Emergency Medicine International

Recent Technology and Protocols in Specialized Intensive Care Units

Lead Guest Editor: Weiguo Li
Guest Editors: Fenglin Liu and Xuncai Chen

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

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(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] J. Wang, C. Wang, X. Wu, T. Ma, and X. Guo, "Effect of Hyperbaric Oxygen Therapy on Sleep Quality, Drug Dosage, and Nerve Function in Patients with Sleep Disorders after Ischemic Cerebral Stroke," *Emergency Medicine International*, vol. 2022, Article ID 8307865, 6 pages, 2022.

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Retraction

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Retraction

Retracted: Short-Term and Long-Term Curative Effect of Partial Hepatectomy on Ruptured Hemorrhage of Primary Liver Cancer after TAE

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Retraction

Retracted: Application Effect of the 6S Care Model in Sterilization in the Department of Stomatology and Its Impact on the Incidence of Nosocomial Infection

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Retraction

Retracted: Effects of Self-Made Prescription Compound Rhodiola on the Ultrastructure of Podocytes in Rats with Type 2 Diabetic Nephropathy

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Retraction

Retracted: Clinical Analysis on the Effects of Tandospirone Citrate Assisted by Drawing Therapy on Medication Compliance and Sleep Quality in Patients with Anxiety Disorders

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Retraction

Retracted: Predictive Value of Preoperative Dynamic Contrast-Enhanced MRI Imaging Features in Breast Cancer Patients with Postoperative Recurrence Time

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Retraction

Retracted: Clinical Effect of Minimally Invasive Percutaneous Pedicle Screw Internal Fixation Combined with Injured Vertebrae Bone Grafting in the Treatment of Thoracolumbar Fractures in Orthopedic Surgery

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[1] G. Fei and H. Yan, "Clinical Effect of Minimally Invasive Percutaneous Pedicle Screw Internal Fixation Combined with Injured Vertebrae Bone Grafting in the Treatment of Thoracolumbar Fractures in Orthopedic Surgery," *Emergency Medicine International*, vol. 2022, Article ID 3081380, 6 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2024, Article ID 9867068, 1 page
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Retraction

Retracted: Preparation of PCL Electrospun Fibers Loaded with Cisplatin and Their Potential Application for the Treatment of Prostate Cancer

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

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[1] H. Mills, R. Acquah, N. Tang et al., "Preparation of PCL Electrospun Fibers Loaded with Cisplatin and Their Potential Application for the Treatment of Prostate Cancer," *Emergency Medicine International*, vol. 2022, Article ID 6449607, 8 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2024, Article ID 9865953, 1 page
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Retraction

Retracted: Clinical Effect of Hufu Copper Scraping on Shoulder-Hand Syndrome after Stroke

Emergency Medicine International

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[1] L. He, X. Chen, and Y. Zhang, "Clinical Effect of Hufu Copper Scraping on Shoulder-Hand Syndrome after Stroke," *Emergency Medicine International*, vol. 2022, Article ID 9165141, 7 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2024, Article ID 9865905, 1 page
https://doi.org/10.1155/2024/9865905

Retraction

Retracted: Clinicopathological Features of 166 Cases of Invasive Ductal Breast Carcinoma and Effect of Primary Tumor Location on Prognosis after Modified Radical Mastectomy

Emergency Medicine International

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[1] S. Chen, L. Yang, and Y. Li, "Clinicopathological Features of 166 Cases of Invasive Ductal Breast Carcinoma and Effect of Primary Tumor Location on Prognosis after Modified Radical Mastectomy," *Emergency Medicine International*, vol. 2022, Article ID 3158956, 6 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2024, Article ID 9865095, 1 page
https://doi.org/10.1155/2024/9865095

Retraction

Retracted: Serum IMA and LP-PLA2 Levels in Patients with Coronary Heart Disease and Their Correlation with the Degree of Myocardial Ischaemia and Their Diagnostic Value

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9863850, 1 page
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Retraction

Retracted: Comparison of Curative Effect between PFNA and PCCP in the Treatment of Femoral Intertrochanteric Fractures

Emergency Medicine International

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[1] B. Fan, H. Xiao, P. Wu, and Y. Du, "Comparison of Curative Effect between PFNA and PCCP in the Treatment of Femoral Intertrochanteric Fractures," *Emergency Medicine International*, vol. 2022, Article ID 5957025, 6 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2024, Article ID 9863262, 1 page
https://doi.org/10.1155/2024/9863262

Retraction

Retracted: Biochemical Behaviours of Salmeterol/Fluticasone Propionate in Treating Asthma and Chronic Obstructive Pulmonary Diseases (COPD)

Emergency Medicine International

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Hindawi
Emergency Medicine International
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https://doi.org/10.1155/2024/9862010

Retraction

Retracted: Application of Chain Nursing Process in the Nursing of Elderly Inpatients with Implantable Venous Infusion Port

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9861978, 1 page
https://doi.org/10.1155/2024/9861978

Retraction

Retracted: Application of 24 h Dynamic Electrocardiography in the Diagnosis of Asymptomatic Myocardial Ischemia with Arrhythmia in Elderly Patients with Coronary Heart Disease

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9853631, 1 page
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Retraction

Retracted: Correlation between Serum ApoC III and Galectin-3 Levels and Maternal and Neonatal Adverse Outcomes in Gestational Diabetes Mellitus Patients

Emergency Medicine International

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[1] T. Tang and L. Chen, "Correlation between Serum ApoC III and Galectin-3 Levels and Maternal and Neonatal Adverse Outcomes in Gestational Diabetes Mellitus Patients," *Emergency Medicine International*, vol. 2022, Article ID 5089529, 5 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2024, Article ID 9850678, 1 page
https://doi.org/10.1155/2024/9850678

Retraction

Retracted: Changes in Serum CRP and PCT Levels in Patients with Acute Simple Lower Urinary Tract Infection and Evaluation of the Efficacy of Treatment with Shuangdong Capsules

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9849523, 1 page
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Retraction

Retracted: Preoperative Nutritional Risk Assessment for Predicting Complications after Radical Cystectomy plus Urinary Diversion for Bladder Cancer

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9846256, 1 page
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Retraction

Retracted: Detection and Significance of Cell-Free DNA Mutation in Pleural Effusion in Patients with Advanced NSCLC

Emergency Medicine International

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[1] M. Qiao, D. Li, Y. He et al., "Detection and Significance of Cell-Free DNA Mutation in Pleural Effusion in Patients with Advanced NSCLC," *Emergency Medicine International*, vol. 2022, Article ID 3112281, 5 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2024, Article ID 9842328, 1 page
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Retraction

Retracted: Curative Effect of Prebiotics/Probiotics-Assisted Ketogenic Diet on Children with Refractory Epilepsy

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9842128, 1 page
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Retraction

Retracted: Effect of Nursing Model Based on Rosenthal Effect on Self-Efficacy and Cognition of Life Meaning in Patients with Non-Small-Cell Lung Cancer

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Hindawi
Emergency Medicine International
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Retraction

Retracted: Effect of Transcatheter Arterial Chemoembolization Combined with Radiofrequency Ablation on Liver Function and Immune Function in Patients with Hepatocellular Carcinoma

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[1] Y. Zhou, Y. Qian, W. Xiong et al., "Effect of Transcatheter Arterial Chemoembolization Combined with Radiofrequency Ablation on Liver Function and Immune Function in Patients with Hepatocellular Carcinoma," *Emergency Medicine International*, vol. 2022, Article ID 4842370, 5 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2024, Article ID 9839210, 1 page
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Retraction

Retracted: Application of the Stratified Nursing Mode of the Prediction Model Constructed Based on Case System Data in the Nursing of Patients with Acute Renal Failure

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

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(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

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We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

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[1] J. Shen, X. Mei, and X. Sun, "Application of the Stratified Nursing Mode of the Prediction Model Constructed Based on Case System Data in the Nursing of Patients with Acute Renal Failure," *Emergency Medicine International*, vol. 2022, Article ID 5666145, 6 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2024, Article ID 9837894, 1 page
https://doi.org/10.1155/2024/9837894

Retraction

Retracted: Effects of Stone Removal via Different Approaches in the Treatment of Incarcerated Upper Ureteral Calculi: A Comparative Study

Emergency Medicine International

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[1] X. Yuan, H. Wei, X. Liu, Z. Jiao, T. Wu, and H. Shi, "Effects of Stone Removal via Different Approaches in the Treatment of Incarcerated Upper Ureteral Calculi: A Comparative Study," *Emergency Medicine International*, vol. 2022, Article ID 7651215, 4 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2024, Article ID 9837328, 1 page
https://doi.org/10.1155/2024/9837328

Retraction

Retracted: Efficacy and Mechanism of Trimebutine Maleate Combined with Lactulose in the Treatment of Constipation-Predominant Irritable Bowel Syndrome in the Elderly

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9836090, 1 page
https://doi.org/10.1155/2024/9836090

Retraction

Retracted: The Role of Jinhuang Powder to Prevent Adverse Effects of Subcutaneous Injection of Enoxaparin Sodium

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9835750, 1 page
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Retraction

Retracted: Effect of Cognitive Behavioral Therapy on Stress Disorder, Cognitive Function, Motor Function, and Daily Living Ability of Patients with a Traumatic Brain Injury

Emergency Medicine International

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Hindawi
Emergency Medicine International
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Retraction

Retracted: Application Value of NT-proBNP Combined with NLR in Evaluation of Major Adverse Cardiac Events in Elderly Patients with Chronic Heart Failure

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9834169, 1 page
https://doi.org/10.1155/2024/9834169

Retraction

Retracted: Effects of Modified Jianpi Qushi Heluo Decoction on Scores of TCM Syndromes, 24 h Urinary Albumin, and Plasma Albumin in IMN of Spleen-Kidney Qi Deficiency

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9832547, 1 page
https://doi.org/10.1155/2024/9832547

Retraction

Retracted: Early Postoperative Pain Control and Inflammation for Total Knee Arthroplasty: A Retrospective Comparison of Continuous Adductor Canal Block versus Single-Shot Adductor Canal Block Combined with Patient-Controlled Intravenous Analgesia

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9831920, 1 page
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Retraction

Retracted: Clinical Characteristics of Metastatic Colorectal Cancer Combined with Gastrointestinal Perforation and Prognostic Value of Circulating Tumor DNA

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9827346, 1 page
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Retraction

Retracted: Changes in Thrombelastography in Patients with Acute Exacerbation of Chronic Obstructive Pulmonary Disease and the Relationship with Lung Function

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9826892, 1 page
https://doi.org/10.1155/2024/9826892

Retraction

Retracted: Study on the Relationship between Different Body Mass Indexes and Puncture Pain and Image Quality in Patients Undergoing Coronary Angiography with Intravenous Indwelling Needle

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9826247, 1 page
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Retraction

Retracted: Effectiveness and Safety Analysis of Plasma Beam in the Treatment of Facial Depressed Scars

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9824670, 1 page
https://doi.org/10.1155/2024/9824670

Retraction

Retracted: Improvement Effect of PERMA Model-Based Nursing Intervention plus Music Therapy on Patients with Acute Liver Failure Undergoing Plasma Exchange Therapy

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9823015, 1 page
https://doi.org/10.1155/2024/9823015

Retraction

Retracted: Relationship between Peripheral Blood miR-181c, miR-101, and Cognitive Impairment in Patients with Diabetes Mellitus Complicated with Acute Stroke

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9820745, 1 page
https://doi.org/10.1155/2024/9820745

Retraction

Retracted: Effect of miR-144-3p-Targeted Regulation of PTEN on Proliferation, Apoptosis, and Osteogenic Differentiation of Bone Marrow Mesenchymal Stem Cells under Stretch

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9820695, 1 page
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Retraction

Retracted: Correlation between Coagulation Fibrinolysis Function and Outcomes during Hospitalization in Patients with Severe Traumatic Hemorrhagic Shock

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The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] L. Zhang, M. Lin, X. Tang, and Y. Tang, "Correlation between Coagulation Fibrinolysis Function and Outcomes during Hospitalization in Patients with Severe Traumatic Hemorrhagic Shock," *Emergency Medicine International*, vol. 2022, Article ID 3775868, 5 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2024, Article ID 9814198, 1 page
https://doi.org/10.1155/2024/9814198

Retraction

Retracted: Clinical Study on Prevention of Irinotecan-Induced Delayed-Onset Diarrhea by Hot Ironing with Moxa Salt Packet on Tianshu and Shangjuxu

Emergency Medicine International

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Hindawi
Emergency Medicine International
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https://doi.org/10.1155/2024/9812154

Retraction

Retracted: Curative Effect of Prebiotics/Probiotics Preparations Combined with Zoledronic Acid + Calcitriol Regimen on Patients with Primary Osteoporosis and Their Influences on Bone Metabolism Markers

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9810434, 1 page
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Retraction

Retracted: Risk Factors of Benign Stricture of Anastomotic Stoma after Esophagectomy and Therapeutic Effect of Stent Implantation

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[1] G. Wu, L. Niu, Y. Yang et al., "Risk Factors of Benign Stricture of Anastomotic Stoma after Esophagectomy and Therapeutic Effect of Stent Implantation," *Emergency Medicine International*, vol. 2022, Article ID 2605592, 5 pages, 2022.

Hindawi
Emergency Medicine International
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Retraction

Retracted: Application of Diversified Health Education Combined with Psychological Nursing in the Treatment of Patients with Infectious Bone Defects by Induction Membrane Surgery

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9808439, 1 page
https://doi.org/10.1155/2024/9808439

Retraction

Retracted: Effect of Arthroscopic Acromioplasty Combined with Rotator Cuff Repair in the Treatment of Aged Patients with Full-Thickness Rotator Cuff Tear and Rotator Cuff Injury

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Hindawi
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Retraction

Retracted: The Expression and Clinical Significance of Sphingosine Kinase 1 and Vascular Endothelial Growth Factor in Endometrial Carcinoma

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Hindawi
Emergency Medicine International
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https://doi.org/10.1155/2024/9803617

Retraction

Retracted: Infection Control-Based Construction of a Fever Outpatient Routine Management Model

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9803436, 1 page
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Retraction

Retracted: Gene Mutation and Its Association with Clinicopathological Features in Young Patients with Non-Small-Cell Lung Cancer

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9801750, 1 page
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Retraction

Retracted: Effects of Mind Mapping Combined with Microvideo Explanation on Disease Perception Control and Nursing Cooperation during Membrane Induction Therapy in Patients with Infectious Nonunion after Tibial Trauma

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Emergency Medicine International
Volume 2024, Article ID 9798474, 1 page
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Retraction

Retracted: Diagnosis of Cervical Intraepithelial Neoplasia and Invasive Cervical Carcinoma by Cervical Biopsy under Colposcopy and Analysis of Factors Influencing

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Hindawi
Emergency Medicine International
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Retraction

Retracted: Clinical Effect of Emergency Dermabrasion Combined with Biological Dressing A on Wound Microcirculation and Preventing Sepsis in Deep Degree-II Burns

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Retraction

Retracted: Clinical Factors of Blood Transfusion-Related Acute Lung Injury and Changes in Levels of Treg-Related Cytokines

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9796083, 1 page
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Retraction

Retracted: Application and the Effect of the Triple Prerehabilitation Nursing Model in the Perioperative Period of Knee Arthroplasty in Diabetic Patients

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9795276, 1 page
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Retraction

Retracted: Clinical Effect of Apatinib Mesylate Tablets Combined with Paclitaxel Concurrent Radiotherapy and Chemotherapy in the First-Line Treatment of Locally Advanced Nasopharyngeal Carcinoma

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9795172, 1 page
https://doi.org/10.1155/2024/9795172

Retraction

Retracted: Pingyangmycin Activates Oral Carcinoma Cell Autophagy via the Phosphorylation of the PI3K/AKT/mTOR Axis to Achieve the Purpose of Treating Oral Carcinoma

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[1] W. Xu, L. Zhang, Z. Chen, H. Wang, and Z. Yan, "Pingyangmycin Activates Oral Carcinoma Cell Autophagy via the Phosphorylation of the PI3K/AKT/mTOR Axis to Achieve the Purpose of Treating Oral Carcinoma," *Emergency Medicine International*, vol. 2022, Article ID 4522873, 8 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2024, Article ID 9790343, 1 page
https://doi.org/10.1155/2024/9790343

Retraction

Retracted: Application Analysis of Multidisciplinary Diagnosis and Treatment Nursing Mode Based on Doctor-Nurse-Integration for Stroke Patients Undergoing Emergency Intervention Surgery

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

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(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9790157, 1 page
https://doi.org/10.1155/2024/9790157

Retraction

Retracted: A Signature of Genes Featuring *FGF11* Revealed Aberrant Fibroblast Activation and Immune Infiltration Properties in Keloid Tissue

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9787391, 1 page
https://doi.org/10.1155/2024/9787391

Retraction

Retracted: Application of Health Education Based on Phased Transition Theory Model in Continuous Nursing for Patients with Inflammatory Bowel Disease

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9787343, 1 page
https://doi.org/10.1155/2024/9787343

Retraction

Retracted: Clinical Comparative Study of Intravitreal Injection of Triamcinolone Acetonide and Aflibercept in the Treatment of Diabetic Retinopathy Cystoid Macular Edema

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9786504, 1 page
https://doi.org/10.1155/2024/9786504

Retraction

Retracted: Risk Factors of Urinary Pathogenic Bacteria Infection after Benign Prostatic Hyperplasia Surgery and Curative Effect Analysis of Shuangdong Capsule Intervention

Emergency Medicine International

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Hindawi
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Volume 2024, Article ID 9785342, 1 page
https://doi.org/10.1155/2024/9785342

Retraction

Retracted: Effects of Deep Hyperthermia Combined with Intraperitoneal Chemotherapy on Liver-Kidney Function, Immune Function, and Long-Term Survival in Patients with Abdominal Metastases

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9768409, 1 page
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Retraction

Retracted: Value of Humanized Nursing under Emergency Green Channel on Gastrointestinal Function Recovery in Patients with Acute Intestinal Obstruction after Operation

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9765495, 1 page
https://doi.org/10.1155/2024/9765495

Retraction

Retracted: Effect of MED-TLIF Combined with Percutaneous Pedicle Screw Fixation on Function and Spinal Pelvic Parameters in Patients with Lumbar Spondylolisthesis

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9758570, 1 page
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Retraction

Retracted: Analysis of the Clinical Value of MAGE-A9 Expressions in Cervical Cancer Tissues and PBMC

Emergency Medicine International

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Hindawi
Emergency Medicine International
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Retraction

Retracted: Serum Levels of CXCL-13, RBP-4, and IL-6, and Correlation Analysis of Patients with Graves' Disease

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9756981, 1 page
https://doi.org/10.1155/2024/9756981

Retraction

Retracted: Curative Effect of Yangxin Dingji Capsule Combined With Mexiletine Hydrochloride on Postoperative Arrhythmia and Its Influences on the Vascular Endothelial Function in Coronary Bifurcation Lesions

Emergency Medicine International

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9753496, 1 page
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Retraction

Retracted: A Study on the Impact of Perioperative Pain Care Management on Pain, Comfort, and Defecation of Patients in Anorectal Surgery

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

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Hindawi
Emergency Medicine International
Volume 2023, Article ID 9874893, 1 page
https://doi.org/10.1155/2023/9874893

Retraction

Retracted: Analysis of the Effect of Rational Emotional Intervention Combined with Hierarchical Management Mode on Improving the Psychological Stress of Emergency Nurses and Trainee Nurses

Emergency Medicine International

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Hindawi
Emergency Medicine International
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Retraction

Retracted: Study on the Current Status and Influencing Factors of Workplace Violence to Medical Staff in Intensive Care Units

Emergency Medicine International

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Hindawi
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Retraction

Retracted: Effect of Compound Polyethylene Glycol Electrolyte Powder on the Quality of Gastrobowel Preparation before Enteroscopy Intervention

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References

[1] Y. Yuan, Y. Li, Y. Zhang et al., "Effect of Compound Polyethylene Glycol Electrolyte Powder on the Quality of Gastrobowel Preparation before Enteroscopy Intervention," *Emergency Medicine International*, vol. 2022, Article ID 9895499, 5 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2023, Article ID 9805463, 1 page
https://doi.org/10.1155/2023/9805463

Retraction

Retracted: Comparison of the Effects of Hysteroscopic Cold Broad Sword Play Combined with Estrogen and Progestin Sequential Therapy and Drospirenone and Ethinylestradiol Tablets in Patients with Severe Intrauterine Adhesion

Emergency Medicine International

Received 19 December 2023; Accepted 19 December 2023; Published 20 December 2023

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

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Hindawi
Emergency Medicine International
Volume 2023, Article ID 9765351, 1 page
https://doi.org/10.1155/2023/9765351

Retraction

Retracted: Clinical Value of Pleural Effusion and Serum MMP-3 and CYFRA21-1 Combined with ADA in Differential Diagnosis of Pleural Exudative Effusion

Emergency Medicine International

Received 19 December 2023; Accepted 19 December 2023; Published 20 December 2023

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[1] Z. Xu, J. Guan, J. Xu, J. Tu, and J. Cheng, "Clinical Value of Pleural Effusion and Serum MMP-3 and CYFRA21-1 Combined with ADA in Differential Diagnosis of Pleural Exudative Effusion," *Emergency Medicine International*, vol. 2022, Article ID 1615058, 6 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2023, Article ID 9756841, 1 page
https://doi.org/10.1155/2023/9756841

Retraction

Retracted: Clinical Effect and Aesthetic Evaluation of Minimally Invasive Implant Therapy

Emergency Medicine International

Received 19 December 2023; Accepted 19 December 2023; Published 20 December 2023

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[1] K. Li, F. Liu, P. Liu, C. Wei, and X. Li, "Clinical Effect and Aesthetic Evaluation of Minimally Invasive Implant Therapy," *Emergency Medicine International*, vol. 2023, Article ID 9917311, 7 pages, 2023.

Hindawi
Emergency Medicine International
Volume 2023, Article ID 9831797, 1 page
https://doi.org/10.1155/2023/9831797

Retraction

Retracted: Analysis of the Effect of Mindfulness Behavior Intervention Combined with Progressive Breathing Training on Pulmonary Function Rehabilitation in Patients with Chronic Obstructive Pulmonary Disease

Emergency Medicine International

Received 17 October 2023; Accepted 17 October 2023; Published 18 October 2023

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

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Hindawi
Emergency Medicine International
Volume 2023, Article ID 9761860, 1 page
https://doi.org/10.1155/2023/9761860

Retraction

Retracted: Correlation between Lpa, APO-A, APO-B, and Stenosis of Middle Cerebral Artery in Patients with Cerebral Ischemic Stroke

Emergency Medicine International

Received 3 October 2023; Accepted 3 October 2023; Published 4 October 2023

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

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[1] X. Chen, X. Lu, W. Li, H. Zhang, and T. Wang, "Correlation between Lpa, APO-A, APO-B, and Stenosis of Middle Cerebral Artery in Patients with Cerebral Ischemic Stroke," *Emergency Medicine International*, vol. 2022, Article ID 6403645, 7 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2023, Article ID 9878673, 1 page
https://doi.org/10.1155/2023/9878673

Retraction

Retracted: Application Effect of External and Internal Elevation of Maxillary Sinus in Implant Restoration of Posterior Maxilla

Emergency Medicine International

Received 22 August 2023; Accepted 22 August 2023; Published 23 August 2023

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References

[1] X. Deng, R. Shi, J. Zhan, and F. Yang, "Application Effect of External and Internal Elevation of Maxillary Sinus in Implant Restoration of Posterior Maxilla," *Emergency Medicine International*, vol. 2022, Article ID 7879633, 6 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2023, Article ID 9841383, 1 page
https://doi.org/10.1155/2023/9841383

Retraction

Retracted: Serological Characteristics, Etiological Analysis, and Treatment Prognosis of Children with Congenital Hypothyroidism

Emergency Medicine International

Received 22 August 2023; Accepted 22 August 2023; Published 23 August 2023

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

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References

[1] L. shen and J. Ding, "Serological Characteristics, Etiological Analysis, and Treatment Prognosis of Children with Congenital Hypothyroidism," *Emergency Medicine International*, vol. 2022, Article ID 8005848, 7 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2023, Article ID 9838294, 1 page
https://doi.org/10.1155/2023/9838294

Retraction

Retracted: Relationship between PLR and Clinicopathological Characteristics of Patients with Advanced NSCLC and Its Predictive Value for the Efficacy of Chemotherapy and Prognosis

Emergency Medicine International

Received 22 August 2023; Accepted 22 August 2023; Published 23 August 2023

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References

[1] J. Zhao, Y. Pan, Y. Sheng, and J. Sun, "Relationship between PLR and Clinicopathological Characteristics of Patients with Advanced NSCLC and Its Predictive Value for the Efficacy of Chemotherapy and Prognosis," *Emergency Medicine International*, vol. 2022, Article ID 5811219, 5 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2023, Article ID 9831731, 1 page
https://doi.org/10.1155/2023/9831731

Retraction

Retracted: Cohort Study on the Effect of Psychological Education for Nurses in Psychiatric Department

Emergency Medicine International

Received 22 August 2023; Accepted 22 August 2023; Published 23 August 2023

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References

[1] L. Chu and G. Qian, "Cohort Study on the Effect of Psychological Education for Nurses in Psychiatric Department," *Emergency Medicine International*, vol. 2022, Article ID 7394710, 9 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2023, Article ID 9830651, 1 page
https://doi.org/10.1155/2023/9830651

Retraction

Retracted: Aesthetic Effect of Autologous Fat Transplantation on Frontotemporal Depression Filling and Its Influence on SCL-90 and SES of Patients

Emergency Medicine International

Received 22 August 2023; Accepted 22 August 2023; Published 23 August 2023

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[1] D. Yin and G. Shen, "Aesthetic Effect of Autologous Fat Transplantation on Frontotemporal Depression Filling and Its Influence on SCL-90 and SES of Patients," *Emergency Medicine International*, vol. 2022, Article ID 3374780, 7 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2023, Article ID 9814359, 1 page
https://doi.org/10.1155/2023/9814359

Retraction

Retracted: Efficacy of Modified Nonpneumatic Transaxillary Approach in the Treatment of Thyroid Cancer and Its Effect on Immune Function and Parathyroid Function

Emergency Medicine International

Received 22 August 2023; Accepted 22 August 2023; Published 23 August 2023

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Hindawi
Emergency Medicine International
Volume 2023, Article ID 9782943, 1 page
https://doi.org/10.1155/2023/9782943

Retraction

Retracted: Observation on the Efficacy of Moxibustion Combined with Ear Acupoint Pressing Beans in Treating Patients with Phlegm Stasis Syndrome Vertigo

Emergency Medicine International

Received 22 August 2023; Accepted 22 August 2023; Published 23 August 2023

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Hindawi
Emergency Medicine International
Volume 2023, Article ID 9768262, 1 page
https://doi.org/10.1155/2023/9768262

Retraction

Retracted: Investigation on the Correlation of Anxiety Degree with Family Atmosphere in Children with Precocious Puberty

Emergency Medicine International

Received 22 August 2023; Accepted 22 August 2023; Published 23 August 2023

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[1] Y. Xiao, Y. Li, Z. Cai, and J. Xie, "Investigation on the Correlation of Anxiety Degree with Family Atmosphere in Children with Precocious Puberty," *Emergency Medicine International*, vol. 2022, Article ID 3269807, 8 pages, 2022.

Hindawi
Emergency Medicine International
Volume 2023, Article ID 9761575, 1 page
https://doi.org/10.1155/2023/9761575

Retraction

Retracted: Clinical Observation of Low-Temperature Plasma Knife Tonsil Adenoidectomy for Pediatric Snoring and Analysis of Influencing Factors

Emergency Medicine International

Received 22 August 2023; Accepted 22 August 2023; Published 23 August 2023

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Hindawi
Emergency Medicine International
Volume 2023, Article ID 9761496, 1 page
https://doi.org/10.1155/2023/9761496

Retraction

Retracted: Correlation of Complex Impacted Mandibular Teeth with Pericoronitis and Effect of Minimally Invasive Tooth Extraction on Patients' Long-Term Outcome of Masticatory Ability

Emergency Medicine International

Received 22 August 2023; Accepted 22 August 2023; Published 23 August 2023

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Hindawi
Emergency Medicine International
Volume 2024, Article ID 9785342, 1 page
https://doi.org/10.1155/2024/9785342

Retraction

Retracted: Effects of Deep Hyperthermia Combined with Intraperitoneal Chemotherapy on Liver-Kidney Function, Immune Function, and Long-Term Survival in Patients with Abdominal Metastases

Emergency Medicine International

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The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

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[1] Y. Zhang, X. Lu, H. Ji, L. Zheng, G. Chen, and Y. Qian, "Effects of Deep Hyperthermia Combined with Intraperitoneal Chemotherapy on Liver-Kidney Function, Immune Function, and Long-Term Survival in Patients with Abdominal Metastases," *Emergency Medicine International*, vol. 2023, Article ID 5878402, 7 pages, 2023.

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Research Article

Effects of Deep Hyperthermia Combined with Intraperitoneal Chemotherapy on Liver-Kidney Function, Immune Function, and Long-Term Survival in Patients with Abdominal Metastases

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Objectives. To analyze the effects of deep hyperthermia combined with intraperitoneal chemotherapy on liver-kidney function, immune function, and long-term survival in patients with abdominal metastases. *Methods*. A total of 88 patients with abdominal metastases confirmed in the hospital were enrolled as the research objects between August 2018 and August 2021. They were randomly divided into control group ($n = 44$) and observation group ($n = 44$). The control group was treated with intraperitoneal chemotherapy, while observation group was additionally treated with deep hyperthermia. The general clinical data of patients were recorded. The short-term and long-term curative effects were evaluated. The occurrence of side effects in both groups was recorded. Before and after treatment, levels of alanine transaminase (ALT) and aspartate transaminase (AST) were detected by full-automatic biochemical analyzer. The level of blood urea nitrogen (BUN) was detected by the urease electrode method. The level of serum creatinine (Scr) was detected by the picric acid method. The levels of CD_3^+, CD_4^+, CD_8^+, and NK cells were detected by BD FACSCalibur flow cytometer. *Results*. There was no significant difference in clinical data between the two groups ($P > 0.05$). In the observation group, ORR was significantly higher than that in the control group (54.55% *vs* 29.55%) ($P < 0.05$), OS was significantly longer than that in the control group ($P < 0.05$), and median survival time and mPFS were longer than those in the control group. After treatment, the levels of ALT, AST, BUN, and Scr were significantly increased in the control group ($P < 0.05$), but there was no significant difference in peripheral blood CD_3^+, CD_4^+, and CD_4^+/CD_8^+ ratio or count of NK cells before and after treatment ($P > 0.05$). Before and after treatment, there was no significant difference in the levels of ALT, AST, BUN, and Scr in the observation group ($P > 0.05$). After treatment, peripheral blood CD_3^+, CD_4^+, and CD_4^+/CD_8^+ ratio and count of NK cells were all increased in the observation group, significantly higher than those in the control group ($P < 0.05$). The incidence of chemotherapy side effects in the observation group was significantly lower than that in the control group ($P < 0.05$). *Conclusion*. The short-term and long-term curative effects of deep hyperthermia combined with intraperitoneal chemotherapy are good on patients with intraperitoneal metastases, with less damage to liver-kidney function. It is beneficial to enhance immune function of patients, with mild side effects.

1. Introduction

Abdominal metastasis refers to the fact that solid malignant tumors in other parts of the body have invaded the abdomen, usually indicating that the patient has entered the advanced stage of cancer and has lost the surgical indications and no chance of radical cure, and the survival rate of patients can only be improved by chemotherapy and radiotherapy [1–3]. Patients with abdominal metastasis of tumor have complicated condition, rapid changes, poor prognosis, and difficult clinical treatment. In addition, they often have severe abdominal pain, abdominal distension, and other accompanying symptoms [4, 5]. Tumor chemotherapy has developed rapidly and achieved outstanding results in various tumor treatment fields. For patients with intraperitoneal metastases with severe ascites and other

conditions, intraperitoneal chemotherapy is one of the best choices for prolonging survival. However, chemotherapy itself is accompanied by many complications. At the same time, due to drug resistance and more serious side effects, patients often have to stop chemotherapy after a period of treatment [6–8]. Tumor hyperthermia is an important part of the tumor treatment sector. Relying on the rapid development of medical technology in recent years, the clinical application of hyperthermia technology is becoming more and more mature, and the treatment effect can be improved by combining with chemotherapy. Deep hyperthermia, as one of the comprehensive therapies for tumors, combines chemotherapy with hyperthermia to scientifically and reasonably formulate clinical treatment plans and exert the synergistic effects of hyperthermia and chemotherapy, in order to improve the survival rate, alleviate the pain and improve the quality of life. Thermal therapy can expand blood vessels of tumor tissues, accelerate blood circulation, increase the concentration of chemotherapeutic drugs in tumor tissues, and promote the drugs to approach target cells [9, 10]. Meanwhile, thermal therapy can change cell permeability, increase the entry of chemotherapeutic drugs into cells, and enhance chemotherapy reaction [11]. This study investigated the effects of deep hyperthermia combined with intraperitoneal chemotherapy on liver and kidney function, immune function and long-term survival in patients with intra-abdominal metastases, in order to provide more possibilities for the treatment of advanced clinical malignant tumors. The report is as follows:

2. Materials and Methods

2.1. General Information. A total of 88 patients diagnosed with abdominal metastases in our hospital from August 2018 to August 2021 were selected as the research objects and randomly divided into the control group ($n = 44$) and the observation group ($n = 44$). Inclusion criteria: ① Meet the diagnostic criteria of various malignant tumors, confirmed by pathological diagnosis; ②Imaging examination showed that the tumor had abdominal metastasis; ③ Estimated lifetime is greater than or equal to 3 months; ④ No prior chemotherapy and immunotherapy; ⑤ Patients have good tolerance to deep hyperthermia and can cooperate with experimental research. Exclusion criteria: ① Patients with metal implants or contraindications to hyperthermia in areas requiring deep hyperthermia.; ② Patients with abnormal coagulation function or grade 3 hematological toxicity; ③ Patients with poor mental state or cognitive impairment; ④ Less than one assessable lesion;

2.2. Treatment Methods. Routine blood, liver and kidney function, electrocardiogram, and other routine examinations were performed in both groups before treatment.

The control group was treated with intraperitoneal chemotherapy. The patients were instructed to take a supine position for paracentesis, and infused with 150 ml of normal saline at 40°C. After successful infusion, cisplatin and mitomycin were added to about 2000 ml of normal saline to prepare chemotherapy drugs. Good chemotherapy drugs are injected into the abdominal cavity through a drainage tube, Make the drug directly interact with residual cancer cells in the abdominal cavity. During the treatment process, the abdominal cavity temperature is maintained at 40–42°C. At the same time, sodium sulfide sulfate is intravenously infused to reduce renal toxicity. After the infusion is completed, the patient should be changed every 15 minutes. Distributed to the tumor surface to achieve therapeutic effect, treatment was once every 1 week for a total of 4 weeks.

The observation group was treated with deep hyperthermia combined with intraperitoneal chemotherapy, and the intraperitoneal chemotherapy was the same as the control group. The patient's anatomical location of the tumor was confirmed by imaging diagnosis, and the EHY-200 ion radiofrequency deep hyperthermia machine was used for deep hyperthermia. According to the treatment needs, the patient was placed on the treatment water bed in the appropriate position, and the appropriate probe was placed in the well-covered tumor area and the abdominal cavity. Deep hyperthermia was performed about 30 minutes after chemotherapy, 1 hour each time, 3 times a week, for a total of 4 weeks.

2.3. Observation Indicators

2.3.1. Efficacy Criteria [12]. After the treatment, the patients in the control group and the observation group underwent imaging examination to observe the clinical effect and evaluate the short-term effect of the patients. Complete remission (CR): Imaging results show that abdominal metastases and ascites have completely disappeared and can be maintained for more than 4 weeks; Partial remission (PR): The intraabdominal metastatic tumor was reduced by 50%, the ascites disappeared, and it was maintained for more than 4 weeks; Stable disease (SD): The volume of intra-abdominal metastases has decreased by less than 25% or increased by less than 25%, and no new lesions have been found to metastasize; Progressive disease (PD): The volume of metastatic tumor in abdominal cavity increased by more than 25% or a new tumor appeared.

Objective remission rate (ORR) = (CR + PR)/total number of cases × 100%.

2.3.2. Liver and Kidney Function

(1) Liver Function Indicators. Before and after treatment, the levels of Alanine Transaminase (ALT) and Aspartate Transaminase (AST) were detected by Beckman LX-20 automatic enzyme immunoassay biochemical analyzer.

(2) Kidney Function Indicators. Before and after treatment, 3 mL of venous blood was drawn from all patients on an empty stomach in the early morning, placed in blood collection tubes without anticoagulant, centrifuged to separate serum, and stored in a −20°C refrigerator for testing. Blood urea nitrogen (BUN) level and serum creatinine (Scr) level were detected by the urease electrode method.

2.3.3. Immune Function. Before and after treatment, 5 mL of fasting venous blood was collected from the two groups of patients in the morning, anticoagulated, and centrifuged to get the supernatant, which was stored in a −40°C refrigerator for testing. Reagents were purchased from BD Company.

2.3.4. Lifetime. The patients were followed up for 1–48 months by means of telephone follow-up, and the follow-up deadline was August 2022. Telephone follow-up was conducted for 1–48 months with a follow-up deadline of August 2022. The death of the patient due to tumor was considered as the follow-up endpoint. The median survival time, overall survival (OS), and median progression-free survival (mPFS) of patients were recorded.

2.3.5. Case Elimination Criteria. Patients with telephone loss; patients who die from non-neoplastic progression; patients who withdrew from the study due to their own volition. Finally, a total of 5 patients were lost to follow-up during the follow-up period.

2.3.6. Safety Evaluation. The occurrence of toxic and side effects of chemotherapy in the two groups of patients during treatment, including nausea and vomiting, thrombocytopenia, leukopenia, diarrhea, bone marrow suppression, and hepatotoxicity, were recorded.

2.4. Statistical Processing. SPSS 21.0 software was used to analyze the obtained data, and the measured data conforming to the normal distribution is expressed by the ($\overline{x} \pm s$), and the *t*-test was used to analyze the differences of parameter between the two groups; The enumeration data were expressed as rate (%), and the χ^2 test was used to compare the categorical data; The survival curve was drawn by Kaplan-Meier (K-M) analysis, and the survival rate was compared by Log Rank χ^2 test; $P < 0.05$ indicated statistical significance.

3. Results

3.1. Comparison of Clinical Data between the Two Groups of Patients. There was no significant difference in clinical data between the two groups ($P > 0.05$). As shown in Table 1.

3.2. Comparison of Short-Term Curative Effect between Two Groups of Patients. The ORR of the observation group was 58.54%, and the ORR of the control group was 30.95%. The ORR of the observation group was significantly higher than that of the control group ($P < 0.05$). As shown in Table 2.

3.3. Long-Term Survival Analysis of Two Groups of Patients. During the follow-up process, 5 cases were lost to follow-up, and the total sample size was 83 cases, including 3 cases in the control group and 2 cases in the observation group. The follow-up time was 1–48 months. The OS of the observation group was significantly longer than that of the control group ($P < 0.05$), and the median survival time and mPFS were longer than those of the control group. As shown in Figure 1 and Table 3.

3.4. Comparison of Liver and Kidney Function between the Two Groups before and after Treatment. After treatment, the levels of ALT, AST, BUN, and Scr in the control group were significantly increased compared with those before treatment ($P < 0.05$). Before and after treatment, there was no significant difference in the levels of ALT, AST, BUN, and Scr in the observation group ($P < 0.05$). As shown in Figure 2.

3.5. Comparison of Immune Function between the Two Groups before and after Treatment. After treatment, the peripheral blood CD_3^+ level, CD_4^+ level, and CD_4^+/CD_8^+ ratio and NK cell count in the observation group were all increased and were significantly higher than those in the control group ($P < 0.05$). Before and after treatment, there were no significant differences in peripheral blood CD_3^+ level, CD_4^+ level, and CD_4^+/CD_8^+ ratio and NK cell count in the control group ($P > 0.05$). As shown in Figure 3.

3.6. Comparison of Toxic and Side Effects of Chemotherapy in the Two Groups of Patients. After treatment, both groups of patients developed chemotherapy toxicity, but the reaction was mild. The incidence of chemotherapy toxicity and side effects such as nausea and vomiting, thrombocytopenia, leukopenia, diarrhea, bone marrow suppression, and hepatotoxicity in the observation group was significantly lower than that in the control group ($P < 0.05$). As shown in Table 4.

4. Discussions

Abdominal metastasis is a form of metastasis that occurs when malignant tumors develop to an advanced stage, which marks the development of solid tumors from local to systemic metastasis. At present, the diagnosis and treatment methods for intraabdominal metastases are not perfect, and the adverse effects of intraabdominal metastases on the survival of patients have not been completely eliminated [13–15]. The two-in-one comprehensive treatment model combining hyperthermia and chemotherapy is a research hotspot recently. After years of clinical verification, it has been shown that this treatment plan is a comprehensive measure with definite curative effect and no strong toxic and side effects, and has effectively solved a number of clinical malignant tumors [16–18]. The results of this study showed that the ORR of the patients in the observation group was significantly higher than that in the control group, suggesting that deep hyperthermia combined with intraperitoneal chemotherapy had a higher clinical remission rate for intraperitoneal metastases and showed a more impressive clinical effect. This may be because the chemotherapeutic drugs are directly injected into the abdominal cavity, which avoids the effect of the "peritoneal-plasma

Table 1: Comparison of clinical data of the two groups of patients (n, %).

Indexes	Control group ($n = 44$)	Observation group ($n = 44$)	t/χ^2	P
Gender			0.741	0.389
Male	23	27		
Female	21	17		
Age (year)	59.05 ± 8.72	60.31 ± 8.54	0.653	0.516
Course of disease (d)	9.85 ± 2.16	10.32 ± 2.47	0.906	0.368
ECOG scale (score)			1.216	0.544
1	12	9		
2	25	30		
3	7	5		
Primary tumor site			1.687	0.975
Gastrointestinal	13	15		
Esophagus	2	3		
Pancreas	8	6		
Liver	8	9		
Gallbladder	5	5		
Ovary	3	1		
Breast	2	2		
Cervix	3	3		

Table 2: Comparison of short-term curative effect between two groups of patients ($n = 44$, %).

Group	CR	PR	SD	PD	ORR (%)
Control group	4	20	15	2	24/41
Observation group	1	12	22	7	13/42
χ^2					5.643
P					0.018

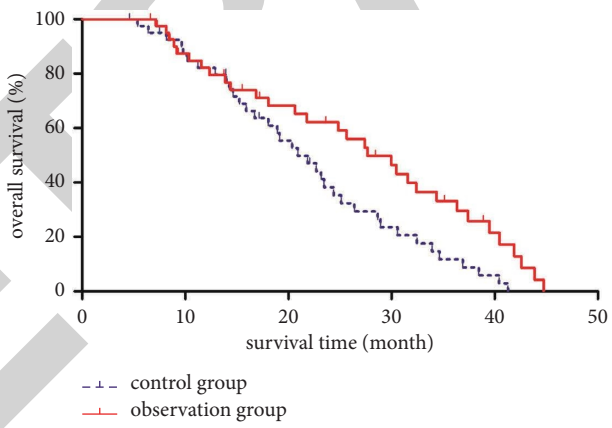

Figure 1: OS of the two groups of patients.

Table 3: Survival analysis of the two groups of patients.

Group	Median survival (months)	OS (%)	mPFS (months)
Control group ($n = 41$)	20.21	5/41 (12.20)	6.35
Observation group ($n = 42$)	28.93	11/42 (26.19)	10.47
Log rank χ^2	—	5.776	—
P	—	0.016	—

barrier" on drug absorption, ensures the amount and concentration of chemotherapeutic drugs entering the abdominal cavity, and makes them in direct contact with the tumor. The synergistic effect of deep hyperthermia increases the sensitivity of tumors to chemotherapy and can effectively kill free cancer cells and micrometastases in the abdominal cavity [19, 20]. In addition to directly inhibiting the growth of malignant tumor cells and accelerating the process of cancer cell apoptosis, deep hyperthermia can also stimulate the body's immune system by synthesizing heat shock proteins, improve the body's immunity, and help resist malignant tumors [21, 22]. Long-term follow-up

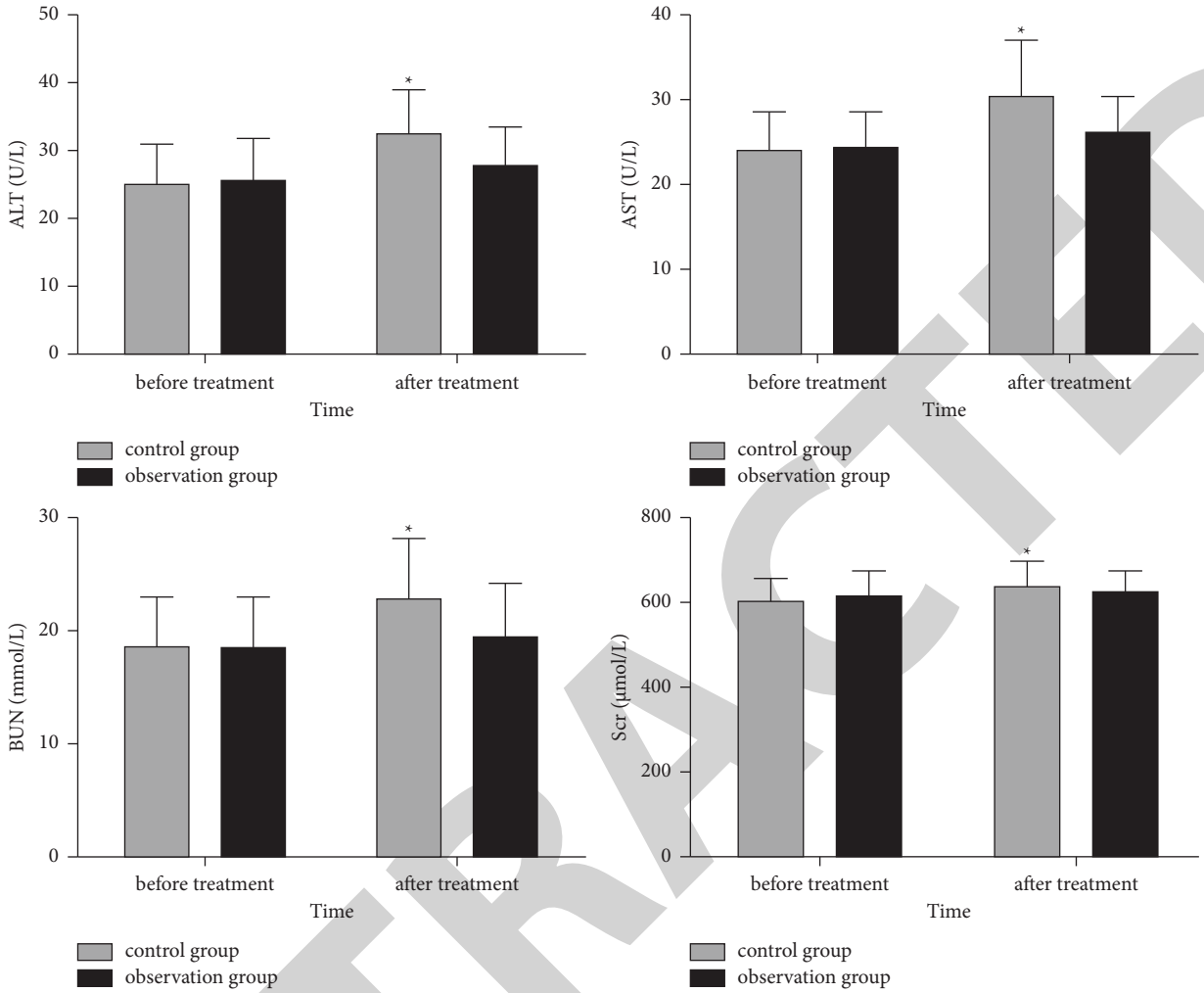

Figure 2: Comparison of liver and kidney function before and after treatment in two groups of patients. Note: compared with before treatment, $^{*}P < 0.05$.

investigation of patients in two groups showed that OS of the observation group was significantly superior to that of the control group, and the median survival time and mPFS of the observation group were also longer than those of the control group, indicating that deep hyperthermia combined with intraperitoneal chemotherapy could facilitate the long-term survival, improve the long-term survival rate, extend the progression-free survival time, and improve the quality of life of patients during the anticancer process.

The results of this study showed that the levels of ALT, AST, BUN, and Scr in the control group increased significantly after treatment, while there was no significant difference in the indicators in the observation group, indicating that the liver and kidney function of the patients decreased after only intraperitoneal chemotherapy. After combined with deep hyperthermia, liver and kidney functions were not significantly damaged compared with those before treatment. Although deep hyperthermia did have negative effects on liver and kidney functions, these effects were mostly transient pathological changes and would not cause serious liver and kidney disease [23]. The results of this study also showed that there were no statistical changes in CD3+ level, CD4+ level, and CD4+/CD8+ ratio and NK cell count in the control group before and after treatment. The above-mentioned indicators in the observation group were all increased after treatment as compared with those before treatment, suggesting that the immune function of patients was significantly improved after deep hyperthermia combined with intraperitoneal chemotherapy. The incidence of toxic and side effects of chemotherapy in the two groups after treatment was observed, and it was found that the incidence of toxic and side effects of chemotherapy in the observation group was significantly lower than that in the control group, and the adverse reactions were mild, indicating that the deep hyperthermia combined with chemotherapy had higher safety and made patients more easily adapt to chemotherapy. The reason why deep hyperthermia can make patients tolerate chemotherapy may be that thermodynamic effect improves the hemodynamics of liver and kidney tissues, increases the blood flow of the body and accelerates metabolism, thus reducing the toxic damage of liver and kidney during chemotherapy [24, 25].

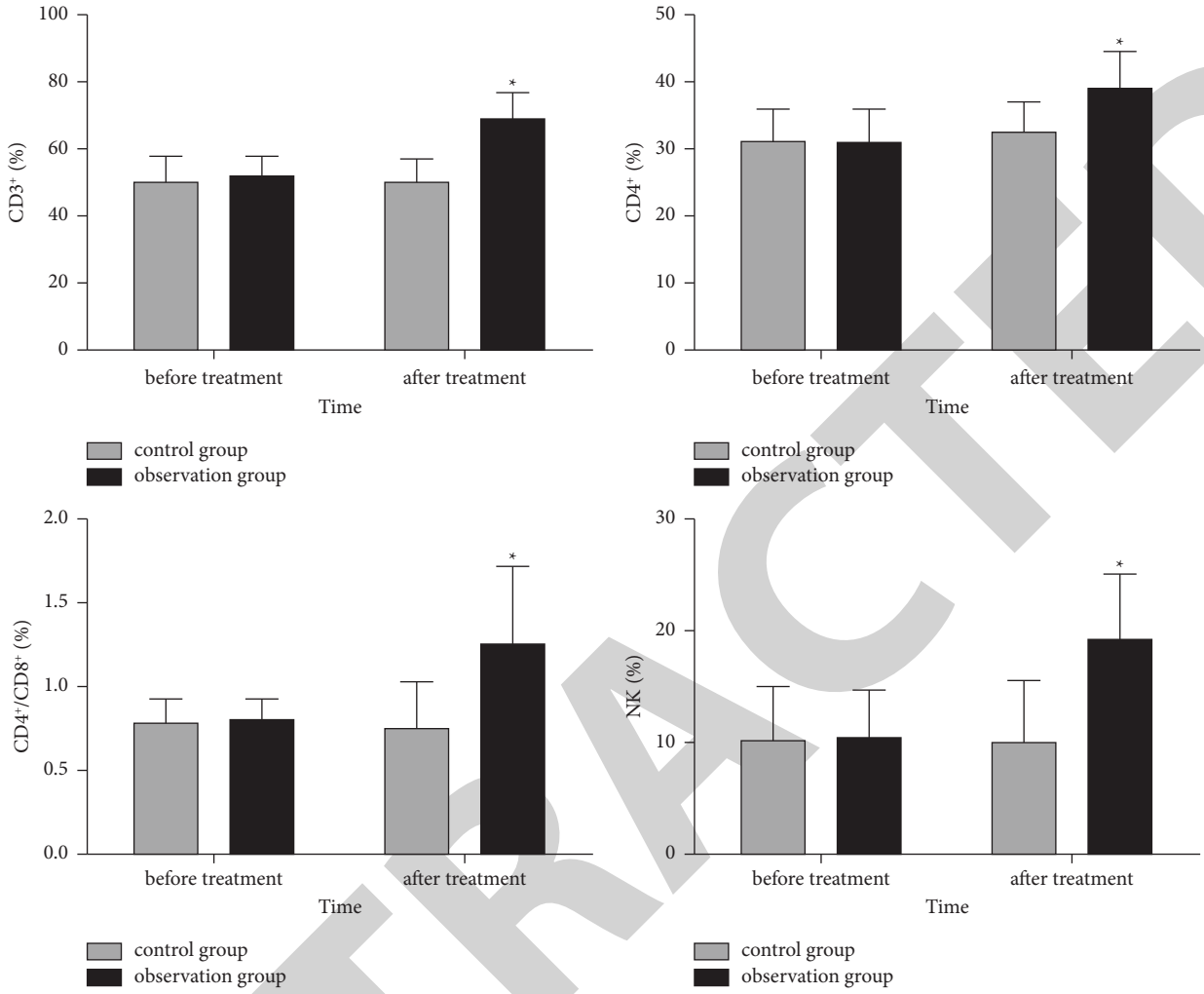

Figure 3: Comparison of immune function between the two groups before and after treatment. Note: compared with before treatment, $^*P < 0.05$.

Table 4: Comparison of toxic and side effects of chemotherapy in two groups of patients ($n = 44$, %).

Group	Nausea and vomiting	Thrombocytopenia	Leukopenia	Diarrhea	Bone marrow suppression	Hepatotoxicity
Control group	35	40	35	29	33	19
Observation group	26	33	20	17	21	8
χ^2	4.328	3.938	10.909	6.559	6.902	6.465
P	0.037	0.047	0.001	0.010	0.009	0.011

In conclusion, deep hyperthermia combined with intraperitoneal chemotherapy can improve the clinical remission rate of patients with abdominal metastases, and enable patients to achieve short-term and long-term survival benefits, which might be due to the fact that deep hyperthermia reduced the toxicity of chemotherapy to the liver and kidney and improved the immune function of the patients.

Data Availability

The raw data supporting the findings of this article will be available from the corresponding author upon request.

Disclosure

Yan Zhang and Xiaomin Lu are co-first authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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[1] V. Tonini and M. Zanni, "Pancreatic cancer in 2021: what you need to know to win," *World Journal of Gastroenterology*, vol. 27, no. 35, pp. 5851–5889, 2021.

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Retraction

Retracted: Clinical Effect and Aesthetic Evaluation of Minimally Invasive Implant Therapy

Emergency Medicine International

Received 19 December 2023; Accepted 19 December 2023; Published 20 December 2023

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
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[1] K. Li, F. Liu, P. Liu, C. Wei, and X. Li, "Clinical Effect and Aesthetic Evaluation of Minimally Invasive Implant Therapy," *Emergency Medicine International*, vol. 2023, Article ID 9917311, 7 pages, 2023.

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Research Article

Clinical Effect and Aesthetic Evaluation of Minimally Invasive Implant Therapy

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Objective. To explore the clinical effect and aesthetic evaluation of minimally invasive implant in the treatment of dentition defect. *Methods*. From April 2020 to May 2021, 60 patients who received implant restoration were collected as the research objects. Randomly divided into minimally invasive surgery group (30 patients) and routine surgery group (30 patients). The postoperative antibiotic use time, pain disappearance time, swelling degree, and pain degree of the two groups were compared. Follow-up for one year, record and compare the success rate of implants and aesthetic evaluation of restoration between the two groups. The evaluation of patients' satisfaction with restoration was collected and compared. *Results*. The operation time and antibiotic use time of patients in minimally invasive surgery group were significantly shorter than those in conventional surgery group, and the swelling degree rating was significantly better than that in conventional surgery group, with statistical significance ($P < 0.05$). The number of patients with no pain (0 degree) and mild pain (degree) in minimally invasive surgery group was significantly higher than that in routine surgery group, and the difference was statistically significant ($P < 0.05$). One year after the repair, the success rate of implants in minimally invasive surgery group was 100.00% compared with that in routine surgery group (93.33%), and the difference was not statistically significant ($P > 0.05$). The aesthetic effect scores of patients in minimally invasive surgery group were higher than those in routine surgery group in seven items: proximal gingival papilla, distal gingival papilla, labial gingival margin curvature, labial gingival margin height, root convexity, soft tissue color, and soft tissue texture, with statistical significance ($P < 0.05$). The satisfaction scores of the patients in minimally invasive surgery group in chewing function, comfort, aesthetics, retention function, and language function were higher than those in conventional surgery group, and the differences were statistically significant ($P < 0.05$). *Conclusion*. Minimally invasive implant can achieve the same effect as conventional implant, and it has the advantages of lower postoperative swelling, shorter pain time, better aesthetic effect, and higher satisfaction after restoration.

1. Introduction

Dentition defect is related to dental caries, developmental disorders, periodontal disease and trauma, etc. Diseases not only affect patients' chewing and pronunciation functions, but also damage patients' facial appearance, resulting in negative emotions such as inferiority complex [1, 2]. At present, denture implantation is the main method to repair dentition defects, especially in repairing single tooth loss, which has obvious advantages and gradually becomes the first choice for dentists and patients to repair missing teeth [3]. Conventional implant plan uses soft tissue ring cutter to remove the keratinized gingiva above the implant site and the implant, which reduces the keratinized gingiva around the implant, especially in the case of insufficient keratinized gingiva, which is not conducive to the health of the gingiva

around the implant. Moreover, the conventional implant scheme has obvious foreign body sensation, and the fixation effect is poor, so the natural teeth need to be ground during the operation, and the curative effect can hardly meet the needs of patients [4].

With the development and popularization of the concept of minimally invasive surgery, minimally invasive implant has become one of the hot spots in clinical research of implant. Compared with the conventional implant scheme, minimally invasive implant is a new type of denture implant scheme, which can effectively protect the soft tissue around the implant and its blood supply. The operation has the advantages of little trauma, no grinding of natural teeth, high oral comfort and quick postoperative recovery [5–7]. Minimally invasive implant further explains the definition of minimally invasive surgery that achieves the best surgical effect with minimal invasion, and further ensures the aesthetic requirements of implant with relatively less bone absorption and fuller gingival papilla after operation [8]. The stability of dentition tissue in patients with edentulous dentition treated by minimally invasive implant is affected by many factors, such as implant mode and implant location, which will affect the overall effect of the operation to a certain extent. In order to analyze the clinical value and aesthetic evaluation of dentition defect patients treated with minimally invasive implant technology, this study selected dentition defect patients treated with minimally invasive implant technology and conventional implant technology in hospitals for comparative study. The results are reported as follows.

2. Data and Methods

2.1. General Information. A total of 60 patients who received implant restoration in the Department of Stomatology of our hospital from April 2020 to May 2021 were collected as research objects. Randomly divided into minimally invasive surgery group (30 patients) and routine surgery group (30 patients). Minimally invasive surgery group: 18 males and 12 females, with an average age of (41.53 ± 6.27) years. The distribution of dentition defects included 12 upper teeth, 6 upper molars, 10 lower anterior teeth, and 2 lower premolars. Routine operation group: 17 males and 13 females, with an average age of (42.17 ± 5.96) years. The distribution of dentition defects included 14 upper teeth, 5 upper molars, 9 lower anterior teeth, and 2 lower premolars. There was no significant difference between the two groups in general data ($P > 0.05$).

Inclusive criteria: all patients had no contraindication of dental implant surgery, all patients had single tooth loss, all patients received periodontal basic treatment before operation, and there was no obvious inflammation of gums. Patients' compliance is good, and the return visit medical records and original data are complete. Exclusion criteria: previous surgical history of alveolar bone transplantation, patients with malignant tumors, accompanied by severe liver and kidney diseases or coagulation diseases, and long-term use of antibiotics and glucocorticoids.

2.2. Research Methods

2.2.1. Planting System and Equipment. Straumann planting system (Straumann Company, Switzerland), Soft tissue ring cutters φ 4.3, φ 5.0, φ 5.3 (Dengteng Company, Korea), etc.

2.2.2. Surgical Methods. Both groups received routine periodontal treatment, including root planning, supragingival scaling, and subgingival scaling. Then, CT was used to observe the periodontal condition of the patients, and the operation was designed.

Minimally invasive surgery group: routine iodophor disinfection towel and local anesthesia were applied to the implant site of the patient with articaine epinephrine injection. After local anesthesia, the best surgical plan was designed according to the position of the patient's tooth damage. The implant guide plate guided the methylene blue mark positioning, and the periodontal probe measured the thickness of the gums in the operation area. A soft tissue ring cutter with a diameter of 0.3–0.5 mm larger than the expected implant was selected, and the gums were annularly excised, scratched, and positioned with a ball drill. After the pioneer drill penetrated the cortex, poor preparations were made according to the different bones of hard bone, soft bone, and moderate bone. For soft bone, bone extrusion technology was not used. When the cavity in the posterior maxillary area is 1-2 mm to the maxillary sinus, the special tool for lifting the maxillary sinus should be used to push it to the top step by step. After lifting to the desired height, gentamicin sulfate injection should be used to wash the implant socket, fill the bone powder, and then implant the implant. The implant is Ankylos implant system of Dentsply Implant Company in Germany. The wound is coated with Beifuxin gel, and the healing abutment is connected according to the gum thickness. The operation is finished by pressing and stopping bleeding.

Routine operation group: after local anesthesia, according to the preoperative examination results and surgical design, the gingival mucoperiosteal flap was cut, the tissue was separated, the labial buccal flap was peeled off, and the subgingival bone was exposed. Then, the hole was drilled into the cortical bone, and the cavity was prepared step by step. According to the patient's injury, maxillary sinus lifting was given reasonably, and the implant was implanted to stop bleeding. The incised gingiva could be sutured with absorbent thread, and conventional antibiotics were given. All operations are performed by the same professional dentist.

2.3. Observation Indicators

(1) The postoperative antibiotic use time, pain disappearance time, and swelling degree of the two groups were compared. The degree of swelling is divided into mild, moderate, and severe. Mild: there is no obvious swelling of gums and soft tissues around the implant or the range of swelling is limited to 2 mm around the abutment. Moderate: the gum and soft tissue around the implant of the patient are swollen,

and the range of swelling is more than 2 mm around the abutment, but not more than the adjacent teeth. Severe: the swelling degree of the patient is more than moderate.

(2) The postoperative pain degree of the two groups was compared and divided into 0, I, II, III, and degrees. Degree 0: no pain for the patient. Degree I: mild pain, intermittent pain, and no medication. Degree II: moderate pain, which is persistent pain and affects rest, and requires painkillers. Degree III: severe pain, which is persistent pain and cannot be relieved without medication. Degree: severe pain, which is persistent severe pain with changes in blood pressure and pulse.

(3) Follow-up for one year, record and compare the success rate of implants and aesthetic evaluation of restoration between the two groups. Implant success criteria: the implant has no looseness, no inflammatory reaction, no persistent infection, no pain, no paresthesia, and other symptoms after the implant operation. After X-ray examination, there is no continuous cephalography around the implant. One year after the operation, the bone resorption of the neck of the implant in the patient was reexamined <2 mm. Evaluation of the aesthetic effect of the restoration: the red aesthetic index (PES) is used to evaluate it, which mainly includes seven parts: proximal gingival papilla, distal gingival papilla, labial gingival margin curvature, labial gingival margin height, root convexity, soft tissue color, and soft tissue texture. Among them, the evaluation of gingival papilla mainly includes three levels: missing, incomplete and complete, with scores of 0, 1, and 2, respectively, labial gingival margin curvature and labial gingival margin.

(4) The evaluation of patients' satisfaction with restoration was collected and compared. The satisfaction degree of restoration was evaluated by the effect questionnaire, which included five items: chewing function, comfort, aesthetics, retention function, and language function, with scores ranging from 0 to 20. The higher the score, the more satisfied the patient was.

2.4. Statistical Methods. SPSS22.0 software was used to process the experimental data. The measurement data was expressed by mean standard deviation ($\pm s$) and the counting data was expressed by (%). Two-to-two comparison of measurement data between groups was performed by T-test analysis and multigroup comparison was performed by variance analysis. The data were counted by χ^2 test. The test level is $\alpha = 0.05$, and the difference is statistically significant ($P < 0.05$).

3. Results

3.1. Comparison of Perioperative Indicators between the Two Groups. The operation time and antibiotic use time of minimally invasive surgery group were significantly shorter than those of routine surgery group, and the swelling degree rating was significantly better than that of routine surgery group, all of which had statistical significance ($P < 0.05$), as shown in Figure 1.

3.2. Comparison of Pain between the Two Groups. There were no patients of extreme pain (Degree) in minimally invasive surgery group and routine surgery group. In minimally invasive surgery group, there were 24 patients (80.00%) with no pain (Degree 0), 4 patients (13.33%) with mild pain (Degree I), 2 patients (6.67%) with moderate pain (Degree II), and no severe pain (Degree III). In the routine operation group, there were 4 patients (13.33%) with no pain (Degree 0), 18 patients (60.00%) with mild pain (Degree I), 6 patients (20.00%) with moderate pain (Degree II), and 2 patients (6.67%) with severe pain (Degree III). The number of patients with no pain (Degree 0) and mild pain (Degree I) in minimally invasive surgery group was significantly higher than that in routine surgery group, and the difference was statistically significant ($P < 0.05$), as shown in Table 1.

3.3. Implant Success of Two Groups of Patients. One year after the repair, the success rate of implants in minimally invasive surgery group was 100.00% compared with that in routine surgery group (93.33%), and the difference was not statistically significant ($P > 0.05$), as shown in Figure 2.

3.4. Comparison of Aesthetic Effect Evaluation between the Two Groups after Repair. The aesthetic effect scores of patients in minimally invasive surgery group were higher than those in routine surgery group in seven items: proximal gingival papilla, distal gingival papilla, labial gingival margin curvature, labial gingival margin height, root convexity, soft tissue color, and soft tissue texture, with statistical significance ($P < 0.05$), as shown in Table 2.

3.5. Comparison of the Scores of Patients' Satisfaction with Restoration between the Two Groups. The satisfaction scores of the patients in minimally invasive surgery group in chewing function, comfort, aesthetics, retention function, and language function were higher than those in routine surgery group, and the differences were statistically significant ($P < 0.05$), as shown in Table 3.

4. Discussion

With the continuous development and progress of social economy, the continuous improvement of implants and surgical instruments, patients' requirements for minimally invasive and beautiful surgery are getting higher and higher, and minimally invasive surgery has gradually become the trend of surgery. How to use the simplest method and the cheapest technical means to achieve the minimum trauma and the best therapeutic effect has become the goal pursued by doctors [9, 10].

Conventional implant surgery is difficult to be accepted by patients because of its long operation time, frequent follow-up visits and relatively serious complications such as

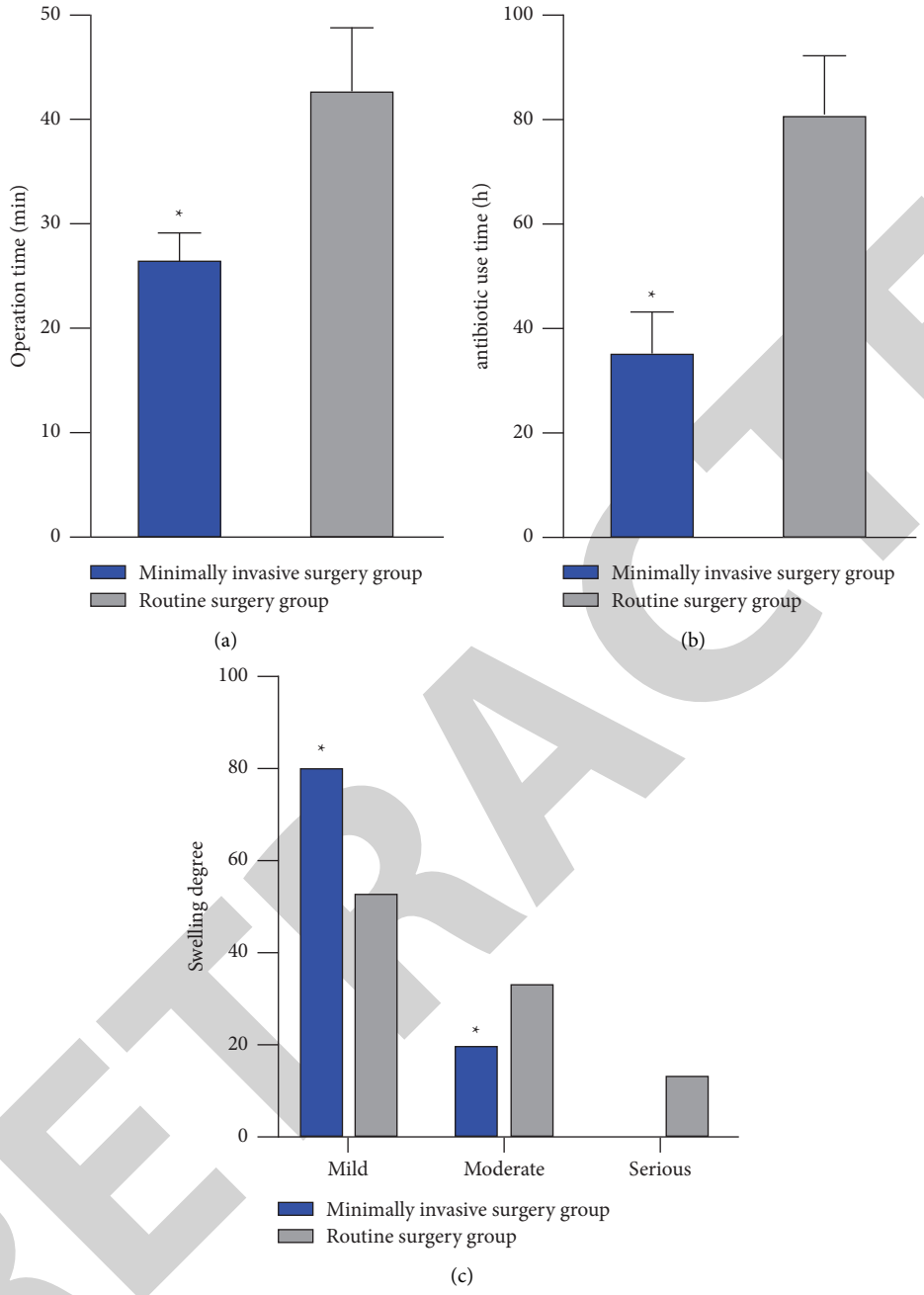

Figure 1: Comparison of perioperative indicators between the two groups. (a) Operation time. (b) Antibacterial use time. (c) Swelling degree. $^{*}P < 0.05$.

Table 1: Comparison of pain between the two groups.

Group	N	No pain (Degree 0)	Mild pain (Degree I)	Moderate pain (Degree II)	Severe pain (Degree III)
Minimally invasive surgery group	30	24 (80.00%)	4 (13.33%)	2 (6.67%)	0 (0.00%)
Routine surgery group	30	4 (13.33%)	18 (60.00%)	6 (20.00%)	2 (6.67%)
χ^2 value		26.786	14.067	2.308	2.069
P value		0.000	0.000	0.129	0.150

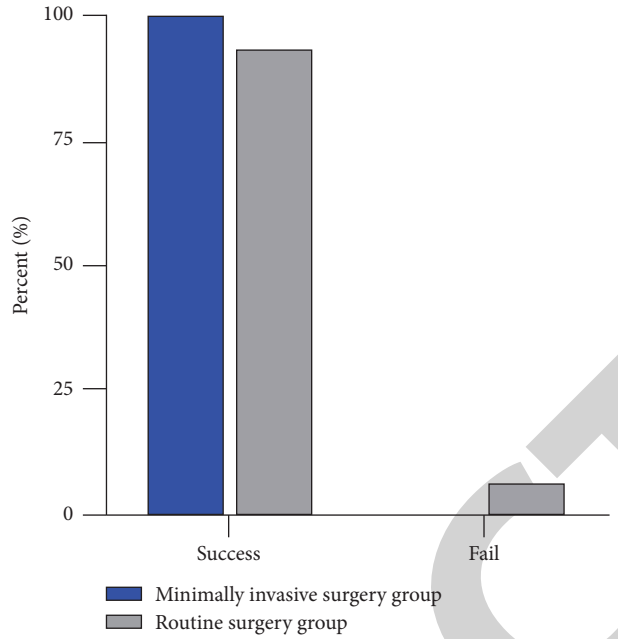

Figure 2: Implant success of two groups of patients.

Table 2: Comparison of aesthetic effect evaluation between the two groups after repair.

Group	*N*	Proximal gingival papilla (Score)	Distal gingival papilla (Score)	Labial gingival margin curvature (Score)	Labial gingival margin height (Score)	Root convexity (Score)	Soft tissue color (Score)	Soft tissue texture (Score)
Minimally invasive surgery group	30	2.29 ± 0.28	2.53 ± 0.19	2.40 ± 0.23	2.12 ± 0.16	2.24 ± 0.36	2.70 ± 0.22	2.59 ± 0.19
Routine surgery group	30	2.00 ± 0.41	2.13 ± 0.25	2.08 ± 0.11	1.75 ± 0.13	1.92 ± 0.28	2.16 ± 0.25	2.05 ± 0.32
t value		3.199	6.977	6.875	9.830	3.843	8.882	7.947
P Value		0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Table 3: Comparison of repair satisfaction scores between the two groups.

Group	*N*	Chewing function (score)	Comfort (minutes)	Aesthetics (score)	Retention function (points)	Language function (points)
Minimally invasive surgery group	30	17.42 ± 1.35	18.06 ± 1.03	18.49 ± 0.53	18.72 ± 0.49	19.05 ± 0.36
Routine operation group	30	14.53 ± 1.19	15.28 ± 1.27	16.24 ± 1.15	16.70 ± 0.91	17.16 ± 1.03
t value		9.100	9.312	9.732	10.705	9.488
P value		<0.001	<0.001	<0.001	<0.001	<0.001

postoperative bleeding, swelling, and pain. Minimally invasive implant surgery significantly shortens the operation time, reduces the pain, edema and local inflammatory reaction caused by conventional surgery, and greatly reduces the fear of patients, which is in line with the development trend of minimally invasive and painless implant surgery [11–13]. The results of this study show that the operation time, antibiotic use time, swelling degree and pain degree of patients in minimally invasive surgery group are significantly lower than those in conventional surgery group. It is proved that minimally invasive implant has obvious advantages over conventional implant. Minimally invasive implant surgery has a small incision, and the implant cavity can be prepared by opening and reaming, which can significantly reduce periodontal and abutment injuries, intraoperative bleeding, postoperative pain and postoperative rehabilitation [14, 15].

During minimally invasive implant treatment, incision and cavity preparation are relatively limited. Therefore, attention should be paid in the operation: ① The accuracy of implant cavity, avoiding repeatedly lifting the drill bit to enlarge the cavity, and preparing the cavity step by step to ensure that the diameter of the cavity bottom is lower than that of the implant [16]. ② Thermal damage and mechanical

damage may affect the surgical effect in the process of implant preparation. Avoid the injury of periodontal and dental base by instruments, and reduce the therapeutic effect. ③ Contamination of the operation area and implant will seriously affect the combination of bone and implant [17]. Therefore, strict aseptic operation, strict disinfection of instruments and materials, and appropriate anti-infection treatment for patients are required.

Minimally invasive implant can reduce the operation steps, shorten the operation time, minimize the damage to patients' gingival tissues, preserve the integrity of gingival papilla, and ensure the tight surrounding of gingival mucosa around the implant after operation [18]. The attached gingiva closely surrounding the edge of the implant can effectively resist friction and pressure. Thicker gums mean sufficient blood supply, and can maintain an ideal biological width, which contributes to the early soft tissue sealing, healing and anti-infection of implants, and improves the initial stability [19, 20]. The follow-up of this study found that the success rate of implants in minimally invasive surgery group was not significantly different from that in conventional surgery group one year after the repair operation was completed. In the conventional operation group, 2 patients failed due to poor Osseo integration, and at the same time, the alveolar bone was cleaned under local anesthesia and the larger diameter implant was successfully implanted. However, this conclusion still needs to be further proved by continuous collection of cases and extension of follow-up time in follow-up studies.

The conventional implant method requires cutting the gingival flap to expose the bone under the gum, and the implant socket is relatively large, so the positioning accuracy of the implant is poor. Gingival peeling also affects the local blood supply and periosteal characteristics, and the risk of gingival atrophy is also high, which affects the postoperative effect [21]. In this study, the aesthetic effect and satisfaction score of patients after implant surgery were further compared, and it was found that the aesthetic effect score and satisfaction score of patients in minimally invasive surgery group were higher than those in conventional surgery group. After minimally invasive implantation, the implanted root can be combined with the alveolar more closely, which is very compatible with human physiological functions, and has the same chewing function as human teeth [22]. Minimally invasive implant surgery can be designed according to the patient's face shape, the condition of the original teeth, etc., and fully consider the coordination of the patient's oral structure [23].

To sum up, minimally invasive implant can achieve the same effect as conventional implant, and it has the advantages of lower postoperative swelling, shorter pain time, better aesthetic effect in the near future and higher satisfaction after restoration.

Data Availability

The raw data supporting the conclusion of this article will be available by the authors without undue reservation.

Disclosure

Kefei Li and Fang Liu are co-first authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Value of Humanized Nursing under Emergency Green Channel on Gastrointestinal Function Recovery in Patients with Acute Intestinal Obstruction after Operation

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] S. Luo and Y. Wang, "Value of Humanized Nursing under Emergency Green Channel on Gastrointestinal Function Recovery in Patients with Acute Intestinal Obstruction after Operation," *Emergency Medicine International*, vol. 2023, Article ID 2303766, 7 pages, 2023.

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Research Article

Value of Humanized Nursing under Emergency Green Channel on Gastrointestinal Function Recovery in Patients with Acute Intestinal Obstruction after Operation

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Acute intestinal obstruction (AIO) is one of the most common surgical acute abdomens. Emergency green channel refers to a fast and efficient service system provided by hospitals for critically ill patients. It is the key to ensure that emergency patients receive timely, standardized, efficient and thoughtful medical services, improve the success rate of rescue, and reduce medical risks. Acute intestinal obstruction is mainly treated by surgery in the clinic. Previous reports have shown that the application of different nursing methods in the operation of acute intestinal obstruction has different effects on the results of surgical treatment. In this study, the clinical data of 80 patients with AIO were retrospectively analyzed to explore the value of humanistic care under the emergency green channel in promoting the recovery of gastrointestinal function after AIO surgery.

1. Introduction

Intestinal obstruction is an obstacle to the passage of intestinal contents caused by various reasons, which leads to clinical symptoms such as abdominal pain, constipation, vomiting, absence of defecation, and exhaustion in patients, and even results in systemic physiological disorders and endangers life safety [1]. Acute intestinal obstruction (AIO) is an extremely common type of intestinal obstruction, which has the characteristics of rapid onset, complex signs, and changeable causes [2]. Previous data revealed that AIO patients are unable to eat due to frequent vomiting, which can rapidly lead to decreased blood volume and hemoconcentration, and even endanger the life of patients when it is serious [3]. Therefore, surgical relief of intestinal obstruction remains the most immediate treatment option for AIO at this time.

Emergency green channel is a fast and efficient service system provided by hospitals for critically ill patients, which can ensure that standardized treatment can be convenient, efficient, and smooth and reach the hands of the crowd in urgent need of treatment. It has been verified in long-term practice that the application of emergency green channel greatly increases the rescue time of patients, prolongs their life cycle, and improves their prognosis and quality of life [4]. Based on this view, previous studies suggested that targeted psychological intervention combined with planned pain care could improve pain after AIO surgery [5]. Some studies also indicate that rapid rehabilitation nursing can promote postoperative recovery [6]. Previous literature studies have shown that humanized nursing can effectively reduce the perioperative adverse reactions of AIO patients and has application value [7]. This indicates that targeted care plays an extremely important role in improving surgical outcomes. Based on the above research, we believe that the humanized nursing under the emergency green channel has a significant effect on the recovery of gastrointestinal function of patients with AIO after surgery. Thus, this research will provide reliable theoretical guidance for future clinical treatment by analyzing the effectiveness of humanized nursing.

2. Materials and Methods

2.1. General Information. 80 patients with AIO admitted to the emergency department of our hospital from January 2020 to December 2021 were selected for the retrospective analysis. Among them, 37 patients who received the conventional nursing intervention under the emergency green channel were regarded as the control group, while 43 with the humanized nursing intervention were enrolled in the research group.

2.2. Inclusion and Exclusion Criteria. Inclusion criteria were as follows: age >18, confirmed as AIO by clinical tests and imaging examinations, and the symptoms were fully consistent with the signs of AIO onset [8]; patients who met the surgical indications [9]; complete medical records; those agreed to participate in this research. Exclusion criteria were as follows: those with abnormal heart, liver, and kidney functions; those with mental abnormalities and communication disorders; those with contraindications to surgery or medications; patients transferred to other hospitals; those with low treatment compliance.

3. Methods

3.1. Establishment of Emergency Green Channel. All departments of the hospital had standardized the diagnosis and treatment procedures of the green channel and set up special emergency telephone numbers for the green channel. After a patient visited a doctor, the doctor visiting the doctor must quickly clarify the condition and determine the main factors affecting the life of the patient. Rescue orders, consultation orders, inspection orders, and surgical orders are issued. Emergency drugs, especially shock drugs, in time according to the patient's condition are prepared. Meanwhile, appropriate doctors should be contacted in advance for further treatment, and the operating room should be informed timely to prepare for the corresponding surgery. At the same time, emergency department nurses quickly created venous access, instructed him to remain supine, completed oxygen dosing, and created cardiac monitoring. And a blood sample is collected for standby. In the process of emergency treatment, we should closely observe the changes in his condition to ensure the smooth flow of fluid and blood and assist doctors in handling it.

3.2. Nursing Methods

3.2.1. Control Group. Patients received routine nursing interventions after being transferred to the department from the emergency room. Nursing staff first registered patients' physical conditions, then conducted health education, instructed them on how to regulate their diet, monitored their vital signs in real time, made preoperative preparations, helped them to carry out surgical treatment smoothly, and implemented routine anti-infection measures after surgery until they were discharged from the hospital.

3.2.2. Research Group. Patients received humanized nursing after being transferred from the emergency department to the department for treatment. ① A personalized nursing group headed by the head nurse of the department is established in the department. All team members receive relevant training. ② Understand the actual needs, pain, psychology, diet, adaptation, and other conditions of each patient, and give corresponding preoperative care. At the same time, the patients were educated about the disease and the previous successful cases, so that they could understand the disease, reduce anxiety, and improve compliance. Besides, the operating procedures were carefully explained, and precautions were informed in advance to make patients feel relaxed. Strictly observe the changes in vital signs to promote the optimal implementation of the surgery. ② The patients were guided to be in the semilying position after the anesthesia disappeared, in order to promote the recovery of intestinal function, and timely intervention was given to severe pain. ③ After the operation, we formulated a diet plan for the patient and tried to take liquid food in the initial stage of treatment to minimize the stimulation to the digestive tract. On an empty stomach, small amounts of liquid, semiliquid, and coarse fiber foods are used as directed by your doctor to promote airflow. Patients are regularly assisted in expectoration, turning over, and the like, and are encouraged to perform the functional exercise as soon as possible and to get out of bed after the condition is stable. Instruct them to proceed gradually until discharge.

3.3. Observation Index

(1) Postoperative recovery: The time of first anal discharge, first bed activity, intestinal function recovery, and the length of stay after surgery were counted in both groups.

(2) Nursing efficacy: Cured: The clinical symptoms such as nausea, vomiting, and abdominal pain completely disappeared. Patients could defecate and ventilate, and they could eat semiliquid food. Improved: The clinical symptoms are relieved, and patients can defecate, pass gas, and consume semiliquid food. Ineffective: No change or worsening of clinical symptoms. Total effective rate of nursing = (cured + improved)/total × 100%.

(3) Pain: Patients' pain before and after nursing was assessed via the visual analogue scale (VAS) and the general comfort questionnaire scale (GCQ), with the VAS scoring out of 10 and higher scores representing more marked pain; the full score of GCQ is 80, and the higher the score, the higher the comfort.

(4) Psychology: The psychology of patients before and after nursing was evaluated via anxiety rating scale (SAS) and depression rating scale (SDS). The decrease in score indicated the decrease in negative emotions, such as anxiety and depression.

(5) Adverse reactions: Patients were counted for adverse reactions that occurred between the postoperative period and discharge, and the incidence rate was calculated.

Table 1: Comparison of clinical baseline data.

	Control group ($n = 37$)	Research group ($n = 43$)	t/χ^2	P
Age	54.32 ± 4.06	55.72 ± 4.72	1.410	0.163
Gender			0.131	0.717
Male	28 (75.68)	34 (79.07)		
Female	9 (24.32)	9 (20.93)		
Type of AIO			0.754	0.860
Dynamic intestinal obstruction	8 (21.62)	8 (18.60)		
Hematogenous intestinal obstruction	9 (24.32)	11 (25.58)		
Incomplete intestinal obstruction	14 (37.84)	14 (32.56)		
Strangulated intestinal obstruction	6 (16.22)	10 (23.26)		
BMI (kg/m^2)	26.62 ± 2.84	26.13 ± 2.38	0.840	0.404
Nationality			0.037	0.848
Han nationality	34 (91.89)	40 (93.02)		
Ethnic minorities	3 (8.11)	3 (6.98)		
Family history of disease			0.119	0.730
Yes	5 (13.51)	7 (16.28)		
No	32 (86.49)	36 (83.72)		
Smoking			0.224	0.636
Yes	30 (81.08)	33 (76.74)		
No	7 (18.92)	10 (23.26)		
Drinking			0.159	0.690
Yes	19 (51.35)	24 (55.81)		
No	18 (48.65)	19 (44.19)		

(6) Quality of life: The quality of life of patients after nursing was assessed via the generic quality of life inventory-74 scale (GQOL-74), and the scores included mental function, physical function, material life, and social function, with higher scores indicating higher quality of life.

(7) Nursing satisfaction: Patients were discharged from the hospital with a nursing satisfaction survey, which was divided into four levels: very satisfied, satisfied, needs improvement, and unsatisfied.

3.4. Statistical Methods. Data were statistically analyzed via SPSS 23.0 software. Measurement data were expressed as mean ± standard deviation ($\overline{x} \pm s$), independent sample t-test was used for comparison between groups, count data were expressed as [n(%)], and chi-square (χ^2) test was performed. The differences were statistically obvious ($P < 0.05$).

4. Results

4.1. Comparison of Clinical Baseline Data between the Two Groups. There were no statistically marked differences in terms of age, gender, type of AIO, BMI, nationality, family history of disease, history of smoking, and history of drinking ($P > 0.05$), indicating comparability between groups (Table 1).

4.2. Comparison of Postoperative Recovery between the Two Groups. The time of first anal discharge, first bed activity and intestinal function recovery, and the length of hospital stay after surgery were shorter in the research group than in the control group ($P < 0.05$, Figure 1).

4.3. Comparison of Nursing Efficiency before and after Nursing between the Two Groups. The total nursing efficiency of the research group was 88.37%, and the difference was statistically dramatic compared with that of the control group of 70.27% ($P < 0.05$, Table 2).

4.4. Changes of Pain before and after Nursing between the Two Groups. There was no significant difference in VAS and GCQ scores before nursing ($P > 0.05$). After nursing, the VAS score of patients in the two groups was decreased and was lower in the research group than in the control group; the GCQ score of the two groups was increased and was higher in the research group than in the control group ($P < 0.05$, Figure 2).

4.5. Changes in Psychology before and after Nursing between the Two Groups. There was no difference in SAS and SDS scores between groups before nursing ($P > 0.05$), and both decreased after nursing, and the research group was lower than the control group ($P < 0.05$, Figure 3).

4.6. Comparison of Adverse Reactions between the Two Groups. The incidence of adverse reactions in the research group was 9.30%, which was lower than that in the control group (27.03%) ($P < 0.05$, Table 3).

4.7. Comparison of Quality of Life between the Two Groups. The GQOL-74 scores in both groups denoted that the four dimensions of somatic function, psychological function, social function, and material function were higher in the research group than in the control group ($P < 0.05$, Figure 4).

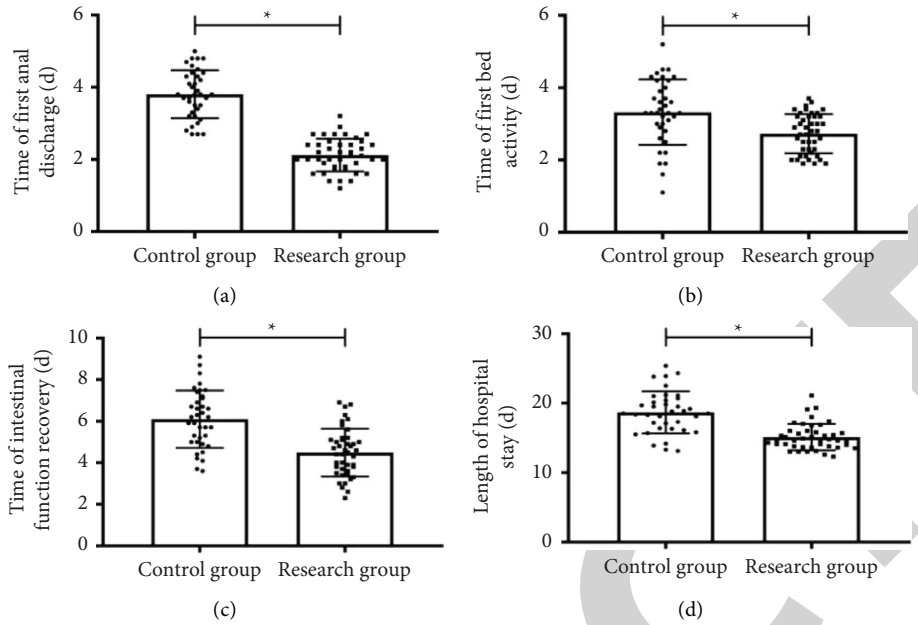

Figure 1: Postoperative recovery between two groups. Note: (a) comparison of time of first anal discharge; (b) comparison of time of first bed activity; (c) comparison of time of intestinal function recovery; (d) comparison of length of hospital stay. $^{*}P < 0.05$.

Table 2: Comparison of nursing efficiency.

Group	Cured	Improved	Invalid	Total effective rate (%)
Control group ($n = 37$)	12 (32.43)	14 (37.84)	11 (29.73)	70.27
Research group ($n = 43$)	24 (55.81)	14 (32.56)	5 (11.63)	88.37
χ^2				4.073
P				0.044

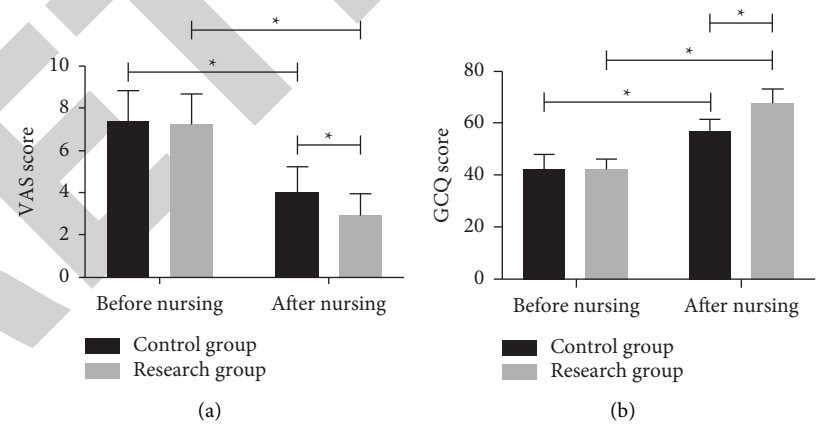

Figure 2: Comparison of pain between two groups. Note: (a) comparison of VAS scores before and after nursing; (b) comparison of GCQ scores before and after nursing. $^{*}P < 0.05$.

4.8. Comparison of Nursing Satisfaction before and after Nursing between the Two Groups. There was no marked difference in the number of nursing satisfaction such as satisfied, needing improvement, and unsatisfied ($P > 0.05$), but that of very satisfied was 55.81% in the research group, which was higher than the control group (29.73%) ($P < 0.05$) (Table 4).

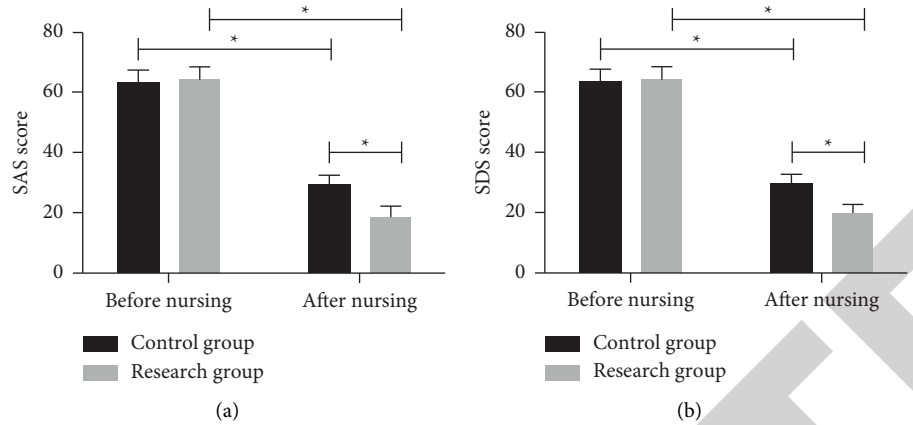

Figure 3: Comparison of changes in psychology between two groups. Note: (a) comparison of SAS scores before and after nursing; (b) comparison of SDS scores before and after nursing. $^{*}P < 0.05$.

Table 3: Comparison of adverse reactions.

Group	Incision cracking	Intraperitoneal infection	Anastomotic fistula	Gastrointestinal dysfunction	Incidence of adverse reactions (%)
Control group ($n = 37$)	2 (5.41)	1 (2.70)	3 (8.11)	4 (10.81)	27.03
Research group ($n = 43$)	1 (2.33)	0 (0.00)	1 (2.33)	2 (4.65)	9.30
χ^2					4.328
P					0.038

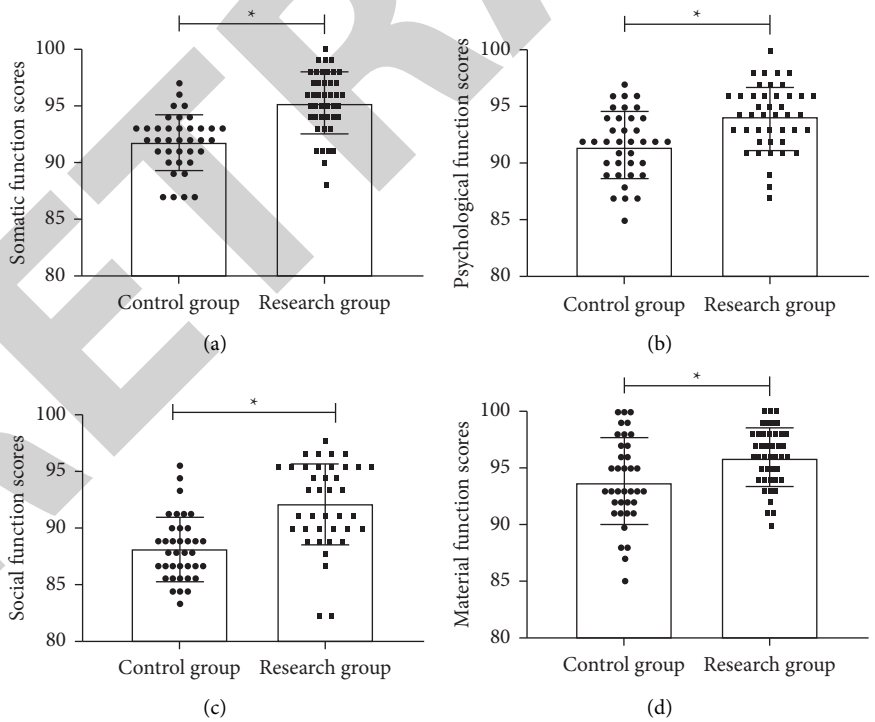

Figure 4: Comparison of GQOL-74 scores. Note: (a) comparison of somatic function scores; (b) comparison of psychological function scores; (c) comparison of social function scores; (d) comparison of material function scores. $^{*}P < 0.05$.

Table 4: Comparison of nursing satisfaction.

Group	Very satisfied	Satisfied	Needing improvement	Unsatisfied
Control group ($n = 37$)	11 (29.73)	14 (37.84)	8 (21.62)	4 (10.81)
Research group ($n = 43$)	24 (55.81)	12 (27.91)	5 (11.63)	2 (4.65)
χ^2	5.498	0.894	1.459	1.088
P	0.019	0.344	0.227	0.297

5. Discussion

AIO, as an extremely common intestinal disorder, will potentially endanger patients' lives if not treated promptly and appropriately [10]. Currently, the number of new cases of AIO worldwide is increasing year by year. How to effectively, quickly, and accurately save the life of a patient has become a hot topic in clinical research.

The traditional emergency admission process is complicated and can easily delay the "golden time" of emergency care [11, 12]. As the latest concept proposed in emergency departments, the emergency green channel has been proven to be excellent in the success rate of rescuing patients with acute diseases such as ischemic stroke and amputation, and it is equally applicable to AIOs that require rapid surgical management [13, 14]. At present, emergency green channels have been more and more frequently used clinically [15, 16]. The emergency green channel allows for a clear distribution of work among the various departments in the emergency process and facilitates the smooth operation of emergency care. In addition, the emergency green channel is also conducive to improving the emergency rescue ability of nursing staff, prompting them to continuously improve their business level and nursing skills, so that they can handle complex injuries without fear, cooperate with anesthesiologists and surgeons to complete surgery in an orderly manner, and improve the success rate of surgical rescue for traumatic shock patients [17]. Opening an emergency green channel can also prioritize the implementation of relevant examinations, laboratory tests, treatments, and surgeries, ensuring that the relevant departments can complete the diagnostic and treatment examinations in the shortest possible time, thus shortening the preparation time for emergency treatment [18, 19]. This not only can greatly protect the life safety of AIO patients but also facilitate better clinical control of their pathological changes, thus enhancing their postoperative recovery to a certain extent. Zhang et al. confirmed that the postoperative recovery time of AIO patients was longer than that of patients in the current study [11], which was also related to the implementation of the emergency green channel. AIO is a high-risk disease with rapid progression and may pose a high risk of death if not rescued in time.

However, it is known that patients with AIO usually need to stay in bed for a long time after surgery. In this process, nursing staff should pay attention to provide targeted care from the perspectives of vital signs, gastrointestinal conditions, complications, and mentality and assist clinicians in giving appropriate treatment and dietary medication guidance [12]. In this study, the recovery conditions of patients after surgery were first compared. The patients in the research group had a shorter time to exhaust gas for the first time, time to get out of bed, and time to recover intestinal function and hospital stay after surgery than those in the control group. The total effective rate of the former was higher than that of the latter, which fully illustrated the high recovery efficiency of patients in the research group. Second, through the comparison of patients' pain, it was found that the VAS score of the research group was lower than that of the control group, while the GCQ score was higher, indicating that the pain in the research group after surgery was lower. Humanistic care under the emergency green channel can improve patients' postoperative pain and recovery. In previous studies, we also found that humanized nursing could shorten the postoperative rehabilitation process of patients with tumor combined with mental disorders [20, 21], which could also verify the accuracy of the results of the experiment. Therefore, we believe that humanistic care in the green channel of emergency room can effectively improve the therapeutic effect of AIO and provide more reliable safety guarantee for patients. To analyze the reasons, in conventional nursing care, nursing staff cannot meet the expected satisfaction for all these aspects, so there may be some limitations in the patient's postoperative rehabilitation. Humanistic care is a targeted nursing strategy targeted at the psychological and physiological levels of patients, which is more easily accepted by patients due to their individual differences. In humanized nursing, nursing staff should pay attention to patients' own feelings, plan diet and rehabilitation according to patients' condition, patiently explain the importance and scheme of treatment, and answer all questions raised by patients, so that they can have a deeper understanding of the development of the disease and effectively alleviate their negative psychology and emotions [22].

In this study, the SAS and SDS scores of the two groups were further compared, and the results showed that the improvement degree of SAS and SDS in the research group after the intervention was more significant than that in the control group. This finding was consistent with that of Zeng and Guan [23], and it could reaffirm the application value of humanized nursing. The reason was that humanistic nursing intervention could not only transmit disease-related knowledge to patients through a variety of ways under the basic premise of conventional drug treatment, strengthen their understanding and mastery of disease factors, clinical manifestations, precautions, and other related content, and then improve the patients' bad psychology. In addition, targeted care can also promote them to form a good lifestyle and habits, and reduce the recurrence of diseases caused by poor living habits. Therefore, the

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Retraction

Retracted: Clinical Observation of Low-Temperature Plasma Knife Tonsil Adenoidectomy for Pediatric Snoring and Analysis of Influencing Factors

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] L. Guo and Y. Hu, "Clinical Observation of Low-Temperature Plasma Knife Tonsil Adenoidectomy for Pediatric Snoring and Analysis of Influencing Factors," *Emergency Medicine International*, vol. 2022, Article ID 1691583, 8 pages, 2022.

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Research Article

Clinical Observation of Low-Temperature Plasma Knife Tonsil Adenoidectomy for Pediatric Snoring and Analysis of Influencing Factors

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Objective. To investigate the clinical efficacy of low-temperature plasma knife tonsil adenoidectomy for pediatric snoring and to analyze the factors influencing the efficacy. *Methods.* 90 children with snoring who were scheduled for surgical treatment in our hospital from June 2020 to December 2021 were selected as the research objects. According to the random number table method, they were divided into control group (group C) and observation group (group O), with 45 cases in each group. The children in group C were treated with power cutting system to remove adenoids combined with conventional peeling of bilateral tonsils, while the children in group O were treated with low-temperature plasma adenoidectomy combined with bilateral tonsillectomy, and both the groups received psychological care, preoperative preparation, health guidance, postoperative posture care and close monitoring of vital signs during the perioperative period. The clinical efficacy, perioperative related indexes (including operation time, intraoperative bleeding, postoperative pain time, and hospital stay) were compared between the two groups. The apnea-hypopnea index (AHI), oxygen decrement index (ODI), longest apnea time (LAT), and lowest oxygen saturation ($LSaO_2$) were measured before operation and 1 week after operation to evaluate the ventilatory function of the two groups. According to the curative effect, 90 children with snoring were divided into cure + significant effective group and valid + invalid group. The general data and preoperative biochemical indexes of the two groups were collected, and logistic regression model was used to analyze the related influencing factors of the curative effect. *Results.* The total effective rate of group O (100.00%, 45 cases) was significantly higher than that of group C (91.11%, 41 cases) ($P < 0.05$); the operative time, intraoperative bleeding, postoperative pain time, and hospitalization time of group O were shorter/less than those of group C; the AHI, ODI, and LAT of group O at 1 week after surgery were shorter/less than those of the control group; and $LSaO_2$ was higher than that of group C. The differences were statistically significant ($P < 0.05$). Univariate analysis showed that there were significant differences in age, BMI, course of disease, preoperative AHI, preoperative $LsaO_2$, and surgical method between cure + significant effective group and valid + invalid group ($P < 0.05$). Multivariate analysis showed that high BMI, high preoperative AHI, and power cutting system for adenoids combined with routine peeling of the bilateral tonsils were independent risk factors for postoperative outcome in children with obstructive sleep apnea syndrome (OSAS) ($P < 0.05$).

1. Preface

Pediatric snoring, also known as pediatric obstructive sleep apnea hypopnea syndrome (OSAS), is a disease characterized by more than one partial airway obstruction and/or intermittent complete obstruction in childhood. It can affect the sleep and respiratory rhythm of the children and make them in a state of chronic hypoxia, leading to excessive dreaming, daytime lethargy, lethargy, and memory loss, which affects the intellectual and physical development of children and easily affects the personality change of children [1, 2]. In childhood, OSAS if not treated in a timely manner,

Table 1: Comparison of general information between group C and group O at the time of admission.

Indicators		Group C ($n = 45$)	Group O ($n = 45$)	t/χ^2 values	P values
Gender (n, %)	Male	30 (66.67)	32 (71.11)	0.207	0.649
	Female	15 (33.33)	13 (28.89)		
Age (years, mean ± SD)		7.24 ± 2.23	7.49 ± 2.32	0.521	0.604
BMI (kg/m^2, mean ± SD)		16.53 ± 4.12	16.13 ± 3.85	0.476	0.635
Duration of disease (months, mean ± SD)		13.25 ± 2.28	13.72 ± 2.37	0.959	0.340
Degree of tonsillar hypertrophy (n, %)	II degree	25 (55.56)	19 (42.22)	1.601	0.206
	III degree	20 (44.44)	26 (57.78)		

can have a serious impact on the growth and development of the affected children; infants can develop sudden sleep death, and children can develop short stature, low intelligence, poor learning ability, or even dementia, which has serious implications for both families and society [3, 4].

In recent years, the problems arising from OSAS in children have received increasing attention from pediatricians, but it is believed that most cases are due to incomplete obstruction of the upper airway causing poor ventilation, snoring, and abnormal respiratory movements, and that adenoid and/or tonsillar hypertrophy is the most common cause of OSAS in children [5, 6]. For most children with simple adenoid and/or tonsillar hypertrophy, adenoidectomy and tonsillectomy are the most effective treatment modalities, with an effective rate of up to 90%. Low-temperature plasma knife tonsil adenoidectomy performer is to ablate the adenoid tissue at a lower temperature in the ion field by the energy generated by low-temperature plasma radiofrequency [7], and the study [8] showed that low-temperature plasma surgery has the characteristics of light pain, small trauma, and quick postoperative recovery, and its tip has multiple functions such as flushing, hemostasis, and ablation. It does not need to change the instrument during operation, and it can be easily operated even if the oropharyngeal space is narrow.

Low-temperature plasma knife tonsil adenoidectomy has been applied in clinical practice and its efficacy has been recognized, but few studies have reported on the factors affecting the efficacy in children. Therefore, this study selected 90 children as the research objects in order to observe the clinical efficacy and influencing factors of low-temperature plasma tonsillectomy in the treatment of children with OSAS.

2. Data and Methods

2.1. General Information

2.1.1. Study Subjects. 90 children with snoring who were scheduled for surgical treatment in our hospital from June 2020 to December 2021 were selected as the research objects. According to the random number table method, they were divided into the control group (group C) and observation group (group O), with 45 cases in each group. The children in Group C were treated with the power cutting system for adenoidectomy combined with conventional peeling of bilateral tonsils, and the children in Group O were treated with low-temperature plasma adenoidectomy combined with bilateral tonsillectomy, and both the groups received psychological care, preoperative preparation, health guidance, postoperative posture care, and close monitoring of vital signs during the perioperative period. The differences between the general information of the two groups were not statistically significant ($P > 0.05$) and were comparable, as shown in Table 1.

2.1.2. Diagnostic Criteria. The diagnostics criteria include the following: (1) the symptoms include increased night urine, daytime sleepiness, and snoring; (2) blood oxygen saturation (SpO_2) decreased ≥0.04; (3) the apnea-hypopnea index was higher than 5 times/h; (4) the lowest SpO_2 was lower than 0.92 [9].

2.1.3. Inclusion Criteria. The inclusion criteria include the following: (1) those who met the abovementioned diagnostic criteria and combined with clinical examination to make a clear diagnosis; (2) patients aged 3~14 years; (3) patients who had no contraindication to anesthesia or tonsil surgery; those who met the indications for surgical treatment; (4) consent was given by the family of the child and approved by the ethical committee of the hospital.

2.1.4. Exclusion Criteria. The exclusion criteria include the following: (1) those with liver, kidney, lung, brain, heart, and other important organ damage; (2) those who have neurological disease, hematologic disease, and impaired consciousness; (3) those with a previous history of airway surgery; (4) those accompanied by acute tonsil inflammation and allergic rhinitis; (5) those with combined respiratory tract infection at admission; (6) those with a history of respiratory drug use within 4 weeks prior to admission.

3. Methods

3.1. Surgical Methods

3.1.1. Group C Method. The adenoids were removed by the child's mobility cutting system in combination with routine stripping of the bilateral tonsils. An opener was placed to expose the oropharynx, and if the tonsils were enlarged and met the indications for removal, the tonsils were removed by the stripping method, and sutures and hemostasis were applied at the end of stripping. Then, the soft palate was pulled by a fine silicone tube to expose the adenoids, and a 70° nasal endoscope was placed. Under the guidance of 70°

nasal endoscope, hypertrophic adenoid tissue was excised by the nasal dynamic system.

3.1.2. Methodology of Group O. All children were placed in supine position, intubated under general anesthesia, shoulder pads, and exposed oropharynx with upper mouth opener after routine disinfection. For children with combined tonsillar hypertrophy, a double tonsillar radiofrequency ablation was performed first, and then a thin catheter was introduced from each side of the nasal cavity to the oropharynx, and the soft palate was lifted and fixed with a knot to expose the nasopharynx. A 70° or 30° nasal endoscope was introduced through the mouth to observe the degree of adenoid proliferation, whether it entered the posterior end of bilateral nasal cavity and whether it squeezed the bilateral eustachian tube pillow. Afterwards, a low-temperature plasma radiofrequency ablation tip was introduced and the hypertrophied adenoids were completely removed under direct vision.

Both the groups were treated with anti-inflammatory and other symptomatic treatments after surgery and were given adjuvant treatments such as mometasone furoate nasal spray and Sinupret drops.

3.2. Nursing Care Methods

3.2.1. Preoperative Care. Nursing staff needed to take the initiative to communicate and exchange with the children and their families, patiently explained the characteristics of the disease, the general process of surgical treatment, the expected effect, and matters needing attention, so as to enhance their confidence and alleviate their bad emotions and make good preoperative preparations.

3.2.2. Intraoperative Care. After entering the operating room, the child was positioned and anesthetized. After the nursing staff should apply gentamicin eye ointment on the child's eyes, and use cortisol patch to glue the eyelid to prevent corneal damage during surgery. The child was placed in a supine position with a soft pillow under the shoulders and the head was secured with a headband according to the needs of the operation. Intraoperative monitoring of the child's vital signs and bleeding should be performed, and the fluid volume and drip rate should be controlled.

3.2.3. Postoperative Care. After surgery, the child should be placed in a lying head position so that the secretions in the child's mouth could be cleared in a timely manner and the respiratory tract could be ensured. Routine ECG, blood pressure, and oxygen monitoring were performed for 6 h after the operation, and the respiratory status and lip color of the child were closely monitored. Dietary guidance should be given for children who underwent adenoidectomy and tonsillectomy at the same time and gradually transition from liquid diet to semiliquid diet to soft food according to the recovery of the operated area, and gradually return to a normal diet about 2 weeks after surgery. The child's operating area should be closely observed, and the child's family should be informed not to cough or swallow frequently after the child was awake to prevent bleeding in the operating area, and to report to the doctor for treatment if the child has active bleeding or infection in the operating area.

3.2.4. Discharge Instructions. Most of the children were not completely healed when they were discharged from the hospital, so good discharge instructions were needed. In addition to continuing the application of antibiotics, it was very necessary to continue reasonable diet and supplement high-protein, high-calorie, and high-fiber diet due to the gradual shedding of wound pseudomembrane. The child was also instructed to rinse his mouth to keep it clean and prevent upper respiratory tract infection. The child was allowed to be reviewed in the outpatient clinic 2 weeks after discharge; if the child developed high fever, severe sore throat, or coughing up blood during discharge, promptly seek medical attention.

3.3. Observation Indexes

3.3.1. Clinical Efficacy. Evaluation of the cure rate and total efficiency of the two groups: the efficacy of patients was evaluated at 6 months of postoperative follow-up: cure: snoring, open-mouth breathing, and sleep apnea disappeared, and the lateral X-ray showed no residual adenoids. Significant effect: snoring, open-mouth breathing, and sleep apnea improved significantly compared with the preoperative performance, but did not disappear completely. Valid: snoring, open-mouth breathing, and sleep apnea did not improve significantly compared with the preoperative performance. Invalid: no significant improvement in snoring, open-mouth breathing, sleep apnea, and other manifestations compared with the preoperative period. Total effective rate = (number of cured cases + number of significant effect cases + number of valid cases)/total number of cases × 100%.

3.3.2. Perioperative Indicators. Perioperative indicators include operative time, intraoperative bleeding, pain duration, and hospital stay.

3.3.3. Ventilation Function. The instrument was Shanghai Trex HD polysomnography, and the indexes were apnea-hypopnea index (AHI), oxygen decrement index (ODI), longest apnea time (LAT), and lowest oxygen saturation ($LSaO_2$).

3.3.4. Analysis of Risk Factors Affecting the Efficacy. (1) Basic clinical information including gender, age, and height and clinical information such as main symptoms, concomitant symptoms, past history, growth and development history, and family history were collected. (2) Metabolism-related indexes: all admitted subjects collected 3 ml of venous blood specimens in a fasting state between 7 : 30 and 8 : 00 am after completion of PSG, centrifuged at 3500 r·min^{-1} for 10 min

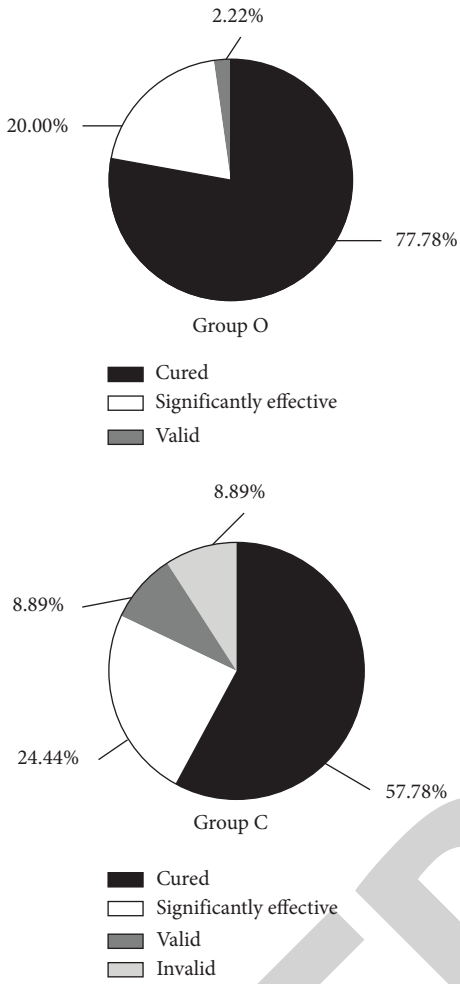

Figure 1: Comparison of clinical efficacy between group C and group O.

and then measured glucose (Glu), low-density lipoprotein (LDL), high-density lipoprotein (HDL), triglyceride (TG), and total cholesterol (TC) levels by the homogeneous enzyme colorimetric method.

3.4. Statistical Methods. SPSS 22.0 statistical software was applied to process the data. The t-test and repeated measures ANOVA were used for the measurement data, and the χ^2 test and rank sum test were used for the count data; the influence factors were analyzed by logistic regression model. $P < 0.05$ was considered statistically significant difference.

4. Results

4.1. Comparison of General Information between Group C and Group O at Admission. The general data of OSAS children at admission were compared between the two groups. The results showed that there were no statistically significant differences between the two groups in terms of gender, age, BMI, disease duration, and degree of tonsillar hypertrophy ($P > 0.05$) (Table 1).

5. Comparison of Clinical Efficacy between Group C and Group O

In group O, the percentages of cured, significant effect, and valid were 77.78% (35 cases), 20.00% (9 cases), and 2.22% (1 case), respectively, and no invalid cases were found. In group C, the percentages of cured, significant effect, valid, and invalid were 57.78% (26 cases), 24.44% (11 cases), 8.89% (4 cases), and 8.89% (4 cases), respectively. Comparison of the total effective rate between the two groups showed that the total effective rate in group O (100.00%, 45 cases) was significantly higher than that in group C (91.11%, 41 cases), and the difference was statistically significant ($\chi^2 = 4.186$, $P = 0.041$) (Figure 1).

6. Comparison of Perioperative Indicators between Group C and Group O

The operating time, intraoperative bleeding, postoperative pain time, and hospital stay were shorter in group O than in group C, and the differences were statistically significant ($P < 0.05$) (Figure 2).

6.1. Comparison of Preoperative and 1-Week Postoperative Ventilatory Function between Group C and Group O. There were no significant differences in AHI, ODI, LAT, and $LSaO_2$ levels between the two groups before operation ($P > 0.05$). At 1 week after surgery, the AHI, ODI, and LAT levels in both the groups decreased significantly, and $LSaO_2$ levels increased significantly, which were significantly different from those before surgery ($P < 0.05$); meanwhile, the AHI, ODI, and LAT levels in group O at 1 week after surgery were lower than those in group C, and $LSaO_2$ levels were higher than those in group C, and the differences were statistically significant ($P < 0.05$) (Figure 3).

6.2. Univariate Analysis of Children's Efficacy. We evaluated the efficacy of the children and divided them into a cure + significant effect group and a valid + invalid group according to their efficacy. The indicators with statistically significant differences between the two groups included age, BMI, disease duration, preoperative AHI, preoperative $LSaO_2$, and surgical approach ($P < 0.05$). Indicators with no statistically significant differences between the two groups included gender, preoperative Glu, LDL, HDL, TC, TG, preoperative ODI, and preoperative LAT ($P > 0.05$) (Table 2).

6.3. Multifactor Analysis of Child's Outcome. The 'child's outcome was used as the dependent variable, and the statistically significant indicators of univariate analysis were used as the dependent variables and substituted into the logistic regression model for analysis. The results of the analysis showed that high BMI, high preoperative AHI, and power cutting system for adenoids combined with routine removal of bilateral tonsils were independent risk factors for

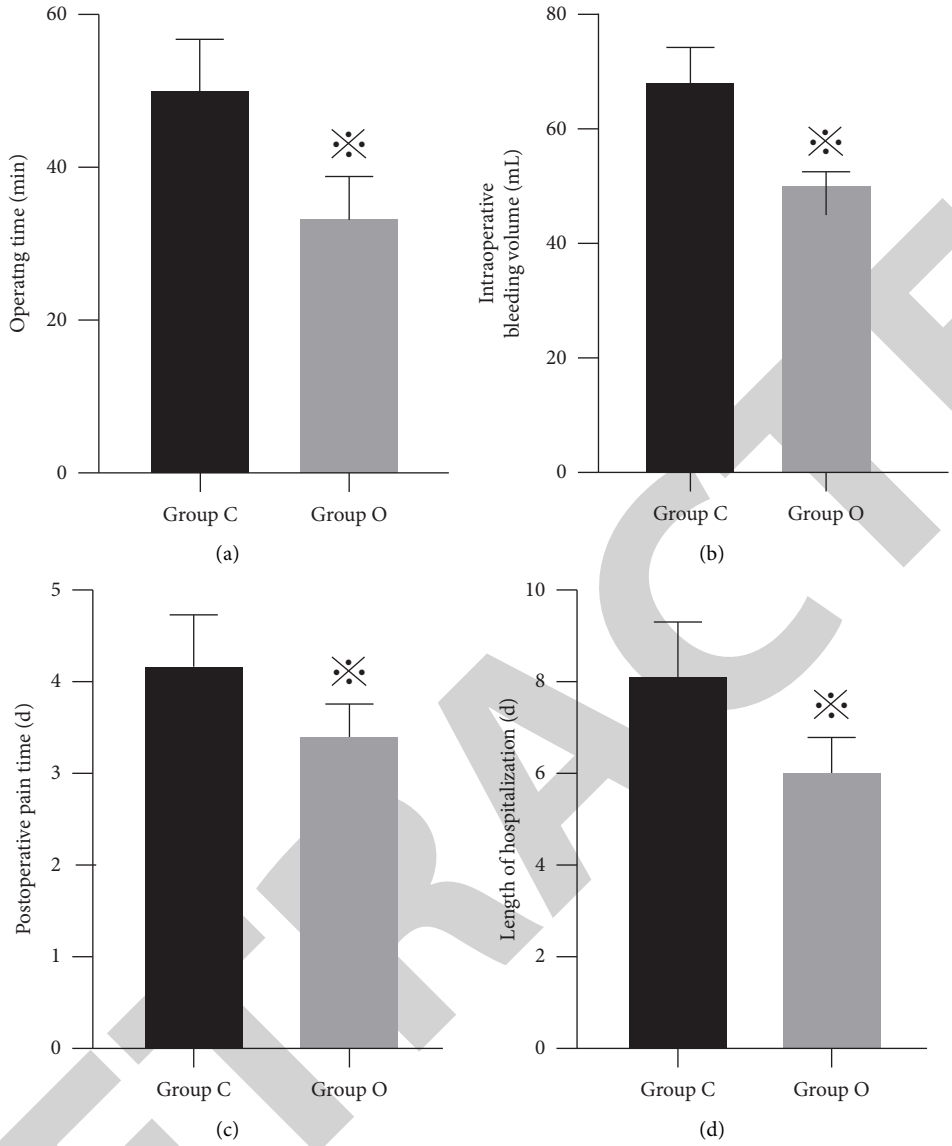

Figure 2: Comparison of perioperative indicators between group C and group O. *Note*: Figures 2(a)~(d) indicate the operative time, intraoperative bleeding, postoperative pain time, and hospital stay, respectively. ※ indicates $P < 0.05$ compared with group C.

postoperative outcome in children with OSAS ($P < 0.05$) (Tables 3 and 4).

7. Discussion

Childhood snoring is a common clinical disease, which is mainly caused by airway obstruction caused by adenoid hypertrophy or tonsillar hypertrophy, resulting in poor breathing and even apnea syndrome in children during sleep, with clinical manifestations of nasal congestion, snoring, apnea, and open-mouth breathing [10, 11]. When the abovementioned symptoms occur, children often show mental atrophy, daytime sleepiness, memory loss, and other phenomena [12], and even lead to cerebral hypoxia, which seriously affects the normal development and healthy growth of children in the future. The causes and mechanisms of the disease have not yet been fully elucidated, but are thought to be related to anatomical lesions of the upper airway, such as hypertrophy of the adenoids and tonsils, which cause a series of symptoms such as paroxysmal hypoventilation by obstructing the upper airway [13, 14]. Based on its pathogenesis and adenoids and tonsillar hypertrophy, the clinical treatment is usually surgical. However, although traditional surgery such as adenoids scraping is convenient, it has the disadvantages of longer operation time and more difficult to stop bleeding as well as easy postoperative bleeding, which can lead to postoperative infection and fever and increase secondary injuries. In recent years, with the further development of clinical techniques, nasal power excision [15] and low-temperature plasma radiofrequency ablative resection [16] have been widely used and promoted.

Low-temperature plasma knife uses the energy generated by bipolar radiofrequency to form a thin layer of plasma only

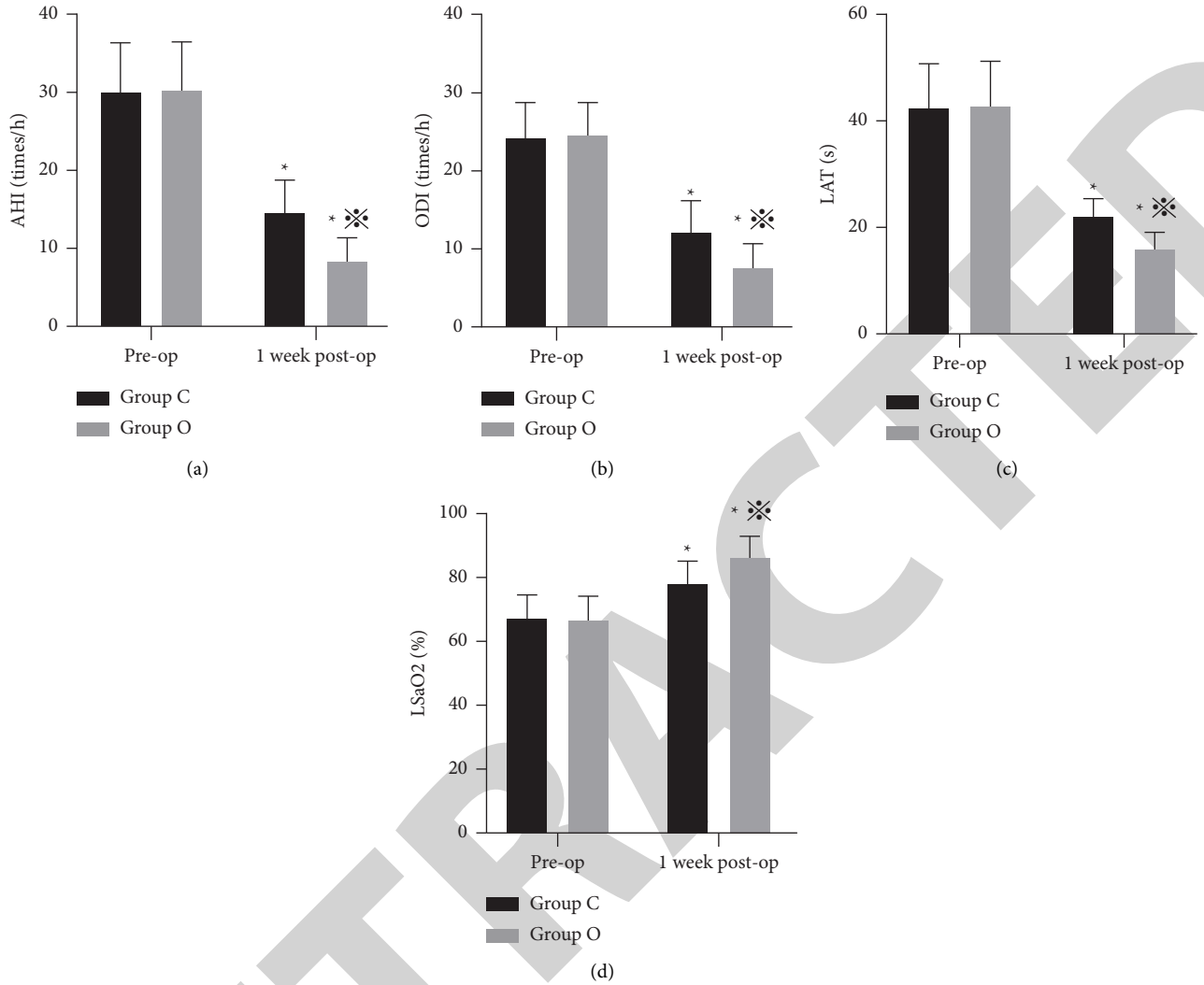

Figure 3: Comparison of preoperative and 1-week postoperative ventilatory function between group C and group O. *Note*: Figures 3(a)~(d) indicate AHI, ODI, LAT, and LSaO2, respectively. * indicates comparison with the same group before surgery, $P < 0.05$. ※ indicates comparison with group C at one week after surgery, $P < 0.05$.

between the electrode and the tissue, and the ions in the layer are accelerated by the electric field and transfer energy to the tissue. Under the condition of 40–70°C, the intercellular molecular binding bonds are opened, and the cells are lysed into simple carbohydrates to achieve the purpose of tissue ablation [17]. The low-temperature plasma tip combines surgical cutting and suction in one, allowing clear separation of the tonsillar peritoneum and simultaneous aspiration of blood, thus shortening surgical time and reducing intraoperative bleeding. The results of this study showed that the operative time, intraoperative bleeding, postoperative pain time, and hospital stay were significantly shorter in group O than in group C. The total clinical efficiency was significantly higher in the 45 children with OSAS treated with cryoplasma studied in this group. In addition, this study found that ventilation function improved in both the groups of children after treatment, with the low-temperature plasma protocol showing a better improvement than the power cutting system. The reason may be that the operation field of low-temperature plasma knife is clear and the operation area is well exposed, which can cauterize the lymphatic follicular tissue at the base of the tongue, reduce the proliferation of lymphatic tissue, help reduce the tonsil residue, and achieve the purpose of improving airway stenosis [18, 19]. In addition, this study found that the power cutting system protocol was an independent risk factor for the efficacy of OSAS in children, which laterally corroborates that cryoplasma adenoidectomy combined with bilateral tonsillectomy is more effective.

Adenoidal hypertrophy or tonsillar hypertrophy is the main cause of OSAS in children. Surgical removal of the adenoids and/or tonsils is the preferred treatment for OSAS in children when there are no contraindications to surgery, but there is still a significant proportion of children who do not achieve complete improvement in sleep apnea after surgery. Therefore, in this study, we further analyzed the factors influencing the outcome of children, and the logistic regression model revealed that high BMI and high

Table 2: Univariate analysis of factors affecting postoperative outcomes in children with OSAS.

Influencing factors		Cure + significant effect ($n = 81$)	Valid + invalid ($n = 9$)	t/χ^2 value	P value
Gender (n, %)	Male	56 (69.15)	6 (66.67)	0.023	0.879
	Female	25 (30.86)	3 (33.33)		
Age (years, mean ± SD)		7.01 ± 2.02	10.55 ± 1.94	5.005	0.001
BMI (kg/m^2, mean ± SD)		15.55 ± 3.20	23.33 ± 3.38	6.883	0.001
Duration of disease (months, mean ± SD)		13.12 ± 2.11	16.56 ± 1.94	4.673	0.001
Degree of tonsillar hypertrophy (n, %)	II degree	37 (45.68)	7 (77.78)	3.340	0.068
	III degree	44 (54.32)	2 (22.22)		
Preop glu (nmol/L, mean ± SD)		5.67 ± 1.13	6.12 ± 1.09	1.137	0.259
Preop LDL (mmol/L, mean ± SD)		3.36 ± 0.87	3.74 ± 0.91	1.238	0.219
Preop HDL (mmol/L, mean ± SD)		1.03 ± 0.12	0.97 ± 0.09	1.452	0.150
Preop TC (mmol/L, mean ± SD)		1.14 ± 0.41	1.23 ± 0.39	0.627	0.532
Preop TG (mmol/L, mean ± SD)		3.12 ± 0.56	3.43 ± 0.62	1.560	0.123
Preop AHI (times/h, mean ± SD)		29.43 ± 5.42	39.56 ± 4.85	5.368	0.001
Preop ODI (times/h, mean ± SD)		24.33 ± 4.23	27.22 ± 5.36	1.893	0.062
Preop LAT (s, mean ± SD)		42.56 ± 7.63	46.89 ± 10.98	1.542	0.127
Preop $LSaO_2$ (%, mean ± SD)		67.27 ± 6.64	75.89 ± 8.07	3.617	0.001
Surgical method (n, %)	Class A	44 (54.32)	1 (11.11)	6.049	0.014
	Class B	37 (45.68)	8 (88.89)		

Note: Class A indicates low-temperature plasma adenoidectomy combined with bilateral tonsillectomy, and Class B indicates power cutting system for adenoidectomy combined with conventional peeling of bilateral tonsils.

Table 3: Multifactor assignment.

Variables	Serial numbers	Assignment
BMI	X1	Continuous variables
Preoperative AHI	X2	Continuous variables
Surgical approach	X3	Class $A = 0$, Class $B = 1$

Note: Class A indicates low-temperature plasma adenoidectomy combined with bilateral tonsillectomy, and Class B indicates power cutting system for adenoidectomy combined with conventional peeling of bilateral tonsils.

Table 4: Multifactorial analysis affecting the postoperative outcome of children with OSAS.

Indicators	B	SE	Walds	OR	95%CI	P values
BMI	0.523	0.201	15.248	1.687	1.138~2.502	<0.001
Preoperative AHI	0.673	0.259	18.120	1.960	1.180~3.256	0.001
Surgical approach	1.124	0.467	22.347	3.077	1.232~7.685	<0.001

preoperative AHI were independent risk factors for the outcome of OSAS in children. The prevalence of obesity is increasing worldwide among children and is also increasingly becoming a serious problem affecting the health of our children, and obesity leads to an increased risk of OSAS in children [20]. Most scholars [21, 22] suggest that the etiology of OSAS in obese children may include collapse of the airway due to dysfunctional neuromotor control; narrowing of the pharyngeal lumen due to accumulation of the adipose tissue in the pharynx; and further narrowing of the airway by hypertrophic adenoids and tonsillar tissue. Adenoide and tonsillectomy improves sleep apnea in most obese children, but does not completely resolve OSAS. Polysomnography is the "gold standard" for the diagnosis of OSAS in children, and surgical treatment alone may not be effective in patients with a more severe disease [23]. Some studies [24, 25] have shown that preoperative polysomnography results in non-obese children with OSAS suggest that postoperative outcomes are often poor in children with severe OSAS. Because in children with severe OSAS with AHI > 20 times/h, the etiology may not be solely due to adenoid or tonsillar hypertrophy, the risk of residual OSAS after adenoidectomy and tonsillectomy is also increased.

In conclusion, compared with the power cutting system protocol, the use of low-temperature plasma knife surgery for OSAS in children can further improve postoperative ventilation and facilitate the postoperative recovery of the child. Although adenoide and tonsillectomy can solve the sleep breathing disorder problem in most children with OSAS, it cannot yet solve all the problems of children with OSAS, especially those with obesity and severe OSAS. Therefore, in the diagnosis and treatment of OSAS in children, we should choose the appropriate treatment plan, supervise, and guide obese children to lose weight, control their weight, review polysomnography after surgery, detect residual sleep breathing disorders after surgery in time, and deal with them accordingly in order to achieve the purpose of curing the disease.

Data Availability

The data used in this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Correlation between Lpa, APO-A, APO-B, and Stenosis of Middle Cerebral Artery in Patients with Cerebral Ischemic Stroke

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] X. Chen, X. Lu, W. Li, H. Zhang, and T. Wang, "Correlation between Lpa, APO-A, APO-B, and Stenosis of Middle Cerebral Artery in Patients with Cerebral Ischemic Stroke," *Emergency Medicine International*, vol. 2022, Article ID 6403645, 7 pages, 2022.

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Research Article

Correlation between Lpa, APO-A, APO-B, and Stenosis of Middle Cerebral Artery in Patients with Cerebral Ischemic Stroke

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Ischemic stroke (CIS) is characterized by a high incidence, disability, and mortality. Numerous studies have demonstrated that intracranial arterial stenosis is an important pathological basis of CIS, and its main cause is atherosclerosis. Dyslipidemia is an important risk factor for atherosclerosis. Lysophosphatidic acid (Lpa), apolipoprotein -A(APO-A), and apolipoprotein -B(APO-B) proved to be significantly correlated with the severity of coronary artery disease. This study retrospectively collected the case data of 186 patients with CIS treated from May 2020 to May 2022 and explored the correlation between Lpa, APO-A, APO-B, and middle cerebral artery (MCA) stenosis in CIS patients.

1. Introduction

Cerebral ischemic stroke (CIS) is the most common type of cerebrovascular disease, accounting for about 70% of all acute cerebrovascular diseases, with high morbidity, mortality, and recurrence rates [1]. Neurological deficits are a major feature of CIS, and symptoms associated with neurological deficits can generally peak in seconds or minutes due to the rapid onset of the disease. Occlusion of the middle cerebral artery (MCA) is one of the main causes of CIS and also the cause of patients, disorders of consciousness, cerebral edema, cerebral hernia, and even death [2]. At present, it is considered that atherosclerosis is the primary factor of MCA occlusion, and dyslipidemia is an important risk factor for atherosclerosis [3]. Lysophosphatidic acid (Lpa) is a kind of phospholipid, which is an intermediate product of glycerophospholipid metabolism [4]. Apolipoprotein (APO) is an apolipoprotein in the blood where the main function is to transport blood lipids to various tissues of the body and participate in the occurrence and regulation of cardiovascular and cerebrovascular diseases [5]. APO-A and APO-B are members of the APO family. Among them, APO-A is the main structural protein of high-density lipoprotein, and its main role is to remove tissue lipids and resist atherosclerosis. APO-B mainly exists on the surface of low-density lipoprotein, which can directly reflect the level of low-density lipoprotein cholesterol [6]. Some studies have shown that the development of atherosclerosis is also closely related to the metabolic process of APO-A and APO-B. In addition, previous studies [7, 8] have reported that Lpa, APO-A, and APO-B are significantly correlated with the severity of coronary artery disease. However, there are few reports about the correlation between Lpa, APO-A, and APO-B and the degree of cerebral artery stenosis Based on this, this study intends to retrospectively analyze the correlation between Lpa, APO-A, APO-B, and MCA stenosis in CIS patients, aiming to provide a new research direction for clinical prevention and treatment of CIS.

2. Materials and Methods

2.1. General Information. The case data of 186 CIS patients admitted to our hospital from May 2020 to May 2022 were retrospectively selected for research. According to the DSA evaluation results, they have been divided into 92 cases without MCA stenosis group and 94 cases in the MCA stenosis group, including 18 cases, 16 cases, and 60 cases of mild, moderate, and severe MCA stenosis.

Inclusion criteria is as follows: (1) imaging examinations and clinical signs of all patients met the relevant diagnostic criteria of CIS [9]; (2) clinical data were complete, and research and analysis were available. Exclusion criteria is as follows: (1) Hemorrhagic stroke or cerebral thrombosis caused by other causes; (2) diseases affecting blood lipid levels other than conventional chronic underlying diseases, including coronary heart disease, diabetes, and hyperlipidemia; (3) take within one month before admission lipid-lowering drug treatment; and (4) there is a malignant tumor. This study is a retrospective study and does not involve ethical issues.

2.2. Data Collection. According to the purpose of this study, hospital professionals collected the age, gender, underlying diseases, smoking history, drinking history, systolic blood pressure (SBP), diastolic blood pressure (DBP), and the level of glycosylated hemoglobin (HbA1c), homocysteine (Hcy), uric acid level, and other data of the patient through the hospital medical record system. Wherein the underlying diseases include hyperlipidemia, type 2 diabetes mellitus, and coronary heart disease.

2.3. Middle Cerebral Artery Stenosis Assessment. All patients with CIS admitted to the hospital were evaluated for stenosis by digital subtraction angiography (DSA) using Aginnova digital subtraction X-ray angiography machine (model: Innova 3100-IQ) by the same group of physicians. Intracranial artery stenosis degree = (1 − diameter at the most stenotic point/diameter of the artery distal to the stenosis) × 100%. Classification of cerebral artery stenosis: less than 50% stenosis is mild, 50% to 69% is moderate, and more than 70% is severe [10].

2.4. Method for Detecting Lpa, APO-A, and APO-B Levels. Within 48 h after hospitalization, 2 ml venous blood was collected from the upper limbs in the fasting state in the morning. The levels of total cholesterol (CHOL), triglyceride (TG), high-density lipoprotein (HDL), and low-density lipoprotein (LDL) were measured by Mindray BS2000 automatic biochemical analyzer. The levels of Lpa, APO-A, and APO-B were detected by an immunoturbidimetric kit (Wuhan Boster Biological Engineering Co., Ltd.), and the ratio of APO-A/APO-B was calculated.

2.5. Statistical Methods. SPSS 22.0 statistical software was used for data analysis, and the measurement data that met the normal distribution were expressed as ($\pm S$), and the differences between the two groups were compared by independent samples t-test. Differences between multiple groups were compared by one-way analysis of variance; measurement data that did not meet the normal distribution were expressed by M(P25, P75), and differences between groups were compared by Kruskal–Wallis test. The enumeration data were expressed by the number of cases and the rate, and the differences between groups were compared by the χ^2 test. Logistic regression was used to analyze the independent risk factors of MCA stenosis. ROC was used to detect the diagnostic value of each index, and the Delong Test function was used to compare the AUC between the ROC curves. $P < 0.05$ indicates statistical significance.

3. Results

3.1. Comparison of Case Data between MCA Stenosis Group and No MCA Stenosis Group. There was no significant difference in gender, age, smoking, drinking, Hcy value, uric acid value, 24 hSBP value, and 24 hDBP value between the two groups ($P > 0.05$). The proportion of patients with hyperlipidemia, type 2 diabetes mellitus, and coronary heart disease in the MCA stenosis group was higher than that in the non-MCA stenosis group, and the HbA1c value was higher than that in the non-MCA stenosis group, and the differences were statistically significant ($P < 0.05$), as shown in Table 1.

3.2. Comparison of Blood Lipid Metabolism Indexes between MCA Stenosis Group and Non-MCA Stenosis Group. There was no significant difference in the levels of CHOL, TG, HDL, and LDL between the two groups ($P > 0.05$). The levels of Lpa and APO-B in the MCA stenosis group were higher than those in the non-MCA stenosis group, and the levels of APO-A, APO-A/APO-B were lower than those in the MCA stenosis group, and the differences were statistically significant ($P < 0.05$), as shown in Table 2.

3.3. Independent Influencing Factors of MCA Stenosis. Logistic regression analysis was performed with variables with statistical differences in Tables 1 and 2 as independent variables and MCA stenosis as dependent variables. The results showed that complicated with hyperlipidemia and coronary heart disease, high levels of Lpa and APO-B were independent risk factors for MCA stenosis in CIS patients ($P < 0.05$), and high levels of APO-A and APO-A/APO-B were independent protective factors ($P < 0.05$), as shown in Table 3.

3.4. The Diagnostic Value of Lpa, APO-A, and APO-B in MCA Stenosis in CIS Patients. The results of the ROC curve showed that the AUCs of Lpa, APO-A, and APO-B alone and in combination were 0.647, 0.660, 0.672, and 0.762, respectively, and the diagnostic value of combined detection was higher than that of each index alone ($P = 0.014, 0.004, 0.003$), as shown in Figure 1 and Table 4.

3.5. Comparison of Lpa, APO-A, and APO-B in CIS Patients with Different Degrees of MCA Stenosis. There were significant differences in the levels of Lpa, APO-A, and APO-B in CIS patients with different degrees of MCA stenosis ($P < 0.05$), as shown in Table 5.

3.6. Correlation Analysis of Lpa, APO-A, APO-B Levels in Peripheral Blood and Stenosis Degree of MCA in CIS Patients. The results of Spearman correlation analysis showed that the levels of Lpa and APO-B in the peripheral blood of CIS

Table 1: Comparison of case data between the MCA stenosis group and the no MCA stenosis group.

Indexes	MCA stricture group ($n = 94$)	Non-MCA stricture group ($n = 92$)	$\chi 2$ value or Z value or t value	P value
Male [n (%)]	64 (68.09)	65 (70.65)	0.144	0.704
Age ($\overline{x} \pm s$, years)	60.14 ± 13.11	59.59 ± 12.07	0.298	0.766
Hyperlipidemia [n (%)]	51 (54.26)	18 (19.57)	23.978	<0.001
Type 2 diabetes [n (%)]	24 (25.53)	12 (13.04)	4.646	0.031
Coronary heart disease [n (%)]	15 (15.96)	4 (4.35)	6.833	0.009
Smoking [n (%)]	41 (43.62)	34 (36.96)	0.857	0.355
Drinking [n (%)]	27 (28.72)	26 (28.26)	0.005	0.944
HbA1c [M(P_{25}, P_{75}), %]	6.00 (5.70, 6.63)	5.80 (5.60, 6.28)	−2.299	0.021
Hcy [M(P_{25},P_{75}), μmol/L]	8.80 (5.01, 13.00)	8.34 (6.86, 12.19)	0.323	0.747
Uric acid ($\overline{x} \pm s$, μmol/L)	294.43 ± 73.41	321.50 ± 72.53	1.880	0.062
24 hSBP ($\overline{x} \pm s$, mmHg)	139.76 ± 17.71	137.63 ± 19.30	0.783	0.435
24 hDBP ($\overline{x} \pm s$, mmHg)	81.88 ± 10.52	81.70 ± 11.28	0.117	0.907

Table 2: Comparison of blood lipid metabolism indexes between the MCA stenosis group and the no MCA stenosis group.

Indexes	MCA stricture group ($n = 94$)	Non-MCA stricture group ($n = 92$)	Z value or t value	P value
Lpa [M(P_{25},P_{75}), mg/L]	193.14 (154.82, 363.85)	135.63 (78.01, 326.22)	3.472	0.001
CHOL ($\overline{x} \pm s$, mmol/L)	4.75 ± 1.23	4.82 ± 1.10	0.451	0.653
TG [M(P_{25}, P_{75}), mmol/L)	1.35 (1.05, 1.68)	1.25 (0.89, 1.74)	1.219	0.223
HDL [M(P_{25}, P_{75}), mmol/L]	1.22 (0.93, 1.44)	1.21 (0.99, 1.44)	0.706	0.480
LDL ($\overline{x} \pm s$, mmol/L)	2.87 ± 0.68	2.95 ± 0.67	0.591	0.556
APO-A [M(P_{25}, P_{75}), g/L]	1.11 (1.00, 1.29)	1.22 (1.07, 1.39)	2.917	0.004
APO-B ($\overline{x} \pm s$, g/L)	1.02 ± 0.29	0.94 ± 0.25	2.390	0.018
APO-A/APO-B [M(P_{25}, P_{75})]	1.12 (0.87, 1.39)	1.32 (1.04, 1.70)	3.550	<0.001

Table 3: Independent influencing factors of MCA stenosis.

Indexes	B	Se	Wals	Exp (B)	95% confidence interval	P
Hyperlipidemia	−1.462	0.366	15.970	0.232	0.113–0.475	<0.001
Type 2 diabetes	−0.980	0.562	3.042	0.375	0.125–1.129	0.081
Coronary heart disease	−1.741	0.629	7.665	0.175	0.051–0.601	0.006
HbA1c	−0.102	0.159	0.409	0.903	0.661–1.234	0.522
Lpa	−1.001	0.401	6.231	2.721	1.240–5.971	0.013
APO-A	1.369	0.433	9.996	3.931	1.983–9.186	0.002
APO-B	−1.134	0.382	8.813	3.108	1.470–6.571	0.003
APO-A/APO-B	1.040	0.381	7.451	2.829	1.241–5.970	0.007

patients were positively correlated with the degree of MCA stenosis ($r = 0.244$, 0.286, $P < 0.05$). APO-A level was negatively correlated with the degree of MCA stenosis ($r = -0.344$, $P < 0.001$). The distribution of Lpa, APO-A, and APO-B levels in CIS patients with different degrees of MCA stenosis is shown in Figure 2, and the correlation between Lpa, APO-A, and APO-B and the degree of MCA stenosis is shown in Figure 3.

4. Discussions

MCA stenosis is a common type of intracranial arterial stenosis. According to statistics, intracranial artery stenosis may have a probability of 30%–50% of CIS, and MCA stenosis is one of the main pathological basis of CIS [11]. MCA is the main branch of the internal carotid artery, which controls the blood circulation in brain regions and is related to the movement, sensation, and language of the human body. Therefore, CIS caused by MCA stenosis may lead to hemiplegia and aphasia among other serious sequelae. In the study of Han et al. [12], 562 young patients with CIS were studied, and 249 CIS patients had MCA stenosis, accounting for 44.31%. In this study, DSA evaluation was performed on 186 patients with CIS, and 94 patients were found to have MCA stenosis, accounting for 50.54%, which was comparable to the above reports. It further confirms the prevalence of MCA stenosis in patients with CIS. This also suggests that early detection and control of risk factors affecting MCA stenosis have important clinical significance for preventing the occurrence and development of CIS.

In this study, Logistic regression analysis showed that hyperlipidemia and coronary heart disease were independent risk factors for MCA stenosis in CIS patients ($P < 0.05$). A number of studies have shown that hyperlipidemia and coronary heart disease are independent risk factors for MCA stenosis [13, 14]. Hyperlipidemia is often accompanied by dyslipidemia in organisms, and lipids are deposited in large amounts in blood vessels, which gradually leads to

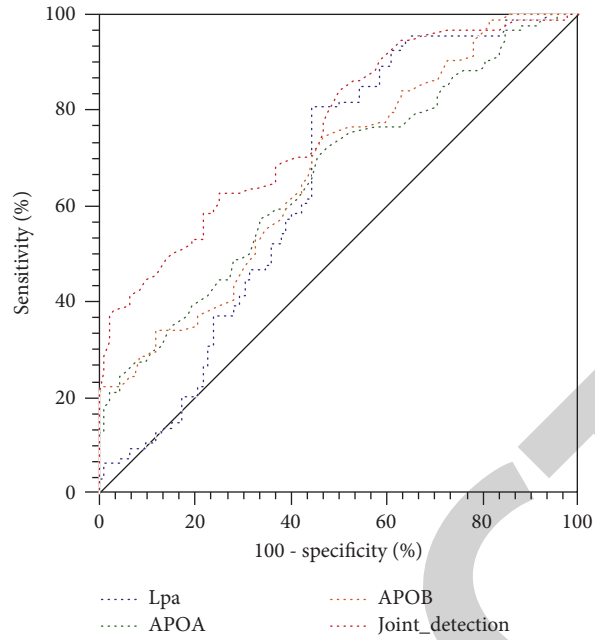

Figure 1: The ROC curve of Lpa, APO-A, and APO-B in the diagnosis of MCA stenosis in CIS patients.

Table 4: The diagnostic value of Lpa, APO-A, and APO-B for MCA stenosis in CIS patients.

Indexes	AUC	Sensitivity (%)	Specificity (%)	95% confidence interval	P
Lpa	0.647	80.85	55.43	0.574~0.716	<0.001
APO-A	0.660	70.21	54.35	0.587~0.727	<0.001
APO-B	0.672	74.47	53.26	0.599~0.739	<0.001
Joint detection	0.762	62.77	75.00	0.694~0.821	<0.001

Table 5: Comparison of Lpa, APO-A, and APO-B in CIS patients with different degrees of MCA stenosis.

Degree of MCA stenosis	Lpa [M(P_{25}, P_{75}), mg/L]	APO-A [M(P_{25}, P_{75}), g/L]	APO-B ($\bar{x} \pm s$, g/L)
Mild ($n = 18$)	165.93 (90.50, 254.51)	1.23 (1.05, 1.68)	0.90 ± 0.22
Moderate ($n = 16$)	213.00 (157.29, 353.25)	1.17 (1.05, 1.32)	0.96 ± 0.27
Severe ($n = 60$)	262.00 (163.30, 417.75)	1.09 (0.93, 1.21)	1.10 ± 0.30
Z/F	6.565	7.057	4.191
P	0.038	0.029	0.018

atherosclerosis. As the intima of the cerebral artery thickens, it gradually leads to the narrowing of the MCA. Although coronary heart disease is a typical heart disease, a larger thrombus will be formed after the disease develops to a certain extent. As the blood circulates into different arteries, it is most likely to enter the MCA and then develop into MCA stenosis. It is therefore recommended that for patients with thrombus diseases such as hyperlipidemia and coronary heart disease, timely reduce the blood lipid level of the patient, improve the unhealthy state of the body with high load, adjust the diet balance, and take medicine strictly according to the doctor's advice.

This study showed that the levels of Lpa and APO-B in the MCA stenosis group were higher than those in the nonstenosis group, and the levels of APO-A and APO-A/APO-B were lower than those in the stenosis group ($P < 0.05$). Lpa, APO-A, and APO-B are closely related to MCA stenosis. Lpa is a bioactive phospholipid mediator that can induce cell proliferation and morphological changes, promote platelet aggregation, and form thrombosis [15]. The study by Chi et al. [16] reported that Lpa could damage the blood-brain barrier and lead to an increase in cerebral infarction volume. Bhattarai et al. [17] found in their mouse study that blocking the automatic axis protein (ATX)-Lpa signal could reduce the damage to the blood-brain barrier and mitochondrial function after blood reperfusion. The results of this study, combined with the above reports confirmed that Lpa was closely related to the formation of MCA stenosis and plaque stability in CIS patients. APO is a type of protein that can bind to plasma lipids (mainly triglycerides, cholesterol, and phospholipids) and also plays an important role in the occurrence and development of atherosclerosis [18]. Li et al. [19] studied the relationship between APO-A1, APO-B, and CIS patients with extracranial

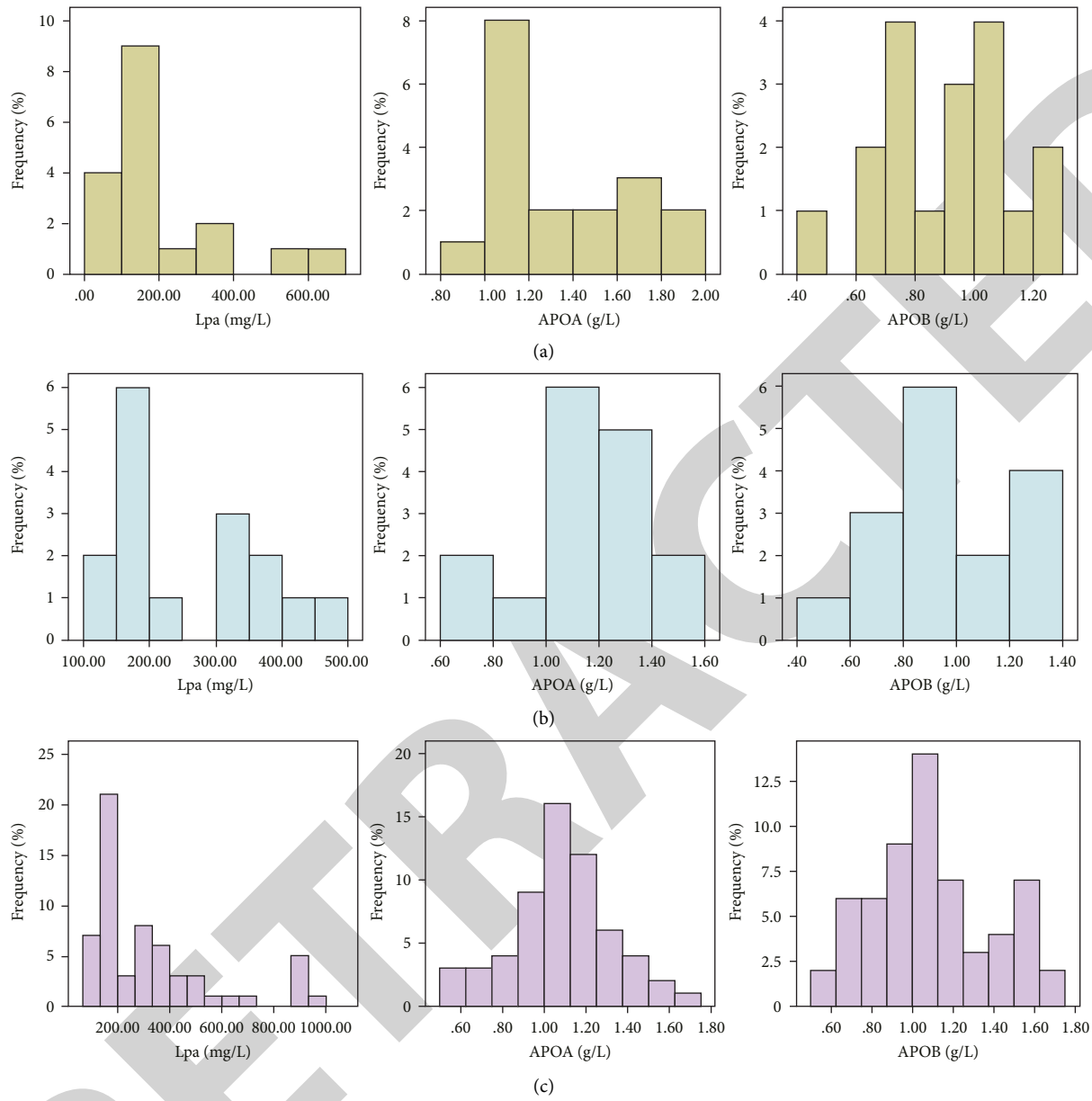

Figure 2: Distribution of Lpa, APO-A, and APO-B levels in CIS patients with different degrees of MCA stenosis. (a) Mild MCA stenosis. (b) Moderate MCA stenosis. (c) Severe MCA stenosis.

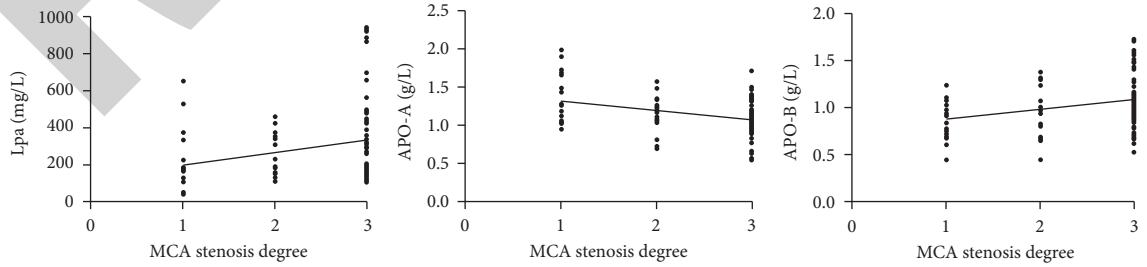

Figure 3: Scatter plot of correlation between Lpa, APO-A, APO-B, and MCA stenosis degree in CIS patients.

artery stenosis and found that APO-A1 and APO-B were closely related to intracranial artery stenosis. The study by Chou et al. [20] found that APO-B was a significant risk predictor of stroke. And Emanuele et al. [21] found that APO-A may be associated with poststroke dementia. Combined with the above reports, this study suggests that

APO-A and APO-B may be the influencing factors of MCA stenosis in CIS patients.

The ROC curve results for the Lpa, APO-A, and APO-B indices in this study showed AUC values of 0.647, 0.660, 0.672, and 0.762, respectively, both individually and in combination. The diagnostic value of the combined detection was higher than that of single indicators. These results indicated that each index had a certain diagnostic value for MCA stenosis in CIS patients, and the combined detection of the three indexes has a higher diagnostic value. The relationship between Lpa, APO-A, APO-B, and MCA stenosis was further analyzed using the Spearman correlation. The results showed that the levels of Lpa and APO-B in CIS patients were positively correlated with the degree of MCA stenosis, and the APO-A level was negatively correlated with the degree of MCA stenosis. It has been reported by Shui et al. [22] that the increase in Lpa is positively correlated with the progression of coronary artery disease. Yaseen et al. [23] reported that APO-B was positively correlated with the degree of coronary artery disease. In this study, combined with the above reports, it is suggested that when the levels of Lpa and APO-B are increased and the level of APO-A is decreased, the risk of MCA stenosis increases.

In conclusion, the levels of Lpa, APO-A, and APO-B in the peripheral blood of CIS patients have a certain correlation with the degree of MCA stenosis. When the levels of Lpa and APO-B increase and the level of APO-A decreases, the risk of MCA stenosis occurs. However, there are still some deficiencies in this study. If it is a retrospective study, there may be some data bias, and the specific mechanism of action of each index has not been clarified. In the later stage, further in-vitro animal experiments are still needed for in-depth research.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author.

Disclosure

Xinxu Chen and Xuefei Lu are cofirst authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest, financial or otherwise.

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Research Article

Effects of Sevoflurane Laryngeal Mask Inhalation Combined with Intravenous Anesthesia on Perioperative Stress and Myocardial Injury in Elderly Patients with Acute Cholecystitis and Coronary Heart Disease

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Surgery is the first choice for the treatment of acute cholecystitis. To ensure the curative effect of surgery, laparoscopic anesthesia should be characterized by rapid induction, good analgesic effect, and rapid postoperative sobriety. With the aggravation of an aging population, acute cholecystitis combined with coronary heart disease is more common in the elderly. The selection of anesthesia protocols for these patients has become a hot topic in research. In this study, we selected 72 elderly patients with acute cholecystitis combined with coronary heart disease who were treated in our hospital from January 2019 to January 2022 to explore the effects of sevoflurane laryngeal mask inhalation combined with intravenous anesthesia on perioperative stress and myocardial injury in elderly patients with acute cholecystitis combined with coronary heart disease, in order to provide a scientific basis for the formulation of a surgical plan for elderly patients with acute cholecystitis combined with coronary heart disease.

1. Introduction

Coronary heart disease is a multiple cardiovascular disease in the middle-aged and elderly people. Patients with coronary heart disease are often older and suffer from other diseases at the same time. Acute cholecystitis is one of them. Acute cholecystitis is inflammation of the gallbladder caused by obstruction of the cystic duct and bacterial invasion, and it includes acute calculous cholecystitis and acute acalculous cholecystitis [1]. Acute cholecystitis is mainly manifested as epigastric pain radiating to the right shoulder and back. Clinically, the disease develops very rapidly. With the development of the disease, patients may have unbearable pain, restlessness, intolerance of cold and high fever, and even life-threatening conditions in severe cases [2]. Early surgical intervention is the key to saving patients with acute cholecystitis [3]. Anesthesia is the most essential part of surgery. The condition of elderly patients with cholecystitis combined with coronary heart disease is often complex, and the selection of an anesthesia scheme for such patients is also difficult.

At present, the commonly used clinical anesthesia methods are divided into intravenous general anesthesia and inhalation anesthesia. And with the rapid development of anesthesia technology and equipment, a variety of new anesthesia methods have been gradually applied in clinical practice to ensure that surgical complications caused by respiratory problems are minimized. The laryngeal mask is an artificial airway placed in the throat cavity, using a balloon to seal the esophagus and throat cavity, and ventilating through the laryngeal cavity, avoiding tracheal intubation, but it is more effective than using a mask. It has been clinically proven for more than two decades for its remarkable effect in resolving or managing common and difficult airways [4]. Sevoflurane does not need intravenous injection and can produce obvious anesthesia effect on human body after being inhaled through the respiratory tract and has the advantages of quick effect, quick recovery,

good controllability, and a small toxic side effect. In recent years, sevoflurane has become the most widely used inhalation anesthetic in the global anesthesiology community [5]. However, few studies have reported its application value in elderly patients with acute cholecystitis combined with coronary heart disease. Therefore, this study investigated the effect of sevoflurane laryngeal mask inhalation combined with intravenous anesthesia on perioperative stress and myocardial injury in elderly patients with acute cholecystitis complicated by coronary heart disease. It aims to provide a better basis for the clinical treatment of such patients.

2. Materials and Methods

2.1. General Information. A total of 72 elderly patients with acute cholecystitis complicated by coronary heart disease who visited our hospital from January 2019 to January 2022 were selected as the research objects. The patients were divided into an observation group and a control group according to the random number table method, with 36 cases in each group. There were 14 males and 22 females in the control group ranging in age from 61 to 82 years mean age: 71.54 ± 5.27 years; and there were 33 cases of acute calculous cholecystitis, 3 cases of acute acalculous cholecystitis, 12 cases of arrhythmia, 11 cases of hypertension, and 4 cases of diabetes. There were 15 males and 21 females in the observation group. Their age ranged from 61 to 85 years, with an average of 73.04 6.02 years. And there were 33 cases of acute calculous cholecystitis; 3 cases of acute acalculous cholecystitis; 10 cases of combined arrhythmia; 10 cases of hypertension; and 3 cases of diabetes. There was no significant difference in the basic data between the two groups ($P > 0.05$). The study was reviewed and approved by the Hospital Ethics Committee, and the patient and his/her family were aware of the study and signed an informed consent form.

2.2. Inclusion Criteria. ① Meet the relevant diagnostic criteria for acute cholecystitis and coronary heart disease [6, 7]; ② age more than 60 years old; ③ ASA grade I ~ III; and ④ comply with the indications of laparoscopic surgery, no contraindications.

2.3. Exclusion Criteria. ① Patients with coagulation dysfunction; ② patients with liver and kidney damage; ③ patients with other heart diseases other than related diseases; ④ patients with mental disorders; ⑤ patients with respiratory system-related diseases; and ⑥ those who have severe allergies to the drugs used in this study.

2.4. Methods. Both groups underwent an elective laparoscopic cholecystectomy. The rats were deprived of food for 8 h and 4 h before operation. The intramuscular injection of 0.5 mg atropine sulfate injection (Wanbangde Pharmaceutical Group Co., Ltd., H13022141) and 0.1 g benzene was performed. The barbital sodium injection (Tianjin Jinyao Pharmaceutical Co., Ltd., recognized by TCM as H12020381) was performed 0.5 h before anesthesia. The upper limb veins were opened for monitoring blood pressure, heart rate, electrocardiogram and other vital signs.

2.4.1. Control Group. The oxygen saturation of blood oxygen was maintained at 98% with mask oxygen inhalation. Propofol injection (AstraZeneca S.p.A., Italy, import drug registration number: H20080473) compound remifentanil hydrochloride for injection (Yichang Renfu Pharmaceutical Co., Ltd. Company, Sinopharm Zhunzi H20030197) anesthesia, intravenous injection of propofol injection 2 μg/kg and remifentanil hydrochloride 200 μg/kg for anesthesia induction, after the patient lost consciousness, intravenous injection of 0.1 mg/kg vitamin for injection. Curium bromide (Zhejiang Xianju Pharmaceutical Co., Ltd., approved by Chinese medicine H19991172), tracheal intubation after 5 minutes, mechanical ventilation (tidal volume 8–10 mL/kg) to control respiratory rate 12 times/min, propofol maintenance anesthesia was performed at 0.2 mg/(kg·min), and propofol was discontinued after the operation.

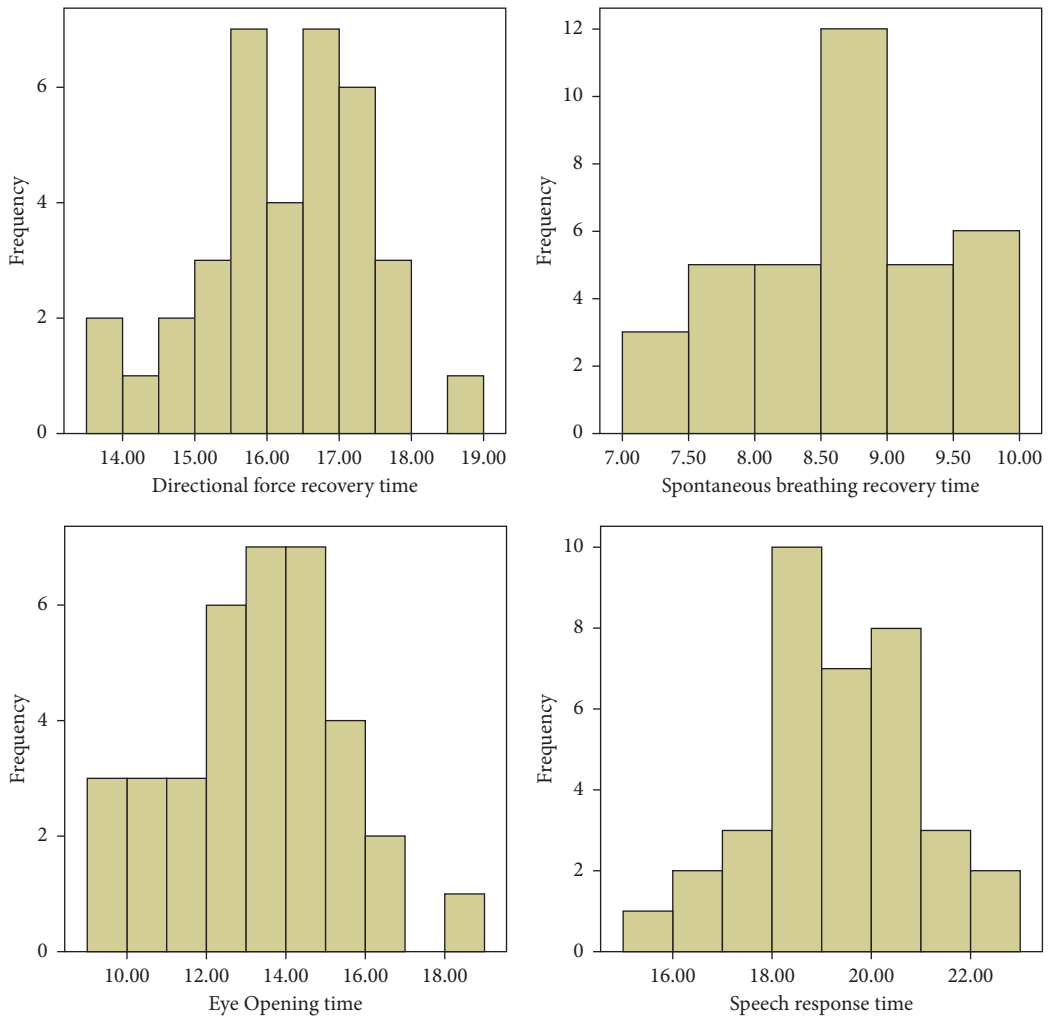
2.5. Observation Group. The oxygen saturation of blood oxygen was maintained at 98% by mask oxygen inhalation and sevoflurane for inhalation (Shanghai Baxter Medical Products Co., Ltd., Imported Drug Registration Certificate No.: H20110142) compound remifentanil hydrochloride for injection (Yichang Renfu Pharmaceutical Co., Ltd., responsible company, Chinese medicine Zhunzi H20030197) during intravenous inhalation anesthesia. The target-controlled infusion of remifentanil, with a target plasma concentration of 3 ng/mL was performed. The oxygen switch was turned on and was set the flow rate to 5 L/min. Then the sevoflurane evaporator was opened until 0 patient lost consciousness, and the laryngeal mask was placed. After that, 0.1 mg/kg vecuronium bromide for injection was given intravenously (Zhejiang Xianju Pharmaceutical Co., Ltd.). Company, GuoYaoZhunZi H19991172), mechanical ventilation (tidal volume 8–10 mL/kg) control the respiratory rate of 12 times/min, remifentanil maintain a constant target concentration, sevoflurane maintain anesthesia inhalation concentration of 0.8–1.5%, sevoflurane and remifentanil stopped after surgery.

2.6. Observation Indicators

2.6.1. Comparison of Anesthesia Effects. The orientation recovery time, spontaneous breathing recovery time, eye opening time, and speech response time of the two groups were observed and recorded.

2.6.2. Comparison of Perioperative Stress

(1) The levels of hemodynamic indexes, including mean arterial pressure (MAP) and heart rate (HR), were observed and recorded before anesthesia (T0), 1 min after intubation (T1), during skin incision (T2),



(a)

Figure 1: Continued.

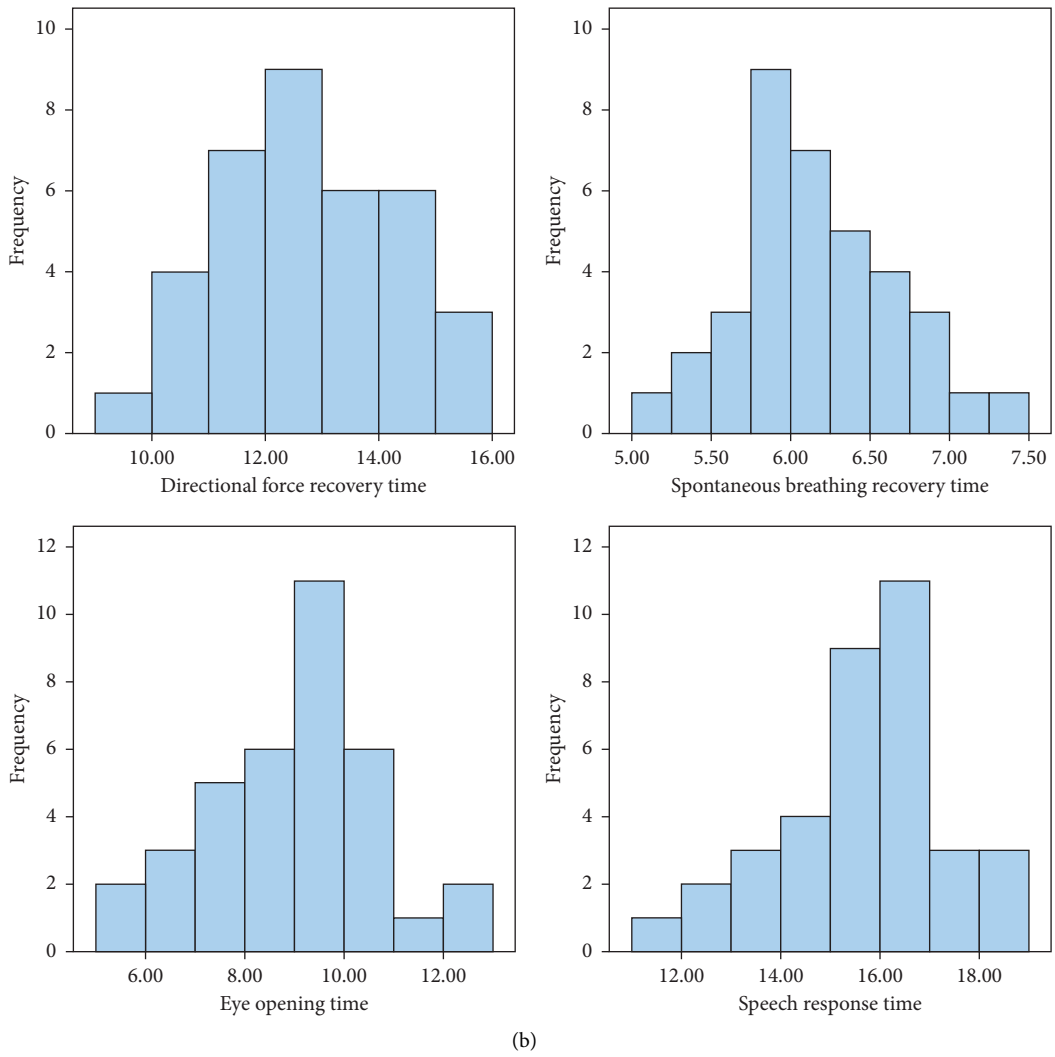


Figure 1: Level distribution of indexes related to the anesthesia effect in two groups (Note. (a) Level distribution of indexes related to anesthesia effect in the control group; (b) Level distribution of indexes related to anesthesia effect in the observation group).

5 min after pneumoperitoneum (T3), and after surgery (T4) in the two groups.

(2) 5 mL of fasting venous blood was collected from both groups before operation, immediately after operation, 6 hours after operation, and 12 hours after operation. The blood was centrifuged at 3000 r/min for 10 minutes, separated and collected the upper serum part, which was divided into two parts and stored in −80°C refrigerator to be tested. Stress response indicators (cortisol (Cor), C-reactive protein (CRP)) were detected using ELISA kits (Shanghai Qiyan Biotechnology Co., Ltd.).

2.6.3. Comparison of Myocardial Injury. The supernatant serum collected in 1.4.2 was used for testing. The indicators of myocardial injury, creatine kinase isoenzyme MB (CK-MB), and cardiotrophin I (cTnI), were detected by ELISA. The kits were purchased from Shanghai Qiyan Biotechnology Co., Ltd.

2.7. Statistical Methods. All counting and measurement data were input into SPSS 22.0 software for statistical data analysis, and Shapiro-Wilk was used for a normality test for measurement data. The data that meet the normal distribution are expressed in the form of (±S), an independent *t*-test is used, and the comparison of multiple time points within the group uses the analysis of variance of repeated measures data. Enumeration data were expressed as number of cases or rate, and differences between groups were compared using χ^2 test. A statistical value $P < 0.05$ indicates statistical significance.

3. Results

3.1. Comparison of Indexes Related to Anesthesia Effect Between the Two Groups. The orientation recovery time, spontaneous breathing recovery time, eye opening time, and speech response time of the observation group were shorter than those of the control group ($P < 0.05$). As shown in Figure 1 and Table 1.

Table 1: The indexes related to the anesthesia effect of the two groups ($\overline{x} \pm s$, min).

Group	n	Orientation recovery time	Spontaneous breathing recovery time	Eye opening time	Verbal response time
Control group	36	16.23 ± 1.16	8.63 ± 0.74	13.32 ± 2.16	19.34 ± 1.59
Observation group	36	12.72 ± 1.58	6.17 ± 0.51	9.05 ± 1.74	15.60 ± 1.58
t		10.744	16.423	9.237	10.011
P		<0.001	<0.001	<0.001	<0.001

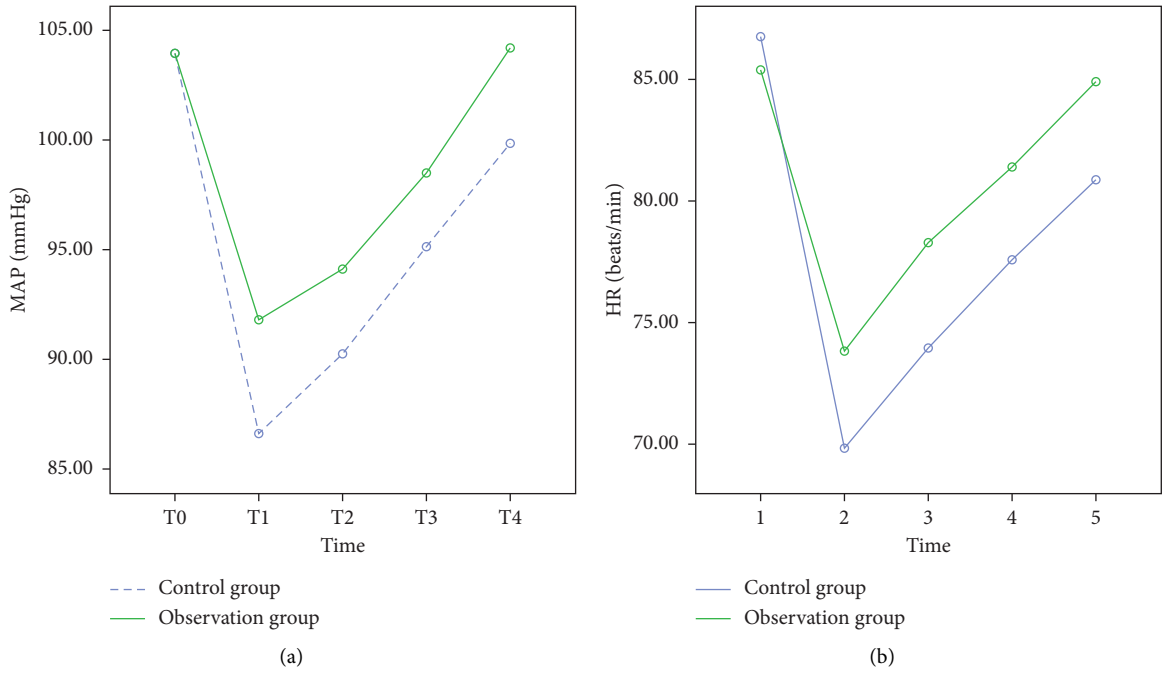


Figure 2: Comparison of perioperative hemodynamic indexes between the two groups (Note. (a) Comparison of perioperative MAP levels between the observation group and the control group; (b) comparison of HR levels between the observation group and the control group in the perioperative period).

Table 2: Comparison of perioperative hemodynamic indexes between the two groups ($\overline{x} \pm s$).

Time	MAP (mm·Hg)		HR (beats/min)	
	Control group ($n = 36$)	Observation group ($n = 36$)	Control group ($n = 36$)	Observation group ($n = 36$)
T0	104.00 ± 7.05	104.08 ± 5.30	86.75 ± 7.83	85.39 ± 6.89
T1	86.50 ± 7.50*	91.94 ± 5.70*#	69.86 ± 6.69*	73.83 ± 6.44*#
T2	90.22 ± 6.53*	94.11 ± 6.05*#	73.97 ± 7.57*	78.31 ± 6.36*#
T3	95.14 ± 7.22*	98.56 ± 6.10*#	77.58 ± 6.75*	81.42 ± 7.20*#
T4	99.61 ± 7.88*	104.25 ± 7.57#	80.89 ± 7.07*	84.17 ± 5.10#
F_{group}/P_{group}	4.327/0.045		4.159/0.049	
F_{time}/P_{time}	64.683/<0.001		41.104/<0.001	
F_{mutual}/P_{mutual}	55.444/<0.001		56.374/<0.001	

Note. Compared with T0, *$P < 0.05$; compared with control group, #$P < 0.05$.

3.2. Comparison of Perioperative Hemodynamic Indexes between the Two Groups. At T0, there was no significant difference in the levels of MAP and HR between the observation group and the control group ($P > 0.05$). From T1 to T4, the levels of MAP and HR in the two groups first decreased and then increased ($P < 0.05$), and the observation group was higher than the control group ($P < 0.05$) as shown in Figures 1 and 2 and Table 2.

3.3. Comparison of Perioperative Serum Stress Response Indexes between the Two Groups. There was no significant difference in serum Cor and CRP levels between the observation group and the control group before operation ($P > 0.05$); Immediately after operation, the levels of serum Cor and CRP in the two groups were increased, and decreased at 6 hours and 12 hours after operation ($P < 0.05$), and the observation group was lower than the control group ($P < 0.05$) as shown in Figure 3 and Table 3.

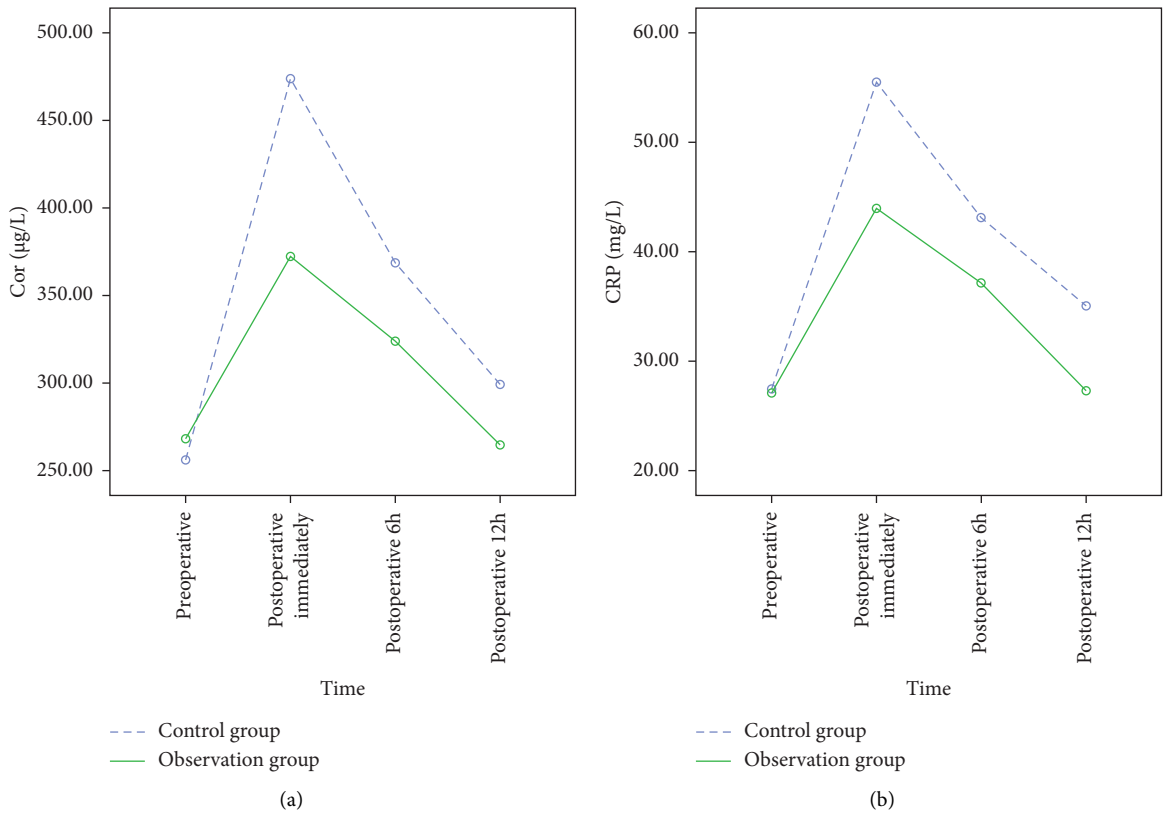


Figure 3: Comparison of perioperative serum stress response indexes between the two groups (Note. (a) Comparison of perioperative Cor levels between observation group and control group; (b) comparison of perioperative CRP levels between observation group and control group).

Table 3: Comparison of perioperative serum stress response indexes between the two groups ($\overline{x} \pm s$).

Time	Cor (μg/L)		CRP (mg/L)	
	Control group ($n = 36$)	Observation group ($n = 36$)	Control group ($n = 36$)	Observation group ($n = 36$)
Preoperative	256.44 ± 65.96	268.50 ± 47.80	27.51 ± 2.86	27.17 ± 4.33
Immediately after surgery	473.58 ± 59.58*	372.14 ± 64.22*#	55.46 ± 4.40*	43.96 ± 6.35*#
6 h after surgery	368.67 ± 56.59*	324.03 ± 52.14*#	43.13 ± 4.18*	37.15 ± 4.96*#
12 h after surgery	299.37 ± 50.78*	265.07 ± 57.02#	35.06 ± 4.04*	27.34 ± 4.80#
F_{group}/P_{group}	12.039/0.001		38.373/<0.001	
F_{time}/P_{time}	136.837/<0.001		316.524/<0.001	
F_{mutual}/P_{mutual}	287.283/<0.001		370.364/<0.001	

Note. Compared with preoperative, *$P < 0.05$; compared with control group, #$P < 0.05$.

3.4. Comparison of Perioperative Serum Myocardial Injury Indexes between the Two Groups. Before operation and immediately after operation, there was no significant difference in serum CK-MB and cTnI levels between the observation group and the control group ($P > 0.05$); The levels of serum CK-MB and cTnI in the two groups increased at 6 hours and 12 hours after operation ($P < 0.05$), but the observation group was lower than the control group ($P < 0.05$) as shown in Figure 4 and Table 4.

4. Discussions

Acute cholecystitis is a digestive tract emergency that can occur in any age group. Surgery is one of the main treatment methods for acute cholecystitis, but the physiological reserve ability of elderly patients is poor due to their own physical condition and combined with coronary heart disease. Therefore, it is necessary to comprehensively formulate the surgical plan according to the actual situation and physical quality of such patients, especially to select the appropriate anesthesia plan [8].

Relevant studies reported that different anesthesia methods may cause different anesthesia effects and stress responses in elderly patients, which may have a certain impact on the successful completion of surgery [9]. In this study, the recovery time of orientation, spontaneous breathing, eye opening, and speech response time in the observation group were shorter than those in the control

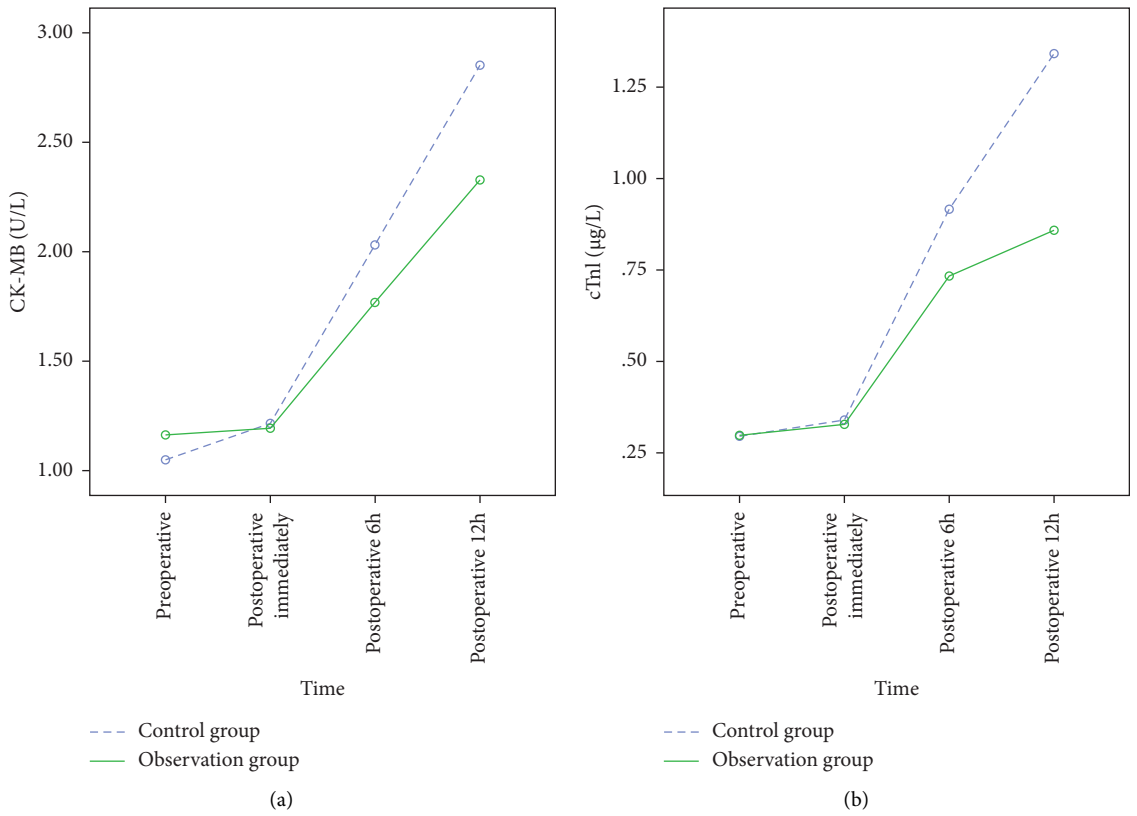


Figure 4: Comparison of perioperative serum myocardial injury indexes between the two groups (Note. (a) Comparison of perioperative CK-MB levels between observation group and control group; (b) comparison of perioperative cTnI levels between the observation group and control group).

Table 4: Comparison of perioperative serum myocardial injury indexes between the two groups ($\overline{x} \pm s$).

Time	CK-MB (U/L)		cTnI (μg/L)	
	Control group ($n = 36$)	Observation group ($n = 36$)	Control group ($n = 36$)	Observation group ($n = 36$)
Preoperative	1.05 ± 0.38	1.17 ± 0.36	0.30 ± 0.05	0.30 ± 0.04
Immediately after surgery	1.22 ± 0.35	1.20 ± 0.27	0.35 ± 0.12	0.33 ± 0.10
6 h after surgery	$2.04 \pm 0.77^{*}$	$1.68 \pm 0.63^{*\#}$	$0.92 \pm 0.17^{*}$	$0.73 \pm 0.14^{*\#}$
12 h after surgery	$2.88 \pm 0.86^{*}$	$2.23 \pm 0.63^{*\#}$	$1.34 \pm 0.24^{*}$	$0.86 \pm 0.07^{*\#}$
F_{group}/P_{group}	4.456/<0.042		35.336/<0.001	
F_{time}/P_{time}	432.741/<0.001		684.042/<0.001	
F_{mutual}/P_{mutual}	42.183/<0.001		191.062/<0.001	

Note. Compared with preoperative, $^{*}P < 0.05$; compared with control group, $^{\#}P < 0.05$.

group, suggesting that sevoflurane laryngeal mask inhalation combined with intravenous anesthesia is effective for elderly patients with acute cholecystitis complicated by coronary heart disease. The effect of perioperative anesthesia is good, and it will not cause respiratory depression caused by excessive anesthesia. Inhalation anesthesia is a commonly used anesthesia method in clinic. Anesthesia by respiratory inhalation reduces drug metabolism and decomposition in the body, allowing most of it to be excreted directly from the lungs. Therefore, inhalation anesthesia is easy to control and relatively safe and effective. Sevoflurane is a surgical anesthetic that is widely used in clinical practice, which was more convenient to used. Its physical properties were superior to those of the existing human anesthetics, and the blood/air fraction coefficient was only 0.59. Due to rapid induction and small tissue uptake, the patient recovered quickly after surgery. Studies have confirmed that patients under sevoflurane anesthesia generally recover less than 10 minutes after drug discontinuation, and patients have no symptoms of falling asleep again after waking up, and there are obvious complications such as nausea and vomiting, dizziness, headache, cough, throat and bronchospasm, edema, and other complications [10, 11].

Traditional anesthesia requires endotracheal intubation, and there are many receptors in the throat. Direct endotracheal intubation can cause intense stimulation, leading to arousal of sympathetic nervous system and aggravation of cardiovascular stress response, which may aggravate

coronary heart disease in patients [12]. The results of this study found that, at T1-T4, the levels of MAP and HR in the two groups first decreased and then increased, and the observation group was higher than the control group. The study by Kannojiya et al. [13] reported that the application of a laryngeal mask in pediatric laparoscopic surgery has less effect on the hemodynamic parameters of patients and fewer postoperative complications. Combined with the above reports, this study believe that sevoflurane laryngeal mask inhalation combined with intravenous anesthesia has a stable effect on perioperative hemodynamic parameters of elderly patients with acute cholecystitis combined with coronary heart disease and can reduce surgical stress. The stress response indexes of the two groups were further analyzed, and it was also found that the serum Cor and CRP levels of the two groups increased at 6 h and 12 h after the operation, but the observation group was lower than the control group. Cor and CRP can be used as indicators of decreased surgical stress response after laparoscopic surgery [14, 15]. The reason may be that, compared with tracheal intubation, the laryngeal mask does not need to use instruments to expose the glottis, the throat irritation is small, so it does not enter the trachea, it has no irritation to the tracheal mucosa, and its hemodynamics are less affected.

Relevant research have reported that for the elderly patients with coronary heart disease, the use of irritating anesthesia methods such as tracheal intubation during the operation easily induces serious cardiovascular complications, such as such as increased blood pressure and arrhythmia [16]. The results of this study showed that the serum levels of CK-MB and cTnI in the two groups were increased at 6 h and 12 h after the operation, but the observation group was lower than the control group. Zhang et al. [17] found that sevoflurane inhalation anesthesia can effectively maintain perioperative hemodynamic stability in elderly patients with coronary heart disease and has a certain myocardial protection effect. The analysis of the reason may be related to the efficacy of sevoflurane in increasing the opening of intracellular ATP-sensitive potassium channels, increasing cardiac output, and reducing coronary neutrophil adhesion [18].

In conclusion, the application of sevoflurane laryngeal mask inhalation combined with intravenous anesthesia in elderly patients with acute cholecystitis complicated by coronary heart disease can relieve the perioperative stress response, ensure stable hemodynamics in the perioperative period, and promote rapid and stable recovery. And it will not aggravate the myocardial injury of patients, improving the safety of anesthesia. However, there are still some deficiencies in this study. For example, it is a single-center study with a small number of samples, and there may be some data biases. In the later stage, further multicenter and large-sample clinical trials are needed for in-depth research.

Data Availability

The data supporting the conclusion of this article will be available by the authors without undue reservation.

Conflicts of Interest

The authors declare that there are no conficts of interest.

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Retraction

Retracted: Efficacy and Mechanism of Trimebutine Maleate Combined with Lactulose in the Treatment of Constipation-Predominant Irritable Bowel Syndrome in the Elderly

Emergency Medicine International

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(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] Y. Zhou, D. Yang, and W. Gu, "Efficacy and Mechanism of Trimebutine Maleate Combined with Lactulose in the Treatment of Constipation-Predominant Irritable Bowel Syndrome in the Elderly," *Emergency Medicine International*, vol. 2022, Article ID 6125120, 5 pages, 2022.

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Research Article

Efficacy and Mechanism of Trimebutine Maleate Combined with Lactulose in the Treatment of Constipation-Predominant Irritable Bowel Syndrome in the Elderly

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Objective. Study on the efficacy and mechanism of trimebutine maleate combined with lactulose in the treatment of constipation-predominant irritable bowel syndrome (IBS-C) in the elderly. *Methods*. From March 2019 to March 2021, 102 elderly patients with IBS-C were randomly divided into the observation group (51 cases) and the control group (51 cases). The observation group was treated with trimebutine maleate combined with lactulose, while the control group was treated with lactulose. Comparison of the clinical effects of the two groups. Comparison of vasoactive intestinal peptide (VIP) levels, neuropeptide Y (NPY) levels, and quality of life scores before and after treatment between the two groups. Documentation of adverse reactions during treatment. *Results*. The improvement of clinical symptoms in the observation group was significantly better than that in the control group, and the difference is statistically significant ($P < 0.05$). The level of VIP after treatment in the observation group was significantly lower than that in the control group and before treatment, and the differences were statistically significant ($P < 0.05$). The level of NPY after treatment in the observation group was significantly higher than that in the control group and before treatment, and the differences were statistically significant ($P < 0.05$). The scores of dietary restrictions and health worries in the control group after treatment were significantly higher than those before treatment, and the differences were statistically significant ($P < 0.05$). The scores of anxious, behavioral conflict, dietary restrictions, health worries, social response, and family relationship in the observation group after treatment were significantly higher than those in the control group and before treatment, and the differences were statistically significant ($P < 0.05$). There were no serious adverse effects in either group during the treatment period, with some patients experiencing dizziness and dry mouth, which improved after discontinuation of the drug, without special intervention. *Conclusion*. Trimebutine maleate combined with lactulose can improve clinical symptoms and quality of life in elderly patients with IBS-C, and its mechanism of action may be related to the regulation of the body's VIP and NPY levels.

1. Introduction

Irritable bowel syndrome (IBS) is a nonorganic disease. Its main symptoms are functional gastrointestinal disease symptoms such as abdominal pain, abdominal distension, and abnormal defecation [1]. The protracted course of IBS has a serious impact on the quality of life of patients [2]. The pathogenesis of IBS may be related to high visceral sensitivity, intestinal infection, dysbiosis of microflora, genetics, diet, and mental factors [3, 4]. Lactulose is a synthetic disaccharide that is not absorbed by the small intestine, increases fecal water content, lowers intestinal pH, and promotes intestinal motility. It has been found that lactulose can correct and restore the intestinal microecological

balance and can be used as a conventional medicine for the treatment of constipation-predominant irritable bowel syndrome (IBS-C) [5]. Trimebutine maleate is a commonly used clinical drug for the treatment of IBS, which can adjust the abnormal gastrointestinal rhythm and is suitable for the adjuvant treatment of patients with gastrointestinal dysfunction and IBS, but mostly diarrhea-type [6]. In addition, clinical reports on the combination of the two are rare, in order to clarify the clinical effect and mechanism of trimebutine maleate combined with lactulose in the treatment of IBS-C in the elderly, this clinical controlled study was conducted, and the results are reported as follows:

2. Materials and Methods

2.1. General Data. 102 elderly patients with IBS-C who were admitted to our hospital from March 2019 to March 2021 were selected, and the patients were divided into the observation group (51 cases) and the control group (51 cases) by the random number table method. This study was reviewed and approved by the hospital ethics committee, and the included patients gave informed consent to this study and signed the informed consent. In the observation group, there were 25 males and 26 females, aged 60–74 years, mean age (66.42 ± 4.62) years, disease duration of 3–24 months, mean disease duration (15.23 ± 6.84) months, total symptom score of 10–17 points, with an average of (14.12 ± 3.16) points. In the control group, there were 26 males and 25 females, aged 60–75 years, mean age (67.08 ± 4.71) years, disease duration of 3–24 months, mean disease duration (15.41 ± 6.92) months, total symptom score of 10–18 points, with an average score of (15.01 ± 3.22) points. There was no significant difference in general data between the two groups ($P > 0.05$), and there was comparability.

2.2. Inclusion Criteria. Inclusion criteria were as follows: (1) aged 60–75 years old; (2) symptoms in the past 3 months met the diagnostic criteria of IBS Rome III [7], that is, symptoms for more than six months, abdominal discomfort or pain that has persisted for the last three months and is accompanied by at least two of the following characteristics: symptoms improve after defecation, symptoms occur with a change in the frequency of defecation, symptoms occur with a change in the nature of defecation; (3) The clinical symptoms of IBS-C are mainly incomplete bowel movements, hard lumpy bowel movements, obstructive sensation in the anus during defecation, inability to help oneself to defecation and the need for external assistance; (4) on clinical examination, gastrointestinal tumors were excluded; (5) those with complete clinical data.

2.3. Exclusion Criteria. Exclusion criteria were as follows: (1) patients with mental disorders; (2) patients unable to communicate with normal speech; (3) patients with alarm symptoms such as anemia, blood in the stool, and weight loss; (4) patients with severe respiratory and central nervous system diseases; (5) patients with severe liver and kidney dysfunction.

2.4. Treatment Methods. Both groups received routine diet therapy and psychological and behavioral therapy. On these bases:

2.4.1. Control Group. Routine treatment was used. That was lactulose oral solution (produced by Beijing Hanmei Pharmaceutical Co., Ltd., approved by Chinese medicine H20065730) 10~25 ml was used, which was taken with breakfast, and the course of treatment was 12 weeks.

2.4.2. Observation Group. Treatment with trimebutine maleate combined with lactulose. The dosage of lactulose was referred to as that of the control group; at the same time, it was combined with trimebutine maleate dispersible tablets (produced by Zhejiang Anglikang Pharmaceutical Co., Ltd., approved by H20040882) orally, 2 tablets (0.2 g) each time, 3 times a day, and the course of treatment was 12 weeks.

2.4.3. Observation Indicators. (1) Clinical effect: collect patients' abdominal pain time, abdominal pain frequency, abdominal pain and distention during defecation, abnormal defecation character ratio, abnormal defecation frequency ratio, and mucous stool ratio to evaluate by symptom score, and count the total symptom score before and after treatment. (Symptom score before treatment - symptom score after treatment)/symptom score before treatment, the calculated value was converted into a percentage, and the clinical symptom decline rate of the patient was obtained. ≥ 90% was considered healed, 80–90% was a significant effect, 60–79% was valid, and < 60% was invalid. (2) Vasoactive intestinal peptide (VIP) and neuropeptide Y (NPY) levels: fasting cubital venous blood was collected from patients before and after treatment, and serum was collected after centrifugation. The determination was carried out by professional inspectors in strict accordance with the instructions of the inspection reagents. (3) Quality of life: the irritable bowel syndrome-quality of life (IBS-QOL) was used to evaluate, a total of 34 items, 8 dimensions, anxious, behavioral conflict, body image, dietary restrictions, health worries, social response, sexuality, and family relationship were scored on a 5-point scale, namely, asymptomatic, mild, moderate, severe, and severe were scored as 5, 4, 3, 2, and 1, respectively, and the scores of each dimension were converted into percentage values (the actual score/full score of each dimension × 100%) for statistics, the higher the score, the better the quality of life. (4) Documentation of adverse reactions during treatment.

2.5. Statistical Methods. Data were entered into Excel form, imported into SPSS24.0 for statistical processing, measurement data were expressed as mean ± standard deviation ($x \pm s$), and a t-test was applied; The enumeration data were expressed by the rate (%), and the χ^2 test was used. The rank data was expressed by the rank sum test, and there was a significant difference at $P < 0.05$.

Table 1: Comparison of clinical symptoms of patients (n, %).

Group	n	Healed	Significant effect	Valid	Invalid
Control group	51	16	20	9	6
Observation group	51	29	20	2	0
Z			3.234		
P			0.012		

Table 2: Comparison of VIP and NPY levels in patients (pg/ml, $\bar{x} \pm s$).

Group	n	VIP		NPY	
		Before treatment	After treatment	Before treatment	After treatment
Control group	51	292.30 ± 47.09	242.31 ± 35.06	60.52 ± 7.94	67.17 ± 9.23
Observation group	51	294.45 ± 47.05	173.35 ± 30.07	60.22 ± 7.53	85.17 ± 9.28
T		0.231	10.662	0.196	9.821
P		0.818	0.000	0.845	0.000

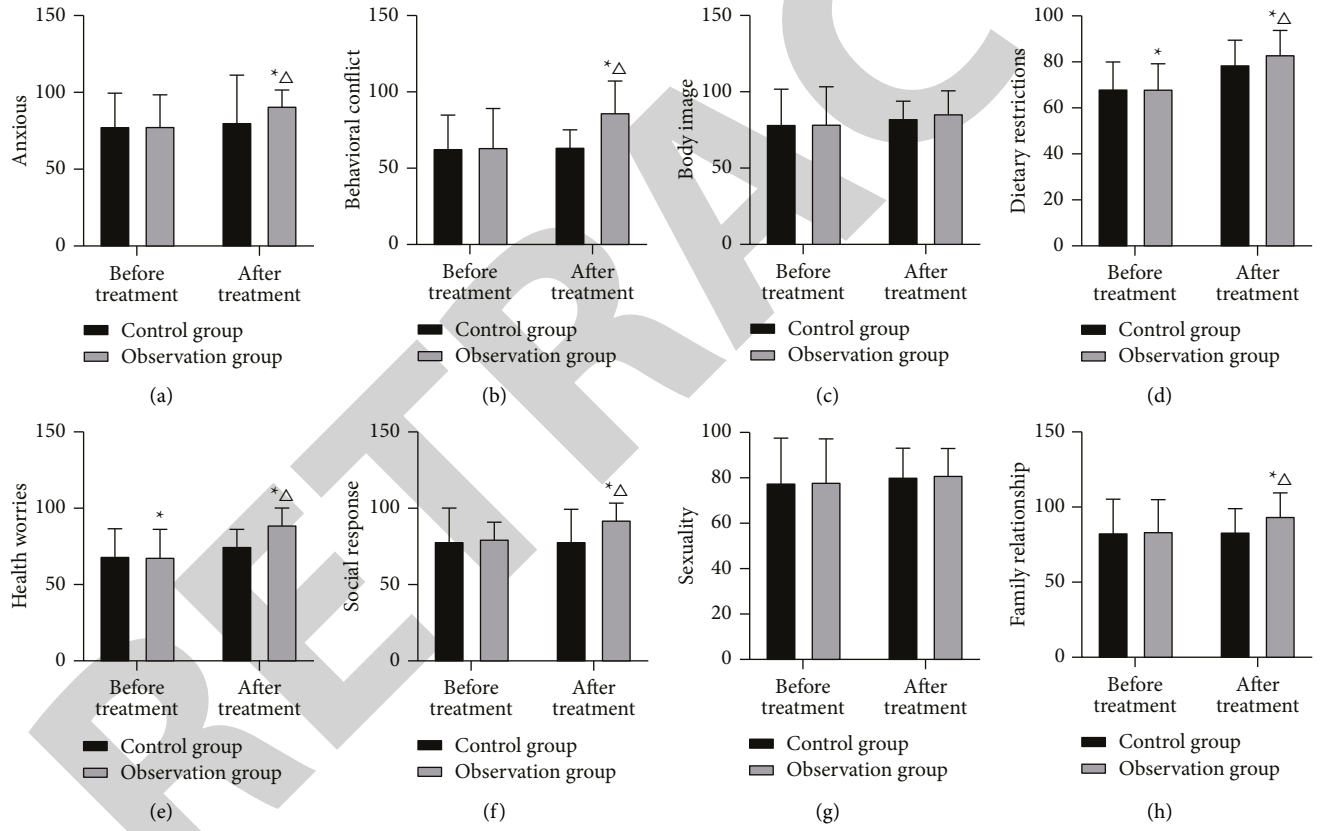

Figure 1: Comparison of IBS-QOL scores between the two groups of patients (scores, $\bar{x} \pm s$). Note: compared with the same group before treatment, $^{*}P < 0.05$; compared with the control group after treatment, $\Delta P < 0.05$. (a) Anxious. (b) Behavioral conflict. (c) Body image. (d) Dietary restrictions. (e) Health worries. (f) Social response. (g) Sexuality. (h) Family relationship.

3. Results

3.1. Clinical efficacy of patients. The improvement of clinical symptoms in the observation group was significantly better than that in the control group, and the difference is statistically significant ($P < 0.05$) (as shown in Table 1).

3.2. Comparison of VIP and NPY Levels in Patients. Before treatment, there was no significant difference in the levels of VIP and NPY between the two groups ($P > 0.05$); The level of VIP after treatment in the observation group was significantly lower than that in the control group and before treatment, and the differences were statistically

significant ($P < 0.05$). The level of NPY after treatment in the observation group was significantly higher than that in the control group and before treatment, and the differences were statistically significant ($P < 0.05$) (as shown in Table 2).

3.3. Comparison of Patients' Quality of Life. There was no significant difference in the scores of each dimension of the IBS-QOL scale between the two groups before treatment ($P > 0.05$); The scores of dietary restrictions and health worries in the control group after treatment were significantly higher than those before treatment, and the differences were statistically significant ($P < 0.05$). The scores of anxious, behavioral conflict, dietary restrictions, health worries, social response, and family relationship in the observation group after treatment were significantly higher than those in the control group and before treatment, and the differences were statistically significant ($P < 0.05$) (as shown in Figure 1).

3.4. Documentation of Adverse Reactions during Treatment. There were no serious adverse effects in either group during the treatment period, with some patients experiencing dizziness and dry mouth, which improved after discontinuation of the drug, without special intervention.

4. Discussions

The incidence of IBS gradually increases with the change in people's life and diet structure [8]. With the in-depth study of the pathogenesis of IBS, the theories of NPY, vasoactive peptides, other gastrointestinal hormones, and abnormal visceral sensitivity have been paid more and more attention by scholars [3, 9]. NPY mainly exists in ileum and colon cells and is a biologically active substance with the function of regulating gastrointestinal motility [10]. A vasoactive peptide is a noncholinergic inhibitory gastrointestinal hormone secreted by the gastrointestinal mucosa, which can inhibit the contractile function of the smooth muscle of the gastrointestinal tract, inhibit the excitability of the gastrointestinal tract, reduce the motility of the gastrointestinal tract, cause gastrointestinal motility, and gastrointestinal emptying is impaired [11, 12]. Studies have shown that VIP acts as an inhibitor of gastrointestinal motility and that VIP is elevated in the intestinal mucosa of patients with IBS-C, resulting in an inhibitory background of intestinal motility such that peristaltic contractions are less likely to occur, leading to constipation. Based on the above, aiming at improving gastrointestinal hormone levels and reducing visceral sensitivity can more effectively improve the clinical symptoms of IBS-C patients.

Lactulose can be converted into organic acids of molecular weight with the assistance of the digestive tract flora, which helps to reduce the pH value in the intestinal tract, stimulates the smoothness of the intestinal tract, relieves constipation, and helps restore the physiological activity of the colon. It has high safety and is suitable for patients with IBS-C [13, 14]. Trimebutine maleate is a commonly used drug for patients with diarrhea-type irritable bowel syndrome and has the function of regulating gastrointestinal motility [15, 16]. Relevant data show that the effect of trimebutine maleate or lactulose alone in the treatment of elderly IBS-C is not ideal, and it has certain limitations. Therefore, this study will combine the two to observe its efficacy and explore its possible mechanism of action.

The results of this study showed that the improvement of clinical symptoms in the observation group was significantly better than that in the control group ($P < 0.05$). This indicates that trimebutine maleate combined with lactulose has a synergistic effect in the treatment of IBS-C in the elderly, with a more definite improvement in their clinical symptoms. Analyze the reasons for the above results: On the one hand, lactulose has the characteristics of disaccharide intestinal nonabsorption, can support the reproduction of intestinal bifidobacteria and lactobacilli, correct and restore the intestinal microecology, and acidic metabolites such as lactic acid and acetic acid can promote intestinal peristalsis, increase the osmotic pressure in the intestine, soften the stool and promote stool excretion. On the other hand, trimebutine maleate is gastric motility regulating drug, in addition to blocking the calcium influx channel to make gastrointestinal smooth muscle in a relaxed state, it can also effectively inhibit the outflow of potassium ions to enhance the excitability of smooth muscle cells. The main mechanism of trimebutine maleate is that it can reduce the release of acetylcholine to improve gastrointestinal motility when the gastrointestinal tract is in a highly dynamic state for a long time; in the low dynamic state, it can effectively control the release of adrenaline to improve gastrointestinal movement, thereby realizing bidirectional regulation.

At the same time, the level of VIP after treatment in the observation group was significantly lower than that in the control group and before treatment ($P < 0.05$), and the level of NPY after treatment in the observation group was significantly higher than that in the control group and before treatment ($P < 0.05$). The above shows that the treatment of trimebutine maleate combined with lactose can synergistically work together to inhibit the release of VIP and promote the release of NPY, thereby modulating visceral hypersensitivity in elderly IBS-C patients. Studies [17] have shown that elderly IBS-C patients have increased intestinal mucosal mast cell and VIP expression, and decreased NPY expression, so show high visceral sensitivity. The decrease in VIP levels was more pronounced in the observation group of this study, indicating a significant decrease in visceral sensitivity in patients, which is more helpful in improving the symptoms of visceral hypersensitivity, gastrointestinal motility disorders, and impaired gastrointestinal emptying. At the same time, trimebutine maleate can effectively inhibit the plasma substance P and somatostatin in patients, thereby promoting the release of NPY [18, 19]. Therefore, the combination of the two has the effect of inhibiting the high sensitivity of the viscera and correcting intestinal endocrine function. The observation of the quality of life of the patients showed that the improvement of the quality of life of the patients in the observation group was more significant.

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Retraction

Retracted: Application of 24 h Dynamic Electrocardiography in the Diagnosis of Asymptomatic Myocardial Ischemia with Arrhythmia in Elderly Patients with Coronary Heart Disease

Emergency Medicine International

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Research Article

Application of 24 h Dynamic Electrocardiography in the Diagnosis of Asymptomatic Myocardial Ischemia with Arrhythmia in Elderly Patients with Coronary Heart Disease

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Objective. To investigate the application effect of 24 h dynamic electrocardiogram in the diagnosis of asymptomatic myocardial ischemia with arrhythmia in elderly patients with coronary heart disease. *Methods*. A total of 206 elderly patients suspected of coronary heart disease (CHD) with asymptomatic myocardial ischemia and arrhythmia were selected as the research subjects. 24 h dynamic electrocardiogram and conventional electrocardiogram examinations were conducted. Coronary angiography was used as the gold standard to observe the performance of the two examination methods in the diagnosis of asymptomatic myocardial ischemia with arrhythmia in elderly patients with CHD. *Results*. Coronary angiography showed 174 positive cases and 32 negative cases among the 206 patients. The diagnostic results of a conventional electrocardiogram showed 150 positive cases and 20 negative cases. Its sensitivity, specificity, accuracy, positive predictive value, and negative predictive value were 86.21%, 62.50%, 82.52%, 92.59%, and 45.45%, respectively. The diagnostic results of 24 h dynamic electrocardiograms showed 168 positive cases and 29 negative cases. Its sensitivity, specificity, accuracy, positive predictive value, and negative predictive value were 96.55%, 96.63%, 95.63%, 98.25%, and 82.86%, respectively. The above results indicated that 24 h dynamic electrocardiogram was significantly better ($P < 0.05$). The detection rate of arrhythmia types by 24-hour dynamic electrocardiogram was significantly higher than that of conventional electrocardiogram ($P < 0.05$). *Conclusion*. 24 h dynamic electrocardiogram is helpful for the diagnosis of asymptomatic myocardial ischemia with arrhythmia in elderly patients with CHD and can improve the detection rate, thereby providing a basis for clinical diagnosis and treatment.

1. Introduction

Coronary heart disease (CHD) is a clinical coronary atherosclerotic heart disease. In general, the main pathogenesis of CHD is vascular stenosis or obstruction caused by atherosclerosis in patients, resulting in myocardial hypoxia and ischemia, so myocardial ischemia is one of the main symptoms of CHD [1]. With the gradual increase of the aging population in China, the occurrence of CHD is also becoming more and more serious, and some patients with the coronary syndrome often have arrhythmias due to ischemia manifestations. This type of patient has a risk of sudden cardiac death and myocardial infarction higher, so CHD complicated with arrhythmia has become a key issue in clinical research at this stage [2]. However, the vast majority of patients with CHD often present asymptomatic myocardial ischemia. Although such patients have obvious coronary artery occlusion, they have no angina pectoris, which may be due to the relatively slow or even slow response of elderly patients to pain. Therefore, early diagnosis and treatment are necessary to avoid delaying the disease and missing the opportunity for treatment [3]. The clinical electrocardiogram can play a good role in early diagnosis and treatment and can detect pathological *Q* waves and ST-segment elevation in time, with occasional irregular fluctuations. Therefore, it is also of great significance for clinical guidance of treatment and prognosis evaluation [4]. However, there is still controversy about the choice of diagnostic

method for asymptomatic myocardial ischemia with arrhythmia in elderly patients with CHD. In view of this, this paper aims to analyze the clinical diagnostic value of 24 h dynamic electrocardiogram for asymptomatic myocardial ischemia with arrhythmia in elderly patients with CHD. The specific contents are shown as follows:

2. Materials and Methods

2.1. General Information. A total of 206 elderly patients suspected of having CHD with asymptomatic myocardial ischemia and arrhythmia were selected as the research subjects. Inclusion criteria were as follows: ① Examined by the electrocardiogram stress test, myocardial imaging, coronary angiography, and other examinations, patients met the indications of asymptomatic myocardial ischemia with arrhythmia in CHD [5]; ② patients older than 60 years; and ③ the clinical data were complete, and the patients gave informed consent. Exclusion criteria were as follows: ① Patients with severe cardiopulmonary, hepatic, and renal insufficiency; ② patients with poor compliance and were unable to cooperate with the examination; ③ patients accompanied by other cardiomyopathies; ④ patients complicated with neurological diseases; ⑤ patients with poor image quality; ⑥ patients with a history of angina pectoris. The included subjects included 113 males and 93 females, with an average age of 60–79 (65.57 ± 5.33) years, 74 patients have underlying diseases of hypertension, 67 patients have hyperlipidemia, and 65 patients have diabetes. A controlled trial study was initiated after the approval of the research ethics committee.

2.2. Methods. Conventional electrocardiogram: After admission, we performed an electrocardiogram examination, took the supine position, cleaned the electrode placement site and applied the special conductive paste to reduce skin resistance, connected the electrocardiogram machine to the power supply and ground wire, and the voltage was set to to 10 mm/mV, input impedance ≥100 KΩ, frequency response 100 Hz, paper feeding speed 25 mm/s, etc., adjusted the sensitivity controller, traced the conventional 12 leads, in turn, gave a clear indication of the patient's name, department, date, time, and other information. The positive diagnostic criteria of a conventional electrocardiogram are ST segment level drops in the range of 0.05~0.2 mV, the ST segment is abnormally elevated, and the *T* wave in the same lead is smaller than the *R* wave [6].

24 h dynamic electrocardiogram: took the same supine position, the patch area should be kept clean, after connecting to the power supply and connecting the electrodes, the ST-T segment changes, duration, heart rate variability, etc. were recorded by using a BS6930 Holter electrocardiograph (Shenzhen Bosheng Medical Equipment Co., Ltd.). During the examination, cotton loose clothing should be selected as much as possible to reduce electrostatic interference; the dynamic changes of 12 leads should be traced in turn, and the patient information should be noted in detail. The positive diagnostic criteria of 24 h dynamic electrocardiogram: the ST segment is in a downward state (continuous for 0.08 s after the *J* point), the distance reaches 0.1 mV, the continuous abnormal fluctuation time is about 1 min, and the interval between two seizures is longer than 1 min [7].

2.3. Coronary Angiography. Coronary angiography is the gold standard for the diagnosis of CHD with arrhythmia. Before performing angiography, we performed breathing training on patients and chose the appropriate body position and angle at the same time, recorded coronary arteries, abnormal anatomy, blood flow, etc. Positive diagnostic criteria for coronary angiography: the stenosis degree of one or more coronary arteries is ≥50%, or the stenosis degree of main branch coronary arteries is ≥50%. If the above criteria are not met, the patient is negative [8].

2.4. Observation Indicators. We took coronary angiography as the gold standard to observe the diagnostic performance of two inspection methods, including sensitivity, specificity, accuracy, positive predictive value, and negative predictive value. Sensitivity = true positive number/(true positive number + false negative number) ∗ 100%; specificity = true negative number/(true negative number + false positive number) ∗ 100%; accuracy = (true positive number + true negative number)/total number ∗ 100%; positive predictive value = true positive number/(true positive number + false positive number) ∗ 100%; negative predictive value = true negative number/(true negative number + false negative number) ∗ 100%.

According to the electrocardiogram start and end characteristics, heart rate, rhythm, and fluctuations recorded the detection rate of arrhythmia types in the two groups, including ventricular tachycardia, ventricular arrhythmia, atrial arrhythmia, and supraventricular tachycardia.

2.5. Statistical Method. EXCEL spreadsheet was used for statistical analysis of experimental data, and SPSS 22.0 statistical tools were used for analysis and processing, with $(\bar{x} \pm s)$ for measurement, % for percentage, and t and X^2 tests were performed respectively. P value < 0.05 shows that there is a significant difference between the groups.

3. Results

3.1. Diagnostic Efficacy of Conventional Electrocardiogram for Asymptomatic Myocardial Ischemia with Arrhythmia in Elderly Patients with CHD. Coronary angiography showed that among the 206 patients, 174 were positive and 32 were negative; the diagnostic results of conventional electrocardiogram showed that 150 cases were positive and 20 cases were negative, the sensitivity, specificity, accuracy, positive predictive value, and negative predictive value were 86.21%, 62.50%, 82.52%, 92.59%, and 45.45% respectively, as shown in Table 1.

Table 1: Diagnostic efficacy of conventional electrocardiogram for asymptomatic myocardial ischemia with arrhythmia in elderly patients with CHD (*n*).

Conventional electrocardiogram	Pathological result		Total
	Positive (174 cases)	Negative (32 cases)	
Positive	150	12	162
Negative	24	20	44
Total	174	32	206

Table 2: The diagnostic efficacy of 24 h dynamic electrocardiogram in asymptomatic myocardial ischemia with arrhythmia in elderly patients with CHD.

24 h dynamic electrocardiogram	Pathological result		Total
	Positive (174 cases)	Negative (32 cases)	
Positive	168	3	171
Negative	6	29	35
Total	174	32	206

Table 3: Comparison of the diagnostic efficacy of the two groups of examination methods (*n*/*N*).

Diagnostic method	Sensitivity	Specificity	Accuracy	Positive predictive value	Negative predictive value
Conventional electrocardiogram	86.21% (150/174)	62.50% (20/32)	82.52% (170/206)	92.59% (150/162)	45.45% (20/44)
24 h dynamic electrocardiogram	96.55% (168/174)	96.63% (29/32)	95.63% (197/206)	98.25% (168/171)	82.86% (29/35)

3.2. The Diagnostic Efficacy of 24-h Dynamic Electrocardiogram in Asymptomatic Myocardial Ischemia with Arrhythmia in Elderly Patients with CHD. 24 h dynamic electrocardiogram diagnosis results showed that 168 cases were positive and 29 cases were negative. The sensitivity, specificity, accuracy, positive predictive value, and negative predictive value were 96.55%, 96.63%, 95.63%, 98.25%, and 82.86%, respectively, as shown in Table 2.

3.3. Comparison of the Diagnostic Performance of the Two Groups of Inspection Methods. Comparing the diagnostic performance of the two groups, the diagnostic performance of 24 h dynamic electrocardiogram was significantly better than that of a conventional electrocardiogram ($P < 0.05$), as shown in Table 3.

3.4. Comparison of the Detection Rate of Arrhythmia Types between the Two Inspection Methods. In the 24-hour dynamic electrocardiogram test of all patients, there are four arrhythmia types including ventricular tachycardia, ventricular arrhythmia, atrial arrhythmia, and supraventricular tachycardia. The detection rate of arrhythmia types in the 24 h dynamic electrocardiogram group was 80.58% (166/206), which was significantly higher than that in the conventional electrocardiography group, which was 70.39% (145/206) ($X^2 = 5.784$, $P < 0.05$), as shown Figure 1.

4. Discussion

CHD is also known as ischemic heart disease. When the continuous release of cytokines makes fibrous adipose tissue lesions and in the blood pressure, vascular branch formation and platelet aggregation, and other abnormal hemodynamic conditions, led to arterial intima, function damage, and atherosclerosis. Atherosclerosis is one of the main pathological mechanisms of CHD. Atherosclerosis and CHD are common diseases that lead to organ diseases, myocardial ischemia, and hypoxia. Relevant studies [9] have confirmed that early diagnosis and treatment are particularly important for improving the prognosis of patients with CHD. However, for patients with asymptomatic myocardial ischemia, although there is objective evidence of myocardial ischemia, there is no clinical symptom of myocardial ischemia, so even if patients frequently suffer from myocardial ischemia, the optimal time for diagnosis and treatment is still delayed because of no pain.

Coronary angiography, as the gold standard for diagnosing CHD, can quantitatively measure coronary lesions by puncturing the artery with a custom-made catheter and visualize it with a contrast agent and observe the arterial blood flow and myocardial perfusion to select an appropriate treatment method. However, coronary angiography is expensive and requires certain medical equipment and technology, so it cannot be widely used in some grass-roots hospitals and township hospitals [10]. Therefore, it is extremely important to find an effective early diagnosis method for patients.

As one of the inspection methods to reflect the bioelectric changes of human myocardial cells, electrocardiography can observe whether there is myocardial ischemia and the existence of ischemic blood vessels to diagnose the disease. However, routine electrocardiography detects the

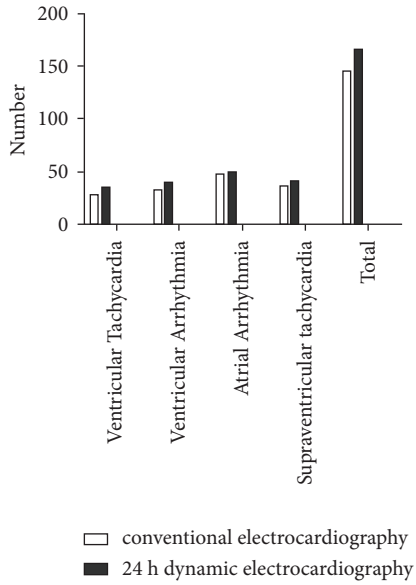

Figure 1: Comparison of detection rates of arrhythmia types between the two inspection methods (*n* (%)).

resting state of the patient, which may lead to misdiagnosis or missed diagnosis of the patient, thus affecting the follow-up treatment [11]. The emergence of dynamic electrocardiography has brought good news to patients and clinicians. As one of the clinical noninvasive diagnostic methods, it has the advantages of being affordable, it is easy to be operated, and it is noninvasive. It can continuously record the ST fluctuation trend, heart rate variability, heart rhythm, and other electrical signal data in different states within 24 hours and analyze the changes of the heart in active and resting states through 12 leads. On the one hand, it can also analyze the relationship between ST fluctuation and time, monitor the changes in patients' hemodynamics, and determine the lesion site to determine whether the patient is asymptomatic myocardial ischemia [12]. On the other hand, in the diagnosis of arrhythmia, it is possible to understand the characteristics of arrhythmia occurrence, duration, attack frequency, etc., to clarify the type of disease, to effectively improve the detection rate, to provide a scientific basis for clinical treatment and diagnosis, and to take preventive measures as soon as possible [13]. The results of this study showed that the diagnostic effect of 24 h dynamic electrocardiography was better than that of conventional electrocardiography, and the detection rate of arrhythmia types was also significantly higher than that of conventional electrocardiography, indicating that the diagnostic effect of 24 h dynamic electrocardiography was more advantageous. The reason for this may be that, compared with conventional electrocardiography, 24h electrocardiography examination can observe the nature of coronary lesions through angiography, and with the help of multi-lead synchronous, long-term and continuous monitoring of electrocardiography changes, the scope of diagnosis can be expanded, and patients' resting and active symptoms can be expanded. 24-h dynamic electrocardiography has many advantages, for example, it can record all types of arrhythmia, ST segment, *T* wave, and heart rate in detail in patients, providing important reference information for clinical diagnosis and treatment. In addition, patients can wear it tightly, which can reduce restrictions on their activities and is more acceptable to patients [14].

To sum up, 24 h dynamic electrocardiography can play a great advantage in detecting electrocardiography signals in asymptomatic myocardial ischemia with arrhythmia in elderly patients with CHD, and its diagnostic efficiency and arrhythmia detection rate is significantly higher than those of conventional electrocardiography. In addition, compared with arteriography, its detection cost and equipment requirements are relatively low and simple, and there is little difference from conventional electrocardiography. Therefore, 24-hour dynamic electrocardiography is of great significance in the early diagnosis, treatment, and prevention of patients with CHD and arrhythmia, which is worth popularizing.

Data Availability

The data can be obtained from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Application Analysis of Multidisciplinary Diagnosis and Treatment Nursing Mode Based on Doctor-Nurse-Integration for Stroke Patients Undergoing Emergency Intervention Surgery

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] H. Zhong, A. Liang, H. Luo et al., "Application Analysis of Multidisciplinary Diagnosis and Treatment Nursing Mode Based on Doctor-Nurse-Integration for Stroke Patients Undergoing Emergency Intervention Surgery," *Emergency Medicine International*, vol. 2022, Article ID 6299676, 9 pages, 2022.

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Research Article

Application Analysis of Multidisciplinary Diagnosis and Treatment Nursing Mode Based on Doctor-Nurse-Integration for Stroke Patients Undergoing Emergency Intervention Surgery

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Purpose. To analyze the application value of multidisciplinary diagnosis and treatment (MDT) nursing mode based on doctor-nurse-integration for stroke patients undergoing emergency intervention surgery. *Methods*. In this study, a historical comparative study method was adopted. 118 stroke patients and medical staff (9 doctors and 11 nurses) who met the diagnosis and inclusion criteria of emergency intervention surgery admitted from July 2021 to February 2022 were treated clinically according to the traditional medical care mode (TMC group), 87 stroke patients and medical staff (9 doctors and 11 nurses) who met the diagnosis and inclusion criteria of emergency intervention surgery admitted from February 2022 to June 2022 were treated and cared according to the MDT nursing mode based on medical integration (MDT group). Comparison of perioperative time indicators, postoperative outcome indicators, treatment compliance, secondary complications and visit satisfaction between the two groups of patients, and comparison of cooperation satisfaction between the two groups of medical staff. *Results*. The MDT group had shorter onset—emergency physician's reception time, arrival at CT room—completion time of CT/MR, notify intervention chamber—arrival time at catheter chamber, admission—femoral artery puncture time, admission—first vessel recanalization time, mean postural restraint time than the TMC group ($P < 0.05$). The postoperative mortality rate in the MDT group (5.75%) was comparable to that in the TMC group (8.47%) ($P > 0.05$); the postoperative disability rate in the MDT group (28.74%) was less than that in the TMC group (45.76%) ($P < 0.05$); the NIHSS score in the MDT group was lower than that in the TMC group, and the FMA score and BI score were both higher than those in the TMC group ($P < 0.05$). The MDT group had higher treatment compliance than the TMC group, fewer secondary complications than the TMC group, and higher patient visit satisfaction and medical staff cooperation satisfaction than the TMC group ($P < 0.05$). *Conclusion*. The implementation of the MDT nursing mode based on the doctor-nurse-integration for stroke patients undergoing emergency intervention surgery can improve the work efficiency of rescuing patients, improve the clinical treatment outcome of patients, and improve the satisfaction of doctors, nurses, and patients.

1. Introduction

The incidence of stroke in China is currently on the rise, with more than half of those who survive showing varying degrees of loss of ability to perform daily activities. A study by Barthels and Das [1] showed that the most significant disease causing long-term disability in Western countries is stroke and that the functional impairment of stroke sequelae severely reduces the quality of life of patients. Intravenous thrombolysis is the standard of care for acute ischemic stroke (AIS) [2]. Studies [3] have shown that mechanical thrombectomy has become the mainstay of treatment for large vessel occlusion in AIS and is effective in reducing the mortality and disability rates in AIS patients. However, due to factors such as the short time window for treatment, only a small number of patients are able to receive timely and

effective treatment. Therefore, an efficient stroke care system that works within a limited time window is key to improving the efficiency of care [4]. Multidisciplinary diagnosis and treatment (MDT) refers to the diagnosis and treatment mode in which two or more disciplines in the clinic can put forward the best treatment plan for a clinical disease through multidisciplinary expert discussion [5]. In recent years, MDT has become an important diagnosis and treatment mode in the international medical field, promoting multidisciplinary cooperation and improving diagnosis and treatment efficiency and success rate [6]. In addition, the cooperative behavior of doctors and nurses is also an important factor that directly affects the medical quality, medical relations, patient health solutions, and patient satisfaction [7, 8]. The clinical nursing mode of doctor-nurse-integration requires nurses to integrate the idea of doctor and patient participation in clinical nursing work such as nursing procedures and health education, through benign communication and good cooperation, the doctors and nurses jointly formulate diagnosis and treatment plans to realize the complementarity of specialized knowledge and professional skills between the doctors and nurses, patients and caregivers receive consistent and standardized scientific rehabilitation guidance and help from different aspects, providing a good treatment and nursing environment for patients. The purpose of this study is to explore the application value of MDT nursing model based on doctor-nurse-integration in stroke patients undergoing emergency intervention surgery.

2. Materials and Methods

2.1. Research Object. In this study, a historical comparative study method was adopted. 118 stroke patients and medical staff (9 doctors and 11 nurses) who met the diagnosis and inclusion criteria of emergency intervention surgery admitted from July 2021 to February 2022 were treated clinically according to the traditional medical care mode (TMC group), 87 stroke patients and medical staff (9 doctors and 11 nurses) who met the diagnosis and inclusion criteria of emergency intervention surgery admitted from February 2022 to June 2022 were treated and cared according to the MDT nursing mode based on medical integration (MDT group). Inclusion criteria: those who met the American Heart Association [9] diagnostic criteria for AIS and confirmed the diagnosis in combination with CT or MRI; those who had a complete medical history; those who were aware of the study and signed to confirm; those who had their first episode; those who were within 24 h of onset to admission; and those over 18 years of age. Exclusion criteria: those with recurrent stroke; those with severe circulatory, digestive, respiratory, endocrine system diseases, or malignant tumors that seriously affect the quality of life; those with severe aphasia, cognitive impairment, dementia, and psychosis, unable to cooperate with the investigator; those with a clear history of bleeding tendencies or contraindications to endovascular treatment, those who were pregnant, and coagulation disorders; those who refused to agree to sign the interventional procedure consent form; those who withdrew themselves from the included cases and did not complete treatment. Statistical differences in Table 1 for baseline information of both groups were analysed, $P > 0.05$, comparable.

3. Care Methods

3.1. TMC Group: Clinical Treatment and Care According to the Traditional Medical Care Work Pattern. (1) Initial screening of ischemic stroke patients, emergency triage nurses quickly identified stroke patients based on their condition within 10 minutes, and a greenway would be activated for suspected stroke patients to notify the neurology resident and escort the patient to the resuscitation unit. (2) Those eligible for initial screening into the greenway, with a diagnosis considered to be AIS, onset <24 h and age 18 years or older. (3) After completing the preliminary screening preparation and entering the greenway, the nurses in the rescue room quickly established venous channels, collected test samples, inquired about the medical history, judged the condition, and improved the preparations before ECG and CT examination. The neurology resident arrived for consultation within 15 minutes of notification, and completed the CT examination within 25 minutes, the CT examination report was issued within 45 minutes. (4) Within 60 minutes, the resuscitation room nurse cooperated with thrombolytic therapy in the CT room. If the CT result showed that the large vessel was occluded, it was immediately sent to the interventional catheterization chamber for revascularization. (5) Preparation for interventional embolectomy, the emergency nurse and the interventional catheterization chamber nurse conducted a handover according to the routine procedure, three checks-seven pairs-one turn to look at the skin condition of each area, and the surgical nurse performed various checks and assessments on the patient, including the consent form for the procedure, the time of reception, the medication, the skin condition, the pipeline condition, and the level of cooperation. (6) Preparation for entry into the interventional suite, patients were allowed to lie flat on the DSA machine bed and placed in a good position, those undergoing head radiography were fixed with special pillows. The ECG monitoring instrument was connected, various pipelines and corresponding rescue instruments were fixed, and the venous indwelling needle was unblocked. (7) Communicate and respond with neurology physician after operation.

3.2. MDT Group: Clinical Treatment and Care According to the MDT Nursing Mode Based on Doctor-Nurse-Integration. (1) Formation of an stroke doctor-nurse-integration MDT team: The doctor-nurse-integration clinical care model was adopted, construction of specialized medical care unit for stroke, which provided treatment, nursing, rehabilitation, health education, and other medical and nursing services for stroke patients in the form of doctor-nurse-integration team and multidisciplinary team. The core team consisted of 2 experienced neurologists, 1 emergency room physician, 2 imaging physicians, 1 laboratory physician, 1 anesthetist, 1

Table 1: Baseline information.

Information	TMC group ($n = 118$)	MDT group ($n = 87$)	t/χ^2	P
Age ($M \pm$ SD, years old)	65.14 ± 14.93	66.98 ± 11.73	0.953	0.342
Male (n (%))	75 (63.56)	57 (67.52)	0.084	0.772
Tobacco/alcohol history (n (%))	73 (61.86)	50 (57.47)	0.403	0.526
Education level (n (%))			1.085	0.581
Primary and below	57 (48.31)	39 (44.83)		
Secondary and below	49 (41.53)	35 (40.23)		
University and above	12 (10.16)	13 (14.94)		
Marriage status (n (%))			0.589	0.899
Married	93 (78.80)	72 (82.76)		
Divorced	6 (5.08)	4 (4.60)		
Widowed	13 (11.02)	8 (9.20)		
Unmarried	6 (5.08)	3 (3.44)		
Occupation (n (%))			1.300	0.522
On the job	12 (10.17)	11 (12.64)		
Retired	62 (52.54)	50 (57.47)		
Other	44 (37.29)	26 (29.89)		
Concomitant disease (n (%))			0.361	0.835
1 kind	26 (22.03)	18 (20.69)		
2 kinds	52 (44.07)	42 (48.28)		
≥3 kinds	40 (33.90)	27 (31.03)		

rehabilitation physician, 2 nurse-in-charge, 1 technician each in the interventional theater, and 9 trained specialist stroke nurses. All graduated at least 5 years ago and had been in their specialty for at least 3 years, with a relatively fixed mix and grouping of doctors and nurses according to their respective titles and ranks. (2) Development of job responsibilities for members within the group: The director of neurology and the head nurse of the interventional operation room served as the group leader and deputy group leader, respectively, the chief resident physician of neurology coordinated the organization and implementation in a unified manner, and jointly formed the core management team of stroke doctor-nurse-integration MDT team. The 3 persons were responsible for developing the workflow of the team and arranging for the relevant physicians in charge of their specialty to actively cooperate and participate in stroke treatment; a monthly multidisciplinary case discussion was conducted to optimize the treatment process; were responsible for systematic training of the professional staff to keep abreast of the development of stroke treatment at home and abroad. The other members of the team, under the decision and guidance of the core team, followed the coordination and arrangements, were responsible for the implementation and dissemination of information involving the treatment of their specialty, and dynamically reported on the stage of the process and the status of the patient's condition. (3) Integration work of the team: ①According to the guideline [10] and the operation system of our hospital, the neurologist developed the flow chart of multidepartment linkage treatment for AIS patients with emergency interventional treatment (Figure 1). ②A flow chart for rapid identification of stroke patients was prominently displayed in the emergency department, and doctors and nurses used a scale [11] to quickly identify and activate the greenway. ③Measures for greenway access: Patients eligible for greenway access were given priority treatment by special arrangement according to the principle of saving first and paying later. A stroke unit was set up in the resuscitation room and doctors chose the greenway entrance in the doctor's consultation system for medical prescriptions, test orders and checklists, etc. Test specimen tubes were marked with green ribbons and placed on the conveyor belt to reach the testing department directly and the testing department was informed by telephone. (4) Clinical implementation: ①Establishment of an hospital stroke emergency greenway App: Relevant department personnel or doctors on duty push the information of patients treated by greenway on the App interface, the content included basic information, contact information, creation time, push time, data of specific time period, basic vital signs (blood pressure, body mass, blood collection time, rapid blood glucose results, electrocardiogram, NIHSS score, etc.), and treatment information. ②Shorten the treatment time: the consent for interventional operation was signed together with the informed consent for CT examination and thrombolysis, and the intervention room was started in advance. The neurologist and the emergency room nurse nurse prepared the intravenous thrombolysis kit and resuscitation drugs and sent the patient to the CT room. If a large vessel occlusion was found during the CT examination, the patient did not need to wait for the imaging report, and intravenous thrombolysis was performed immediately if it was within the thrombolysis time window, otherwise the patient was sent directly to the interventional catheterization laboratory for revascularization. ③Simplify shift handover: Emergency nurses and nerve physician confirmed the surgical consent form and picked up the patient straight into the interventional operating room, other patient information can be viewed on the App after entering the surgery, shortening shift handover time. ④Emergency protocol for stroke surgery was established to train nurses in emergency response and to improve interventional techniques of

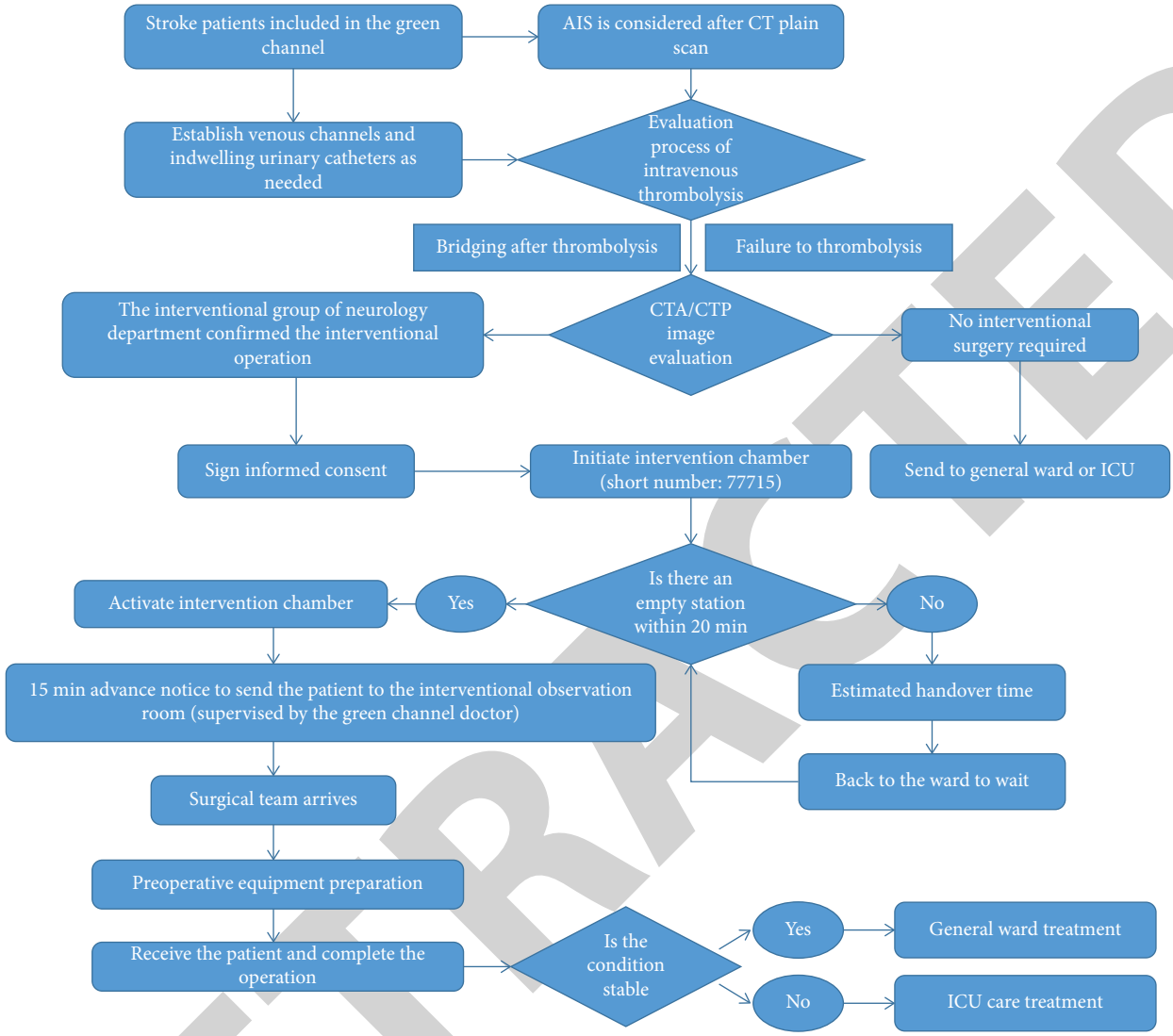

Figure 1: Flow chart of multidepartment linkage treatment for AIS patients with emergency interventional treatment.

neurologists. The nurses in the operating room should be trained and assessed on rescue skills every month to ensure that everyone was proficient in nerve interventional operation. The surgical materials and drugs were backed up and put in special use, and there was a special logo for the stroke greenway, so as to be in emergency at any time; interventional operation room nurses achieved the intervention room within 20 minutes after receiving the call, so as to quickly cooperate with doctors for surgery and achieve the purpose of treatment. ⑤Doctors and nurses worked together to formulate the rescue process and nursing focus of emergency intervention surgery for stroke, fully evaluate the patient's consciousness state, activity level, cooperation degree, upper limb muscle strength level, etc., and then evaluate the necessity of physical restraint of the patient, if restraint was needed, informed consent was obtained, the restraint level was judged, and the restraint was carried out safely and effectively to reduce the patients' anxiety, uncontrolled consciousness, and noncooperation during the operation. Restraint and fixation positions: head, upper limbs, lower limbs, and pipeline (infusion tube, urinary tube), it was ensured that various monitoring cables were firmly connected to avoid falling off and affecting the observation of the disease and the operation of doctors. ⑥Complication management: in case of complications such as technical or hyperperfusion hemorrhage and massive cerebral infarction during and after surgery, the condition and imaging information would be pushed in the app in time and neurologist would be contacted to follow up the treatment and play the role of MDT team.

3.3. Observation Index

3.3.1. Perioperative Time Indicators. The main categories included onset—emergency physician's reception time, arrival at CT room—completion time of CT/MR, notify intervention chamber—arrival time at catheter chamber,

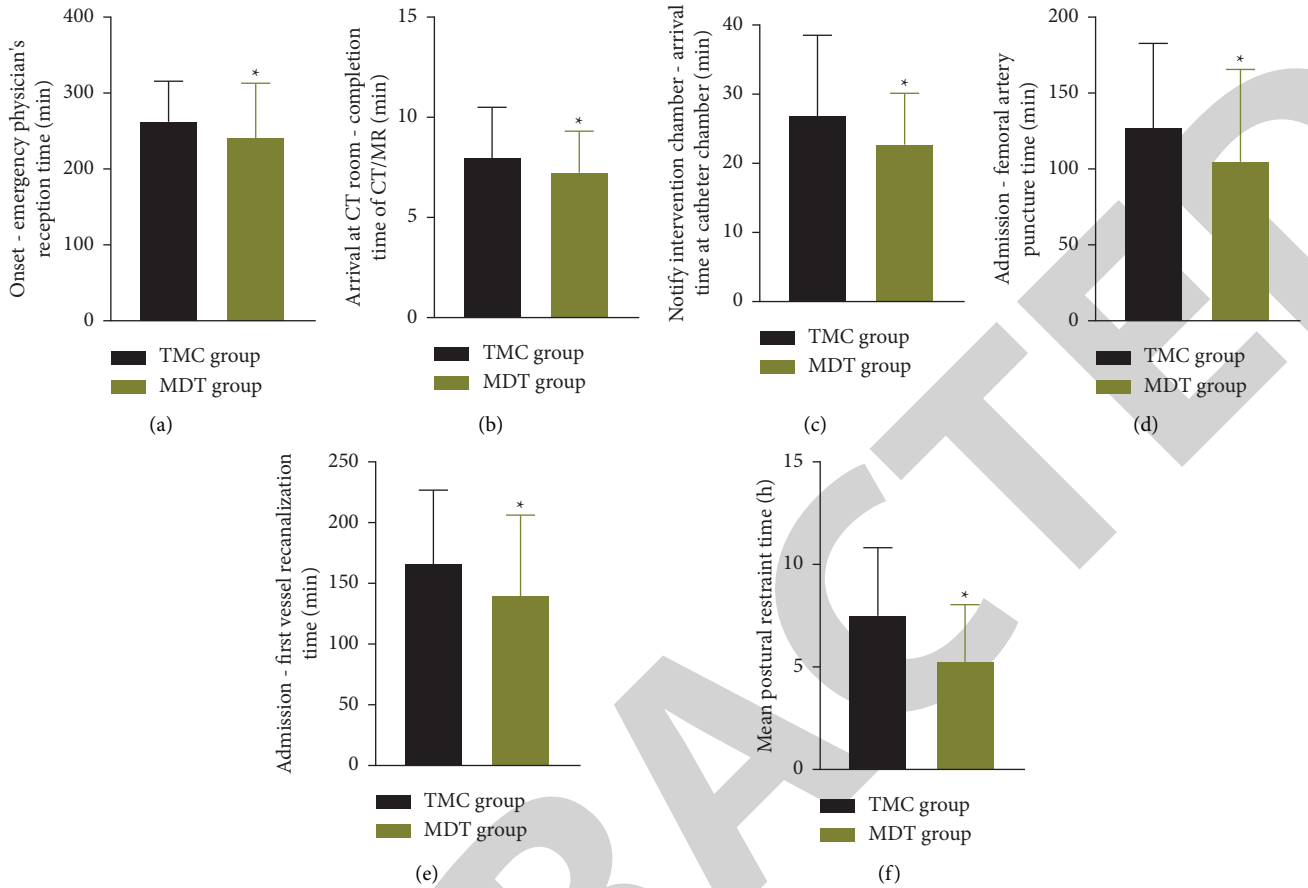

Figure 2: Perioperative time indicators. Note: (a) Onset—emergency physician's reception time (min), (b) arrival at CT room—completion time of CT/MR (min), (c) notify intervention chamber—arrival time at catheter chamber (min), (d) admission—femoral artery puncture time (min), (e) admission—first vessel recanalization time (min), (f) mean postural restraint time (h). comparison of same time indicators between groups, $^*P < 0.05$.

admission—femoral artery puncture time, admission—first vessel recanalization time, mean postural restraint time.

3.3.2. Postoperative Outcome Indicators. The main components were mortality rate, disability rate, National Institute of Health stroke scale (NIHSS) score, Fugl-Meyer assessment (FMA) score, and Barthel index (BI) score.

3.3.3. Treatment Compliance. Compliance was assessed on the basis of the patient's treatment performance and was graded into three levels: excellent (active and cooperative with nursing operations), good (able to cooperate with nursing operations when supervised by the nurse), and inferior (presence of significant resistance or refusal behavior).

3.3.4. Secondary Complications. The occurrence of postoperative complications such as shoulder subluxation, shoulder hand syndrome, foot drop, inversion of the foot, joint contracture, and urinary tract infection was documented.

3.3.5. Satisfaction. This included 2 levels of patient visit satisfaction and medical staff cooperation satisfaction. Both were designed by the MDT team itself.

3.4. Statistical Methods. SPSS 22.0 software was applied. For statistical data (%), χ^2 test was used for comparison between the groups. For measurement data ($M \pm SD$), t-test was used for comparison between the groups. $P < 0.05$ was considered a statistically significant difference.

4. Results

4.1. Perioperative Time Indicators. The MDT group had shorter onset—emergency physician's reception time, arrival at CT room—completion time of CT/MR, notify intervention chamber—arrival time at catheter chamber, admission—femoral artery puncture time, admission—first vessel recanalization time, mean postural restraint time than the TMC group, all with statistically significant differences ($P < 0.05$) (Figure 2).

4.2. Postoperative Outcome Indicators. The postoperative mortality rate in the MDT group (5.75%) was comparable to

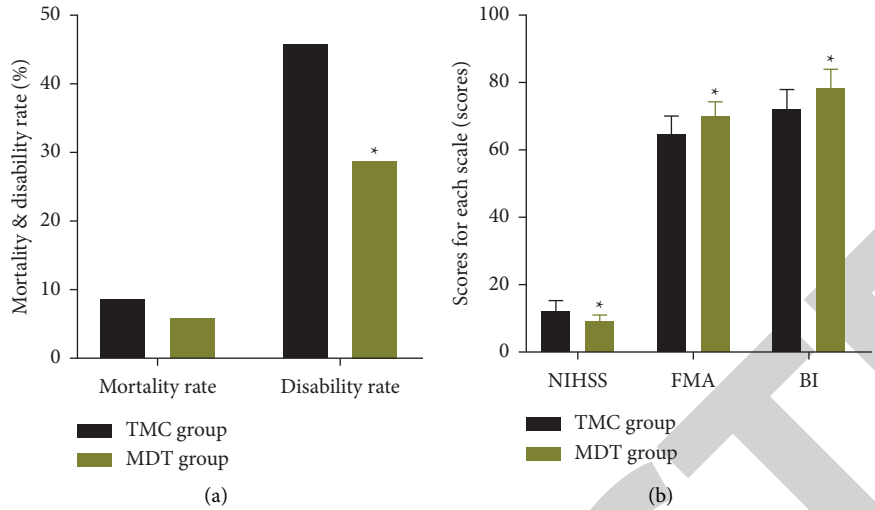

Figure 3: Postoperative outcome indicators. Note: (a) Mortality and disability rate (%), (b) scores for each scale (scores). Comparison of same outcome indicators between groups, $^{*}P < 0.05$.

Table 2: Treatment compliance.

Grade	TMC group ($n = 118$)	MDT group ($n = 87$)	χ^2	P
Excellent	50 (42.37)	48 (55.17)	3.288	0.070
Good	55 (46.61)	37 (42.53)	0.337	0.561
Inferior	13 (11.02)	2 (2.30)	5.613	0.018
Excellent good rate	105 (88.98)	85 (97.70)	5.613	0.018

Table 3: Secondary complications.

Complication	TMC group ($n = 118$)	MDT group ($n = 87$)	χ^2	P
Shoulder subluxation	20 (16.95)	6 (6.90)	4.570	0.033
Shoulder hand syndrome	28 (23.73)	10 (11.49)	4.964	0.026
Foot drop	20 (16.95)	5 (5.75)	5.869	0.015
Inversion of the foot	21 (17.80)	9 (10.34)	2.226	0.136
Joint contracture	14 (11.86)	5 (5.75)	2.229	0.135
Urinary tract infection	10 (8.47)	5 (5.75)	0.549	0.459

that in the TMC group (8.47%), and the difference was not statistically significant ($P > 0.05$); the postoperative disability rate in the MDT group (28.74%) was less than that in the TMC group (45.76%), and the difference was statistically significant ($P < 0.05$); the NIHSS score in the MDT group was lower than that in the TMC group, and the FMA score and BI score were both higher than those in the TMC group, and the difference was statistically significant ($P < 0.05$) (Figure 3).

4.3. Treatment Compliance. Treatment compliance was higher in the MDT group than in the TMC group, with a statistically significant difference ($P < 0.05$) (Table 2).

5. Secondary Complications

After care, the incidence of all types of secondary complications in Table 3 in the MDT group was less than that in the TMC group, and the difference in the incidence of shoulder subluxation, shoulder hand syndrome, and foot drop in the MDT group compared with the TMC group was statistically significant ($P < 0.05$).

6. Satisfaction

Patient visit satisfaction and medical staff cooperation satisfaction were both higher in the MDT group than in the TMC group, with statistically significant differences ($P < 0.05$) (Tables 4 and 5).

7. Discussion

AIS is the most common type of stroke in China, accounting for approximately 69.6% to 70.8% of all strokes [12]. Irreversible brain tissue damage can occur 4–6 min after the interruption of blood supply to the brain tissue in this disease, so time to resuscitation is critical to the success of treating patients with AIS [13]. The results of this study showed that the MDT group had a shorter

Table 4: Patient visit satisfaction.

Dimension	Score range	TMC group ($n = 118$)	MDT group ($n = 87$)	t	P
Satisfaction with inpatient guidance	2~10	7.95 ± 0.65	8.48 ± 0.70	5.584	<0.001
Satisfaction with doctors	2~10	9.26 ± 0.72	9.68 ± 0.47	4.745	<0.001
Satisfaction with nurses	4~20	18.14 ± 0.72	19.46 ± 0.50	14.684	<0.001
Satisfaction with doctor-nurse cooperation	4~20	17.70 ± 0.54	19.35 ± 0.62	20.298	<0.001
Satisfaction with doctor-patient communication	6~30	26.42 ± 1.03	28.22 ± 1.00	12.520	<0.001
Satisfaction with condition at discharge	5~25	22.51 ± 1.02	23.53 ± 0.76	7.855	<0.001
Total satisfaction of patient visits	23~115	102.45 ± 2.13	108.44 ± 1.74	21.471	<0.001

Table 5: Medical staff cooperation satisfaction.

Dimension	Score range	TMC group	MDT group	t	P
Doctor ($n = 9$)					
Doctor-nurse cooperation attitude	15~75	58.55 ± 7.60	67.32 ± 5.51	2.803	0.013
Doctor-nurse cooperation feeling	9~45	35.82 ± 3.22	40.87 ± 2.50	3.716	0.002
Nurse ($n = 11$)					
Doctor-nurse cooperation attitude	15~75	61.15 ± 6.52	68.05 ± 5.54	2.675	0.015
Doctor-nurse cooperation feeling	9~45	35.99 ± 4.40	42.36 ± 2.50	4.175	0.001

onset—emergency physician's reception time, arrival at CT room—completion time of CT/MR, notify intervention chamber—arrival time at catheter chamber, admission—femoral artery puncture time, admission—first vessel recanalization time than the TMC group ($P < 0.05$). The reason for this is that the MDT nursing mode based on doctor-nurse-integration has optimized and improved the clinical procedures for AIS patients, such as improving the rules and regulations, clarifying the division of labor among the team members, teamwork and close cooperation, and setting time limits for each step of the process, so that each member only needs to follow the rules to achieve good results, thus gaining time for resuscitation and significantly shortening the perioperative time indicators for AIS patients. Stroke patients are prone to consciousness disorder, agitation, delirium, thinking disorder, behavior, and movement abnormalities, and the risk of unplanned extubation is high, medical personnel often take physical restraint to prevent the occurrence of unplanned extubation and other accidents, but the standardization, rationality, and effectiveness of such restraint still need to be further examined [14, 15].It is urgent to establish a standard scheme of graded physical restraint for AIS patients undergoing interventional surgery. In this result, the mean posterior constraint time of the patients in the MDT group was shorter than that of the TMC group ($P < 0.05$), suggesting that the application of MDT nursing mode based on doctor-nurse-integration can improve the accuracy of the assessment of physical constraint of stroke patients by medical staff, shorten the average body constraint time of patients, and actively promote the clinical application of standardized physical constraint management.

Previous studies [16] showed that intravascular interventional therapy with early stent removal was superior to standard medical treatment in AIS patients. The advantage of stent thrombectomy technology is that it can provide a longer treatment time window and a higher recovery rate, thus improving the clinical outcome of AIS patients [17]. In this result, the postoperative disability rate of the MDT group is lower than that of the TMC group ($P < 0.05$), suggesting that the application of the MDT nursing mode based on doctor-nurse-integration can improve the clinical outcome of AIS patients and reduce the postoperative disability rate, which is consistent with the study of Grigonyte [18]. This is mainly because the collaborative response ability of the multidisciplinary team in the MDT group can effectively shorten the treatment time window, which is very important. Emergency greenway before surgery, standardized care behaviors and resuscitation procedures during surgery, improved sickness observation and resuscitation skills of nurses, multidisciplinary assistance in timely management of postoperative complications, and timely postoperative rehabilitation guidance can improve both the efficiency of resuscitation and the prognosis of patients, thus reducing the incidence of disability. In this result, the NIHSS score of the MDT group was lower than that of the TMC group, and the FMA score and BI score were higher than those of the TMC group ($P < 0.05$), suggesting that the application of MDT nursing mode based on doctor-nurse-integration can promote the recovery of neurological and motor functions and improve the prognosis of survival quality in AIS patients after intervention surgery. The reason for this may be due to the fact that the MDT group was able to effectively shorten the time to implement various life-saving measures during the treatment of AIS patients, and the patients were able to receive timely treatment, which facilitated the recovery of neurological and motor functions after surgery. Also, after rapid thrombectomy, the brain tissue is reperfused, which effectively reduces brain tissue damage and facilitates the recovery of neurological function, thus improving in-hospital stroke care.

The assessment of needs and potential complications associated with endovascular interventions in stroke patients in the perioperative period is essential to protect patient safety [19]. In this study, the MDT group had higher treatment compliance than the TMC group, fewer secondary

complications than the TMC group, and higher patient visit satisfaction and medical staff cooperation satisfaction than the TMC group ($P < 0.05$). The reason for this is that in the care model for patients in the MDT group, the medical staff of various specialties have a reasonable division of labor, clear responsibilities, skillfull cooperation, powerful handling, and clear treatment procedures, which has promoted the improvement of teamwork among medical staff of various departments, and patients feel that there is no waiting for emergency treatment, examination, consultation, and treatment, and that various treatment measures are in place in a timely manner, which has improved patients' sense of safety and trust in the consultation, resulting in high compliance with treatment and high satisfaction with the consultation. This result is also consistent with that of He et al. [20, 21]. In addition, the MDT group's nursing measures include the implementation of perioperative health education, intraoperative optimal care, and postoperative rehabilitation guidance for patients under the integration of medical and nursing care. Through multidisciplinary collaborative consultation and nursing interventions, it not only increases the communication and exchange between doctors, nurses, and patients, but also helps anesthesiologists and surgeons to improve the efficiency of lifesaving treatment, reduces patients' negative emotions and stress reactions to fear of surgery, promotes patients' postoperative rehabilitation and enhances patients' satisfaction with their visit [22].

8. Conclusion

The implementation of the MDT nursing mode based on the doctor-nurse-integration for stroke patients undergoing emergency intervention surgery can improve the work efficiency of rescuing patients, improve the clinical treatment outcome of patients, and improve the satisfaction of doctors, nurses, and patients.

Data Availability

The data used to support the findings of this study are available from the associated author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Changes in Thrombelastography in Patients with Acute Exacerbation of Chronic Obstructive Pulmonary Disease and the Relationship with Lung Function

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] Y. Zhou, J. Yu, and H. Zhou, "Changes in Thrombelastography in Patients with Acute Exacerbation of Chronic Obstructive Pulmonary Disease and the Relationship with Lung Function," *Emergency Medicine International*, vol. 2022, Article ID 4313394, 7 pages, 2022.

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Research Article

Changes in Thrombelastography in Patients with Acute Exacerbation of Chronic Obstructive Pulmonary Disease and the Relationship with Lung Function

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Purpose. To analyze the changes in thrombelastography (TEG) in patients with acute exacerbation of chronic obstructive pulmonary disease (AECOPD) and the relationship with indicators related to lung function. *Methods*. 100 patients with AECOPD admitted to our hospital from May 2021 to May 2022 were selected as the AE group, and another 80 patients with a stable phase of COPD in the same period were selected as the SP group. Fresh blood specimens were collected from both groups, and TEG-related indicators (*R* value, *K* value, α-angle, MA value) were measured using the TEG technique, and lung function-related indicators (FEV1, FVC, FEV1/FVC, FEV1%) were measured using a lung function meter, and the correlation between TEG-related indicators and lung function-related indicators was analyzed. *Results*. Patients in the AE group had lower *R* and *K* values and higher α-angle and MA values than those in the SP group, all with statistically significant differences ($P < 0.05$). Patients in the AE group had lower FEV1, FVC, FEV1/FVC, and FEV1% levels than those in the SP group, all with statistically significant differences ($P < 0.05$). Correlation analysis showed that the *R* value in TEG of AECOPD patients was positively correlated with pulmonary function-related indicators (FEV1, FVC, FEV1/FVC, FEV1%) ($r = 0.565, 0.529, 0.447, 0.527$, all $P < 0.001$); *K* value was positively correlated with pulmonary function-related indicators (FEV1, FVC, FEV1/FVC, FEV1%) ($r = 0.512, 0.567, 0.459, 0.439$, all $P < 0.001$); α-angle was inversely correlated with pulmonary function-related indicators (FEV1, FVC, FEV1/FVC, FEV1%) ($r = -0.498, -0.372, -0.408, -0.424$, all $P < 0.001$); MA value was inversely correlated with lung function-related indicators (FEV1, FVC, FEV1/FVC, FEV1%) ($r = -0.459, -0.429, -0.394, -0.403$, all $P < 0.001$). *Conclusion*. There is a correlation between TEG-related indicators and lung function-related indicators in AECOPD patients, both of which can guide the diagnosis and treatment process of the disease and are worthy of clinical promotion. The clinical registration number is EA2021086.

1. Introduction

Chronic obstructive pulmonary disease (COPD) is a common, preventable, and treatable respiratory disease characterized by persistent respiratory symptoms and airflow limitation and is a global public health challenge due to its high prevalence, disability, and mortality. Cross-sectional foreign epidemiological studies have shown that the prevalence of COPD is 3.6% in adults aged 45 years and older and increases with age [1]. In China, approximately 100 million people suffer from COPD, with an overall prevalence of 8.6% [2]. And by 2020, COPD becomes the third most deadly disease in the world [3]. In the course of COPD, patients sometimes have aggravated respiratory symptoms and progressive decline in lung function, and even causes respiratory failure and systemic inflammatory response syndrome, which is called acute exacerbation of chronic obstructive pulmonary disease (AECOPD) [4, 5]. At present, AECOPD can be diagnosed and evaluated clinically by serum inflammatory factor levels and lung function indicators [6, 7]. However, with the complex causes of acute exacerbations in COPD patients, the lack of specificity of inflammatory factors and the physical requirements of pulmonary function tests for patients, there is a clinical need to find more specific and sensitive indicators to support diagnosis and assessment. Previous studies [8] have pointed

out that patients with COPD have abnormal coagulation-fibrinolysis function, and the high coagulation state in the acute exacerbation period may lead to pulmonary hypertension, right heart injury, pulmonary vascular microthrombotic embolism, etc., which may affect the prognosis of patients. It is therefore essential to assess the coagulation status of patients with AECOPD. However, changes in the four coagulation indicators only reflect a certain stage of the coagulation mechanism and do not reflect the coagulation status within the blood cells, which is a limitation. Thrombelastography (TEG) is an immediate bedside test, which uses whole blood specimens for testing and includes the influence of blood cells as well as plasma components on the coagulation process, simulating the entire process in the human body from the beginning of coagulation to fibrinolysis and can effectively reflect the function of coagulation factors, fibrinogen, platelets, etc., making up for the deficiencies of the four indicators of coagulation [9, 10]. This study analyses the changes in TEG and the relationship with lung function-related indicators in patients with AECOPD and evaluates the value of TEG in this group of patients. It is reported as follows:

2. Materials and Methods

2.1. Research Object. 100 patients with AECOPD admitted to our hospital from May 2021 to May 2022 were selected as the AE group, and another 80 patients with a stable phase of COPD in the same period were selected as the SP group. Inclusion criteria were as follows: (1) diagnostic criteria for AECOPD referred to the 2018 edition of the global initiative for chronic obstructive lung disease (GOLD) [11]: patients with progressively worsening dyspnea, chronic cough or sputum; history of long-term smoking and occupational or environmental exposure to noxious gases; pulmonary function tests showing FEV1/FVC < 0.70 after inhalation of bronchodilators, excluding other diseases causing airflow limitation; (2) those with complete information on TEG, pulmonary function tests, coagulation tests, and arterial blood gas analysis; (3) those who voluntarily participated in this study. Exclusion criteria were as follows: (1) combination of other acute events such as acute stroke and acute myocardial infarction; (2) combination of bronchiectasis, bronchial asthma, and active tuberculosis; (3) previous history of venous thromboembolism, cerebral infarction, myocardial infarction, etc.; (4) those who had taken antiplatelet agents or anticoagulants within the last 2 weeks; (5) history of major surgical trauma within 6 months; (6) combination of tumor and immune system; (7) those with significant hematological disorders or severe hepatic or renal insufficiency.

2.2. Research Methods

2.2.1. Baseline Information Collection. Baseline information on gender, age, body mass index (BMI = kg/m^2), duration of illness, number of days of exacerbation, and smoking history were collected from all patients. The comparison of baseline information between the two groups is shown in Table 1 and was not statistically significant ($P > 0.05$) and was comparable.

2.2.2. TEG Examination. Fresh blood specimens were collected from both groups in the early morning of the day following enrollment, and TEG-related indicators, including reaction of blood coagulation time (R value), kinetics time (K value), alpha coagulation angle (α-angle), and maximum amplitude (MA value), were measured using a TEG 5000 thromboelastography. The normal reference ranges for each of the TEG indicators and the significance of their detection are shown in Table 2.

2.2.3. Pulmonary Function Examination. In the awake state of all patients, lung function-related indicators were measured using the German JAEGFR lung function test, including forced expiratory volume in one second (FEV1), forced vital capacity (FVC), FEV1/FVC, and FEV1 as a percentage of the expected value (FEV1%).

2.3. Statistical Methods. SPSS 22.0 was applied to analyze the statistical data and GraphPad Prism 8.0.2.263 was applied to plot the graphs. The count data in the baseline information was expressed in (%), using the χ^2 test. The measurement data was expressed in ($\overline{x} \pm s$) and tested with t. The correlation between TEG-related indicators and lung function-related indicators was analyzed by Pearson correlation. $P < 0.05$ was statistically significant.

3. Results

3.1. Comparison of TEG Parameters for Both Groups. Patients in the AE group had lower R and K values and higher α-angle and MA values than those in the SP group, all with statistically significant differences ($P < 0.05$), as seen in Figure 1.

3.2. Comparison of Lung Function Parameters for Both Groups. Patients in the AE group had lower FEV1, FVC, FEV1/FVC, and FEV1% levels than those in the SP group, all with statistically significant differences ($P < 0.05$), as seen in Figure 2.

3.3. Correlation between R Value and Lung Function-Related Indicators in Patients with AECOPD. Correlation analysis showed that the R value in TEG of AECOPD patients was positively correlated with pulmonary function-related indicators (FEV1, FVC, FEV1/FVC, FEV1%) ($r = 0.565$, 0.529, 0.447, 0.527, all $P < 0.001$), as seen in Figure 3.

3.4. Correlation between K Value and Lung Function-Related Indicators in Patients with AECOPD. Correlation analysis showed that the K value in TEG of AECOPD patients was positively correlated with pulmonary function-related indicators (FEV1, FVC, FEV1/FVC, FEV1%) ($r = 0.512$, 0.567, 0.459, 0.439, all $P < 0.001$), as seen in Figure 4.

Table 1: Baseline information collection.

	AE group ($n = 100$)	SP group ($n = 80$)	χ^2/t value	P value
Gender (n, %)			0.037	0.848
Male	75	59		
Female	25	21		
Smoking history (n, %)			0.001	0.972
Yes	64	51		
No	36	29		
Age ($\overline{x}\pm s$, years old)	63.41 ± 6.12	62.91 ± 6.51	0.529	0.597
BMI ($\overline{x}\pm s$, kg/m^2)	22.75 ± 1.37	22.68 ± 1.41	0.336	0.737
Duration of illness ($\overline{x}\pm s$, years)	3.53 ± 1.05	3.62 ± 1.07	0.567	0.572
Days of exacerbation ($\overline{x}\pm s$, days)	4.29 ± 1.20	4.48 ± 1.22	1.048	0.296

Table 2: Reference ranges of TEG indicators and their significance for detection.

TEG indicator	Reference values	Significance for detection
R Value	5.00–10.00	Reflective of coagulation factor activity
K Value	1.00–3.00	Reflective of fibrinogen function
α-angle	53.00–72.00	Reflective of fibrinogen function
MA value	50.00–70.00	Reflective of platelet function

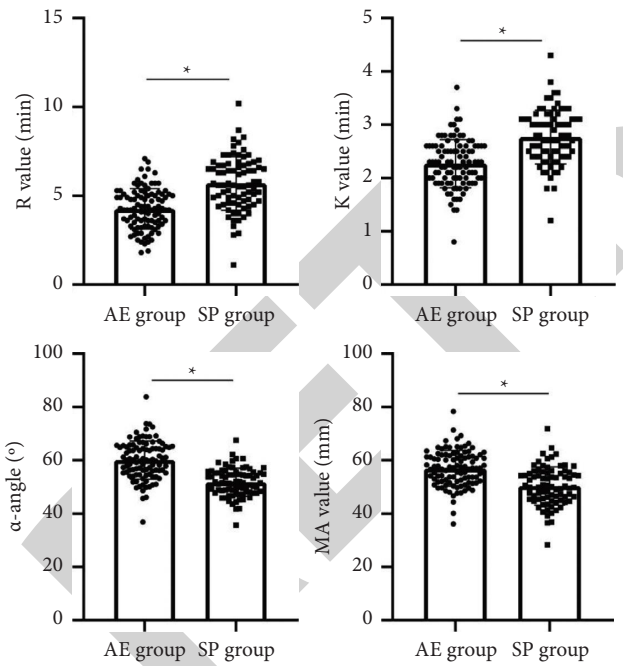

Figure 1: Comparison of TEG parameters for both groups. Note: * means the difference between groups for comparison, $P < 0.05$.

3.5. Correlation between α-Angle and Lung Function-Related Indicators in Patients with AECOPD. Correlation analysis showed that α-angle in TEG of AECOPD patients was inversely correlated with pulmonary function-related indicators (FEV1, FVC, FEV1/FVC, FEV1%) ($r = -0.498$, -0.372, -0.408, -0.424, all $P < 0.001$), as seen in Figure 5.

3.6. Correlation between MA Value and Lung Function-Related Indicators in Patients with AECOPD. Correlation analysis showed that MA value in TEG of AECOPD patients was inversely correlated with lung function-related indicators (FEV1, FVC, FEV1/FVC, FEV1%) (r −0.459, −0.429, −0.394, −0.403, all $P < 0.001$), as seen in Figure 6.

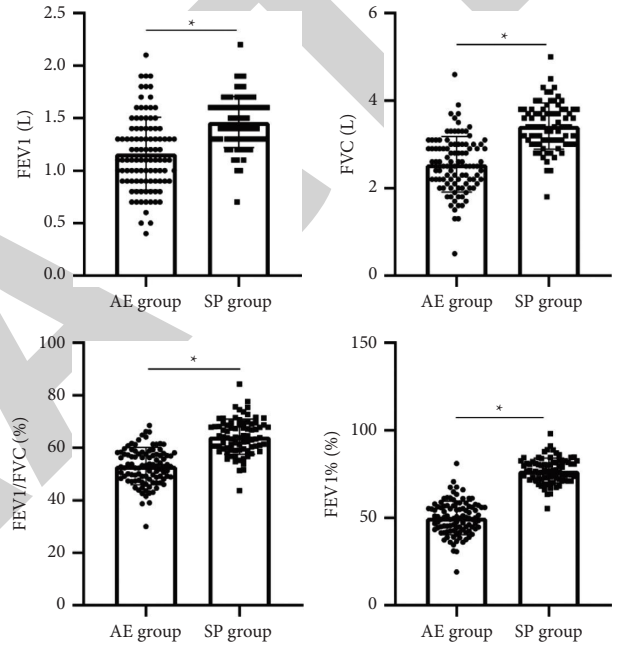

Figure 2: Comparison of lung function parameters for both groups. Note: * means the difference between groups for comparison, $P < 0.05$.

4. Discussion

Many studies [12–15] suggest that the body is in a long-term hypoxic state, which is easy to activate the coagulation system and promote the simultaneous occurrence of secondary fibrinolytic hyperfunction and hypercoagulability. Patients with AECOPD have long-term airflow restriction and hypoxia, resulting in an increase in the number of secondary red blood cells and a decrease in deformability, resulting in an increase in blood viscosity, promoting platelet adhesion and aggregation, and the formation of microthrombosis [16, 17]. There is no consensus on the indications for anticoagulation and the duration of anticoagulation in COPD patients. Therefore,

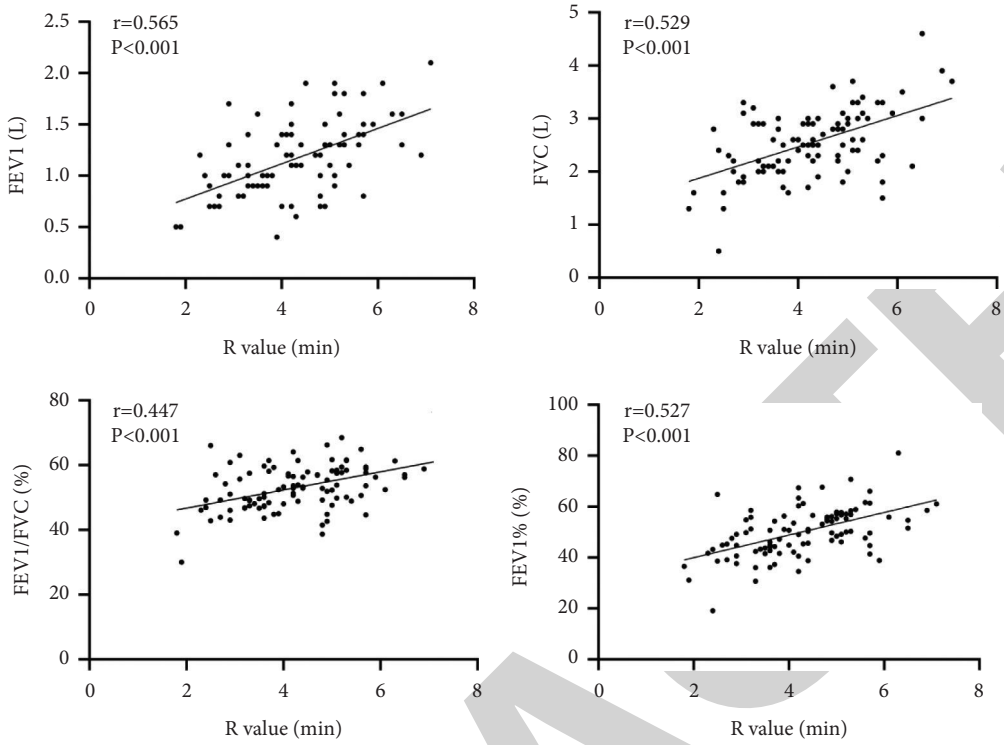

Figure 3: Scatter plot of correlation between *R* value and FEV1, FVC, FEV1/FVC, and FEV1% in patients with AECOPD.

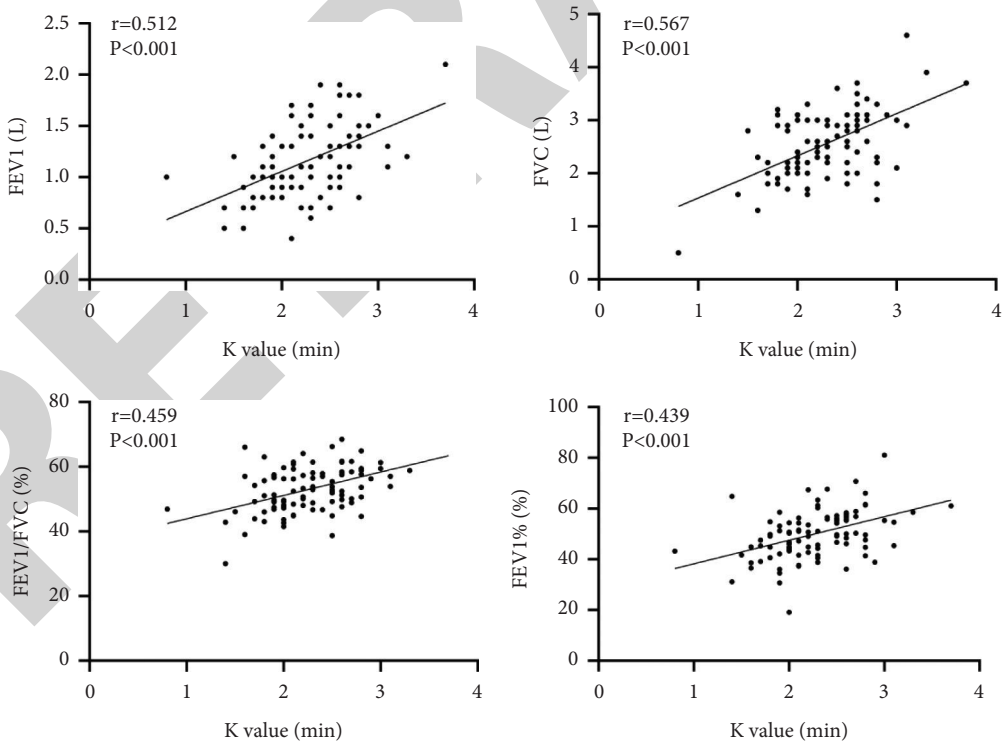

Figure 4: Scatter plot of correlation between *K* value and FEV1, FVC, FEV1/FVC, and FEV1% in patients with AECOPD.

the assessment of coagulation and fibrinolytic function in patients with AECOPD can provide an important reference for the anticoagulation treatment of COPD patients.

TEG was invented by Hartert [18] of Germany in 1948 to image platelet aggregation through to thrombosis and subsequent fibrinolytic coagulation-fibrinolysis. Among them, the *R* value describes the content of coagulation

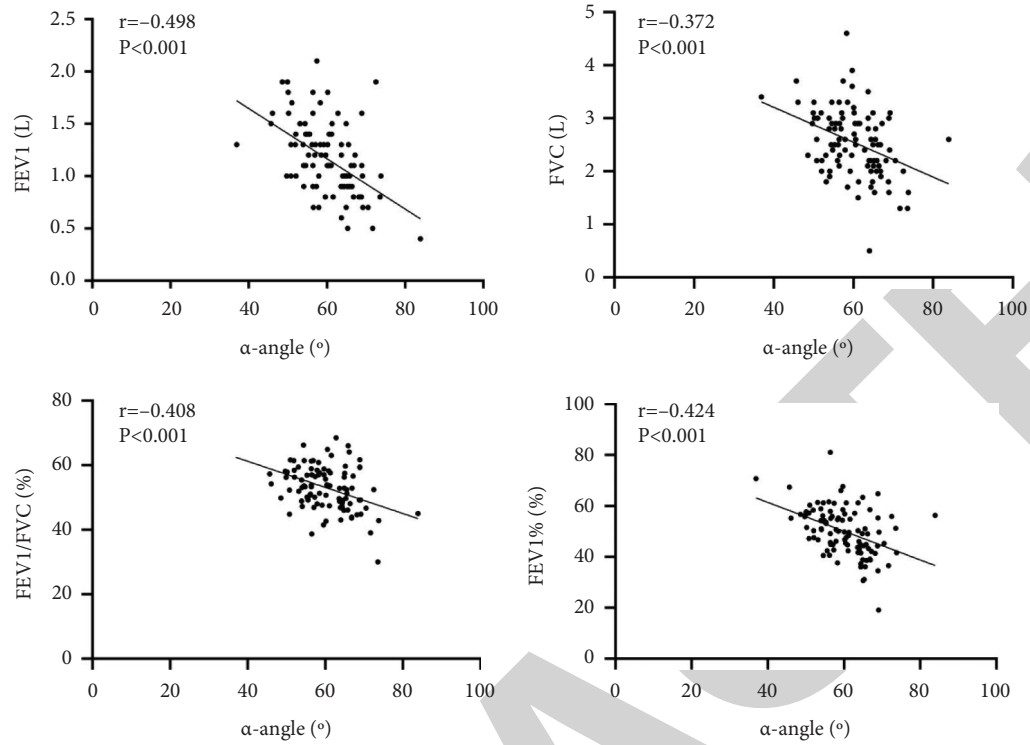

Figure 5: Scatter plot of correlation between α-angle and FEV1, FVC, FEV1/FVC, and FEV1% in patients with AECOPD.

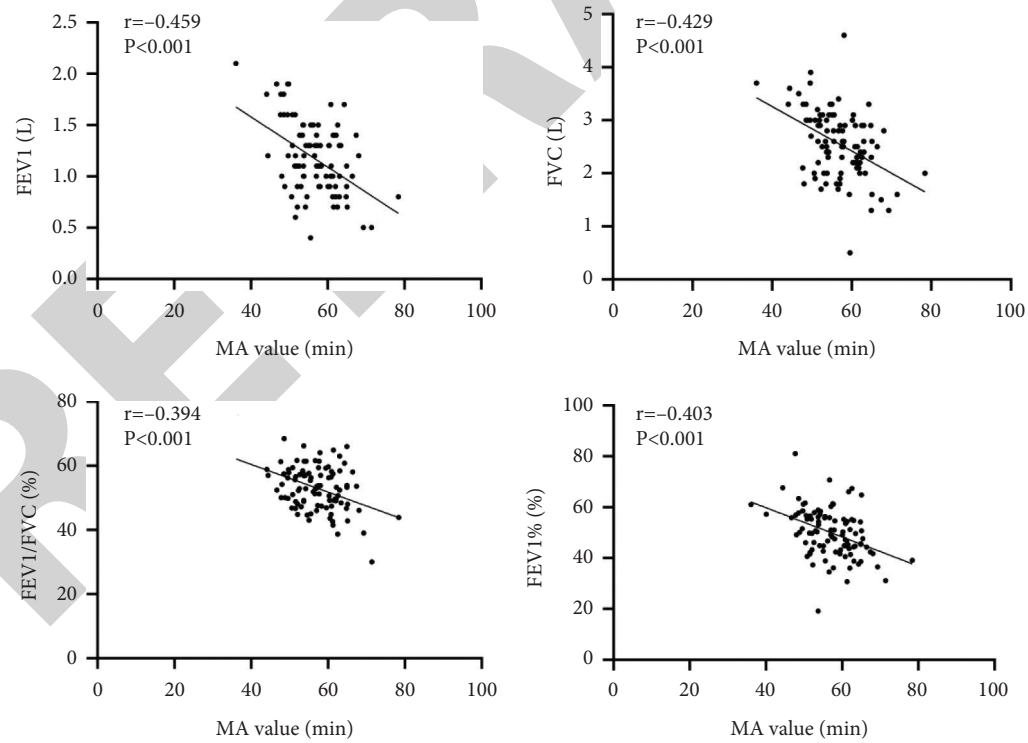

Figure 6: Scatter plot of correlation between MA value and FEV1, FVC, FEV1/FVC, and FEV1% in patients with AECOPD.

factors in the blood, and the K value describes the speed of visible clot formation, which depends on thrombin, thrombin production, fibrinogen, and platelets; the α-angle indicates the rate of increase in clot strength over time and this variable correlates well with fibrinogen content; MA values reflect platelet function and clot-forming potency. In recent years, TEG has been widely used for coagulation-fibrinolytic function monitoring in clinical areas such as

surgery, severe trauma, sepsis, and acute cerebral infarction [19–22].

In this study, patients with AECOPD and stable phase of COPD were tested for TEG and lung function and correlations were made between the relevant indicators, the results showed that the R and K values of patients in the AE group were lower than those in the SP group, and the α-angle and MA value were higher than those in the SP group, all with statistically significant differences ($P < 0.05$). This suggests increased coagulation factor activity, enhanced fibrinogen function, and enhanced platelet activity in patients with AECOPD. The R value reflects the coagulation factor activity and when it is lower than the normal reference value, it indicates enhanced coagulation factor activity [23]. Patients with COPD suffer from chronic hypoxia, inflammation, and CO_2 retention, causing secondary erythropoiesis, increased erythrocyte pressure volume, and reduced erythrocyte deformability in the blood, resulting in slower blood flow, increased blood viscosity and concomitantly increased coagulation factor activity [24]. Spasms of pulmonary arterioles due to long-term hypoxia can cause pulmonary hypertension, poor systemic circulation, and blood stasis, which will further increase the activity of coagulation factors; At the same time, when the vascular endothelium of AECOPD patients is subjected to oxidative stress and inflammatory injury, the endothelial cell function is disordered, and the activated inflammatory cells release a large number of inflammatory mediators and inflammatory factors, which not only aggravate airway inflammation, but also activate the endogenous and exogenous coagulation system, increase the activity of coagulation factors, and make the patient's blood in a hypercoagulable state [25]. Both the K value and the α-angle reflect the fibrinogen function. When the K value is lower than the normal reference value or the alpha angle is higher than the normal reference value, it indicates enhanced fibrin activity or increased fibrinogen [26]. The enhanced fibrinogen activity in the patients enrolled in this study may be explained by the fact that during acute exacerbations of COPD, due to the presence of a hypercoagulable state of the blood, fibrinogen is not only involved in the endogenous and exogenous coagulation process as a coagulation factor but can also act as an acute phase response protein, triggering platelet aggregation and increasing blood viscosity; and elevated fibrinogen provides more substrates for enzymatic reactions in the coagulation process and also causes a marked increase in the aggregation of red blood cells, reducing the speed of blood flow and stagnation of blood, thus promoting thrombosis; In addition, recurrent lung infections and chronic inflammatory processes can also lead to increased fibrinogen and enhanced activity [27]. MA mainly reflects platelet function, and when MA is elevated it indicates increased platelet activity and a hypercoagulable state of blood [28]. Long-term hypoxia and inflammatory stimulation damage the vascular endothelial system of AECOPD patients, after endothelial damage, subintimal collagen fibers are exposed and release tissue factors, and platelets gather, which then affect the production of anticoagulant factors and the balance of the pulmonary vascular internal environment, so as to start endogenous and exogenous coagulation, resulting in the imbalance of coagulation function and fibrinolytic system; Inflammatory mediators and inflammatory factors released by inflammatory cells following damage to the vascular endothelium in patients with AECOPD, which not only damage lung tissue structure and increase airway inflammation but also interact with platelets and enhance platelet activity; In addition, chronic tobacco and toxic particle irritation can inhibit prostacyclin synthesis in the blood, which enhances the action of thromboxane A2, which can also trigger platelet aggregation and increase platelet activity [29].

Pulmonary function tests are the main objective indicator of persistent airflow limitation and can reflect the severity of changes in COPD [30]. In this result, FEV1, FVC, FEV1/FVC, and FEV1% levels were lower in the AE group than in the SP group, and all differences were statistically significant ($P < 0.05$). This indicates a progressive decline in lung function as the COPD patient's condition worsens. Further analysis of the correlation between changes in TEG and pulmonary function-related indicators in AECOPD patients showed that the R and K values in TEG of AECOPD patients were positively correlated with pulmonary function-related indicators (FEV1, FVC, FEV1/FVC, FEV1%) (all $P < 0.001$), and the α-angle and MA value were inversely correlated with pulmonary function-related indicators (FEV1, FVC, FEV1/FVC, FEV1%) (all $P < 0.001$). This means that as the R and K values of AECOPD patients fall, the α-angle and MA value rise, their FEV1, FVC, FEV1/FVC, and FEV1% levels fall, airway resistance gradually increases, the more severe the lung tissue damage, and the condition continues to deteriorate.

5. Conclusion

TEG parameters can reflect the full range of dynamic changes in coagulation, and pulmonary function tests can be used to determine the severity of persistent airflow limitation. There is a correlation between TEG-related indicators and lung function-related indicators in AECOPD patients, both of which can guide the diagnosis and treatment process of the disease and are worthy of clinical promotion.

Data Availability

The data used or analyzed during the study are available from the corresponding authors upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Research Article

Warning and Nursing Experience of Anesthesia Depth Monitoring for Patients with General Anesthesia Delayed to Leave Anesthesia Recovery Room and Delirium

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Affected by the residues of narcotic drugs, patients under general anesthesia are vulnerable to emergence of agitation, delirium, hemodynamic changes, and other adverse events in the recovery period of anesthesia. Therefore, it is necessary to strengthen the observation and care of these patients. Depth of anesthesia monitoring (DAM) has always been a concern for anesthesiologists, but there are few reports related to it. This study compared the early warning value of DAM for patients under general anesthesia with delayed exit from the anesthesia recovery unit (PACU) and delirium and summarized the related nursing experience. The results showed that DAM could reduce the incidence of complications in patients under general anesthesia, reduce the incidence of delirium, shorten the time of postoperative anesthesia recovery and PACU observation time, reduce the workload of nursing staff, and improve nursing satisfaction. DAM plays an important role in improving the quality and efficiency of care in PACU.

1. Introduction

General anesthesia is the key to ensure the smooth progress of surgery. However, since the functions of various tissues and organs of the patient's body are in an unstable state during the anesthesia recovery period after general anesthesia, and it is difficult to accurately control the dose of clinical anesthetics, anesthetic residues often appear in the recovery process, which may cause delirium, low oxygen saturation, nausea and vomiting, aspiration, and hypotension, and affect the surgical efficacy [1, 2]. Postanesthesia care unit (PACU) is mainly used for condition change monitoring and treatment recovery after surgical anesthesia and before the patient's vital signs are unstable [3]. All patients need to be transferred to PACU after surgery until recovery, so PACU nursing work plays an important role in postoperative recovery and safety of anesthetized patients. Relevant studies have shown that depth of anesthesia monitoring (DAM) can help medical staff to grasp the depth of anesthesia in a timely manner, conduct reasonable interventions in a timely manner, and ensure the safety of patients to the greatest extent [4]. However, there are few reports related to the effect of deep anesthesia monitoring on patients under general anesthesia. Based on this, the author compares the effects of DAM technology on delayed out of PACU, occurrence of delirium, and nursing work in this study. The report is as follows.

2. Materials and Methods

2.1. Research Objects. 100 patients who underwent general anesthesia in our hospital from January 2019 to January 2020 were selected, including 32 males and 18 females in the control group. The patients were divided into the

experimental group ($n = 50$) and the control group ($n = 50$) according to the random number method. This study was approved by the Medical Ethics Committee.

2.2. Inclusion Criteria. The inclusion criteria are as follows: (1) patients meeting the indications for general anesthesia [5]; (2) patients whose operation time exceeds two hours; (3) patients whose American Association for Standardization (ASA) anesthesia classification [6] is between grade II and III; (4) patients whose body mass index (BMI) $\leq 30\,kg/m^2$; and (5) patients who have signed informed consent form.

2.3. Exclusion Criteria. Exclusion criteria are as follows: (1) patients with contraindications to surgery; (2) patients with allergies to anesthetics; (3) patients with severe insufficiency of organs such as the heart, liver, kidney, or lung; (4) patients with preoperative disturbance of consciousness or mental illness; and (5) general information is incomplete or the researcher quits midway.

2.4. Treatment Methods. The patients in both groups received general anesthesia with tracheal intubation, and after entering the operating room, they were given open venous channel and continuous intravenous infusion of 500 ml compound sodium chloride injection. Oxygen was inhaled through nasal catheter, and the oxygen flow was set at 3-5 L/min. Patients were monitored by routine ECG monitoring such as respiration, blood pressure, pulse, oxygen saturation, and ECG. After entering the operating room, the anesthesiologist made appropriate adjustments to the infusion rate and dose of anesthetic drugs according to the specific situation during the operation.

On this basis, the patients in the test group were connected with BIS VISTA monitor (Aspect Medical Systems, Inc) after entering the operating room. The bispectral index (BIS value) of electroencephalogram was detected, and the depth of anesthesia was adjusted according to the BIS value. The value was maintained at 50-60, and the two groups of patients were sent to PACU for observation. Anesthesia was induced with propofol, sufentanil, and cisatracurium. After the operation, in the operating room, the respiratory rate of the two groups was more than 12 times/min and SPO_2 extubation can be performed if the tidal volume exceeds 95% and the tidal volume reaches 6 ml/kg.

2.5. Observation Indicators and Evaluation Criteria

(1) Compare the dose of anesthesia between the two groups.

(2) Vital signs in different time periods: the mean arterial pressure (MAP), heart rate (HR), and SPO_2 at the beginning of surgery (T0), extubation (T1), 10 minutes after extubation (T2), and the time to leave the PACU (T3) were compared between the two groups.

(3) Compare the extubation time between the two groups.

(4) Compare the PACU observation time between the two groups.

(5) Delirium assessment: professional training is provided to the investigator before the study, and the delirium is scored by the investigator after the patient wakes up and is extubated. The simplified Chinese version of Nu-DESC (Nu-DESC-SCV) was used to evaluate the delirium degree of patients in two groups. Five items were scored from delusions\hallucinations, disorientation, abnormal behavior, abnormal verbal communication, and psychomotor retardation. Score is given according to the severity of the patient: 0 is absent, 1 is mild, and 2 is moderate to severe [7].

(6) Compare the nursing satisfaction between the two groups.

(7) Nursing activity assessment scale (NAS) [8]: it consists of 23 nursing items from 5 aspects, including activities, testing, health care, nursing administration, and patient support for nursing work. The higher value indicates greater workload. As a nursing quality evaluation standard, each item corresponds to a score of 1.2-32.0 according to the percentage of nurses' 24-hour working time. The higher score is, the greater the workload. The patient's 24 h NAS score ranges from 0 to 177 points, working hours = score/100 $*$ 24 h, starting from the patient's end of surgery and entering the PACU for resuscitation, until leaving the PACU and returning to the ward.

(8) Compare the incidence of complications between the two groups.

2.6. Statistical Methods. All data were processed by SPSS23.0 statistical software package. The continuous variable data of experimental data were expressed as mean standard deviation ($\overline{x} \pm s$) and adopted t-test. The classified variable data and descriptive analysis were expressed as (%) and adopted χ^2 test. $P < 0.05$ was considered statistically significant.

3. Results

3.1. General Data. There was no significant difference in the general data between the two groups ($P > 0.05$), and they were comparable. See Table 1 for details.

3.2. Comparison of the Dose of Anesthesia, Extubation Time, and Observation Time between the Two Groups. The doses of propofol and cisatracurium used in the test group were less than those in the control group ($P < 0.05$), but the doses of sufentanil used in the two groups were not statistically significant ($P > 0.05$). The extubation time and observation time were longer than those in the experimental group ($P < 0.05$). See Table 2 for details.

3.3. Comparison of Vital Signs between Two Groups of Patients at Different Time Periods. The MAP and HR in the T1 and T2 time periods of the two groups were higher than those in T0

Table 1: Comparison of general information of patients (n (%), $\overline{x} \pm s$).

Group	n	Age (year)	Gender		Weight (kg)	ASA stage			Operation time (h)
			Male	Female		I	II	III	
Control group	50	51.62 ± 10.10	32	18	49.15 ± 7.12	20	26	4	2.51 ± 0.24
Test group	50	52.15 ± 9.23	30	20	50.45 ± 7.54	19	28	3	2.43 ± 0.32
t/χ^2 value	—	0.274	0.170	0.886			0.243		1.412
P-value	—	0.785	0.680	0.378			0.886		0.161

Table 2: Comparison of anesthesia dose, extubation time, and observation time between two groups of patients ($\overline{x} \pm s$).

Group	n	Propofol (mg)	Sufentanil (ug)	Cisatracurium (mg)	Extubation time (min)	Observation time (min)
Control group	50	110.56 ± 23.35	12.36 ± 3.36	13.34 ± 4.32	8.74 ± 2.15	52.85 ± 10.65
Test group	50	102.24 ± 12.64	11.51 ± 2.31	9.64 ± 2.65	5.47 ± 1.52	30.12 ± 6.21
t-value	—	2.216	1.474	5.162	8.782	13.037
P-value	—	0.029	0.144	0.001	0.001	0.001

($P < 0.05$), and the MAP and HR in the T1 and T2 time periods of the experimental group were higher than those of the control group ($P < 0.05$). There was no difference in SPO_2 level between the two groups at any time point ($P > 0.05$). See Table 3 for details.

3.4. Comparison of Delirium Assessment and Complications between Two Groups of Patients. The Nu-DESC-SCV score of the experimental group was significantly lower than that of the control group ($P < 0.05$). See Table 4 for details.

3.5. Comparison of Nursing Satisfaction and Nursing Quality Assessment between the Two Groups. The NAS score of the test group was lower than that of the control group, and the nursing satisfaction degree was higher than that of the control group ($P < 0.05$). See Table 5 for details.

3.6. Comparison of Complications between the Two Groups. The incidence of complications in the experimental group and the control group were 14% and 32%, respectively. The incidence of complications in the experimental group was lower than that in the control group ($P < 0.05$). See Table 6 for details.

4. Discussions

The functions of various systems and organs of the body are in an unstable state for a period of time after the operation under general anesthesia [9]. At the same time, because of the residual effects of anesthetics and muscle relaxants and the failure to normalize protective reflexes, a series of adverse events, including postoperative delirium, often occur. Delirium can cause disorders of consciousness, memory, perception, and even other organ functions. Besides, the death rate caused by delirium is relatively high, and research results show that the death rate ranges from 22% to 76% [10]. Therefore, avoiding the occurrence of delirium after general anesthesia is of great significance to the prognosis of patients.

In this study, the doses of propofol and atracurium used in the experimental group were lower than those in the control group ($P < 0.05$), suggesting that DAM could save anesthetics and avoid excessive anesthesia. At the same time, the incidence of respiratory complications, consciousness disorders, nausea, and vomiting complications in the experimental group was significantly lower than that in the control group ($P < 0.05$), indicating that DAM can effectively improve the quality of patients' rehabilitation, reduce the incidence of complications, and improve the perioperative outcome. The possible reason for the above results is that in the past, the traditional depth of anesthesia was determined based on the changes in patients' heart rate and blood pressure level [11]. However, under the influence of factors such as surgical invasive operations during the operation, it may lead to the increase of reflex sexual intercourse sensation activity of the body, which will gradually become stable after a period of time. At this time, the judgment of the depth of anesthesia may be affected, further affecting the postoperative anesthesia recovery. However, DAM results allow for the development of individualized anesthesia regimens that assure the reasonableness of sedative doses [12]. This effectively ensures the rationality of the anesthesia depth, prevents the awareness during the operation and excessive stress response of the body caused by the insufficient anesthesia depth, thereby reducing the occurrence of perioperative adverse events, and also effectively reduces the exposure of anesthetics in the operation of patients, thereby shortening the awakening time and respiratory function recovery time after the operation [13, 14].

The mechanism of postoperative delirium has not been clearly explained, but most scholars believe that it may be related to neuronal differentiation ability, cognitive reserve, cerebral blood flow, cognitive function, decreased brain volume, and large fluctuations in endocrine levels, which may lead to patients' tolerance to anesthesia force drop related [15, 16]. Therefore, in anesthesia monitoring, a method that has little impact on the body, less interference with physiological functions, and effectively inhibits surgical stimulation energy should be selected. Nu-DESC-SCV is a rapid, easy-to-use, and convenient nursing delirium screening scale [17]. In this study, the MAP and HR of the experimental group during T1 and T2 were higher than those of the control group, and the Nu-DESC-SCV score of

Table 3: Comparison of vital signs between two groups of patients at different time periods ($\overline{x} \pm s$).

Group	n	Time	MAP (mmHg)	HR (b/m)	SPO_2 (%)
Control group	50	T0	82.65 ± 11.52	71.36 ± 14.62	98.64 ± 5.62
		T1	94.62 ± 16.35[a]	86.14 ± 13.52[a]	97.56 ± 4.72
		T2	86.15 ± 14.22[a]	77.12 ± 10.56[a]	95.41 ± 3.26
		T3	76.34 ± 10.54	71.25 ± 10.25	96.58 ± 5.36
Test group	50	T0	81.32 ± 10.24	72.24 ± 10.32	98.58 ± 5.63
		T1	97.24 ± 15.05[ab]	93.64 ± 16.67[ab]	96.47 ± 5.34
		T2	93.61 ± 14.36[ab]	85.47 ± 15.21[ab]	95.74 ± 4.34
		T3	80.54 ± 13.85	77.14 ± 13.25	97.14 ± 2.14

Note. Compared with T0, $^{a}P < 0.05$; compared with the control group at the same time, $^{b}P < 0.05$.

Table 4: Comparison of delirium assessment between the two groups ($\overline{x} \pm s$).

Group	n	Nu-DESC-SCV (score)
Control group	50	4.21 ± 1.35
Test group	50	2.12 ± 0.34
t-value	—	10.616
P-value	—	0.001

Table 5: Comparison of nursing satisfaction and nursing quality assessment between the two groups (n (%), $\overline{x} \pm s$).

Group	n	NAS (score)	Nursing satisfaction (%)
Control group	50	61.24 ± 9.64	38 (76.00)
Test group	50	57.56 ± 5.35	46 (92.00)
t/χ^2 value	—	2.360	5.314
P-value	—	0.020	<0.05

Table 6: Comparison of delirium assessment and complications between the two groups.

Group	Respiratory complication	Disturbance of consciousness	Sick/vomit	Complication rate
Control group ($n = 50$)	7 (14.00)	5 (10.00)	4 (8.00)	16 (32.00)
Test group ($n = 50$)	3 (6.00)	2 (4.00)	2 (4.00)	7 (14.00)
χ^2 value	—	—	—	4.574
P-value	—	—	—	0.032

the experimental group was significantly lower than that of the control group ($P < 0.05$), indicating that DAM can effectively reduce the incidence of delirium and improve vital signs in patients. This may be related to the accurate regulation and judgment of the depth of anesthesia by DAM, avoiding the stress response or EEG burst suppression caused by the discomfort of deep and shallow anesthesia, and reducing the exposure of anesthetics [18, 19]. PACU care is an important part of this. Studies have shown that the NAS score of some hospitals is 68.64, which indicates that nursing staff are in a state of full load or even overload in most cases [20]. In this study, the NAS score of the control group was higher than that of the experimental group, and the nursing satisfaction was lower than that of the experimental group ($P < 0.05$). This shows that DAM can significantly improve work efficiency, reduce PACU nursing workload, and improve nursing quality. The reason is that DAM can effectively shorten the awakening time, reduce observation time, improve vital signs and reduce the incidence of complications, to a certain extent, and reduce the workload of nursing care, which makes the nursing work more efficient.

In conclusion, DAM can reduce the incidence of complications in patients with general anesthesia, reduce the incidence of delirium, shorten postoperative anesthesia recovery time and PACU observation time, reduce the workload of nursing staff, improve nursing satisfaction, improve the quality of PACU nursing work and efficiency. However, the shortcomings of this study lie in the fact that the included sample size is small and too centralized. Further prospective multicenter research is needed to investigate the effects and related mechanisms of DAM in patients undergoing surgical anesthesia from different regions, different levels of hospitals, and different populations.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author.

Conflicts of Interest

The authors declare that there are no conflicts of interest, financial, or otherwise.

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Research Article

Predictive Value of the HEART Score Combined with Hypersensitive C-Reactive Protein for 30 d Adverse Cardiovascular Events in Patients with Acute Chest Pain

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Purpose. This study aimed to explore the predictive value of the HEART score combined with hypersensitive C-reactive protein (hs-CRP) for 30 d major adverse cardiovascular events (MACEs) in patients with acute chest pain. *Methods*. 103 patients with acute chest pain admitted to the emergency department of our hospital from May 2020 to May 2022 were selected as the study subjects. The patients' HEART score and plasma hs-CRP level were recorded. The patients were followed up for 30 d to observe whether MACE occurred. *Results*. Among 103 patients with acute chest pain, MACE occurred in 8 cases within 30 d of follow-up, and the probability of MACE was 7.76%. There was a statistically significant difference in 30 d MACE risk among patients with different HEART score stratification ($P < 0.05$). The age, HEART score, and hs-CRP levels of patients in the MACE group were higher than those in the non-MACE group ($P < 0.05$). The HEART score and the hs-CRP level were independent risk factors for 30 d MACE in patients with acute chest pain ($P < 0.05$). The AUC of the HEART score combined with hs-CRP in the occurrence of 30 d MACE in patients with acute chest pain was 0.901, which was significantly higher than 0.720 and 0.758 of single detection. *Conclusion*. The HEART score combined with hs-CRP can better predict the occurrence of 30 d MACE in patients with acute chest pain.

1. Introduction

Acute chest pain is a clinical emergency, and its incidence accounts for 5%–20% of patients in emergency medicine and even 20%–30% in large tertiary hospitals [1]. Acute chest pain can be divided into cardiogenic and noncardiogenic chest pain, of which, acute cardiogenic chest pain is one of the main types [2]. Acute cardiogenic chest pain is rapid in onset and progression and has a complex etiology, variable clinical manifestations, and high risk factors, which may lead to malignant events such as heart failure and arrhythmias, and even disability or death [3, 4]. It has been reported that the incidence of major adverse cardiovascular events (MACEs) in patients with acute chest pain is higher than that in the normal population. Therefore, timely identification of the risk of chest pain and assessment of the patient's prognosis are conducive to guiding clinical treatment and improving the survival rate and are of great value for improving the prognosis [5]. In addition, due to the lack of accurate symptom manifestations of acute chest pain and the mostly atypical ECG, the optimal treatment time is easily missed, and sudden cardiac events are possible [6]. Therefore, how to rapidly predict MACE in acute chest pain has become an urgent clinical problem to be explored.

In order to quickly differentiate between chest pain categories and assess the degree of risk, emergency physicians in China and abroad have developed many acute chest pain scoring systems to make accurate treatment decisions and improve patients' quality of life as early as possible [7, 8]. The HEART score is simple, fast, convenient, and economical. It can be performed within 1 hour after patients with chest pain receive treatment, helping doctors estimate the patient's condition as early as possible [9, 10]. C-reactive protein (CRP) is used as a monitoring indicator for acute

illnesses and can quickly respond to the severity of infection, inflammation, and tissue damage [11]. Hypersensitive CRP (hs-CRP) is an acute temporal protein produced by the human body in response to microbial invasion or tissue inflammation and is synthesized by the human liver [12]. hs-CRP is more than 10 times more sensitive than CRP, and assessing hs-CRP levels can help doctors estimate the risk of cardiovascular disease in patients.

At present, there are few clinical studies on the predictive value of the HEART score combined with hs-CRP on 30 d MACE in patients. Therefore, in this study, 103 patients with acute chest pain were selected to observe the occurrence of 30 d MACE and to analyze the relationship between the HEART score, hs-CRP, and MACE.

2. Materials and Methods

2.1. Research Objects. 103 patients with acute chest pain admitted to the emergency department of our hospital from May 2020 to May 2022 were selected as the study subjects. Inclusion criteria were as follows: presented with chest pain as the main symptom; chest pain onset within 12 h; age ≥ 18 years; complete medical records and able to complete follow-up. Exclusion criteria were as follows: chest pain caused by trauma; systemic pain due to rheumatic diseases involving the chest; liver and kidney insufficiency; combined with malignant tumors, infectious diseases or psychiatric diseases; a recent history of heart valve disease, cardiomyopathy, myocarditis, etc.

2.2. Research Methods. All patients were treated symptomatically on admission according to their condition. ① After admission, a risk score was assigned to all enrolled patients based on the HEART scoring system. The total score was 10 points, with 0~3 points being the low-risk group ($n = 20$), 4~6 points being the moderate-risk group ($n = 44$), and 7~10 points being the high-risk group ($n = 39$). The HEART scoring system is shown in Table 1. ② After patients were admitted to the hospital, 4 ml of peripheral venous blood was drawn, anticoagulated with sodium citrate, and centrifuged at 3000 r/min. Plasma was separated and stored at −70°C. Plasma hs-CRP levels were measured by the immunoturbidimetric assay. ③ Patients were followed up for 30 d after discharge using outpatient review, door-to-door face-to-face visits, or telephone. The occurrence of MACE within 30 d was recorded, and MACE included all-cause death, myocardial infarction, unstable angina, emergency revascularization, cardiogenic shock, and cardiac arrest/ventricular fibrillation.

2.3. Statistical Methods. SPSS 20.0 software was used for analysis. The measurement data were expressed as the mean ± SD, and the t-test was used for comparison. Count data were expressed as rates, and the χ^2 test was used for comparison. Logistic regression models were used to analyze risk factors. The AUC in the subject's ROC was used to express the predictive value. The difference was considered significant at $P < 0.05$.

3. Results

3.1. Occurrence of 30 d MACE in Patients with Acute Chest Pain. Among 103 patients with acute chest pain, MACE occurred in 8 cases within 30 d of follow-up, and the probability of MACE was 7.76%. Of these, all-cause death occurred in 6 cases, myocardial infarction occurred in 1 case, and unstable angina occurred in 1 case.

3.2. Occurrence of 30 d MACE in Patients with Different HEART Scores. There was a statistically significant difference in 30 d MACE risk among patients with different HEART score stratification ($P < 0.05$), as shown in Table 2.

3.3. Comparison of Clinical Data between the Two Groups. The age, HEART score, and hs-CRP levels of patients in the MACE group were higher than those in the non-MACE group ($P < 0.05$). There was no statistically significant difference between the remaining clinical information of the two groups ($P > 0.05$), as shown in Table 3.

3.4. Risk Factors for 30 d MACE in Patients with Acute Chest Pain. Multifactorial logistic analysis showed that the HEART score and the hs-CRP level were independent risk factors for 30 d MACE in patients with acute chest pain ($P < 0.05$), as shown in Table 4.

3.5. Predictive Value of Different Indicators for 30 d MACE in Patients with Acute Chest Pain. The AUC of the HEART score in predicting 30 d MACE in patients with acute chest pain was 0.720. The AUC of hs-CRP in predicting 30 d MACE in patients with acute chest pain was 0.758. The AUC of the HEART score combined with hs-CRP in predicting 30 d MACE in patients with acute chest pain was 0.901, as shown in Table 5 and Figure 1.

4. Discussion

Acute chest pain is one of the more dangerous diseases in the emergency department and is a pain that occurs in the chest or radiates from other parts of the body to the chest [13]. The causes of acute chest pain are many and involve multiple organs and systems, commonly including chest boils and carbuncles, herpes zoster, trauma, pneumothorax, myocarditis, and abdominal diseases [14]. For patients with acute cardiogenic chest pain, taking active treatment and predicting the occurrence of MACE can obviously improve the prognosis of patients and then improve the survival rate of patients [15]. Therefore, there is great clinical value in using a simple, practical, quick, and accurate method to assess the prognosis of patients with acute chest pain.

The HEART score is a nonspecific scoring system that does not require inclusion or exclusion criteria for patients with chest pain, and the items of the score are easy to collect data and less difficult to calculate, which facilitates daily use by clinical workers [16]. Unlike other chest pain scoring systems, the HEART score includes patient history, ECG,

Table 1: HEART scoring system.

Projects	Score
History	
Highly suspicion	2
Moderate suspicion	1
Mild suspicion or exclusion	0
ECG	
Significant depression or elevation of the ST segment	2
Nonspecific repolarization abnormalities	1
Bundle branch conduction block	1
Left ventricular hypertrophy	1
Normal	0
Age (years)	
>65	2
45~65	1
<45	0
Risk factors (including diabetes, smoking, hypertension, hyperlipidemia, obesity, family history of coronary artery disease)	
>3 coronary heart disease risk factors or history of atherosclerosis treatment	2
1 or 2	1
0	0
Troponin (normal value ≤ 0.1 μg/L)	
>2 times the upper limit of the normal value	2
1~2 times the upper limit of the normal value	1
≤Upper limit of the normal value	0

Table 2: Occurrence of 30 d MACE in patients with different HEART scores.

Group	Number of cases	Incidence of MACE
HEART low-risk group	20	0 (0.00%)
HEART moderate-risk group	44	1 (2.27%)
HEART high-risk group	39	7 (17.95%)
χ^2 value		9.182
P value		0.010

age, risk factors, and troponin levels, emphasizing the combination of ECG and troponin levels, which is more accurate than conventional assessment methods [17]. At the same time, the HEART score assesses different independent risk components in patients with acute chest pain without the need for clear evidence of acute coronary syndromes and can identify patients' condition and prognosis as soon as possible [18]. The HEART score can be evaluated within 1 hour after the patient is admitted to the hospital, so the HEART score is suitable for patients diagnosed with urgent intervention and meets the requirement of clinical emergency treatment [19]. The HEART score can quickly and effectively communicate the risks associated with acute chest pain, allowing for a quick understanding of the patient's risk level and helping physicians intervene according to the patient's risk level [20]. In this study, the incidence of 30 d MACE in the HEART high-risk group was higher than that in the moderate-risk group and the low-risk group, and the HEART score was an independent risk factor for 30 d MACE in patients with acute chest pain. The results suggest that the HEART score has good efficacy for assessing the occurrence of MACE in patients with chest pain in the short term.

It has been reported that the occurrence of acute cardiogenic chest pain is closely related to the body's inflammatory response and coagulation formation [21]. As an inflammatory factor, CRP inhibits neovascularization by promoting endothelial cell apoptosis. Since CRP reflects macrophage activity and plaque rupture correlates with macrophage activity, CRP is associated with atherosclerotic plaque vulnerability [22]. CRP activates the complement system and produces complement terminal complexes that cause direct damage to the intima, which in turn leads to vasospasm and unstable plaque rupture. Boncler M et al. showed that plasma concentrations of CRP are relatively low in a healthy population, while plasma CRP levels are significantly increased when the organism is under inflammation, stress, or trauma [23]. At the same time, changes in CRP levels are closely associated with cardiovascular disease risk factors such as diabetes, hypertension, and hyperlipidemia. In clinical, compared to CRP, hs-CRP can reflect cardiovascular inflammation more sensitively and accurately and is not affected by taking food and circadian rhythms [24]. Under normal circumstances, the concentration of hs-CRP in plasma was in a stable state for a long period. After tissue damage in patients, hs-CRP concentration could rise rapidly and be detected in blood within 6–8 h and reached the peak at 24–48 h. [25]. Caselli C et al. concluded that hs-CRP, as a marker of inflammation, is able to monitor the severity of disease and has high predictive accuracy for the development of coronary artery disease in patients with chronic chest pain [26]. We found that hs-CRP levels in the MACE group were higher, and the level of hs-CRP can predict the occurrence of MACE in patients with acute chest pain for 30 d.

Table 3: Comparison of clinical data between the two groups.

Projects	Non-MACE group ($n = 95$)	MACE group ($n = 8$)	t/χ^2 value	P value
Age (years)	65.36 ± 4.71	68.88 ± 3.59	2.060	0.042
Male	52 (54.74%)	5 (62.50%)	0.180	0.671
Body mass index (kg/m^2)	23.96 ± 3.14	23.56 ± 2.86	0.672	0.503
History of smoking	35 (36.84%)	4 (50.00%)	0.543	0.461
History of alcoholism	28 (29.47%)	3 (37.50%)	0.226	0.635
History of hypertension	61 (64.21%)	6 (75.00%)	0.378	0.539
History of diabetes	22 (23.16%)	3 (37.50%)	0.826	0.364
History of hyperlipidemia	24 (25.26%)	2 (25.00%)	0.001	0.987
History of coronary heart disease	46 (48.42%)	4 (50.00%)	0.007	0.932
Admission systolic blood pressure (mmHg)	140.31 ± 20.12	137.88 ± 20.27	0.327	0.743
Admission diastolic blood pressure (mmHg)	79.59 ± 15.69	78.87 ± 13.40	0.125	0.900
Admission heart rate (beats/min)	81.31 ± 11.90	81.13 ± 11.49	0.041	0.967
HEART score (points)	3.57 ± 0.75	7.50 ± 0.87	14.066	<0.001
hs-CRP (mg/L)	3.87 ± 0.40	5.98 ± 0.39	14.353	<0.001

Table 4: Risk factors for 30 d MACE in patients with acute chest pain.

Projects	B Value	SE value	Wald's value	OR value	95% CI	P value
Age	0.166	0.084	3.892	0.847	0.718~1.009	0.050
HEART score	1.521	0.628	5.865	4.576	1.336~15.666	0.015
hs-CRP	3.112	1.119	7.735	22.464	2.507~21.329	0.005

Table 5: Predictive value of different indicators for 30 d MACE in patients with acute chest pain.

Variable	AUC	Standard error	P value	Asymptotic 95% CI		Youden index	Best cutoff value	Sensitivity (%)	Specificity (%)
				Lower limit	Upper limit				
HEART score	0.720	0.086	0.039	0.553	0.888	0.443	4.93 (points)	87.5	56.8
hs-CRP	0.758	0.086	0.016	0.589	0.927	0.383	4.65 (mg/L)	62.5	75.8
HEART score + hs-CRP	0.901	0.052	0.001	0.799	1.000	0.676	—	75.0	92.6

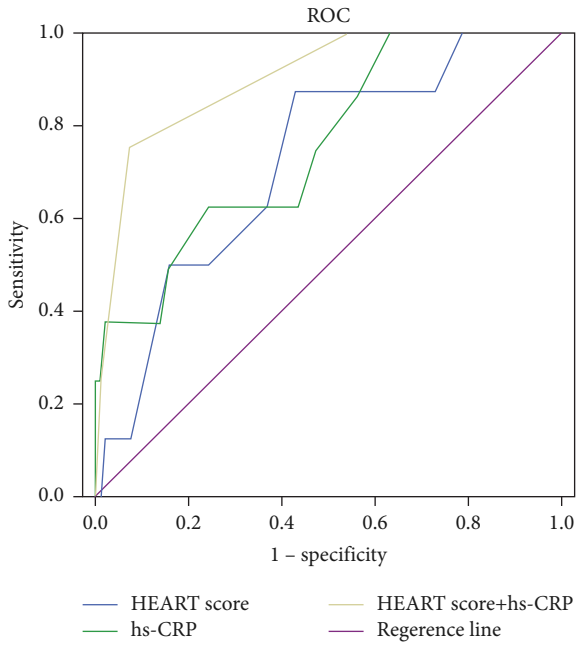

Figure 1: Predictive value of different indicators for 30 d MACE in patients with acute chest pain (the ROC curve above the reference line represented its diagnostic value, and the closer the curve to the upper left corner of the graph, the greater the diagnostic value).

Only troponin is included in the HEART scoring system, which shows poor specificity. Therefore, the addition of another biomarker above the cardiac score has a positive effect on improving the evaluation of acute chest pain. In addition, hs-CRP has good specificity but relatively poor sensitivity, and the predictive value of a single test is not high, so it has good significance to combine the two. In view of the limitations of the HEART score and hs-CRP alone in predicting the short-term prognosis, we applied the combination of the HEART score and hs-CRP in prognostic assessment. The AUC of the HEART score combined with hs-CRP in the occurrence of 30 d MACE in patients with acute chest pain was 0.901, which was significantly higher than 0.720 and 0.758 of single detection. This revealed that the HEART score combined with hs-CRP could better predict the occurrence of 30 d MACE in patients with acute chest pain and can improve sensitivity and specificity.

5. Conclusion

In conclusion, the HEART score combined with hs-CRP can better predict the occurrence of 30 d MACE in patients with acute chest pain, which is helpful for assisting clinical treatment decision-making.

Data Availability

All data included in this study are available upon request from the corresponding author.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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Research Article

The Value of Neutrophil/Lymphocyte Ratio Combined with Red Blood Cell Distribution Width in Evaluating the Prognosis of Emergency Patients with Sepsis

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Sepsis is a dysfunction of various organs caused by a dysfunctional host response induced by infection. In recent years, the mortality rate of sepsis patients, especially the mortality rate of septic shock patients still remains high. Due to the complexity and heterogeneity of sepsis, there is currently a lack of clinical biomarkers that can be widely used for the early assessment of sepsis. In order to find more concise and accurate biomarkers for timely and adequate intervention in sepsis, we explored the value of neutrophil/lymphocyte ratio (NLR) combined with red blood cell distribution width (RDW) in assessing the prognosis of emergency sepsis patients. The results showed that NLR and RDW were closely related to the prognosis of emergency sepsis patients. The combination of the two can evaluate the prognosis of patients with emergency sepsis, which deserves close attention from clinicians.

1. Introduction

Sepsis is a common systemic inflammatory disease. Some studies have pointed out that sepsis can be caused by an infection in any part of the body, and most patients have clinical manifestations such as fever, shortness of breath, tachycardia, and increased peripheral blood leukocytes [1, 2]. At present, the clinical use of bundled and target-guided treatment programs for patients with sepsis can delay the development of patients' disease, but there are still some emergency sepsis patients with high mortality. Therefore, early identification and evaluation of the prognosis of emergency sepsis patients Influencing factors are the current clinical concerns [3]. At present, only SOFA, A-Pache II score, and some serum markers are used to predict and evaluate the progression of sepsis, but due to liver dysfunction and the use of other specific drugs, the above indicators still have certain limitations. Red blood cell distribution width (RDW), a simple and inexpensive parameter reflecting the degree of red blood cell volume heterogeneity, has traditionally been used for differential diagnosis of anemia in laboratory hematology. Recently, RDW has attracted extensive attention as a prognostic marker for various diseases such as acute myocardial infarction, heart failure, autoimmune diseases, and liver disease. A recent analysis has shown that the neutrophil-to-lymphocyte ratio (NLR) is a marker for the assessment of systemic inflammatory response, and a recent analysis has shown that NLR levels increase with the progression of sepsis in patients with sepsis [4]. There are many clinical reports on the influencing factors of the prognosis of emergency sepsis patients, and significant results have been achieved. However, there are few clinical studies on the effect of NLR combined with RDW on the prognosis of emergency sepsis patients [5, 6]. Therefore, the purpose of this study was to analyze the predictive impact of NLR and RDW on the prognosis of emergency sepsis patients in order to explore whether they can be used as a prognostic index in sepsis patients. The research is reported as follows.

2. Materials and Methods

2.1. General Information. A retrospective analysis of 63 patients with acute sepsis admitted to our hospital from May 2020 to May 2022 was included as the research object. Among the 63 patients, 36 were males and 27 were females; the age ranged from 18 to 70 years, with an average age of (43.82 ± 4.16) years. This study has been approved by the hospital ethics committee, and all patients are informed and sign the relevant consent form.

2.2. Inclusion Criteria. (1) Those who meet the diagnostic criteria for emergency sepsis [7]; (2) those aged ≥18 years; (3) those who have been admitted to the hospital for ≥24 hours; (4) patients without mental illness or family history; and (5) those who have complete clinical data.

2.3. Exclusion Criteria. (1) Patients with other end-stage chronic diseases; (2) patients with other infectious diseases, immune system diseases, and blood system diseases; (3) patients with abnormal coagulation function; (4) patients with hemorrhagic shock; (5) patients with a history of erythrocyte suspension infusion in the past 7 days; (6) patients with a history of erythropoietin, cyclosporine, and other drug treatments in the past 7 days; (7) patients with a history of chemotherapy; (8) patients combined with cardiogenic shock, acute myocardial infarction, and other emergencies.

2.4. Research Methods. The general information of all patients was collected, including the patients' age, gender, body mass index (BMI), underlying diseases, and sepsis-related organ failure assessment (SOFA). record the level of laboratory indicators, including high density lipoprotein-cholesterol (HDL-C), total cholesterol (TC), low density lipoprotein-cholesterol (LDL-C), triglyceride (TG), activated partial thromboplastin time (APTT), D-dimer (DD), thromboplastin time (TT), prothrombin time (PT), hematocrit (Hct), hemoglobin (HB), platelet (PLT), RDW, and NLR.

Among them, the weight and height of the patients were collected, and calculate the BMI value according to the formula (BMI = weight/height^2) [8]. And the survival of the patients within 30 days was counted. In addition, the levels of Hct, HB, PLT, NLR, and RDW were measured by the BS-20S automatic blood cell analyzer (Mindray). LDL-C, HDL-C, TC, and TG levels were measured directly. The Dd were determined by nephelometry; the levels of APTT, platinum, and TT were determined by coagulation. All the kits were provided by Shanghai Kaibo Biology Co., Ltd. The SOFA score included six items including respiratory system (PaO_2/FiO_2 oxygenation index) (mmHg), platelet count, bilirubin, circulatory system function, GCS score, and renal function. When the daily changes of SOFA score ≥2, it could be considered that the infected patient had an acute change in organ failure. The higher the score is, the worse the prognosis will be [9].

2.5. Statistical Methods. SPSS 22.0 software was used to process the abovementioned data, the count data was expressed as percentage (%), and the χ^2 test was performed between groups; the measurement data that met normality and homogeneity of variance were expressed as mean ± standard deviation ($\overline{x} \pm s$), and one-way analysis of variance was used. Comparison between groups was carried out by using the Student-Newman-Keuls method. A receiver operating characteristic (ROC) curve was used to analyze the predictive value of NLR and RDW in the prognosis of emergency sepsis patients. Multivariate Logistic regression analysis was used to analyze the independent risk factors affecting the prognosis of emergency department sepsis patients, $P < 0.05$ was considered statistically significant.

3. Results

3.1. Prognosis Analysis of Emergency Patients with Sepsis. Among the 63 emergency department sepsis patients, 41 (65.08%) patients survived and were included in the survival group; 22 (34.92%) patients died and were included in the death group.

3.2. Univariate Analysis of the Prognosis of Emergency Patients with Sepsis. There was no significant difference in gender, proportion of underlying diseases and age, BMI index, blood lipid index, coagulation index, Hct, HB, and PLT levels between the two groups ($P > 0.05$); the NLR, RDW, and SOFA scores in the death group were higher than those in the survival group ($P < 0.05$), as shown in Table 1.

3.3. Multivariate Logistic Regression Analysis on the Prognosis of Emergency Patients with Sepsis. The prognosis of emergency patients with sepsis was used as the dependent variable, the abovementioned univariate factors with differences were used as independent variables and included in the logistic regression analysis model, quantitative assignment was performed, as shown in Table 2.

Multivariate logistic regression analysis showed that NLR and RDW were independent risk factors affecting the prognosis of emergency patients with sepsis ($P < 0.05$), as shown in Table 3.

3.4. The Predictive Value of NLR and RDW on the Prognosis of Emergency Patients with Sepsis. Through ROC curve analysis, the area under the curve of NLR and RDW predicting the prognosis of patients with emergency sepsis was 0.818 and 0.823, respectively, while the area under the curve of the above two indicators combined to diagnose the prognosis of acute sepsis patients was 0.891, as shown in Table 4 and Figure 1.

4. Discussion

Sepsis is a common clinical disease of systemic inflammatory response syndrome that is mostly caused by the invasion of pathogenic microorganisms such as bacteria. At present, the clinical treatment of sepsis patients is mainly based on

Table 1: Univariate analysis on those affecting the prognosis of emergency patients with sepsis.

Indicator	Survival group ($n = 41$)	Death group ($n = 22$)	t/χ^2	P
Age (years old)	44.76 ± 5.16	44.69 ± 4.13	0.156	0.876
Gender (male/female)	23/18	19/13	0.052	0.818
Basic illness (n, %)				
Hypertension	13 (31.71)	7 (31.82)	0.001	0.992
Diabetes	8 (19.51)	2 (9.09)	1.164	0.280
Coronary heart disease	5 (12.19)	3 (13.64)	0.026	0.869
SOFA (score)	3.71 ± 1.12	14.38 ± 2.16	25.906	0.001
BMI (kg/m^2)	25.74 ± 1.34	26.08 ± 1.21	0.992	0.325
Blood lipids				
TC (mmo/l/L)	4.28 ± 0.81	4.21 ± 0.77	0.332	0.740
TG (mmo/l/L)	2.91 ± 0.43	2.88 ± 0.38	0.274	0.784
HDL-C (mmo/l/L)	1.51 ± 0.25	1.48 ± 0.23	0.466	0.642
LDL-C (mmo/l/L)	2.32 ± 0.57	2.29 ± 0.54	0.202	0.840
Coagulation				
TT (s)	13.85 ± 2.71	13.98 ± 2.45	0.187	0.851
APTT (s)	28.96 ± 2.15	27.98 ± 2.84	1.538	0.129
PT (s)	12.29 ± 1.98	12.42 ± 1.76	0.257	0.797
DD (μg/L)	175.23 ± 9.48	177.18 ± 9.89	0.766	0.446
HB (g/L)	126.53 ± 20.11	125.96 ± 21.74	0.104	0.917
Hct (%)	0.32 ± 0.08	0.35 ± 0.09	1.358	0.179
PLT ($\times 10^9$/L)	214.33 ± 20.15	217.84 ± 19.86	0.662	0.510
RDW (%)	11.33 ± 2.51	17.42 ± 2.68	8.967	0.001
NLR	11.45 ± 1.52	18.96 ± 2.03	16.590	0.001

Table 2: Quantitative assignment table.

Variable	Quantitative assignment
NLR	<16.93 = 0, ≥16.93 = 1
RDW	<16.00% = 0, ≥16.00% = 1
SOFA score	<9 scores = 0, ≥9 scores = 1
Prognosis	Survival = 0, death = 1

Table 3: Multivariate logistic regression analysis on those affecting the prognosis of emergency patients with sepsis.

Variable	β	*S.E.*	*Wald*	*P*	*OR*	95% CI
NLR	0.308	0.102	9.018	0.002	1.361	1.113~1.664
RDW	0.354	0.133	7.091	0.007	1.425	1.098~1.849
SOFA score	0.449	0.953	0.637	0.619	1.567	0.242~10.146

cluster therapy combined with critical care. Although it can help patients improve clinical symptoms and prolong their survival time to a certain extent, the mortality rate of emergency sepsis patients is still high [10, 11]. Studies [12] pointed out that the mortality rate of emergency patients with sepsis is about 36.27%. In this study, the mortality rate of the 63 patients with sepsis in the emergency department accounted for 34.92%. Although there was some deviation from the above report due to the sample size, the difference was not significant. This indicates that the high mortality rate of sepsis in emergencies is still a characteristic worthy of attention. Previous studies have shown that for emergency sepsis, it is of great significance to find quick and correct serum markers to evaluate the prognosis of patients at an early stage and improve the clinical outcome [13]. Both NLR and RDW have been found to be correlated with the prognosis of sepsis patients, and both have been proven to be independent predictors of inpatient mortality in sepsis patients [14]. However, the impact of both on the prognosis of emergency patients with sepsis is still controversial [15]. For this reason, this paper starts a preliminary discussion on this aspect.

It was found in this study that NLR was an independent risk factor affecting the prognosis of emergency department patients with sepsis ($P < 0.05$), which was similar to results described in Pantzaris et.al. reports [16]. This indicates that the NLR level of sepsis patients is closely related to the severity of the disease. NLR is one of the common markers of systemic inflammatory responses in which lymphocytes can eliminate nonspecific inflammation while neutrophils are important cell that responds to nonspecific inflammatory responses and secret destructive enzymes and inflammatory mediators [17]. Sepsis is a systemic inflammatory disease caused by various pathogens. The neutrophils and lymphocytes in peripheral blood are the main effector cells involved in the inflammatory response [18]. After inflammation, cytokines such as cortisol, prolactin, and catecholamine can be increased. At the same time, it leads to the spontaneous apoptosis of lymphocytes attached to the reticuloendothelial cell system, causing a persistent and harmful inflammatory state, delaying the apoptosis of neutrophils and increasing the contentration of neutrophils in the blood. If sepsis is not effectively controlled in time, neutrophils can accumulate in large numbers in the organs and tissues of the patient's body, block the microcirculation, and aggravate the damage, which is not conducive to prognosis. In addition, when bacteria invade the body of emergency patients with emergency sepsis, the expression of neutrophil surface receptors is out of balance, and a large number of functionally immature neutrophils are released

Table 4: Predictive value of NLR and RDW on the prognosis of emergency patients with sepsis.

Indicator	Area under the curve	Standard error	P value	95% CI	Best cutoff value	Sensitivity	Specificity
NLR	0.818	0.063	0.001	0.694~0.941	16.935	0.82	0.69
RDW	0.823	0.056	0.001	0.713~0.933	16.000	0.82	0.60
NLR + RDW	0.891	0.072	0.001	0.507~0.790	—	0.81	0.51

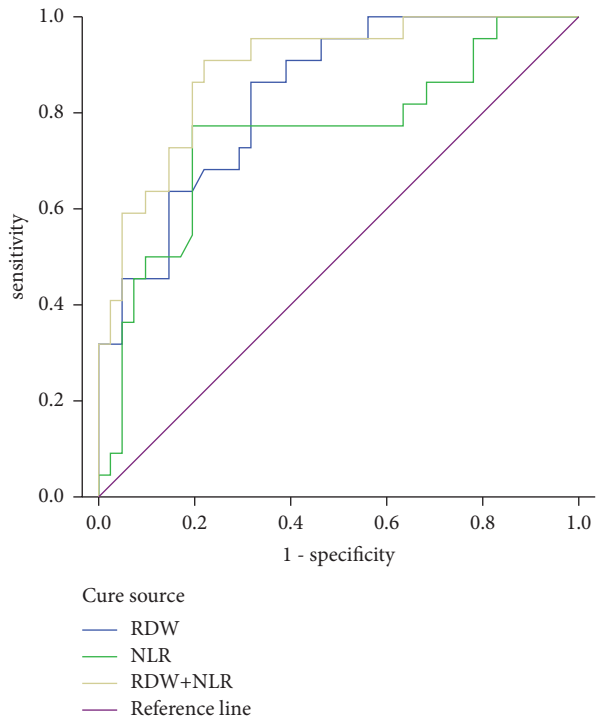

Figure 1: ROC curve of prognostic value of NLR, RDW, and the combination of the two indexes in emergency sepsis patients.

into the blood, which will not only increase the number of neutrophils but also stimulate the activation of lymphocytes and migration to inflammatory tissues, reduce lymphocyte apoptosis, and then, increase the degree of functional damage to vital organs, further aggravating the condition of sepsis patients.

It was found in studies that there is a correlation between the occurrence and development of sepsis and the level of RDW [19]. Other studies point out that RDW is an important predictor of death in patients with sepsis [20]. In the results of this study, RDW was an independent risk factors affecting the prognosis of patients with sepsis in the emergency department ($P < 0.05$), and it was confirmed that the level of RDW could reflect the prognosis of patients with sepsis in the emergency department. The reason is that RDW represents the degree of red blood cell dispersion, which can intuitively reflect the heterogeneity of red blood cell volume. Interaction between RDW levels and severity of inflammatory response in emergency sepsis. When sepsis occurs, the systemic inflammatory response can inhibit red blood cell maturation, increase the level of circulating immature reticulocytes, reduce the half-life of red blood cells, increase the heterogeneity of red blood cells, and cause a large number of immature red blood cells to enter the blood, thereby increasing the RDW level. At the same time, the increase of RDW level can lead to iron metabolism disorder, damage the hematopoietic function, because bone marrow suppression, reduce the expression of erythropoietin receptors, and aggravate the inflammatory reaction. This is repeated to form a vicious circle.

In this study, through ROC curve analysis, it was found that both NLR and RDW had certain predictive values for the prognosis of emergency patients with sepsis, and the areas under the curve were 0.818 and 0.823, respectively. At the same time, the combined detection of the two also has a certain predictive value for the prognosis of emergency patients with sepsis.

To sum up, emergency patients with sepsis have a certain risk of poor prognosis. When the NLR and RDW levels of patients increase, it indicates that the patients may die. Therefore, the detection of NLR and RDW levels can timely determine the risk of death and provide a reference for symptomatic treatment. The sample size selected for this study is relatively low, so there are certain limitations. In the future, the sample size can be appropriately expanded for in-depth research to provide objective theoretical support for this field.

Data Availability

The data used in this study can be obtained from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Effect of Hyperbaric Oxygen Therapy on Sleep Quality, Drug Dosage, and Nerve Function in Patients with Sleep Disorders after Ischemic Cerebral Stroke

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] J. Wang, C. Wang, X. Wu, T. Ma, and X. Guo, "Effect of Hyperbaric Oxygen Therapy on Sleep Quality, Drug Dosage, and Nerve Function in Patients with Sleep Disorders after Ischemic Cerebral Stroke," *Emergency Medicine International*, vol. 2022, Article ID 8307865, 6 pages, 2022.

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Research Article

Effect of Hyperbaric Oxygen Therapy on Sleep Quality, Drug Dosage, and Nerve Function in Patients with Sleep Disorders after Ischemic Cerebral Stroke

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Objective. To explore the effects of hyperbaric oxygen therapy (HOT) on sleep quality, drug dosage, and nerve function in patients with sleep disorders after ischemic cerebral stroke (ICS). *Methods*. A total of 120 patients with acute ICS and sleep disorders who came to our hospital for treatment from January 2019 to October 2021 were selected and divided into control and observation groups according to the random numbering method, with 60 cases in each group. Both groups were treated with sertraline and eszopiclone for treating insomnia. The control group was given routine treatment for ICS, and the observation group was additionally treated with HOT in addition to the control group. The sleep quality, the use of sleep medication, the neurological function score, and the levels of serum tumor necrosis factor-α (TNF-α), endothelin (ET), and neuropeptide Y (NPY) before and after treatment were compared between the two groups. *Results.* The levels of TNF-α, ET and NPY were not significantly different between the two groups of patients before treatment ($P > 0.05$), and all of the above indicators decreased significantly in both groups after treatment, with the observation group being lower than the control group ($P < 0.05$). There was no significant difference in the sleep quality scores of PSQI, ESS, and SBQ between the two groups before treatment ($P > 0.05$), and the above indicators decreased significantly in both groups after treatment, with the observation group being lower than the control group ($P < 0.05$). There was no significant difference in the dose of sleep medication used in the first day of treatment between the two groups ($P > 0.05$), and the amount of sleep medication used in the observation group was significantly less than that in the control group after 14 d of treatment ($P < 0.05$). There was no significant difference in the NIHSS scores between the two groups before treatment ($P > 0.05$), and the scores of both groups decreased after treatment, and the scores of the observation group were significantly lower than those of the control group ($P < 0.05$). *Conclusion.* Compared with routine treatment, the addition of HOT to treat patients with sleep disorders after ICS can significantly improve their sleep quality, reduce dosage of sleep drugs, reduce inflammatory level of brain tissue and nerve function damage, and improve their prognosis. *Trial Registration.* This study was registered in the EA2019056

1. Preface

Ischemic stroke, also known as cerebral infarction, is a localized necrotic lesion of brain tissue caused by a narrowing or occlusion of the blood supplying arteries to the brain that triggers insufficient blood supply to the brain [1]. Ischemic stroke has a high morbidity and mortality rate and a poor prognosis, and it often occurs in middle-aged and elderly people [2]. In recent years, with the change of people's lifestyle, the number of cases has been increasing year by year, which seriously threatens the physical and mental health of patients. Ischemic stroke is caused by obstruction of cerebral blood flow and the pathophysiological changes of ischemia, hypoxia, and necrosis of the brain parenchyma, which in turn impairs cognitive and other neurological functions of the patient. The current treatment modalities

Table 1: Comparison of the general data of the two groups of patients.

Indicator		Control group ($n = 60$)	Observation group ($n = 60$)	Statistical value	P-value
Gender (male/female)	—	33/27	32/28	0.034	0.855
Age (years)	—	64.43 ± 8.64	64.41 ± 8.63	0.013	0.990
Co-morbidities	Hypertension	24	23	0.047	0.977
	Diabetes mellitus	19	20	—	—
	Hyperlipidemia	17	17	—	—
Lesion site	Thalamus	5	3	2.606	0.626
	Cerebellum	7	4	—	—
	Cerebral hemispheres	16	19	—	—
	Basal ganglia	18	15	—	—
	Brainstem	14	19	—	—
Education level	Illiterate	3	5	1.016	0.907
	Elementary school	14	12	—	—
	Junior high school	27	26	—	—
	High school	13	15	—	—
	University	3	2	—	—

for ischemic stroke mainly focus on thrombolysis, anticoagulation, and reduction of blood viscosity [3, 4]. Some ischemic stroke patients are often accompanied by varying degrees of anxiety and depression, which seriously affect the patient's sleep quality and is very unfavorable for the patient's treatment and recovery [5]. Dexzopiclone is a common sedative-hypnotic drug commonly used for various types of insomnia symptoms [6]. Sertraline is a commonly used antidepressant and anxiety drug in clinical practice, which can effectively relieve the bad psychological state of patients and contribute to the sleep quality of patients [7].

In addition to the above treatment, how to improve the patient's neurological impairment, restore the patient's motor function, and improve the patient's prognosis is also the focus of clinical attention. Hyperbaric oxygen therapy (HOT) is currently an effective way to promote the prognosis of patients with ischemic stroke, which can effectively increase the oxygen acquisition of brain tissue by inhaling high concentrations of oxygen, thereby promoting the recovery of injured neurological functions, improving blood circulation, enhancing brain metabolism, and contributing to the recovery of neurological functions [8, 9]. In this study, hyperbaric oxygen was used to treat patients with sleep disorders after ischemic stroke, and its effects on sleep quality, drug dosage, and neurological function were analyzed. The reports are as follows.

2. Materials and Methods

2.1. General Information. From January 2019 to October 2021, 120 patients with acute ischemic stroke sleep disorder who came to our hospital for treatment were selected as research subjects. According to the random numbering method, they were divided into the control group and observation group, with 60 cases in each group. There was no statistical difference in the data between the two groups ($P > 0.05$), Table 1.

Diagnostic criteria: (1) focal neurological deficits and, in a few cases, global neurological deficits; (2) unlimited duration or persistence of symptoms or signs for more than 24 h; (3) exclusion of vascular causes; (4) exclusion of cerebral hemorrhage by cranial CT or MRI.

Inclusion criteria: (1) The diagnostic criteria for ischemic stroke were met [10], and confirmed by head CT or MRI; (2) Had not taken similar drugs or drugs antagonistic to this drug recently; (3) All patients were first-time patients stroke patients; (4) informed and voluntary participation. Exclusions: (1) Patients with malignant tumors; (2) Mental disorders, unable to communicate normally; (3) Poor compliance. (4) Complicated with organic diseases such as heart, liver, and kidney.

2.2. Methods

2.2.1. The Control Group Was Given Conventional Treatment. The patient was hospitalized immediately after diagnosis, and given normal pressure oxygen inhalation, intracranial pressure reduction, antiplatelet drugs, thrombolysis, neurotrophic solution, symptomatic and supportive treatment, etc. Aspirin enteric-coated tablets (Shenyang Aojina Pharmaceutical Co., Ltd., approved by H20065051, 100 mg/time, once/d) and nimodipine (Hubei Sihuan Pharmaceutical Co., Ltd., approved by H20030026, 60 mg/time, 2 times/d) were given for the treatment of ischemic stroke. Critically ill patients were given drugs to prevent infection, antiarrhythmia and maintain water-electrolyte balance, sedation and antiepilepsy according to the patient's symptoms, as well as appropriate rehabilitation instructions for two consecutive weeks.

2.2.2. The Observation Group Received Hyperbaric Oxygen Therapy on the Basis of the Control Group. The patients in the observation group started to receive hyperbaric oxygen therapy after the vital signs stabilized on the 3rd day of admission. A single hyperbaric chamber was used, with partial pressure of oxygen at 2.0 mPa, pressurized to 0.2 Mpa, and stabilized for 20 min. The chamber was washed at high flow rate for 10 min at the high pressure plane, and then gradually decompressed and discharged, 60 min/time, 1

time/d, for two weeks, and early rehabilitation training was also instructed.

2.2.3. Treatment Options for Sleep Disorder Medications. The two groups of patients were given the same sleep drug sertraline (Pfizer Pharmaceutical Co., Ltd., approved by the State Drug H10980141, 50 mg*30 tablets) and dexrazopiclone (Jiangsu Tasly Diyi Pharmaceutical Co., Ltd., approved by the State Drug H20070069, 3 mg*6 tablets) for the treatment of sleep disorders. Dexrazopiclone 3 mg/d, 1 time/d and sertraline 50 mg/d, 1 time/d were started and the dose was adjusted according to the patient's sleep status.

2.2.4. Observation Indicators

(1) To compare the sleep quality of the two groups of patients before and after treatment. All patients were evaluated by specialized medical staff within 24 hours of admission and were collected by a sleep disorder scale. The Pittsburgh Sleep Quality Index Inventory (PSQI) was used to assess sleep quality, consisting of 7 factors (sleep quality, time to fall asleep, sleep duration, sleep efficiency, sleep disorder, hypnotic medication, and daytime function), with a total score range of 0–21. A total PSQI score ≥7 can be used as a criterion for diagnosing sleep disorders, and a higher score indicates poorer sleep quality. Epworth (ESS) was used to evaluate the degree of daytime sleepiness, and the ESS scale consisted of 8 items, each item was scored 0~3 (never napping was scored as 0, rarely napping was scored as 1, sometimes napping was scored as 2, and often napping was scored as 3), and the total score was 24, ESS>10 was assessed as daytime sleepiness, the higher the score, the more serious the patient's sleepiness. The STOP-Bang questionnaire (SBQ) was used to assess sleep apnea, which included whether snoring was loud, whether daytime fatigue was present, whether sleep apnea was observed, whether hypertension was present, and gender, age, BMI, and neck circumference. The presence of sleep apnea was determined by an SBQ score ≥3.

(2) To compare the dosage of sleep drug sertraline before and after treatment in the two groups of patients.

(3) The serum levels of tumor necrosis factor-α (TNF-α), endothelin (ET), and neuropeptide Y (NPY) were compared between the two groups of patients before and after treatment. 8 mL of fasting venous blood was collected from patients, centrifuged at 3500 r/min for 10 min at 5°C, and the upper layer of plasma was stored in a refrigerator at −40°C and assayed by radioimmunoassay technique.

(4) Comparison of the changes of neurological function between the two groups before and after treatment. NIHSS was used to evaluate the neurological function of the patients. The scores included the level of consciousness, language, articulation, movement of limbs, sensation, and facial paralysis.

2.2.5. Statistical Analysis. Statistical software SPSS 22.0 was used to analyze the data. The count data was expressed as rate, and the χ^2 test was used. The measurement data was expressed as $(x \pm s)$, and the t-test was used. $P < 0.05$ was considered statistically significant.

3. Results

3.1. Comparison of the General Data of the Two Groups of Patients. The general data of the patients in the two groups were compared, and the results showed that the differences between the two groups were not significant $P > 0.05$ in the data of gender, age, co-morbidities, lesion sites, and education level, as shown in Table 1.

3.2. Comparison of the Contents of TNF-α, ET, and NPY in the Two Groups of Patients. There was no significant difference in the contents of TNF-α, ET, and NPY between the two groups before treatment ($P > 0.05$). The levels of TNF-α, ET, and NPY decreased in both groups after treatment, with the above indexes in the observation group being significantly lower than those in the control group ($P < 0.05$), as shown in Table 2.

3.3. Comparison of sleep quality between the two groups of patients. There was no significant difference in the scores of PSQI, ESS, and SBQ between the two groups before treatment ($P > 0.05$). The scores of PSQI, ESS, and SBQ decreased in both groups after treatment, with the scores of the above-mentioned scales in the observation group being significantly lower than those in the control group ($P < 0.05$), as shown in Table 3.

3.4. Comparison of the Dosage of Sleep Medication before and after Treatment between the Two Groups of Patients. There was no significant difference in the dosage of sleep medication between the two groups on the first day of treatment ($P > 0.05$). After 14 days of treatment, the dosage of sleep medication in the observation group was significantly lower than that in the control group ($P < 0.05$), as shown in Table 4.

3.5. Comparison of the NIHSS Scores of the Two Groups of Patients. There was no significant difference in the NIHSS scores between the two groups before treatment ($P > 0.05$), the scores of both groups decreased after treatment, and the scores of the observation group were significantly lower than those of the control group, and the differences between the two groups were statistically different ($P < 0.05$), as shown in Table 5.

Table 2: Comparison of the levels of TNF-α, ET, and NPY in the two groups of patients ($\bar{x} \pm s$, pg/mL).

Group	Number of cases	TNF-α		ET		NPY	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Observation group	60	87.61 ± 5.54^a	34.41 ± 4.76^a	228.31 ± 9.56	154.26 ± 8.11^a	181.48 ± 7.53	97.49 ± 6.86^a
Control group	60	87.58 ± 5.49	59.77 ± 4.83^a	228.29 ± 9.61	198.65 ± 8.23^a	180.52 ± 7.49	126.17 ± 7.73^a
t	—	0.030	28.967	0.011	29.759	0.700	21.495
P	—	0.976	0.000	0.991	0.000	0.485	0.000

Note. $aP < 0.05$ compared with before treatment.

Table 3: Comparison of sleep quality between the two groups of patients ($\bar{x} \pm s$, points).

Group	Number of cases	PSQI		ESS		SBQ	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Observation group	60	7.44 ± 3.92	5.23 ± 3.02^a	7.62 ± 4.32	5.19 ± 4.11^a	3.26 ± 1.69	2.18 ± 0.67^a
Control group	60	7.51 ± 4.01	6.41 ± 3.11	7.57 ± 4.29	6.71 ± 4.15	3.24 ± 1.67	2.98 ± 1.02
t		0.097	2.108	0.064	2.016	0.065	5.078
P		0.923	0.037	0.949	0.046	0.948	0.000

Note. $aP < 0.05$ compared with before treatment.

Table 4: Comparison of sleep medication dosage changes before and after treatment in the two groups of patients ($\bar{x} \pm s$, mg).

Group	Number of cases	1st day of treatment	14 days of treatment
Observation group	60	53.00 ± 1.37	28.00 ± 0.56^a
Control group	60	53.00 ± 1.21	37.00 ± 0.64^a
t	—	0.000	81.976
P	—	1.000	0.000

Note. $aP < 0.05$ compared with before treatment.

4. Discussions

Ischemic stroke is a common clinical cardiovascular and cerebrovascular disease, and patients are often accompanied by varying degrees of sleep disorders, which affect the recovery process of patients and are not conducive to the improvement of prognosis [11]. Patients have various forms of sleep disorders, including difficulty in falling asleep, insomnia, and sleep apnea. Long-term sleep disorders can lead to poor mental concentration, daytime sleepiness, anxiety, and depression [12]. At present, sleep disorders are generally treated with drugs, but long-term use of drug therapy can produce toxic side effects on the body [13], HOT is a noninvasive treatment method and is widely used in neurology [14]. In this study, HOT was used to treat ischemic stroke patients with sleep disorders, in order to improve the sleep quality of patients, reduce the dosage of sleep drugs, and improve the neurological function of patients.

In this study, it was found that the levels of TNF-α, ET, and NPY were not significantly different between the two groups before treatment, and the levels of these indicators decreased in both groups after treatment, and the observation group was significantly lower than the control group. TNF-α is a tumor necrosis factor with strong biological activity, which can activate leukocytes and promote the release of various inflammatory mediators; ET has a vasoconstrictive function and can be released in large quantities in a state of ischemia and hypoxia, and is an endogenous injury-causing factor. NPY is a neuropeptide that is widely distributed in the central and peripheral nervous systems and can stimulate the occurrence of inflammatory responses [15]. The reduction of inflammatory factors such as TNF-α, ET, and NPY after treatment suggests that hyperbaric oxygen therapy contributes to the clearance of serum inflammatory factors in ischemic stroke, reduces the inflammatory response, and improves cerebral blood circulation. HOT can improve patients' cerebral hypoxia, increase the partial pressure of blood oxygen in cerebral vessels, promote cerebral blood circulation, improve cerebral metabolism, reduce

Table 5: Comparison of NIHSS scores between the two groups ($\bar{x} \pm s$, points).

Group	Number of cases	Before treatment	After treatment
Observation group	60	7.21 ± 4.35	4.78 ± 2.45^a
Control group	60	7.18 ± 4.27	5.89 ± 3.21^a
t	—	0.038	2.129
P	—	0.970	0.035

Note. $aP < 0.05$ compared with before treatment.

intracranial pressure, alleviate cerebral edema, accelerate the rate of removal of oxygen free radicals and inflammatory factors in the body, and reduce their secondary damage to the brain tissue [16]. It was found that there was no significant difference in the scores of PSQI, ESS, and SBQ between the two groups before treatment, and the scores of the above scales decreased in both groups after treatment, with the observation group significantly lower than the control group, and the use of sleep medication in the observation group was significantly lower than the control group after treatment. PSQI, ESS, and SBQ are common clinical scales used to assess patients' sleep quality, and the results of the study showed that adding hyperbaric oxygen therapy to conventional treatment can improve patients' sleep quality and reduce dependence on sleep medication.

The pathogenesis of sleep disorders in patients with ischemic stroke is complex. In recent years, there have been many studies [17, 18] on the pathogenesis of sleep disturbance after ischemic stroke at home and abroad, and it is believed that the neurons in the brain may be damaged, the brain edema compresses the surrounding brain tissue, and the brain areas involved in sleep regulation are severely damaged, blocking the conduction of the specific reticular upward activation system, thus triggering the disruption of sleep structure. HOT can improve the state of brain hypoxia, increase the blood oxygen content of brain tissue, restore blood supply balance, improve the state of intracranial hypertension, accelerate the scavenging of free radicals, reduce secondary damage to brain tissue, eliminate the vicious cycle of brain tissue hypoxia-edema-hypoxia, can promote the reconstruction of deficient neurological function, and improve the quality of sleep [7, 19]. At the same time, hyperbaric oxygen therapy reduces the inflammatory response of the blood vessels in the brain, decreases the interference of neuropathic factors in the sleep of patients, improves the quality of their sleep, reduces dependence on drugs, and decreases the use of drugs [20]. NHISS scores decreased in both groups before and after treatment compared with those before treatment, and were lower in the observation group. The possible reason for the analysis is that insufficient energy metabolism of brain cells due to severe ischemia and hypoxia is the main cause of triggering neurological function damage, while HOT can rapidly increase the oxygen content of blood, improve hemodynamics, promote oxygen metabolism of brain cells, accelerate the regeneration and repair of capillaries, help the recovery of the internal environment of damaged neurons, and reduce the damage to patients' neurological function [21].

In conclusion, the treatment of patients with sleep disorders after ischemic stroke with HOT on the basis of conventional treatment has good efficacy, can significantly improve the sleep quality of patients, reduce the use of sleep medication, high safety, reduce the inflammatory level of brain tissue, improve the neurological impairment of patients, and is worthy of clinical promotion. The clinical registration number is EA2019056.

Data Availability

The data can be obtained from the author upon reasonable request.

Ethical Approval

This study was approved by the ethics committee of our hospital. The number is L2019096.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Research Article

Effect Observation of Optimized Individualized Nursing Care Applied to ICU Patients with Severe Pneumonia

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Purpose. This study aims to observe the effect of optimized individualized nursing care applied to intensive care unit (ICU) patients with severe pneumonia (SP). *Methods*. 440 patients with SP admitted to the ICU of our hospital from January 2019 to June 2020 were provided with routine nursing care (group A), and 550 patients with SP admitted from July 2020 to December 2021 were provided with optimized individualized nursing care (group B). The blood lactate index and acute physiology and chronic health evaluation (APACHE II) scores before and after care were compared between the two groups. The WBC count recovery time, mechanical ventilation time, antipyretic time, and length of hospital stay of the two groups were recorded. The complication rate of the two groups during the nursing care period was compared. The prognosis effect of the two groups after 6 and 12 months of discharge was followed up with the Seattle angina pectoris questionnaire (SAQ). *Results*. After care, the lactate level and lactate clearance rate were higher in both groups than before care, and the lactate level in group B was lower than that in group A and the lactate clearance rate was higher than that in group A ($P < 0.05$). After care, APACHE II scores were lower in both groups than before care, and lower in group B than in group A ($P < 0.05$). After care, the WBC count recovery time, mechanical ventilation time, antipyretic time, and length of hospital stay were shorter in group B than in group A ($P < 0.05$). During the nursing care period, the complication rate was lower in group B (5.82%) than in group A (11.59%) ($P < 0.05$). 6 and 12 months after discharge, the SAQ scores were higher in group B than in group A ($P < 0.05$). *Conclusion*. Optimized individualized nursing care applied to ICU SP patients can effectively improve the patients' physiological indicators, reduce complications, improve the prognosis of quality of life, and have a positive effect on the patients' speedy recovery.

1. Introduction

Severe pneumonia (SP) is a common acute and critical illness, mostly in the elderly. Patients are severely ill, progress rapidly, and have a poor prognosis, and some patients may even suffer from complications, such as infectious shock [1], acute respiratory distress syndrome [2], gastrointestinal bleeding [3], and multiorgan failure [4], leading to reduced survival rates. The main manifestations of the patient are edema and congestion in the lung tissue. In addition, the secretion in the respiratory tract is significantly increased compared with that before the disease, which make it easy to block part of the bronchioles and affects the gas exchange in the alveoli, thus hindering the patient's breathing [5]. The key to the treatment of this disease is to increase the effective oxygen intake, reduce the CO_2 retained in the lungs, and keep breathing unobstructed. ICU monitoring is often used in the clinic to improve the treatment effect [6]. Martin-Loeches et al. [7] believe that scientific and reasonable nursing care measures can improve the clinical symptoms of patients from both physiological and psychological aspects and improve the quality of life. Individualized nursing care comprehensively implements the idea of serving patients, which emphasizes patient-centredness and expands the purely technical operation of nursing to include all aspects of patients' physiology, psychology, and spirituality, and provides patients with quality nursing services in a targeted manner. Especially in terms of health education for patients, nursing techniques and services, the number of nurses' rounds, and nurses' work attitudes, these

measures have brought nursing close to patients and to the clinic, which has greatly brought the doctor-patient relationship closer, reduced medical disputes, and facilitated the recovery of patients' conditions. In this study, we adopted an optimized individualized nursing care intervention by evaluating the changes in blood lactate levels, acute physiology, and chronic health assessment system (APACHE II) scores, and Seattle angina survival quality scale (SAQ) scores in SP patients after the adoption of nursing care interventions to determine the impact of optimized individualized nursing care on the prognosis of SP patients, so as to accumulate experience for rational nursing care interventions in ICU SP patients.

2. Materials and Methods

2.1. Research Object. This study is a controlled historical experiment. The cases collected were 990 patients with SP admitted to our ICU between January 2019 and December 2021. Inclusion criteria: who all met the diagnostic criteria of the Chinese College of Emergency Physicians (CCEP) for SP [8] and were confirmed by clinicopathology; all patients were first cases, admitted to the hospital within 2 weeks of onset, and received reasonable treatment after admission; they were mentally and cognitively normal and able to cooperate effectively with treatment and rehabilitation care; patients or their families who had signed the relevant informed consent form. Exclusion criteria: persons with serious diseases of the cardiovascular system; persons suffering from malignant tumours; persons with severe immune system disorders; persons suffering from respiratory failure; persons suffering from coagulation disorders; those who had recently undergone major surgical treatment; persons with restricted mobility; those who died during nursing care and follow-up. 440 patients with SP admitted to the ICU of our hospital from January 2019 to June 2020 were provided with routine nursing care (group A), and 550 patients with SP admitted from July 2020 to December 2021 were provided with optimized individualized nursing care (group B). The general information collected from groups A and B was compared, and no statistical difference was found ($P > 0.05$), which is comparable (Table 1).

2.2. Care Methods. Patients in both groups received symptomatic support treatment, such as routine oxygenation, sputum evacuation, anti-infection, nutritional support, correction of water-electrolyte disturbances, acid-base balance, and active treatment of underlying diseases.

2.2.1. Group A Was Provided with Routine Nursing Care. ① Environmental care: nursing staff should keep the air in the ward clean with appropriate room temperature and humidity and regular ventilation. Also, ensure that the beds are neat and clean, the room is disinfected regularly, and the quietness of the ward is maintained. ② Daily care: healthcare workers should make detailed observations and records of changes in the patient's condition, advise the patient to take medication on time, arrange rest time reasonably, conduct daily vital sign checks for the patient, and perform regular oral, nasal, and suction care. ③ Health education: health care staff should develop relevant health education programmes in a targeted manner. For those with a high literacy level, they could communicate with patients by using the treatment means of the disease, the nursing programme, and precautions as entry points; for those with a low literacy level, the nursing staff should explain the knowledge of the disease in a simple and easy-to-understand manner to help patients establish a correct mindset towards the disease. ④ Discharge instruction: instruct patients to take appropriate physical exercise to improve their physical fitness and quality of life.

2.2.2. Group B Was Provided with Optimized Individualized Nursing Care. ① Enhance respiratory management: help the patient lie flat and pad the neck and back, and pay attention to clearing the oral and nasal secretions at any time to keep the respiratory tract unblocked. For those whose sputum was thick and difficult to cough up, Mucosolvan and normal saline were given for atomization inhalation to dilute the sputum. Sputum aspiration could be performed on anyone with SpO_2 below 90%, elevated airway pressure and sputum sounds, and the patient's vital signs and parameters were closely monitored during aspiration. For older, weaker coughs and severe conditions, postural drainage might be used. For patients on ventilator-assisted ventilation, airway humidification should be enhanced to dilute sputum to prevent blockage of the tube. ② Oxygen therapy care: for patients with symptoms of hypoxia, blood oxygen saturation should be monitored, and an appropriate oxygen inhalation mode should be selected according to the results. Oxygen flow should be controlled at 5 L/min. For patients with CO_2 retention, oxygen should be maintained at a low flow rate and be continuous, with an oxygen concentration of 30%–35% being appropriate. Also, during oxygen therapy care, the nurse must closely monitor the patient's respiratory rate and state of consciousness. ③ Bacterial culture and drug sensitivity test: bacterial cultures were regularly performed on airway secretions, and drug sensitivity tests were conducted on isolated pathogenic bacteria to keep track of changes in pathogenic bacteria and to select sensitive antibacterial drugs, pay attention to the duration of each use of antibacterial drugs within 8 d, and change the type of antibacterial drugs when appropriate to reduce bacterial resistance. ④ Complication prevention and control care: if patients develop cardiac insufficiency, they should be promptly treated with oxygen and sedation to control their condition. If there was no significant improvement in symptoms and the patient became agitated and cyanotic, appropriate resuscitation measures should be taken to prevent heart failure from developing. If patients develop symptoms of renal insufficiency, caregivers must closely monitor the patient's progress. ⑤ Psychological care and health education: SP patients often had symptoms, such as chest tightness and wheezing, and were accompanied by a sense of near-death, which, together with being in an ICU environment, further aggravated the patients' psychological

Table 1: General information for groups A and B.

Items	Group A ($n = 440$)	Group B ($n = 550$)	χ^2/t	P
Age (years old)	66.86 ± 7.43	66.01 ± 7.37	1.797	0.073
Disease duration (d)	11.95 ± 7.04	11.71 ± 5.64	0.596	0.552
Gender (n, %)				
Male	258 (58.64)	294 (53.45)	2.661	0.103
Female	182 (41.36)	256 (46.55)		
Basic diseases (n, %)				
Hypertension	165 (37.50)	210 (38.18)	0.048	0.826
Diabetes	86 (19.55)	120 (21.82)	0.766	0.381
Coronary heart disease	80 (18.18)	122 (22.18)	2.408	0.121
Chronic obstructive pulmonary disease	72 (16.36)	86 (15.64)	0.096	0.756
Cerebral infarction	50 (11.36)	60 (10.91)	0.051	0.821
Cerebral haemorrhage	42 (9.55)	49 (8.91)	0.119	0.731
Others	205 (46.59)	242 (44.00)	0.663	0.416

burden and fear. Patients were provided with reasonable psychological guidance and health education, introduced to the purpose of various treatments and examinations and the methods of cooperation so that they could have a scientific understanding of their condition, reduce unnecessary psychological pressure, alleviate their anxiety and tension, and improve compliance with treatment.

2.3. Research Indicators

2.3.1. Blood Lactate Indicator. Before and after care, a blood gas biochemistry analyser (Nova Stat Profile, USA) was used to measure lactate levels in both groups and to calculate the lactate clearance rate. Lactate clearance rate = (initial lactate level – post-treatment lactate level)/initial lactate level × 100%.

2.3.2. APACHE II Score. Before and after care, APACHE II scores were tallied for both groups. It consists of 3 parts: the acute physical status score, age, and chronic health status score, with a total score of 71, 0–15 being nonserious, and >15 being serious, with lower scores indicating a less serious condition.

2.3.3. Relevant Time Indicator. The WBC count recovery time, mechanical ventilation time, antipyretic time, and length of hospital stay of the two groups were recorded.

2.3.4. Complication Rate. The occurrence of complications (such as infectious shock, pulmonary oedema, bronchiectasis, renal insufficiency, cardiac insufficiency, etc.) during care was recorded in both groups.

2.3.5. Prognostic Effect. The prognosis effect of the two groups after 6 and 12 months of discharge was followed up with the SAQ. The assessment dimensions include activity limitation, disease onset, and quality of life, all of which are scored out of 100, with higher scores indicating better survival status.

2.4. Statistical Analysis. SPSS 22.0 was used for data analysis. The measurement data (±s) were tested by independent samples t-test. Count data n (%) was tested by χ^2. A difference of $P < 0.05$ was considered statistically significant.

3. Result

3.1. Blood Lactate Indicator. After care, the lactate level and lactate clearance rate were higher in both groups than before care, and the lactate level in group B was lower than that in group A and the lactate clearance rate was higher than that in group A; the differences were statistically significant ($P < 0.05$). (Figure 1).

3.2. APACHE II Score. After care, APACHE II scores were lower in both groups than before care, and lower in group B than in group A; the differences were statistically significant ($P < 0.05$). (Figure 2).

3.3. Relevant Time Indicator. After care, the WBC count recovery time, mechanical ventilation time, antipyretic time, and length of hospital stay were shorter in group B than in group A; the differences were statistically significant ($P < 0.05$). (Figure 3).

3.4. Complication Rate. During the nursing care period, the complication rate was lower in group B (5.82%) than in group A (11.59%); the difference was statistically significant ($P < 0.05$). (Figure 4).

3.5. SAQ Score. Six and 12 months after discharge, activity limitation, disease onset, and quality of life scores in the SAQ were higher in group B than in group A; the differences were statistically significant ($P < 0.05$). (Figure 5).

4. Discussion

Pneumonia is an inflammation of lung tissue (fine bronchial, alveolar, and interstitial), caused by different etiologies and different pathogenic bacteria in different settings with similar or identical pathophysiological processes, all of

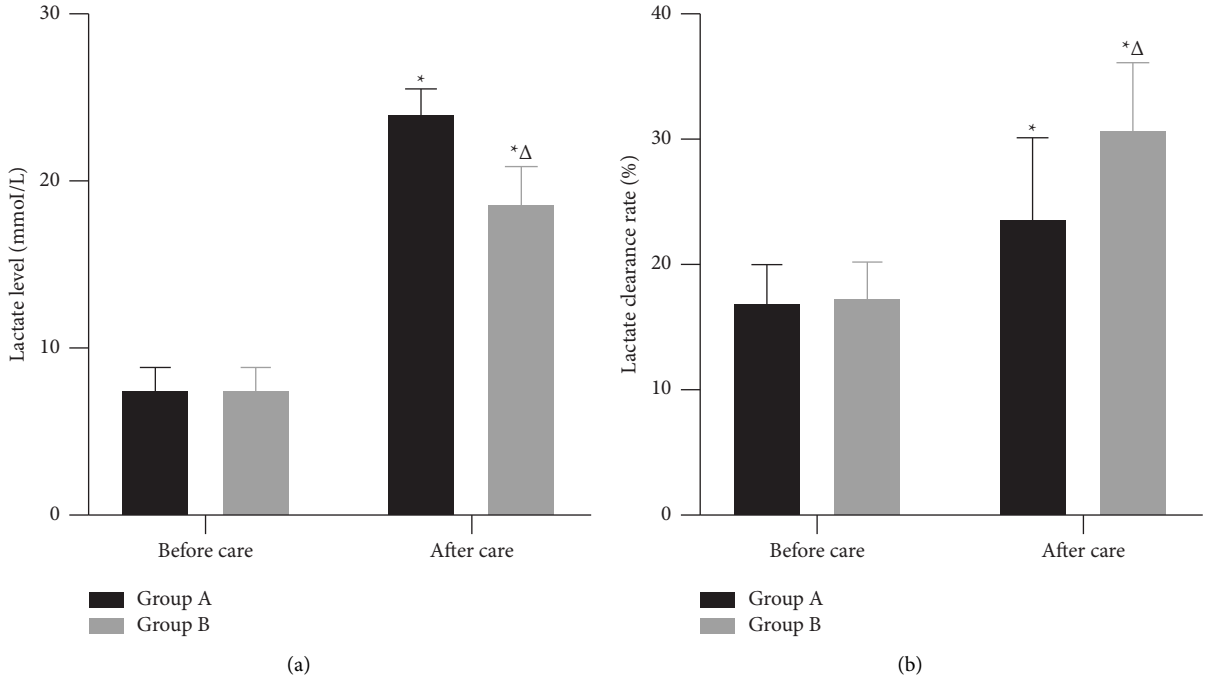

Figure 1: Blood lactate indicator. *Note*. (a). Lactate level (mmol/L). (b). Lactate clearance rate (%). *and △represent a comparison with the same group before care and group A after care, respectively, $P < 0.05$.

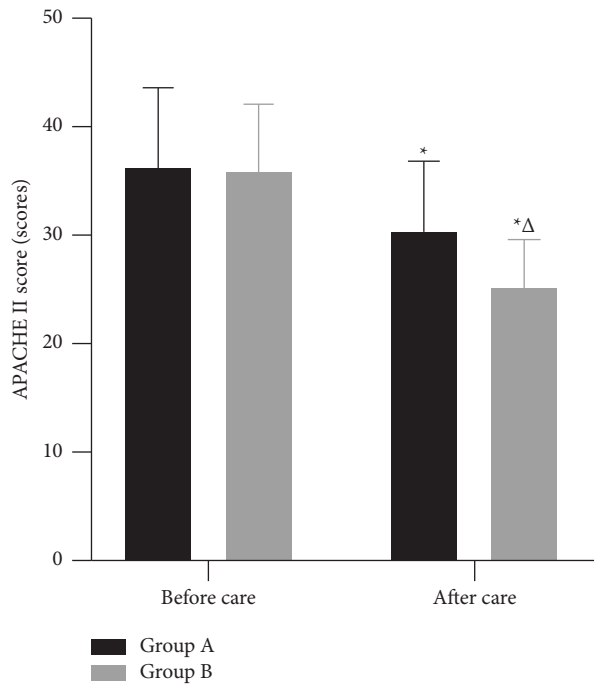

Figure 2: APACHE II score. *Note*. *and △represent a comparison with the same group before care and group A after care, respectively, $P < 0.05$.

which can deteriorate and worsen into SP when they develop into certain disease stages, causing multiorgan dysfunction or even being life-threatening, with a mortality rate of up to 30%–50% [9]. SP is prone to a variety of comorbidities and increases the financial burden of healthcare. In general, the treatment of this disease is the first choice of strong broad-

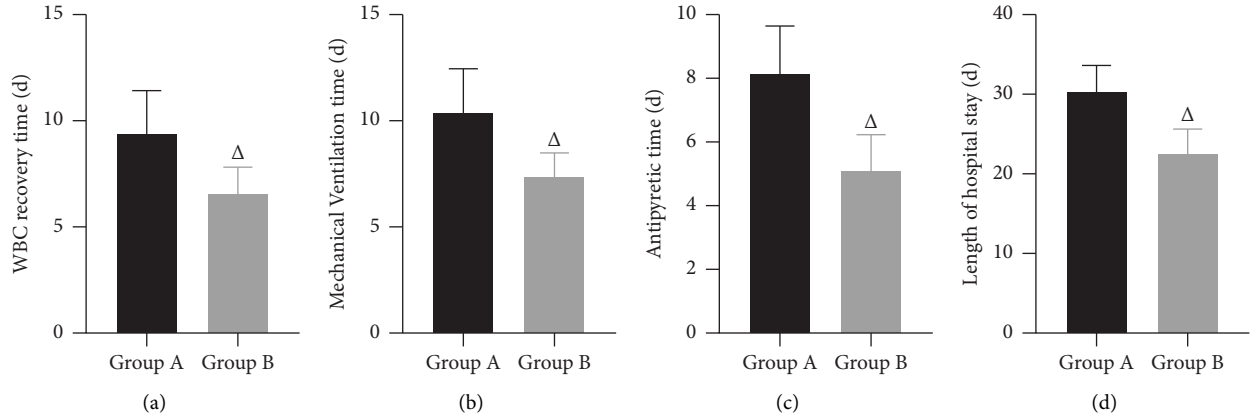

Figure 3: Relevant time indicators. *Note*. (a). WBC recovery time. (b). Mechanical ventilation time. (c). Antipyretic time. (d). Length of hospital stay. Comparison with group A, $^{\triangle}P < 0.05$.

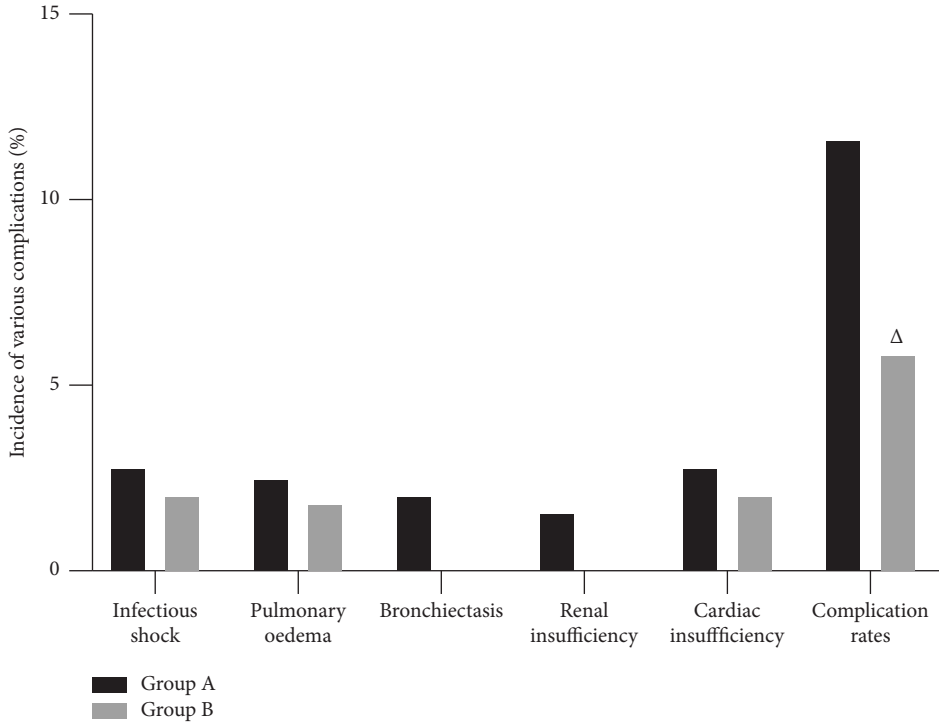

Figure 4: Incidence of various complications. *Note*. Comparison with group A $^{\triangle}P < 0.05$.

spectrum antibiotics in sufficient amounts, and combined medication and ICU monitoring can significantly improve its efficacy [10]. In a way, appropriate nursing interventions are also of great therapeutic importance for the relief of the disease. Xin [11] showed an overall treatment effectiveness rate of 95.00% in elderly SP patients after anticipatory care intervention, which was significantly higher than that of the control group. Liu [12] showed significant improvement in blood gas analysis and family satisfaction after intensive care of a newborn with SP and respiratory failure. In this study, we adopted an optimized individualized nursing care plan, focusing on the implementation of targeted care according to the patient's specific condition, closely observing the changes in the patient's monitoring indicators during nursing care, and adjusting the nursing care plan according to the changes in the condition in a timely manner, which also achieved satisfactory results.

4.1. Optimized Individualized Nursing Care can Improve Physiological Indicators in ICU SP Patients. Patients with SP have congested and oedematous lung tissue, as well as increased respiratory secretions, which can lead to fine bronchial and bronchial obstruction, causing respiratory distress [13]. Lactate, a product of glucose anaerobic metabolism, reflects the degree of tissue hypoxia and intertissue perfusion levels and is a commonly used indicator to assess the severity of disease [14]. Tang et al. [15]

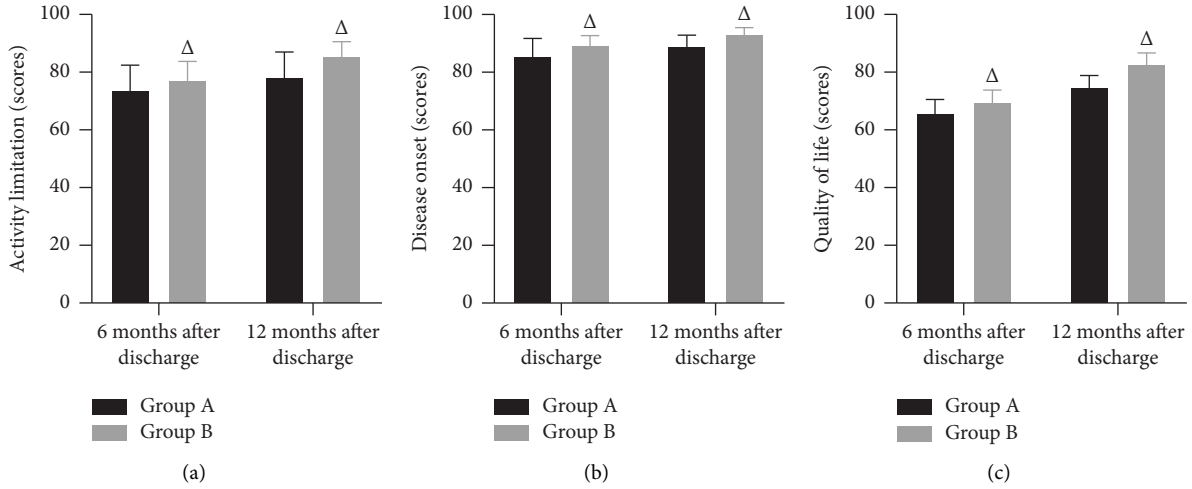

Figure 5: SAQ score. *Note*. (a). Activity limitation (scores). (b). Disease onset (scores). (c). Quality of life (scores). Comparison with group A, $^{\triangle}P < 0.05$.

concluded that individualized nursing interventions can improve pulmonary ventilation and reduce cellular hypoxia in patients with SP, thereby reducing abnormalities in pyruvate metabolism and resulting in lower lactate levels. Shadvar et al. [16] also concluded that for patients with SP in the ICU, care can be graded accordingly based on lactate clearance rate, thus shifting the original empirical judgement of the condition to an objective indicator, and that reasonable nursing interventions can improve blood lactate levels. In this outcome, after care, the lactate level and lactate clearance rate were higher in both groups than before care, and the lactate level in group B was lower than that in group A and the lactate clearance rate was higher than that in group A. It is suggested that optimized individualized nursing care can significantly improve hypoxic symptoms and intertissue perfusion in SP patients. This may be due to the fact that in optimized individualized nursing care, giving patients oral, nasal, and other respiratory care will effectively remove oral and nasal secretions and ensure the patency of the upper respiratory tract; giving patients symptomatic treatment such as sputum aspiration and oxygen inhalation can fully remove the obstruction of the lower respiratory tract, increase the oxygen saturation in the body, and improve the blood circulation; as a result, the patient's symptoms of dyspnoea improved, and the arterial blood lactate level decreased and lactate clearance increased. On the other hand, in group A, where only symptomatic treatment was administered, care was less effective than in group B because the nursing staff did not fully understand the changes in the patient's condition, resulting in inadequate care.

APACHE II score is an internationally used method to classify and assess the condition of critical patients and predict the prognosis, and it is also applicable to the assessment of the severity and prognosis of ICU patients [17]. Also, the higher the score, the more severe the patient's condition. After care in this study, APACHE II scores were lower in both groups than before care, and lower in group B than in group A. It is suggested that optimized individualized nursing care can speed up the recovery of ICU SP patients. This was also confirmed by the fact that the time to normalise the WBC count, the time for mechanical ventilation, the time for fever reduction, and the length of stay in the hospital were shorter in group B than in group A after care in this study. Analyze the reasons for the above results, which may be related to the following points: First, in the process of strengthening respiratory management and oxygen therapy care, individualized care measures were developed according to the patient's condition, a comprehensive understanding of the patient's needs was gained and symptomatic care was given so that the patient's condition was effectively controlled and the risk to life was reduced. Second, in the past, the clinical application of antibiotics was mostly empirical, which not only had a poor therapeutic effect but also easily led to bacterial resistance. This study strengthens the identification of pathogenic bacteria and the timely use of narrow-spectrum antibiotics after identifying the pathogenic bacteria, so as to prevent dysbiosis and fungal infection caused by the enhancement of bacterial resistance due to the long-term use of broad-spectrum antibiotics, which plays an important role in controlling the progress of patients' diseases and shortening the recovery time. Third, through health education, patients can also learn what to look out for in their daily lives and reduce fluctuations in their condition caused by their own factors and poor lifestyle habits. Finally, through comprehensive disease promotion and psychological care, patients have a detailed understanding of their condition and the treatment process, which can alleviate the psychological barriers that exist in their treatment, thus improving treatment compliance and facilitating recovery.

4.2. Optimized Individualized Nursing Care can Reduce Complications and Improve Prognostic Life Quality in ICU SP Patients. ICU SP is mostly seen in elderly patients, whose immune systems are low and whose organ reserve function is relatively poor. Once the disease progresses, it can lead to rapid failure of all organ functions that are barely in equilibrium in a

short period of time, and can easily lead to various complications and seriously affect the patient's prognosis [18, 19]. Based on this, it is of great significance to strengthen the prevention and treatment of complications in the nursing process for SP patients in the ICU. During the nursing period of this group, the complication rate of group B was 5.82%, significantly lower than that of group A at 11.59%. It is suggested that optimizing individualized nursing is an effective nursing method to reduce the related complications of SP patients during ICU treatment, which is basically consistent with the research conclusion of Chen [20].

SAQ is a recognized, effective index to evaluate the results of clinical treatment measures and has been widely used in the evaluation of the quality of life of patients with coronary heart disease [21]. In this study, it was applied to the long-term prognosis evaluation of discharged patients with severe pneumonia. The results showed that 6 and 12 months after discharge, the SAQ scores in group B were higher than those in group A. This may be due to the fact that health education in optimized individualized nursing care compensates for the lack of health education for patients after discharge, significantly improves the patient's activity limitation and disease onset, and improves the patient's quality of life. This proactive model of care not only fosters a sense of achievement and self-discipline among caregivers but also improves the patient's post-discharge status and can maximise the patient's prognosis for a better quality of life.

In summary, the optimized individualized nursing care applied to ICU SP patients can effectively improve the patients' physiological indicators, reduce complications, improve the prognosis of quality of life, and have a positive effect on the patients' speedy recovery.

Data Availability

The data used in the current study are available from the corresponding author.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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Retraction

Retracted: Correlation of Complex Impacted Mandibular Teeth with Pericoronitis and Effect of Minimally Invasive Tooth Extraction on Patients' Long-Term Outcome of Masticatory Ability

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] T. Nie, B. Chang, L. Tian et al., "Correlation of Complex Impacted Mandibular Teeth with Pericoronitis and Effect of Minimally Invasive Tooth Extraction on Patients' Long-Term Outcome of Masticatory Ability," *Emergency Medicine International*, vol. 2022, Article ID 6389900, 8 pages, 2022.

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Research Article

Correlation of Complex Impacted Mandibular Teeth with Pericoronitis and Effect of Minimally Invasive Tooth Extraction on Patients' Long-term Outcome of Masticatory Ability

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Objective. To explore the correlation of complex impacted mandibular teeth and pericoronitis, as well as the effect of minimally invasive tooth extraction on patients' long-term outcomes of masticatory ability. *Methods*. A total of 101 patients with complex impacted teeth who were treated in our hospital from March 2019 to June 2021 were selected and divided into the control group ($n = 55$) and the observation group ($n = 46$) according to the different treatment methods. The patients in the control group were given conventional extraction treatment, and the patients in the observation group were given minimally invasive extraction treatment. The clinicopathological features of patients complicated by pericoronitis were observed and the relationship between complex impacted mandibular teeth and pericoronitis was discussed. Additionally, we made statistics on operative time (OT), intraoperative blood loss (IBL), dental socket integrity score, and adverse reactions (ARs) and compared the clinical efficacy between the observation group and control group. The Visual Analogue Scale (VAS) and Oral Health Impact Profile scale (OHIP-14) were utilized for pain assessment and oral health status evaluation, respectively. Bite force (BF) and masticatory efficiency were also measured. *Results*. OG showed less OT and IBL than CG, with a higher dental socket integrity score ($P < 0.05$). In addition, OG outperformed CG with a higher overall response rate and a lower incidence of ARs ($P < 0.05$). The pretreatment VAS score, mouth-opening degree, and OHIP-14 score differed insignificantly between groups ($P > 0.05$). After treatment, the VAS score of OG decreased, while the mouth-opening degree and OHIP-14 score increased ($P < 0.05$). Finally, the mastication ability was higher in OG at 7 days postoperatively, but there was no difference between groups at 6 months postoperatively ($P > 0.05$). *Conclusion*. Complex mandibular impacted teeth can easily induce pericoronitis, so clinicians should pay attention to the influencing factors of pericoronitis. Minimally invasive surgery for complex impacted mandibular teeth can effectively improve treatment outcomes, accelerate patient rehabilitation, and provide more effective protection for patients' oral health and masticatory ability, which is worth promoting in clinical use.

1. Introduction

Teeth that cannot erupt into the normal occlusal position due to their improper position in the jawbone are called impacted teeth [1]. According to the investigation, more than 20% of adults have impacted teeth to varying degrees, and the prevalence is constantly on the rise [2]. Impacted teeth are mostly found in the mandibular and maxillary third molars, among which complex mandibular impacted teeth are the most common, accounting for approximately 60-70% of all impacted teeth [3]. The most typical clinical symptom of complex impacted mandibular teeth is obvious intermittent toothache or gingival swelling, accompanied by a great risk of infection, which is easy to induce pericoronitis or periodontitis [4]. In addition, if the patient suffers from complications and misses the best treatment time, it will probably lead to a large area of jaw necrosis, jaw cyst lesions, and even oral cancer, which will endanger the life safety of the patient [5]. At present, extraction is still the mainstay of treatment for complex impacted mandibular teeth in clinic.

Although the operation is not difficult and the success rate is relatively high, the incidence of postoperative wound pain and diffuse inflammation is high, which is the key problem affecting the prognosis and recovery of patients [6, 7].

With consistent development and improvement, minimally invasive techniques have contributed to extremely remarkable application results in the medical field. For instance, laparoscopic surgery and stone surgery based on minimally invasive techniques have been shown to be more effective and safer than traditional surgical modalities [8–10]. In the treatment of impacted mandibular teeth, minimally invasive surgery has gradually obtained clinical recognition and become one of the preferred treatment options for patients [11]. Currently, minimally invasive techniques like high-speed turbine technology have been proved to have excellent application effects in dental implants and orthodontic treatment [12, 13], but the research concerning its application in complex impacted mandibular teeth is still rare.

Accordingly, this study will carry out correlation analysis on the correlation of complex impacted mandibular teeth with pericoronitis and discuss the application effect of minimally invasive tooth extraction, so as to provide novel evidence for future clinical treatment of such patients and improve patient safety.

2. Materials and Methods

2.1. Patient Data. A total of 101 patients with complex impacted mandibular teeth who were treated in our hospital from March 2019 to June 2021 were selected and divided into the control group ($n = 55$) and the observation group ($n = 46$) according to the different treatment methods. Besides, in order to understand the correlation between complex impacted mandibular teeth and pericoronitis, the patients with impacted mandibular teeth complicated with pericoronitis were set as group A ($n = 31$), and the patients with impacted mandibular teeth without pericoronitis were set as group B ($n = 70$).

2.2. Inclusion and Exclusion Criteria. Inclusion criteria are as follows: patient's age >18 years; the patient was diagnosed with a complex impacted mandibular tooth and confirmed by X-rays and underwent extraction treatment in our hospital; patient himself/herself signs an informed consent form; and patient data are complete.

Exclusion criteria are as follows: patients with mental, cognitive, and communication disorders; patients with low treatment compliance; patients with periodontitis, caries, and other dental conditions; and patients with blood or immune diseases.

2.3. Methods. After admission, both groups received routine X-ray examination to explore the correlation of impacted mandibular teeth with adjacent tissues. After disinfection, 3 mL lidocaine hydrochloride injection (Shanghai Zhaohui Pharmaceutical, SFDA Approval No. H31021072) was used for block anesthesia of the inferior alveolar nerve, and an incision was made at the buccal gum to fully expose the bone overlying the impacted mandibular tooth crown. Subsequently, patients in the control group were treated with bone chisel for conventional extraction: following the opening of the mucoperiosteal flap with a gingival separator, bone removal was performed using bone chisel, and the resistance of the crown root was relieved after enlarging the gap. After the impacted tooth became loose, the root crown was removed with ultrasonic osteotome, the alveolar fossa was cleaned, and the wound was fully washed with 0.9% sodium chloride injection before suturing. Observation group was treated with minimally invasive plus high-speed turbine tooth extraction: the alveolar bone at the alveolar site and the top of the alveolar bone was ground off according to the patient's oral condition, and the crown was exposed (bone grinding is not required if the area of the patient's bone window is too large). Separation was then performed several times, using the patient's alveolar crest as the surgical approach. After all the resistance was removed, a turbine was used for root division and complete extraction of the complete dental tissue.

2.4. Efficacy Evaluation. Marked response: the patient's symptoms disappeared completely and the masticatory function returned to normal. Response: the patients' symptoms basically disappeared and the masticatory function recovered to a certain extent. Nonresponse: no change in symptoms nor recovery of masticatory function. Overall response rate (ORR) = (marked response cases + response cases)/Total number of cases × 100% [14].

2.5. Follow-up for Prognosis. All patients were followed up for 6 months after discharge, with either outpatient or telephone questioning each month to observe their recovery.

2.6. Endpoints. (1) The incidence of pericoronitis in patients with complex impacted mandibular teeth was counted. (2) Operation condition: the operative time (OT), intraoperative blood loss (IBL), and dental socket integrity score of both cohorts were counted [15]. (3) Safety: the adverse reactions (ARs) of patients from postoperative to discharge were recorded to calculate the incidence of ARs. (4) Clinical efficacy. (5) Pain and mouth-opening degree: pain assessment, which was made using the Visual Analogue scale (VAS), was performed before and 2 d after surgery. VAS score can better indicate the severity of pain and the degree of pain relief before and after treatment. Among them, 0 point means no pain, 1-3 points means mild pain, 4-6 points means moderate pain, and 7-10 points means severe pain. (6) Oral health status: oral health evaluation was performed using the Oral Health Impact Profile scale (OHIP-14) [16]. OHIP-14 provided oral health assessment to patients from four dimensions of functional limitation, physical disability, physical pain, and social disability, with a total score of 10 points. A lower score indicates a better oral health condition for the patient. (7) Masticatory ability: the occlusal force tester measured the maximum bite force (BF) of patients. The patient was asked to chew 2.0 g peanuts 20 times on the left and right sides. The chews were then collected and mixed with double distilled water to a

Table 1: Incidence of pericoronitis in patients with complex impacted mandibular teeth.

Indicator	Group A ($n = 31$)	Group B ($n = 70$)	t/χ^2	P
Age	24.3 ± 6.3	23.6 ± 6.3	0.517	0.606
Pericoronal blind pocket depth			13.690	<0.001
<3 mm	26 (83.9)	30 (42.9)		
≥3 mm	5 (16.1)	40 (57.1)		
Sex			0.046	0.829
Male	16 (51.6)	35 (50.0)		
Female	15 (48.4)	35 (50.0)		
Sleep situation			8.748	0.003
<8 h	7 (22.6)	39 (55.7)		
≥8 h	24 (77.4)	31 (44.3)		
Brushing times			10.420	0.001
<1 time/d	13 (41.9)	54 (77.1)		
≥1 time/d	18 (58.1)	16 (22.9)		
Physical exercise			7.443	0.006
Yes	9 (29.0)	40 (57.1)		
No	22 (71.0)	30 (42.9)		
Family medical history			13.330	<0.001
Yes	14 (45.2)	9 (12.9)		
No	17 (54.8)	61 (87.1)		

Table 2: Comparison of clinical data.

Indicator	Control group ($n = 55$)	Observation group ($n = 46$)	t/χ^2	P
Age	24.9 ± 6.9	23.1 ± 5.5	1.429	0.156
Pericoronal blind pocket depth			0.327	0.567
<3 mm	30 (54.5)	26 (56.5)		
≥3 mm	25 (45.5)	20 (43.5)		
Sex			0.241	0.624
Male	29 (52.7)	22 (47.8)		
Female	26 (47.3)	24 (52.2)		
Sleep situation			0.676	0.411
<8 h	27 (49.1)	19 (41.3)		
≥8 h	28 (50.9)	27 (58.7)		
Brushing times			0.047	0.828
<1 time/d	35 (63.6)	32 (69.6)		
≥1 time/d	20 (36.4)	14 (30.4)		
Physical exercise			0.241	0.624
Yes	29 (52.7)	20 (43.5)		
No	26 (47.3)	26 (56.5)		
Family medical history			0.528	0.468
Yes	11 (20.0)	12 (26.1)		
No	44 (80.0)	34 (73.9)		
Pericoronitis			0.018	0.893
Yes	15 (27.3)	16 (34.8)		
No	40 (72.7)	30 (65.2)		

volume of 1000 mL. After stirring the middle and upper suspension for 1 min, a spectrophotometer was used to determine the absorbance value as the patient's mastication efficiency. The test was carried out 7 days postoperatively and 6 months after prognosis.

2.7. Statistics and Methods. SPSS22.0 performed statistical analysis, and statistical significance was indicated by $P < 0.05$. The Chi-square test was used for comparisons of count data (n (%)), and the independent sample t-test and paired t-test were used for comparisons of measurement data ($\overline{\chi} \pm s$).

3. Results

3.1. Incidence of Pericoronitis in Patients with Complex Impacted Mandibular Teeth. The intergroup comparison of patients' clinicopathological data revealed no notable

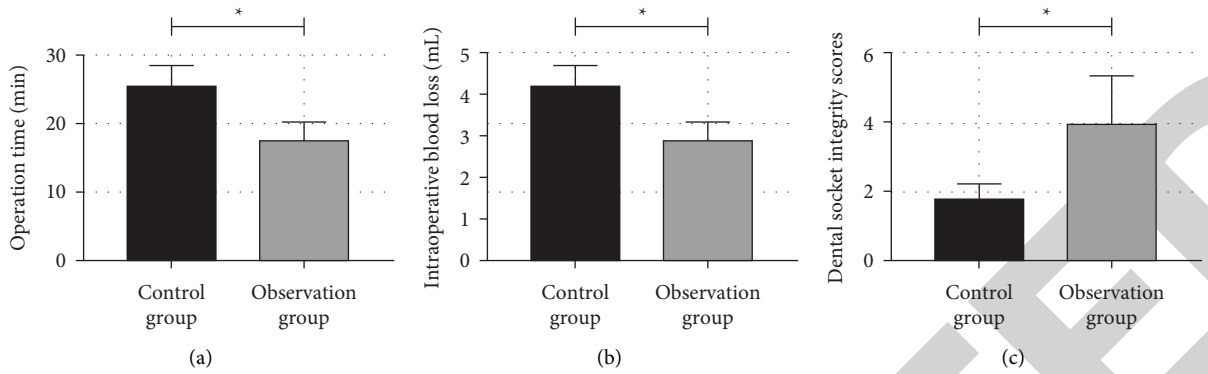

Figure 1: Comparison of operation conditions. (a) Comparison of operative time between the research group and control group; (b) comparison of intraoperative blood loss between the research group and control group and; (c) comparison of dental socket integrity scores between the research group and control group. Note. *indicates that the difference between the two groups is statistically significant ($P < 0.05$).

Table 3: Comparison of clinical efficacy.

Group	Marked response	Response	Nonresponse	ORR (%)
Control group ($n = 55$)	18 (32.7)	23 (41.8)	14 (25.5)	74.5
Observation group ($n = 46$)	19 (41.3)	23 (50.0)	4 (8.7)	91.30
χ^2				4.804
P				0.028

Table 4: Comparison of safety.

Group	Lower jaw pain	Wound infection	Wound swelling	Restricted mouth movement	ARs (%)
Control group ($n = 55$)	5 (9.1)	2 (3.6)	4 (7.3)	2 (3.6)	13 (23.6)
Observation group ($n = 46$)	2 (4.3)	0 (0.0)	1 (2.2)	1 (2.2)	4 (8.7)
χ^2					3.994
P					0.046

difference in age and sex between groups ($P > 0.05$); however, group A had more cases of pericoronal blind pocket depth ≥3 mm, sleep insufficiency, no physical exercise, brushing times <1/d, and family medical history than group B ($P < 0.05$). As shown in Table 1, it can be seen that when the abovementioned conditions exist in patients with complex impacted mandibular teeth, clinical attention should be paid to prevent the occurrence of pericoronitis.

3.2. Comparison of Clinical Data. Then, to ensure the comparability of the results of the two treatment methods, we compared the data of observation group and control group again. The two groups differed insignificantly in various data ($P > 0.05$), confirming the credibility of the experimental results, as shown in Table 2.

3.3. Comparison of Operation Conditions. As shown in Figure 1, the observation group had less OT and IBL than the control group ($P < 0.05$). The comparison of dental socket integrity scores revealed a higher score in the observation group compared than the control group ($P < 0.05$).

3.4. Comparison of Clinical Efficacy. See Table 3 for efficacy of both cohorts of patients. In the observation group, marked response and response were found in 41.3% and 50.0% patients, respectively, while those with nonresponse accounted for 8.7% only, with an ORR of 91.30% that was higher than the control group ($P < 0.05$).

3.5. Comparison of Safety. As shown in Table 4, the incidence of ARs in the observation group was 8.7% versus 23.6% in the control group. The data revealed a lower incidence of ARs in the observation group versus the control group ($P < 0.05$).

3.6. Comparison of Pain and Mouth-Opening. As shown in Figure 2, the two cohorts were nonsignificantly different in pretreatment VAS score and mouth-opening degree ($P > 0.05$). In the control group, the VAS score on day 2 after treatment was similar to the baseline (before treatment) ($P > 0.05$), but the VAS score of the observation group decreased on the 2nd day after treatment versus the baseline and control group ($P < 0.05$). Both groups showed a wider mouth-opening degree than the baseline, especially in the observation group ($P < 0.05$).

3.7. Comparison of Oral Health Status. The OHIP-14 score results shown in Figure 3 demonstrated no difference

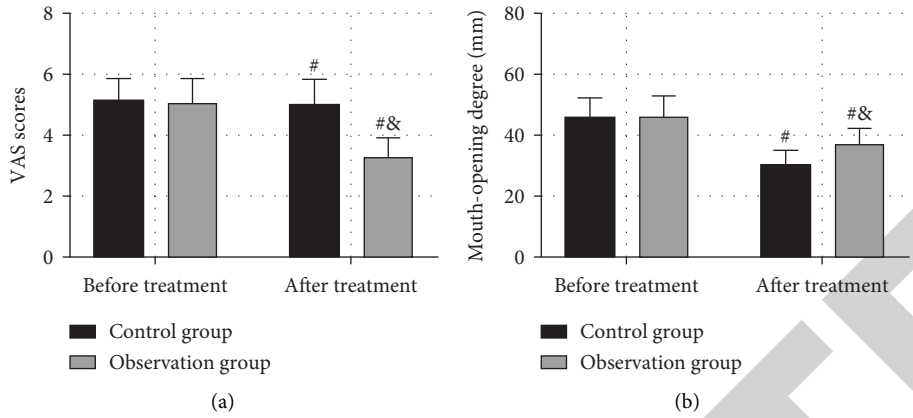

Figure 2: Comparison of pain and mouth opening. (a) Comparison of VAS score. (b) Comparison of mouth-opening degree. Note. #indicates that the difference is statistically significant compared with that before treatment ($P < 0.05$), and & indicates that the difference is statistically significant compared with the control group ($P < 0.05$).

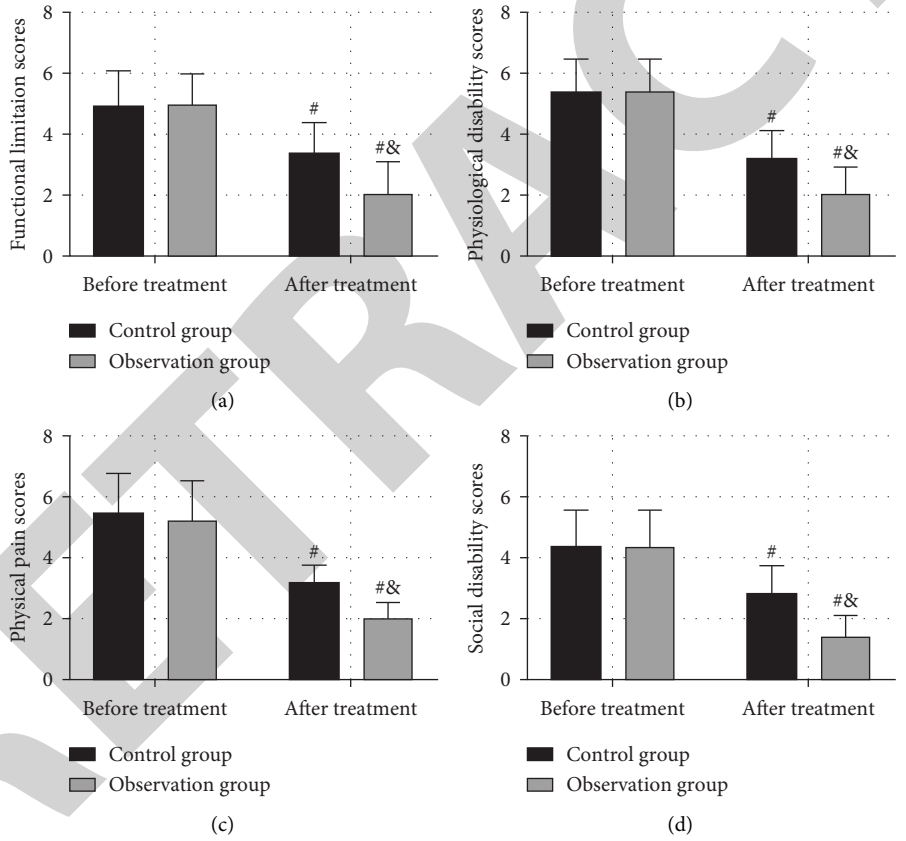

Figure 3: Comparison of oral health status. (a) Comparison of functional limitation scores between the research group and control group. (b) Comparison of physiological disability scores between the research group and control group. (c) Comparison of physical pain scores between the research group and control group. (d) Comparison of social disability scores between the research group and control group. Note. #indicates that the difference is statistically significant compared with that before treatment ($P < 0.05$), and & indicates that the difference is statistically significant compared with the control group ($P < 0.05$).

between groups prior to treatment ($P > 0.05$). While the post-treatment functional limitation, physiological disability, physical pain, and social disability scores were even lower in the observation group than the control group ($P < 0.05$). In both groups, a decreased OHIP-14 score was observed after treatment ($P < 0.05$).

3.8. Comparison of Masticatory Ability. As shown in Figure 4, the intergroup comparison of masticatory ability showed better BF and masticatory efficiency in the observation group than the control group at 7 days after surgery ($P < 0.05$). At 6 months postoperatively, markedly enhanced masticatory ability was determined in both cohorts

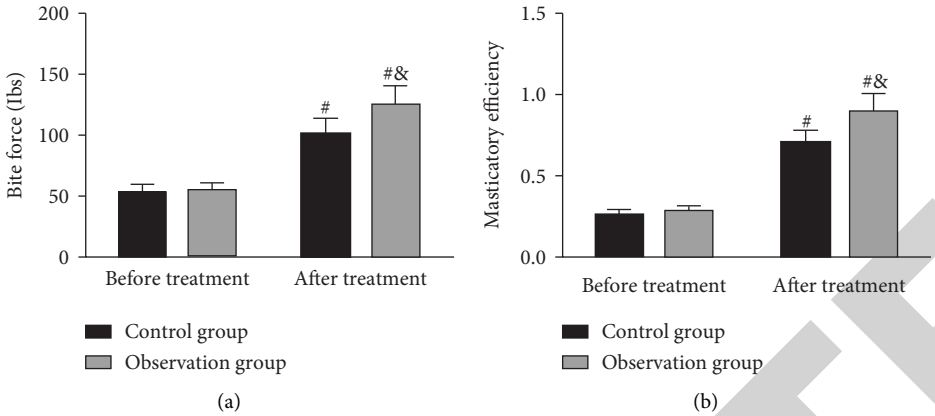

Figure 4: Comparison of masticatory ability. (a) Comparison of bite force between the research group and control group. (b) Comparison of masticatory efficiency between the research group and control group. Note. #indicates that the difference is statistically significant compared with that before treatment ($P < 0.05$), and & indicates that the difference is statistically significant compared with the control group ($P < 0.05$).

compared with the baseline ($P < 0.05$), but with no statistical intergroup difference ($P > 0.05$).

4. Discussion

With the continuous improvement of the technical level of stomatology in China, minimally invasive tooth extraction has gradually been extensively used in stomatology [17]. The complex impacted mandibular tooth is located in a special position in the patient's oral cavity, which is closely combined with the surrounding teeth and affected by narrow oral position, resulting in limited operation space for tooth extraction. In addition, many complicated surgical instruments are involved in the operation of complicated mandibular impacted teeth, which can easily lead to the fracture of surrounding teeth or collision infection, so the extraction of complex impacted mandibular teeth is a difficult and complicated process [18, 19]. Therefore, it is urgent to explore the specific advantages of minimally invasive tooth extraction in clinical practice and promote its application in stomatology.

In this study, we first analyzed the correlation of complex impacted mandibular teeth with pericoronitis. The results showed that a higher percentage of pericoronitis patients had pericoronal blind pocket depth ≥3 mm, sleep insufficiency, no physical exercise, brushing teeth <1/d, and family history, which was also in line with previous studies on the pathological manifestations of pericoronitis [20, 21], indicating that patients with complex impacted mandibular teeth should pay attention to the above situation to prevent the occurrence of pericoronitis. Second, we compared the effects of minimally invasive surgery and traditional surgery in the treatment of complex impacted mandibular teeth. The results determined that the OT and IBL of patients in the observation group were reduced compared with the control group, while the dental socket integrity and clinical efficacy were increased, indicating that minimally invasive surgery was more effective in treating complex impacted mandibular teeth. In previous studies [22, 23], there is evidence that minimally invasive oral surgery is more effective for sialolithiasis and parotid calculi than traditional extractions, which is also consistent with our experimental results. As we all know, traditional tooth extraction for complex impacted mandibular teeth often involves violent percussion, chopping, chiseling, and other harmful operations, which will not only cause serious damage to patients' periodontal tissues but also cause great psychological pressure [24]. In addition, traditional tooth extraction is also susceptible to the influence of factors such as the doctor's skill and the force applied, resulting in inadequate safety of surgical outcomes. Furthermore, during extraction and treatment of complex impacted mandibular teeth, the size, position, number and length of nerves involved, and other factors will affect the operation difficulty [25]. Moreover, violent operation in surgery will further lead to adverse consequences such as postoperative bleeding and wound infection and increase the difficulty of postoperative rehabilitation and the fear of tooth extraction, which is more obvious in traditional tooth extraction [26]. In minimally invasive surgery, complex impacted mandibular teeth can be extracted on the basis of minimal wound, without causing serious pain. At the same time, minimally invasive tooth extraction uses turbines instead of traditional large and bulky surgical instruments, which can fully shorten the OT and reduce the amount of IBL [27]. What's more, the advanced surgical instruments used in minimally invasive tooth extraction have high precision, which can prevent the wound from being infected by bacteria. Meanwhile, the surgical approach that adheres to the periodontal tissue can completely and comprehensively extract complex impacted mandibular teeth, contributing to a lower probability of postoperative ARs [28]. This can be confirmed by lower incidence of postoperative ARs and VAS scores as well as wilder mouth-opening degree in the observation group. And with the improvement of the treatment effect, the overall oral quality of patients is also improved, which explains a higher OHIP-14 score in the observation group versus the control group, demonstrating the excellent application value of minimally invasive surgery

for complex impacted mandibular teeth. The chewing ability of patients after tooth extraction is the key that directly affects their normal life and deserves clinical attention. Therefore, in this study, we also explored the effects of the two treatments on the chewing ability of patients [29]. The results determined higher BF and mastication efficiency in the observation group compared with the control group at 7 days after operation, indicating better mastication ability of the observation group at this time. However, there was no difference in chewing ability between the two groups at 6 months after surgery, which might be due to the fact that the patient's oral condition had completely recovered by that time. However, the application of minimally invasive surgery can more effectively ensure the stability of the early postoperative chewing ability of patients and improve the quality of life of patients after surgery, showing that minimally invasive tooth extraction has better clinical value.

However, due to the short time frame, we have not been able to assess the long-term oral outcome of patients. Besides, this study is a retrospective analysis, which may have the chance of statistical calculation, so follow-up randomized controlled trials should be carried out as soon as possible for confirmation. Finally, the clinical effect may be affected by the professional skills of clinicians because of the high operative difficulty of minimally invasive surgery in the treatment of complex impacted mandibular teeth, which is also the focus of further exploration.

Conclusively, complex impacted mandibular teeth can easily induce pericoronitis, so patients need to pay attention to the possible influencing factors. Minimally invasive surgery for complex impacted mandibular teeth can effectively improve treatment outcomes, accelerate patient rehabilitation, and provide more effective protection for patients' oral health and masticatory ability, which is worth promoting in clinical use.

Data Availability

The raw data supporting the conclusion of this article will be available by the authors without undue reservation.

Disclosure

Tinghong Nie and Bojie Chang are co-first authors.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

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Retraction

Retracted: Efficacy of Modified Nonpneumatic Transaxillary Approach in the Treatment of Thyroid Cancer and Its Effect on Immune Function and Parathyroid Function

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] T. Huang, Y. Sang, and J. Zhang, "Efficacy of Modified Nonpneumatic Transaxillary Approach in the Treatment of Thyroid Cancer and Its Effect on Immune Function and Parathyroid Function," *Emergency Medicine International*, vol. 2022, Article ID 3336880, 5 pages, 2022.

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Research Article

Efficacy of Modified Nonpneumatic Transaxillary Approach in the Treatment of Thyroid Cancer and Its Effect on Immune Function and Parathyroid Function

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Objective. The aim of the study is to investigate the effect of modified nonpneumatic transaxillary approach in the treatment of thyroid cancer and its effect on immune function and parathyroid function. *Methods*. A total of 96 patients with thyroid cancer who were diagnosed and treated in our hospital from January 2018 to December 2020 were selected and randomly divided into the control group of 48 cases and the observation group of 48 cases. The control group was given open surgery, and for the observation group, modified nonpneumatic transaxillary approach was used for treatment. The perioperative related indicators, the incidence of complications, as well as the changes of immune function indicators, parathyroid hormone (PTH), and calcium before and after surgery were compared between the two groups. *Results*. The time of flap separation and cavity construction, operation time, and hospital stay in the observation group were significantly longer than those in the control group ($P < 0.05$). After operation, $CD3^+$, $CD4^+$, and $CD4_+/CD8^+$ in the two groups were lower than those before operation ($P < 0.05$), but the observation group was significantly higher than that in the control group ($P < 0.05$). The serum PTH and calcium at 1 h, 1 d, 3 d and 7 d after operation were lower than those before operation in this group ($P < 0.05$), but the observation group was significantly higher than that in the control group ($P < 0.05$). Compared with the control group, the incidence of complications in the observation group (4.17% vs. 6.25%) was not statistically significant ($P > 0.05$). *Conclusion*. Compared with open surgery, the modified nonpneumatic transaxillary approach in the treatment of thyroid cancer is more effective in reducing immune function decline, hypoparathyroidism, and hypocalcemia; although the operation time and recovery time are longer, and it is safe. Sex is also high.

1. Introduction

Thyroid cancer is an endocrine system disease with the main clinical symptoms of hoarseness, dysphagia, lymphadenopathy, and intrathyroidal mass, which is more common in women [1]. At present, surgical treatment is mainly adopted for clinical treatment of thyroid cancer, and laparoscopic surgery and laparotomy are the common surgical methods. However, the large wound in open surgery not only leads to scar formation in neck surgery and affects aesthetics but also increases the probability of postoperative infection. Laparoscopic surgery is favored by doctors and patients because of its advantages such as hidden incision, small incision, safety, and reliability [2]. With the continuous development and maturation of endoscopic surgery technology, endoscopic technology is gradually used in thyroid surgery and the surgical approach is constantly changing. At present, the main approaches for endoscopic thyroid surgery include transaxillary, subclavian, oral, and whole areola. It has been clinically verified that the scar ratio of the incision in endoscopic thyroidectomy via transthoracic approach is relatively concealed, but it has the disadvantages of slow flap recovery, unstable operation space, etc. In addition, the probability of postoperative hemorrhage, hypoparathyroidism, hypocalcemia, and even immunologic dysfunction is relatively high [3, 4]. There are few studies about the effect of nonpneumatic transaxillary approach on immune function and parathyroid gland function in the treatment of thyroid cancer. Based on this, this study analyzed the influence of

modified noninflated transaxillary approach on immune function and parathyroid function of patients with thyroid cancer. The report is as follows.

2. Materials and Methods

2.1. General Information. A total of 96 patients with thyroid cancer who were diagnosed and treated in our hospital from January 2018 to December 2020 were selected. All the patients were divided into an observation group (48 cases) and a control group (48 cases) according to the random number table. This study was approved by the hospital medical ethics committee, and the patients and their families signed informed consent.

2.2. Inclusion Criteria. The inclusion criteria were as follows: (1) All patients were unilateral thyroid malignancies. (2) Imaging examination showed lymph nodes in the neck, but no enlargement of the lymph nodes. (3) The pathological diagnosis was differentiated thyroid carcinoma. (4) The long diameter of the tumor ≤2 cm.

2.3. Exclusion Criteria. The exclusion criteria were as follows: (1) Patients with hyperthyroidism. (2) Patients with Hashimoto's thyroiditis. (3) Patients with severe organic lesions. (4) Patients who have received radiation therapy. (5) Patients who have received axillary, breast, and neck. (6) Those who have contraindications to the operation of this study. (7) Those who are unable to cooperate with the researcher due to disturbance of consciousness, mental illness, etc. (8) Patients who withdrew from the study.

2.4. Methods

2.4.1. Control Group. The control group underwent open surgery. An incision of 3–5 cm in length was made approximately 2 cm above the sternum. After the flap was effectively separated, the thyroid on the affected side is exposed. The blood vessels around its thyroid and the upper and lower poles were cut off by coagulation with an ultrasonic scalpel, and the thyroid on the affected side was removed. We dissect the lobe and isthmus of thyroid and the lymph node in the central region and place a negative pressure drainage tube in the operation cavity, and then close the operation cavity.

2.4.2. Observation Group. In the observation group, the modified noninflatable axillary approach was adopted. Under general anesthesia, the patient was kept in the supine position, and the affected upper limb was abduction, and fully expose the axilla and fix it, make an incision from the top of the axilla, 5 cm in length, and free depth to be able to identify the sternocleidomastoid sternal head and clavicle head. The bone was pulled medially for separation, effectively separating the lateral border of the anterior girdle muscle, exposing the thyroid lobe on the affected side, the ventral side at the level of the sternoclavicular joint, the cephalic side of the superior thyroid pole, and the middle of the thyroid isthmus. A special retractor was inserted through the axillary incision, and the sternal heads of the anterior cervical ligament muscle and sternocleidomastoid muscle were pulled and fixed upward. The surgical window was established, and the surgical cavity did not need to be rinsed with CO_2 gas. After the operation cavity was established, 3 operating instruments were placed through the axillary incision. When using the right main knife, we operate the endoscopic grasper or release forceps with the right hand, and when the left main cutter is used, we operate the endoscopic grasper or release forceps with the left hand. The external capsule of the thyroid was separated, and the gland was pulled to the lower pole. The thyroid was attached to the thyroid with an ultrasonic scalpel. The blood vessels of the thyroid are coagulated and cut off, completely exposing the esophageal groove. The ultrasonic scalpel was used to coagulate and cut off the blood vessels and lower pole on the thyroid side, so as to fully expose the recurrent laryngeal nerve along the lateral side of trachea. The thyroid suspensory ligament and the isthmus were cut off by coagulation, and the thyroid lobe and the isthmus of the thyroid gland on the affected side were completely removed. Then, the lymph nodes in the central region were dissected. The chamber was rinsed postoperatively to stop bleeding until the parathyroid glands could be effectively identified, and a negative pressure drainage tube was placed in the chamber and the chamber was then closed.

2.5. Observation Indicators

(1) Perioperative indicators were recorded, including flap separation and cavity construction time, operation time, intraoperative blood loss, postoperative drainage volume, length of hospital stay, and number of lymph node dissections.

(2) Immune function index: Before and 7 days after operation (after operation), 5 ml of fasting venous blood was taken, centrifuged at 3000 rpm for 5 min, and the supernatant was taken for inspection (−80°C), and the supernatant blood was taken for testing (−80°C). $CD3^+$, $CD4^+$, $CD4_+/CD8^+$ were detected by a Thermo Fisher Scientific Attune NxT flow cytometer.

(3) Serum parathyroid hormone (PTH), calcium: Fasting venous blood (5 ml) was collected preoperatively and 1 h, 1 d, 3 d, and 7 d after operation, and centrifuged at 3000 rpm for 5 min. The supernatant was collected for detection. Radioimmunoassay was used to detect PTH, and the kit was from Shanghai Lanji Biotechnology Co., Ltd.; the American Beckman AU5800 automatic biochemical analyzer was used to detect blood calcium content.

(4) The occurrence of complications, including subcutaneous hematoma, wound infection, and temporary recurrent laryngeal nerve palsy was recorded.

Table 1: Comparison of baseline data between the two groups ($\overline{x} \pm s$; n, %).

Group	n	Age (year)	*Gender*		Tumor diameter (cm)	*Lesion location*	
			Male	Female		Left	Right
Observation group	48	44.83 ± 5.34	10 (20.83)	38 (79.17)	0.86 ± 0.14	29 (60.42)	19 (39.58)
Control group	48	45.44 ± 5.67	11 (22.92)	37 (77.08)	0.92 ± 0.27	28 (58.33)	20 (41.67)
t/χ^2 value		0.543	0.061		1.367	0.043	
P value		0.589	0.805		0.175	0.835	

Table 2: Comparison of perioperative related indicators between the two groups ($\overline{x} \pm s$).

Group	n	Flap separation and cavity construction time (min)	Operation time (min)	Intraoperative blood loss (ml)	Postoperative drainage (ml)	The number of days in hospital (d)	Number of lymph nodes dissected (piece)
Observation group	48	34.34 ± 4.43	130.78 ± 12.3	15.49 ± 5.45	143.92 ± 15.53	7.23 ± 1.98	5.59 ± 1.55
Control group	48	12.49 ± 1.88	90.42 ± 8.72	14.41 ± 4.33	139.57 ± 15.19	5.57 ± 1.37	5.41 ± 1.58
t value		31.456	18.546	1.075	1.387	4.777	0.563
P value		<0.001	<0.001	0.285	0.169	<0.001	0.574

2.6. Statistical Methods. The data obtained in this study were analyzed using SPSS 22.0 statistical software. The expression form of enumeration data is (n, %), and the χ^2 test is used; the expression form of measurement data is ($\overline{x}$ ± S), the independent sample t-test is used for the comparison between groups, and the paired t-test is used for the comparison within the group. One-way ANOVA was used for comparison between multiple groups, and LSD-t method was used for pairwise comparison between groups. The differences between the two groups and the time differences of the measured values at each time point were compared using the repeated measures data analysis of variance between the two groups, and the LSD-t test was performed afterwards. Statistically significant differences were indicated by $P < 0.05$.

3. Results

3.1. Baseline Data. There was no statistical significance in the comparison of baseline data between the two groups ($P > 0.05$), as shown in Table 1.

3.2. Comparison of Related Indicators in the Perioperative Period. The time of flap separation and cavity construction, operation time, and hospital stay in the observation group were significantly longer than those in the control group ($P < 0.05$). The intraoperative blood loss, postoperative drainage volume, and the number of lymph node dissection between the two groups were not statistically significant ($P > 0.05$), as shown in Table 2.

3.3. Comparison of Immune Function Indicators. There was no statistical significance in the comparison of $CD3^+$, $CD4^+$, and $CD4_+/CD8^+$ between the two groups before operation ($P > 0.05$). After operation, $CD3^+$, $CD4^+$, and $CD4_+/CD8^+$ in the two groups were lower than those before operation ($P < 0.05$), but the observation group was significantly higher than that in the control group ($P < 0.05$), as shown in Table 3.

3.4. Comparison of Serum PTH and Calcium. Repeated measurements showed that the time point, between groups, and the interaction between time points and between groups of serum PTH and calcium were statistically significant ($P < 0.05$). Postoperative LSD-t test showed that serum PTH and calcium at 1 h, 1 d, 3 d, and 7 d after operation were lower than those before operation in this group ($P < 0.05$), but the observation group was significantly higher than that in the control group ($P < 0.05$), as shown in Table 4.

3.5. Complications. There was no statistical significance in the incidence of complications in the observation group compared with the control group ($P > 0.05$), as shown in Table 5.

4. Discussion

With the continuous development and progress of modern medical technology, the pursuit of smaller trauma and more beautiful wound has gradually become an important issue in the clinical treatment of thyroid disease [5]. There are many options for endoscopic surgical approaches. Among them, the transoral approach can make the scar invisible, but the operation is difficult, and patients are prone to nosocomial infection after surgery [6]. Through axillary approach to surgery, axillary skin fold can better hide the surgical scar. In addition, subaxillary approach does not need gas filling, which can avoid mediastinal emphysema caused by gas filling. Therefore, the axillary approach has been considered as a more appropriate option for endoscopic surgery for thyroid cancer in most studies [7–9]. In this study, the time of flap separation and cavity construction, operation time, and hospital stay in the observation group were significantly longer than those in the control group. The reason for the analysis is that, compared with open surgery, compared with

Table 3: Comparison of immune function indexes between the two groups before and after surgery ($\overline{x} \pm s$).

Group	n	$CD3^+$(%)		$CD4^+$(%)		$CD4^+/CD8^+$	
		Preoperative	Postoperative	Preoperative	Postoperative	Preoperative	Postoperative
Observation group	48	67.33 ± 6.49	56.97 ± 5.21[a]	43.54 ± 4.58	32.39 ± 4.18	1.33 ± 0.32	1.13 ± 0.35[a]
Control group	48	66.36 ± 6.31	50.15 ± 5.28[a]	44.35 ± 4.68	28.35 ± 4.24[a]	1.36 ± 0.38	0.94 ± 0.26[a]
t value		0.742	6.366	−0.857	4.698	−0.419	3.021
P Value		0.460	<0.001	0.393	<0.001	0.676	0.003

Compared with preoperative in this group, [a]$P < 0.05$.

Table 4: Comparison of serum PTH and calcium between two groups at different time points ($\overline{x} \pm s$).

Indexes	Group	Preoperative	1 hour after surgery	1 day after surgery	3 days after surgery	7 days after surgery
PTH (ng/L)	Observation group (48)	51.33 ± 15.98	32.56 ± 10.56[ab]	30.04 ± 10.13[ab]	28.71 ± 8.66[ab]	34.44 ± 10.30[ab]
	Control group (48)	51.85 ± 16.52	19.96 ± 6.12[a]	17.31 ± 5.43[a]	16.44 ± 5.32[a]	24.71 ± 7.47[a]
F Value		$F_{time} = 86.806$, $F_{time\times group} = 5.353$, $F_{group} = 46.050$				
P Value		$P_{time} = 0.000$, $P_{time\times group} = 0.001$, $P_{group} = 0.000$				
Calcium (mmol/L)	Observation group (48)	2.35 ± 0.12	2.21 ± 0.17[ab]	2.18 ± 0.09[ab]	2.12 ± 0.14[ab]	2.22 ± 0.16[ab]
	Control group (48)	2.36 ± 0.12	2.09 ± 0.16[a]	2.02 ± 0.13[a]	1.89 ± 0.21[a]	2.08 ± 0.17[a]
F Value		$F_{time} = 204.635$, $F_{time\times group} = 23.156$, $F_{group} = 26.692$				
P value		$P_{time} = 0.000$, $P_{time\times group} = 0.000$, $P_{group} = 0.000$				

Compared with this group before operation, [a]$P < 0.05$; compared with the control group at the same time, [b]$P < 0.05$.

Table 5: Comparison of the incidence of complications between the two groups (n, %).

Group	n	Subcutaneous hematoma	Wound infection	Transient recurrent laryngeal nerve palsy	Complication
Observation group	48	1 (2.08)	1 (2.08)	0 (0.00)	2 (4.17)
Control group	48	0 (0.00)	2 (4.17)	1 (2.08)	3 (6.25)
χ^2 value		1.011	0.344	1.011	0.211
P value		0.315	0.557	0.315	0.646

open surgery, modified nonpneumoperitoneum axillary approach surgery is relatively more complex and has more free flaps during the operation, which needs to establish operation space for the surgery. Therefore, the operation time and postoperative recovery time are relatively long [10].

The thyroid gland is responsible for regulating the calcium balance in the body. Its anatomical structure is very complex, and there are many nerves, blood vessels, and capsule tissues around it [11]. Therefore, if it is operated improperly during the operation, the adjacent tissues and parathyroid will be injured by mistake, resulting in postoperative epileptic seizure, limb numbness, muscle spasm, and agitation [12,13]. Parathyroid gland mainly secretes PTH, which is involved in the regulation of calcium and phosphate metabolism. If the secretion of PTH is insufficient, it will lead to a decrease in serum calcium and an increase in serum phosphorus, leading to hypocalcemia, convulsions and even death [14–16]. In this study, the $CD3^+$, $CD4^+$, and $CD4_+/CD8^+$ in the two groups after operation were lower than those before operation, but the observation group was significantly higher than the control group. Compared with the control group, the levels of the observation group were significantly higher than those of the control group. The results of the study showed that the two surgical methods both damaged parathyroid function and reduced immune function, but the modified nonpneumatic transaxillary approach significantly reduced the impact on parathyroid function and immune function [17]. The reason is that the improved nonpneumatic subaxillary approach has established the operative cavity, and the surgical field of vision is relatively larger. It is easier to identify and separate structures such as recurrent laryngeal nerve during surgery, which will not increase the trauma to the body and reduce the stress response of patients. Therefore, this method can effectively reduce the decline of immune function and avoid the occurrence of hypoparathyroidism and hypocalcemia. [18]. The scope of the subcutaneous tunnel in the modified nonpneumatic transaxillary approach is smaller, and the

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Retraction

Retracted: Application Value of NT-proBNP Combined with NLR in Evaluation of Major Adverse Cardiac Events in Elderly Patients with Chronic Heart Failure

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

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(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

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In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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Research Article

Application Value of NT-proBNP Combined with NLR in Evaluation of Major Adverse Cardiac Events in Elderly Patients with Chronic Heart Failure

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Objective. To explore the application value of N-terminal pro-B type natriuretic peptide (NT-proBNP) combined with neutrophil-to-lymphocyte ratio (NLR) in evaluation of major adverse cardiac events (MACEs) in elderly patients with chronic heart failure (CHF). *Methods*. 50 CHF patients admitted to the Department of Cardiovascular Medicine of our hospital from January 2021 to December 2021 were selected as the observation group. Another 50 non-CHF patients of our hospital were selected as the control group. Clinical data were collected from subjects who met the inclusion criteria, including general information, personal disease history, and laboratory test indicators. Patients with CHF were followed up for 6 months. Patients with CHF were divided into two groups, MACE group and non-MACE group. *Results*. The levels of WBC, NEU, NLR, and NT-proBNP in observation group were higher than those in control group, but the level of LYM was the opposite ($P < 0.05$). The age, WBC, NEU, LYM, PLT, blood glucose, NLR, and NT-proBNP of MACE group and non-MACE group were significantly different ($P < 0.05$). The increased levels of NEU, NLR, NT-proBNP and the decreased levels of LYM and PLT are all independent risk factors for MACE in elderly patients with CHF ($P < 0.05$). The AUC of NLR in evaluating the occurrence of MACE in elderly CHF patients was 0.841. When the Youden index was 0.7692, the sensitivity was 76.92% and the specificity was 100.00%. The AUC of NT-proBNP in evaluating the occurrence of MACE in elderly CHF patients was 0.705. When the Youden index was 0.5260, the sensitivity was 76.92% and the specificity was 75.68%. The AUC of NT-proBNP combined with NLR in evaluating the occurrence of MACE in elderly CHF patients was 0.954. When the Youden index was 0.8420, the sensitivity was 92.31% and the specificity was 91.89%. *Conclusion*. NT-proBNP combined with NLR has high value in the evaluation of MACE in elderly CHF patients and can be used as an auxiliary predictive index in clinic.

1. Introduction

Chronic heart failure (CHF) is a serious stage of many cardiovascular diseases, mainly caused by hypertension, coronary heart disease, myocardial ischemia, stress response, cardiac insufficiency, and other inducements [1]. The pathogenesis of CHF is complex, and the common clinical symptoms are dyspnea, limited exercise tolerance, chest tightness, shortness of breath, lower limb edema, and fatigue [2]. Studies have shown that the onset of CHF is mainly in the elderly, and the elderly patients with CHF are usually older than 70 years [3]. For the elderly, this population is

often accompanied by a variety of diseases, so the clinical symptoms and signs of CHF patients are atypical, and it is difficult to get effective treatment in time, thus increasing the mortality of patients [4]. CHF can damage patients' health status and bring heavy medical and health care burden to patients and their families. At present, the global aging trend is getting worse, and CHF has gradually become one of the public health problems that threaten people's lives and health [5]. The prognosis of elderly patients with CHF is mainly related to long-term progressive underlying diseases, myocardial injury, heredity, environment, and other factors. Among them, the most common poor prognosis for patients with CHF is the main adverse cardiac event (MACE), which is the main cause of disability and death in patients with CHF and seriously reduces the quality of life of their patients [6, 7]. Therefore, it is necessary to predict the sensitive indicators of MACE in elderly CHF patients clinically, which is especially important to improve people's prognosis.

N-terminal pro-B type natriuretic peptide (NT-proBNP) is an inactive N-terminal fragment of probrain natriuretic peptide (BNP) hormone after splitting, which has the characteristics of longer half-life and more stability [8]. As a natural hormone synthesized by cardiac myocytes, NT-proBNP has attracted increasing attention in evaluating the severity and prognosis of CHF [9]. In addition, inflammatory factors are also involved in the pathogenesis, disease progression, and prognosis of CHF in a variety of ways. CHF patients are often accompanied by abnormal release of proinflammatory factors and aggravation of systemic inflammatory response [10]. Neutrophil-to-lymphocyte ratio (NLR), as a common inflammatory marker, can indicate the ratio of neutrophil (NEU) to lymphocyte (LYM), which has become a research hotspot of cardiologists [11].

At present, there are few reports about the evaluation value of NT-proBNP combined with NLR in elderly CHF patients with MACE. We will analyze this content in order to improve the prognosis of patients.

2. Data and Methods

2.1. General Information. 50 CHF patients admitted to the Department of Cardiovascular Medicine of our hospital from January 2021 to December 2021 were selected as the observation group. Inclusion criteria are as follows: the age ranged from 65-82 years, with an average age of (74.16 ± 2.94) years; all patients met the 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure [12]; NYHA is classified as II-IV; and all patients were treated according to the 2016 ESC Guidelines. Exclusion criteria are as follows: accompanied by chronic obstructive pulmonary disease, pulmonary interstitial fibrosis, primary pulmonary hypertension, nonthrombotic disease, chronic kidney disease, liver cirrhosis, venous insufficiency, acute myocardial infarction, severe arrhythmia, malignant tumor, blood system disease, infections, and other diseases that affect white blood cell counts; patients with missing case data; and patients who died due to non-MACE factors during the follow-up period. Another 50 non-CHF patients of our hospital were selected as the control group.

2.2. Research Methods. Clinical data were collected from subjects who met the inclusion criteria, including general information (age and sex), personal disease history (coronary heart disease, diabetes, and hypertension), and laboratory examination indicators (white blood cell (WBC), NEU, LYM, platelet count (PLT), blood glucose, NLR, and NT-proBNP).

Patients with CHF were followed up for 6 months, and the follow-up mode was outpatient follow-up or telephone. The end point of follow-up was MACE or death. MACE includes cardiac death, nonfatal myocardial infarction, and hospitalization for recurrent heart failure. Patients with CHF were divided into MACE group and non-MACE group according to the occurrence of MACE.

2.3. Statistical Methods. SPSS 22.0 software was used for processing, and the measurement data were expressed as mean ± standard deviation ($\overline{x} \pm s$), and t-test was used for comparison. The data are expressed as %, and the comparison was made by χ^2 test. Logistic regression was used to analyze the influencing factors of MACE. ROC was used to analyze the evaluation value of different indexes on the occurrence of MACE. $P < 0.05$ was statistically significant.

3. Results

3.1. Comparison of Clinical Data between Observation Group and Control Group. The levels of WBC, NEU, NLR, and NT-proBNP in the observation group were higher than those in the control group, but the level of LYM was the opposite ($P < 0.05$) (see Table 1).

3.2. Comparison of Clinical Data between MACE Group and Non-MACE Group. There were 13 CHF patients with MACE in the observation group. The age, WBC, NEU, LYM, PLT, blood glucose, NLR, and NT-proBNP of the MACE group and non-MACE group were significantly different ($P < 0.05$) (see Table 2).

3.3. Multivariate Analysis of MACE in Elderly CHF Patients. Age, white blood cells, NEU, LYM, platelets, blood sugar, NLR, and NT-proBNP were assigned according to the average of all CHF patients. See Table 3 for the assignment. The increased levels of NEU, NLR, and NT-proBNP and the decreased levels of LYM and PLT are all independent risk factors for MACE in elderly patients with CHF ($P < 0.05$) (see Table 4).

3.4. ROC of MACE in Elderly CHF Patients was Assessed by Different Indicators. The AUC of NLR in evaluating the occurrence of MACE in elderly CHF patients was 0.841. When the Youden index was 0.7692, the sensitivity was 76.92% and the specificity was 100.00%. The AUC of NT-proBNP in evaluating the occurrence of MACE in elderly CHF patients was 0.705. When the Youden index was 0.5260, the sensitivity was 76.92% and the specificity was 75.68% (see Table 5 and Figure 1).

Table 1: Comparison of clinical data between observation group and control group (n, $\overline{x} \pm s$, %).

Item	Control group ($n = 50$)	Observation group ($n = 50$)	χ^2/t value	P-Value
Age (years)	73.54 ± 2.92	74.16 ± 2.94	1.058	0.293
Male	27 (54.00%)	30 (60.00%)	0.367	0.545
History of coronary heart disease	24 (48.00%)	28 (56.00%)	0.641	0.423
History of diabetes	12 (24.00%)	15 (30.00%)	0.457	0.499
History of hypertension	29 (58.00%)	31 (62.00%)	0.167	0.683
WBC ($\times 10^9$/L)	5.77 ± 1.16	6.38 ± 1.34	2.433	0.017
NEU ($\times 10^9$/L)	3.41 ± 0.93	4.88 ± 1.20	6.846	<0.001
LYM ($\times 10^9$/L)	1.95 ± 0.41	1.49 ± 0.28	6.551	<0.001
PLT ($\times 10^9$/L)	202.64 ± 42.72	187.97 ± 39.08	1.791	0.076
Blood glucose (mmol/L)	5.75 ± 1.23	6.20 ± 1.44	1.680	0.096
NLR	1.72 ± 0.16	3.50 ± 1.78	7.043	<0.001
NT-proBNP (pg/ml)	267.34 ± 37.61	3748.11 ± 413.52	59.275	<0.001

Table 2: Comparison of clinical data between the MACE group and non-MACE group (n, $\overline{x} \pm s$, %).

Item	Non-MACE group ($n = 37$)	MACE group ($n = 13$)	χ^2/t value	P-Value
Age (years)	73.59 ± 2.51	75.77 ± 3.54	2.412	0.020
Male	22 (59.46%)	8 (61.54%)	0.017	0.895
History of coronary heart disease	21 (56.76%)	7 (53.85%)	0.033	0.856
History of diabetes	11 (29.73%)	4 (30.77%)	0.005	0.944
History of hypertension	22 (59.46%)	9 (69.23%)	0.390	0.532
WBC ($\times 10^9$/L)	6.12 ± 1.13	7.11 ± 1.66	2.393	0.021
NEU ($\times 10^9$/L)	4.65 ± 1.02	5.55 ± 1.48	2.422	0.019
LYM ($\times 10^9$/L)	1.61 ± 0.21	1.16 ± 0.19	6.802	<0.001
PLT ($\times 10^9$/L)	180.51 ± 33.03	209.23 ± 47.98	2.386	0.021
Blood glucose (mmol/L)	5.92 ± 1.22	6.99 ± 1.78	2.402	0.020
NLR	2.93 ± 0.64	5.12 ± 2.81	4.497	<0.001
NT-proBNP (pg/ml)	3669.08 ± 349.48	3973.06 ± 507.73	2.386	0.021

Table 3: Multifactor assignment.

Item	Coefficient of regression
Age	"<74.16" = "0"; ≥74.14" = "1"
WBC	"<6.38" = "0"; "≥6.38" = "1"
NEU	"<4.88" = "0"; "≥4.88" = "1"
LYM	"≥1.49" = "0"; "<1.49" = "1"
PLT	"≥187.97" = "0"; "<187.97" = "1"
Blood glucose	"<6.20" = "0"; "≥6.20" = "1"
NLR	"<3.50" = "0"; "≥3.50" = "1"
NT-proBNP	"<3748.11" = "0"; "≥3748.11" = "1"

3.5. NT-proBNP Combined with NLR to Evaluate ROC Curve of MACE in Elderly CHF Patients. The AUC of NT-proBNP combined with NLR in evaluating the occurrence of MACE in elderly CHF patients was 0.954. When the Youden index was 0.8420, the sensitivity was 92.31% and the specificity was 91.89% (see Figure 2).

4. Discussion

In recent years, good clinical progress has been made in the diagnosis and treatment of CHF. However, due to various factors, the prognosis of CHF patients has not been comprehensively improved, and the risk of MACE after the patient is discharged from hospital is still high [13]. Especially in the elderly patients with CHF, due to the gradual failure of the organs of the elderly, the systolic and diastolic function of the heart is obviously decreased, which leads to the higher incidence of MACE in elderly CHF patients after discharge than in young patients, and higher incidence of disability and death after MACE [14, 15]. Therefore, it is very important to use effective indicators to evaluate the prognosis of elderly CHF patients.

As a metabolite of BNP, NT-proBNP has a relatively stable activity in normal people [16]. Patients with CHF often have ventricular remodeling and cardiac insufficiency after onset, which leads to the increase of atrial pressure, stimulates the release of BNP from the myocardium of atrial wall, and makes BNP rapidly synthesized and released into the blood, which leads to the increase of NT-proBNP level in patients [17]. Schmitt's team found that NT-proBNP can replace the clinical results of heart failure trials and provide higher predictive value for cardiac insufficiency [18]. NEU is one of the most abundant leukocyte types and is involved in active nonspecific inflammation. In the process of inflammation, abnormally high activation of NEU leads to the release of multiple proinflammatory factors and proteolytic enzymes, which amplify the inflammatory response and destroy the cardiomyocytes, causing direct damage to the heart function [19, 20]. LYM is related to physiological stress and plays an important role in inflammation. In CHF patients, the decrease of LYM proliferation and differentiation, inhibition of neurohumoral priming, and LYM apoptosis lead to the decrease of LYM level in patients [21, 22]. NLR, as a compound inflammatory marker of NEU and LYM, can reflect the evaluation characteristics of NEU and LYM at the

Table 4: Multivariate analysis of MACE in elderly CHF patients.

Item	Coefficient of regression	Standard error	Wald value	*P*-Value	OR value	95%CI
Age	0.199	0.150	1.760	0.073	1.220	0.909-1.637
WBC	0.315	0.245	1.653	0.074	1.370	0.847-2.214
NEU	0.406	0.204	3.961	0.041	1.501	1.006-2.238
LYM	0.457	0.186	6.036	0.035	1.579	1.096-2.274
PLT	0.280	0.133	4.432	0.037	1.323	1.019-1.717
Blood glucose	0.332	0.218	2.319	0.059	1.394	0.909-2.136
NLR	0.489	0.164	8.890	0.019	1.631	1.182-2.248
NT-proBNP	0.295	0.101	8.531	0.020	1.343	1.102-1.637

Table 5: ROC of MACE in elderly CHF patients was assessed by different indicators.

Item	AUC	Asymptotic 95% CI		Standard error	*P*-Value	Youden index	Sensitivity (%)	Specificity (%)	Optimal cutoff value
		Lower limit	Upper limit						
NLR	0.841	0.678	1.000	0.083	<0.001	0.7692	76.92	100.00	3.96
NT-proBNP	0.705	0.502	0.907	0.103	0.029	0.5260	76.92	75.68	3815.42 (pg/ml)

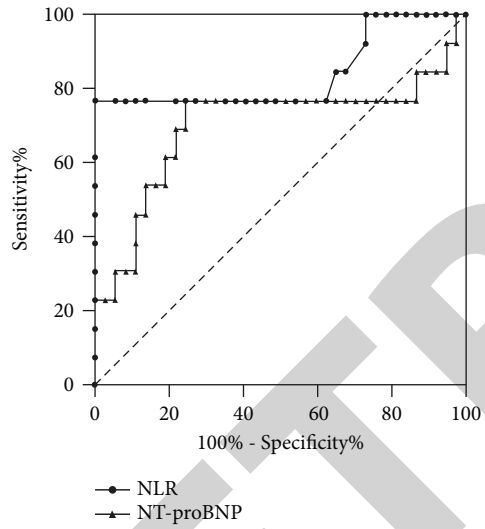

Figure 1: ROC of MACE in elderly CHF patients was assessed by different indicators (the closer the curve is to the upper left corner of the picture, the higher the prediction value will be. If the curve is lower than the reference line area, it means that the indicator has no prediction significance).

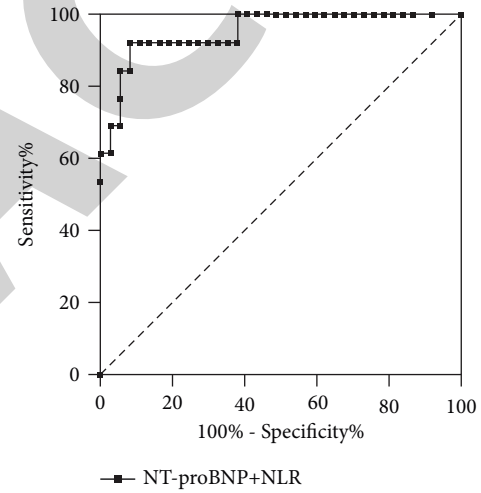

Figure 2: ROC curve of NT-proBNP combined with NLR in evaluating MACE in elderly CHF patients.

same time, reflect the sympathetic nerve excitation, and better reflect the systemic inflammatory state, which is of great significance for the evaluation of the condition and prognosis of patients with CHF [23]. Durmus's team studied 56 HF patients and found that compared with non-HF patients, the NLR level of HF patients was improved, and NLR could be used to predict the mortality of HF patients [24]. In this study, compared with the non-CHF population, the levels of NLR and NT-proBNP in elderly CHF patients are higher; compared with the non-MACE group, the levels of NLR and NT-proBNP in the MACE group were higher. In addition, multivariate analysis showed that the increase in level of NLR and NT-proBNP were independent risk factors of MACE in elderly CHF patients. It is suggested that the levels of NLR and NT-proBNP may reflect the prognosis of CHF patients.

ROC analysis in this study further showed that the AUC of NLR and NT-proBNP in evaluating MACE in elderly CHF patients was 0.841 and 0.705, respectively. The results indicate that NLR and NT-proBNP have certain value in predicting MACE in elderly CHF patients. The detection of NLR has the advantages of simple operation, easy access, low cost, saving detection time, etc., and the variability in the detection process is small [25]. The advantages of NT-proBNP detection are lower detection cost and better prediction effect [26]. However, only using NLR or NT-proBNP to predict the incidence of MACE in elderly patients with CHF is vulnerable to factors such as age, infection, and renal function, and single-index detection still has certain limitations. Therefore, using the combination of the two as an evaluation index for predicting the occurrence of MACE can significantly improve the limitation of single-index detection. We found that the AUC of NT-proBNP combined with NLR in evaluating MACE in elderly CHF patients was higher than that of single index. It shows that the combination of

the two has higher value in the prognosis evaluation of elderly CHF patients and can be used as an auxiliary predictive index in clinic.

5. Conclusion

To sum up, NT-proBNP combined with NLR has high value in the evaluation of MACE in elderly CHF patients and can be used as an auxiliary predictive index in clinic. This study only selected elderly patients with CHF, and it was a single-center and small-sample study. We need to further improve the research scheme in the future.

Data Availability

The data can be obtained from the author upon reasonable request.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

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Research Article

Construction of Standard Fast Medical Procedures for Traumatic Shock and Its Application Effects

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Objective. To explore the construction of standard fast medical procedures for traumatic shock and its application effects. *Methods*. 84 patients with traumatic shock were admitted to emergency department of the hospital between January 2018 and January 2020. Using random number table method, the patients were divided into the control group (was given emergency treatment by routine emergency rescue procedures) and the study group (was given emergency treatment by standard fast medical procedures) with 42 patients in each group. The treatment time (rescue time, consultation time in each department, and examination time), shock index (SI), blood pressure fluctuation range, urine output, serum lactate (LAC) level, activated partial thromboplastin time (APTT), and international normalized ratio (INR) were recorded. The incidences of complications in the two groups within 3 days were counted. *Results*. The rescue time, consultation time, and examination time of the study group were shorter than those of the control group ($P < 0.05$). After 18 h of treatment, the SI, blood pressure fluctuation range, LAC, and APTT in the study group were lower or shorter than those in the control group ($P < 0.05$), while urine volume and INR were higher than those in the control group ($P < 0.05$). Within 3 days of treatment, the incidence of complications in the study group was 5.41% lower than that in the control group which was 24.14% ($P < 0.05$). *Conclusion*. Standard fast medical procedures can effectively shorten the time of each stage of emergency treatment for traumatic shock, which allows patients to receive effective treatment in the shortest time while improving shock symptoms and reducing related complications.

1. Introduction

The post-traumatic body is affected by multiple factors such as tissue damage, fractures, and decreased circulating blood volume, which will cause multisystem post-traumatic reactions. When the body's circulating blood volume is insufficient and the microcirculation of multiple organs fails, it will lead to shock [1, 2]. Traumatic shock is more prone to multiple organ dysfunction syndrome (MODS) than simple hemorrhagic shock. During its pathophysiology, ischemia-reperfusion injury induces a cascade effect of cellular signalling, leading to enhanced neuroendocrine activity; activation and release of various chemical mediators, cytokines, and oxygen radicals, which can cause a nonspecific stress response; increase vascular permeability; and lead to necrosis and disintegration of damaged tissues, further reducing circulating blood volume and aggravating tissue ischemia [3, 4]. Patients with this disease not only have primary trauma but also multisystem functional damage, often severe blood loss, fluid loss, and symptoms of pain and anxiety [5]. The treatment of traumatic shock focuses on timely control of inflammation to avoid the further development and deterioration of systemic inflammatory response. The basic first aid measures include reasonable management of tissue damage, control of bleeding, volume expansion, sedation, and analgesia [6]. The standardization of emergency procedures and the timely and efficient rescue are crucial for the rescue of traumatic shock and the life of patients and should also be the focus of the construction of the medical emergency system. The purpose of this study is

to explore the specific construction and clinical application effect of standard fast medical procedures for traumatic shock.

2. Materials and Methods

2.1. General Information. A total of 84 patients with traumatic shock admitted to the emergency department of our hospital from January 2018 to January 2020 were selected as the research subjects. The patients were divided into the control group and the study group by random number table method, with 42 cases in each group. The control group consisted of 24 males and 18 females; the age ranged from 18 to 66 years, with an average of (38.24 ± 6.33) years; causes of shock include the following: 16 cases of impact and abrasions; 10 cases of stab wounds, contusions, and lacerations; 8 cases of crush injuries; and 8 cases of other injuries; type of wound included the following: there were 27 open wounds and 15 closed wounds; injury sites are as follows: 8 cases of head, face, and neck; 10 cases of chest (back); 12 cases of abdomen (waist); 5 cases of limbs; 3 cases of pelvis and spine; and 4 cases of multiple injuries. The study group consisted of 28 males and 14 females; the age ranged from 18 to 64 years, with an average of (37.34 ± 6.12) years; causes of shock are as follows: 14 cases of impact and abrasions; 9 cases of stab wounds, contusions, and lacerations; 7 cases of crush injuries; and 12 cases of other injuries; type of wound includes the following: there were 30 open wounds and 12 closed wounds; injury sites are as follows: 6 cases of head, face, and neck; 10 cases of chest (back); 13 cases of abdomen (waist); 6 cases of limbs; 2 cases of pelvis and spine; and 5 cases of multiple injuries. There was no significant difference in general data between the two groups ($P > 0.05$), which was comparable. This study met ethical standards.

2.2. Inclusion Criteria. Inclusion criteria are as follows:(1) should have a clear history of trauma, meet the surgical diagnostic criteria [7], and be diagnosed as traumatic shock; (2) trauma index (TI) > 10; (3) all patients were admitted to hospital 24 hours after trauma; (4) the patient's family members were informed of the rescue purpose, plan, and risks, and the family members agreed to the treatment.

2.3. Exclusion Criteria. Exclusion criteria are as follows:(1) those who died before hospital or were transferred midway; (2) those who had serious medical diseases; (3) those who gave up treatment.

2.4. Nursing Methods. The control group adopted the routine emergency rescue procedures: prehospital first aid and in-hospital first aid, treatment of primary injury, effective control of active bleeding, cardiopulmonary resuscitation, keep the patient's airway unobstructed and establish venous access, replenish body fluids, closely monitor vital signs and blood oxygen saturation, etc., cooperate with doctors to actively rescue, observe the patient's condition changes, send information to doctors in a timely manner, confirm valid medical orders, and implement them.

The study group adopted standard fast medical procedures: ① set up a care support group of trauma center, formulate emergency rescue plans, divide labor among members, clarify functions, and the team leader is responsible for coordinating the emergency process such as personnel scheduling to ensure the orderly progress of the emergency process; ② in the prehospital emergency, check and evaluate the patient's trauma, shock degree, and vital signs; check whether the patient has active bleeding or hidden injury; and classify the patient according to the degree of injury; hemostasis, opening of venous access, and keeping the airway open, etc. Basic first aid measures, and dynamic monitoring of patients' vital signs; after preliminary assessment and judgment, the information is fed back to the emergency room and related departments in the hospital, so that information can be effectively communicated, so as to formulate treatment plans, clarify the division of medical care, coordinate staff in various departments, and prepare rescue drugs and equipment; ③ quickly enter the EICU through the green channel and briefly report the patient's injury, and the in-hospital care support group of trauma center will quickly make a judgment on the patient's condition, carry out in-hospital first aid, stabilize the patient's vital signs (focus on blood pressure, breathing, heart rate, and consciousness), and control activities; tracheal intubation or incision can be done to establish 2-3 circulation paths if necessary; for changes in vital signs, perform cardiopulmonary resuscitation, antishock, fluid resuscitation (crystalloid followed by colloid, low-pressure resuscitation, and hemostatic resuscitation), hemostasis, pain relief, and oxygen inhalation; inquire about the patient's trauma history in detail and perform a careful physical examination. After the attending physician prescribes the relevant biochemical examination and auxiliary imaging examination, the nurse will review and notify the relevant examination department, who will be escorted to the examination department by a special person to complete the examination, and invite multiple departments for consultation; give patients deterministic treatment, such as timely hemostasis, debridement, bandaging, and other treatments for trauma patients, and patients with rib fractures and thoracic injuries, pay attention to whether the patient has hemothorax, pneumothorax, etc., and can be given thoracic-closed drainage treatment according to the actual condition; ④ for patients who need surgery, timely feedback the patient's condition to the operating room. The EICU is ready for blood preparation. After the blood pressure is stabilized, the emergency doctor and the responsible nurse are quickly escorted to the operating room, and the preoperative preparations are handed over. After the vital signs are stabilized out of the room, do a seamless handover; ⑤ during the rescue process, it is also necessary to actively communicate with the patient's family member, inform the patient's condition change, and comfort the family member.

Table 1: Comparison of treatment time data between the control group and the study group ($n = 42$, $\overline{x} \pm s$, min).

Group	Rescue time	Consultation time	Examination time
Control group	36.52 ± 8.66	25.67 ± 6.25	23.87 ± 5.92
Study group	30.46 ± 8.47	21.33 ± 5.86	20.74 ± 5.73
T	3.242	3.283	2.462
P	0.002	0.002	0.016

SI, blood pressure fluctuation range, and urine output.

Table 2: Comparison of SI, blood pressure fluctuation range, and urine output between the control group and the study group after 18 hours of treatment ($\overline{x} \pm s$).

Group	n	SI	Blood pressure fluctuation range (mmHg)	Urine output (ml/h)
Control group	29	1.02 ± 0.12	27.54 ± 8.63	33.41 ± 5.11
Study group	37	0.71 ± 0.08	20.12 ± 8.34	36.52 ± 5.87
T		12.562	3.533	2.260
P		<0.001	<0.001	0.027

Note. Patients who died within 18 hours of admission were excluded.

2.5. Observation Indicators. Observation indicators are as follows: (1) treatment time: record the rescue time after admission, the consultation time of each department (the time from admission to the consultation opinion), and the examination time (the time required to complete the main biochemical and imaging examinations); (2) record the shock index (SI), blood pressure fluctuation range, and urine output of the patient after 18 hours of treatment, among them, SI = pulse rate/systolic blood pressure, SI < 0.5 means no shock, 1.0 < SI < 1.5 indicates shock, and SI > 2.0 indicates severe shock; (3) serum lactate (LAC) level, activated partial thromboplastin time (APTT), and international normalized ratio (INR): venous blood was collected from patients before and 18 hours after treatment; (4) the incidence of complications [disseminated intravascular coagulation (DIC), MODS, acute respiratory distress syndrome (ARDS), and infection] within 3 days of treatment.

2.6. Statistical Methods. SPSS 20.0 statistical software was used for data analysis. The enumeration data was represented by n (%), and the χ^2 test was performed; the measurement data was represented by ($\overline{x} \pm s$), and the t-test was performed, the test level was $\alpha = 0.05$, and $P < 0.05$ was statistically significant.

3. Results

3.1. Treatment Time. The rescue time, consultation time, and examination time in the study group were shorter than those in the control group ($P < 0.05$), as shown in Table 1.

After 18 hours of treatment, the SI and blood pressure fluctuation range in the study group were smaller than those in the control group ($P < 0.05$), but the urine output was more than that in the control group ($P < 0.05$), as shown in Table 2.

3.2. LAC, APTT, and INR Levels. After 18 hours of treatment, the LAC and APTT of the study group were lower than those of the control group ($P < 0.05$), and the INR was higher than that of the control group ($P < 0.05$), as shown in Table 3.

3.3. Complications. Within 3 days of treatment, the incidence of complications in the study group was 5.41% lower than that in the control group 24.14% ($P < 0.05$), as shown in Table 4.

4. Discussions

Traumatic shock is a common surgical emergency, which often leads to damage to the patient's body organs, severe instability of vital signs, and rapid disease progression, which is prone to extreme deterioration and death [8]. Therefore, timely and effective treatment is of great significance to save the lives of patients. In patients with acute trauma, the injury should be quickly assessed, early shock symptoms should be identified, primary trauma should be prioritized, and emergency symptoms such as active bleeding and airway obstruction should be dealt with [9].

Patients with trauma need to be treated as effectively as possible in the shortest possible time after their injury. In emergency, medical staff also needs to cooperate closely, evaluate and judge the patient's condition, and take targeted treatment measures to improve the patient's symptoms in the shortest time [10]. This study is to explore the specific construction and clinical application effect of standard fast medical procedures for traumatic shock. The results of this study showed that the rescue time, consultation time, and examination time of the study group were shorter than those of the control group, and the intervention was also higher than that of the control group, suggesting that standard fast medical procedures can effectively shorten the treatment time, improve treatment efficiency, and improve patient safety. Analyze the causes: the establishment of a first aid team led by a team leader allows for a clear division of labour within the team and the development of a scientific first aid plan following evidence-based principles. The establishment of emergency rescue plans can avoid panic and blindness in

Table 3: Comparison of LAC, APTT, and INR levels between the control group and the study group ($\overline{x} \pm s$).

Group	n	LAC (mmol/L)		APTT (s)		INR	
		Before treatment	18 h after treatment	Before treatment	18 h after treatment	Before treatment	18 h after treatment
Control group	29	4.96 ± 1.16	3.62 ± 0.86*	60.35 ± 9.54	52.26 ± 8.86*	1.21 ± 0.13	1.32 ± 0.24*
Study group	37	4.77 ± 1.12	2.27 ± 0.77*	61.26 ± 9.67	47.68 ± 8.71*	1.24 ± 0.17	1.47 ± 0.31*
T		0.673	6.715	0.382	2.104	0.787	2.148
P		0.503	<0.001	0.704	0.040	0.434	0.036

Note. Compared with before treatment, $^*P < 0.05$.

Table 4: Comparison of the incidence of complications in the control group and the study group within 3 days of treatment (cases, %).

Group	n	DIC	MODS	ARDS	Infection	Total incidence
Control group	29	2	1	1	3	7 (24.14%)
Study group	37	0	0	0	2	2 (5.41%)
χ^2						4.844
P						0.028

the rescue process and is also conducive to efficient handling of emergencies, improving the effectiveness of rescue and avoiding the waste of personnel and resources. Prehospital trauma and shock assessment, which classifies patients according to their injuries, can be effective in improving the efficiency of treatment, ensuring that critically ill patients receive priority treatment and avoiding confusion in emergency situations. Also, the implementation of the standard fast medical procedures is patient-centered, by carrying out information linkage between multiple departments, they can communicate and discuss the patient's situation in a timely manner, clearly divide the work, cooperate with each other, do their own work in an orderly manner, then develop the best treatment plan for the patient, and ensure good treatment equipment conditions, so that the patient's treatment process is systematic and continuous, thus ensuring the success rate of patient treatment [11, 12]. The green channel approach can make up for the defects of the traditional emergency route, remove the prehospital obstacles as much as possible, and ensure that the patients are quickly admitted to the emergency room and receive treatment in the shortest time, and its rapidity can improve the treatment efficiency [13, 14].

Fluid resuscitation is an effective means to stabilize hemodynamics and restore the body's circulating blood volume. Patients with shock are often treated with fluid resuscitation, and changes in blood pressure fluctuations, heart rate, and urine output should be observed in real time. Coagulopathy, hypothermia, and acidosis are the "post-traumatic lethal triad," which can be induced by massive fluid resuscitation [15]. INR and APTT are effective indicators for monitoring coagulation function and the occurrence of DIC [16], and LAC can reflect the severity of shock and hypoperfusion, as well as the level of oxygenation, and serve as indicators for judging metabolic disorders and prognosis [17]. The results of this study showed that after 18 h of treatment, the SI, blood pressure fluctuation range, LAC, and APTT in the study group were lower or shorter than those in the control group, while the urine volume and INR were higher than those in the control group, and the incidence of related complications within 3 days was lower than that of the control group, suggesting standard fast medical procedures can improve the patient's treatment efficiency, promote the improvement of the patient's shock symptoms, reduce the patient's blood pressure range, relieve the coagulation disorder, and reduce the incidence of complications. Analyze the causes: in the standard fast medical procedures, nurses cooperate with doctors to carry out resuscitation work, effectively implement effective instructions from doctors, resuscitate patients with fluids, closely observe changes in relevant index data, and use timely and effective low-pressure resuscitation and hemostatic resuscitation, which can not only ensure effective blood supply to vital organs but also improve the body's oxygen supply, reduce the fluctuation of blood pressure, avoid the damage of blood pressure fluctuations to the organs, and also correct the symptoms of shock in patients and prevent the dilution of coagulation factors and cause coagulation disorders [18].

In conclusion, the application of standard fast medical procedures in traumatic shock treatment can shorten the treatment time, improve the treatment efficiency, promote the relief of symptoms, and reduce the risk of related complications. This shows that the construction of standard fast medical procedures has high clinical value, but the construction of this research process is still insufficient, and it is still necessary to further optimize the nursing functions and division of labor management in the implementation process, as well as the rescue process and execution feasibility, so as to be more conducive to the rescue and treatment of patients.

Data Availability

The raw data supporting the conclusion of this article will be available by the authors without undue reservation.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

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Retraction

Retracted: Aesthetic Effect of Autologous Fat Transplantation on Frontotemporal Depression Filling and Its Influence on SCL-90 and SES of Patients

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] D. Yin and G. Shen, "Aesthetic Effect of Autologous Fat Transplantation on Frontotemporal Depression Filling and Its Influence on SCL-90 and SES of Patients," *Emergency Medicine International*, vol. 2022, Article ID 3374780, 7 pages, 2022.

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Research Article

Aesthetic Effect of Autologous Fat Transplantation on Frontotemporal Depression Filling and Its Influence on SCL-90 and SES of Patients

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Objectives. This study aimed to study the aesthetic effect of autologous fat transplantation in frontotemporal depression filling as well as the influence on the Symptom Checklist 90 (SCL-90) and the Rosenberg Self-Esteem Scale (SES) score of patients. *Methods*. A total of 100 patients with frontotemporal depression admitted to the outpatient department of burn and plastic surgery in our hospital were selected as the observation group, and all of them received autologous fat transplantation. The filling effect of patients in the observation group was discussed. Simultaneously, 50 volunteers were selected as the control group to compare the SCL-90 and SES scores of the observation group and the control group. *Result*. ① A total of 100 patients with frontotemporal depression were treated with autologous fat transplantation, and the secondary autologous fat transplantation rate was 10%; two cases of fat absorption occurred during the 12-month follow-up after surgery; on the 7th day, 6 months, and 12 months after the operation, the satisfaction rate of the patients who visited the doctor was 96.00%, 97%, and 92.00%; the satisfaction rate of the plastic surgeon was 94.00%, 96%, and 90.00%; the satisfaction rate of the third party was 96.00%, 98%, and 92.00%. ② The preoperative scores of somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, terror, paranoia, and psychotic factor scores in the observation group were higher than those in the control group ($P < 0.05$). The scores of somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, terror, paranoia, and psychotic factor scores in the observation group at 6 months after the operation were lower than those before operation ($P < 0.05$). The preoperative SES score of the observation group (28.51 ± 9.81) was significantly lower than that of the control group (32.47 ± 5.39) ($P < 0.05$). The SES score (34.17 ± 9.81) in the observation group at 6 months after the operation was significantly higher than that before the operation ($P < 0.05$). *Conclusion*. The aesthetic effect of autologous fat transplantation in frontotemporal depression filling is good and safe. Simultaneously, it can improve the mental health and self-esteem of patients and has high clinical value.

1. Introduction

With the increase in age, the lack of relaxation of soft tissues will lead to depression and deformity of the face. Once it seriously affects the appearance of the face, it is easy to give people a feeling of haggardness and sadness. More and more people have begun to pursue a kind of delicate and harmonious facial contour, and the main purpose is to make themselves look more beautiful and younger and meet their psychological needs for life, work, marriage, and love [1]. At present, in clinical practice, the materials for improving frontotemporal depression mainly include artificial materials and autologous materials, which are widely applied to the filling of frontal and temporal lobe depressions and have obvious aesthetic effects. However, compared with artificial materials, autologous materials have the significant advantages of low cost, no rejection, low infection incidence, and long effective period [2]. However, it has been found in clinical practice that the psychological state and self-esteem of plastic surgery patients are different from those of the

general population due to the long-term effect of the disease [3]. In this study, autologous fat transplantation was applied in frontotemporal depression filling and achieved satisfactory aesthetic results. Simultaneously, the psychological status and self-esteem of patients were analyzed, and the report is as follows.

2. Materials and Methods

2.1. Research Objects. A total of 100 patients with frontotemporal depression who were admitted to the outpatient department of burn and plastic surgery in our hospital from January 2020 to August 2021 were selected as the observation group, and all received autologous fat transplantation. In the observation group, there were 14 males and 86 females; their age ranged from 24 to 66 years, with an average of (47.15 ± 3.37) years; there were 25 cases of simple frontal depression, 28 cases of simple temporal depression, and 47 cases of frontotemporal depression. Inclusion criteria were as follows: (1) meet the diagnostic criteria for congenital or aging frontotemporal depression and be diagnosed by a physician (fatty tissues and muscular tissues in the temporal part or frontal part are sunken due to atrophy, manifested as narrowing and prominence of the frontal part, forming the shape of upper small and lower wide or the lower limit of the frontal part, thus giving the impression of aging and fatigue); (2) there are no contraindications to surgery in the preoperative blood routine, coagulation function, blood sugar, and infection index tests; (3) age 24–66 years old, with complete case data available; (4) no cardiovascular disorder; (5) patients without AIDS, syphilis, hepatitis, and other infectious diseases; (6) all aware of the risks of surgery and signed the consent form for surgery. Exclusion criteria were as follows: (1) patients with mental disorders; (2) patients with insufficient blood supply or blood dysfunction in the surgical area; (3) patients who have previously injected substances such as fat and hyaluronic acid into the frontotemporal region; (4) patients with previous frontotemporal trauma, or skin damage, and body surface mass in the surgical area; (5) patients with contraindications for surgery; (6) women who are trying to conceive, breastfeeding, or pregnant. Simultaneously, 50 healthy volunteers with full frontotemporal were selected as the control group, and among them, there were 6 males and 44 females, aged from 24 to 64 years old, with an average of (47.18 ± 3.45) years. The general data (gender and age) of the two groups were similar ($P > 0.05$) and were comparable.

2.2. Methods

2.2.1. Preoperative Preparation. After admission, the patient was diagnosed with frontotemporal depression and was informed of the surgical risk, then, the patient signed the surgical consent form, and the preoperative and postoperative photographs of the patient's surgical area were recorded. We carefully mark the concave range to roughly define the amount of fat to be filled; the liposuction site is selected from the inner thigh, and the liposuction area on one or both inner thighs is marked according to the amount of fat to be filled.

2.2.2. Autologous Fat Extraction. Tumescent anesthesia was performed in the marked fat donor area, and a tumescent solution was made with 0.04% lidocaine +1 : 1 million epinephrine. We make an incision of about 4 cm on the outer upper side of the thigh, inject tumescent fluid with a water injection needle, 250–300 ml of the unilateral thigh, evenly cover, place a water injection liposuction tube with a diameter of 4 cm in the incision, and connect a body-jet hydrodynamic-assisted liposuction system device (Human Med Company, Germany); the preoperative estimated fat was extracted by round-trip fan suction, and about 0.6 cm of subcutaneous fat was retained. A sufficient amount was extracted and placed in a syringe, the subcutaneous fluid was squeezed out, and the incision was sutured.

2.2.3. Fat Purification. The extracted fat cells are placed in a larger container, the larger fat block is appropriately cut off, and the fat particles are purified by centrifugation. Specific operation method: after proper standing, we remove the impurities in the lower layer of fat particles, put the 10 ml syringe with the inner core removed into it, and put the centrifugal sleeve into the centrifuge; the centrifugation speed is 1000 rpm, and the centrifugation time is 5 minutes. The fat syringe was taken out from the centrifuge cannula, and the intact fat particles in the middle layer were taken and transferred to a 1 ml screw-capped syringe for later use.

2.2.4. Fat Filling. In the temporal area, the inner edge of the intersection of the bilateral preauricular hairline and the temporal line was selected as the needle insertion point, and the forehead injection needle injection site was selected in the middle and two sides of the forehead hairline within 1 cm. The fat grafting area was anesthetized with 0.04% lidocaine from the distal end to the proximal end for local tumescent anesthesia; the prepared 1 ml of blunt fat was injected with 18 G blunt pressure into the concave site in fan-shaped, multitunnel, and cross-shaped uniform pressure to avoid agglomeration into clumps. We pay attention to the color and tension of the skin during injection to prevent damage to blood vessels and fat embolism; considering fat absorption, the amount of fat filling is about 20% greater than the volume of the depression. After surgery, the liposuction incision was sutured, and sterile dressings were used for pressure dressing; the liposuction area was compressed with elastic bandages for 3 d, and plastic leg pants were worn for at least 1 month; antibiotics were used for anti-infection after surgery for 5–7 days. The sutures are removed from the incision on the donor site; the injection point of fat filling should avoid touching water within 7 days after the operation. The fat grafting area should not be rubbed and pressed within 1 month after the operation, and spicy foods such as spicy and seafood should be contraindicated within 1 to 3 months after the operation. High collagen food was eaten; follow-up was performed 7 days, 6,

and 12 months after surgery, and the amount of fat transplantation, satisfaction, and complications was counted.

2.2.5. Follow-Up. All patients were followed up for one year after the operation, and their recovery was known by telephone or outpatient service every month, and the occurrence of adverse reactions was observed.

2.3. Fat Survival Rate and Satisfaction Assessment. Fat survival rate = (measurement of frontotemporal volume at 6 months follow-up preoperative frontotemporal volume)/injected fat volume*100%. The number of fat transplants during the 12-month follow-up period was recorded, and satisfaction was assessed [4]. 7 d after the operation, 6 months after the operation, and 12 months after the operation, the satisfaction evaluation of the patients in the observation group was evaluated by patients themselves, plastic surgeons, and a third person not related to this study. The evaluation was rated on a scale of 1–5, with 5 points indicating very satisfactory and 1 point indicating completely unsatisfactory. The satisfaction rate = (5 points cases +4 points cases)/total cases ×100%.

2.4. Symptom Assessment. Self-report symptom inventory Symptom Checklist 90 (SCL-90) evaluation [5]: the patients of control group admitted on the 1st day and the patients of observation group admitted on the 1st day and 6 months after the operation, filled out the SCL-90 questionnaire under the unified guidance of professionals, and the questionnaire involved various mental health problems, which were summarized into somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, terror, paranoia, and psychotic factors. Each item of SCL-90 was divided into 1–5 points according to its severity. The higher the score, the more serious the symptoms. If the total score of SCL-90 was greater than 160, the number of positive items was more than 43, or if the average score of any major item was more than 2, then the patient could be considered to have positive symptoms.

2.5. Self-Esteem Assessment. Rosenberg Self-Esteem Scale (SES) evaluation [6]: The patients of control group admitted on the 1st day and the patients of observation group admitted on the 1st day and 6 months after the operation,filled out the SES questionnaire under the unified guidance of professionals. The questionnaire included 10 items. Each item was scored as "very agree," "agree," "disagree," and "strongly disagree" with 1–4 points, with the total score ranging from 10 to 40 points. A higher SES score indicates higher self-esteem.

2.6. Evaluation of Complications. Complications, including infection, fat liquefaction, and nodules, were recorded during the postoperative follow-up in both groups.

2.7. Statistical Analysis. All data were processed by SPSS 23.0 statistical software package, measurement data were expressed as mean ± standard deviation ($\overline{x}$ ±S), using the *t*-test; enumeration data were described by the pass rate/composition ratio, using the χ^2 test, with $P < 0.05$ as the statistical difference study meaning.

3. Results

3.1. Analysis of Fat Transplantation Survival Rate and Satisfaction Results. During the 6 months follow-up after the operation, the fat survival rate was higher (69.84 ± 4.83) %; the satisfaction rate of those seeking medical treatment on the 7th day, 6 months, and 12 months after the operation was 96.00%, 97%, and 92.00%; the satisfaction rate of plastic surgeons was 94.00%, 96%, and 90.00%; the third-party satisfaction rate was 96.00%, 98%, and 92.00%, as shown in Tables 1–3.

3.2. Comparison of SCL-90 and SES Scores between the Observation Group and the Control Group. The preoperative scores of somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, terror, paranoia, and psychotic factor scores in the observation group were higher than those in the control group ($P < 0.05$). The scores of somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, terror, paranoia, and psychotic factor scores in the observation group at 6 months after the operation were lower than those before the operation ($P < 0.05$) (see Table 4). The preoperative SES score of the observation group (28.51 ± 9.81) was significantly lower than that of the control group (32.47 ± 5.39) ($P < 0.05$). The SES score of the observation group 6 months after surgery (34.17 ± 9.81) was significantly higher than that of the preoperative (34.17 ± 9.81) ($P < 0.05$).

3.3. Complications during Follow-Up. A total of 100 patients with frontotemporal depression were treated with autologous fat transplantation, and most of the patients were accompanied by local redness and swelling 7 days after the operation. The 10 patients who sought medical treatment showed no obvious improvement. After communication and consultation, second autologous fat transplantation was performed 6 months later. The secondary transplantation rate was 10%, and the effect was satisfactory. During the 12-month follow-up period, 2 patients had fat absorption, and no complications occurred such as infection, subcutaneous mass, and uneven skin.

4. Discussion

When facial aging develops to a certain extent, there will be depression, relaxation, and wrinkles in the facial skin and soft tissue. At present, clinicians can repair the depression contour of a patient using a filling technique, in which the autologous fat filling technique has been widely used [7]. Autologous fat filling is to absorb excess subcutaneous fat cells from certain parts of the human body, purify sucked fat, and then select complete autologous fat cells by injection and

Table 1: Satisfaction evaluation of patients, plastic surgeons, and third parties on the 7th day after the operation.

Indexes	Patients					Plastic surgeons					3rd party (third party not related to this study)				
Score	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
Number of cases	86	10	0	4	0	84	10	4	2	0	88	8	4	0	0
Percentage	86.00	10.00	0	4.00	0	84.00	10.00	4.00	2.00	0	88.00	8.00	4.00	0	0
Satisfaction rate %	96.00					94.00					96.00				

Table 2: Satisfaction evaluation of patients, plastic surgeons, and third parties 6 months after surgery.

Indexes	Patients					Plastic surgeons					3rd party (third party not related to this study)				
Score	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
Number of cases	86	11	0	3	0	83	13	3	1	0	88	10	2	0	0
Percentage	86.00	11.00	0	3.00	0	83.00	13.00	3.00	1.00	0	88.00	10.00	2.00	0	0
Satisfaction rate %	97.00					96.00					98.00				

Table 3: Satisfaction evaluation of patients, plastic surgeons, and third parties 12 months after surgery.

Indexes	Patients					Plastic surgeons					3rd party (third party not related to this study)				
Score	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
Number of cases	86	6	6	2	0	84	6	6	2	2	82	10	4	4	0
Percentage	86.00	6.00	6.00	2.00	0	84.00	6.00	6.00	2.00	2.00	82.00	10.00	4.00	4.00	0
Satisfaction rate %	92.00					90.00					92.00				

then transplant them to the site that needs fat filling [8, 9]. Autologous fat, which is derived from the subject itself, has the advantages of no immunologic rejection, wound, and long use time, and meanwhile, compared with artificial materials, autologous materials impose a less economic burden on the patient. However, because the blood circulation of fat cells can be damaged after inhalation and a series of treatments, some fat cells are difficult to survive and can cause rapid necrosisafter transplantation. Long-term clinical observations have found that the survival rate of fat cells after transplantation is between 10% and 80%, and most patients require secondary autologous fat transplantation due to a lack of conscious improvement [10, 11]. In this study, 100 patients with frontotemporal depression were treated with autologous fat transplantation. After 6 months of follow-up, the fat survival rate was (69.84 ± 4.83) %, which was relatively high, but 10 patients (10%) were not significantly improved. The key to fat filling is to improve the fat survival rate, and the fat survival rate is mainly related to methods such as fat extraction and purification. The most commonly used liposuction method in the clinic is the negative pressure liposuction method. The principle of negative pressure liposuction is to suck out subcutaneous fat by using the negative pressure generated by the machine, which has the advantages of convenient operation and short operation time. At 50 kPa, with the increase of pressure, the surgical injury and fat damage will be more serious, which will reduce the fat survival rate, and the rate of secondary fat transplantation will be higher [12, 13]. Simultaneously, studies have shown [14] that when the negative pressure of liposuction is less than 50 kPa, there is no difference in the damage of fat cells under different pressures. In this study, the German Body-Jet hydrodynamic system is used to have a closed fat recovery mechanism, and while directly filtering and separating the extracted fat, it can also remove suctioned fibrous connective tissue. After the method is used, the purity of sucked axillary lower layer fat particles is higher, and meanwhile, fat can be stored in a closed sterile environment in each link of the surgical operation, so that the separation time of fat particles can be reduced, and the infection rate and necrosis rate are reduced, the fat survival rate is further improved, and finally, a satisfactory aesthetic effect is achieved. In addition, some studies believe that the application of autologous fat transplantation has certain risks. Common postoperative complications include induration, fat absorption, subcutaneous mass, and infection, but they can be controlled by standard surgical operations [15]. At present, the safety factor of autologous fat transplantation is getting higher and higher, and the operation technology and the experience of operators are becoming more and more mature. In this study, only 2 cases out of 100 patients with frontotemporal depression were complicated by liposuction, and this conclusion is consistent with the above viewpoint and indicates that autologous fat transplantation is a safer method for filling frontotemporal inhibition. The reasons were analyzed: (1) all the autologous fat transplantation was performed by experienced senior physicians, and the hydrodynamic liposuction method was used to reduce the complications of autologous fat transplantation to avoid damage to fat cells; (2) a 2.5 mm liposuction tube is used during liposuction to avoid the liposuction tube being too thin to damage the integrity of fat particles and reduce

Table 4: Comparison of SCL-90 scores between the observation group and the control group ($\overline{x} \pm s$, points).

Group	Somatization	Obsessive-compulsive	Interpersonal sensitivity	Depression	Anxiety	Hostility	Terror	Paranoia	Psychotic
Control group ($n = 50$)	1.36 ± 0.47	1.61 ± 0.56	1.59 ± 0.60	1.49 ± 0.58	1.38 ± 0.42	1.45 ± 0.44	1.22 ± 0.40	1.42 ± 0.56	1.28 ± 0.41
Observation group ($n = 100$)									
Before surgery	1.51 ± 0.55^{a}	1.94 ± 0.84^{a}	1.93 ± 0.64^{a}	1.69 ± 0.61^{a}	1.53 ± 0.52^{a}	1.39 ± 0.33^{a}	1.22 ± 0.39^{a}	1.59 ± 0.50^{a}	1.44 ± 0.48^{a}
6 months after surgery	1.35 ± 0.48^{b}	1.59 ± 0.79^{b}	1.41 ± 0.62^{b}	1.50 ± 0.59^{b}	1.37 ± 0.51^{b}	1.40 ± 0.46^{b}	1.21 ± 0.37^{b}	1.41 ± 0.52^{b}	1.26 ± 0.39^{b}
t value of preoperative and control group	3.341	4.172	3.714	3.165	3.914	1.064	0.861	4.028	3.467
P value of preoperative and control group	0.033	0.027	0.029	0.037	0.031	0.079	0.144	0.019	0.032
t value of 6 month postoperative and preoperative	3.247	4.039	3.451	3.046	3.461	1.174	0.797	3.972	3.243
P value of 6 month postoperative and preoperative	0.035	0.025	0.030	0.038	0.034	0.516	0.115	0.026	0.036

Note. $^{a}P < 0.05$, compared with the control group; $^{b}P < 0.05$, compared with the observation group before the operation.

the risk of fat absorption and uneven skin surface; (3) we use a blunt needle to inject fat to fill and inject evenly in the form of a fan-shaped, multitunnel, and cross-shaped depression in order to avoid agglomeration into agglomerates; (4) we pay attention to the color and tension of the skin during injection to prevent damage to blood vessels and fat embolism. In addition, in order to prevent postoperative infection and reduce the survival rate of adipose cells, strict aseptic operation should be performed during the operation, and antibiotics should be used to resist infection within 5–7 days after the operation.

According to the survey, the aging of facial depression not only affects people's physical feelings but also affects people's mental health to a certain extent, resulting in some people's lack of self-confidence and fear of participating in social activities [16]. In this study, the preoperative somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, terror, paranoia, and psychotic factor scores in the observation group were higher than those in the control group ($P < 0.05$). The preoperative SES score of the observation group was (28.51 ± 9.81) points, which was significantly lower than that of the control group (32.47 ± 5.39) ($P < 0.05$), and the results show that frontotemporal depression filling patients have negative emotions such as anxiety and depression in terms of mental health, accompanied by somatic symptoms and personality paranoia, especially expressed as interpersonal sensitivity and compulsion. In terms of self-esteem levels, it is manifested as disapproval and unacceptance of self, and an obvious inferiority complex appears. The results suggest that medical workers need time and energy to solve the psychological problems of such patients while doing routine medical care work [17, 18]. In this study, the scores of somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, terror, paranoia, and psychotic factor scores in the observation group 6 months after operation were lower than those before operation ($P < 0.05$). The SES score of the observation group 6 months after the operation was significantly higher than that before the operation ($P < 0.05$), and the results showed that the psychological status and self-esteem of the patients treated with autologous fat transplantation for frontotemporal depression were significantly improved after surgery. Autologous fat filling can greatly improve the facial aesthetics of patients, which can affect the psychological state and self-esteem of patients to some extent [19].

In conclusion, autologous fat transplantation has a good and safe aesthetic effect in frontotemporal depression filling and can improve the mental health and self-esteem of medical patients, which has high clinical value. However, the authors believe that this study still has limitations, such as a single study sample and a short follow-up time. In particular, the aesthetic effects of patients with different levels of fat extraction and purification and different degrees of frontotemporal depression have not been analyzed. The research conclusions are worthy of further verification.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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Research Article

Comparison of Febuxostat and Allopurinol in the Treatment of Patients with Chronic Kidney Disease Stage 3~5 with Hyperuricemia

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Objective. To compare the efficacy of febuxostat and allopurinol in the treatment of chronic kidney disease (CKD) at stages 3~5 with hyperuricemia. *Methods*. A total of 100 patients with stage 3 to 5 CKD with hyperuricemia in our hospital from July 2018 to December 2019 were selected and divided into the control group ($n = 50$) and the experimental group ($n = 50$) according to the random number expression method, the control group on the basis of conventional treatment with allopurinol treatment, the experimental group based on conventional treatment using the febuxostat be treatment. The clinical efficacy, incidence of adverse reactions, and renal function indexes, blood urea nitrogen (BUN), serum creatinine (Scr), serum sodium (Na), serum potassium (K), and serum uric acid (UA) before and after treatment were compared between the two groups. *Results*. The total effective rate of the experimental group and the control group was 82.00% and 78.00%, respectively, with little difference ($P > 0.05$); compared with before treatment, BUN, Scr, and UA of the two groups were decreased ($P < 0.05$); and the degree of decline in the experimental group was significantly greater than that in the control group ($P < 0.05$); the incidence of adverse reactions in the control group was 22.00%, which was significantly higher than that in the experimental group (10.00%) ($P < 0.05$). *Conclusion*. Compared with allopurinol, febuxostat can improve renal function, reduce UA levels, and reduce the occurrence of complications, with high safety, which is worthy of further clinical promotion.

1. Introduction

Chronic kidney disease (CKD) is a common nephrology disease. It is mainly caused by renal function and renal structural disorders caused by various factors. With the continuous deterioration of the disease, it will lead to the retention of metabolites, water, electrolyte, and acid-base balance disorders in patients. Hyperuricemia is one of the important factors leading to the development of CKD [1, 2]. Studies have shown that hyperuricemia is gradually showing a younger trend, accounting for 10% of the population, and it is very easy to cause heart disease, hypertension, diabetes, hyperlipidemia, and other diseases [3]. In view of the important mechanism of serum uric acid in the pathogenesis of CKD, we can conclude that how to effectively improve CKD and reduce the serum uric acid value is particularly important for patients with CKD stage 3–5 combined with hyperuricemia. The most commonly used uric acid-lowering drugs in clinical practice include febuxostat and allopurinol, but there are few reports on the efficacy of these two drugs in patients with CKD and their differences [4–6]. Therefore, this study selected 100 patients with CKD stages 3–5 with hyperuricemia who were admitted to our hospital from July 2018 to December 2019, and compare the therapeutic effects of febuxostat and allopurinol in the treatment of CKD at stages 3–5, the report is as follows.

2. Materials and Methods

2.1. Research Objects. This study selected 100 patients with CKD stage 3 to 5 with hyperuricemia who were admitted to

Table 1: Comparison of general information of patients (n%, ($\pm S$)).

Group	N	Age (year)	Gender		Weight (kg)	Education level			
			Male	Female		College and above	High school	Junior high school	Elementary school and below
Experimental group	50	63.80 ± 4.21	32	18	44.17 ± 3.12	12	16	9	13
Control group	50	64.13 ± 5.10	30	20	45.34 ± 3.54	15	12	10	13
t value	—	1.547	0.524		2.356			1.302	
P value	—	0.074	0.492		0.065			0.954	

our hospital from July 2018 to December 2019 and divided them into the control group ($n = 50$) and the experimental group ($n = 50$) according to the random number expression method. In the experimental group, there were 32 males and 18 females, the age ranged from 33 to 83 years old, and the average age was (63.80 ± 4.21) years old, there were 20 cases in stage 3, 21 cases in stage 4, and 9 cases in stage 5. In the control group, there were 30 males and 20 females, the age ranged from 31 to 85 years old, and the average age was (64.13 ± 5.10) years old, there were 22 cases in stage 3, 21 cases in stage 4, and 7 cases in stage 5. There was no significant difference in the general data such as gender, age, weight, and education level between the two groups ($P > 0.05$), which is comparable. See Table 1 for details. Inclusion criteria were as follows: (1) blood uric acid (UA) >360 μmol/L in females and UA > 420 μmol/L in males; (2) CKD stage 3–5 with hyperuricemia, serum creatinine (Scr) is about 133–442 μmol/L; (3) meet the diagnostic criteria for CKD in the guidelines of the "Kidney Disease Prognosis Quality Initiative" published by the National Kidney Foundation [7]; (4) this study was approved by the Medical Ethics Committee, and patients or their families gave informed consent to the study and signed the informed consent form voluntarily. Exclusion criteria were as follows: (1) combined with malignant tumor; (2) those with severe insufficiency of organs such as the heart, liver, or lung; (3) patients who are allergic to the drugs in this study; (4) those with mental disorders or cognitive impairments; (5) the general information is incomplete or the researcher quits midway.

2.2. Treatment Methods. The patients in both groups received conventional treatments such as supplementing α-keto acid, correcting water, electrolyte, and acid-base balance, reducing blood pressure, improving anemia symptoms, ensuring a high-quality low-protein, and low-purine diet. Control group: oral 100 mg allopurinol (Guangzhou Bidi Pharmaceutical Co., Ltd., Chinese medicine Zhunzi: S14202000669, specification: 100 mg) once a day; experimental group: oral 40 mg febuxostat (Jiangsu Wanbang Biochemical Pharmaceutical Co., Ltd., specification: 40 mg) 1 time/d.

2.3. Observation Indicators. The clinical efficacy, the incidence of adverse reactions, renal function indexes blood urea nitrogen (BUN), serum creatinine (Scr), serum sodium (Na), serum potassium (K), and UA before and after treatment were compared between the two groups.

2.4. Detection Method. (1) Clinical curative effect: Significant effect: Scr decreased by more than 50% compared with that before treatment, UA decreased by more than 20% compared with that before treatment, and the clinical symptoms of patients disappeared; valid: Scr decreased by more than 20%–50% and UA decreased by more than 10%–20% compared with that before treatment, and the clinical symptoms of patients were improved; invalid: Scr and UA increased, and the patient's clinical symptoms were not relieved or even aggravated. Total effective rate = (Significant effective cases + Valid cases)/Total cases × 100%. (2) Renal function index: 5 ml of cubital venous blood was collected from the patient in the morning and on an empty stomach, centrifuged at 4°C, and sent to the laboratory. PUZS-300 automatic biochemical analyzer (Shanghai Huanxi Medical Instrument Co., Ltd.) was used to detect the Scr, Na, BUN, and K levels. of the patient before and after treatment. (3) UA: 5 ml of venous blood was drawn, placed in an EDTA anticoagulant tube, centrifuged at 3000 r/min for 10 min, and the plasma was separated. The supernatant was collected, and the UA level was detected by capillary electrophoresis. The kit was from Shanghai Xuanhao Technology Development Co., Ltd. company. According to the instructions of the kit and the instrument, it will be strictly carried out by special personnel.

2.5. Statistical Methods. All data were processed by SPSS 23.0 statistical software package, measurement data were expressed as mean ± standard deviation (Mean ± SD), and a t-test was used; the pass rate/composition ratio of count data was described by the χ^2 test, and $P < 0.05$ was considered statistically significant for differences.

3. Results

3.1. Comparison of Clinical Efficacy between the Two Groups. The total effective rates of the experimental group and the control group were 82.00% and 76.00%, respectively, and the difference was not statistically significant ($P > 0.05$), as shown in Table 2.

3.2. Comparison of UA and Renal Function Indexes between the Two Groups before and after Treatment. Compared with before treatment, BUN, Scr, and UA in both groups decreased after treatment ($P < 0.05$); and the degree of decrease in the experimental group was significantly greater than that in the control group ($P < 0.05$). As shown in Table 3.

Table 2: Comparison of clinical efficacy between the two groups [n (%)].

Group	n	Significant effect	Valid	Invalid	Total efficiency
Control group	50	15	24	11	39 (78.00)
Experimental group	50	16	25	9	41 (82.00)
t value	—	—	—	—	3.827
P value	—	—	—	—	> 0.05

Table 3: Comparison of UA and renal function indexes between the two groups before and after treatment (±S).

Group	N		BUN (mmol/L)	Scr (mmol/L)	Na (mmol/L)	K (mmol/L)	UA (μmol/L)
Control group	50	Before treatment	17.24 ± 5.05	326.32 ± 56.24	127.21 ± 12.47	3.36 ± 0.92	503.64 ± 50.31
		After treatment	12.44 ± 5.15[a]	275.15 ± 41.62[a]	130.35 ± 11.42	3.41 ± 7.39	446.35 ± 42.35[a]
Experimental group	50	Before treatment	18.32 ± 4.24	326.23 ± 57.52	128.75 ± 11.24	3.38 ± 1.23	498.36 ± 50.25
		After treatment	10.24 ± 4.11[ab]	243.25 ± 41.25[ab]	131.24 ± 15.67	3.14 ± 0.32	361.58 ± 28.67[ab]

Note. Compared with before treatment, [a]$P < 0.05$; compared with the control group after treatment, [b]$P < 0.05$.

Table 4: Comparison of the incidence of adverse reactions between the two groups after treatment [n (%)].

Group	n	Rash	Abnormal liver function	Gastrointestinal functional response	Allergic vasculitis	The incidence of adverse reactions
Control group	50	2	4	3	2	11 (22.00)
Experimental group	50	1	1	2	1	5 (10.00)
t value	—	—	—	—	—	5.31
P value	—	—	—	—	—	< 0.05

3.3. Comparison of the Incidence of Adverse Reactions between the Two Groups after Treatment. The incidence of adverse reactions in the control group was 22.00%, which was significantly higher than that in the experimental group (10.00%) ($P < 0.05$). As shown in Table 4.

4. Discussion

As the kidney is an important organ for the excretion of uric acid, when the proximal convoluted renal tubule increases the reabsorption of uric acid and the glomerular filtration rate is reduced, it can lead to secondary hyperuricemia in patients with chronic renal failure. In addition, the metabolic disorder caused by chronic renal disease is also one of the important reasons for hyperuricemia [8, 9]. Uric acid accumulation in the kidney can activate renin-angiotensin inhibit epithelial-mesenchymal transdifferentiation, nitric oxide synthase-aldosterone system, trigger an inflammatory response, oxidative stress, etc., and eventually lead to tubulointerstitial damage and renal vascular disease, which is also an important reason for the exacerbation of CKD [10]. Studies have shown that renal dysfunction and hyperuricemia have far more influence on patients with CKD than that of proteinuria, and they are the main factors affecting the development of patients' conditions. [11]. Therefore, how to effectively control hyperuricemia is an important part of the treatment of CKD. At present, the treatment of CKD with hyperuricemia is mainly aimed at promoting uric acid excretion and inhibiting uric acid synthesis. Allopurinol is one of the drugs commonly used in the clinical treatment of hyperuricemia. Its main mechanism is to reduce uric acid synthesis. Inhibit the metabolism of xanthine and hypoxanthine. However, relevant data show that the use of allopurinol in the treatment of CKD with hyperuricemia has not achieved an ideal therapeutic effect, and the incidence of adverse reactions is high [12, 13]. In this study, the incidence of adverse reactions in the control group was 22.00%, which was significantly higher than that in the experimental group (10.00%) ($P < 0.05$), which was in line with the aforementioned data. This shows that the incidence of adverse reactions in patients with CKD and hyperuricemia treated with allopurinol is significantly higher than that of febuxostat.

Febuxostat was launched in China in 2013 [14], but there is no systematic report on the safety, experience, and efficacy of febuxostat in the field of kidney disease. Febuxostat mainly inhibits uric acid synthesis by selectively inhibiting xanthine oxidase. It is a novel uric acid-lowering drug that inhibits oxidative xanthoxylum and reductase from being affected by purinase such as pyrimidine metabolism. Therefore, febuxostat can effectively reduce drug damage to the body, accelerate the excretion of uric acid, improve the reduction efficiency of uric acid, is not affected by the redox state of enzymes, and ensure that no dose resistance is generated during the treatment [15–17]. At the same time, it can be converted into inactive products by the metabolic function of the liver, and finally eliminated from the body. Compared with allopurinol or other uric acid-lowering drugs currently in clinical use, febuxostat has a more significant treatment effect and has less impact on patients' renal function. In some developed countries, febuxostat has been used for chronic hyperuricemia in patients with a history of gouty joints and gout and has achieved good results [6, 18]. In this study, BUN, Scr, and UA in the two

groups decreased after treatment ($P < 0.05$); and the degree of decrease in the experimental group was significantly greater than that in the control group ($P < 0.05$), indicating that febuxostat can effectively reduce the effect of hyperuricemia on renal function of patients. To analyze the reason, febuxostat can increase glomerular filtration rate, improve the renal function of patients, and promote the recovery of renal function, so as to avoid the rise of intrarenal pressure of surviving nephrons, leading to the hypertrophy of arteriole wall, and thus, reducing the renal impairment and urinary protein precipitation. [19].

In conclusion, compared with allopurinol, febuxostat can improve renal function, reduce UA level, and reduce the occurrence of complications, with high safety, which is worthy of further clinical promotion. However, due to the limitation of the small sample size and short observation time in this study, it is necessary to increase the sample size and extend the observation time in subsequent studies for further discussion.

Data Availability

The data can be obtained from the corresponding author upon reasonable request.

Disclosure

Zhimin Liao and Lei Xu are the cofirst authors.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

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Retraction

Retracted: Relationship between PLR and Clinicopathological Characteristics of Patients with Advanced NSCLC and Its Predictive Value for the Efficacy of Chemotherapy and Prognosis

Emergency Medicine International

Received 22 August 2023; Accepted 22 August 2023; Published 23 August 2023

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] J. Zhao, Y. Pan, Y. Sheng, and J. Sun, "Relationship between PLR and Clinicopathological Characteristics of Patients with Advanced NSCLC and Its Predictive Value for the Efficacy of Chemotherapy and Prognosis," *Emergency Medicine International*, vol. 2022, Article ID 5811219, 5 pages, 2022.

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Research Article

Relationship between PLR and Clinicopathological Characteristics of Patients with Advanced NSCLC and Its Predictive Value for the Efficacy of Chemotherapy and Prognosis

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Objective. To investigate the relationship between blood platelet-to-lymphocyte ratio (PLR) and clinicopathological characteristics of patients with advanced non-small cell lung cancer (NSCLC) and evaluate the value of PLR for predicting the efficacy of chemotherapy and prognosis. *Methods*. The clinical data of 175 patients with advanced NSCLC diagnosed from March 2017 to December 2018 in our hospital were retrospectively analyzed, and the data of 175 healthy subjects from our hospital physical examinations were included. The platelet was detected by using a blood cell analyzer to calculate PLR. According to the average PLR value (197) before chemotherapy, 175 patients were divided into the low PLR group (=78) and the high PLR group (=97). The relationship between the expression levels of PLR and clinicopathologic features was analyzed, and the Kaplan–Meier survival curve was used to analyze the relationship between the expression levels of PLR and prognosis. *Results*. The results showed that prechemotherapy PLR levels were significantly higher in NSCLC compared with the healthy subjects ($P < 0.05$). After 4 cycles of chemotherapy, the PLR levels were significantly lower than those during prechemotherapy ($P < 0.05$). The proportion of TNM (IV) stage cases in the low PLR group was lower than that in the high PLR group ($P < 0.05$). The total effective rate of the first-line chemotherapy was 46.9% (82/175). The effective rate of IIIb staging was higher than that in IV staging ($P < 0.05$), and the effective rate of the low PLR group was higher than that in the high PLR group ($P < 0.05$). Multivariate logistic analysis showed that TNM stage 4 and high PLR level were the independent risk factors for the efficacy of the first-line chemotherapy in patients with advanced NSCLC ($P < 0.05$), and the high PLR level was an independent risk factor affecting the prognosis of patients with advanced NSCLC. The median overall survival (OS) of patients with the low PLR group was 20.8 months, higher than the 12.0 months of patients with the high PLR group ($P < 0.05$). *Conclusion*. PLR might have a certain clinical significance for predicting the TNM staging of NSCLC and can provide important diagnostic and prognostic results for patients.

1. Introduction

Lung cancer is one of the most common malignant tumors worldwide, with the highest morbidity and mortality. Non-small cell lung cancer (NSCLC) is the main type of lung cancer, accounting for about 80%–85% of lung cancers. 70% of NSCLC patients have reached an advanced stage when they are found, with a high degree of malignancy and a short survival time. The 5-year survival rate of patients with stage IIIb NSCLC is only 26% [1–3]. Chemotherapy is currently one of the main treatments for advanced NSCLC, which can effectively prolong the survival time of patients, although there are still many defects. However, there is currently a lack of indicators with a relatively low cost and high specificity to effectively reflect the severity of NSCLC and evaluate the efficacy of chemotherapy. The levels of inflammatory factors play an irreplaceable role in the evaluation of the development and prognosis of tumors; among them, the peripheral blood platelet-lymphocyte ratio (PLR) is an easily obtained inflammatory index, and the combination of platelets and lymphocytes, which can better reflect the systemic inflammatory state [4, 5]. In addition, PLR is also closely related to the staging of solid tumors, chemotherapy, and surgical prognosis [6, 7]. In this study, the

clinical data of 175 patients with advanced NSCLC were collected, and a retrospective cohort analysis was performed to explore the relationship between peripheral blood PLR levels and their clinicopathological characteristics in patients with advanced NSCLC and to evaluate the predictive value of PLR for the chemotherapy efficacy.

2. Materials and Methods

2.1. Clinical Data. The clinical data of 175 patients with advanced NSCLC who were diagnosed and treated in our hospital from March 2017 to December 2018 were retrospectively collected, including gender, age, smoking history, pathological type, TNM stage, and performance status (PS). There were 115 males and 60 females, ranging in age from 32 to 78 years old, with an average age of (68.72 ± 8.53) years old. There were 98 cases with a smoking history and 77 cases without a smoking history. There were 94 cases of squamous cell carcinoma, 71 cases of adenocarcinoma, and 10 cases of large cell carcinoma. TNM staging lists 106 cases of stage IIIb and 69 cases of stage IV. PS score: 0–1 points in 123 cases (patient's physical function of was completely normal or he had only mild symptoms); ≥2 points in 52 cases (patients with tumor-related symptoms need to stay in bed for part of the day, or even worse). Inclusion criteria are as follows: (1) patients met the diagnostic criteria for NSCLC and were confirmed by pathological diagnosis [8]; (2) the TNM stage is stage IIIb (T4, N2, and M0 or T1a-4, N3, and M0) or stage IV (any of *T*, any of *N*, and M1a-1b) [9]; (3) the patient's estimated survival was greater than 3 months; (4) no acute infection within 2 weeks before admission; and (5) complete case data and follow-up data. Exclusion criteria are as follows: (1) patients with severe heart, lung, liver, or kidney insufficiency; (2) patients with other malignant tumors. At the same time, 175 healthy volunteers who underwent physical examination were included in our hospital, including 112 males and 63 females, aged 30–76 years, with an average age of (67.84 ± 8.48) years. There was no significant difference in general data such as gender and age between the two groups ($P < 0.05$); the two groups were comparable.

2.2. Research Methods

2.2.1. Evaluation of Curative Effect. All patients received chemotherapy, 21 days as a cycle, and at least 4 cycles of treatment. According to the evaluation criteria of efficacy [10], efficacy is divided into complete remission (CR), partial remission (PR), stable disease (SD), and progressive disease (PD). All patients were evaluated for short-term efficacy after four cycles of treatment. The effective rate = (CR cases + PR cases)/total cases × 100%.

2.2.2. Blood Sample Collection and Testing. 5 ml of fasting peripheral venous blood was collected from patients with NSCLC before and after chemotherapy and healthy volunteers. The blood cytology test was performed with an automatic blood routine analyzer. Reference range: platelet (PLT) count is (100–300) × 10^9/L, lymphocyte (LY) count is (1.1–3.2) × 10^9/L, and PLR is calculated. The range of PLR was 138.9–288.6, and the mean PLR (197) was taken as the cut-off value. Patients were divided into the low PLR group ($n = 78$) and the high PLR group ($n = 97$) according to the level of PLR.

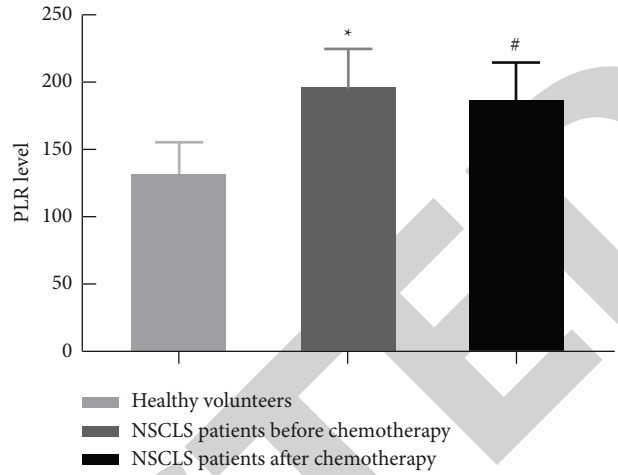

Figure 1: Comparison of PLR levels in patients with advanced NSCLC before and after chemotherapy and in healthy volunteers. *Note.* Compared with healthy volunteers, $^*P < 0.05$; compared with NSCLC patients before chemotherapy, $^\#P < 0.05$.

2.2.3. Follow-up. All patients were followed up regularly by outpatient or telephone after discharge, and the deadline for follow-up was December 31, 2019. Overall survival (OS) time refers to the time from the date of receiving chemotherapy to the time of death or last follow-up.

2.3. Statistical Processing. SPSS 22.0 software was used for processing, measurement data were expressed as the mean ± standard deviation ($\overline{x} \pm s$), comparison between groups was expressed by a *t*-test, enumeration data were expressed by (%), and comparison between groups was expressed by the χ^2 test. The effective rate and OS time factors affecting it were analyzed by using a logistic regression model. Survival analysis was performed by the Kaplan–Meier method, the OS curve was drawn, and the comparison was performed by the log-rank test. $P < 0.05$ means the difference is statistically significant.

3. Results

3.1. Comparison of PLR Levels in Patients with Advanced NSCLC before and after Chemotherapy and in Healthy Volunteers. The level of PLR (197.38 ± 26.92) before chemotherapy in patients with advanced NSCLC was higher than that in healthy volunteers (132.09 ± 23.27), and the difference was statistically significant ($P < 0.05$). After 4 cycles of chemotherapy, the level of PLR (188.90 ± 29.22) in advanced NSCLC patients was lower than that (197.38 ± 26.92) before chemotherapy, and the difference was statistically significant ($P < 0.05$), as shown in Figure 1.

Table 1: Comparison of different clinicopathological features and PLR levels in patients with advanced NSCLC before chemotherapy (n, %).

Factor	Cases ($n = 175$)	Low PLR group ($n = 78$)	High PLR group ($n = 97$)	χ^2 value	P value
Gender					
Male	115	56 (48.7)	59 (51.3)	2.310	0.129
Female	60	22 (36.7)	38 (63.3)		
Age (Years old)					
<65	71	44 (56.4)	47 (48.5)	1.729	0.189
≥65	104	34 (43.6)	50 (51.5)		
Smoking status					
Yes	98	35 (44.9)	63 (64.9)	0.926	0.336
No	77	43 (55.1)	34 (35.1)		
PS score (points)					
0~1	123	56 (45.5)	67 (54.5)	0.154	0.695
≥2	52	22 (42.3)	30 (57.7)		
Pathological type					
Squamous cell carcinoma	94	40 (42.6)	54 (57.4)		
Adenocarcinoma	71	34 (47.9)	37 (52.1)	0.226	0.695
Large cell carcinoma	10	4 (5.13)	6 (6.18)		
TNM staging					
IIIb	106	55 (51.9)	51 (48.1)	5.823	0.019
IV	69	23 (33.3)	46 (66.7)		

3.2. The Relationship between PLR Levels before Chemotherapy and Clinicopathological Characteristics in Patients with Advanced NSCLC. There was no significant difference between the PLR level before chemotherapy and gender, age, smoking status, PS score, and pathological type in advanced NSCLC patients ($P < 0.05$). However, the proportion of TNM (IV) stage cases in the low PLR group was lower than that in the high PLR group; the differences were statistically significant ($P < 0.05$), as shown in Table 1.

3.3. Comparison of Effective Rate and OS Time in Patients with Advanced NSCLC. The effective rate of first-line chemotherapy in advanced NSCLC patients was 46.9% (82/175), and there was no significant difference with gender, age, smoking status, PS score, or pathological type ($P < 0.05$), and the effective rate in the stage IIIb group was higher than that in the stage IV group; the effective rate of the low PLR group was higher than that of the high PLR group, and the difference was statistically significant ($P < 0.05$). There was no significant difference between the median OS time and gender, age, smoking status, PS score, pathological type, and TNM staging of patients ($P < 0.05$). The median OS time in the low PLR group was higher than that in the high PLR group, and the difference was statistically significant ($P < 0.05$), as shown in Table 2.

3.4. Multivariate Logistic Analysis on Factors Affecting Efficacy of Chemotherapy and OS Time in Patients with Advanced NSCLC. Multivariate logistic analysis showed that TNM stage 4 and a high PLR level were the independent risk factors for the efficacy of first-line chemotherapy in patients with advanced NSCLC ($P < 0.05$), as shown in Table 3. The high PLR level was an independent risk factor affecting the prognosis of patients with advanced NSCLC ($P < 0.05$), as shown in Table 4.

3.5. The Relationship between Different PLR Levels and Prognosis of Patients. As of December 31, 2019, all 175 cases were followed up, of which 45 died. The median OS time of patients in the low PLR group was 20.8 months, which was higher than the median OS time of 12.0 months in the high PLR group, $P = 0.020$ by the log-rank test, as shown in Table 2 and Figure 2.

4. Discussion

The incidence and mortality of lung cancer are high all over the world, especially in China. In addition, NSCLC is the most common type of lung cancer, and it is difficult to find it in the early stages. At present, the commonly used treatment of NSCLC in clinical practice is mainly chemotherapy. However, there is still a lack of specific evaluation indicators for evaluating the severity of NSCLC and the efficacy of chemotherapy [11–13]. In recent years, PLR, as a biochemical indicator with strong operability, stable results, and low cost, has been favored by researchers. Current studies [14, 15] have shown that PLR has good predictive value in the evaluation and prognosis of solid tumors such as gastrointestinal tumors. However, there are few reports on the use of PLR to evaluate the efficacy of chemotherapy in advanced NSCLC. Therefore, this study retrospectively evaluated the relationship between PLR levels and their clinicopathological characteristics and the predictive value of PLR for the efficacy of chemotherapy in patients with advanced NSCLC.

The results of this study showed that the PLR of patients with advanced NSCLC before chemotherapy was higher than that of healthy volunteers. After receiving 4 cycles of chemotherapy, PLR in patients with advanced NSCLC was lower than before chemotherapy. When activated PLT is combined with tumor cells, PLT can prevent tumor cells from being detected and attacked by human immune cells

Table 2: Comparison of effective rate and OS time in patients with advanced NSCLC (n, %).

Factor	Cases ($n = 175$)	Efficacy of chemotherapy	χ^2 value	P value	Median OS time (month)	χ^2 Value	P value
Gender							
Male	115	53 (46.1)	0.029	0.865	15.3	2.518	0.113
Female	60	29 (48.3)			14.9		
Age (Years old)							
<65	71	36 (50.7)	0.255	0.614	15.2	0.513	0.474
≥65	104	46 (44.2)			16.9		
Smoking status							
Yes	98	42 (42.9)	0.515	0.473	14.9	0.462	0.497
No	77	40 (43.5)			15.3		
PS score (points)							
0~1	123	55 (44.7)	0.336	0.623	16.4	3.558	0.060
≥2	52	27 (51.9)			14.5		
Pathological type							
Squamous cell carcinoma	94	45 (47.9)	0.961	0.327	15.8	0.093	0.761
Adenocarcinoma	71	33 (44.0)			15.2		
Large cell carcinoma	10	4 (40.0)			15.0		
TNM staging							
IIIb	106	63 (59.4)	6.555	0.010	15.9	0.834	0.361
IV	69	19 (27.5)			14.8		
PLR level							
<197	78	48 (61.5)	6.937	0.037	20.8	3.393	0.047
≥197	97	34 (35.0)			12.0		

Table 3: Multivariate logistic analysis on the effect of chemotherapy in patients with advanced NSCLC (Assignment situation: "TNM stage IIIb" = "0"; "TNM stage IV = "1". "PLR < 197" = "0"; "PLR ≥ 197" = "1").

Variable	B value	Walds	OR value	95% CI	P value
TNM staging	0.214	5.163	1.695	1.452~1.894	0.042
PLR	0.089	4.734	1.306	1.069~1.425	0.004

Table 4: Multivariate logistic analysis on affecting the prognosis of patients with advanced NSCLC (Assignment situation: "PLR < 197" = "0"; "PLR ≥ 197" = "1").

Variable	B value	Walds	OR value	95% CI	P value
PLR	0.256	11.232	0.979	0.004~1.712	0.001

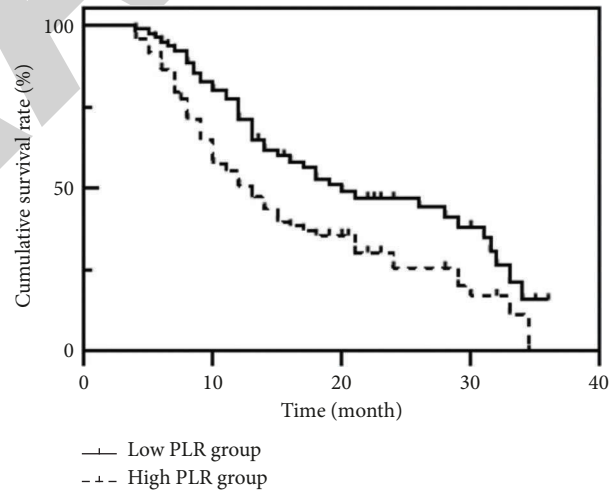

Figure 2: Survival curves of patients with different PLR levels.

and produce vascular endothelial growth factor and transforming growth factor beta to promote the growth of tumor cells. In addition, PLT can also produce a variety of cytokines, such as interleukin IL-1β, IL-6, and IL-12, which in turn promote the production of PLT by megakaryocytes and inhibit the secretion of LY, leading to an increase in PLR in patients. [16–18]. During the course of chemotherapy, the tumor cells in the patient's body were continuously killed, the inflammatory response decreased, the immune response increased, the secretion level of PLT decreased, and the secretion level of LY increased, which led the patients' PLR decreasing after chemotherapy. This may suggest that the changes of PLR in the peripheral blood of NSCLC patients can reflect the degree of disease and the number of tumor cells in the body to a certain extent.

The results of this study showed that the PLR level of patients was closely related to TNM staging, and the higher the TNM staging was, the higher the PLR level was. This suggests that the level of PLR is closely related to the disease progression and pathological development of NSCLC, which provides good evidence for PLR as a relatively common indicator for early screening of NSCLC.

This study compared the effects of different clinicopathological features and PLR levels on the efficacy of chemotherapy and patients' OS time. The efficacy of chemotherapy was related to TNM staging and PLR. Among them, the effective rate of chemotherapy in stage IIIb patients was higher than that in stage IV patients, and the effective rate of chemotherapy in the low PLR group was

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Retraction

Retracted: Relationship between Peripheral Blood miR-181c, miR-101, and Cognitive Impairment in Patients with Diabetes Mellitus Complicated with Acute Stroke

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

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In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

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[1] M. Shu and C. Xiang, "Relationship between Peripheral Blood miR-181c, miR-101, and Cognitive Impairment in Patients with Diabetes Mellitus Complicated with Acute Stroke," *Emergency Medicine International*, vol. 2022, Article ID 5777106, 6 pages, 2022.

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Research Article

Relationship between Peripheral Blood miR-181c, miR-101, and Cognitive Impairment in Patients with Diabetes Mellitus Complicated with Acute Stroke

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Objectives. To explore the relationship between peripheral blood microRNA-181c (miR-181c), microRNA-101 (miR-101), and cognitive impairment (CI) in patients with diabetes mellitus (DM) complicated with acute stroke (AS). *Methods*. A retrospective analysis was performed on 70 patients with DM complicated with AS admitted to the hospital between January 2019 and December 2021. According to presence or absence of CI, they were divided into CI group (41 cases) and non-CI group (29 cases). The clinical characteristics and general data (blood glucose and blood lipid) of patients were statistically analyzed. The relative expression levels of miR-181c and miR-101 in peripheral blood were detected by real-time fluorescence quantitative PCR. The risk factors of CI were analyzed by logistic regression analysis. The diagnostic value of peripheral blood miR-181c and miR-101 for CI was evaluated by receiver operating characteristic (ROC) curves. *Results*. The relative expression levels of peripheral blood miR-181c and miR-101 in the CI group were lower than those in the non-CI group ($P < 0.05$). The occurrence of CI was related to age, course of DM, AS location, time from onset to admission, HbA1c, TG, UA, and Hcy levels ($P < 0.05$). Logistic regression analysis showed that age, AS location, HbA1c, miR-181c, and miR-101 were related influencing factors of CI in patients with DM complicated with AS ($P < 0.05$). The results of ROC curves analysis showed that AUC, sensitivity, and specificity of miR-181c combined with miR-101 for predicting CI were 0.865, 73.17%, and 89.66%, respectively ($P < 0.05$). *Conclusions*. The peripheral blood miR-181c and miR-101 are low expressed in patients with DM complicated with AS, and advanced age, intracortical AS lesions, increased HbA1c, and low expression of miR-181c and miR-101 are all independent risk factors for CI in patients with DM complicated with AS. Besides, the combined detection of miR-181c and miR-101 expression has a good diagnostic value for CI.

1. Introduction

Diabetes mellitus (DM) is a glucose, lipid, and protein metabolic disorder syndrome caused by genetic, immune disorders, microbial infection, and other pathogenic factors, which can lead to increased cholesterol levels, decreased red blood cell deformability, and hypercoagulable state of organism, and promote thrombosis, thus easily inducing the occurrence of acute stroke (AS) [1, 2]. Some studies have found that DM microvascular complications are a high-risk factor for cognitive impairment (CI), which can cause neuronal degeneration and induce CI by inhibiting the insulin post-transport receptor signaling pathway, which has a serious impact on the work and life of patients [3, 4]. In recent years, microRNAs (miRNAs), which are widely present in brain tissue and have a regulatory effect on post-transcriptional protein expression, have become a research hotspot for their roles in neurogenesis, angiogenesis, and other cell biology [5]. MicroRNA-181c (miR-181c) is a member of the miR-181 family, and its overexpression increases reactive oxygen species production and affects mitochondrial genome protein coding [6]. Micro RNA-101 (miR-101) is sensitive to

hypoxia, participates in cellular amino acid response, and plays an important regulatory role in neural tissue [7]. Previous studies have reported the changes of serum miR-181c levels in patients with acute cerebral infarction and the protective effect of miR-101 on cerebral ischemia-reperfusion injury, but there are relatively few studies reporting the changes of miR-181c and miR-101 levels in peripheral blood of patients with DM complicated with AS [8]. In addition, there is also a lack of research on the correlation between serum miR-181c and miR-101 levels and CI degree in patients with DM complicated with AS. In order to provide a molecular biological reference index for the prediction of cognitive dysfunction and early intervention planning in diabetes and patients, this study analyzed the relationship between the levels of miR-181c and miR-101 in peripheral blood and CI degree in patients with DM complicated with AS and the predictive value of the two on CI occurrence.

2. Materials and Methods

2.1. General Information. A retrospective analysis of 70 patients with DM complicated with AS admitted to our hospital from January 2019 to December 2021 was performed. Inclusion criteria were as follows: patient has a history of DM [9], patient met the diagnostic criteria for AS (the patient developed acute symptoms such as limb numbness and decreased muscle strength, and the appearance of cerebral infarction was confirmed by cranial CT or magnetic resonance imaging) and was admitted within 48 hours of developing AS [10], and patient's clinical medical records are complete. Exclusion criteria were as follows: patients with severe organ dysfunction or malignant tumor; patients with combined craniocerebral trauma, cerebrovascular malformation, or cerebral hemorrhage; patients with previous cognitive dysfunction; and patients with acute and chronic infectious diseases in various tissues and organs of the body. The patients were divided into 41 cases in the CI group and 29 cases in the non-CI group according to whether CI occurred or not, and the diagnosis [11] of CI was made by combining diagnostic criteria from the authoritative literature, the patient's history, physical examination and cognitive screening results.,

2.2. Methods

2.2.1. Clinical Information Collection. The general data of the included subjects were collected through the hospital electronic medical record system, including gender, age, education level, body mass index (BMI), combined underlying diseases (hypertension and coronary heart disease), smoking history, drinking history, DM duration, AS location (subtentorial, subcutaneous, and cortical), type of AS, time from onset to admission, National Institute of Health Stroke Scale (NIHSS) score, fasting blood glucose (FBG), glycated hemoglobin (HbA1c), triacylglycerol (TG), total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), total bilirubin (TBIL), direct bilirubin (DBIL), uric acid (UA), homocysteine (Hcy), thyroid-stimulating hormone (TSH)), and cysteine (Cys).

2.2.2. Detection of miR-181 and miR-101 Expression in Peripheral Blood. In the morning of the next day after admission, 5 mL of fasting venous blood was collected from all the included subjects through the cubital vein and then anticoagulated and stored at low temperature. Total RNA was extracted by adding TRIzol and reverse transcribed into cDNA. miR-181c and miR-101 with cDNA as template were amplified, and PCR was used to perform fluorescence quantitative PCR reaction. The reaction conditions are as follows: 3 replicate wells for all samples, 95°C for 15 min, 94°C for 15 s, 60°C for 35 s, repeated 40 times. Using U6 as the internal reference, primer sequences are as follows: miR-181c upstream 5′-AACAUUCAACCUGUCGGUGAGU-3′, downstream 5′-UCACCGACAGGUUGAAUGUUUU-3′; miR-101 upstream 5′-CGTGCCAGACATGGACCTAT-3′, downstream 5′-CGGGGTAGGTGAAGACGAAG-3′; U6 upstream 5′-TCAGTTTGCTGCTGTTCTGGGTG-3′, downstream 5′-GGGTTGGCTGGAAAGGA-3′. The relative expression levels of miR-181c and miR-101 were calculated by 2-△△CT method. All steps were carried out in strict accordance with the instructions of each instrument and reagent.

2.3. Statistical Processing. SPSS 22.0 statistical software was used for data analysis, measurement data were expressed by ($\overline{x} \pm s$), differences between groups were expressed by two-sample independent t-test, count data were expressed by rate, and differences between groups were expressed by $\chi 2$ test. Univariate analysis and binary logistic regression were used to analyze the risk factors for the occurrence of CI in patients with DM complicated with AS. The receiver operator characteristic curve (ROC) was used to detect the diagnostic value of miR-181c and miR-101 expression in peripheral blood for the occurrence of CI in patients with DM complicated with AS. Two-sided $P < 0.05$ was considered to be statistically significant.

3. Results

3.1. Comparison of Relative Expression Levels of miR-181c and miR-101 in Peripheral Blood of Patients with DM Complicated with AS in the CI Group and the Non-CI Group. The relative expressions of miR-181c and miR-101 in peripheral blood of patients with DM complicated with AS in the CI group were significantly lower than those in the non-CI group ($t = 8.534$, 14.279, $P < 0.05$), as shown in Figure 1.

3.2. Univariate Analysis of CI in Patients with DM Combined with AS. The occurrence of CI in patients with DM combined with AS was related to age, duration of DM, AS location, time from onset to admission, and levels of HbA1c, TG, UA, and Hcy ($P < 0.05$). There was no relationship with gender, education level, BMI, underlying disease, smoking history, drinking history, duration of DM, AS type, NIHSS score, and FBG, TC, LDL-C, HDL-C, TBIL, DBIL, TSH, and Cys levels ($P > 0.05$), as shown in Figure 2 and Table 1.

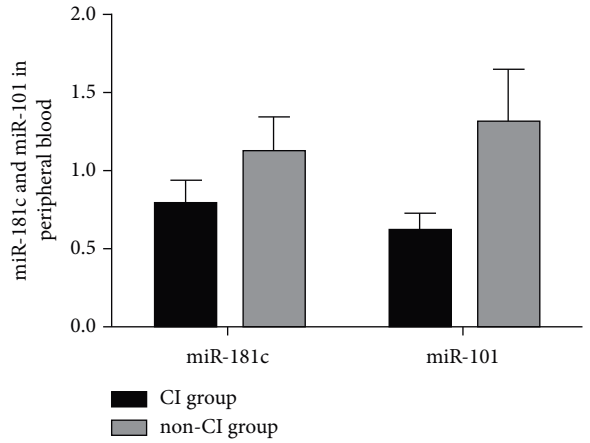

Figure 1: Comparison on relative expression levels of peripheral blood miR-181c and miR-101 between the CI group and the non-CI group.

3.3. Logistic Regression Analysis Affecting the Occurrence of CI in Patients with DM Complicated with AS. The difference variables that affected the cognitive function of patients with DM and AS were assigned and divided according to the mean value of all patients as the critical value, and the detection level was $\alpha = 0.05$. The assignments of dependent and independent variables are shown in Table 2. Logistic regression analysis showed that age (OR = 2.784, $P = 0.038$), AS location (OR = 2.697, $P = 0.024$), HbA1c (OR = 2.751, $P = 0.031$), miR-181c (OR = 2.759, $P = 0.024$) = 0.032), and miR-101 (OR = 2.702, $P = 0.047$) were related factors affecting the occurrence of CI in patients with DM complicated with AS, as shown in Table 2.

3.4. The Diagnostic Value of miR-181c and miR-101 Expression in Peripheral Blood for CI in Patients with DM Complicated with AS. The ROC Table 3 results showed that the AUC of miR-181c and miR-101 in peripheral blood for predicting the occurrence of CI in patients with DM complicated with AS was 0.816 and 0.783, respectively, and the cutoff values were 0.91 and 1.01, respectively. Combined detection was used to predict the area under the curve of CI in patients with DM complicated with AS (area under curve, AUC) which was 0.865, and the sensitivity and specificity were 73.17% and 89.66%, respectively ($P < 0.05$), as shown in Figure 3 and Table 4.

4. Discussions

DM patients often suffer from AS and other acute complications due to endocrine disorders, glycolipoprotein metabolism imbalance, and microvascular disease. Some studies have found that more than half of DM patients with AS can have CI, which seriously affects their quality of life [12, 13]. Therefore, finding simple and noninvasive biomarkers for early screening and diagnosis of cognitive impairment in DM patients with AS is of great significance to the clinical health management of DM patients. miRNA is a key regulatory molecule that plays an important role in the development and function of the nervous system [14]. This study mainly explored the relationship between the expression of miR-181c and miR-101 in peripheral blood and CI occurrence in patients with DM complicated with AS.

The results of this study showed that the relative expressions of miR-181c and miR-101 in the peripheral blood of patients with DM combined with AS in the CI group were significantly lower than those in the non-CI group, indicating that the expressions of miR-181c and miR-101 in peripheral blood of patients with DM complicated with AS were downregulated, which might lead to the occurrence of CI. Studies by Lian et al. [15] and others found that CI was related to neuronal apoptosis and mitochondrial dysfunction, and studies by Meng et al. [16] found that miR-181c was downregulated in AS patients. MiR-181c is an miRNA widely expressed in the central nervous system, and it is often abnormally expressed in a variety of neurodegenerative and neuropsychiatric diseases with cognitive deficits. The abnormal expression of miR-181c can participate in the regulation of neuronal function by regulating mitochondrial histone coding [17]. The hippocampus is the key and basis for the formation of long-term memory and is closely related to cognitive functions such as learning and memory. miR-101 is extremely sensitive to hypoxia and highly expressed in synapses, and it participates in the proliferation and apoptosis of hippocampal neurons by negatively regulating the degradation of amyloid precursor in hippocampal neurons, and thus plays a neuroprotective role. miR-101 may participate in the regulation of hippocampal neuron apoptosis and regeneration through endogenous antioxidant pathways, affecting synaptic function and structure, and then regulating cognitive function in patients [18].

The results of this study showed that the occurrence of CI in patients with DM combined with AS was related to age, duration of DM, AS location, time from onset to admission, and levels of HbA1c, TG, UA, and Hcy, similar to the results of other studies, suggesting that cognitive function in patients with DM combined with AS may be related to factors such as age, duration of disease, damage to cerebral cortex, treatment delay, blood sugar control, and blood lipid level. Further multiple linear regression analysis was used to analyze the influencing factors of cognitive function in patients with DM complicated with AS. The results showed that age, AS location, HbA1c, miR-181c, and miR-101 were independent influencing factors on cognitive function of DM patients with AS, which indicated that the elderly, high HbA1c level, cortex, miR-181c, and miR-101 expression level were more likely to have CI. Elderly patients are often accompanied by decreased cerebral cortical cells and decreased cerebral perfusion, which increase the risk of CI. Cognitive function is generated and maintained in the complex system network of the brain. Current research generally believes that the brain functional area of cognitive function is located in the cerebral cortex, and the cerebral cortex damage is most closely related to CI in the site of AS occurrence [19]. The level of HbA1c reflects the glycemic control of patients. The toxic effect of hyperglycemia on the brain tissue of AS patients can lead to severe cerebral ischemia and hypoxia, which significantly increases the risk of CI [20]. miR-181c

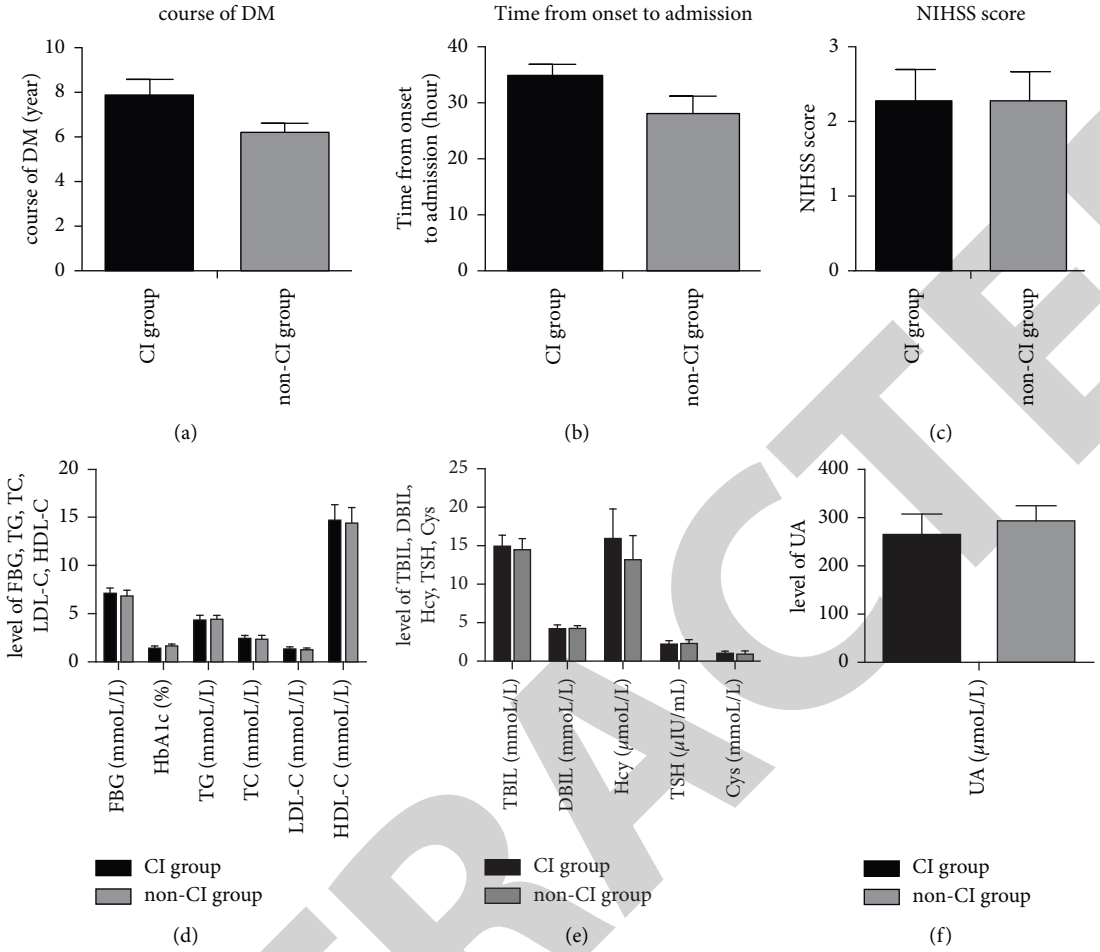

Figure 2: Comparison of measurement data between the CI group and the non-CI group: (a) course of DM; (b) time from onset to admission; (c) NIHSS score; (d) FBG, HbA1c, TG, TC, LDL-C, and HDL-C levels; and (e) TBIL, DBIL, Hcy, TSH, and Cys levels; (f): UA level.

Table 1: Univariate analysis on the influencing factors of cognitive function in patients with DM complicated with AS [n(%)].

Index		CI group ($n = 41$)	Non-CI group ($n = 29$)	χ^2 value	P -Value
Gender (cases)	Male	25 (60.98)	18 (62.07)	0.810	0.368
	Female	16 (39.02)	11 (37.93)		
Age (year)	≤60	13 (31.71)	17 (58.62)	5.024	0.025
	>60	28 (68.29)	12 (41.38)		
Education level (cases)	Undergraduate and above	9 (21.95)	5 (17.24)	0.611	0.962
	Senior high school	19 (46.34)	14 (48.28)		
	Junior high school and below	13 (31.71)	10 (34.48)		
BMI (kg/m^2)	≤24	24 (58.54)	16 (55.17)	18.290	0.919
	>24	17 (41.46)	13 (44.83)		
Combined underlying disease (cases)	Hypertension	12 (29.27)	7 (24.14)	0.226	0.634
	Coronary heart disease	9 (21.95)	6 (20.69)	0.016	0.899
Smoking history (cases)	No	26 (63.41)	18 (62.07)	0.013	0.909
	Yes	15 (36.59)	11 (37.93)		
History of drinking (cases)	No	29 (70.73)	19 (65.52)	0.214	0.643
	Yes	12 (29.27)	10 (34.48)		
AS location	Subtentorial	5 (12.20)	4 (13.79)	6.306	0.043
	Subcutaneous	23 (56.10)	23 (79.31)		
	Cortex	13 (31.70)	2 (6.90)		
Type of AS	Cerebral infarction	22 (53.66)	18 (62.07)	0.491	0.484
	Intracerebral hemorrhage	19 (46.34)	11 (37.93)		

Table 2: Assignments of study variables.

Index	Relevant factor	Definition and assignment	
X_1	Age	≤60 years = 0	>60 years = 1
X_2	DM course of disease	≤7.16 years = 0	>7.16 years = 1
X_3	AS location	Subtentorial or subcutaneous = 0	, = 1
X_4	Time from onset to admission	≤31.59 h = 0	>31.59 h = 1
X_5	HbA1c	≤6.89% = 0	>6.89% = = 1
X_6	TG	≤1.47mmoL/L = 0	>1.47mmoL/L = 1
X_7	UA	≤279.45μmoL/L = 0	>279.45μmoL/L = 1
X_8	Hcy	≤14.26μmoL/L = 0	>14.26μmoL/L = 1
X_9	miR-181c	>0.91 = 0	≤0.91 = 1
X_{10}	miR-101	>1.01 = 0	≤1.01 = 1

Table 3: Logistic regression analysis on the influencing factors of CI in patients with DM complicated with AS.

Index	β	SE	Wald χ^2	OR	95%CI lower limit	95%CI upper limit	P -Value
Age	1.024	0.493	4.314	2.784	1.059	7.318	0.038
DM course of disease	0.977	0.536	3.322	2.656	0.929	7.596	0.069
AS location	0.992	0.438	5.130	2.697	1.143	6.363	0.024
Time from onset to admission	0.876	0.517	2.871	2.401	0.872	6.615	0.091
HbA1c	1.012	0.467	0.526	2.751	1.102	6.871	0.031
TG	0.983	0.522	3.546	2.672	0.976	7.319	0.056
UA	0.783	0.508	2.376	2.188	0.808	5.992	0.124
Hcy	0.826	0.514	2.582	2.284	0.834	6.255	0.109
miR-181c	1.015	0.473	4.605	2.759	1.092	6.973	0.032
miR-101	0.994	0.498	3.984	2.702	1.018	7.171	0.047

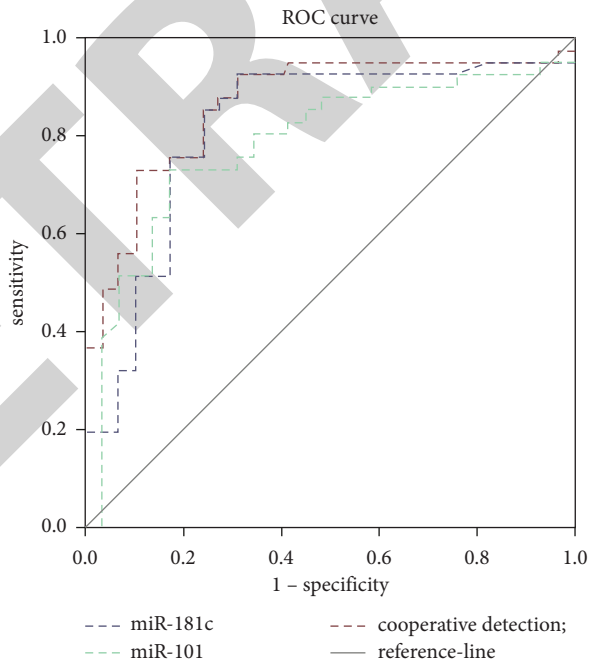

Figure 3: ROC curves of peripheral blood miR-181c and miR-101 in the diagnosis of CI in patients with DM complicated with AS.

Table 4: ROC characteristics of peripheral blood miR-181c and miR-101 in the diagnosis of CI in patients with DM complicated with AS.

Index	AUC	Standard error	Sensitivity (%)	Specificity (%)	Cutoff value	95%CI	*P-value*
miR-181c	0.816	0.056	92.68	68.97	0.91	0.707~0.925	<0.001
miR-101	0.783	0.057	73.17	82.76	1.01	0.671~0.896	<0.001
Joint detection	0.865	0.045	73.17	89.66	—	0.777~0.954	<0.001

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Retraction

Retracted: Effect of Transcatheter Arterial Chemoembolization Combined with Radiofrequency Ablation on Liver Function and Immune Function in Patients with Hepatocellular Carcinoma

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] Y. Zhou, Y. Qian, W. Xiong et al., "Effect of Transcatheter Arterial Chemoembolization Combined with Radiofrequency Ablation on Liver Function and Immune Function in Patients with Hepatocellular Carcinoma," *Emergency Medicine International*, vol. 2022, Article ID 4842370, 5 pages, 2022.

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Research Article

Effect of Transcatheter Arterial Chemoembolization Combined with Radiofrequency Ablation on Liver Function and Immune Function in Patients with Hepatocellular Carcinoma

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Objectives. To investigate the effects of transcatheter arterial chemoembolization (TACE) combined with radiofrequency ablation (RFA) on liver function and immune function in patients with hepatocellular carcinoma (HCC). *Methods.* From December 2016 to January 2019, patients with primary liver cancer who could not be operated on were selected as the study subjects. 170 patients were randomly divided into two groups. The control group was treated with transcatheter arterial chemoembolization ($n = 85$). The patients in the observation group were treated with transcatheter arterial chemoembolization combined with radiofrequency ablation ($n = 85$). The clinical effects of the two groups were analyzed. The changes of liver function and immune function were detected by automatic biochemical analyzer before and after treatment. The changes of hypoxia inducible factor-1 (HIF1) alpha and vascular endothelial growth factor (VEGF) levels before and after treatment were analyzed by enzyme-linked immunosorbent assay (ELISA). *Results.* The total effective rate in the observation group was significantly higher than that in the control group ($P < 0.05$). After treatment, serum levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST), CD8+, HIF1 alpha, and VEGF decreased significantly ($P < 0.05$), while levels of total bilirubin, direct bilirubin, indirect bilirubin, CD3+, CD4+, and CD4+/CD8+ increased significantly ($P < 0.05$). The changes of the above indexes in the observation group were more significant than those in the control group ($P < 0.05$). *Conclusion.* Hepatic arterial chemoembolization combined with radiofrequency ablation has a significant effect on liver function and immune function in patients with liver cancer, which may be related to the abnormal levels of HIF1α and vascular endothelial growth factor.

1. Introduction

Primary liver cancer is one of the common malignant tumors in our country. The etiology and pathogenesis of primary liver cancer have not yet been determined. At present, it is believed to be related to gene mutation and soil and water factors [1]. The main symptoms are liver pain, fatigue, weight loss, abdominal distension, loss of appetite, etc., which will harm surrounding organs and cause rupture and bleeding. Early surgical resection is the most effective treatment method, and postoperative comprehensive treatment can be based on the patient's condition and combined with drugs. The prognosis of primary liver cancer is closely related to early diagnosis and early treatment [2, 3].

Hepatic arterial chemoembolization is currently the first choice for the clinical treatment of advanced hepatocellular carcinoma, which has obvious effects on inhibiting tumor vascular invasion and relieving tumor progression [4]. Radiofrequency ablation is a minimally invasive interventional surgery for the clinical treatment of solid tumors, which belongs to the category of thermal ablation [3]. The rapid proliferation of tumor cells is usually accompanied by hypoxia in the organized microenvironment, and VEGF and HIF1α are important participants in this physiological

process [5]. This study analyzed the effect of hepatic arterial chemoembolization combined with radiofrequency ablation on liver function and immune function in patients with liver cancer, in order to provide reference for clinical treatment.

2. Materials and Methods

2.1. Research Objects. The subjects were patients with inoperable primary liver cancer who were admitted to our hospital from December 2016 to January 2019. Inclusion criteria were as follows: all study subjects were pathologically confirmed to be with primary liver cancer and could not continue surgery, liver function Child grade was A or B, age ≥45 years, complete clinical data, normal mental state, consent to this study, and compliance with the requirements of the hospital ethics committee. Exclusion criteria were as follows: patients with other malignant tumors, patients with severe metabolic system diseases, patients with organic heart or kidney disease or severe dysfunction, patients with incomplete clinical data, mental illness and uncooperative patients, and patients with contrast medium allergy. 170 patients were divided into two groups by the random data table method: control group patients received hepatic arterial chemoembolization, and observation group received hepatic arterial chemoembolization combined with radiofrequency ablation. In the control group, there were 44 males and 41 females, aged 45–67 years (56.6 ± 11.3), 52 patients with Child liver function grade A, and 33 patients with B. In the observation group, there were 43 males and 42 females, aged 45–65 years (56.2 ± 11.8). There were 50 patients with Child liver function grade A and 35 patients with B. There was no statistical difference between the two groups in general data such as sex ratio, average age, and Child–Pugh classification [6] of liver function ($P > 0.05$).

2.2. Methods. Patients in the control group received hepatic arterial chemoembolization: the modified Seldinger method was used to perform femoral artery puncture, catheters were inserted into the common hepatic artery, left and right hepatic arteries, and proper hepatic artery, and arteriography was performed. Chemotherapy drugs (oxaliplatin J20150117) and embolic agents (liquid lipiodol) are injected. The corresponding lipiodol and pirarubicin suspension were selected according to the size of the liver cancer lesions of the research subjects. At the same time, gelatin sponge particles were used for thromboembolism according to the actual situation. Hepatic arterial chemoembolization was performed at an interval of 2 months, and relevant indicators were observed after 3 treatments. The observation group was treated with hepatic arterial chemoembolization combined with radiofrequency ablation. The control group underwent radiofrequency ablation after 4 weeks of hepatic arterial chemoembolization, which was the same as the observation group. Under the precise guidance of CT, radiofrequency ablation was performed after puncture at the appropriate location. Participation in radiofrequency ablation therapy was adjusted according to the size, location, and morphology of the patient's tumor. The treatment principle from far to near is adopted from the epidermis, and the ablation method of multiple overlapping and multiple needle overlapping is used for treatment.

Table 1: Comparative analysis of the clinical effective rate of treatment in the two groups of patients.

Group	Number of cases	CR	PR	SD	PD	Total efficiency (%)
Control group	85	10	35	27	13	72 (84.7)
Test group	85	19	50	11	5	80 (94.1)
x^2						3.977
P						0.046

2.3. Observation Indicators and Analysis Methods. The clinical treatment effect includes medium [7]: complete remission (CR) refers to the disappearance of the target lesion after the patient receives treatment, and it is maintained for at least four weeks; partial remission (PR) is a 30% reduction in the sum of the maximum diameters of the patient's baseline lesions after treatment, maintained for at least four weeks; stable (SD) is the reduction in the sum of the maximum diameters of the baseline lesions but less than 30% after the patient receives treatment; progressive (PD) refers to patients whose baseline lesions did not decrease or even increase after treatment. Total effective rate = (CR cases + PR cases + SD cases)/total cases × 100%.

The changes of liver function and immune function in the two groups of patients before and after treatment were detected. CD3/CD4/CD8 detection kits were purchased from Shenzhen Ruijing Biotechnology Co. Ltd. ALT and AST detection kits were purchased from Nanjing Jiancheng Bioengineering Institute; total bilirubin, direct bilirubin, and indirect bilirubin detection reagents were purchased from Roche. The automatic biochemical analyzer is Roche Cobas8000c701. The changes of HIF1α and VEGF levels before and after treatment were analyzed by enzyme-linked immunosorbent assay. HIF1α detection kit was purchased from R&D Company; VEGF detection kit was purchased from CST Company. The full-wavelength microplate reader is RT-6100 of Redu Company.

2.4. Statistical Analysis Data. Statistical analysis was done by SPSS18.0 statistical software, the count data were expressed as percentage, and the comparison between two groups was done by x2 test; measurement data were expressed as mean ± standard deviation, t-test was used for comparison between two groups, and paired t-test was used for comparison within group before and after treatment. $P < 0.05$ means the difference is statistically significant.

3. Results

3.1. Comparison and Analysis of the Clinical Effective Rate of the Two Groups of Patients. The study found that the total effective rate of patients in the observation group was

Table 2: Changes of transaminase levels before and after treatment in two groups of patients.

Group	Number of cases	AST (U/L)			ALT (U/L)		
		Before treatment	After treatment	t/P	Before treatment	After treatment	t/P
Control group	85	98.6 ± 11.3	57.8 ± 7.32	3.102/0.002	90.8 ± 8.54	54.6 ± 8.32	2.745/0.008
Test group	85	99.5 ± 10.4	45.5 ± 8.33	2.915/0.004	92.6 ± 9.91	41.7 ± 7.88	2.718/0.001
t		0.540	10.226		1.269	10.379	
P		0.589	<0.001		0.206	<0.001	

Table 3: Changes of bilirubin levels before and after treatment in two groups of patients.

Group	Total bilirubin (μmol/L)			Direct bilirubin (μmol/L)			Indirect bilirubin (μmol/L)		
	Before treatment	After treatment	t/P	Before treatment	After treatment	t/P	Before treatment	After treatment	t/P
Control group	23.5 ± 2.84	35.4 ± 4.88	4.735/0.002	6.22 ± 1.01	9.89 ± 1.13	3.612/0.004	15.7 ± 2.54	22.5 ± 3.91	5.975/0.000
Test group	23.7 ± 3.09	42.4 ± 3.12	3.498/0.003	6.14 ± 0.94	12.6 ± 2.98	5.876/0.000	15.4 ± 2.12	27.7 ± 3.09	4.633/0.001
t	0.439	11.142		0.535	7.839		0.836	9.619	
P	0.661	<0.001		0.594	<0.001		0.404	<0.001	

Table 4: Comparison of changes in immune function indexes of two groups of subjects.

Group		CD3+	CD4+	CD8+	CD4+/CD8+
Control group	Before treatment	42.5 ± 6.54	30.8 ± 4.32	18.5 ± 2.99	1.66 ± 0.49
	After treatment	55.6 ± 7.98	36.8 ± 3.99	14.3 ± 3.52	2.27 ± 0.65
t		11.706	9.407	8.384	6.909
P		0.000	0.000	0.000	0.000
Test group	Before treatment	43.6 ± 8.43	31.9 ± 4.32	19.2 ± 3.61	1.66 ± 0.57
	After treatment	59.6 ± 9.21[a]	42.7 ± 5.38[a]	11.6 ± 2.99[a]	3.68 ± 0.78[a]
t		11.815	14.431	14.948	19.278
P		<0.001	<0.001	<0.001	<0.001

Note. Compared with the control group, [a]$P < 0.05$.

significantly higher than that of the patients in the control group, and the difference was significant ($x^2 = 2.449$, $P < 0.05$), as shown in Table 1.

3.2. Changes of Liver Function Index Levels before and after Treatment in the Two Groups of Patients. The study found that the levels of serum transaminases ALT and AST in the two groups of patients after treatment were significantly decreased ($P < 0.05$), while the levels of total bilirubin, direct bilirubin, and indirect bilirubin were significantly increased ($P < 0.05$), and the changes of the above indicators in the observation group were more obvious than those in the control group ($P < 0.05$), as shown in Tables 2 and 3.

3.3. Comparison of Changes in Immune Function Indexes between the Two Groups before and after Treatment. The study found that the levels of CD3+, CD4+, and CD4+/CD8+ in the serum of the two groups of patients after treatment were significantly increased while the level of CD8+ was significantly decreased ($P < 0.05$), and the changes of the above indicators in the observation group were more obvious than those in the control group ($P < 0.05$), as shown in Table 4.

3.4. Changes of HIF1α and VEGF Levels in the Two Groups of Patients before and after Treatment. The study found that the serum levels of CHIF1α and VEGF in the two groups of patients were significantly decreased after treatment ($P < 0.05$), and the changes of the above indicators in the observation group were more obvious than those in the control group ($P < 0.05$), as shown in Table 5.

4. Discussion

Liver cancer has become one of the most common malignant tumors that threaten human health and survival. At present, the clinical treatment is mainly based on the clinical stage of the patient's tumor. Patients with liver cancer in the early stage can be treated with surgery, and the clinical effect and prognosis of the patients are better. Patients with tumors in the middle and advanced stages who are not suitable for surgery can be treated with hepatic arterial chemoembolization. In radiofrequency ablation, electrodes are placed in the tumor tissue and then high-frequency radio waves are emitted. In this study, when analyzing the effect of hepatic arterial chemoembolization combined with radiofrequency ablation on liver function and immune function in patients with liver cancer, it was found that the total effective rate of the observation group

Table 5: Changes of HIF1α and VEGF levels before and after treatment in the two groups of patients.

Group	Number of cases	HIF1α (μg/L)			VEGF (μg/L)		
		Before treatment	After treatment	t/P	Before treatment	After treatment	t/P
Control group	85	23.6 ± 4.32	17.5 ± 4.88	6.398/0.004	40.4 ± 7.98	33.6 ± 5.88	5.284/0.009
Test group	85	24.7 ± 5.07	13.7 ± 2.98	5.365/0.005	40.9 ± 6.82	26.9 ± 5.22	4.968/0.008
t		1.523	6.127		0.439	7.856	
P		0.129	<0.001		0.661	<0.001	

was significantly higher than that of the control group. The results of the study showed that after treatment, the levels of serum transaminases ALT, AST, CD8+, HIF1α, and VEGF were significantly decreased, and the levels of total bilirubin, direct bilirubin, indirect bilirubin, CD3+, CD4+, and CD4+/CD8+ were significantly increased, suggesting that liver arterial chemoembolization combined with radiofrequency ablation has a significant effect on liver function and immune function in patients with liver cancer, which may be related to its abnormal effect on HIF1α and VEGF levels.

Existing studies have shown that compared with transcatheter hepatic artery embolization, hepatic arterial chemoembolization is more effective and safe for interventional therapy of primary liver cancer [8], and hepatic arterial chemoembolization combined with radiofrequency ablation is used for primary liver cancer. Patients with liver cancer can improve clinical efficacy, reduce tumor diameter, and have a lower incidence of adverse reactions [9]. Gemcitabine combined with cisplatin has obvious effect on the treatment of liver cancer patients through TACE, without increasing the toxic and side effects, and for the non-surgical resection of hepatocellular carcinoma, the short-term efficacy of percutaneous thermal ablation is better than that of TACE [10, 11]. At the same time, RFA combined with TACE has good short-term and long-term efficacy in the treatment of primary liver cancer [12]. This study also found that the total effective rate of the observation group was significantly higher than that of the control group, and the serum transaminase ALT, AST, and CD8+ levels were significantly decreased after treatment. The levels of total bilirubin, direct bilirubin, indirect bilirubin, CD3+, CD4+, and CD4+/CD8+ were significantly increased, suggesting that hepatic arterial chemoembolization combined with radiofrequency ablation can significantly improve liver function and immune function in patients with liver cancer of recovery. However, previous studies have not analyzed the expression of cell proliferation and microenvironment hypoxia-related molecules before and after treatment in patients. The rapid proliferation of malignant tumor cells is usually accompanied by hypoxia in the microenvironment, and the rapid angiogenesis process also requires enhanced expression of vascular endothelial growth factor [13, 14]. TRAP1 is highly expressed in HepG2 cells, and it may be one of the pathways by which HIF-1α regulates the EMT of HepG2 hepatoma cells. There is a significant correlation between the common syndromes of primary liver cancer and serum AFP and VEGF [15, 16]. Knockdown of HIF-1 and AKT expression can inhibit the proliferation of human liver cancer cell line SMMC-7721. HIF-1 may be the main determinant of liver cancer cell proliferation. Downregulation of HIF-1 expression level can inhibit the proliferation of liver cancer cells, and knockdown of AKT expression can inhibit the proliferation of liver cancer cells, reduce the expression level of HIF-1, and synergize with the low expression of HIF-1 to inhibit the proliferation of liver cancer cells [17], and metuximab combined with TACE sequential surgery in the treatment of primary liver cancer can inhibit the high expression of VEGF and AFP, improve survival rate, reduce the rate of metastasis and recurrence, and improve the quality of life [18]. Hypoxia can induce HIF-1 in liver cancer tissue α expression and immunosuppression, silencing HIF-1 β. It can inhibit the growth of transplanted tumor and provide new ideas for reversing the immunosuppression of liver cancer [19]. The high expression of HIF-1a and VEGF in the microenvironment of primary liver cancer tissue is closely related to angiogenesis, and they may be the key factors in promoting the formation of new blood vessels in the intratumoral environment and the inflammatory response in the extratumoral environment [20], and *Lycium barbarum* polysaccharide can inhibit the migration and invasion of liver cancer cells, and its mechanism may be related to the direct inhibition of VEGF [21]. This study also found that the levels of HIF1α and VEGF in serum of the two groups of patients were significantly decreased after treatment, suggesting that hepatic arterial chemoembolization combined with radiofrequency ablation has a significant effect on liver function and immune function in patients with liver cancer and may affect the abnormal levels of HIF1α and VEGF. In future research, we will further use immunohistochemistry to analyze the expression and localization of related proteins and use animal models to analyze the dynamic changes of related protein expression during the treatment process, so as to pass the reference for more reasonable clinical treatment.

Therefore, hepatic arterial chemoembolization combined with radiofrequency ablation has obvious effect on liver function and immune function in patients with liver cancer, which may be related to the regulation of abnormally expressed HIF1α and VEGF levels in vivo.

Data Availability

The data can be obtained from the corresponding author upon reasonable request.

Disclosure

Yan Zhou and Ying Qian are co-first authors.

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Retraction

Retracted: Serological Characteristics, Etiological Analysis, and Treatment Prognosis of Children with Congenital Hypothyroidism

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] L. shen and J. Ding, "Serological Characteristics, Etiological Analysis, and Treatment Prognosis of Children with Congenital Hypothyroidism," *Emergency Medicine International*, vol. 2022, Article ID 8005848, 7 pages, 2022.

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Research Article

Serological Characteristics, Etiological Analysis, and Treatment Prognosis of Children with Congenital Hypothyroidism

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Objective. The aim of the study is to analyze the serological features, etiology, and prognosis of congenital hypothyroidism (CH) treated with L-thyroxine sodium (L-T4). *Methods*. A total of 126 CH children in our hospital from June 2015 to January 2020 were selected as the research objects, and L-T4 treatment was given immediately after diagnosis. After diagnosis and 24 months of treatment, laboratory serum thyroid function-related indicators were examined, and thyroid changes were determined by ultrasound. We compared serum thyroxine levels in children with different thyroid changes, compared serum thyroid hormone levels, serum ghrelin levels, and body mass index (BMI) changes in children with CH before treatment and after 24 months of treatment, and analyzed the prognosis of treatment in children. In terms of thyroid changes in 126 CH children, 32 cases (25.40%) had a normal thyroid gland, 16 cases (12.70%) had a hypoplastic thyroid gland, 40 cases (31.75%) had an ectopic thyroid gland, 28 cases (22.22%) had an absent thyroid gland, and 10 cases (7.93%) had an enlarged thyroid gland, with an ectopic thyroid gland being the most common. In terms of serological expression of CH children, the TSH level in children with thyroid dysplasia was significantly higher than that in children with basic normal and T3 and T4 levels were significantly lower than those in children with basic normal ($P < 0.05$). At the same time, the TSH level in children with thyroid absence, ectopic, and enlargement was increased, while thyroxine (T4) and tri-iodothyronine (T3) levels were decreased compared with those in children with thyroid dysplasia. The difference was statistically significant ($P < 0.05$). Univariate analysis showed that there were statistically significant differences in birth weight, week of gestation at delivery, maternal age at childbirth, household registration, and a family history of thyroid disease compared between the two groups ($P < 0.05$); multivariate logistic regression analysis showed that birth weight <2,500 g, maternal age >35 years, rural residence, and a family history of thyroid disease were risk factors for neonatal CH ($P < 0.05$). Serum thyroid-stimulating hormone (TSH) levels, serum ghrelin levels, and the body mass index of children with CH decreased significantly, and T4 levels increased significantly after 24 months of treatment ($P < 0.05$). *Conclusion*. Screening for common causes of CH is conducive to timely detection of children with CH, and L-T4 treatment can effectively improve thyroid function in children.

1. Preface

Congenital hypothyroidism (CH), also known as sporadic cretinism, is caused by the decrease of thyroid hormone levels in the blood circulation of children due to various reasons, and the deficiency of thyroid hormone occurs in the fetal period until after birth; nonspecific symptoms such as feeding difficulties, hypothermia, abdominal distension, constipation, delayed resolution of yellow gangrene, and hair loss and thinning may occur [1, 2]. Untreated children may have a low nasal bridge, wide eye spacing, thick lips, and a large and thick tongue that often sticks out of the mouth, and in severe cases, damage to heart, liver, and kidney functions may occur, which will eventually affect the physical and intellectual development of the child and also cause a certain burden to the family and society [3, 4].

A related survey [5] showed that if children with CH are detected within 2 months of the disease and given effective

Table 1: Morphological changes of the thyroid gland in 126 children with CH.

Group	Number of cases	%
Basically normal	32	25.40
Dysplasia	16	12.70
Ectopic	40	31.75
Absent	28	22.22
Enlargement	10	7.93
Total	126	100.00

treatment, more than 80% of them can reach the level of normal children of the same age in terms of mental development, and the probability of poor prognosis increases as the time of disease detection and treatment increases, which shows that early diagnosis and treatment can largely reduce the irreversible impairment of growth and mental development of children with the disease. However, half of the children behave normally in the neonatal period, and only a few show some nonspecific symptoms, but the diagnosis is easily delayed by clinical manifestations; therefore, early diagnosis must rely on laboratory auxiliary examination to avoid serious sequelae such as growth retardation and mental retardation [6, 7]. Newborn disease screening was introduced in China in the 1980s; through early screening and diagnosis, children can receive relevant treatment as early as possible, and regular follow-up treatment can be carried out, which can effectively improve the prognosis of children with CH [8]. This investigation was conducted by counting children with CH in our hospital from June 2015 to January 2020 as the study population, analyzing their etiological composition, serum characteristics of children with different etiologies and risk factors for morbidity, and observing the effect and prognosis of LT-4 treatment, aiming to provide a reference basis for clinical development of neonatal CH prevention measures.

2. Information and Methods

2.1. General Data. From June 2015 to January 2020, 126 neonates with CH were enrolled in our hospital, including 57 males and 69 females, aged 22 d-3 years, with a median age of 1.37 years. Inclusion criteria were as follows: children who met the diagnostic criteria for CH; children with severe liver and kidney dysfunction and other genetic diseases were excluded; normal heart rate, blood pressure, and respiratory rate; no low weight, feeding intolerance, jaundice, or abnormal body temperature. All newborns had heel blood collected using special filter paper within 72h~7 d after delivery, and the thyroid-stimulating hormone (TSH) level was measured after drying. If TSH ≥ 10 mU/L, the screening was positive, and then, the serum TSH and free thyroxine (FT4) levels in venous blood were determined by an electrochemical immunoluminescence method. If TSH < 10 mU/L but suspected positive symptoms exist, the diagnosis was confirmed by measuring venous blood serum TSH and FT4 levels by electrochemical immunoluminescence. 126 healthy physical examination infants and children of the same age-matched period were selected as the control group. Normal values were judged by the criteria [9] as TSH: 0.64~6.27 uIU/ml; tri-iodothyronine (T3): 1.21~4.18 pg/ml; FT4:8.9~17.2 pg/ml. The FT3 level and FT4 level decreased, the TSH level increased, the result of the filter paper blood film was positive, and the test result was considered abnormal.

2.2. Etiological Analysis. 126 diagnosed children and their parents were investigated, and the main contents included the following: ① Investigation of the family and medical history. The nationality, place of origin, occupation, age, physical condition, living environment, disease history, infectious history, and genetic history of all members of 4 generations of family including the child were analyzed. We also counted whether the child's mother had a toxic cold before or during pregnancy, whether she was treated with medication, history of alcohol consumption, history of smoking, history of spontaneous abortion, history of preeclampsia, number of pregnancies, fetal position, and fetal movement, including the child's clinical manifestations after birth. ② A thyroid ultrasound scan was performed by using an ACU-SON-128 ultrasound machine (Axel Corporation, USA) to determine the location, development, and functional measurements of the child's thyroid gland.

2.3. Treatment. For children diagnosed with CH, thyroid hormone replacement therapy was given immediately: levothyroxine sodium tablets (Merck, Germany, SFDA Approval No. H20100523, 50 μg per tablet) were crushed, dissolved in a little water or milk, and fed immediately, avoiding coadministration with foods or medications that interfere with drug absorption (e.g., soy products, iron-rich, high-calcium, fiber-rich foods, and ammonium thioglycolate). At the same time, we did a good job of health education for parents to make them fully understand the hazards of CH and the importance of L-T4 treatment to ensure that children receive long-term and regular treatment. The initial dose of treatment was 5–10 μg/(kg-d), serum TSH, FT3, and FT4 levels were checked at 1, 2, and 4 w of treatment, and the dose was adjusted according to serum TSH, FT3, and FT4 levels. During the treatment, regular outpatient follow-up was performed, and thyroid function and thyroid B ultrasound were reviewed after 24 months. Children with abnormal thyroid development were treated with L-T4 for life; children with normal thyroid development were discontinued for 1 month, and TSH, FT3, and FT4 levels were rechecked. If TSH and FT4 returned to normal reference values, it was considered temporary hypothyroidism, and the treatment was discontinued and followed up for more than 12 months. If TSH and FT4 levels were still not within the normal reference range, the diagnosis of permanent hypothyroidism was confirmed and L-T4 treatment was given for life.

2.4. Observation Index. (1) Thyroid color ultrasound was used to determine the thyroid changes before treatment, and the serum thyroxine levels of children with different thyroid

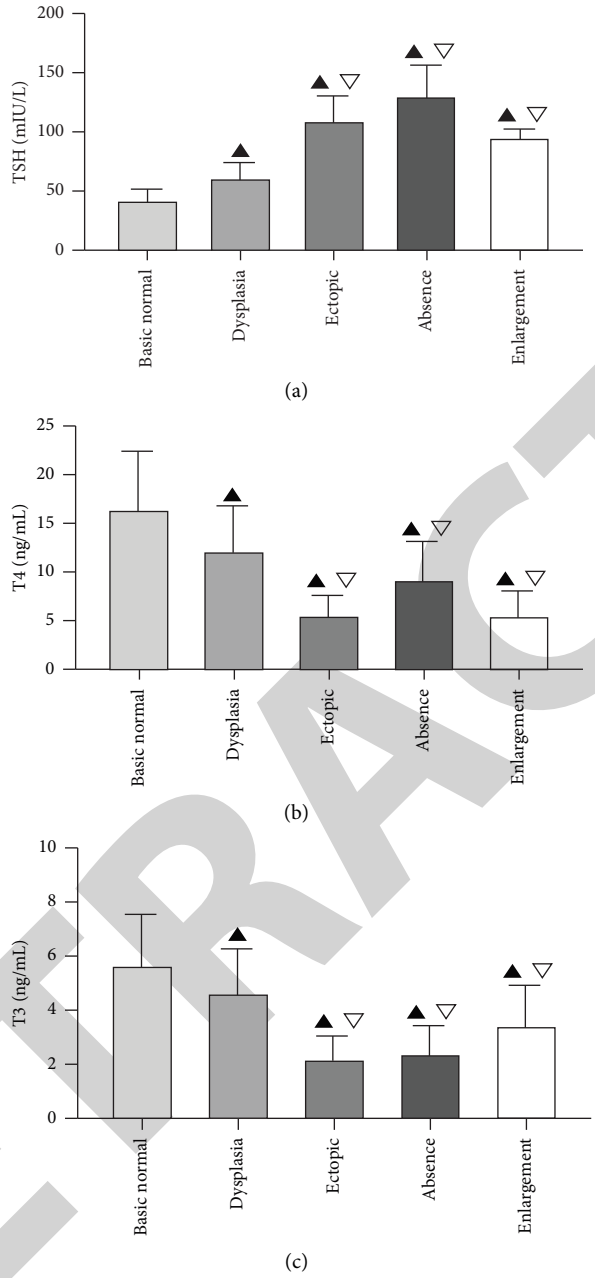

Figure 1: Serological characteristics of children with CH with different thyroid changes (mean; SD). Note: (a) TSH levels, (b) T4 levels, and (c) T3 levels. Compared with the basic normal thyroid gland, $^{\blacktriangle}P < 0.05$. Compared with thyroid dysplasia, $^{\triangledown}P < 0.05$.

changes were compared; (2) Multiple regression models were used to analyze the factors associated with the causes of morbidity in children with CH; (3) the levels of TSH, FT3, and FT4 were compared before treatment and 24 months after treatment in children with CH.

2.5. Statistical Methods. The data were statistically analyzed using SPSS 19.0, and the demographic characteristics of CH incidence and confirmed children and mothers were analyzed descriptively; TSH level, T4 level, and other data were compared and analyzed by the *t*-test; factors influencing maternal age, family history, and birth status were analyzed univariately using the χ^2 test; factors that were statistically significant in the univariate analysis were analyzed by logistic multiple regression. The test level of $a = 0.05$ was used. $P < 0.05$ was considered statistically significant.

3. Results

3.1. Morphological Changes of the Thyroid Gland in 126 Children with CH. In terms of thyroid changes in 126 CH children, 32 cases (25.40%) had a basically normal thyroid gland, 16 cases (12.70%) had a dysplastic thyroid gland, 40 cases (31.75%) had an ectopic thyroid gland, 28 cases (22.22%) had an absent thyroid gland, and 10 cases (7.93%)

Table 2: Univariate analysis of morbidity in children with CH (n,%).

Variables		CH group ($n = 126$)	Control group ($n = 126$)	χ^2 /t	P
Sex (female)		69 (64.29)	55 (43.65)	3.112	0.078
Twin or multiple births	Yes	10 (7.94)	1 (0.79)	7.700	0.006
	No	116 (92.06)	125 (99.21)		
Birth weight	<2.5 kg	83 (65.87)	45 (35.71)	22.926	0.000
	>2.5 kg	43 (34.13)	81 (64.29)		
Gestational week of delivery	<37 weeks	76 (60.32)	42 (33.33)	18.424	0.000
	<37 weeks	50 (39.68)	84 (66.67)		
Age of mothers at birth	Nonadvanced	56 (44.44)	85 (67.46)	13.541	0.000
	Advanced age (>35 years old)	70 (55.56)	41 (32.54)		
Household registration	Rural	77 (61.11)	58 (46.03)	5.760	0.016
	Nonrural	49 (38.89)	68 (53.97)		
Family history of thyroid disease	Yes	36 (28.57)	6 (4.76)	25.714	0.000
	No	90 (71.43)	120 (95.24)		
Maternal illness during pregnancy	Yes	10 (7.94)	5 (3.97)	1.772	0.183
	No	116 (92.06)	121 (96.03)		

Table 3: Multifactor assignment table.

Indicators	Assignment
Birth weight	Below 2.5 kg = 0; above 2.5 kg = 1
Household registration	Rural = 0; town = 1
Family history of thyroid disease	Yes = 0; no = 1
Maternal age at childbirth	Nonadvanced = 0; advanced age (>35 years old) = 1

Table 4: Multifactorial analysis of morbidity in children with CH.

Indicators	B	SE	Wald's	OR	95%CI	P
Low birth weight	0.892	0.247	9.875	2.440	1.504~3.960	0.001
Rural household registration	1.245	0.367	10.913	3.473	1.692~7.130	0.001
Family history of thyroid disease	1.142	0.319	13.146	3.133	1.677~5.855	0.001
Mother's advanced age	1.482	0.573	12.846	4.402	1.713~3.933	0.001

had an enlarged thyroid gland, with an ectopic thyroid being the most common (see Table 1 for details).

3.2. Serological Characteristics of Children with CH with Different Thyroid Changes. In terms of serological expression of CH children, TSH levels were significantly higher in children with dysplastic thyroid than those in children with basic normal, and T3 and T4 levels were significantly lower than those in children with basic normal ($P < 0.05$). At the same time, the TSH level in children with thyroid absence, ectopic, and enlargement was increased, while T4 and T3 levels were decreased compared with those in children with thyroid dysplasia, with statistically significant differences ($P < 0.05$) (see Figure 1 for details).

3.3. Analysis of Factors Associated with the Development of CH Children. Univariate analysis showed statistically significant differences ($P < 0.05$) in birth weight, week of gestation at delivery, maternal age at childbirth, domicile, and a family history of thyroid disease compared between the two groups, as shown in Table 2. With the presence or absence of CH in children as the independent variable (assignment method: morbidity = 0; no morbidity = 1), and the indicators that differed in the univariate analysis were used as independent variables (see Table 3 for assignment method) to enter the multiple regression analysis. Multivariate logistic regression analysis showed that birth weight <2,500 g, maternal age >35 years, rural residence, and a family history of thyroid disease were risk factors for the development of CH in newborns ($P < 0.05$), as shown in Table 4.

3.4. Comparison of Changes in Serum Thyroxine Levels in Children before and after L-T4 Treatment. After 24 months of treatment, the serum TSH levels of children with CH decreased significantly and T4 levels increased significantly, with statistically significant differences ($P < 0.05$). No significant changes were observed in T3 levels ($P > 0.05$)(see Figure 2 for details).

3.5. Comparison of Serum Ghrelin Levels and the Body Mass Index of Children before and after L-T4 Treatment. After 24 months of treatment, the serum ghrelin level and the body mass index of children with CH decreased significantly compared with those before treatment, and the difference was statistically significant ($P < 0.05$) (see Figure 3 for details).

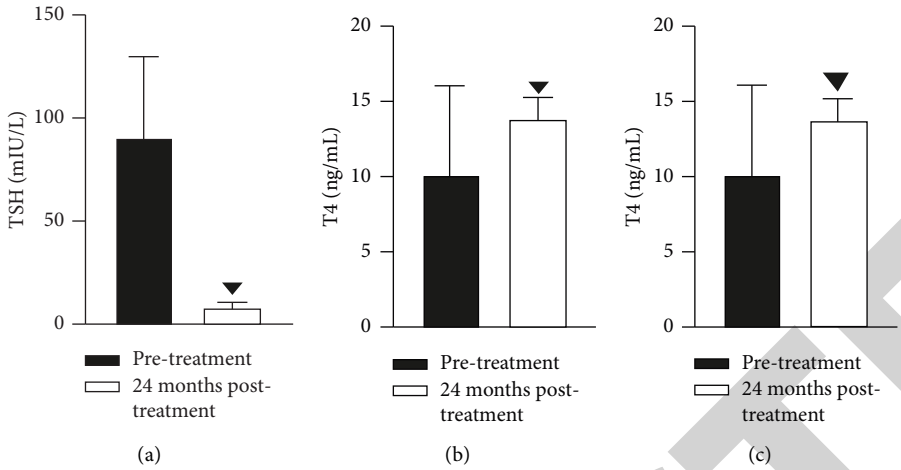

Figure 2: Comparison of changes in serum thyroxine levels in children before and after L-T4 treatment (mean; SD). Note: (a) TSH levels, (b) T4 levels, and (c) T3 levels. $^{\blacktriangledown}P < 0.05$ compared with pretreatment.

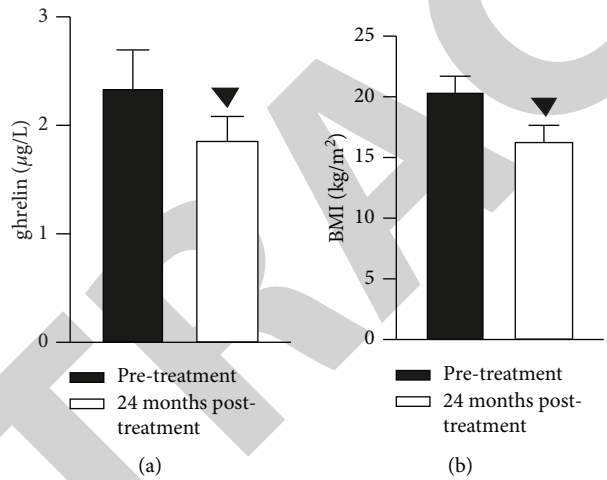

Figure 3: Comparison of serum ghrelin levels and the body mass index of children before and after L-T4 treatment (mean; SD). Note: (a) ghrelin levels and (b) BMI levels; compared with pretreatment, $^{\blacktriangledown}P < 0.05$.

4. Discussion

Improving the quality of the population at birth is a key concern in today's society. Neonatal disease screening is a special examination for certain severe congenital metabolic diseases and endocrine diseases through blood component detection in the neonatal period [10]. In 2016, the nationwide coverage of newborn disease screening in China was as high as 96.10%, and it has gradually increased with the improvement of medical technology, and from the initial detection of a single congenital disease, more than 50 diseases have been detected so far [11, 12]. Among many congenital disorders, CH is one of the major disorders causing mental retardation in infants and children. We believe that in addition to the possible regional differences in the incidence of CH, these factors may be related to environment, diet, iodine deficiency, and other factors, as well as screening population, screening method, and screening and selection of reference values for diagnosis. Among the results of this study, the serological expression of 126 CH children, compared with the children with normal thyroid, the TSH level of the children with hypoplasia of thyroid, absence of thyroid, ectopic thyroid, and goiter was significantly increased, and the T3 and T4 levels were significantly decreased; the differences were statistically significant ($P < 0.05$). The TSH levels in children with thyroid deficiency and ectopic thyroid were higher than those in children with thyroid dysplasia, while the T3 and T4 levels were lower than those in children with thyroid dysplasia, with statistically significant differences ($P < 0.05$), suggesting the thyroid morphology or functional changes associated with thyroid hormone levels of blood pressure, or we can preliminary judge by TSH and T4 levels with the cause.

There are many risk factors for the development of CH, and it is important to enhance health education for women of maternal age to improve their awareness of CH prevention in newborns. This survey found that the female-to-male ratio of neonatal CH was 1.21 : 1, which is somewhat

different from the female-to-male ratio of neonatal CH (3/4) reported in relevant literature [13], suggesting that the female-to-male ratio of neonatal CH varies in different regions, which may be due to different factors such as dietary habits, environment, and medical conditions in each region. Health education on neonatal CH in rural areas is not in place, especially for rural dwellers with low literacy levels and having poor knowledge about neonatal CH health and low understanding of relevant preventive measures, leading to an increased risk of CH [14, 15]. This study showed that advanced maternal age was correlated with the occurrence of CH ($P < 0.05$), and logistic regression analysis showed that advanced maternal age was one of the high risk factors for CH. The analysis considered that with the increase of maternal gestational age, advanced maternal age not only affected the psychological and physiological functions of pregnant women but also resulted in the decline of reproductive organs and functions. In addition, the incidence of complications during pregnancy is significantly higher than that of women of appropriate age, thus affecting the embryo-breeding environment and nutritional supply and ultimately affecting the health of newborns [16, 17]. In addition, this study also found that a family history of thyroid disease in the family is a high risk factor for the development of CH. Studies of long-term multicenter screening data from large samples at home and abroad have also clearly confirmed the close relationship between the occurrence of CH and a family history of thyroid disease, and the results of an analysis of a related study showed that patients with thyroid disease in the family had a 4.555 times higher risk of having CH than normal pregnancies, suggesting that genetic factors play an important role in the development of CH [18, 19].

Regardless of the cause of CH, it is necessary to treat it in time once it is diagnosed so that the child's FT4 level reaches the normal range as soon as possible to meet the needs of growth and development [20], and most studies show that after active treatment, most children have a good prognosis and can reach the normal level of intelligence. However, a few children have neurological sequelae despite long-term, regular treatment, which may be related to maternal hypothyroidism and impaired neurological development during intrauterine fetal brain development during pregnancy. Therefore, even if the children are given timely thyroid hormone replacement therapy after birth, their intellectual impairment is irreversible [21, 22]. L-T4 is a synthetic tetraiodothyronine analog with a structure identical to that of human thyroid hormones, with the advantages of high purity, good absorption and homeostasis, low irritation, more stable biochemical activity, and a high safety profile for use in infants and the elderly. It is currently one of the drugs of choice for hormone replacement therapy in patients with thyroid disorders [23–25]. The results of this study showed that TSH levels were lower and FT4 levels were higher than before treatment in children with CH after 24 months of treatment, and the differences were statistically significant. This indicates that L-T4 can significantly improve the thyroid hormone levels in children with CH.

In summary, screening for common causes of CH is useful for timely detection of children with CH, and treatment with levothyroxine sodium can effectively improve thyroid function in children.

Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Ethical Approval

This study was approved by our medical ethics committee (2014008).

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Investigation on the Correlation of Anxiety Degree with Family Atmosphere in Children with Precocious Puberty

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] Y. Xiao, Y. Li, Z. Cai, and J. Xie, "Investigation on the Correlation of Anxiety Degree with Family Atmosphere in Children with Precocious Puberty," *Emergency Medicine International*, vol. 2022, Article ID 3269807, 8 pages, 2022.

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Research Article

Investigation on the Correlation of Anxiety Degree with Family Atmosphere in Children with Precocious Puberty

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Objective. This research sets out to explore the correlation of anxiety degree with family atmosphere in children with precocious puberty (PP), so as to provide a reference for future treatment of PP. *Methods*. Eighty-one cases of PP were visited between January 2021 and March 2021, and their direct relatives were selected as the research population for retrospective analysis. After admission, children and their direct relatives completed a questionnaire survey on the quality of life and social anxiety of children with PP. Children were assigned to the research group and the control group based on their anxiety scores. The intergroup differences in daily activities, diet, and family status, as well as children's and parents' psychological status, were identified, and the relationship between anxiety degree in PP children and family atmosphere was discussed. *Results*. The children's anxiety score was (6.17 ± 4.26), and they were divided into groups according to the median, with 30 cases in the research group and 51 cases in the control group. The two cohorts were similar in dietary status and children's physiological status ($P > 0.05$); however, the research group exhibited a greater number of cases who used electronic products for 2-3 h daily and watched romantic TV series (movies). The daily exercise time of the research group is lower than that of the control group ($P < 0.05$). In the research group, the monthly family income and the number of family companions and very harmonious families were significantly lower, while the number of divorces or remarriages increased ($P < 0.05$). The survey results on parents' psychological status also showed better psychological states in patients in the control group ($P < 0.05$). *Conclusion*. The anxiety level of PP children is closely related to the family atmosphere. In future clinical treatment of children with PP, it will also be necessary to pay attention to and adjust the family relationship of the children, which is of great significance for relieving PP-associated anxiety.

1. Introduction

Precocious puberty (PP) is an endocrine disease with abnormal growth and development in children, which refers to the presentation of secondary sexual characteristics in girls before the age of 8 and boys before the age of 9, more common in girls [1]. For example, the symptoms of girls are more rapid breast development than their peers and the appearance of axillary hair, pubic hair, and menophania, while the symptoms of boys mostly include increased testicular volume, an enlarged penis, a beard, pubic hair, and so on [2]. Current clinical data show an increasingly high incidence of PP due to various reasons, such as the popularization of modern Internet information [3]. In some developed countries, PP is more common, and the incidence of urban children is significantly higher than that of rural children [4]. In addition to the seriously affected physical development of children due to the occurrence of PP, the long treatment process may greatly cause adverse effects on children's psychology, leading to anxiety and depression; while parents, as relatives, are also susceptible to anxiety and psychological pressure when facing the treatment of their children, which eventually leads to family disharmony [5].

In the prevention and treatment of modern PP, it is usually necessary to provide psychological counseling to children so that they can view PP correctly [6]. Common methods include explaining the knowledge of precocious puberty to children, encouraging children to maintain an

optimistic and cheerful attitude, etc. [7, 8]. It is not difficult to find that the current psychological counseling on PP is more concerned with children, and with the limited information available regarding the issue, it ignores the relationship between children and their family atmosphere. We believe that understanding the relationship between the psychological state and family atmosphere of PP children is the basis of psychological relief therapy. Psychological research points out that improving the quality of life of children and their families and the degree of family harmony can effectively promote children's physical and mental health during their growth [9, 10]. It can be seen that when providing psychological counseling for children with PP, it is also necessary to pay attention to the influence of the family atmosphere. Since 2021, our hospital has launched a survey and research on the family atmosphere of children with PP admitted to our hospital, and a sufficient number of cases have been accumulated so far. Therefore, in this study, we will summarize and report the characteristics of such PP children, and analyze the relationship between the anxiety level of children and family atmosphere, aiming to provide reliable evidence for future clinical prevention and treatment of PP children.

2. Materials and Methods

2.1. Research Participants. A retrospective analysis was performed on 81 PP children admitted between January 2021 and March 2021 and their immediate family members. Based on the median anxiety score, children with a score ≥ median were assigned to the research group, and those with a score < median were set as the control group. Patients' basic information, such as age and sex, is shown in Table 1. This study was carried out in strict accordance with the guidelines laid down in the Declaration of Helsinki, and all the legal guardians of the research subjects signed the informed consent.

2.2. Eligibility Criteria. Children enrolled in the research group all conformed to the diagnostic guidelines for PP [11] and were diagnosed as PP by clinical trials in our hospital, requiring long-term gonadotropin-releasing hormone therapy; moreover, the children and their immediate family members had good communication skills and could cooperate to complete the investigation. Children with organ disorders such as liver, lung, and brain, unfixed primary caregivers, other endocrine diseases, congenital defects or disorders, and mental diseases were excluded. children who underwent physical examination in our hospital, with normal physical examination results, no major physical or psychological history and good communication skills, and willingness to cooperate with the investigation were included in the control group.

2.3. Evaluation Tool. After admission, the research subjects, accompanied by their parents, completed a questionnaire survey on the quality of life and social anxiety in children with PP (https://www.wjx.cn/xz/105367013.aspx). The survey was divided into six items, including five items answered by parents (including basic information, daily activities, diet, family status, and physiological status of children) and one item answered by children (an anxiety level survey). The children answered a total of 10 questions, and the alternative results were never (0), sometimes (1 point), and always (2 points), for a full score of 20. The higher the score, the more serious the child's anxiety.

Table 1: Basic information of precocious puberty children.

Project	Data
Age	8.31 ± 1.58
Height (cm)	137.12 ± 8.95
Weight (kg)	32.45 ± 6.36
Gender	
Boy	4 (4.94)
Girl	77 (95.06)
Type of drug therapy	
Two or more	28 (34.57)
Not receiving treatment	21 (25.93)
Only one drug	30 (37.04)
Traditional Chinese and western medicine	2 (2.47)
Drug treatment route	
Subcutaneous injection	39 (48.15)
Intramuscular injection	8 (9.88)
Both	12 (14.81)
None	22 (27.16)
Living environment	
City	59 (72.84)
Rural or township	22 (27.16)

2.4. Investigation Methods. After the subjects were admitted to the hospital, a questionnaire survey was conducted through WeChat. Before they filled it out, the investigator carefully explained the purpose and content of the survey to the subjects. If the subjects had a reading or filling-in obstacle, the investigator would dictate the relevant contents for them and then let the subjects make their own choices. After completing the survey, the scale was submitted on the spot and filed by the researcher on the computer. The children's answers were sorted out separately, and the final anxiety score was counted.

2.5. Statistics and Methods. Data processing was carried out by SPSS24.0. A chi-square test was performed for the intergroup comparison of the categorical data recorded in the form of [n (%)]. The quantitative data were expressed as ($\overline{\chi} \pm s$). Statistical significance was present when $P < 0.05$.

3. Results

3.1. Grouping. In this experiment, all the children's anxiety scores were (6.17 ± 4.26), and they were grouped according to the median, including 30 cases in the research group and 51 (score ≥6) cases in the control group (score <6). Comparing the anxiety scores of the two groups, it can be seen that the anxiety score of the research group was (8.53 ± 2.08), which was significantly higher than that of the control group (2.37 ± 1.77), $P < 0.001$. Figure 1

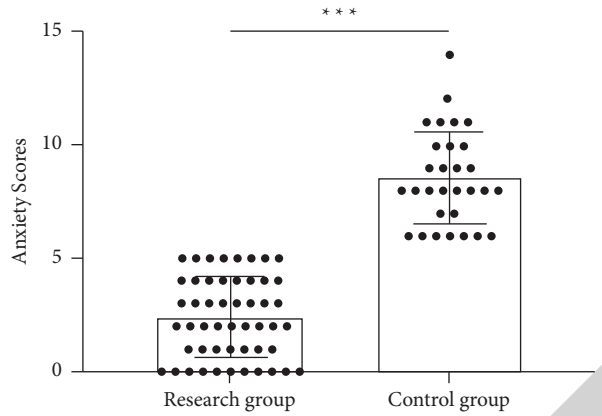

Figure 1: Comparison of anxiety scores between study and control groups. $^{***}P < 0.001$.

Table 2: Survey results of children's daily activities.

Project	Control group ($n = 51$)	Research group ($n = 30$)	χ^2/P
Nap habit			0.036/0.849
None	30 (58.82)	17 (56.67)	
Yes	21 (41.18)	13 (43.33)	
Sleeping time			1.980/0.577
<8 h	7 (13.73)	2 (6.67)	
8-9 h	32 (62.75)	19 (63.33)	
9-10 h	11 (21.57)	9 (30.00)	
>10 h	1 (1.96)	0 (0.0)	
Sleeping with the lights on at night			1.294/0.255
Yes	10 (19.61)	3 (10.00)	
No	41 (80.39)	27 (90.00)	
Outdoor light time			3.333/0.189
<1 h	14 (27.45)	14 (46.67)	
1-2 h	28 (54.90)	11 (36.67)	
>2 h	9 (17.65)	5 (16.67)	
Daily exercise time			**6.507/0.039**
<1 h	34 (66.67)	25 (83.33)	
1-2 h	15 (29.41)	2 (6.67)	
>2 h	2 (3.92)	3 (10.00)	
Daily use time of electronic products			**10.450/0.015**
0	4 (7.84)	2 (6.67)	
1-2 h	37 (72.55)	15 (50.00)	
2-3 h	10 (19.61)	8 (26.67)	
>3 h	0 (0.0)	5 (16.67)	
Romance TV dramas (movies)			**4.914/0.027**
Seen	9 (17.65)	12 (40.00)	
Never seen	42 (82.35)	18 (60.00)	
Adult skin care products (cosmetics)			—
Use	0 (0.0)	0 (0.0)	
Not used	51 (100.0)	30 (100.0)	

3.2. Comparison of Children's Daily Activities. First of all, we compared the survey results related to children's daily activities. The results showed no intergroup differences in total sleeping time, sleep with lights on at night, time spent outdoors, sports items, and the use of adult skin care products (or cosmetics) between the control group and the research group ($P > 0.05$). However, the use time of the research group on electronic products and the number of people who have watched romantic TV series (movies) are significantly more than the control group, and their daily exercise time is less than the control group ($P < 0.05$). Table 2

3.3. Comparison of Diet. Then, comparing the diet structure, it can be seen that the two cohorts of children also differed insignificantly in feeding patterns, eating habits, food intake, and frequency of drinking milk before half a year old ($P > 0.05$). Table 3

Table 3: Survey results of children's diet.

Project	Control group ($n = 51$)	Research group ($n = 30$)	χ^2/P
Frequency of drinking milk before half a year old			0.823/0.663
Breastfeeding	25 (49.02)	14 (46.67)	
Formula feeding	11 (21.57)	9 (30.00)	
Both	15 (29.41)	7 (23.33)	
Eating habits			1.060/0.589
Half and half meat and vegetable	26 (50.98)	13 (43.33)	
Meat-based	18 (35.29)	14 (46.67)	
Vegetarian-based	7 (13.73)	3 (10.00)	
Food intake			0.005/0.998
Too small	5 (9.80)	3 (10.00)	
Normal	31 (60.78)	18 (60.00)	
Larger	15 (29.41)	9 (30.00)	
Frequency of drinking milk			8.268/0.082
None	1 (1.96)	0 (0.0)	
1 time a week	10 (19.61)	8 (26.67)	
3-5 times a week	2 (3.92)	6 (20.00)	
1 time a day	27 (52.94)	9 (30.00)	
2 times a day or more	11 (21.57)	6 (20.00)	

3.4. Comparison of Family Status. The intergroup comparison of family status revealed no obvious difference in parents' education level and occupation as well as children's living environment ($P > 0.05$); however, the monthly income and family companionship of the research group were obviously less compared with the control group, with fewer numbers of very harmonious families and a higher number of divorces or remarriages ($P < 0.05$). Table 4

3.5. Comparison of Children's Physiological Status. According to the intergroup comparison of children's physiological status, the research group was not statistically different from the control group in the survey results of running, participating in sports or exercise, lifting heavy objects, doing housework, injury, and poor physical strength ($P > 0.05$). Table 5

3.6. Comparison of Parents' Psychological States. Comparing parents' psychological states, it can be seen that the parents' psychological states in the research group were significantly worse compared with the control group ($P < 0.05$), which shows that the parents of the research group had more obvious unhealthy psychological states and negative emotions. Table 6

4. Discussion

PP is a very common childhood disease. Because of the influence of sex hormones, children's epiphyseal lines will close early, resulting in height retardation [12]. Besides, some PP girls may have early sexual behaviors due to the mismatch between psychological development and physical development, lack of life experience, and poor self-control, which may have a certain impact on their future fertility [13]. Moreover, children with PP generally have great psychological barriers, which directly affect their normal life, study, and family relations and may even lead to endocrine disorders [14]. Therefore, timely and effective improvement of PP is of great significance for the normal growth of children.

In this study, we made a preliminary analysis of a questionnaire survey targeting PP children and compared the differences between PP children and normal children from many aspects. First of all, in daily life comparison, the research group spent significantly less time exercising and significantly more time using electronic products and watching romantic TV series, which is consistent with our expectation that we believe is due to psychological disorders. As we all know, proper physical exercise can effectively accelerate the secretion of growth hormones in the process of children's development, which can enhance their self-confidence and hard-working spirit while improving body function [15]. A study shows that children with PP will resist sports because of their psychological inferiority and fear of socializing, and choose to be alone or indulge in online virtual worlds [16]. This also agrees with the findings of this survey, indicating that one of the basic conditions for improving PP is to increase physical exercise and improve children's communicative ability. Second, the intergroup comparison of eating habits showed no obvious differences, indicating a nonsignificant influence of diet on PP. However, Pollom TR et al. proposed that children's diets should be based on high protein and vitamins, with a reasonable combination of meat and vegetables, which will help children to grow and develop better [17]. Excessive intake of oils and fats, on the contrary, may lead to obesity and endocrine disorders in children, which may also affect the secretion of sex hormones to a certain extent [18]. Therefore, although this study indicates no significant effect of diets on PP, we still need to pay attention to the reasonable collocation of children's diets. Subsequently, in the comparison of children's family status, it can be seen that the family's monthly income and the number of family companionships and very harmonious families were statistically lower in the research group, while the number of divorces or remarriages were higher, which indicates that family status has a very close

Table 4: Survey results of children's family status.

Project	Control group ($n = 51$)	Research group ($n = 30$)	χ^2/P
Father's education level			2.930/0.403
Middle school and below	6 (11.76)	7 (23.33)	
High school	13 (25.49)	6 (20.00)	
College	25 (49.02)	11 (36.67)	
Master degree and above	7 (13.73)	6 (20.00)	
Father's profession			7.743/0.258
Service industry	6 (11.76)	1 (3.33)	
Sole proprietor	8 (15.69)	8 (26.67)	
Organs and institutions	7 (13.73)	5 (16.67)	
Corporate staff	7 (13.73)	7 (23.33)	
Professional technicians	16 (31.37)	5 (16.67)	
Migrant workers	3 (5.88)	0 (0.0)	
Other	4 (7.84)	4 (13.33)	
Mother's educational level			3.196/0.362
Middle school and below	5 (9.80)	5 (16.67)	
High school	16 (31.37)	6 (20.00)	
College	25 (49.02)	13 (43.33)	
Master degree and above	5 (9.80)	6 (20.00)	
Mother's profession			3.829/0.700
Service industry	6 (11.76)	1 (3.33)	
Sole proprietor	6 (11.76)	7 (23.33)	
Organs and institutions	7 (13.73)	4 (13.33)	
Corporate staff	8 (15.69)	5 (16.67)	
Professional technicians	10 (19.61)	5 (16.67)	
Migrant workers	1 (1.96)	0 (0.0)	
Other	13 (25.49)	8 (26.67)	
Monthly household income (yuan)			0.412/0.938
<0.5 million	5 (9.80)	3 (10.00)	
0.5–1.0 million	9 (17.68)	7 (23.33)	
1.0–2.0 million	18 (35.29)	10 (33.33)	
>2.0 million	19 (37.25)	10 (33.33)	
Children's family living environment			6.190/0.103
Separate room	33 (64.71)	12 (40.00)	
Share a room with parents	9 (17.65)	6 (20.00)	
Share a room with a brother (sister)	5 (9.80)	5 (16.67)	
Share a room with grandparents	4 (7.87)	7 (23.33)	
Parents marital status			**8.614/0.013**
Normal	49 (96.08)	22 (73.33)	
Divorced	2 (3.92)	7 (23.33)	
Remarry	0 (0.0)	1 (3.33)	
Family atmosphere			**6.188/0.045**
Very harmonious	21 (41.18)	6 (20.00)	
Normal	21 (41.18)	12 (40.00)	
Not good	9 (17.65)	12 (40.00)	
Father's accompaniment			**9.933/0.042**
None	0 (0.0)	2 (6.67)	
Rare	18 (35.29)	18 (60.00)	
Less than half	19 (37.25)	7 (23.33)	
More than half	8 (15.69)	2 (6.67)	
Most	6 (11.76)	1 (3.33)	
Mother's accompaniment			**11.300/0.010**
None	0 (0.0)	0 (0.0)	
Rare	3 (5.88)	6 (20.00)	
Less than half	6 (11.76)	6 (20.00)	
More than half	6 (11.76)	8 (26.67)	
Most	36 (70.59)	10 (33.33)	

relationship with the anxiety level of PP children. We believe that in the follow-up treatment of PP children, it is also necessary to pay attention to the health education of the children's families. On the one hand, it is clinically necessary to guide children to face the disease with a positive attitude. Meanwhile, strengthening communication with the families of PP children, urging parents to pay more attention to the psychological changes of children, and strengthening

Table 5: Survey results of children's physiological status.

Project	Control group ($n = 51$)	Research group ($n = 30$)	χ^2/P
Difficulty walking more than 200 meters			5.664/0.129
There has never been	45 (88.24)	21 (70.00)	
Almost none	5 (9.80)	5 (16.67)	
Sometimes	1 (1.96)	3 (10.00)	
Frequently	0 (0.0)	0 (0.0)	
Always	0 (0.0)	1 (3.33)	
Difficulty running			3.555/0.314
There has never been	36 (70.59)	16 (53.33)	
Almost none	7 (13.73)	9 (30.00)	
Sometimes	7 (13.73)	4 (13.33)	
Frequently	0 (0.0)	0 (0.0)	
Always	1 (1.96)	1 (3.33)	
Difficulty participating in sports or exercise			3.590/0.464
There has never been	33 (64.71)	16 (53.33)	
Almost none	11 (21.57)	6 (20.00)	
Sometimes	5 (9.80)	6 (20.00)	
Frequently	1 (1.96)	2 (6.67)	
Always	1 (1.96)	0 (0.0)	
Difficulty lifting heavy objects			7.695/0.103
There has never been	35 (68.63)	12 (40.00)	
Almost none	9 (17.65)	11 (36.67)	
Sometimes	3 (5.88)	5 (16.67)	
Frequently	2 (3.92)	1 (3.33)	
Always	2 (3.92)	1 (3.33)	
Difficulty taking a bath			6.440/0.092
There has never been	41 (80.39)	21 (70.00)	
Almost none	4 (7.84)	8 (26.67)	
Sometimes	5 (9.80)	1 (3.33)	
Frequently	0 (0.0)	0 (0.0)	
Always	1 (1.96)	0 (0.0)	
Difficulty doing housework			5.632/0.131
There has never been	35 (68.63)	17 (56.67)	
Almost none	4 (7.84)	8 (26.67)	
Sometimes	8 (15.69)	4 (13.33)	
Frequently	4 (7.84)	1 (3.33)	
Always	0 (0.0)	0 (0.0)	
Injuries or pain			6.648/0.156
There has never been	27 (52.94)	13 (43.33)	
Almost none	15 (29.41)	6 (20.00)	
Sometimes	7 (13.73)	11 (36.67)	
Frequently	1 (1.96)	0 (0.0)	
Always	1 (1.96)	0 (0.0)	
Poor physical strength			7.652/0.054
There has never been	32 (62.75)	13 (43.33)	
Almost none	14 (27.45)	8 (26.67)	
Sometimes	4 (7.84)	9 (30.00)	
Frequently	1 (1.96)	0 (0.0)	
Always	0 (0.0)	0 (0.0)	

communication among family members are essential. In addition, medical bulletin boards can be used to popularize relevant knowledge among the public, improve social support, and boost the quality of life of children and their families. Similarly, in previous studies, it was also mentioned that when the children's family atmosphere is poor and their illness cannot be supported by their families, the two parties cannot have a positive resonance, which will increase children's negative psychological emotions and parents' parenting pressure [19]. In contrast, in a harmonious family, children are more willing to share their ideas with their parents, and parents can understand and support each other well, which is beneficial for both sides to establish benign behaviors and improve the ability to solve family problems [20]. Furthermore, the two cohorts of children exhibited no obvious difference in physiological states, which shows that the main influence of PP-induced anxiety has nothing to do with the patients' physiological conditions, similar to the results of previous studies [21]. The reason for the lack of a significant difference between the two groups may be that the occurrence of PP does not affect the normal physiological function of children. Therefore, there is no difference

Table 6: Survey results of parents' psychological states.

Project	Control group ($n = 51$)	Research group ($n = 30$)	χ^2/P
Feeling exhausted			**8.952/0.030**
There has never been	16 (31.37)	7 (23.33)	
Almost none	17 (33.33)	3 (10.00)	
Sometimes	15 (29.41)	18 (60.00)	
Frequently	3 (5.88)	2 (6.67)	
Always	0 (0.0)	0 (0.0)	
Feeling of headache			1.446/0.695
There has never been	19 (37.25)	11 (36.67)	
Almost none	14 (27.45)	9 (30.00)	
Sometimes	17 (33.33)	8 (26.67)	
Frequently	1 (1.96)	2 (6.67)	
Always	0 (0.0)	0 (0.0)	
Feeling of weakness			5.731/0.220
There has never been	24 (47.06)	10 (33.33)	
Almost none	15 (29.41)	12 (40.00)	
Sometimes	11 (21.57)	5 (16.67)	
Frequently	0 (0.0)	2 (6.67)	
Always	1 (1.96)	0 (0.0)	
Feeling of nausea			0.003/0.999
There has never been	27 (52.94)	16 (53.33)	
Almost none	19 (37.25)	11 (36.67)	
Sometimes	5 (9.80)	3 (10.00)	
Frequently	0 (0.0)	0 (0.0)	
Always	0 (0.0)	0 (0.0)	
Feeling of anxiety			**16.020/0.003**
There has never been	22 (43.14)	3 (10.00)	
Almost none	7 (13.73)	2 (6.67)	
Sometimes	18 (35.29)	19 (63.33)	
Frequently	4 (7.84)	3 (10.00)	
Always	0 (0.0)	3 (10.00)	
Feeling of sadness			**14.230/0.003**
There has never been	21 (41.18)	4 (13.33)	
Almost none	13 (25.49)	5 (16.67)	
Sometimes	16 (31.37)	15 (50.00)	
Frequently	1 (1.96)	6 (20.00)	
Always	0 (0.0)	0 (0.0)	
Feeling of anger			**11.700/0.009**
There has never been	20 (39.22)	4 (13.33)	
Almost none	12 (23.53)	9 (30.00)	
Sometimes	18 (35.29)	11 (36.67)	
Frequently	1 (1.96)	6 (20.00)	
Always	0 (0.0)	0 (0.0)	
Feeling of depression			**8.238/0.041**
There has never been	23 (45.10)	7 (23.33)	
Almost none	12 (23.53)	9 (30.00)	
Sometimes	15 (29.41)	9 (30.00)	
Frequently	1 (1.96)	5 (16.67)	
Always	0 (0.0)	0 (0.0)	
Feeling of helplessness			**8.815/0.032**
There has never been	24 (47.06)	8 (26.67)	
Almost none	18 (35.29)	9 (30.00)	
Sometimes	8 (15.69)	8 (26.67)	
Frequently	1 (1.96)	5 (16.67)	
Always	0 (0.0)	0 (0.0)	

in physical function among children with PP with different anxiety levels. It may also be because the children with PP included in this study did not have any malignant pathological diseases due to PP, so their physical activity remained in a normal state. In view of this situation, we will confirm the life activity level of children with intracranial mass effects caused by PP in the future. Finally, in the investigation of parents' psychological states, we found notably better psychological states in parents in the control group, which also verifies our view, that is, there are mutual influences between

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Retraction

Retracted: Correlation between Serum ApoC III and Galectin-3 Levels and Maternal and Neonatal Adverse Outcomes in Gestational Diabetes Mellitus Patients

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] T. Tang and L. Chen, "Correlation between Serum ApoC III and Galectin-3 Levels and Maternal and Neonatal Adverse Outcomes in Gestational Diabetes Mellitus Patients," *Emergency Medicine International*, vol. 2022, Article ID 5089529, 5 pages, 2022.

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Research Article

Correlation between Serum ApoC III and Galectin-3 Levels and Maternal and Neonatal Adverse Outcomes in Gestational Diabetes Mellitus Patients

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Objective. The correlation between serum ApoC III and galectin-3 levels and adverse maternal and infant outcomes in GDM patients was analyzed. *Methods*. A total of 97 GDM patients admitted to our hospital from January 2019 to June 2021 were selected and divided into a good group and a poor group according to the pregnancy outcomes, ApoC III in blood of subjects was detected by immunoturbidimetry, and galectin-3 level was detected by enzyme-linked immunosorbent assay. Spearman correlation test was used to analyze the correlation between ApoC III and galectin-3 levels and pregnancy outcomes in patients with GDM, and ROC curves were drawn to analyze the value of each index alone and in combination to predict pregnancy outcomes in patients with GDM. *Results*. The levels of ApoC III and galectin-3 in the blood of the patients in the bad group were significantly higher than those in the good group, and the difference was statistically significant ($t = 11.231$, 14.965, $P < 0.05$). The levels of ApoC III and galectin-3 in the blood of GDM patients were significantly positively correlated with adverse pregnancy outcomes, and there was a statistical significance ($r = 0.754$ and $r = 0.698$, $P < 0.05$). The combined application of ApoC III and galectin-3 levels in GDM patients' blood to predict the adverse outcome of pregnancy was Log $P = 0.623$,* ApoC III+0.605* galectin-3. The sensitivity, specificity, and AUC of combined application of ApoC III and galectin-3 for predicting adverse pregnancy outcomes in GDM patients were all greater than 90%, and AUC>0.90. The combined application in predicting adverse pregnancy outcomes were higher than those of the individual indicators, and the difference was statistically significant ($P < 0.05$). *Conclusion*. The levels of ApoC III and galectin-3 in the blood of GDM patients with adverse pregnancy outcomes were significantly increased, and the detection of ApoC III and galectin-3 could effectively improve the value of predicting adverse pregnancy in GDM.

1. Introduction

Gestational diabetes mellitus (GDM) is a common pregnancy complication in women [1]. The results of the study show that the prevalence of GDM in some parts of our country shows an obvious upward trend year by year, which has a serious adverse impact on maternal and child care [2]. GDM may lead to maternal complications such as preeclampsia, spontaneous abortion, and other complications and neonatal complications such as macrosomia, hypoglycemia, deformed infants, and other neonatal complications. At present, the clinical pathogenesis of GDM is not fully understood, but some scholars have pointed out that the occurrence and development of GDM is similar to the pathological basis of type 2 diabetes. [3]. In recent years, studies have found that adipokines are involved in the progression of GDM and are involved in abnormal secretion of adipokines, resulting in abnormal adipose tissue hyperplasia and distribution [4]. Apolipoprotein CIII (ApoC III) is the main apolipoprotein of very low density lipoprotein cholesterol, which has the function of inhibiting the apoE receptor and lipoprotein lipase of liver cell membrane and plays an important role in the regulation of adipose tissue [5]. Galectin-3 is an important β-galactoside binding protein

in the body and plays a very important role in the occurrence and development of insulin resistance [6]. However, the relationship between ApoC III and galectin-3 levels and adverse maternal and infant outcomes in GDM patients has not been reported yet. Therefore, this study selected GDM patients as the research subjects to analyze the correlation between serum ApoC III and galectin-3 levels and adverse maternal and infant outcomes in GDM patients.

2. Materials and Methods

2.1. Research Objects. A total of 97 GDM patients admitted to our hospital from January 2019 to June 2021 were selected as the research subjects, and all patients were divided into a good group and a poor group according to the pregnancy outcomes. There were 64 cases in the good group (age: (28.19 ± 4.32) years, gestational age: (39.28 ± 1.83) weeks, and body weight: (25.38 ± 2.12) kg/m2) and 33 patients in the adverse group, with an age of (28.94 ± 4.71) years, a gestational age of (39.41 ± 1.92) weeks, and a body weight of (25.45 ± 2.37) kg/m2. Inclusion criteria were as follows: (1) meet the diagnostic criteria in the Recommended Guidelines for Clinical Diagnosis and Treatment of Pregnancy Complicated Diabetes (Draft) [7]; (2) GDM confirmed by clinical manifestations combined with laboratory tests; (3) no blood sugar control before admission treatment; (4) prepregnancy diabetes; and (5) singleton pregnancy. Exclusion criteria were as follows: (1) combined with other pregnancy complications such as gestational hypertension; (2) combined with endocrine diseases such as hyperthyroidism and hypothyroidism; (3) polycystic ovary syndrome; (4) combined with severe brain, kidney, liver, heart, lung, and other diseases; and (5) combined with severe trauma or infection. There was no significant difference in general data between the two groups ($P > 0.05$).

2.2. Instruments and Reagents. Low-speed centrifuge (Beckman Avanti JXN-30/26) and Automatic biochemical analyzer (Beckman 5830) were provided by our hospital. Galectin-3 ELISA kit was purchased from Shanghai Xitang Biotech Co., Ltd.

3. Methods

After the subjects were enrolled, fasting venous blood was collected, the speed was 3000 r/min, and the serum was collected by centrifugation at four degrees for 10 min. The level of ApoC III in the blood of subjects was detected by Beckman 5830 automatic biochemical analyzer. Galectin-3 levels were detected by enzyme-linked immunosorbent assay, all operations were carried out in strict accordance with the kit instructions, and the quality control and detection were carried out in accordance with the standard operating procedures of the instrument.

3.1. Statistical Methods. SPSS 20.0 was used for statistical analysis, and the count and measurement data were expressed by percentage and mean ± standard deviation, and then the chi-square test and LSD-t test were used to analyze the differences of count data and measurement data between groups. Spearman correlation test was used to analyze the correlation between ApoC III and galectin-3 levels and pregnancy outcomes in GDM patients. The logistic regression model was used to analyze the combined model of ApoC III and galectin-3 for predicting pregnancy outcome in GDM patients. ROC curves were then drawn to analyze the value of each index alone and in combination to predict the pregnancy outcome of GDM patients. $P < 0.05$ indicates that the difference is statistically significant.

4. Results

4.1. Test Results of ApoC III and Galectin-3 Levels in Blood of Subjects. The results of this study showed that the levels of ApoC III and galectin-3 in the blood of the patients in the poor group were significantly higher than those in the good group, and the difference was statistically significant ($P < 0.05$), as shown in Table 1.

4.2. The Correlation between ApoC III and Galectin-3 in Subjects' Blood and Pregnancy Outcome. The results of this study showed that the levels of ApoC III and galectin-3 in the blood of GDM patients were significantly positively correlated with adverse pregnancy outcomes ($r = 0.754$ and $r = 0.698$), and there was a statistically significant difference ($P < 0.05$).

4.3. ApoC III and Galectin-3 Combined Model for Predicting Pregnancy Outcomes in GDM Patients. . The results of this group showed that the ApoC III level in the blood of GDM patients to predict the adverse pregnancy outcome model of patients is $P = 0.623$,* The Galectin-3 level to predict the adverse pregnancy outcome model of patients is ApoC III+0.605*, as shown in Table 2.

4.4. The Value of ApoC III and Galectin-3 in Predicting Pregnancy Outcomes in GDM Patients. The results of this study showed that the combined application of ApoC III and galectin-3 had sensitivity and specificity greater than 90% and AUC >0.90 in predicting adverse pregnancy outcomes in patients with GDM. The sensitivity, specificity, and AUC of the combined application in predicting adverse pregnancy outcomes were higher than those of the individual indicators, and the difference was statistically significant ($P < 0.05$), as shown in Table 3 and Figure 1.

5. Discussion

GDM is one of the common pregnancy complications. Some studies have shown that pregnant women with GDM have premature rupture of membranes, termination of pregnancy, polyhydramnios, gestational hypertension, and postpartum hemorrhage. The incidence of infant asphyxia, macrosomia, premature infant, and neonatal pneumonia was higher than that of normal pregnancy [8]. GDM usually has no obvious symptoms in the first trimester, and the

Table 1: Test results of ApoC III and galectin-3 levels in blood of subjects.

Indexes	Maternal and infant adverse outcome group ($n = 33$)	Good maternal and infant outcome group ($n = 64$)	t	p
ApoC III/μg/mL	9.31 ± 1.75	5.59 ± 1.04	11.231	0.001
Galectin-3/μg/mL	35.40 ± 8.34	13.29 ± 2.19	14.966	0.001

Table 2: Combined model of ApoC III and galectin-3 for predicting pregnancy outcome in patients with GDM.

Indexes	b	SE	$\chi 2$	P	OR	95% CI	
						Lower limit	Upper limit
ApoC III	0.623	0.229	7.401	0.007	1.865	1.190	2.921
Galectin-3	0.605	0.215	7.918	0.005	1.831	1.202	2.791

Table 3: The value of ApoC III and galectin-3 in predicting pregnancy outcome in patients with GDM.

Indexes	Sensitivity	Specificity	AUC	Standard error	p	95% CI	
						Lower limit	Upper limit
ApoC III	78.79	85.94	0.785	0.049	0.001	0.690	0.881
Galectin-3	75.76	81.25	0.759	0.054	0.001	0.653	0.864
Joint application	93.94	95.31	0.905	0.040	0.001	0.827	0.984

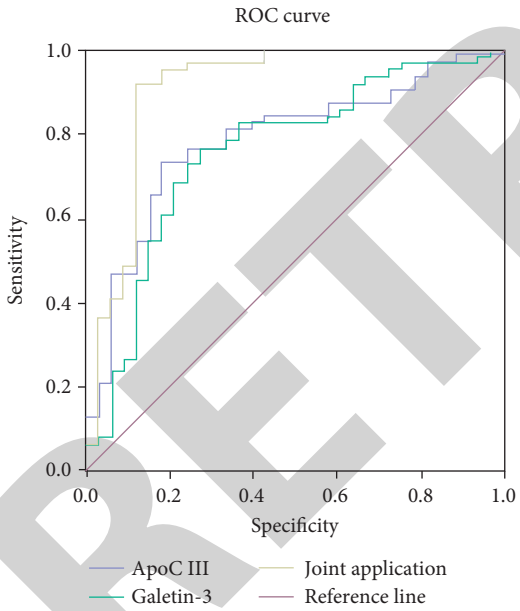

Figure 1: ROC curve.

fasting blood glucose level is basically normal in clinical screening, so the clinical missed diagnosis rate is high. GDM has a greater impact on both mother and baby, and effective evaluation and treatment can improve the clinical outcomes of patients. Pregnancy outcomes are of great significance [9]. Research results show that obesity-induced lipotoxicity plays a very important role in the occurrence and development of GDM. The proliferation of adipocytes can be achieved by detecting and observing adipokines and can be used to analyze the changes of GDM disease [10]. In addition, previous studies have pointed out that GDM can be predicted by detecting inflammatory factors and glucose metabolism indicators related to type 2 diabetes, which suggests that the occurrence and development of type 2 diabetes has many similarities with GDM, but the relationship between inflammatory factors, lipid metabolism related indicators, and pregnancy outcomes of GDM patients has rarely been reported. The relationship with pregnancy outcomes in GDM patients is still rarely reported [11].

Studies have pointed out that a large number of bioactive factors such as leptin and ApoC III are synthesized and secreted by adipocytes and play a very important role in the occurrence and development of insulin resistance [12]. ApoC III is a diabetes-causing factor that has gradually attracted widespread attention in recent years, and it is of great significance to actively control the level of ApoC III in the process of slowing down the progression of diabetes. ApoC III is a potent direct modulator of established cardiovascular disease risk factors: plasma triglycerides and inflammation. Recent findings show that changes in ApoC III levels are directly associated with changes in directing the atherogenicity of HDL, intestinal dietary triglyceride trafficking, and modulating pancreatic β-cell survival. The combination of these roles makes ApoC III an important therapeutic target for the management and prevention of diabetes. ApoC III plays a role in regulating body weight, food intake, and energy metabolism in the body and plays an important role in anti-inflammatory response, anti-intimal hyperplasia after injury, and anti-atherosclerosis [13]. Galectin-3 is synthesized and secreted by a variety of immune cells in the body such as macrophages. Galectin-3 (Gal-3) regulates basic cellular functions such as cell-cell and

cell-matrix interactions, growth, proliferation, differentiation, and inflammation. It is not surprising that this protein is involved in the pathogenesis of many relevant human diseases, including cancer, fibrosis, chronic inflammation, and scarring affecting many different tissues. It can bind to insulin receptors in insulin target organs such as adipocytes and muscles to regulate insulin [14].

The results of this study showed that the levels of ApoC III and galectin-3 in the blood of the patients in the poor group were significantly higher than those in the good group. There was a significant positive correlation with adverse pregnancy outcomes of patients. Further exploration of ApoC III and galectin-3 in predicting pregnancy outcomes showed that the combined application of ApoC III and galectin-3 had sensitivity and specificity greater than 90% in predicting adverse pregnancy outcomes in patients with GDM, and AUC was greater than 0.90. The sensitivity, specificity, and AUC of the outcome were all higher than those of each indicator alone. The analysis shows that the levels of ApoC III and galectin-3 can effectively evaluate the lipid metabolism and inflammatory state in GDM patients. With the increase of ApoC III and galectin-3 levels, it indicates that the abnormal state of lipid metabolism and inflammation in patients is aggravated, accompanied by the appearance of pancreatic islet cells. Abnormal function aggravates, and the phenomenon of insulin resistance increases. It can lead to aggravation of the patient's condition and may lead to the occurrence of adverse pregnancy outcomes. Through the combined detection and analysis of ApoC III and galectin-3 levels, the lipid metabolism and inflammatory state in GDM patients can be deeply studied and analyzed, so it can effectively improve the value of predicting the pregnancy outcome of GDM patients. Insulin resistance in diabetes is strongly associated with chronic inflammation and obesity. Insulin target tissue is affected by inflammatory mediators and undergoes pathological changes that lead to the onset and development of insulin resistance. The high expression of ApoC III may lead to the high expression of blood lipids in the body, induce apoptosis of islet β cells, and may aggravate abnormal blood glucose metabolism in patients. Galectin-3 can effectively inhibit insulin secretion, block insulin signaling pathway, regulate chemotaxis such as macrophages and induce the migration of macrophages to insulin target tissues, leading to the synthesis and release of Galectin-3, aggravating insulin resistance, and forming a vicious circle [15].

In conclusion, the levels of ApoC III and galectin-3 in the blood of GDM patients with adverse pregnancy outcomes were significantly increased, and the detection of ApoC III and galectin-3 could effectively improve the value of predicting adverse pregnancy in GDM. However, the number of clinical samples in this study was small, and no long-term follow-up and follow-up were performed on patients, which needs further research and discussion [16].

Data Availability

The data can be obtained from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

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Research Article

Value of Serum miR-34a and Ang-1 in Severity Evaluation and Prognosis of Neonatal Respiratory Distress Syndrome

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Objects. To analyze the value of serum microribonucleic acid-34a (miR-34a) and angiopoietin-1 (Ang-1) in severity evaluation and prognosis of neonatal respiratory distress syndrome (RDS). *Methods*. A total of 96 neonates with RDS admitted to the hospital from February 2020 to April 2021 were selected as the research subjects. According to the neonatal critical illness score, the subjects were divided into non-critical group ($n = 50$), critical group ($n = 27$), and extremely critical group ($n = 19$). According to survival status, the subjects were divided into survival group ($n = 76$) and death group ($n = 20$). Serum miR-34a and Ang-1 levels and NCIS were compared between RDS neonates with different severity and prognosis. The predictive value of serum miR-34a, Ang-1, and NCIS for death was analyzed using the receiver operating characteristic (ROC) curve. *Results*. Serum miR-34a and Ang-1 levels and NCIS were significantly different in the 3 groups ($P < 0.05$). Serum miR-34a level decreased in order, while serum Ang-1 level and NCIS increased in order from the extremely critical group, the critical group to the non-critical group ($P < 0.05$). The survival group had lower serum miR-34a level and higher Ang-1 level and NCIS than the death group ($P < 0.05$). ROC curve analysis showed that the area under the curve (AUC) values of serum miR-34a, Ang-1, and NCIS to predict death of RDS neonates were 0.745, 0.7667, and 0.736. The cutoff values were 1.175, 6.815 ng/mL, and 85 points. The AUC of joint prediction with the three was 0.924, significantly larger than that of each index. The sensitivity and specificity were 94.70% and 90.00%. *Conclusion*. Serum miR-34a, Ang-1, and NCIS are closely related to the severity and prognosis of neonatal RDS. Combined detection of the three is helpful for prognosis of neonatal RDS.

1. Introduction

Respiratory distress syndrome (RDS) is a type of disease with a high clinical mortality rate in pediatrics. The clinical manifestations of children are moaning, shortness of breath, purple and blue, etc. In severe cases, apnea, superficial breathing, and limb relaxation may occur. It is common in infants, and the younger the gestational age, the higher the incidence [1, 2]. The main cause of the disease is the reduction of primary or secondary alveolar surface material, which poses a great threat to the life and health of children [3]. At present, the pathogenesis of RDS is not yet clear clinically. It has been suggested that the lack of lung surface material and the imbalance of inflammatory response are the important pathological mechanisms of RDS [4]. MicroRNA (miRNA) is a gene regulatory molecule that regulates the immune response and inflammatory pathway by affecting the expression of target genes. In recent years, studies have shown that miR-34a can regulate the inflammatory response [5]. According to literature reports, different pathogenesis can increase the alveolar epithelial barrier and pulmonary vascular endothelial permeability in patients with RDS, and then pulmonary edema occurs. Angiopoietin (Ang) plays an important role in vascular endothelial proliferation and apoptosis [6, 7]. In view of this, this study detected serum miR-34a and Ang-1 levels in children with RDS and analyzed the value of these indicators in assessing the severity and prognosis of neonatal RDS.

2. Materials and Methods

2.1. General Information. A total of 96 children with RDS admitted to our hospital from February 2020 to April 2021 were selected as the research objects. Among them, there were 53 males and 43 females; the gestational age was 34–40 weeks, and the average gestational age was (37.07 ± 1.33)

weeks. The birth weight was 2525g~3370 g, and the average weight was (2950.54 ± 210.45) g. This study was approved by the Medical Theory Committee of the hospital, in accordance with the principles of the Declaration of Helsinki, and the patients and their families were informed and signed the consent form for this study.

Taking the diagnosis of RDS in children as the starting point of the study and taking the recovery and discharge or death as the end point of the study, all the children were divided into a survival group and a death group, with 76 cases and 20 cases, respectively. The Neonatal critical score (NCIS), which including heart rate, systolic blood pressure, respiration, and serum potassium of all children was performed [8]. Children with NCIS score >90 were classified as non-critical group, 70–90 were classified as critical group, and <70 were classified as extremely critical group, with 50 cases, 27 cases, and 19 cases, respectively.

2.2. Inclusion Criteria. Inclusion criteria were as follows: ① all children meet the relevant diagnostic criteria in Practical Neonatology [9]; ② the chest X-ray showed diffuse fine-grained reticular shadows, and the pulmonary transparency was reduced; and ③ the gestational age was over 34 weeks.

2.3. Exclusion Criteria. Exclusion criteria were as follows: ① combined with congenital pulmonary malformation, respiratory malformation, and so on; ② combined with severe extrapulmonary infection; and ③ combined with congenital complex heart disease.

2.4. Methods

2.4.1. Serum miR-34a Detection. After diagnosis, 5 ml of morning venous blood was collected from all children, centrifuged to separate serum, and stored at −80°C for testing. 500 μl serum was collected and allowed to stand with 1 mL of TRIzol at room temperature, isopropanol and 75% ethanol were added in turn, and the above operations were repeated to extract total RNA and store it at −20°C. The total RNA was reverse transcribed using a reverse transcription kit to synthesize cDNA products. The reaction system was 0.15 μl dNTP (100 mmol/L), 1 μl multi-stranded reverse-transcriptase (50 U/μl), 0.19 μl lRNase inhibitor (20 U/μl), and 4.16 μl nuclease-free water, adding 5 μl RNA solution (1.6 ng/μl) and 3 μl reverse transcription primers, mixing well, and centrifuging for 1 min. Cyclic reaction: 16°C for 30 minutes, 42°C for 30 minutes, 85°C for 5 minutes, ice bath for 1 minute, and stored at −20°C. Real-time fluorescence quantitative polymerase chain reaction was performed using a real-time fluorescence quantitative PCR instrument. Real-time fluorescence quantitative polymerase chain reaction (2 μl cDNA, 3 μl of upper and lower primers, and 0.5 μl of Taq polymerase) was performed using real-time fluorescence quantitative PCR instrument. Reaction conditions: denaturation at 95°C for 15 s. After annealing at 60°C for 1 min, the reaction was terminated after 30 cycles of amplification, and the relative expression level of serum miR-34a was calculated by the $2^{-\Delta\Delta Ct}$ method.

2.4.2. Detection of Ang-1 Level. The early morning venous blood was collected from the children and centrifuged at 3000 r/min for 10 min in a centrifuge, and the Ang-1 level was detected by enzyme-linked immunosorbent assay.

2.5. Statistical Indicators. In this study, SPSS19.0 was used for analysis and processing, the count data were described by (n(%)), and the χ^2 test was used for comparison between groups. The measurement data conforming to the normal distribution are presented in ($\overline{x} \pm s$), the t-test is used for comparison between groups, and the one-way analysis of variance is used between multiple groups. Receiver operating characteristic curve (ROC) was used to analyze the predictive value of serum miR-34a, Ang-1, and NCIS scores for death in children with RDS. $P < 0.05$ was the detection level.

3. Results

3.1. Comparison of Serum miR-34a and Ang-1 Levels and NCIS Scores in Children with RDS of Different Severity. There were significant differences in serum miR-34a and Ang-1 levels and NCIS scores among the three groups ($P < 0.05$), and miR-34a and Ang-1 levels and NCIS score of extremely critical group were lower than the other two groups ($P < 0.05$). The serum miR-34a level in the critical group was higher than that in the non-critical group, and the serum Ang-1 level and NCIS score were lower than those in the non-critical group ($P < 0.05$), as shown in Figures 1–3.

3.2. Comparison of Serum miR-34a and Ang-1 Levels and NCIS Scores in Children with RDS with Different Prognosis. The serum miR-34a level in the survival group was lower than that in the death group, and the Ang-1 level and NCIS score were higher than those in the death group, and the difference was statistically significant ($P < 0.05$), as shown in Figures 4–6.

3.3. The Serum Levels of miR-34a, Ang-1, NCIS Score, and the Three Combined Detection on the Predictive Value of Death of RDS Children. The results of ROC curve analysis showed that the areas under the line of serum miR-34a, Ang-1, and NCIS scores for predicting death in children with RDS were 0.745, 0.7667, and 0.736, and the critical values were 1.175, 6.815 ng/mL, and 85 points, respectively. The offline area of combined detection for predicting death in children with RDS was 0.924, which was significantly higher than that of single detection, and its sensitivity and specificity were 94.70% and 90.00%, respectively, as shown in Table 1 and Figure 7.

4. Discussion

RDS is the main cause of neonatal death. At present, there is still a lack of specific therapeutic methods for RDS, mainly through pulmonary surfactant replacement, respiratory support, fluid management, and other methods, and the treatment is difficult [10]. This disease has a poor prognosis

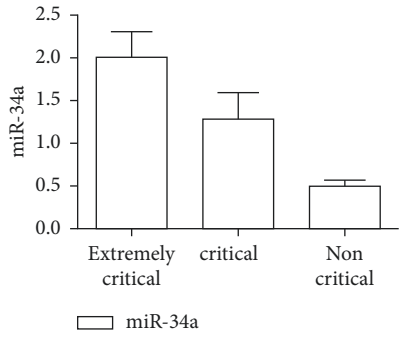

Figure 1: Comparison of serum miR-34a in children with different severity of RDS.

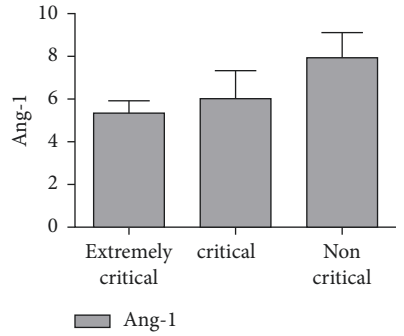

Figure 2: Comparison of serum Ang-1 levels in children with different severity of RDS.

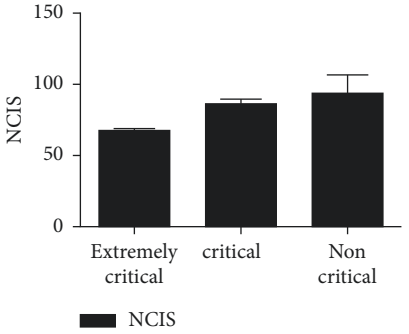

Figure 3: Comparison of NCIS scores in children with RDS of different severity.

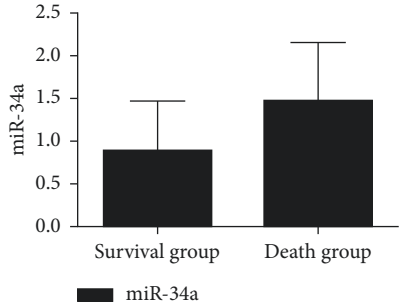

Figure 4: Comparison of serum miR-34a in children with RDS with different prognosis.

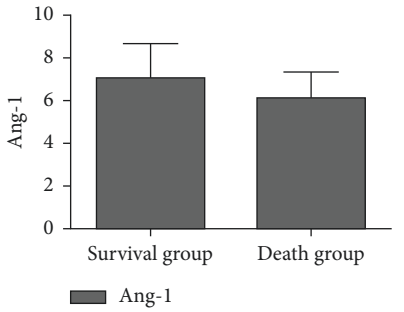

Figure 5: Comparison of serum Ang-1 levels in children with RDS with different prognosis.

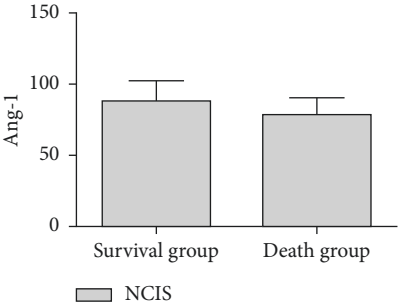

Figure 6: Comparison of NCIS scores in children with RDS with different prognosis.

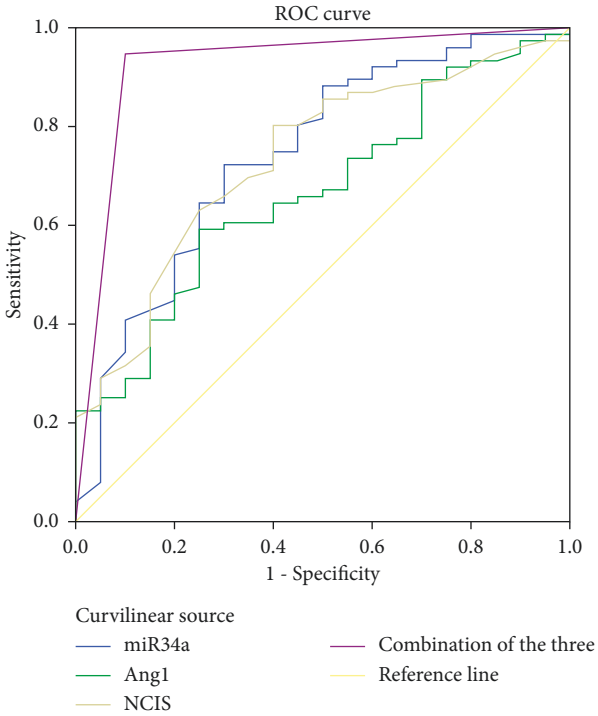

Figure 7: ROC curve analysis of serum miR-34a, Ang-1, and NCIS scores alone and their combined detection to predict death in children with RDS.

Table 1: Predictive value of serum miR-34a, Ang-1, and NCIS scores individually and their combined detection on death in children with RDS.

Indexes	Area under the curve	Standard deviation	95% CI	P	Critical value	Sensitivity (%)	Specificity (%)
miR-34a	0.745	0.064	0.620~0.870	0.001	1.175	72.40	70.00
Ang-1	0.667	0.063	0.543~0.791	0.022	6.815pg/mL	59.20	75.00
NCIS scale	0.736	0.060	0.618~0.853	0.001	85 scale	80.30	60.00
Joint detection of the three	0.924	0.042	0.842~1.000	0.001	—	94.70	90.00

and many sequelae, which pose a great threat to the life and health of children. Timely and effective prediction of the severity of the disease has positive significance for improving the prognosis and reducing the mortality rate of children. Serum miR-34a has been confirmed by studies to play an important role in cell proliferation, differentiation, and metabolism and is significantly related to immune inflammatory response [11]. Ang is a secretory endothelial cell-specific growth factor, mainly including Ang-1, Ang-2, Ang-3, Ang-4, and so on. Among them, Ang-1 and Ang-2 are more studied in inflammation, and studies have pointed out that monitoring the level of Ang-1 is helpful to evaluate the survival status of ARDS patients [12, 13].

Studies have confirmed that serum miR-34a plays an important role in cell proliferation, differentiation, and metabolism, and some studies have pointed out that it can be used as an effective index to evaluate the prognosis of RDS [14]. The results of this study showed that the level of serum miR-34a gradually increased with the aggravation of children's condition, and the level of serum miR-34a in critically ill recombinant children was higher than that in other two groups. It shows that the level of serum miR-34a is significantly correlated with the severity of the disease. In addition, the level of serum miR-34a in the survival group is lower than that in the death group, which suggests that serum miR-34 may be involved in the progress of neonatal RDS and can be used as a marker for prognosis evaluation of children with RDS. The reason is that mRNA plays an important regulatory role in RDS cell apoptosis and inflammation. The occurrence of RDS can lead to different degrees of inflammation in the body, leading to the increase of the level of miR-34a. Data show that miRNA can regulate gene transcription and expression, participate in macrophage polarization, and play an important role in the pathophysiological process of epithelial cells, endothelial cells, and macrophages [15]. Macrophages can effectively resist harmful substances in the immune process and can eliminate invading pathogens. They play an important role in alveoli and can prevent lung injury caused by extrapulmonary causes [16]. Therefore, the level of miR-34a is closely related to the pathological process of RDS. In addition, under the influence of lung epithelial cell injury, it can also stimulate the alveolar wall and capillary wall to release the level of miR-34a into blood circulation. Also, with the aggravation of RDS, this inflammatory stimulation will be more obvious.

This study showed that the serum Ang-1 level and NCIS score gradually decreased, and the serum Ang-1 level and NCIS score were lower than those of the other two groups ($P < 0.05$). The serum Ang-1 level of critically ill patients and NCIS score were lower than those of non-critically ill patients, suggesting that serum Ang-1 level and NCIS score were closely related to the severity of RDS in children. On the other hand, studies have pointed out that monitoring Ang-1 levels can help to evaluate the survival status of patients with ARDS. In this study, the serum miR-34a level of children in the survival group was lower than that in the death group, and the Ang-1 level and NCIS score were higher than those in the death group ($P < 0.05$), further confirming the above view. Ang-1 is a vascular growth factor secreted by a variety of cells, which plays a regulatory role in maintaining vascular permeability. In previous studies, the downregulation of Ang-1 expression was responsible for the decreased stability and increased permeability of pulmonary capillary endothelial cells in patients with ARDS [17]. The main reason was that Ang-1 could not only reduce the synthesis of nitric oxide (NO) by degrading bradykinin but also promote the generation of oxygen free radicals induced by oxidative stress to increase the decomposition of NO and aggravate the damage of pulmonary vascular endothelial cells [18]. NCIS score is a domestic neonatal critical illness score method, which is mainly used to analyze and observe blood gas analysis, vital signs, biochemical tests, and other indicators of children [19]. The literature has shown that NCIS score has a good prediction effect on the death of children with RDS [20]. In this study, the ROC curve was used to analyze the predictive value of single test of serum miR-34a, Ang-1, NCIS scores, and the combination of the three tests on the death of children with RDS. It was found that the offline area for predicting the death of children with RDS by the combination of the three tests was 0.930, which was significantly higher than that by the single test. The sensitivity and specificity were 90.00% and 96.10%, respectively, indicating that the combination of the above three indicators had high predictive value for the prognosis of children with RDS and could be used as an auxiliary method for clinical diagnosis.

In conclusion, serum miR-34a, Ang-1, and NCIS scores are closely related to the disease severity and prognosis of children with RDS, and the combined detection of the three has a high predictive value for the prognosis of children with RDS. It provides new clues for clinical treatment. However, the shortcomings of this study are that the sample sources are concentrated, the sample size is small, and it is a single-

center study. Future large-scale, multi-center research is needed to further demonstrate the research results.

Data Availability

The data can be obtained from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

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Retraction

Retracted: The Expression and Clinical Significance of Sphingosine Kinase 1 and Vascular Endothelial Growth Factor in Endometrial Carcinoma

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] H. Yu, Dejizhuoga, W. Huang et al., "The Expression and Clinical Significance of Sphingosine Kinase 1 and Vascular Endothelial Growth Factor in Endometrial Carcinoma," *Emergency Medicine International*, vol. 2022, Article ID 6716143, 6 pages, 2022.

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https://doi.org/10.1155/2022/6716143

Research Article

The Expression and Clinical Significance of Sphingosine Kinase 1 and Vascular Endothelial Growth Factor in Endometrial Carcinoma

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The aim of the study is to investigate the expression of sphingosine kinase 1 (SPHK1) and vascular endothelial growth factor (VEGF) in patients with endometrial carcinoma and its clinical significance. The tissues of 86 cases of patients with endometrial carcinoma and 54 cases of patients with endometrial atypical hyperplasia were collected. The expression of SPHK1 and VEGF in the tissue was detected by immunohistochemistry. The expression of SPHK1 in patients with endometrial carcinoma was compared with the clinicopathological data. *Results.* 69 cases (82.1%) of endometrial carcinoma were positive for SPHK1, which was higher than 2 cases (3.7%) of endometrial atypical hyperplasia ($P < 0.05$). The VEGF expression in 54 patients (62.8%) with endometrial carcinoma was higher than that in 12 patients with endometrial atypical hyperplasia (22.2%) ($P < 0.05$). There was a positive correlation between SPHK1 and VEGF expressions in endometrial carcinoma ($c = 0.595$). The expression of SPHK1 in endometrial cancer patients was different in different pathological types, FIGO stages, lymph node metastasis, ER, and PR positive or not, and the difference between the two groups was significant ($P < 0.05$). There was no difference in age, degree of differentiation, and depth of myometrial infiltration ($P < 0.05$). The expression of SPHK1 in patients with endometrial carcinoma is increased, which is helpful for early detection of patients with endometrial carcinoma, and may play a synergistic role with VEGF in the pathogenesis and development of endometrial carcinoma.

1. Introduction

Endometrial carcinoma is one of the most prevalent malignant tumors of the female reproductive system, which threatens more and more women [1, 2]. The pathogenesis of endometrial carcinoma is still unclear, which may be a multistep, multistage, and multifactor biological evolution process, involving genetic variation of various molecules [3]. The postoperative survival rate of endometrial carcinoma can reach 80%, but the incidence is still increasing gradually [4, 5]. Early diagnosis and timely intervention are essential to improve the prognosis of patients.

At present, the role of sphingolipids in cancer biology is a new field of lipid research, mainly to study the roles of different sphingolipid-acting enzymes, sphingolipid-binding proteins, and transmembrane transporters in tumors [6, 7]. SPHK family members have attracted much attention because their catalytic activity is at the key

intersection in regulating the metabolism of sphingolipids with biological activity [8, 9]. Sphingosine kinases 1 (SPHK1) are involved in the processes related to cancer progression, including cell transformation, survival and migration, metastasis, and neovascularization of the tumor microenvironment [10, 11].

Angiogenesis is essential for physiological processes such as wound healing and tissue remodeling of ischemic tissue diseases, as well as embryo implantation and endometrial repair after menstruation [12]. The ability of a tumor to develop from a non-angiogenesis to angiogenesis phenotype is the core of cancer development, which is called the "angiogenesis switch" [13]. This phenomenon is a prerequisite for tumor growth and metastasis. Tumors can migrate from the primary site to the new site through direct metastasis, blood vessels, or the lymphatic system. It is considered that the growth of tumors larger than 1-2 mm is vascular-dependent. It has been previously reported that the epidermal growth factor receptor and vascular endothelial growth factor (VEGF) play an important role. Especially, the regulation of VEGF gene expression is related to differentiation, hormones, cytokines, oxygen partial pressure, and many other factors [14, 15]. VEGF, as the most effective promoter of vascular endothelial cell division, is the key to tumor occurrence, invasion, and metastasis. It can prevent the immune response of tumor cells by promoting tumor growth and hindering the maturation of host-specific antigen-presenting cells [16].

However, there is little research on the effect of SPHK1 on endometrial carcinoma. Therefore, the purpose of this study is to explore the expression of sphingosine kinase 1 (SPHK1) and VEGF in patients with endometrial carcinoma and its clinical significance and provide a reference for further study.

2. Materials and Methods

2.1. Case Data. Eighty-six patients with endometrial carcinoma aged from 39 to 70 years, who were first seen in Hunan Provincial People's Hospital, Hunan Maternal and Child Health Hospital, and Shenzhen Third People's Hospital from June 2015 to December 2021 and all of who were diagnosed by pathological biopsy, were selected. According to FIGO surgical pathological staging, there were 63 cases in stages I-II and 23 cases in stages III-IV. Twenty-six cases were highly differentiated, 30 cases were moderately differentiated, and 30 cases were poorly differentiated. Also, 54 cases of patients with endometrial atypical hyperplasia aged from 36 to 68 years were selected. There was no significant difference in age and course of disease between the two groups ($P < 0.05$). Patients with endometrial carcinoma did not receive radiotherapy or chemotherapy before the operation, and all patients in the control group had no other gynaecological diseases related to hormones. Patients' tissues were routinely fixed with 10% formaldehyde, embedded in paraffin, and 3~5 um sections were pasted on antidropping slides for later use. All patients signed the informed consent form, which was approved by the Ethics Committee of Hunan Provincial People's Hospital.

2.2. Methods

2.2.1. Reagents and Operations. The sphingosine kinase primary antibody (rabbit antihuman, concentrated) was purchased from Shanghai Yansheng Biochemical Reagents Co., Ltd., and the SP kit and DAB chromogenic kit were purchased from Beijing Zhongshan Jinqiao Biotechnology Co., Ltd. Immunohistochemistry was performed by the SP method, and the operation method was carried out according to the instructions of the kit.

2.2.2. The Detection of Expression of SPHK1 and VEGF in Tissues by the Immunohistochemical Method. The method of streptavidin peroxidase (SP) was used for the detection of expression of SPHK1 and VEGF in tissues, and the steps were as follows: Paraffin slices were soaked in fresh xylene for 10 min × 3; absolute ethanol for 3 min × 3, 95°C ethanol for 3 min × 2, 75% ethanol for 3 min × 2, washed for 1 min with distilled water, and put in PBS buffer. After antigen repair, an appropriate amount of endogenous peroxidase blocker was added, incubated at room temperature for 20 min, and rinsed with PBS. SPHK1(1 : 200) and VEGF (ready-to-use) primary antibodies were then added and incubated at 37°C for 60 min, and rinsed with PBS. A reaction enhancing solution was added, incubated at room temperature for 20 min, and washed with PBS. Then, goat anti-rabbit IgG polymer labeled with an enhance enzyme was dropwise added, incubated at room temperature for 20 min, and washed with PBS. Finally, freshly prepared DAB color solution was added, incubated at room temperature for 5–8 min, re-dyed with hematoxylin, dehydrated, and transparently sealed. PBS was used as a negative control.

2.2.3. Results' Judgement. 10 high-power fields (×400) were randomly selected from each picture, and SPHK1-positive and VEGF-positive cells were brown-yellow particles stained by a cell membrane or cytoplasm. Referring to Ma X's study [17], it can be divided into negative (−) <5%, positive (+) 6–25%, positive (++) 26–50%, and positive (++) > 50% according to the number of positive cells and the intensity of color development.

2.2.4. Statistical Analysis. SPSS for windows 19.0 statistical software was used for analysis. The positive rate and correlation were compared by the Chi-square test, and the correlation column connection number (C) was calculated by the formula $C = \sqrt{x2/(n + x2)}$. $P < 0.05$ means the difference was statistically significant.

3. Results

3.1. Comparison of the Expression of SPHK1 and VEGF in Endometrial Carcinoma and Endometrial Atypical Hyperplasia. Figure 1 shows the expression of SPHK1 and VEGF in the tissues of patients in each group. As shown in Table 1, 69 cases (82.1%) of 86 patients with endometrial carcinoma were positive for SPHK1 and 2 cases (3.7%) of 54 patients with atypical hyperplasia of the endometrium were

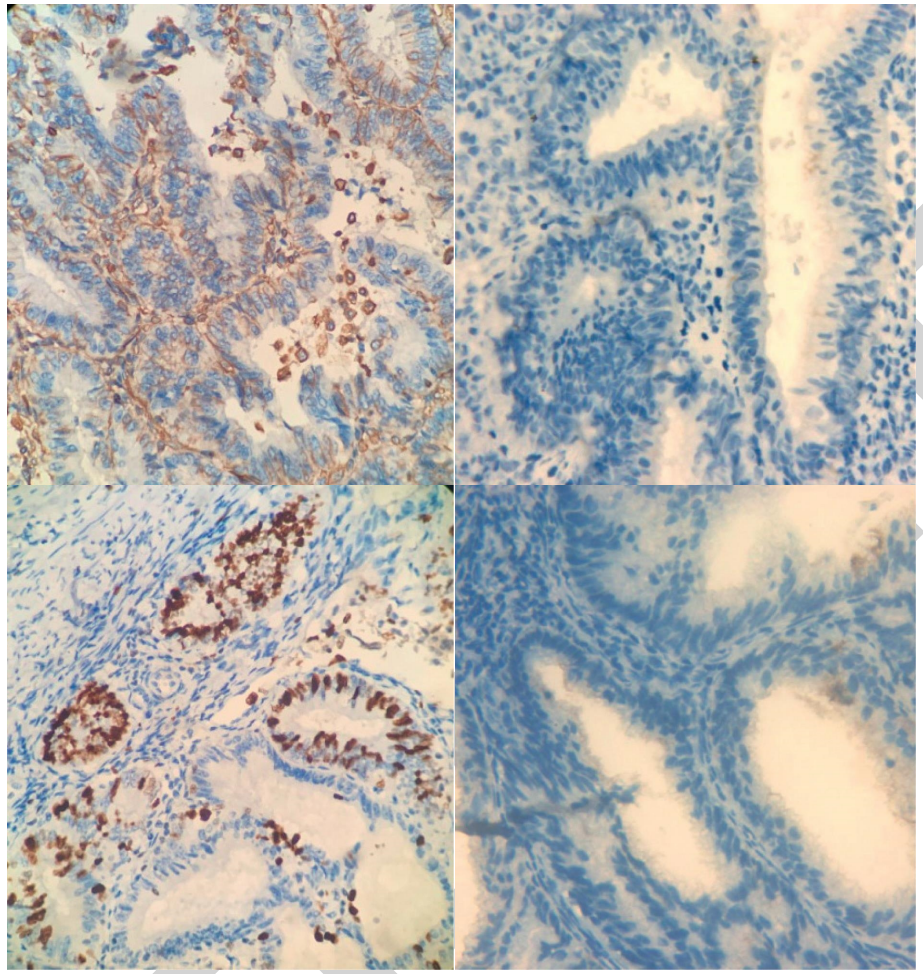

Figure 1: Expression of SPHK1 and VEGF in the tissues of patients in each group. Left-top: The expression of SPHK1 in endometrial carcinoma was positive (×200). Right-top: The expression of SPHK1 in endometrium (×200). Left-bottom: VEGF expression in endometrial atypical hyperplasia group (× 400). Right-bottom: The expression of VEGF in endometrium was negative (×400).

Table 1: Comparison of the expression of SPHK1 and VEGF between the two groups.

Groups	Number	SPHK1 (n (%))	VEGF (n (%))
Endometrial carcinoma	86	69 (82.1)	54 (62.8)
Atypical hyperplasia of endometrium	54	2 (3.7)	12 (22.2)
χ^2		77.725	21.909
P		<0.001	<0.001

positive for SPHK1. The difference in the positive rate between the two groups was statistically significant ($\chi^2 = 77.725$, $P < 0.001$). In 86 cases of endometrial carcinoma, 54 cases (62.8%) were positive for VEGF and 12 cases (22.2%) were positive for VEGF in patients with atypical hyperplasia of the endometrium. The difference in positive rates between the two groups was statistically significant ($\chi^2 = 21.909$, $P < 0.001$).

3.2. Correlation Analysis of SPHK1 and VEGF Expressions in Endometrial Carcinoma. A chi-square test was used to analyze the correlation between SPHK1 and VEGF expressions in endometrial carcinoma, and there was a positive correlation between them ($\chi^2 = 6.857$, $P = 0.009$, column connection number ($c = 0.595$), as shown in Table 2.

3.3. The Relationship between SPHK1 Expression and Clinicopathological Factors in Endometrial Carcinoma. As shown in Table 3, among patients with endometrial carcinoma, SPHK1 in 18 cases (18/24) was positive in patients younger than 50 years old and 51 cases (51/62) in patients older than 50 years old. There was no significant difference in the positive rate between them ($\chi^2 = 0.575$, $P = 0.448$). In degree of differentiation, SPHK1 of 22 cases (22/26) of highly differentiated patients was positive, SPHK1 of 23 cases (23/30) of moderately differentiated patients was positive, and

Table 2: Correlation analysis of SPHK1 and VEGF expressions in endometrial carcinoma.

SPHK1	*VEGF*		Total number
	+	−	
+	48	21	69
−	6	11	17
Total number	54	32	86

Table 3: The relationship between SPHK1 expression and clinicopathological factors in endometrial carcinoma.

Clinicopathological factors	Number	*SPHK1 expression*		χ^2	P
		+	−		
	86	69	17		
Age				0.575	0.448
<50 years old	24	18	6		
≥50 years old	62	51	11		
Pathological types				24.632	<0.001
Adenocarcinoma	41	40	1		
Serous type	23	19	4		
Clear cell type	13	6	7		
Other types	9	4	5		
FIGO staging				4.463	0.035
I-II	63	54	9		
III-IV	23	15	8		
Degree of differentiation				0.556	0.757
Highly differentiated	26	22	4		
Moderately differentiated	30	23	7		
Poorly differentiated	30	24	6		
Muscle infiltration				1.316	0.251
<1/2	51	43	8		
≥1/2	35	26	9		
Lymph node metastasis				6.657	0.010
Yes	58	51	7		
No	28	18	10		
ER				4.986	0.026
Positive	30	28	2		
Negative	56	41	15		
PR				6.561	0.010
Positive	39	36	3		
Negative	47	33	14		

SPHK1 of 24 cases (24/30) of poorly differentiated patients was positive. There was no statistical difference between the three groups ($\chi^2 = 0.556$, $P = 0.757$). 43 cases (43/51) were positive for SPHK1 with myometrial infiltration <1/2 and 26 cases (26/35), with myometrial infiltration ≥1/2. There was no significant difference in the positive rate between them ($\chi^2 = 1.316$, $P = 0.251$).

There were 40 cases (40/41) with positive SPHK1 in adenocarcinoma, 19 cases (19/23) with serous type, 6 cases (6/13) with clear cell type, and 4 cases (4/9) with other types. The difference between groups was statistically significant ($\chi^2 = 24.632$, $P < 0.001$). SPHK1 was positive in 54 cases (54/63) in FIGO stage I-II and 15 cases (15/23) in stage III-IV. The difference between groups was statistically significant ($\chi^2 = 4.463$, $P = 0.035$). There were 51 cases (51/58) with lymph node metastasis and 18 cases (18/28) without lymph node metastasis, and the difference between the two groups was statistically significant ($\chi^2 = 6.657$, $P = 0.010$). Twenty-eight (28/30) of ER-positive patients were SPHK1-positive and 41 (41/56) of ER-negative patients were SPHK1-positive. The difference between the two groups was statistically significant ($\chi^2 = 4.986$, $P = 0.026$). There were 36 cases (36/39) with positive PR and 33 cases (33/47) with negative PR, and the difference between the two groups was statistically significant ($\chi^2 = 6.561$, $P = 0.010$).

4. Discussion and Conclusion

From the perspective of molecular biology, endometrial carcinoma may be caused by abnormal activation of various oncogenes, overexpression of the encoded proteins, and uncontrollable malignant transformation induced by cell proliferation caused by deletion, mutation, and inactivation of nononcogenes [18]. SPHK, an important enzyme in cancer biology, has attracted much attention. It often exists in two subtypes, which are SPHK1 and SPHK2 [19]. Sphingosine-1-phosphate (S1P) is one of the metabolites produced by sphingosine kinase (SPHK1 and SPHK2) in

cancer cells, which regulates many cellular processes, including inhibiting cell apoptosis and increasing cell proliferation and angiogenesis [20–22].

In this study, 69 (82.1%) of 86 patients with endometrial carcinoma were positive for SPHK1, 2 (3.7%) of 54 patients with atypical hyperplasia of the endometrium. The positive rate between the two groups was different ($P < 0.05$), indicating that the expression of SPHK1 was enhanced in endometrial carcinoma. More and more studies have also shown that SPHK1 is involved in the processes related to cancer progression, including cell transformation, survival and migration, metastasis, and neovascularization of the tumor microenvironment [23]. This study also found that there were differences in expression of SPHK1 in different pathological types, FIGO stages, lymph node metastasis, ER and PR positive or not ($P < 0.05$), indicating that SPHK1 may be involved in the pathogenesis and development of endometrial carcinoma.

VEGF is overexpressed in patients with anovulatory dysfunctional uterine bleeding. In gynecological tumors such as ovarian cancer, the expression of VEGF is related to the increased invasion of epithelial ovarian cancer cells in vivo and in vitro. In cervical cancer, VEGF is associated with a poor prognosis in young women. VEGF, as a marker of angiogenesis, is involved in endometrial remodeling after menstruation. During endometrial remodeling, the release of VEGF is thought to be caused by tissue hypoxia or ischemia. When tissues are hypoxic, hypoxia-inducible factors are stimulated in many ways, including the release of different growth factors including VEGF, which leads to the degradation of the extracellular matrix [24, 25]. These constant circulation changes of the endometrium, such as superficial shedding and neointimal reconstruction, are all related to angiogenesis and neovascularization [26].

In this study, 54 out of 86 patients with endometrial carcinoma were positive for VEGF, which was higher than that of patients with atypical hyperplasia of the endometrium (22.2%) ($P < 0.05$). This result was consistent with the results of previous research [27, 28]. In addition, there is a positive correlation between SPHK1 and VEGF expressions in endometrial carcinoma ($P < 0.05$).

The results of this study indicated that SPHK1 may be involved in the pathogenesis and development of endometrial carcinoma through its synergistic effect with VEGF. These findings are helpful for early detection of patients with endometrial carcinoma and also provide a clinical reference for further study on the influence of the expression of SPHK1 and VEGF in endometrial carcinoma.

Data Availability

All the data used to support the findings of this study are included within the article.

Ethical Approval

Ethical approval for this work was obtained from the ethical review committee of the Third People's Hospital of Shenzhen, Hunan Provincial People's Hospital, and Hunan Maternal and Child Health Hospital.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

Acknowledgments

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Retraction

Retracted: Infection Control-Based Construction of a Fever Outpatient Routine Management Model

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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Research Article

Infection Control-Based Construction of a Fever Outpatient Routine Management Model

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Purpose. Outbreaks caused by infectious diseases are now serious public health events. At present, most hospitals have a high number of fever clinic attendances. In order to improve the efficiency of fever clinic screening, timely detection and control of infection sources, early detection, early isolation, and early treatment, our hospital explored the construction and effect of our fever clinic management model during the response period by constructing a fever clinic regular management model based on the principles of infection control. *Methods*. 1300 cases (September 2021 to February 2022) with or without epidemiological history were divided into the control group (without epidemiological history) and the observation group (with epidemiological history) and patients were given differentiated management. A model of permanent management of a fever clinic during the epidemic was set up and evaluated by implementing the person responsible for epidemic positions, optimizing tertiary care, and strengthening nosocomial infection protection for health care workers. *Results*. The results showed that patients in the observation group had a lower age of onset, a longer consultation time, and a higher proportion of patients with fever, which was different from the control group ($P < 0.05$). Compared with the control group, the proportion of routine blood tests, the proportion of four respiratory virus tests, and the per capita cost were higher in the observation group, and the differences were statistically significant ($P < 0.05$). There were no missed diagnoses, underreporting, cross-infections, or nosocomial infections in either group, and there were no significant differences between the two groups in terms of patients' evaluation of management quality and satisfaction with management ($P > 0.05$). The skill level, management attitude, and standardized operation of outpatient clinic managers improved after the construction of a fever clinic standing management model based on infection control, and the recognition of patients was higher in the observation group ($P < 0.05$). *Conclusion*. The construction of a fever outpatient routine management model based on the principle of infection control is conducive to the standardized implementation of the management and treatment of health care workers, early detection of the source of transmission to cut off the transmission route, avoiding cross-infection and nosocomial infection, and ensuring the safety of patients and health care workers.

1. Introduction

Outbreak epidemics caused by infectious diseases are currently serious public health events, and usually infectious diseases can be transmitted through direct contact with infected individuals, body fluids and excreta of infected individuals, and objects contaminated by infected individuals and can be transmitted through airborne, waterborne, food-borne, and contact transmission, with widespread and rapid infectivity [1, 2]. The dramatic increase in the number of patients in a short period of time poses a whole new challenge to medical institutions, and the fever clinic is the first line of defense in the prevention and control of infectious diseases in hospitals, and the consequences of this epidemic would have been unthinkable without the fever clinic for the initial screening of febrile patients for infectious diseases [3]. With the process of global integration, infectious diseases will also spread across national borders to all over the world, and the new infectious diseases, as well as the speed and spread of infectious diseases, are

unanticipated. Therefore, during epidemics, in order to ensure the safety of the medical system and social stability, medical institutions should pay attention to and improve the construction of fever clinic management systems, both in terms of department construction, personnel management, and hardware construction, should be thoroughly considered [4, 5].

At present, China has entered a period of normalized prevention and control of infectious diseases, and the management of infectious diseases has also entered a stage of normalized prevention and control [6]. However, in the turbulent situation of global epidemic, domestic epidemic prevention and control still face the pressure of external prevention of importation and internal prevention of rebound, and it is imperative to strengthen the construction of fever clinics and comprehensive control of nosocomial infections. Research reports on fever clinics in China in recent years have shown that the construction of fever clinics across the country is severely weakened or even virtual, revealing many problems in the prevention and control of infectious diseases [7, 8]. The reasons for this situation are the lack of a reasonable disciplinary orientation of the fever clinic, the irregularity of the medical and nursing staff, the lack of ability of the medical and nursing staff to screen and handle febrile diseases, and the lack of identification, prevention, and control of infectious diseases. This shows that the previous management model of fever clinics had more drawbacks, which could not effectively screen patients with new coronary pneumonia and increased the risk of cross-infection within the hospital [9, 10]. The prevention and control of infectious diseases should not be taken lightly, which requires us to gradually form a set of systematic long-term prevention and control strategies, combine the infectiousness of diseases, the patient's condition, and the hospital's condition, and continuously optimize the management mode of fever clinics to timely detect and control the source of infection, achieve early detection, early isolation, and early treatment [11, 12]. Since the outbreak, based on the principle of infection control, our hospital has built a model for the regular management of fever clinics and implemented it to strengthen the standardized management of all aspects by implementing the person responsible for the epidemic and optimizing the three-level treatment. The following is a report on the regular management of our hospital's independent fever clinic based on the principle of infection control.

2. Objects and Methods

2.1. Subjects. We selected 1300 patients who attended our fever clinic from September 2021 to February 2022, and divided them into the control group (no epidemiological history) and the observation group (with epidemiological history) according to whether they had epidemiological history or not and gave them different management and treatment.

2.2. Medical History Collection. The fever clinic doctors collected detailed clinical information from patients, asking about gender, age, temperature, clinical manifestations, time of consultation, complaints, symptoms, epidemiological history, underlying medical history, previous diagnosis and treatment, and conducting necessary physical examination; nurses were responsible for specimen sampling.

2.3. Inclusion Criteria. Age ≥14 years; patients with a relevant epidemiological history of pneumonia or influenza, with or without fever or respiratory symptoms; patients with fever or respiratory symptoms, normal or reduced white blood cell count and imaging signs of pneumonia; The study was approved by the hospital's medical ethics committee and patients signed an informed Consent Form.

2.4. Exclusion Criteria. Patients with severe cardiac, pulmonary, hepatic, or renal insufficiency; patients with psychiatric disorders; severe malignancies; autoimmune diseases; and patients without significant symptoms, signs, or epidemiological history, except for the purpose of health checkups or consultations.

2.5. Methods

2.5.1. Reagents. (1) Terminal blood analysis was performed using the reagents accompanying the LH750/755 automatic hematology analyzer (Beckman, USA); (2) C-reactive protein was detected using rapid CRP detection reagents (Guangdong Wan Torch Testing Instruments Co.)

2.5.2. Instruments. (1) Peripheral blood analysis was performed by our laboratory using LH750/755 automatic hematology analyzer (Beckman, USA); (2) C-reactive protein was performed using i-CHROMATM Reader immunofluorescence analyzer.

2.5.3. Peripheral Blood Examination. The specimen collection was completed by the medical and nursing staff of the special window of fever clinic in our hospital clinical examination room, and the examination was performed by the outpatient clinical examination room.

2.6. Management Methods. To perform high quality outpatient management service work for all patients and optimize the outpatient management model, the specific elements include the following.

2.6.1. Strengthen Medical Staff Management. ①Strengthen the preservice training work. Pay attention to the management of protective equipment, arrange special personnel to carry out preservice training on the wearing of protective equipment for medical staff, strengthen the follow-up supervision of on-the-job staff, and do a good job of medical staff protection to avoid infection of medical staff. ② Strengthening skills training. Using a variety of training methods such as online meetings, on-site exchanges, and individual training, to exchange and learn about the content of knowledge related to the treatment and care of infectious

diseases; to improve the service capacity and level of medical workers in all aspects. ③ Strengthen the psychological intervention of medical workers. Understand and try to meet the daily needs of medical staff, make reasonable adjustments in light of the actual situation, help medical staff reduce work pressure, and at the same time encourage medical staff to master self-regulation methods to alleviate adverse psychology and promote their ability to devote themselves to their work.

2.6.2. Establishment of Emergency Planning System and Leadership Group and Implementation of Post Responsible Persons. Equipped with auxiliary medical and technical personnel, logistic support personnel and disinfection and cleaning personnel, and urgently dispatched the chief of respiratory department and the head nurse with rich practical experience and strong years of experience to carry out comprehensive coordination of fever clinic scheduling, personnel ranking and material management. A consultation expert group composed of the chief physicians of the emergency department, respiratory medicine, ICU, and radiology departments was formed to conduct expert consultation on difficult cases encountered in the fever clinic, as well as confirmed and suspected cases screened out. A series of emergency plans were prepared at the same time.

2.6.3. Infection Prevention and Control. A disinfector was installed in the fever clinic, and ozone disinfection was performed in the unoccupied state, and air disinfection was performed and registered in the occupied state. Disinfection of floors and objects with disinfectant solution, disinfection of thermometers with 1,000 mg/L chlorine-containing disinfectant solution, and wiping of stethoscopes with ethanol; nurses checked and recorded the use of disinfectant solution; garbage was collected and run by dedicated staff.

2.6.4. Patient Differentiation Management. ① The fever clinic was divided into contaminated, semipolluted, and clean areas, and the three areas were clearly divided without cross-contamination; the contaminated area had independent functional areas such as registration room, pharmacy, test room, CT room, waiting room, consultation room, detention room, and infusion room; the semipolluted area had two buffer rooms and treatment room; the clean area was a special living area for medical staff. ② According to the requirements of the Health and Wellness Commission, our hospital installed the only prescreening and triage channel at the entrance of the emergency clinic, where all incoming patients complete prescreening and triage (temperature measurement and epidemiological history inquiry). Patients were registered and triaged in a timely manner after entering the outpatient clinic.

2.6.5. Triage Process. Fever clinic staff promptly reminded patients to wear masks, understood patients' basic conditions, i.e., any history of contact with patients with infectious diseases, measured patients' body temperature, and registered patients' basic information. Patients with no epidemiological history, 24 h temperature ≥37.3°C or respiratory symptoms registered routinely asked for medical history and physical examination and were triaged to a specialist after completing the appropriate tests. Patients with an epidemiological history, high-to-intermediate-risk epidemic areas, and aggregated morbidity were triaged to special fever clinics, where routine blood tests, four tests for respiratory viruses, and a chest CT were performed and then isolated for observation. Patients excluded from diagnosis by ruling out infection were triaged to specialists and treated accordingly to their condition. Patients with confirmed infections will be admitted to the specialist for treatment, and the fever clinician will call back until their symptoms disappear.

2.6.6. Preaching to Patients and Family Members. All patients and their family members entered the fever clinic were required to wear masks correctly, and the triage nurse was responsible for teaching them the methods, making health education, instructing precautions such as collecting specimens, popularizing knowledge of infectious diseases and personal protection methods, and instructing family members not to directly touch items used by patients and to disinfect them immediately after contact.

The fever clinic operated on a 24-hour basis, with one attending physician or higher in charge of the clinic during the operation period, and secondary protection was implemented throughout the consultation process in strict accordance with infectious disease prevention and control requirements.

2.7. Observation Index

① Comparison of the percentage of completion of auxiliary examination results: statistics on the completion of routine blood tests, four items of respiratory virus, chest CT, and other auxiliary examinations in the two groups of patients, per capita.

② Effectiveness of the operation of the standing management model: Operation of the standing management model was analyzed in terms of missed diagnosis, underreporting, and cross-infection of medical staff.

③ Evaluation of patient management quality scores, nursing skill level, nursing attitude, satisfaction rate, and incidence of cross-infection. Management quality score: Based on the actual situation of the outpatient department, we made our own "Outpatient Management Quality Survey Scale," surveyed patients, evaluated nursing staff behavior, work content, nursing skill level and nursing attitude, and obtained patients' scores on outpatient management quality to determine the management quality of the outpatient department management model. A full score of 100 points was obtained, with higher scores indicating better nursing skill levels and nursing

Table 1: Analysis of the results of basic patient data.

Indicators		Control group ($n = 598$)	Observation group ($n = 702$)	t/χ^2 value	P Value
Gender (n, %)	Male	305 (51.00)	366 (52.14)	0.166	0.684
	Female	293 (49.00)	336 (47.86)		
Age (years; mean ± SD)	38.46 ± 3.14	34.78 ± 1.79	26.420	0.001	
Body temperature ≥37.3°C (n, %)	171 (28.60)	249 (35.47)	6.697	0.009	
Clinical symptoms (n, %)	Throat discomfort/ soreness	104 (17.39)	108 (15.38)	0.953	0.329
	Muscle aches and pains	7 (1.17)	8 (1.14)	0.003	0.958
	Lethargy	15 (2.51)	15 (2.14)	0.198	0.657
	Diarrhea	17 (2.84)	16 (2.28)	0.415	0.520
	Difficulty in breathing	20 (3.34)	21 (2.99)	0.019	0.891
	Cough	221 (36.96)	230 (32.76)	2.506	0.113
	Stuffy/runny nose	12 (2.01)	16 (2.28)	0.114	0.736
	Chest pain	11 (1.84)	10 (1.42)	0.350	0.554
Duration of visit (minutes; mean ± SD)		22.43 ± 3.12	34.25 ± 3.31	65.882	0.001

attitudes, and from this, the effect of management process optimization was determined.

④ Satisfaction rate: Based on the actual situation of the outpatient department, we made our own "Outpatient Management Satisfaction Survey Scale" and conducted research on patients to evaluate the behavior and nursing attitude of nursing staff, and based on the patients' scores, we determined the patients' recognition and satisfaction with the management mode. The total score was 0~100, of which ≥95 was very satisfied, 80~94 was satisfied, 60~79 was average, and <60 was dissatisfied. Satisfaction rate = (very satisfied + satisfied)/total number × 100%.

2.8. Statistical Methods. The SPSS 22.0 statistical software was used to process the data, and the measurement data were expressed as the "mean ± standard deviation," and the t-test was used to compare the means between groups; the counting data were calculated as percentages, and the corrected χ^2 test was used to compare the rates between groups. The test level $\alpha = 0.05$, and the difference was considered statistically significant at $P < 0.05$.

3. Results

3.1. Analysis of the Results of Basic Patient Data. The clinical data of the patients included in this study were collated, i.e., patient age, gender, clinical symptoms, and body temperature. Compared with the control group, patients in the observation group had lower age of onset, longer consultation time, and higher proportion of febrile patients, and all differences were statistically significant ($P < 0.05$). There was no statistically significant difference in the proportion of gender, age, and proportion of clinical symptoms between the two groups ($P > 0.05$) as shown in Table 1.

3.2. Analysis of Patients' Auxiliary Examination Results. Compared with the control group, the proportion of routine blood tests, the proportion of four respiratory virus tests, and the per capita cost were higher in the observation group, and the differences were statistically significant ($P < 0.05$). A higher percentage of patients in the observation group received the chest CT examination (81.05%) while the percentage of patients in the control group tested was 20.07% as shown in Table 2.

The four respiratory viruses were: influenza A antigen, influenza B antigen, respiratory syncytial virus antigen, and adenovirus antigen.

3.3. Analysis of Operation Effect. The number of missed and underreported cases during the operation of the infection control-based fever clinic standing management model was 0 (0.00%), the number of nosocomial infections that occurred was 0 (0.00%), and the number of cross-infections among obligated personnel was 0 (0.00%).

3.4. Comparative Analysis of Management Quality Scores. There was no statistically significant difference between the management quality scores of the two groups ($P > 0.05$). After the regular management of the fever clinic, the patients in the observation group rated the nursing level and nursing attitude of the nursing staff significantly better than those in the control group and the differences were all statistically significant ($P < 0.05$) as shown in Figure 1.

3.5. Analysis of Patient Satisfaction Rate. The satisfaction rate of patients in the observation group was 99.86% and the satisfaction rate of patients in the control group was 99.50% for the normative management mode, and it was found that the satisfaction rates of patients in both the groups were close to each other and the difference was not statistically significant ($P > 0.05$) as shown in Table 3.

4. Discussion

The key to the prevention and control of infectious diseases lies in the cutting off of transmission routes, and the fever clinic is the main place for the prevention and control of infectious diseases, which can screen patients with infectious diseases at an early stage, give them isolation treatment in

Table 2: Analysis of patients' auxiliary examination results.

Indicators	Control group ($n = 598$)	Observation group ($n = 702$)	t/χ^2 value	P Value
Routine blood tests (n, %)	472 (78.93)	681 (97.01)	105.238	0.001
Respiratory virus quadruple test (n, %)	88 (14.72)	567 (80.77)	563.600	0.001
Chest CT (n, %)	120 (20.07)	569 (81.05)	482.168	0.001
Per capita cost (yuan; mean ± SD)	356.82 ± 251.09	736.71 ± 295.43	24.741	0.001

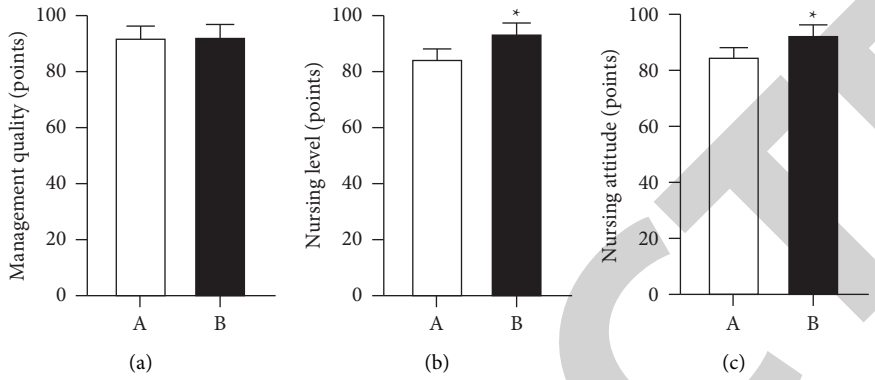

Figure 1: Comparative analysis of management treatment scores. Note: In the figure, A is the control group and B is the observation group. Figure (a) shows the management quality score, (b) shows the nursing level score, and (c) shows the nursing attitude score. *is the comparison between the two groups, $P < 0.05$.

Table 3: Analysis of patient satisfaction rate.

Indicators	Control group ($n = 598$)	Observation group ($n = 702$)	χ^2 value	P Value
Very satisfied (n, %)	346 (57.86)	387 (55.13)	—	—
Satisfied (n, %)	153 (25.59)	198 (28.21)	—	—
General (n, %)	96 (16.05)	116 (16.52)	—	—
Dissatisfied (n, %)	3 (0.50)	1 (0.14)	—	—
Satisfaction rate (n, %)	595 (99.50)	701 (99.86)	1.358	0.244

time, and cut off the transmission routes of infectious diseases [13]. However, some infectious diseases do not always present with febrile symptoms, and it is difficult to fully identify infected patients based on body temperature alone. Furthermore, normal patients attending the clinic may present with atypical clinical features of infectious diseases, making it difficult to identify infected cases. Therefore, medical institutions need to carry out prevention and control according to the characteristics of the epidemic [14, 15]. Studies have shown [16] that patients with a previous epidemiologic history are more likely to be infected with infectious diseases than those without a previous epidemiologic history, and therefore the isolation and protection of such patients should be emphasized. Patients with no epidemiological history are at risk of potential infection by the virus, influenced by other factors, and also at risk of infectious diseases. Therefore, in order to effectively control the development of infectious diseases, we zoned patients according to the presence or absence of epidemiological history, strengthened the disinfection of the fever clinic area, strictly followed the national disinfection and sterilization protocols established for fever clinics, and carried out medical staff protection according to the national fever clinic medical staff protection requirements.

In this study, there was no statistically significant difference in the proportion of clinical symptoms between patients in the control group and the observation group, while the rate of chest CT examination in patients in the observation group was significantly higher than that in the control group. There were no cases of missed diagnosis or underreporting of infected patients, and no cases of nosocomial infection or cross-infection during the implementation of the normalized management model. By strengthening skills training and psychological interventions for medical workers in their daily work, we can effectively control the occurrence of nosocomial infections and cross-infections and reduce the rate of underreporting by improving the service ability and level of medical workers and promoting their all-round commitment to their work [17–19].

The results of this study also showed that the proportion of routine blood tests and the proportion of four tests for respiratory viruses were higher in patients in the observation group than in those in the control group. With the passage of time, the patients' awareness of the symptoms related to infectious diseases and the possible consequences was deeper, their own resistance to screening was lower, and the high importance of the special fever clinic process for

infectious diseases enhanced the screening of infected patients to a higher degree [20]. The study also found that the average cost difference between the two groups was more than double, which was also directly related to the different proportions of routine blood, respiratory virus quadruple test, neo-coronavirus nucleic acid test, and the chest CT examination, indirectly indicating that the triage process optimized the screening process for COVID-19 infection and accelerated the patient's consultation process. After the operation of the permanent management model, in order to obtain the corresponding evaluation from the side of the responsible subject, this paper sent out a satisfaction questionnaire for patients, and the satisfaction rate was over 99%, which shows that patients give very high affirmation to the management model. The application of the standing management model can effectively shorten the time for fever clinic nurses to classify and study febrile patients and patients in epidemic areas, and patients with nonneoconviral infections are rapidly triaged to the corresponding departments to improve patient consultation satisfaction [21].

Shortcomings: (1) Various indicators are affected by policy adjustments; therefore, there may be some abnormal fluctuations in the observed data; (2) This study is preliminary data and further research is still needed. The above shortcomings may interfere with the accuracy of the results of this study, and further studies with extended observation times are needed to further confirm the findings of this study.

As mentioned above, fever clinics have a large number of susceptible people and carriers, and the concentration of people and the long stay of patients make it easy for nosocomial infections to occur. The fever clinic should continuously adjust its operation mode, improve the professional skills of medical staff and their ability to respond to emergencies, and realize the management of patients according to their epidemiological history to prevent cross-infection.

Data Availability

The data supporting this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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Retraction

Retracted: Application of Diversified Health Education Combined with Psychological Nursing in the Treatment of Patients with Infectious Bone Defects by Induction Membrane Surgery

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] N. Wang, L. Wei, R. Xiong, and D. Cheng, "Application of Diversified Health Education Combined with Psychological Nursing in the Treatment of Patients with Infectious Bone Defects by Induction Membrane Surgery," *Emergency Medicine International*, vol. 2022, Article ID 4987816, 6 pages, 2022.

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Research Article

Application of Diversified Health Education Combined with Psychological Nursing in the Treatment of Patients with Infectious Bone Defects by Induction Membrane Surgery

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Objective. To explore the application value of diversified health education combined with psychological nursing in the treatment of patients with infectious bone defects by induction membrane surgery. *Methods*. A total of 52 patients with infectious bone defects treated by induction membrane surgery from May 2018 to January 2022 were selected as the research subjects and divided into an observation group (with diversified health education combined with psychological care) and a control group according to the random number table method (routine nursing care). There were 26 patients in each group, and the Hospital Anxiety and Depression Scale (HADS) and Self-Care Ability Scale (ESCA) were compared. *Results*. At admission, there was no significant difference in anxiety dimension, depression dimension, and total score of anxiety and depression between the two groups ($P > 0.05$). At admission, there was no significant difference in self-care responsibility, self-concept, self-care skills, health knowledge level, and total score between the two groups ($P > 0.05$). Skills, health knowledge level, and total score were higher than those in the control group ($P < 0.05$). The total incidence of complications in the observation group was lower than that in the control group ($P < 0.05$). *Conclusion*. Diversified health education combined with psychological nursing is beneficial to reduce negative emotions, improve self-care ability, and reduce the incidence of complications in the treatment of patients with infectious bone defects by induction membrane surgery.

1. Introduction

Infectious bone defect is a common disease in orthopaedics, and induction membrane surgery is often used in clinical treatment. Previous studies have confirmed that it has a higher rate of bone defect healing. However, it is particularly important to provide corresponding nursing intervention during surgical treatment, which is the key to enhancing cognitive level, improving treatment cooperation, and reducing negative emotions affecting treatment compliance [1]. Health education is a common method to improve patients' cognition of disease in clinical practice, but in the past, health education was mostly infusion education, instilling existing knowledge and conclusions into patients through oral means, which is very boring and easily reduces the enthusiasm and initiative of patients. In recent years, with the diversification of health education models, diversified health education concepts have been proposed, and a three-dimensional health education system has been constructed by sorting out different health education methods to meet the health education needs of different patients. In order to alleviate the adverse effects of negative emotions, a combination of diversified health education and psychological care is proposed. However, there are few research reports on this aspect at present. Therefore, this study selected 52 cases of patients with infectious bone defects treated with induced membrane surgery as the research objects. The purpose of this study was to explore the application value of diversified health education combined with psychological nursing in the treatment of patients with infectious bone defects by induction membrane surgery. The result is as follows.

Table 1: Comparison of general data between the two groups.

Group	Gender [n (%)]		Age (year)	BMI (kg/m^2)	Bone defect length (cm)	Ipsilateral location [n (%)]	
	Male	Female				Tibia	Femur
Observation group ($n = 26$)	18 (69.23)	8 (30.77)	39.45 ± 5.25	23.45 ± 2.52	9.52 ± 1.52	15 (57.69)	11 (42.31)
Control group ($n = 26$)	16 (61.54)	10 (38.46)	39.47 ± 5.18	23.49 ± 2.47	9.47 ± 1.56	14 (53.85)	12 (46.15)
χ^2/t value	0.340		0.014	0.058	0.117	0.078	
P value	0.560		0.989	0.954	0.907	0.780	

2. Materials and Methods

2.1. Clinical Data. A total of 52 patients with infectious bone defects treated by induction membrane surgery from May 2018 to January 2022 were selected as the research subjects and divided into an observation group (with diversified health education combined with psychological care) and a control group according to the random number table method (given routine care), 26 cases in each. Inclusion criteria: ① clinically diagnosed as an infectious bone defect of the lower extremity, and the laboratory bacterial culture was positive; ② the length of the bone defect was ≥5 cm; ③ all received induction membrane surgery; ④ age ≥18 years old; ⑤ the cognitive function was normal. Exclusion criteria: ① pathological fracture; ② diabetic foot; ③ shortening deformity of the affected limb. There was no significant difference in general data between the two groups ($P > 0.05$), as shown in Table 1.

2.2. Methods. The control group received routine nursing interventions, such as monitoring the changes in patients' vital signs, implementing drug treatment according to doctor's orders, issuing health knowledge manuals, dietary guidance, and discharge education.

The observation group received diversified health education combined with psychological care: (1) formation of the intervention team: the members are composed of 1 head nurse, 1 nurse in charge, and 3 nurses. Among them, the head nurse serves as the team leader, responsible for formulating the teamwork system, and organizing team members to carry out knowledge training such as diversified health education and psychological nursing. The training time is 1 month, and only those who pass the assessment can join the group; the nurse in charge is the supervisor, responsible for the supervision of nursing work and the assessment of nursing quality; the nurse, as the administrative staff, is responsible for implementing the nursing plan. (2) Diversified health education: ① evaluation: 1~2 d after admission, assess the patient's understanding of the relevant knowledge of induced membrane surgery, infectious bone defect, etc., and then formulate a personalized health education plan according to the actual situation of the patient. ② Health education method and time: a diversified health education model is adopted, including one-to-one explanations, playing videos of treatment and rehabilitation training, and explaining the prevention of complications in the form of PPT. The health education time is arranged around 4:00–5:00 pm every day, and the duration is controlled within 30 minutes. ③ Contents of health education: (a) introducing the relevant knowledge of induced membrane surgery, infected bone defect, and other related knowledge to the patients by one-to-one explanation. (b) Video playback is used to let patients further understand the treatment process of infectious bone defects and postoperative rehabilitation training and instruct patients on how to carry out rehabilitation training after the operation. The massage time is 20 minutes, 3 times a day; 2 days after the operation, the family members were taught to assist the patient with passive flexion and extension of the knee joint of the affected limb, 10 min/time, 3 times/d; 3 days after the operation, the patient was taught to perform active knee flexion and extension and straight leg raising of the affected limb, 10 min/time, 3 times/d, until the patient gets out of bed and walks with weight; weight-bearing walking out of bed should be determined according to the callus growth and bone healing time observed on X-ray films. Until then, nursing staff should instruct patients not to get out of bed and to walk with weight. (c) Introducing the knowledge of complications such as deep vein thrombosis, muscle atrophy, and joint stiffness to the patient in the form of PPT and guiding the patient to perform foot and ankle joint activities on the first day after the operation if the patient tolerates it. Preventing muscle atrophy and joint stiffness, and guiding patients to take orally or injecting anticoagulant drugs to prevent venous thrombosis. (3) Psychological care: accidental injury to the body, major changes in self-role behavior, and worry about the effect of surgical treatment will all cause the patient to have negative emotions such as depression and anxiety, so take the initiative to introduce the patient to him 1-2 days after admission links in hospital wards, related systems, and precautions to help patients adapt to role changes as soon as possible; at the same time, the psychological status of the patients is evaluated. For those with anxiety and depression, targeted psychological counseling can be implemented, such as deep breathing and playing soothing music, to relieve negative emotions.

2.3. Observation Indicators. ① Anxiety and depression: the Hospital Anxiety and Depression Scale (HADS) [2] was used to evaluate at admission and discharge. The scale includes two dimensions of anxiety (7 items) and depression (7 items). Each item is scored 0, 1, 2, and 3 according to affirmative, often, infrequently, and not at all, and each dimension is scored as a critical point of 7. Scores >7 indicate anxiety or depression. ② self-care ability: the Determination of Self-Care Ability Scale (ESCA) [3] was used to evaluate at

Table 2: Comparison of anxiety and depression levels between the two groups (score, $\overline{x} \pm s$).

Group	Anxiety dimension		Depression dimension		Anxiety and depression total score	
	When admitted to hospital	When discharged	When admitted to hospital	When discharged	When admitted to hospital	When discharged
Observation group ($n = 26$)	8.44 ± 1.55	5.78 ± 1.09	9.26 ± 1.56	6.04 ± 1.06	14.22 ± 2.33	11.81 ± 1.88
Control group ($n = 26$)	8.52 ± 1.50	7.08 ± 1.38	9.12 ± 1.56	7.28 ± 1.43	15.60 ± 2.72	14.36 ± 2.51
t value	0.157	6.847	0.076	6.308	0.042	8.380
Pvalue	0.876	<0.001	0.939	<0.001	0.966	<0.001

admission and discharge, which included disease cognition, self-concept (8 items), and sense of responsibility for self-care (6 items), self-care skills (12 items), and health knowledge level (17 items), and each item is rated as 0, 1, 2, 3, 0, 1, 2, 3, 4 points, the higher the score, the stronger the self-care ability. ③ Complications: observing whether there are any complications such as joint stiffness, muscle atrophy, deep vein thrombosis, and pin tract infection in the two groups during discharge and within one month after discharge.

2.4. Statistical Methods. SPSS 22.0 software was used to analyze the data. The measurement data that conform to the normal distribution are represented by ($\overline{x} \pm s$), and the independent sample t-test is used; categorical variables were represented by the number of cases and percentage (n; %), and the χ^2 test was performed, $P < 0.05$ was considered to be statistically significant.

3. Results

3.1. Comparison of Anxiety and Depression Levels. At the time of admission, there was no significant difference in the anxiety dimension, depression dimension, and total score of anxiety and depression between the two groups ($P > 0.05$). At the time of discharge, the anxiety dimension, depression dimension, and total score of anxiety and depression in the observation group were lower than those in the control group ($P < 0.05$), as shown in Table 2.

3.2. Comparison of Self-Care Abilities. On admission, there was no significant difference in self-care responsibility, self-concept, self-care skills, health knowledge level, and total score between the two groups ($P > 0.05$). When discharged, the self-care responsibility, self-concept, self-care skills, health knowledge level, and total score of the observation group were higher than those of the control group ($P < 0.05$), as shown in Table 3.

3.3. Comparison of Complications. The total incidence of complications in the observation group was lower than that in the control group ($P < 0.05$), as shown in Table 4.

4. Discussion

The infected bone defect is a complication in which infection prevents bone healing. At present, vascularized fibula transplantation, limb shortening followed by distraction osteogenesis, and bone transfer techniques are mainly used in the clinical treatment of large-scale bone defects [4]. Bone defect treatment is mainly bone grafting to repair the bone defect. In the past, autologous cancellous bone grafting can be used to treat limited bone defects. However, when the length of the bone defect reaches 1.5 times the diameter of the diaphysis, it will exceed the critical state of autologous repair, and bone resorption and nonunion often occur. However, in clinical practice, it has high requirements for the operator's operation and clinical experience and also has a large surgical risk. Induction membrane technology is a new method for the clinical treatment of long tubular segmental bone defects. It is widely used in the treatment of patients with large-scale bone defects due to its advantages of low surgical difficulty, short operation time, and fewer postoperative complications. Previous studies [5] have confirmed that it is effective in the treatment of infected bone defects. However, the patient needs to undergo two operations, and the postoperative recovery time is relatively long. Implementing effective health education is of great significance to improving the patient's self-care ability and promoting early recovery. In addition, the patient may be affected by the disease and may be worried about the progress of the disease and surgery. Negative emotions such as anxiety and depression are produced in response to the treatment effect, so effective psychological counseling is essential [6, 7].

Health education is an effective method to enhance patients' awareness of the disease and improve their self-management ability [8]. This research realizes diversified health education based on internet thinking. Through one-to-one explanations, playing treatment and rehabilitation training videos, and introducing complication prevention knowledge in the form of PPT, disease-related information is transmitted to patients. In addition to improving the interest in health education, it can also stimulate the enthusiasm and initiative of patients to receive health education, so as to maximize the effect of health education [9, 10]. In addition, diversifying health education approaches and forms of health education can also meet the health education needs of patients with different characteristics and needs [11, 12]. In the results of this study, the health knowledge level in the self-care ability score of the observation group that implemented diversified health education was significantly higher than that of the control group that implemented routine nursing intervention, and the improvement of the level of health knowledge further enhanced the sense of

Table 3: Comparison of self-care ability between two groups (score, $\overline{x} \pm s$).

Group	Self-care responsibility		Self-concept		Self-care skills		Health knowledge level		Total score	
	When admitted to hospital	When discharged	When admitted to hospital	When discharged	When admitted to hospital	When discharged	When admitted to hospital	When discharged	When admitted to hospital	When discharged
Observation group ($n = 26$)	8.46 ± 1.27	19.62 ± 2.58	17.15 ± 2.36	26.46 ± 3.83	19.23 ± 2.05	32.12 ± 3.77	35.31 ± 2.57	56.04 ± 4.94	80.15 ± 4.81	134.23 ± 7.64
Control group ($n = 26$)	8.35 ± 1.20	14.12 ± 1.88	17.19 ± 2.43	20.15 ± 3.11	19.15 ± 2.13	24.23 ± 2.83	35.27 ± 2.52	45.96 ± 3.45	79.96 ± 3.24	104.46 ± 4.88
t value	0.321	8.785	0.06	6.521	0.138	8.534	0.057	8.530	0.167	16.744
P value	0.750	<0.001	0.952	<0.001	0.891	<0.001	0.955	<0.001	0.868	<0.001

Table 4: Comparison of complications between the two groups [n (%)].

Group	Joint stiffness	Muscle atrophy	Deep vein thrombosis	Total incidence
Observation group ($n = 26$)	0	1 (3.85)	0	1 (3.85)
Control group ($n = 26$)	2 (7.69)	2 (7.69)	2 (7.69)	8 (30.77)
χ^2 value	—	—	—	6.584
P value	—	—	—	0.001

responsibility for self-care, self-concept, and self-care skills which are of great significance in reducing the incidence of complications such as joint stiffness, muscle atrophy, and deep vein thrombosis. It is suggested that diversified health education is beneficial to enhance the self-care ability of patients [13]. As mentioned above, affected by the disease and the particularity of the two surgical treatments, patients are prone to have bad moods. In order to reduce the impact of negative emotions on postoperative rehabilitation, this paper implements psychological nursing under diversified health education, first by introducing the hospital environment, reducing the unfamiliarity of patients, and helping patients adapt to role changes [14]. Then, by assessing their psychological status, targeted psychological counseling can be given to relieve the patient's anxiety and depression. At the same time, by introducing successful cases of treatment, the patients' confidence in the treatment of induced membrane surgery can be improved [15]. It can be seen from the comparison of the degree of anxiety and depression that at the time of discharge, the anxiety dimension, depression dimension, and total score of anxiety and depression in the observation group were lower than those in the control group, indicating that psychological nursing is beneficial to improve the psychological state of patients.

In conclusion, diversified health education combined with psychological nursing is beneficial to reduce negative emotions, improve self-care ability, and reduce the incidence of complications in patients with infectious bone defects treated with induced membrane surgery.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author.

Disclosure

Ni Wang and Ling Wei are the co-first authors.

Conflicts of Interest

The authors declare no conflicts of interest, financial or otherwise.

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Research Article

A Clinical Study on the Use of Yiqi Yangxue Decoction Combined with Chemotherapy to Promote Rapid Postoperative Recovery in Patients with Non-Small Cell Lung Cancer

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Purpose. To observe the promotion effect of Yiqi Yangxue decoction combined with chemotherapy on the rapid recovery of non-small cell lung cancer (NSCLC) patients after surgery. *Methods*. Eighty postoperative NSCLC patients admitted to our hospital from April 2019 to September 2021 were divided into a chemotherapy group ($n = 40$) and a traditional Chinese medicine (TCM) group ($n = 40$) according to a random sampling method. Both groups were treated with surgery and postoperative routine chemotherapy. The TCM group was treated with Yiqi Yangxue decoction, one dose per day, starting from the first day of chemotherapy. Four weeks was a course of treatment, and three courses of treatment were taken continuously. The levels of serum tumour markers (carcinoembryonic antigen (CEA), cytokeratin 19 fragment (CYFRA21-1), carbohydrate antigen 125 (CA-125)), immune function indicators ($CD3^+$, $CD4^+/CD8^+$, and NK cells), Pittsburgh Sleep Quality Index (PSQI) score, and Insomnia Severity Index (ISI) were compared between the two groups before and after treatment, and the clinical efficacy of the two groups was assessed with reference to the WHO efficacy criteria for solid tumours, and the toxic side effects of the two groups were assessed with reference to the WHO classification criteria for the toxic effects of chemotherapeutic drugs. *Results*. After treatment, the levels of CEA, CYFRA21-1, and CA-125 were lower than those before treatment in both groups, and they were lower in the TCM group than in the chemotherapy group ($P < 0.05$). After treatment, the levels of $CD3^+$, $CD4^+/CD8^+$, and NK cells in both groups were higher than before treatment, and they were higher in the TCM group than in the chemotherapy group ($P < 0.05$). After treatment, the PSQI and ISI scores of both the groups were lower than those before treatment, and they were higher in the TCM group than in the chemotherapy group ($P < 0.05$). After treatment, the overall tumour control rate was higher in the TCM group than in the chemotherapy group ($P < 0.05$). During the treatment period, the TCM group showed lower levels of gastrointestinal reactions, leucopenia, anaemia, and neurotoxicity than the chemotherapy group ($P < 0.05$). *Conclusion*. The combination of Yiqi Yangxue decoction combined with chemotherapy for postoperative NSCLC patients can effectively reduce serum tumour marker levels, enhance the body's immune function and sleep quality, and the patient's efficacy and toxicity reduction are obvious, which is conducive to the rapid recovery of many indicators after surgery.

1. Introduction

Lung cancer is the most common malignancy in China and worldwide in terms of incidence and mortality. Non-small cell lung cancer (NSCLC) is the most common histological type of lung cancer, accounting for over 80% of lung cancer cases [1, 2]. The lack of specific clinical manifestations in the early stages of NSCLC and the insensitivity of available screening indicators have been reported, resulting in most patients developing intermediate to advanced stages by the time they are seen [3]. Although surgical resection is currently the primary treatment option, satisfactory results are not yet available and patients still need prolonged chemotherapy after surgery to fight off cancer cells. However, while

Table 1: Comparison of clinical features between the two groups.

Information	Chemotherapy group ($n = 40$)	TCM ($n = 40$)	t/χ^2	P
Age (years old)	53.90 ± 6.80	54.40 ± 5.16	0.370	0.712
Body mass index (kg/m^2)	22.96 ± 2.12	22.86 ± 2.26	0.204	0.839
Male (n, %)	26 (65.00)	24 (60.00)	0.213	0.644
History of smoking (n, %)	17 (42.50)	19 (47.50)	0.202	0.653
Tumour stages (n, %)			0.487	0.485
III	24 (60.00)	27 (67.50)		
IV	16 (40.00)	13 (32.50)		
Pathology type (n, %)			0.202	0.653
Adenocarcinoma	23 (57.50)	21 (52.50)		
Squamous carcinoma	17 (42.50)	19 (47.50)		
Surgical procedure (n, %)			0.237	0.888
Lung lobectomy	25 (62.50)	23 (57.50)		
Pneumonectomy	12 (30.00)	14 (35.00)		
Pulmonary segment resection	3 (7.50)	3 (7.50)		

killing cancer cells, chemotherapy also causes some damage to normal tissue cells, such as gastrointestinal reactions, bone marrow suppression, and other adverse reactions [4].

According to Chinese medicine, the occurrence of tumors is related to the patient's positive qi condition, and weak positive qi is one of the main causes of tumor development. As the saying goes, "When the righteousness exists within, the evil cannot dry up" and "Where the evil comes together, its qi will be deficient." Once a tumour has formed, it can further damage the vital energy, making it even more deficient in qi, blood, yin, and yang. Chemotherapy is a poisonous attack, and although it can be used against lung cancer, it can also disturb the body's qi, deplete the body's vital energy, and damage the body's qi and blood. Yiqi Yangxue decoction is mainly used in the treatment of postpartum blood clots with pain and syncope [5, 6]. Modern research has shown that the herbal medicine Yiqi Yangxue decoction can also inhibit the progression of malignant tumours, reduce adverse effects, improve immune function, and enhance the quality of life. Based on the above, the present study was conducted to observe the effect of Yiqi Yangxue decoction with chemotherapy in promoting the rapid recovery of NSCLC patients after surgery. The report is as follows.

2. Materials and Methods

2.1. General Data. Eighty postoperative NSCLC patients admitted to our hospital from April 2019 to September 2021 were divided into a chemotherapy group ($n = 40$) and a traditional Chinese medicine (TCM) group ($n = 40$) according to a random sampling method. A comparison of the clinical characteristics of the two groups is shown in Table 1, none of which were significantly different and comparable ($P > 0.05$).

2.2. Inclusion Criteria. ① Those who met the diagnostic criteria of the national comprehensive cancer network (NCCN) guidelines for the diagnosis and treatment of non-small cell lung cancer and are diagnosed as NSCLC by imaging and pathological examination [7]; ② patients diagnosed as stage III—IV by the TNM staging criteria [8] of NSCLC; ③ age 18~70 years old; ④ Those who planed to undergo surgical treatment in our hospital without preoperative radiotherapy and chemotherapy; ⑤ those who had accepted the survey with good compliance and completed the assessment.

2.3. Exclusion Criteria. ① Patients and their family members who refused surgical treatment or had chemotherapy contraindications; ② patients with tumors of other organs; ③ primary diseases with other important organs such as the heart, liver, and kidney or serious dysfunction of related organs; ④ patients with infection before operation, such as pulmonary infection and urinary system infection; ⑤ patients who had a history of hormone or immunosuppressant use or complicated with autoimmune diseases within 3 months before operation.

2.4. Medication Regimen. Both groups were treated with operation and routine chemotherapy after operation, while the TCM group was treated with Yiqi Yangxue decoction.

Chemotherapy regimen: Gemcitabine (Jiangsu Haosen Pharmaceutical Co., Ltd.) 100 mg/m^2 was injected intravenously on the first day, once a week. After 3 weeks of continuous use, the drug was stopped for 1 week and then continued to be used. Cisplatin (Jiangsu Haosen Pharmaceutical Co., Ltd.) 80 mg/m^2 was injected intravenously on the first day, once a week. After continuous use for 3 weeks, the drug was stopped for 1 week and then continued to be used. 21 days was a cycle, and the treatment lasted for 3 cycles.

Prescription of Yiqi Yangxue decoction: *Codonopsis pilosula*, *Angelica sinensis*, and Radix Paeoniae Alba each 20 g; *Astragalus membranaceus*, and Caulis Spatholobi each 30 g; Ligusticum wallichii 9 g; Licorice, Pericarpium Citri Reticulatae Viride, and Pericarpium Citri Reticulatae each 6 g. Syndrome differentiation plus or minus: For those with weak spleen qi, add 15 g each of Atractylodes Macrocephala and Poria; For those with liver stagnation and Qi stagnation, add 15 g each of Bupleurum Chinense and Radix Curcumae;

For those with poor appetite, add 30 g each of Grain Sprout and Malt; For those with abdominal distension, add 9 g of Magnolia Officinalis; For those with nausea and vomiting, add 15 g of Inula. Usage: Take 300–400 ml thick decoction of various drugs, take orally twice in the morning and evening, 1 dose per day, take it on the first day of chemotherapy, 4 weeks as a course of treatment, 3 courses in a row.

2.5. Assessment Indicators.

(1) Tumour markers: before and after treatment, 5 ml of fasting elbow vein blood was collected from patients, centrifuged at 3000 r/min for 10 min, and the supernatant was stored at −80°C after completion for testing. The carcinoembryonic antigen (CEA), cytokeratin 19 fragment (CYFRA21-1) and carbohydrate antigen 125 (CA-125) were determined by chemiluminescence immunoassay. The kits were supplied from Wuhan PhD Biological Engineering Company. CEA values of 0–4.3 ng/ml is considered normal, CYFRA21-1 <3.3 ng/ml is considered normal and CA-125 < 35 U/ml is considered normal.

(2) Immune function index: before and after treatment, 5 ml of fasting elbow venous blood was collected from the patient, centrifuged at 3000 r/min for 10 min, and the supernatant was stored at −80°C after completion for measurement. $CD3^+$, $CD4^+$, $CD8^+$, and NK cell levels were measured by BD flow cytometry and the kits were supplied from Wuhan PhD Biological Engineering Company.

(3) Sleep quality: before and after treatment, patients' sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI) [9] score and the Insomnia Severity Index (ISI) [10]. The PSQI scores out of 21 and the ISI scores out of 28, both of which were inversely correlated with sleep quality.

(4) Efficacy assessment: after treatment, the clinical efficacy of the two groups was assessed with reference to the WHO criteria for the efficacy of solid tumours [11]. Complete remission (CR): complete disappearance of the tumour lesion, no new lesion appears and lasts for more than 4 weeks; partial remission (PR): ≥50% shrinkage of the tumour lesion, no new lesion appears and lasts for more than 4 weeks; stable disease (SD): <50% shrinkage of the tumour lesion, ≤25% increase in size, no new lesion appears and lasts for more than 4 weeks; progressive disease (PD): >25% increase in size or new lesion appears. Overall control rate = (CR + PR)/ 40 × 100%.

(5) Toxic side effects: during treatment, the major toxic side effects (gastrointestinal reactions, leukopenia, anaemia, and neurotoxicity) of the two groups were graded 0, I, II, III, and IV with reference to the WHO criteria for grading the toxic side effects of chemotherapeutic drugs [12].

2.6. Statistical Methods. SPSS 20.0 statistical software was used to analyse the data. Statistical information was described in (%) using the χ^2 test and measurement information is expressed in $(x \pm s)$ using the t-test, with $P < 0.05$ being a statistically significant difference.

3. Results

3.1. Comparison of Serum Tumour Markers between the Two Groups. After treatment, the levels of CEA, CYFRA21-1, and CA-125 were lower than those before treatment in both groups, and they were lower in the TCM group than in the chemotherapy group ($P < 0.05$). (Figure 1).

3.2. Comparison of Immune Function Indicators between the Two Groups. After treatment, the levels of $CD3^+$, $CD4^+$/ $CD8^+$, and NK cells in both the groups were higher than before treatment, and they were higher in the TCM group than in the chemotherapy group ($P < 0.05$). (Figure 2).

3.3. Comparison of Sleep Quality between the Two Groups. After treatment, the PSQI and ISI scores of both groups were lower than those before treatment, and they were lower in the TCM group than in the chemotherapy group ($P < 0.05$). (Figure 3).

3.4. Comparison of Clinical Outcomes between the Two Groups. After treatment, the overall tumour control rate was higher in the TCM group than in the chemotherapy group ($P < 0.05$). (Table 2).

3.5. Comparison of Toxic Side Effects between the Two Groups. During the treatment period, the TCM group showed lower levels of gastrointestinal reactions, leucopenia, anaemia, and neurotoxicity than the chemotherapy group ($P < 0.05$). (Table 3).

4. Discussion

NSCLC belongs to the category of "lung accumulation" and "lung rock" in Chinese medicine. Mainly due to the entry of wind and cold evil into the body, causing dysfunction of the lung and spleen, patients suffer from lung qi stagnation, spleen loss of health, qi stagnation, blood stasis and phlegm, which eventually lead to NSCLC. Surgery and chemotherapeutic drugs are the main treatment for NSCLC, but while they remove the evil toxins, they will deplete the body's fluids and blood, resulting in a deficiency of positive energy, so the recurrence rate is still high after surgery, and postoperative treatment still needs to be supplemented with other drugs.

For these conditions, TCM practitioners often use medicines that benefit the Qi and nourish the blood, invigorate the blood, and remove blood stasis. In the Yiqi Yangxue decoction, *Codonopsis pilosula* and *Astragalus* membranaceus can support the body and strengthen the essence, benefit the Qi and nourish the blood, and improve the immunity of the body. Radix Paeoniae Alba has the

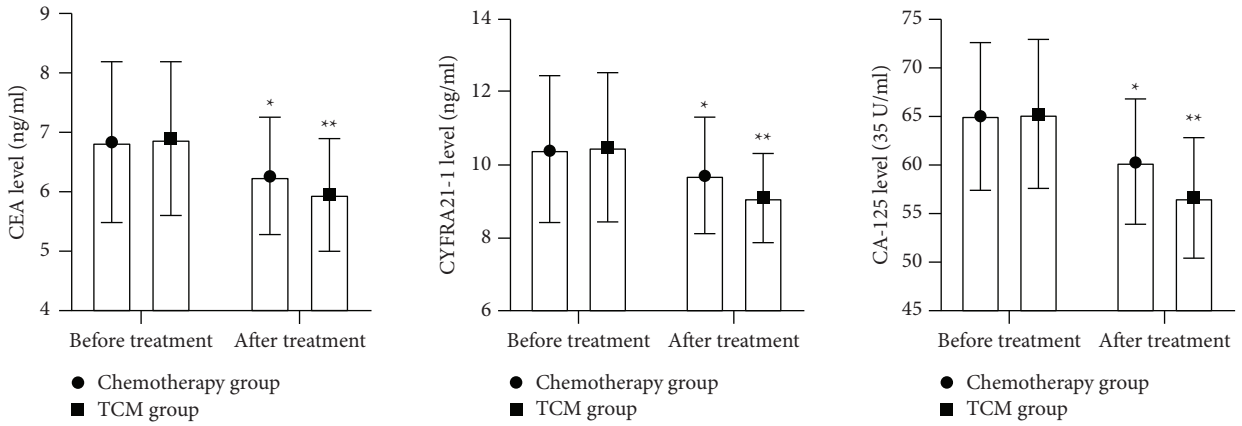

Figure 1: Comparison of serum tumour markers between the two groups. Note: compared with the chemotherapy group before treatment, $^{*}P < 0.05$; compared with the TCM group before treatment and the chemotherapy group after treatment, $^{**}P < 0.05$.

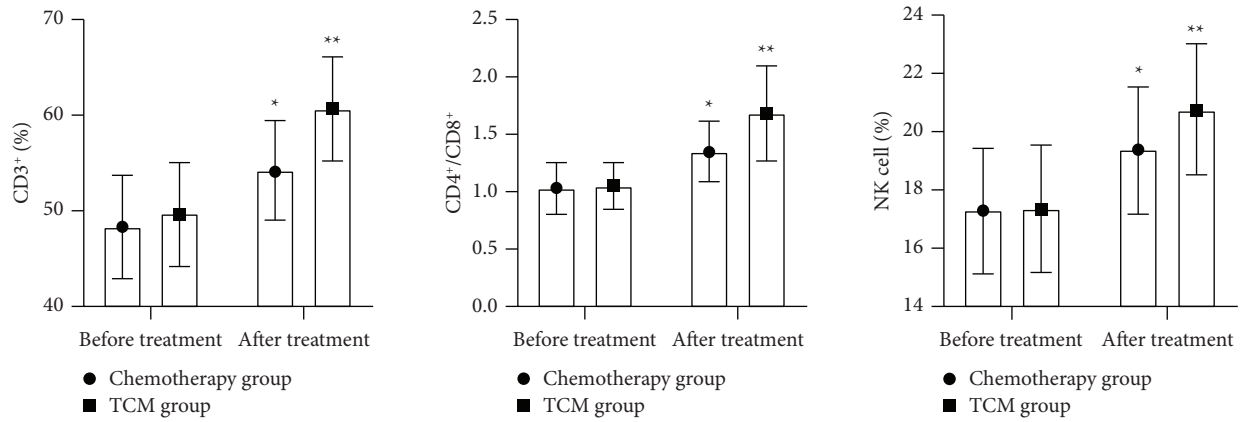

Figure 2: Comparison of immune function indicators between the two groups. Note: compared with the chemotherapy group before treatment, $^{*}P < 0.05$; compared with the TCM group before treatment and the chemotherapy group after treatment, $^{**}P < 0.05$.

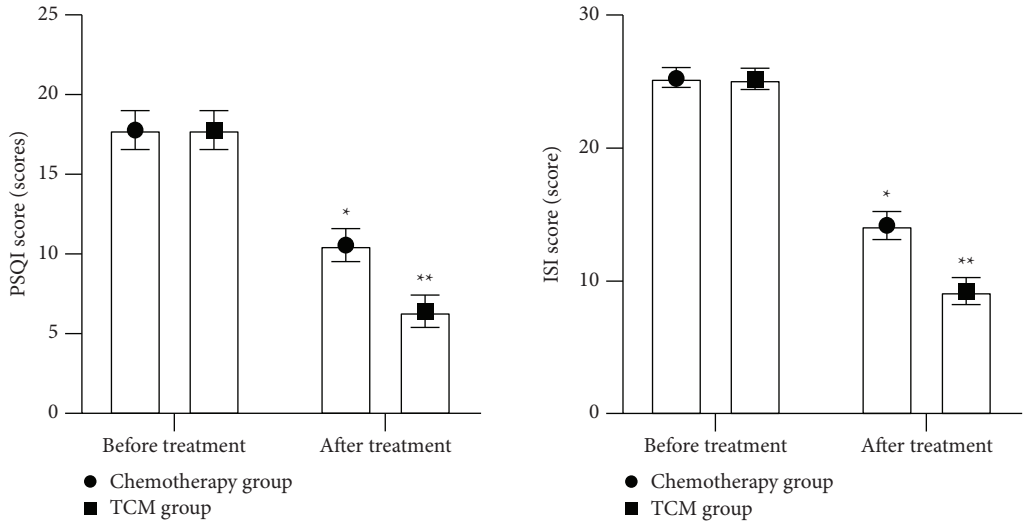

Figure 3: Comparison of sleep quality between the two groups. Note: compared with the chemotherapy group before treatment, $^{*}P < 0.05$; compared with the TCM group before treatment and the chemotherapy group after treatment, $^{**}P < 0.05$.

Table 2: Comparison of clinical outcomes between the two groups (n, %).

Grade	Chemotherapy group ($n = 40$)	TCM group ($n = 40$)	χ^2	P
CR	0 (0.00)	0 (0.00)	—	—
PR	9 (22.50)	18 (45.00)	4.528	0.033
SD	15 (37.5)	16 (40.00)	0.053	0.818
PD	16 (40.00)	6 (15.00)	6.270	0.012
Overall control rate	9 (22.50)	18 (45.00)	4.528	0.033

Table 3: Comparison of toxic side effects between the two groups (n, %).

Group	Gastrointestinal reactions	Leucopenia	Anaemia	Neurotoxicity
Chemotherapy group ($n = 40$)				
0	21 (52.50)	26 (65.00)	27 (67.5)	26 (65.00)
I	8 (20.00)	8 (20.00)	6 (15.00)	8 (20.00)
II	6 (15.00)	4 (10.00)	4 (10.00)	3 (7.50)
III	4 (10.00)	2 (5.00)	2 (5.00)	2 (5.00)
IV	1 (2.50)	0(0.00)	1 (2.50)	1 (2.50)
TCM group ($n = 40$)				
0	31 (77.50)	34 (85.00)	36 (90.00)	35 (87.50)
I	5 (12.50)	4 (10.00)	3 (7.50)	4 (10.00)
II	3 (7.50)	2 (5.00)	1 (2.50)	1 (2.50)
III	1 (2.50)	0 (0.00)	0 (0.00)	0 (0.00)
IV	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)

effects of dispelling wind and dehumidification and has a regulating effect on the improvement of wind cold invasion of the body. Caulis Spatholobi can dispel wind and promote blood circulation, relax muscles and activate collaterals, and promote the recovery of the body. Licorice, Pericarpium Citri Reticulatae Viride, and Pericarpium Citri Reticulatae have antibacterial and anti-inflammatory effects, which can effectively inhibit the occurrence of postoperative inflammation and reduce postoperative tumor recurrence and metastasis. *Angelica sinensis* and Ligusticum wallichii have the function of promoting blood circulation and removing blood stasis, which can restore the normal blood circulation and promote the postoperative recovery. The combination of the above drugs has been proven by modern pharmacological studies [13] to be able to induce apoptosis of tumour cells by enhancing the activity of oxygen free radicals, inhibit the growth and proliferation of tumour cells by blocking the division phase, and enhance the immunity of the body.

Related studies [14–16] pointed out that CEA, CYFRA21-1, and CA-125 are all tumour markers, and their levels are important for the diagnosis of NSCLC disease. The CEA is an acidic glycoprotein found in the membranes of tumour cells differentiated from the fetal intestine and endodermal layers, and is present at high levels in NSCLC and positively correlates with the stage and differentiation of NSCLC metastasis. The CYFRA21-1, mainly a cytokeratin 19 fragment, is commonly found in the lung and the breast epithelium and has the highest sensitivity in squamous lung cancer with an AUC of 0.91. CA-125 is derived from coelom epithelial cells, which is usually used as a tumor marker of ovarian cancer, but its level can also be significantly increased in lung cancer, breast cancer, and colorectal cancer. This shows that all three are of great value in the pathological diagnosis and assessment of the efficacy of NSCLC. The serum CEA, CYFRA21-1, and CA-125 levels of patients in the TCM group were significantly lower than those in the chemotherapy group after treatment in this study. It indicates that chemotherapy supplemented with Yiqi Yangxue decoction treatment significantly inhibited the secretion of tumour markers and promoted postoperative recovery in patients with NSCLC after surgery.

The immune function of the body has a close relationship with the occurrence and development of tumors. When tumors occur, the body can exert antitumor effects through both cellular and humoral immunity [17]. Cellular immunity is mediated by T lymphocytes, mainly through a combination of T cells, NK cells, and macrophages in the body. $CD3^+$ is a common marker on the surface of mature T cells. $CD4^+$ has an auxiliary effect on the expression of T cells. $CD8^+$ can inhibit T cells, inhibit the immune response of the body, and it is conducive to the formation, growth, and metastasis of tumors. NK cells have a broad-spectrum antitumor effect and can kill homologous and heterogeneous tumor cells [18]. Therefore, the detection of T cell subsets and NK cell activity in the peripheral blood of NSCLC patients has certain value for judging the immune function of tumor patients and has certain clinical significance for monitoring tumor recurrence and evaluating prognosis. The results showed that after treatment, the levels of $CD3^+$, $CD4^+/CD8^+$, and NK cells in the TCM group were higher than those in the chemotherapy group. It shows that Yiqi Yangxue decoction can effectively regulate the level of peripheral blood T lymphocytes in patients with NSCLC after chemotherapy and has a positive significance in promoting the rapid recovery of immune function.

The morbidity and mortality of NSCLC increases exponentially in the elderly population over 65 years of age and, due to the complexity of the condition of elderly cancer patients, treatment options for such patients should be more focused on improving their quality of life [19, 20]. However, various toxic side effects of chemotherapy such as gastrointestinal reactions, leukopenia, anaemia, neurotoxicity, hair loss, and sleep disturbances can adversely affect the quality of life of patients [21]. The results of this study show that Yiqi Yangxue decoction not only has significant potency-boosting and toxicity-reducing functions but also significantly improves patients' sleep conditions and enhances sleep quality.

In summary, the combination of Yiqi Yangxue decoction combined with chemotherapy for postoperative NSCLC patients can effectively reduce serum tumour marker levels,

enhance the body's immune function and sleep quality, and the patient's efficacy and toxicity reduction are obvious, which is conducive to the rapid recovery of many indicators after surgery.

Data Availability

The data used to support the findings of this study are available at a reasonable request from the corresponding author.

Disclosure

Junyan Liang and YueWang are the co-first authors.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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Research Article

Analysis of Risk Factors for Postoperative Lower Extremity Deep Venous Thrombosis and its Treatment and Nursing

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Objective. To explore the risk factors of lower extremity deep venous thrombosis (LEDVT) after surgery and discuss the treatment and nursing countermeasures. *Methods*. A retrospective analysis was conducted on 268 surgical patients admitted between July to December 2021. The factors associated with LEDVT were analyzed using the Logistic regression model. Further, LEDVT patients were assigned to a research group treated with targeted nursing to prevent LEDVT and a control group that used routine care. Coagulation function and inflammatory cytokines before and after nursing intervention were compared between groups. The assessment of patients' mobility employed the lower limb motor function part of the Fugel–Meyer Assessment (FMA), Harris Hip Score (HHS), and Barthel index (BI), and their psychological status was evaluated using the Kolcaba's General Comfort Questionnaire (GCQ) and Self-rating Anxiety/Depression Scale (SAS/SDS). Finally, patient satisfaction with the treatment service was investigated. *Results*. Logistic regression analysis showed that hypertension, limb paralysis, central venous catheterization of lower limbs, and bedridden time affect postoperative LEDVT in an independent way ($P < 0.05$). After the intervention, the coagulation function and inflammatory reaction were improved in both groups, with more significant improvement in the research group ($P < 0.05$). The research group also showed higher FMA, Harris, GCQ, and BI scores while lower SAS and SDS scores than the control group postnursing intervention ($P < 0.05$). Finally, a higher satisfaction rate was identified in the research group as compared to the control group ($P < 0.05$). *Conclusion*. Hypertension, limb paralysis, CVC of lower limbs, and bedridden time are all independent risk factors for LEDVT after surgery. The implementation of targeted nursing strategies for the above factors can effectively alleviate the hypercoagulable state of patients after operation, reduce inflammatory responses, and improve patient comfort, which is of great significance for preventing the occurrence of LEDVT.

1. Introduction

Surgery, an important treatment modality in clinical practice, is the only resort for multiple diseases. According to statistics, an average of 2–6 surgical operations are performed every day in grade III-A hospitals [1]. However, this mechanically invasive procedure may negatively affect patients to varying degrees and lead to postoperative complications [2]. Among them, lower extremity deep venous thrombosis (LEDVT) is a very common complication after surgical operation, mainly attributed to reduced physical activity due to limited range of motion, weakened muscle pump, and vascular obstruction caused by invasive procedures [3]. Studies have shown that more than 40% of surgical patients may have LEDVT after surgery, and the incidence rate of LEDVTis increasing year by year [4]. LEDVT may not only have a great negative impact on patients' postoperative rehabilitation but also cause blood supply disorders, resulting in organ dysfunction and disorders, and even sudden cardiac death in severe cases [5]. Because of this, LEDVT has become the focus of medical workers at home and abroad, and how to effectively prevent and control the

occurrence of LEDVT has become a hot spot of modern medical research [6].

As the first line of defense against LEDVT, risk assessment plays a vital part in clinical practice [7]. LEDVT prevention programs for general surgical patients based on accurate risk assessments can minimize the incidence of the LEDVT. However, in clinical practice, nursing staff still lack understanding of the LEDVT risk factor identification, the timing ofLEDVT risk assessment, and the correct use of the LEDVT risk assessment scales [8]. Coupled with a lack of authoritative unified clinical guidelines, all of which leads to inaccurate identification and risk stratification of the LEDVT risk factors in general surgical patients, as well as the negative prevention or excessive prevention is common, greatly affecting the perioperative rehabilitation of patients and the identification of potential risk of the LEDVT [9]. Therefore, an in-depth understanding of the risk factors for LEDVT occurrence, early identification, and accurate risk assessment are of great significance for the prevention and control of LEDVT in patients.

Based on the above-given theory, this study analyzes the risk factors of postoperative LEDVT and discussed the treatment and nursing countermeasures, so as to provide reliable and accurate reference and guidance for future clinical prevention and treatment of the LEDVT.

2. Materials and Methods

2.1. Patient Data. A retrospective analysis was conducted on 268 surgical patients admitted between July to December 2021. Among all the patients, 79 patients developed LEDVT after surgery, of which 36 patients received LEDVT targeted care and were regarded as the research group (RG), and 43 patients received routine post-operative care and were assigned to the control group (CG). This study strictly followed the Declaration of Helsinki, and all subjects signed informed consent.

Diagnostic criteria of LEDVT: ① the clinical manifestations are sudden limb pain, swelling, and increased soft tissue tension; ② the plasma D-D level is above 500 μg/L; ③ the diagnosis is confirmed by Doppler ultrasonography and venography.

2.2. Eligibility Criteria. The enrolled patients (age >18 years) all underwent surgical treatment in our hospital and agreed to participate in this research, with complete medical records. Those meeting any of the following criteria were excluded: blood dysfunction; vascular occlusive diseases; long-term coma without self-consciousness; pregnant and lactating patients; organ dysfunction or disorders; referred patient.2.

2.3. Methods. Routine nursing: nursing staff closely monitor the patient's condition, educate the patient about health knowledge to prevent postoperative complications, and regularly turn the patient over to prevent pressure ulcers. The nursing staff closely monitored the patient's condition, gave the patient health knowledge and education on the prevention of postoperative complications, and regularly turned over the patient to prevent pressure ulcers. Nursing for LEDVT: a LEDVT nursing team was established, with a senior director-level nurse serving as the team leader, and the team members were trained on LEDVT prevention. The nursing staff in the group could only start the practice after passing the theoretical and operational skills assessment. The risk assessment of patients was carried out, the risk factors of LEDVT were summarized, judging whether there are risk factors in patients, and the targeted measures were given. The seriousness and harm of post-operative LEDVT, as well as routine prevention and treatment, were explained to patients and their families by means of health brochures, video broadcasts, in-hospital expert lectures, etc., so as to inform them of the importance of actively cooperating with treatment and enhance their cognition of LEDVT and treatment compliance. For postural nursing, patients were required to raise their feet by 20°–30°, and hot compress and massage were performed on both lower limbs regularly. In addition, they were helped to turn over every 2 hours and encouraged to ambulate as soon as possible, exercise the lower limbs and change their postures more frequently. Patients were also accompanied by nursing staff or family members for indoor walking training, twice a day, with each walking time not exceeding 30 min. Those who were not suitable to get out of bed were instructed to raise their lower limbs, do passive exercises such as flexion and extension and varus-valgus of joints and lower limbs, and massage. Elastic bandages, elastic socks, and air pressure therapy were also given as appropriate. Furthermore, assess the patient's psychological state, provide timely psychological counseling, answer the patient's questions earnestly and eliminate the patient's confusion. Communication with patients and their families was strengthened, and nursing staff helped eliminate patients' negative emotions through encouraging language, music, meditation and relaxation training. More importantly, the patient's dietary regimen was reasonably formulated to prevent platelet aggregation and recurrence of LEDVT. During the intervention period, the team leader and clinicians regularly spot check the work within the team, timely find and solve problems, and constantly summarize and improve the quality of clinical nursing management and service.

2.4. Sample Collection and Testing. Before and after the nursing intervention, fasting peripheral blood was sampled and divided into two parts. One part was tested by an automatic coagulation function analyzer for prothrombin time (PT), activated partial thromboplastin time (APTT), plasma thrombin time (TT), fibrinogen (FIB), and D-dimer (D-D). The other part was used for the determination of high-sensitivity C-reactive protein (hs-CRP), procalcitonin (PCT), and tumor necrosis factor-α (TNF-α) by ELISA after centrifugation for 30 min to obtain serum.

2.5. Evaluation Criteria. The lower limb motor function part of the Fugel–Meyer Assessment (FMA) scale, Harris Hip Score (HHS), and Barthel index (BI) were used to evaluate

the lower limb motor function of the patient, with a total score of 34 points, 100 points, and 100 points, respectively. The score of each scale is in direct proportion to the motor function. Patient comfort (Kolcaba's General Comfort Questionnaire, GCQ) and psychological states (Self-Rating Anxiety/Depression Scale [SAS/SDS]) were also evaluated. The total score of GCQ is 28–112 points, and the score is positively related to the comfort level. For SAS and SDS, the score is converted by multiplying the score by 1.25, with a total score of 0–100 points. Higher scores suggest more serious anxiety and depression. An anonymous satisfaction survey was conducted upon the discharge of patients. According to the score, the satisfaction was divided into very satisfied (>80 points), basically satisfied (60–80 points), or dissatisfied (<60 points). Total satisfaction rate = (very satisfied + basically satisfied)cases/total cases × 100%.

2.6. Endpoints. (1) The related factors affecting the occurrence of LEDVT after surgery were analyzed; (2) alterations of coagulation function, inflammatory cytokines (ICs), mobility, and psychological states were recorded before and after the nursing intervention; (3) patients' satisfaction with treatment services was investigated at discharge.

2.7. Statistical Methods. Data were statistically analyzed by SPSS22.0, and differences with $P < 0.05$ were considered significant in this study. A Chi-square test was used for intergroup comparison of count data expressed as (%) or [n (%)]. For measurement data recorded in the form of $(\bar{\chi} \pm s)$, the intergroup and within-group differences were identified by independent sample t-test and paired t-test, respectively. Relative risk factors were analyzed using the Logistic regression model.

3. Results

3.1. Univariate Analysis of Factors Influencing the Occurrence of LEDVT. First, 268 patients were assigned to either the DVT group ($n = 79$) or the non-DVT group ($n = 189$) according to the occurrence of LEDVT, followed by a univariate analysis. As shown in Table 1, the two groups showed no statistical difference in sex, disease type, and operation type ($P > 0.05$), which indicated that none of the above indexes was a single factor affecting the occurrence of LEDVT. However, the DVT group had higher age, BMI, hypertension, limb paralysis, central venous catheterization (CVC) of lower limbs, and bedridden time than the non-DVT group ($P < 0.05$), suggesting that these indicators were single factors affecting the occurrence of LEDVT.

3.2. Multivariate Analysis of Factors Affecting the Occurrence of LEDVT. After assigning the above-mentioned indicators with differences (Table 2) and inputting them into SPSS, Logistic regression analysis was carried out with whetherLEDVT occurred or not as an independent variable and other indexes as covariates. The output results showed that age and BMI were not independent factors for postoperative LEDVT ($P > 0.05$), but hypertension, limb paralysis, CVC of lower limbs and bedridden time were ($P < 0.05$; Table 3).

3.3. Comparison of Coagulation Function before and after Nursing Intervention. The coagulation function parameters TT, PT, APTT, FIB, and D-D were not statistically different between groups before intervention ($P > 0.05$). TT, PT, and APTT elevated notably in both cohorts after the intervention and were higher in RG compared with CG ($P < 0.05$); while obvious decreases in FIB and D-D were observed in both cohorts, with lower values in RG ($P < 0.05$; Figure 1).

3.4. Comparison of ICs before and after Intervention. The test results of ICs showed no evident differences in hs-CRP, PCT, and TNF-α between groups before intervention ($P > 0.05$). But the levels of these ICs reduced markedly in both cohorts, especially in RG ($P < 0.05$; Figure 2).

3.5. Comparison of Mobility before and after Intervention. The FMA, HHS, and BI scores were found to be similar in the two groups before intervention ($P > 0.05$). However, all the three scores elevated remarkably after intervention ($P < 0.05$), with more obvious increases in RG ($P < 0.05$; Figure 3).

3.6. Comparison of Psychological States before and after Intervention. GCQ, SAS, and SDS scores differed insignificantly between the two groups before intervention ($P > 0.05$). After the intervention, the GCQ score increased and the SAS and SDS scores decreased in both cohorts ($P < 0.05$), and the increase in GCQ score and decreases in SAS and SDS scores were more significant in RG ($P < 0.05$; Figure 4).

3.7. Comparison of Satisfaction. The satisfaction survey results are shown in Table 4. 66.67% of patients in RG were very satisfied with the intervention, and 34.88% of patients in CG. The overall satisfaction rate in RG was 94.44%, a rate higher than that of 79.07% in CG ($P < 0.05$).

4. Discussion

LEDVT, as one of the most commonly seen postoperative complications, has an increasing incidence in recent years with the popularity of surgery [10]. At present, although there are some clinical studies on the prevention and treatment of LEDVT [11–13], the results are not completely consistent, and there is still great controversy about the postoperative response measures. In this study, significant and excellent results have been achieved in the prevention of postoperative LEDVT through analyzing the related factors and implementing targeted prevention and care strategies. Hence, this research has important reference significance for the followup clinical research and the formulation of LEDVT prevention and treatment strategies.

We first analyzed factors associated with postoperative LEDVT. The results showed that hypertension, limb

Table 1: Univariate analysis of factors influencing the occurrence of LEDVT.

Factors	DVT group ($n = 79$)	No DVT group ($n = 189$)	χ^2	P
Age (year)			30.560	<0.001
<60	41 (51.90)	159 (84.13)		
≥60	38 (48.10)	30 (15.87)		
BMI (kg/m^2)			9.927	0.002
<25	43 (54.43)	140 (74.07)		
≥25	36 (45.57)	49 (25.93)		
Gender			0.008	0.780
Male	42 (53.16)	104 (55.03)		
Female	37 (46.84)	85 (44.97)		
Limb paralysis			85.630	<0.001
Yes	56 (70.89)	26 (13.76)		
No	23 (29.11)	163 (86.24)		
Concomitant disease			9.263	0.026
Diabetes	22 (27.85)	69 (36.51)		
Hypertension	41 (51.90)	61 (32.28)		
Coronary heart disease	8 (10.13)	29 (15.34)		
None	8 (10.13)	30 (15.87)		
CVC of lower limbs			22.950	<0.001
Yes	41 (51.90)	42 (22.22)		
No	38 (48.10)	147 (77.78)		
Type of surgery			0.636	0.959
Brain surgery	8 (10.13)	16 (8.47)		
Thoracotomy	23 (29.11)	62 (32.80)		
Abdominal surgery	27 (34.18)	60 (31.75)		
Bone surgery	17 (21.52)	43 (22.75)		
Other	4 (5.06)	8 (4.23)		
Bedridden time (d)			17.070	<0.001
≤5	42 (53.16)	148 (78.31)		
>5	37 (46.84)	41 (21.69)		

Table 2: Assignment for multivariate analysis of factors.

Influencing factors	Assignment
Age (year)	<60 = 0, ≥60 = 1
BMI (kg/m^2)	<25 = 0, ≥25 = 1
Limb paralysis	No = 0, Yes = 1
Combined hypertension	No = 0, Yes = 1
CVC of lower limbs	No = 0, Yes = 1
Bedridden time (d)	≤5 = 0, >5 = 1

paralysis, CVC of lower limbs, and bedridden time were all independent risk factors for LEDVT after surgery. First of all, it is well known that hypertension, as a very common underlying chronic disease, has more than 100 million cases worldwide [14]. The presence of hypertension can make the blood circulation in the patient's body in a long-term high pressure state, which leads to the generation of internal shear force of the blood vessel wall, resulting in vascular stenosis and sclerosis, and eventually thrombosis [15, 16]. Therefore, the possibility of LEDVT would be significantly increased in hypertensive patients, which is consistent with previous research results and supports our results [17, 18]. On the other hand, patients with paralysis are naturally at increased risk of LEDVT because their mobility is completely lost. Similarly, the findings of Desmukh's team also suggest that limb paralysis is a risk factor for LEDVT [19]. Lower extremity CVC is a mechanical invasive procedure, which has been repeatedly confirmed to cause LEDVT [20, 21] and is related to the destruction of intravascular stability and the increased risk of infection. Finally, for the bedridden time, it is also associated with the reduction of limb mobility and muscle pump as described above, thus also contributing to an increased risk of LEDVT. Based on the above results, we believe that the core of LEDVT prevention and treatment includes the following three points: (1) focusing on the relief of basic chronic vascular diseases; (2) strengthening patients' post-operative activities, and enhancing muscle pumps; (3) avoiding mechanical invasive procedures as much as possible.

Then, in view of the above conclusions, we formulated nursing strategies for preventing and treating postsurgical LEDVT and put them into clinical use. The evaluation results showed that RG receiving targeted nursing had higher TT, PT, and APTT than CG treated by conventional nursing, with lower FIB, D-D, hs-CRP, PCT, and TNF-α levels. The results showed that the coagulation function in RG was better and the inflammation in RG was less after the nursing intervention, which indicated that the targeted nursing implemented in this study could effectively alleviate the hypercoagulable blood state and inflammatory reaction injury of patients after surgery, and promote the postoperative rehabilitation of patients. Due to the lack of activity of the lower limbs caused by long-term bedridden, the blood flow slowed down and stagnated, and the blood showed a

Table 3: Multivariate analysis of factors affecting the occurrence of LEDVT.

Influencing factors	B	S.E.	Wald χ^2	P	OR	95%CI
Age	0.892	0.742	1.445	0.637	2.440	0.569–10.447
BMI (kg/m^2)	0.663	0.429	2.388	0.421	1.940	0.837–4.498
Limb paralysis	0.742	0.346	4.599	<0.001	2.100	1.065–4.137
Combined hypertension	0.701	0.340	4.251	<0.001	2.015	1.035–3.925
CVC of lower limbs	0.711	0.211	11.354	<0.001	2.036	1.346–3.078
Bedridden time	0.439	0.214	4.208	<0.001	1.551	1.019–2.359

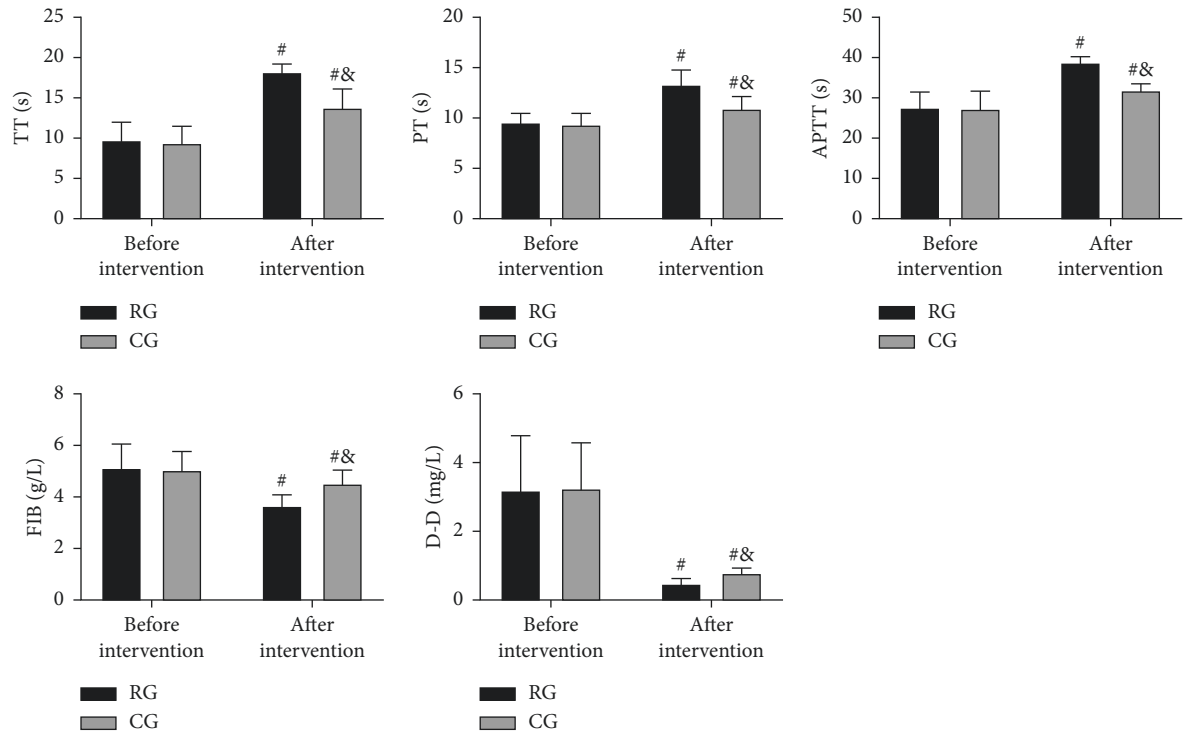

Figure 1: Comparison of coagulation function before and after the nursing intervention. (a) TT comparison between the two groups. (b) PT comparison between the two groups. (c) APTT comparison between the two groups. (d) FIB comparison between the two groups. (e) D-D comparison between the two groups. $^{\#}$means comparison with before intervention ($P < 0.05$), $^{\&}$means comparison with RG ($P < 0.05$).

hypercoagulable blood state [22]. At the same time, due to the mechanical operation, the inflammatory injury reaction in the body is intensified [23]. While increasing the mobility of patients' limbs through active posture nursing, massage, and activity guidance, the targeted nursing developed in this study can promote blood circulation and reduce blood hypercoagulability and inflammation, thus preventing thrombosis. In addition, the nursing strategy provides patients and their families with comprehensive health education, standardized postural care, and early preventive nursing intervention, so that patients and their families can learn more about postoperative recovery and LEDVT, improve patient compliance and ensure that patients are always in a scientific posture after surgery. The risk factors of venous thromboembolism can be reduced by the scientific functional exercise of the affected limb. This can also be confirmed by the physical mobility scores of the two groups. Moreover, after nursing, the GCQ score of RG increased, and the SAS and SDS scores of RG decreased, which also indicated that the nursing strategy could mitigate patients' bad mood and enhance their physical comfort. The main reason is that the nursing project pays attention to the psychological state of patients, which helps patients to solve their own psychological problems, adjust their psychological state, and alleviated the patients' bad mood caused by their illness. At the same time, reasonable nursing strategies can alleviate the symptoms of physical discomfort such as limb pain and itching, improve the patient's physical comfort, and further reduce the adverse effects of physical discomfort on patients' psychology and quality of life. Finally, the improvement in the treatment satisfaction of RG again verified the success of this strategy, indicating that it is worthy of future clinical promotion.

However, there are still many limitations to be improved in this research. Because of the short experimental period, we are unable to evaluate the long-term prognosis of patients for the time being. And, due to the lack of clinical guidelines, the nursing strategy to prevent LEDVT needs to be

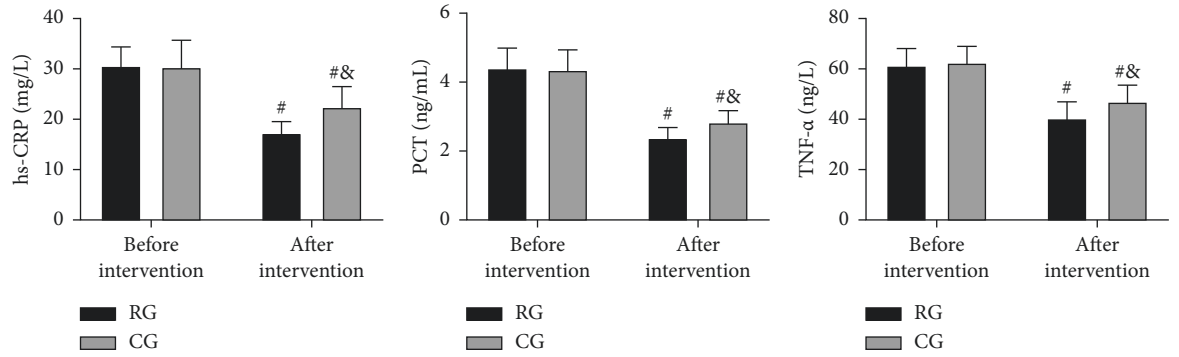

Figure 2: Comparison of ICs before and after an intervention. (a) hs-CRP comparison between the two groups. (b) PCT comparison between the two groups. (c) TNF-α comparison between the two groups. $^{\#}$means comparison with before intervention ($P < 0.05$), $^{\&}$means comparison with RG ($P < 0.05$).

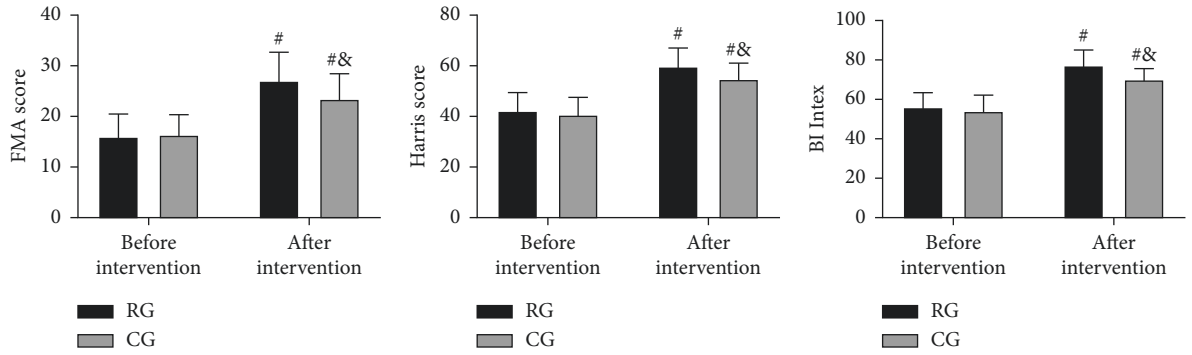

Figure 3: Comparison of mobility before and after an intervention. (a) FMAscore comparison between the two groups. (b) HHS score comparison between the two groups. (c) BI index comparison between the two groups. $^{\#}$means comparison with before intervention ($P < 0.05$), $^{\&}$means comparison with RG ($P < 0.05$).

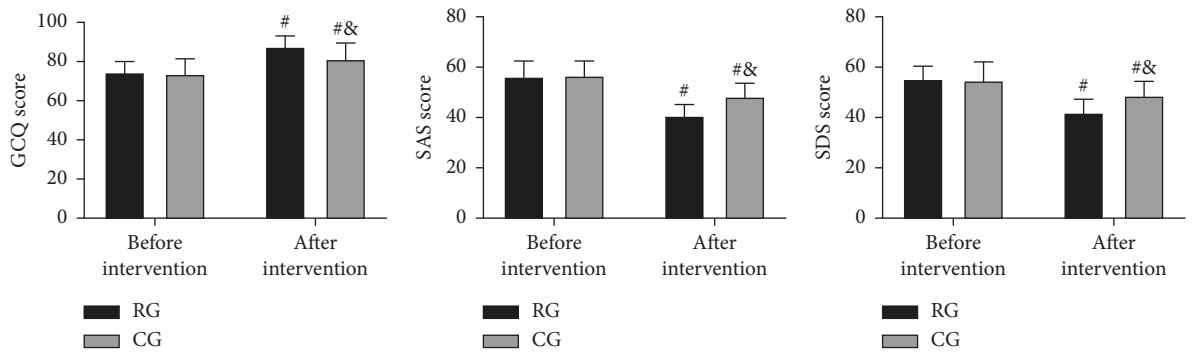

Figure 4: Comparison of psychological states before and after an intervention. A)GCQscore comparison between the two groups. (B) SASscore comparison between the two groups. (C) SDSscorecomparison between the two groups. $^{\#}$ means comparison with before intervention ($P < 0.05$), $^{\&}$ means comparison with RG ($P < 0.05$).

Table 4: Comparison of satisfaction.

Group	Very satisfied	Basically satisfied	Dissatisfied	Overall satisfaction rate
RG ($n = 36$)	24 (66.67)	10 (27.78)	2 (5.56)	94.44%
CG ($n = 43$)	15 (34.88)	19 (44.19)	9 (20.93)	79.07%
χ^2				3.865
P				0.049

continuously improved and optimized. Finally, we need to expand the number of cases to obtain more representative results, in order to provide a reference for clinical practice.

In conclusion, hypertension, limb paralysis, CVC of lower limbs, and bedridden time are all independent risk factors for LEDVT after surgery. The implementation of targeted nursing strategies for the above factors can effectively alleviate the hypercoagulable state of patients after operation, reduce inflammatory responses, and improve patient comfort, which is of great significance for preventing the occurrence of LEDVT.

Data Availability

The raw data supporting the conclusion of this article will be available by the corresponding author upon request.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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Retraction

Retracted: Risk Factors of Urinary Pathogenic Bacteria Infection after Benign Prostatic Hyperplasia Surgery and Curative Effect Analysis of Shuangdong Capsule Intervention

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] B. Xu, M. Liu, Y. Liu, and J. Zuo, "Risk Factors of Urinary Pathogenic Bacteria Infection after Benign Prostatic Hyperplasia Surgery and Curative Effect Analysis of Shuangdong Capsule Intervention," *Emergency Medicine International*, vol. 2022, Article ID 4069787, 7 pages, 2022.

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Research Article

Risk Factors of Urinary Pathogenic Bacteria Infection after Benign Prostatic Hyperplasia Surgery and Curative Effect Analysis of Shuangdong Capsule Intervention

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Benign prostatic hyperplasia (BPH) is a common and frequently occurring disease in clinics, with the main manifestations including frequent micturition, urinary incontinence, dysuria, and endless urination. Transurethral resection of the prostate (TURP) is the main treatment for BPH, but some patients are prone to urinary tract infection after surgery, which affects the prognosis. Therefore, it is of great significance to study the pathogenic characteristics and risk factors of postoperative urinary-derived pathogenic bacteria infection in patients with BPH for the prevention and treatment of postoperative infection. In addition, the treatment of patients with this disease is also the focus of clinical attention. Long-term massive application of antibiotics can induce drug-resistant mutations of bacteria, so it is urgent to find an efficient and safe therapeutic scheme in clinics. However, traditional Chinese medicine (TCM) has a long history of treating urinary tract infections. Therefore, Shuangdong capsule, a traditional Chinese medicine preparation, was selected for the combined treatment in this study. The results showed that age, concomitant diabetes mellitus, and preoperative prophylactic application of antibiotics were the independent risk factors for postoperative urine-derived pathogenic infection in BPH patients. Clinical intervention for BPH patients with concomitant risk factors should be emphasized in clinical practice. The combined use of Shuangdong capsule and conventional western medicine can improve the clinical symptoms and inflammatory reactions of postoperative urine-derived pathogenic infection in BPH patients. Due to its exact curative effect and high safety, it is worthy of promotion. The clinical study registration number is M2022019.

1. Introduction

Benign prostatic hyperplasia (BPH) is a common male disease in the clinic and occurs more frequently in the middle-aged and elderly [1]. There are no typical symptoms of BPH in the early stage due to the compensatory effect of the body. However, with the progression of the disease, BPH can aggravate the degree of urinary obstruction, resulting in frequent micturition, urinary incontinence, dysuria, and endless urination [2]. Currently, patients with BPH are mainly treated with transurethral resection of the prostate (TURP). Although the clinical effect of TURP is very obvious, some patients are prone to urinary-derived infection after surgery under the influence of advanced age, concomitant underlying diseases, and other factors [3].

Antibiotics are mainly used in the treatment of urinary tract infection after BPH operation in western medicine [4]. However, with the extensive use of antimicrobial agents in clinical practice in recent years, some pathogenic bacteria have developed strong resistance to conventional antimicrobial agents, which brings certain difficulties to the treatment of urinary tract infections [5]. In order to improve the clinical treatment effect and reduce the treatment efficacy of patients, the related research subsequently changed its

research direction and further explored the field of traditional Chinese medicine [6]. TCM believes that urinary tract infection falls into the category of "stranguria," mainly caused by damp-heat stagnation. Shuangdong capsule has the effects of clearing heat and stranguria, replenishing qi, and nourishing yin, which has the ideal clinical curative effect on alleviating or relieving the damp-heat in lower energizer and deficiency of both qi and yin [7]. Shuangdong capsule is mainly used to reduce or relieve the symptoms of frequent micturition, urgent urination, burning and stabbing pain in the urethra, and yellow urination caused by acute mild and moderate simple lower urinary tract infection [8]. However, few studies have reported the efficacy of this drug in the treatment of urinary tract infection after TURP. In this study, we analyzed the urinary pathogenic bacteria infection and risk factors in patients with BPH after surgery and further explored the efficacy of Shuangdong capsule intervention, in order to provide a basis for the prevention and treatment of postoperative urinary infection. The results are now reported as follows.

2. Materials and Methods

2.1. General Information. A total of 92 patients with BPH who received surgical treatment in our hospital from January 2022 to May 2022 were selected as the research subjects. Their ages were from 47 to 75 years, and the average age was (69.74 ± 10.33) years. The course of disease was from 2 to 15 years, with an average course of (9.35 ± 2.24) years. The volume of the prostate was 35 to 90 cm^3, with an average of (58.64 ± 12.39) cm^3. The preoperative International Prostate Symptom Score (IPSS) was 19 to 30 points, with an average score of (23.13 ± 3.15) score.

2.2. Inclusion Criteria. Inclusion criteria were as follows: ① All of them had the main symptoms of frequent micturition, urgent urination, nocturia, and dysuria and were confirmed as BPH by color Doppler ultrasound and cystoscope tests. ② Patients with indications for transurethral resection of the prostate and undergoing surgical treatment, specifically including those with no improvement after regular drug treatment; patients with BPH with residual urine more than 50 ml measured by B-ultrasound; residual urine increased due to prostatic hyperplasia, repeated urinary tract infections, and bladder stones formed due to excessive residual urine; patients with urinary retention, etc. ③ There was no infection before operation. ④ There was no history of drug allergy. ⑤ This study was approved by the Medical Ethics Committee of the hospital. The patients and their families knew the situation and signed the informed consent form.

2.3. Exclusion Criteria. Exclusion criteria were as follows: ① patients with prostate cancer or reproductive tract cancer; ② those with diseases such as urinary system deformity, obstruction, and tumor discovered through B-scan ultrasonography or relevant examinations in the medical history; ③ those accompanied with bladder calculi; ④ patients with a history of urethral surgery before entering the group; ⑤ patients with incomplete clinical data and follow-up data.

2.4. Pathogen Culture and Identification. The infection status of urine-derived pathogenic bacteria after prostatectomy was counted. The urine samples collected from the patients in the middle stage of prostatectomy were sampled, separated, and cultured, and the strains were identified using ATB microbiological assay device manufactured by French BioMeria.

2.5. Collection of Baseline Information. Clinical data of all patients were collected through electronic medical records: ① general information: age, course of the disease, BMI, prostate volume, and IPSS score; ② combined basic conditions: diabetes mellitus, hypertension, and coronary heart disease; ③ surgical conditions: whether the urethral catheterization was conducted before the operation, the operation time, and the time of indwelling catheter after the operation; prophylactic application of antibiotics before surgery.

2.6. Treatment Methods. Patients after surgery were divided into control group and study group according to different treatment methods. Levofloxacin was used in the basic treatment in control group (Changchun Serene Pharmaceutical Co., Ltd., GuoYaoZhunZi H20203307, specification: 0.5 g). Oral administration: 200 mg/time, 3 times/d. On this basis, the research group orally took Shuangdong capsule (produced by Guizhou Remote Pharmaceutical Co., Ltd., GuoYaoZhunZi Z20120030, with the specification of 0.30 g/granule). Oral administration: 3 capsules/time, 3 times/day. Patients in both groups received medication continuously for 10 d.

2.7. Observation Indicators

(1) Clinical efficacy: the efficacy was evaluated according to the symptom score in traditional Chinese medicine (TCM). Symptoms included frequent urination, burning, and painful urination, dripping wet and unsmooth urination, abdominal distension, and pain due to limited appetite; Secondary symptoms included soreness of waist, low grade fever, distension of lower abdomen, bitter and dry mouth, emotional disturbance, constipation, red tongue, white or slightly greasy coating, and wiry and rapid pulse. The main symptoms were classified as asymptomatic (0 point), mild (2 points), moderate (4 points), and severe (6 points). For secondary symptoms, no symptoms indicated 0 points, mild 1 points, moderate 2 points, and severe 3 points. After treatment, the clinical symptoms and physical signs completely disappeared and the syndrome score decreased by more than 90% as compared with that before treatment meant recovery. After treatment, the symptoms and physical signs were significantly

improved, and the decrease of syndrome score by 70%–89% as compared with that before treatment was considered as marked effect. Symptoms and physical signs were improved after treatment, and reduction of syndrome score by 30%–69% was considered effective. If there is no significant improvement in symptoms and physical signs after treatment and the syndrome score is less than 30% lower than that before treatment, it is considered ineffective [9]. Total effective rate = recovery rate- + marked effective rate + effective rate.

(2) Urine sediment leukocytes: mid-morning urine was taken in the morning, the urine samples were inoculated on blood agar plates with a quantitative inoculation ring, and the plates were placed in a 37°C greenhouse incubator for cultivation for 24 h; then, we take out the plate and count the number of colonies. Positive criteria: the number of bacteria in the clean midsection urine discharged from the urethra should not exceed 1×10^3 CFU/mL [10].

(3) Serum inflammatory factors: five milliliters of venous blood were collected from patients in the study group before and after treatment in a vacuum blood collection tube containing anticoagulant (K2-EDTA). After thorough mixing, the levels of serum-α (tumor necrosis factor (TNF, TNF-α), interleukin-6 (IL-6), and procalcitonin (PCT) were determined by enzyme-linked immunosorbent assay (ELISA). The detection steps included dilution, incubation after the addition of horseradish peroxidase, plate washing, addition of substrates *A* and *B*, incubation in the dark, addition of stop solution, and determination of OD value at a wavelength of 450 nm.

(4) Adverse reactions: the drug-related adverse reactions observed in the patients during the treatment were recorded in details, including abdominal pain, diarrhea, and dry mouth.

2.8. Statistical Methods. SPSS22.0 software was used for processing. The continuous variable data of experimental data were expressed as mean standard deviation ($\overline{x} \pm s$) and adopted *t*-test. The classified variable data and descriptive analysis were expressed as (%) and adopted χ^2 test. A multivariate logistic regression model was used to analyze the significant factors in single factor analysis. The test level was $\alpha = 0.05$, and $P < 0.05$ indicated that the difference was significant.

3. Results

3.1. Univariate Analysis of Postoperative Urinary Pathogenic Bacteria Infection in Patients with BPH. Forty of 92 BPH patients (43.48%) developed urinary pathogenic bacteria infection after the operation.

Univariate analysis showed that there was no significant difference in BMI, course of the disease, IPSS, concomitanthypertension, and intraoperative blood loss between the infected group and the noninfected group ($P > 0.05$). Age, prostate volume, concomitant diabetes mellitus, preoperative prophylactic application of antibiotics, preoperative catheterization, operation time, and postoperative indwelling catheter time were the single factors affecting postoperative urine-derived pathogenic bacteria infection in BPH patients ($P < 0.05$, Table 1).

3.2. Variable Assignment. The risk of infection was taken as a dependent variable, and the factors with significant differences in Table 1 were taken as independent variables to be included in the logistic regression model. The assignments of the dependent variable and independent variable are shown in Table 2.

3.3. Analysis of Multiple Factors Affecting Postoperative Urinary-Derived Pathogenic Bacteria Infection in Patients with BPH. Multivariate analysis showed that age, concomitant diabetes mellitus, and preoperative prophylactic application of antibiotics were the independent risk factors for postoperative urine-derived pathogenic infection in BPH patients ($P < 0.05$, Table 3).

3.4. Urine-Derived Pathogenic Bacteria Infection and Distribution in BPH Patients after Operation. A total of 76 pathogenic bacteria were isolated from 40 urine samples as shown in Table 4, including 43 Gram-negative bacteria (56.58%), 29 Gram-positive bacteria (38.16%), and 4 fungi (5.26%).

3.5. Comparison of Clinical Effects of Patients with Different Treatment Methods. The total clinical effective rate of patients in the research group was significantly higher than that in the control group ($P < 0.05$, Table 5).

3.6. Comparison of Urinary Leukocytes and Serum Inflammatory Factors in Patients with Different Treatment Methods before and after Treatment. There was no significant difference in the levels of urinary leukocytes and serum inflammatory factors between the two groups before treatment ($P > 0.05$). After the treatment, the levels of urinary leukocyte, TNF-α, IL-6, and PCT in the research group of patients were lower than those before treatment and the levels of various indicators in the research group were lower than those in the control group ($P < 0.05$, Table 6).

3.7. Comparison of the Safety of Different Treatment Methods. No drug-related adverse reactions were observed in the two groups during the treatment.

4. Discussion

At present, the incidence of BPH increases year by year with the aging of the global population [11]. Surgical treatment is the main method for clinical treatment of BPH. However, patients are prone to postoperative infectious complications

Table 1: Univariate analysis of postoperative urinary pathogenic bacteria infection in patients with BPH.

Clinical features		Infected group ($n = 40$)	Noninfected group ($n = 52$)	χ^2/t	P
Age (years old)	<60	6 (15.00)	40 (76.92)	34.677	<0.001
	≥60	34 (85.00)	12 (23.08)		
BMI (Kg/m^2)	<24	19 (47.50)	24 (46.15)	0.016	0.898
	≥24	21 (52.50)	28 (53.85)		
Course of disease (year)		9.42 ± 2.17	9.49 ± 2.19	0.154	0.879
IPSS (score)		24.18 ± 3.95	24.56 ± 3.71	0.475	0.636
Prostate volume (cm^3)	<60	5 (12.50)	41 (78.85)	39.808	<0.001
	≥60	35 (87.50)	11 (21.15)		
Concomitant diabetes mellitus	No	7 (17.50)	42 (80.77)	36.356	<0.001
	Yes	33 (82.50)	10 (19.23)		
Concomitant hypertension	No	26 (65.00)	33 (63.46)	0.023	0.879
	Yes	14 (35.00)	19 (36.54)		
Concomitant coronary heart disease	No	25 (62.50)	30 (57.69)	0.217	0.641
	Yes	15 (37.50)	22 (42.31)		
Preoperative catheterization	No	9 (22.50)	20 (38.46)	5.655	0.017
	Yes	31 (77.50)	22 (42.31)		
Preoperative prophylactic application of antibiotics	No	32 (80.00)	16 (30.77)	21.960	<0.001
	Yes	8 (20.00)	36 (69.23)		
Operation time (min)	<60	11 (27.50)	44 (84.62)	30.676	<0.001
	≥60	29 (72.50)	8 (15.38)		
Intraoperative blood loss (ml)	<50	8 (20.00)	39 (75.00)	1.360	0.244
	≥50	32 (80.00)	13 (25.00)		
Postoperative indwelling catheter time (d)	<7	4 (10.00)	39 (75.00)	38.372	<0.001
	≥7	36 (90.00)	13 (25.00)		

Table 2: Variable assignment of risk factors affecting postoperative urinary pathogenic bacteria infection in BPH patients.

Variable	Assignment
Dependent variable	
Infected	0 = no, 1 = yes
Independent variable	
Age	0 = <60 years old, 1 = ≥60 years old
Prostate volume	0 = <60 cm^3, 1 = ≥60 cm^3
Concomitant diabetes mellitus	0 = No, 1 = Yes
Preoperative catheterization	0 = No, 1 = Yes
Preoperative prophylactic application of antibiotics	0 = No, 1 = Yes
Operation time	0 = <60 min, 1 = ≥60 min
Postoperative indwelling catheter time	0 = <7 d, 1 = ≥7 d

Table 3: Analysis of multiple factors affecting postoperative urinary-derived pathogenic bacteria infection in patients with BPH.

Variable	β	SE	Wald χ^2	P	OR	OR of 95% CI	
						Upper limit	Lower limit
Age	−3.728	1.866	3.990	0.046	0.024	0.001	0.932
Prostate volume	−4.179	2.035	4.215	0.040	0.015	0.000	0.828
Concomitant diabetes mellitus	−3.188	1.580	4.073	0.044	0.041	0.002	0.912
Preoperative catheterization	−2.172	1.596	1.853	0.173	0.114	0.005	2.599
Preoperative prophylactic application of antibiotics	−4.468	1.646	7.371	0.007	0.011	0.000	0.289
Operation time	−2.733	1.586	2.971	0.085	0.065	0.003	1.454
Postoperative indwelling catheter time	−1.758	1.744	1.017	0.313	0.172	0.006	5.257
Constant	12.996	4.401	8.722	0.003	814.701	—	—

such as incision infection and urethral infection, which affects the recovery of patients [12]. Therefore, exploring the pathogen distribution and risk factors of postoperative urinary tract infection in patients with benign prostatic hyperplasia and formulating an effective prevention and treatment plan based on the pathogen distribution is conducive to taking targeted measures to prevent and treat urinary tract infection in the clinic.

The results of this study showed that the infection rate in 92 patients with BPH was 43.48% and the incidence of urinary tract infection was similar to the results of the previous study. It can be seen that patients with BPH have a

Table 4: Urine-derived pathogenic bacteria infection and distribution in BPH patients after operation.

Pathogenic bacteria species		Plant number	Constituent ratio (%)
Gram-negative bacteria	*Escherichia coli*	28	36.84
	Klebsiella pneumoniae	15	19.74
	Pseudomonas aeruginosa	12	15.79
	Other	3	3.95
Gram-positive bacteria	*Enterococcus faecium*	13	17.11
	Enterococcus faecalis	10	13.16
	Staphylococcus epidermidis	5	6.58
	Other	1	1.32
Fungi	*Candida albicans*	3	3.95
	Other	1	1.32

Table 5: Comparison of clinical effects of patients with different treatment methods.

Group	Recovery	Marked effective	Effective	Ineffective	Total effective rate (%)
Research group ($n = 20$)	16	5	1	1	95.00
Control group ($n = 20$)	8	4	2	6	70.00
χ^2			4.329		
P			0.037		

Table 6: Comparison of urinary leukocytes and serum inflammatory factors in patients with different treatment methods before and after treatment ($\overline{x} \pm S$).

Group	Urinary leukocyte		TNF-α (ng/L)		IL-6 (ng/L)		PCT (pg/L)	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Research group ($n = 20$)	90.94 ± 25.83	32.15 ± 7.94[a]	25.33 ± 4.25	16.89 ± 2.91[a]	60.24 ± 12.36	38.91 ± 6.12[a]	159.24 ± 26.12	124.24 ± 20.61[a]
Control group ($n = 20$)	91.06 ± 25.57	20.38 ± 7.04[a]	25.06 ± 4.14	12.04 ± 2.01[a]	60.22 ± 12.71	29.24 ± 5.12[a]	159.32 ± 26.33	108.22 ± 21.45[a]
t	0.015	4.960	0.204	6.134	0.005	5.420	0.010	2.408
P	0.988	<0.001	0.840	<0.001	0.996	<0.001	0.992	0.021

Note. [a]$P < 0.05$, compared with that in the same group before treatment.

higher probability of urinary tract infection after surgery. In this study, we found that age, concomitant diabetes mellitus, and preoperative preventive application of antibiotics were independent risk factors for postoperative urinary-derived pathogenic bacteria infection in BPH patients ($P < 0.05$). Based on previous studies, we analyzed the causes and further discussed the prevention strategies. ① For older patients, the immune system function is degraded, the tolerance to surgical trauma is reduced, and the possibility of bacterial invasion is increased [13]. At the same time, anesthesia will also break the normal environment in the body and reduce the body's immune function [14]. Therefore, elderly patients after surgery are often more prone to urinary tract infections. This suggests that clinical attention should be paid to elderly patients with BPH to prevent postoperative infection by strengthening nutrition before the operation, controlling basic diseases, and strengthening nursing after the operation. ② Patients with diabetes mellitus have their metabolic disorders, and the number of white blood cells with anti-infection function in the urine is significantly reduced. In addition, the high glucose environment provides a suitable environment and sufficient energy for the growth and reproduction of pathogenic bacteria, thus increasing the risk of postoperative urinary tract infection [15]. Therefore, clinical attention should be focused on patients with BPH with diabetes. The preoperative blood glucose was controlled by strengthening nursing intervention, strictly controlling diet, and combining with hypoglycemic drugs, to regulate the metabolic balance in the body. All of which increase the risk of postoperative urinary tract infection. ③ Prophylactic application of antibiotics before surgery can reduce postoperative urinary tract infection, which may be related to the effective control of asymptomatic bacteriuria with antibiotics before surgery [16]. Some studies have shown that asymptomatic bacteriuria can cause urinary tract infection, so it is extremely important to effectively control it before surgery [17]. In addition, previous studies have pointed out that preoperative urethral catheterization and postoperative indwelling urinary catheter for more than 7 d are also risk factors for postoperative urinary tract infection in BPH patients [18]. However, in this study, both of them were only a single factor affecting postoperative urinary tract infection in patients with BPH, and multivariate analysis showed that both P values were higher than 0.05. The reason may be

related to the following aspects: On the one hand, before surgery, we paid attention to the evaluation of patient's clinical characteristics and strictly controlled the operation of preoperative catheterization and postoperative indwelling urinary catheter. On the other hand, our hospital strengthened the nursing intervention of various invasive operations and strictly controlled the aseptic operation, thus effectively preventing the occurrence of infection.

In addition, the study believes that targeted treatment according to the results of its drug sensitivity test can improve clinical efficacy. In this study, a total of 76 pathogenic bacteria were isolated from the urine samples of infected patients, and only four fungi were found, with the rest being bacteria. This result confirmed that bacterial infection remained the main pathogenic species of postoperative urinary tract infection. Further analysis showed that *Escherichia coli* had the highest detection rate. As a type of opportunistic pathogens, it generally existed in the urinary tract and intestinal tract. However, patients with BPH had obstructed urethra, and urine retention could not be ruled out to increase the probability of infection. At the same time, the body was in a sterile environment under normal conditions. However, in elderly patients with decreased body function, urethral catheterization before surgery might destroy the inherent defense function of the urinary system, resulting in decreased resistance of urethral mucosa to pathogenic bacteria, leading to urinary tract infection [19]. Therefore, antibacterial drugs are mainly used for clinical treatment of postoperative urinary-derived infection. However, antibacterial drugs can effectively kill bacteria, but at the same time, they can cause damage to normal cells. In addition, with the increasing abuse of antibacterial drugs, the types of drug-resistant strains are increasing, and even there are many super-resistant bacteria and multiresistant bacteria. The effect of antibacterial drugs on urinary tract infection is also declining [20]. On account of this, commonly used clinical antibacterial drugs were used as the control drugs in this study to investigate the value of the combined treatment of traditional Chinese and Western medicine in the treatment of urinary tract infection.

Urinary tract infection falls into the category of "stranguria" in TCM. In TCM, stranguria is considered that starts from the invasion of the damp-heat pathogen into the lower energizer, with the dampness sticky and persistent. In addition, heat pathogen is likely to consume qi and hurt yin, as well as the deficiency of the spleen and kidney. Hence, stranguria is mostly a syndrome of deficiency-excess in complexity [21]. Therefore, in clinical treatment of stranguria, the deficiency-excess treatment should be combined, with the emphasis on exorcising pathogenic factors as well as strengthening vital qi [22]. Shuangdong capsule is prepared from Fructus Gardeniae, Radix Astragali seu Hedysari, Herba Hedyotis, Radix Ophiopogonis, Ramulus Et Folium Picrasmae, and Fructus Malvae. Gardenia and Hedyotis are bitter and cold, both of which are capable of clearing heat and removing dampness. In particular, Gardenia can clear the heat of the triple energizer in the human body and has the effect of diuresis. It can eliminate the dampness-heat pathogen from childhood and give the pathogen a way out [23]. The bitter and cold wood has the effect of clearing heat and drying dampness. Clinical pharmacology has also proved that the bitter wood has a strong inhibitory effect on *E. coli*. Modern pharmacology has proved that *Abelmoschus manihot* fruit has a significant role in promoting urination, which can make the damp-heat pathogen emerge from the feces and has a significant anti-inflammatory effect [24]. At the same time, Radix Astragali and Radix Ophiopogonis can help healthy qi and enhance the body's immunity to the etiology of both qi and yin deficiency. Radix Ophiopogonis is sweet and cold in nature, capable of nourishing yin and generating fluid, which is matched with Radix Astragali seu Hedysari to replenish qi and nourish yin. The results of this study showed that the total clinical effective rate in the research group was significantly higher than that in the control group. After the treatment, the levels of urinary leukocyte, TNF-α, IL-6, and PCT in patients of the study group were lower than those in the control group ($P < 0.05$), which confirmed that the combined use of Shuangdong capsule and conventional western medicine had exact therapeutic effect. It not only reduced the levels of urinary leukocyte and serum inflammatory factors, but also improved the clinical efficacy and symptoms of patients. In addition, there were no drug-related adverse reactions in the two groups during treatment, which also confirmed that taking Shuangdong capsule on the basis of levofloxacin was safe.

In conclusion, the age, concomitant diabetes mellitus and preoperative prophylactic application of antibiotics were independent risk factors for postoperative urine-derived pathogenic infection in BPH patients. Clinical intervention for BPH patients with concomitant risk factors should be emphasized in clinical practice. The combined use of Shuangdong capsule and conventional western medicine can improve the clinical symptoms and inflammatory reactions of postoperative urine-derived pathogenic infection in BPH patients. Due to its exact curative effect and high safety, it is worthy of promotion. The deficiency of this study is that the sample sources are concentrated and the sample size is small, and the follow-up needs large-scale and multicenter research to further demonstrate the research results.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author.

Conflicts of Interest

The authors declare no conflicts of interest.

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Retraction

Retracted: Application Effect of External and Internal Elevation of Maxillary Sinus in Implant Restoration of Posterior Maxilla

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] X. Deng, R. Shi, J. Zhan, and F. Yang, "Application Effect of External and Internal Elevation of Maxillary Sinus in Implant Restoration of Posterior Maxilla," *Emergency Medicine International*, vol. 2022, Article ID 7879633, 6 pages, 2022.

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Research Article

Application Effect of External and Internal Elevation of Maxillary Sinus in Implant Restoration of Posterior Maxilla

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Objective. To explore and analyze the application effect of external and internal elevation of the maxillary sinus in implant restoration of the posterior maxilla. *Methods*. A total of 84 patients undergoing implant restoration of the posterior maxilla in the hospital were enrolled between January 2019 and March 2021. According to the random number table method, they were divided into the observation group ($n = 42$) and the control group ($n = 42$). The control group underwent external elevation of the maxillary sinus, while the observation group underwent internal elevation of the maxillary sinus. At 6 h, 12 h, and 24 h after surgery, the pain degree between the two groups was compared. All were followed up at 6 months after surgery. The osseointegration (bone resorption around implants, elevation height of maxillary sinus floor, average healing time) and soft tissues (bleeding index, plaque index, probing depth) in both groups were observed. The occurrence of postoperative complications was recorded. *Results*. At 6 h, 12 h, and 24 h after surgery, VAS scores in the observation group were significantly lower than those in the control group ($P < 0.05$). At 6 months after surgery, bone resorption and elevation height of the maxillary sinus floor in the observation group were significantly higher than those i.0.0n the control group, and the average healing time was significantly shorter than that in the control group ($P < 0.05$). The bleeding index, plaque index, and probing depth in the observation group were significantly lower than those in the control group ($P < 0.05$). There was no significant difference in the incidence of postoperative complications between the observation group and the control group (9.52% vs. 19.05%) ($P > 0.05$). *Conclusion*. The application effect of internal elevation of the maxillary sinus is good in implant restoration of the posterior maxilla, which can relieve pain and swelling and improve implant effect.

1. Introduction

Oral implant restoration has now become one of the important restoration methods for missing teeth. As an anatomical structure, the posterior maxillary area is complicated, and the restoration of this area is one of the most challenging surgical procedures in implant surgery [1]. Due to the particularity of the anatomical structure, the roots of the maxillary posterior teeth are closely connected to the maxillary sinus. In addition, some patients are often complicated by severe periodontitis or dental caries, resulting in the loss, loosening, or atrophy of the maxillary posterior teeth, which not only seriously affects the patients. The patient's quality of life and psychological state also increase the difficulty of implant placement in this dental area [2, 3]. In the past, the conventional implantation method was easy to penetrate until the mucosa of the maxillary sinus floor, resulting in the emergence of complications and affecting the surgical effect [4]. With the rapid development and progress of implant technology and medical technology, a maxillary sinus lift is widely known and used in clinics. This method includes maxillary sinus internal and external lifts. By increasing the bone height of the maxillary sinus alveolar, the purpose of implant restoration is achieved. This method can effectively improve the bone mass in the posterior maxillary area, reduce the occurrence of postoperative complications,

and provide a guarantee for the corresponding function of dental implants. It has been widely used in clinical practice [5, 6]. But at present, there is no unified conclusion about the choice of its surgical method. Therefore, in this study, maxillary sinus lift was used in the implant restoration of maxillary posterior teeth in order to evaluate the effect of maxillary sinus internal and external lift in implant restoration of maxillary posterior teeth and to provide a theoretical basis for clinical selection of appropriate surgical methods.

2. Materials and Methods

2.1. General Information. A total of 84 patients who underwent implant restoration in the maxillary posterior region in our hospital from January 2019 to March 2021 were selected. The patients were divided into an observation group ($n = 42$) and a control group ($n = 42$) by the random number table method. The observation group included 23 males and 19 females, aged 26–49 years, mean age 37.73 ± 3.61 years old, body mass index of 18–22 kg/m^2, and a mean age 20.13 ± 0.25 kg/m^2. The control group consisted of 25 males and 17 females, aged 26–49 years, a mean age 37.41 ± 3.45 years old, body mass index 18–22 kg/m^2, and a mean body mass index 20.22 ± 0.18 kg/m^2. There was no significant difference in general data between the two groups ($P > 0.05$). This study was approved by the hospital ethics committee.

2.2. Inclusion Criteria. ① All patients underwent routine CT examination before surgery and met the surgical indications for implant restoration in the maxillary posterior region [7]. ② The patients and their families understood and gave informed consent to this study. ③ The vertical distance from the maxillary sinus floor to the alveolar ridge top is ≥ 5 mm.

2.3. Exclusion Criteria. ① Patients with adjacent periodontitis or apical lesions; ② patients with systemic diseases; ③ patients with confusion or mental illness; ④ patients with important organ disease; and ⑤ there are patients who cannot tolerate surgery.

2.4. Surgical Methods. Both groups of patients underwent routine CT examinations before the operation, and the implant position was determined in advance, the corresponding implant materials were prepared according to the CT examination results, and the patients were instructed to use mouthwash for oral cleaning. The patient was placed in a supine position and local anesthesia was administered.

The control group was treated with a maxillary sinus external lift. A trapezoidal incision was made on the top of the alveolar ridge at the defect of the patient's maxillary posterior teeth, and the mucoperiosteal flap was opened and peeled to expose the alveolar bone implantation area. Then, use a ball drill to prepare a hole, determine the scope of the opening, and cut open the anterior and lateral walls of the maxillary sinus to completely expose the maxillary sinus mucosa. Finally, implants and artificial bone powder are implanted, covered with an oral prosthetic membrane, and sutured layer by layer.

The observation group was treated with maxillary sinus internal lift. A horizontal incision was made on the alveolar crest and buccal side of the patient to open the mucoperiosteal flap to fully expose the lateral wall of the maxillary sinus. A ball drill was used to determine the scope and location of the window at about 5 cm above the implant site at the lower wall of the maxillary sinus., the window opening range is about 1.5 cm. Use a bone squeezer to lift the remaining bone plate together with the mucosa of the sinus floor, expand the implant area step by step, fill it in with the bone powder and implant, cover it with a prosthetic membrane, and finally close the surgical incision.

2.5. Observation Indicators

2.5.1. Pain Level. At 6 h, 12 h, and 24 h after the operation, the visual analogue scale (VAS) [8] was used to evaluate the pain degree of the patients. The total score on the scale was 0–10 points. A higher score indicates more severe pain.

2.5.2. Osseointegration Index. Six months after the operation, the Dutch oral panoramic X-ray machine was used to take pictures, and the bone resorption around the implants, the height of the maxillary sinus floor, and the average healing time of the implants were measured in the two groups of patients.

2.5.3. Soft Tissue Conditions. One day before surgery and 6 months after surgery, a special periodontal probe was used to measure the distance from the gingival margin to the bottom of the gingival sulcus, which was the probing depth. The bleeding index and bacterial plaque index of the mesial, central, and distal parts of the lip and tongue were compared between the two groups, and the results were averaged. The bleeding index: 0 points: no bleeding; 1 point: punctate bleeding; 2 points: bleeding at the gingival margin. The plaque index: 0 points: no plaque; 1 point: the plaque can be detected by the probe; 2 points: Plaque was observed on the oral surface.

2.5.4. Complications. Postoperative complications were recorded, including maxillary sinus mucosal perforation, local infection, implant loosening, pain, and swelling.

2.6. Statistical Processing. The SPSS 22.0 statistical software was used to process and analyze the data of this study, and the measurement data such as osseointegration index, soft tissue condition, VAS, and swelling degree score that satisfied normal distribution and homogeneous variance were expressed as ($\overline{x} \pm s$), The differences between the observation group and the control group without time points were compared using a two-sample independent t-test, and the differences between groups with time points were compared by repeated measures analysis of variance. Before and after

surgery, the differences between the observation group and the control group were compared using paired t-test, the count data were expressed by n (%), and the chi-square test was used. $P < 0.05$ indicated that the difference was statistically significant.

3. Results

3.1. Comparison of Pain Scores between the Two Groups of Patients. The pain scores of VAS of the group treated with maxillary sinus internal lift at 6 h, 12 h, and 24 h after operation was significantly lower than that of the group treated with maxillary sinus external lift ($P < 0.05$), as shown in Figure 1.

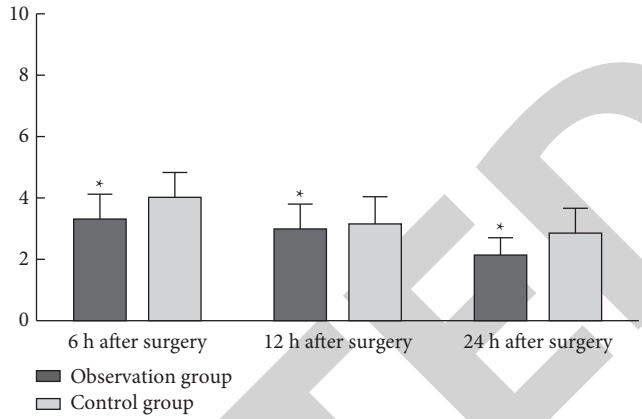

Figure 1: Comparison of pain scores between the groups treated with maxillary sinus external/internal lift. Note. Compared with the group treated with maxillary sinus external lift, $^*P < 0.05$.

3.2. Comparison of Osseointegration Index Levels between the Groups Treated with Maxillary Sinus External/Internal Lift of Patients. After the operation, the bone resorption volume and height of the patients in the group treated with maxillary sinus internal lift were significantly higher than those in the group treated with maxillary sinus external lift. The average healing time was significantly lower than that of the group treated with maxillary sinus external lift ($P < 0.05$), as shown in Figure 2.

3.3. Comparison of Soft Tissue Conditions between the Groups Patients Treated with Maxillary Sinus External/Internal Lift. Before surgery, there was no significant difference in the bleeding index, plaque index, and probing depth between the groups treated with maxillary sinus external/internal lift ($P > 0.05$). After the operation, the bleeding index, plaque index, and probing depth of the groups treated with maxillary sinus external/internal lift were decreased. The internal maxillary sinus lifting group was lower than the external maxillary sinus lifting group ($P < 0.05$) as shown in Figure 3.

3.4. Comparison of Postoperative Complications between the Groups Treated with Maxillary Sinus External/Internal Lift of Patients. The incidence of complications in the group treated with maxillary sinus internal lift was 9.52%, which was not significantly different from 19.05% in the group treated with maxillary sinus external lift ($P > 0.05$), as shown in Table 1.

4. Discussions

Due to the continuous gasification and expansion of the maxillary sinus, the distance between the top of the maxillary alveolar ridge and the bottom wall of the maxillary sinus is reduced, and the bone is more porous, resulting in a lower height of the remaining alveolar bone in the implant area, which is prone to atrophy, thus increasing the difficulty of dental implants [9, 10]. In recent years, the maxillary sinus lift has had a good clinical effect on the implant restoration of the maxillary posterior region. However, domestic and foreign scholars still have some controversy about the specific choice of maxillary sinus internal and external lift [11, 12]. By comparing the effects of internal and external maxillary sinus lifts on postoperative pain, swelling, osseointegration, and soft tissue, this study provides ideas for exploring the best surgical approach for a maxillary sinus lift.

Maxillary sinus lift surgery has the characteristics of large lifting space, easy control, a clear surgical field, and sufficient bone mass. However, because the natural roots of maxillary premolars and molars are often located in the maxillary sinus cavity, the maxillary sinus mucosa Surrounding the root of the tooth, walking irregularly, and the maxillary sinus itself is uneven, it is difficult to peel off the mucosa of the maxillary sinus intact under the influence of the adjacent roots in the near, far, and middle when the maxillary sinus floor lifting operation is performed after a single tooth or a missing spacer tooth [13, 14]. The maxillary sinus lift has the advantages of being a simple operation, less trauma, quick postoperative recovery, and no need for additional operations. The maxillary sinus floor is lifted to a certain height by a specific maxillary sinus internal lifting device, and the integrity of the maxillary sinus floor mucosa is ensured at the same time [15]. In this study, the VAS and swelling scores of the patients in the observation group were significantly lower than those in the control group ($P < 0.05$), suggesting that compared with the external maxillary sinus lift, the maxillary sinus lift has greater advantages in reducing postoperative pain and swelling. This may be due to the small surgical scope of maxillary sinus lift surgery only an incision is made at the top of the alveolar ridge, and the operation can be completed in a short time. It avoids the damage to the sinus floor bony mucosa by surgical instruments, reduces the damage to the surrounding tissues [16], and makes the postoperative pain and swelling of the patients less severe.

In this study, the amount of bone resorption and height of the patients in the observation group were significantly higher than those in the control group, and the average healing time was significantly lower than that in the control group ($P < 0.05$). Heal quickly. The reason for this may be that after the operation has pushed up the maxillary sinus mucosa, a space is formed here, where a large number of

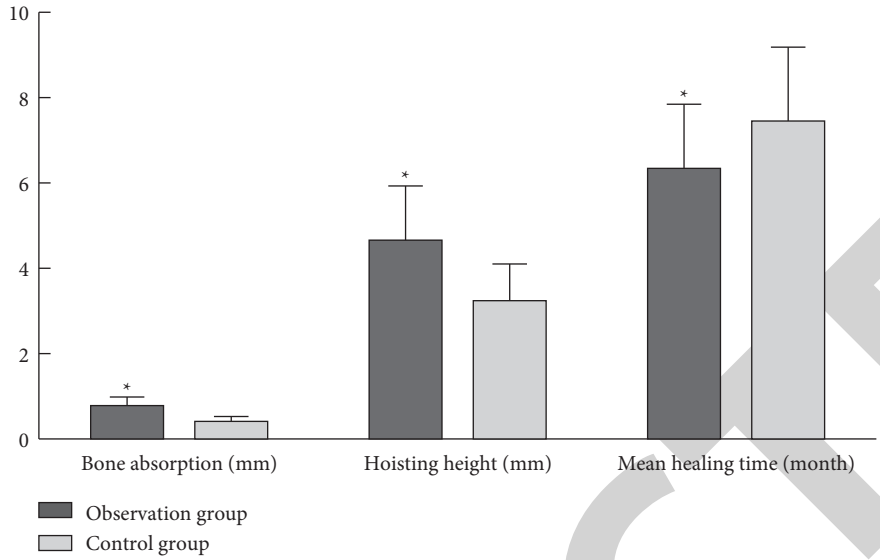

Figure 2: Comparison of bone binding indexes between the groups treated with maxillary sinus external/internal lift. Note. Compared with the group treated with maxillary sinus external lift, $^{*}P < 0.05$.

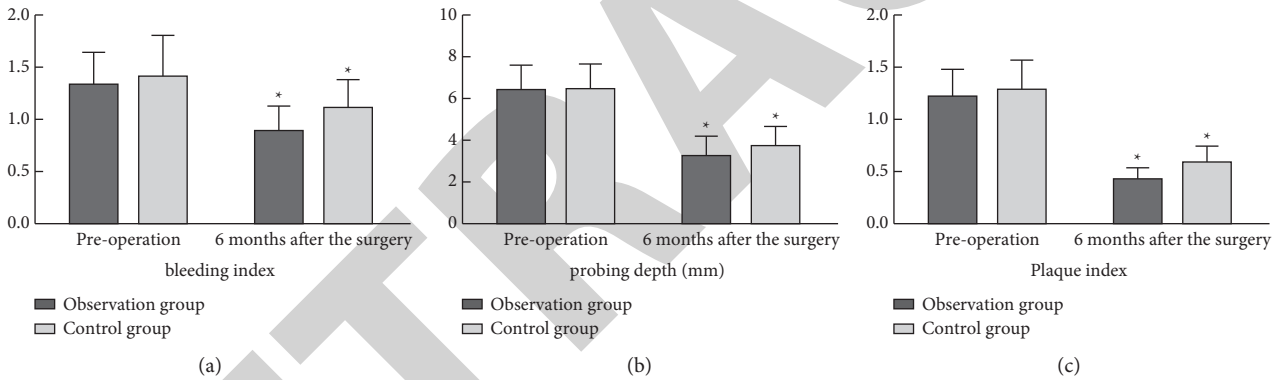

Figure 3: Comparison of soft tissue between the groups treated with maxillary sinus external/internal lift. Note: Compared with pre-operative, $^{*}P < 0.05$.

Table 1: Comparison of postoperative complications between the groups treated with maxillary sinus external/internal lift ($n = 42$, %).

Groups	Maxillary sinus mucosa perforation	Local infection	Implant loosening	Pain	Swell	Normal tissue complication probability
Observation group	2 (4.76)	0 (0.00)	0 (0.00)	1 (2.38)	1 (2.38)	4 (9.52)
Control group	1 (2.38)	2 (4.76)	1 (2.38)	2 (4.76)	2 (4.76)	8 (19.05)
χ^2	—	—	—	—		0.7117
P	—	—	—	—		0.397

blood clots are gathered, and these blood clots provide a good condition and environment for the formation of new bone, which is conducive to stimulation. Osteogenic precursor cells in the periosteum form new bone. In addition, trauma caused by surgical trauma and heat generation in the preparation of the cave will lead to the appearance of an inflammatory response, which in turn induces the activation of osteoclasts and promotes bone resorption [17, 18]. At the same time, because the bone will cause bone resorption after being squeezed to a certain extent, the vertical height of the bone will be reduced, and when the implant is implanted for repair, the surrounding bone will be tighter and the bone resorption will be further increased [19]. In addition, the results of this study showed that the bleeding index, plaque index, and probing depth of the observation group were significantly lower than those of the control group ($P < 0.05$),

suggesting that maxillary sinus lift was more helpful for the reconstruction of periodontal tissue in patients with implant restoration in the maxillary posterior region, reducing the damage to periodontal tissue. The bleeding index, plaque index, and probing depth were all sensitive indicators reflecting periodontitis. Lifting the maxillary sinus is beneficial to enhance the stability of the implant, avoid loosening and falling off, and thus reduce the probability of infection, which is of great significance to protect the health of periodontal tissue, reduce the formation of periodontal plaque, and reduce the appearance of swelling and bleeding. In addition, this study showed no difference in the incidence of complications between the two groups. However, both groups experienced maxillary sinus mucosal perforation, pain, and swelling after surgery, all of which were common complications of maxillary sinus elevation. Among them, patients with perforation of maxillary sinus mucosa had relatively small perforations, no local infection symptoms, and self-cured through the self-repair function of the human body without causing serious adverse effects. The pain and swelling were also improved after the proper intervention. However, this suggests that attention should also be paid to the possible complications in the dental implant-supported restoration of the maxillary posterior region in the clinic, and we should be vigilant about the effects of various complications on the prognosis.

In conclusion, compared with the maxillary sinus lift, the maxillary sinus lift has a better application effect in the implant restoration of the maxillary posterior region, which can reduce the damage to the periodontal tissue and reduce the postoperative pain and swelling. It has a positive significance for promoting bone resorption and increasing the height of the maxillary sinus floor. At the same time, it has high safety and is worthy of widespread clinical application. The disadvantage of this study is that the included sample size is too small and the results have selection bias. The clinical sample size should be expanded for more in-depth research to confirm.

Data Availability

The data can be obtained from the author upon reasonable request.

Disclosure

Xuan Deng and Rujie Shi are the co-first authors.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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Retraction

Retracted: Effect of Compound Polyethylene Glycol Electrolyte Powder on the Quality of Gastrobowel Preparation before Enteroscopy Intervention

Emergency Medicine International

Received 19 December 2023; Accepted 19 December 2023; Published 20 December 2023

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] Y. Yuan, Y. Li, Y. Zhang et al., "Effect of Compound Polyethylene Glycol Electrolyte Powder on the Quality of Gastrobowel Preparation before Enteroscopy Intervention," *Emergency Medicine International*, vol. 2022, Article ID 9895499, 5 pages, 2022.

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Emergency Medicine International
Volume 2022, Article ID 9895499, 5 pages
https://doi.org/10.1155/2022/9895499

Research Article

Effect of Compound Polyethylene Glycol Electrolyte Powder on the Quality of Gastrobowel Preparation before Enteroscopy Intervention

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Objective. To study the effect of compound polyethylene glycol electrolyte powder (PGEP) on the quality of gastrobowel preparation before enteroscopy intervention. *Methods*. From March 2021 to January 2022, among the patients who needed enteroscopy in our hospital, 280 patients who volunteered for this study were randomly selected as the research objects. All the subjects were randomly divided into the control group (140 cases) and the observation group (140 cases). Both groups received routine treatment before enteroscopy intervention. On this basis, patients in the control group were given 9 g of senna every day before operation, and 250 ml of 20% mannitol and 2500 ml of water were taken orally from 9:00 am to 11:00 am on the day of examination. Patients in the observation group took PGEP orally from 9:00 am to 11:00 am. The effective rate of bowel cleaning, the frequency of defecation and duration of diarrhea, the levels of blood electrolyte indexes such as Na^+, K^+, and Cl^- before and after the intervention, and the incidence of adverse reactions were compared between the two groups. *Results*. The effective rate of bowel cleaning in the observation group was significantly higher than that in the control group ($P < 0.05$). The frequency of defecation and duration of diarrhea in the observation group were significantly lower than those in the control group ($P < 0.05$). Compared with the control group, the levels of blood electrolyte indexes in the observation group after the intervention were not statistically significant ($P > 0.05$). The incidence of adverse reactions in the observation group was significantly lower than that in the control group ($P < 0.05$). *Conclusion*. Using PGEP for gastrobowel preparation before enteroscopy intervention can achieve high bowel cleaning efficiency, short bowel preparation time, and low incidence of adverse reactions, which does not affect the water-electrolyte balance of patients, and the psychological state of patients before enteroscopy intervention is more stable. This program is worthy of clinical promotion.

1. Introduction

Enteroscopy is the most commonly used and accurate method to observe the colonic mucosa, and it is the gold standard for the diagnosis of many colorectal diseases [1]. In enteroscopy, the electronic camera located at the front end can accurately transmit the patient's bowel mucosa to the electronic computer. The examining doctor can observe the smallest changes of the mucosa at the enteroscopy, but the clarity of the image mainly depends on the bowel cleanliness of the patient [2]. The study shows that good bowel cleanliness can greatly improve the inspection effect of enteroscopy [3]. Traditional bowel preparation is mainly based on oral senna 3 days before operation and 20% mannitol catharsis before operation. If necessary, cleaning enema is added. The bowel cleaning effect is not good, and the preparation time is long [4]. Traditional bowel preparation requires a long time for patients' preoperative diet control, and high-pressure enema may cause adverse reactions such as bowel edema and ascites. Patients are prone to anxiety and irritability and other bad emotions, which increases the difficulty of nursing work and reduces the

accuracy of enteroscopy [5]. Therefore, it has been a hot topic in clinical research to find a more effective and safe bowel preparation plan. The ideal bowel preparation plan should completely reduce bowel contents, reduce bowel bacteria to a minimum, make patients comfortable and actively cooperate, and not interfere with patients' internal homeostasis [6]. Oral electrolyte method is the latest bowel preparation method. Its operation method omits the steps of oral senna and enema, and the preoperative diet control time is relatively short, which is simple and easy to implement, and the incidence of adverse reactions is lower, and patients' compliance is higher, which is very helpful for the development of nursing work [7]. At present, the electrolyte powder is mainly compound polyethylene glycol electrolyte powder (PGEP), which is an impermeable oral laxative [8]. At present, it has been widely used in bowel preparation before colorectal surgery, enteroscopy, and gynecological pelvic tumor surgery. It can not only reduce the pain of bowel preparation for patients but also ensure good bowel cleanliness, which is convenient for operation and has high safety [9, 10]. We carried out further research on gastrobowel preparation before enteroscopy intervention, and the report is as follows.

2. Data and Methods

2.1. General Information. From March 2021 to January 2022, among the patients who needed enteroscopy in our hospital, 280 patients who volunteered for this study were randomly selected as the research objects. The inclusion criteria were as follows: ① age ≥ 18 years old; ② they had abdominal pain, diarrhea, melena, bloody stool, change of stool habits, abdominal mass and other clinical manifestations, and suspected colon, rectum, and terminal ileum lesions, so they needed enteroscopy; ③ according to the evaluation of the investigator, the subjects met the study requirements, were able to communicate with the investigator about the preoperative bowel preparation method, volunteered to participate in the study, and signed the informed consent form. Exclusion criteria were as follows: ① complicated with severe gastrointestinal diseases such as obvious bowel obstruction, bowel inflammation, stenosis, severe constipation, and other diseases; ② complicated with severe immune system diseases or advanced malignant tumor; ③ complicated with severe cardiovascular and cerebrovascular diseases and liver and kidney diseases; ④ there is a history of allergy or intolerance to compound polyethylene glycol; ⑤ emergency surgery patients; and ⑥ pregnant and lactating women. All the subjects were randomly divided into the control group (140 cases) and the observation group (140 cases). There were 88 males and 52 females in the control group, with an average age of (48.10 ± 3.24) years, and 89 males and 51 females in the observation group, with an average age of (48.42 ± 3.81) years. There was no significant difference in gender, age, and other general information between the two groups ($P > 0.05$), which could be used for experimental comparison.

2.2. Methods. Both the observation group and the control group were given semi-liquid diet on the 3rd day before operation and full-liquid diet on the 1st day and 2nd day before operation. Patients in the control group were given 9 g of senna every day before operation, and 250 ml of 20% mannitol and 2500 ml of water were taken orally from 9:00 am to 11:00 am on the day of examination. If necessary, 0.90% saline was added for enema. The patients in the observation group took PGEP (produced by Jiangxi Hengkang Pharmaceutical Co., Ltd., Guoyao Zhunzi h20020031) orally from 09:00 to 11:00 a.m. on the day of examination. 3000 ml solution was prepared according to the instructions, 600-1000 ml solution was taken for the first time, and then 250 ml solution was taken once every 10-15 minutes, until the water sample was discharged to clear the stool. Closely observe the patients to prevent serious complications. Both groups of patients need to move around as much as possible after taking the medicine and are not allowed to stay in bed or sit for a long time.

2.3. Observation Index. ① Compare the bowel cleaning efficiency of the two groups. ② The frequency of defecation and duration of diarrhea were compared between the two groups. ③ The venous blood of the subjects was drawn, and the levels of blood electrolyte indexes such as Na^+, K^+, and Cl^- were compared before and after intervention. ④ The incidence of adverse reactions such as abdominal distension, abdominal pain, nausea and vomiting, and fatigue during bowel preparation were compared between the two groups.

2.4. Bowel Cleaning Standards. Cleanliness of bowel tract: grade I—no feces or residues are found in the bowel tract, no retention of feces and water, clear bowel fluid, smooth operation, and unaffected observation; grade II—there is no fecal residue in the bowel cavity, but there is less dirty fecal water, so the operation is smooth and the observation is basically clear; and grade III—there are fecal residues or fecal lumps in the bowel cavity, so the operation is not smooth and the operation is greatly affected.

$$\text{The effective rate of bowel cleaning} = \frac{\text{grade I} + \text{grade II}}{\text{total number}} \times 100\%. \quad (1)$$

Frequency of defecation: the total number of defecations of the patient after medication until bowel preparation before enteroscopy intervention.

Duration of diarrhea: the number of days that diarrhea lasted for the patient after medication until bowel preparation before enteroscopy intervention.

2.5. Statistical Method. SPSS 22.0 professional statistical software was used to analyze all statistical data. The measured data were expressed as mean ± standard deviation, *t*-test was used for comparison, all count data were expressed as rate (n, %), and χ^2 test was used for comparison. $P < 0.05$ was evaluated as significant difference.

Table 1: Comparison of bowel cleaning efficiency between two groups of patients (n (%)).

Group	Grade I	Grade II	Grade III	Total effective rate
Control group ($n = 140$)	45 (32.14%)	62 (44.29%)	33 (23.57%)	107 (76.43%)
Observation group ($n = 140$)	61 (43.57%)	69 (49.29%)	10 (7.14%)	130 (92.86%)
χ^2		—		14.53
P		—		0.00

Table 2: Comparison of bowel preparation time between two groups ($\overline{x} \pm s$).

Group	Frequency of defecation (times)	Duration of diarrhea (h)
Control group ($n = 140$)	6.19 ± 1.22	6.36 ± 0.82
Observation group ($n = 140$)	4.41 ± 1.05	3.81 ± 0.63
t	8.92	18.47
P	0.00	0.00

Table 3: Comparison of blood electrolyte indexes between the two groups before and after intervention ($\overline{x} \pm s$).

Group	Na^+ (mmol/L)		K^+ (mmol/L)		Cl^- (mmol/L)	
	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Control group ($n = 140$)	138.44 ± 3.98	137.88 ± 2.70	4.31 ± 0.53	$3.89 \pm 0.43$①	104.36 ± 2.59	$102.67 \pm 2.24$①
Observation group ($n = 140$)	138.29 ± 3.33	$137.14 \pm 2.52$①	4.39 ± 0.60	$3.77 \pm 0.54$①	104.78 ± 2.66	$101.89 \pm 2.11$①
t	2.23	1.68	0.80	1.31	1.06	2.06
P	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05

Note. Compared with before intervention, ①$P < 0.05$.

3. Results

3.1. Comparison of Bowel Cleaning Efficiency between Two Groups of Patients. The effective rate of bowel cleaning in the observation group was 92.86%, and the effective rate of bowel cleaning in the control group was 76.43%. The effective rate of bowel cleaning in the observation group was significantly higher than that in the control group ($P < 0.05$) (see Table 1 for details).

3.2. Comparison of Diarrhea Duration and Defecation Times between the Two Groups. The frequency of defecation and duration of diarrhea in the observation group were significantly lower than those in the control group ($P < 0.05$) (see Table 2 for details).

3.3. Comparison of Blood Electrolyte Indexes between the Two Groups before and after Intervention. Before and after the intervention, there was no significant difference in the levels of Na^+, K^+, and Cl^- and other blood electrolyte indexes between the two groups ($P > 0.05$). Compared with the control group, the levels of blood electrolyte indexes in the observation group after the intervention were not statistically significant ($P > 0.05$) (see Table 3 for details).

3.4. Comparison of the Incidence of Adverse Reactions between the Two Groups. The incidence of adverse reactions in the observation group was 17.14%, and the incidence of adverse reactions in the control group was 29.28%. The incidence of adverse reactions in the observation group was significantly lower than that in the control group ($P < 0.05$) (see Table 4 for details).

4. Discussion

It is a clinical consensus that effective bowel preparation should be carried out for patients before enteroscopy. The standard of bowel preparation is that the colon is empty, clean, collapsed, and sterile, and there are few adverse reactions, which have little impact on the patient's psychological state [11]. Traditional bowel preparation methods mainly include oral catharsis and clean enema, that is, the patients' diet is controlled 3 days before operation, and oral laxatives and artificial enema are required. Studies have shown that the traditional bowel preparation methods have low bowel cleaning efficiency, and long-term dietary control tends to aggravate adverse reactions such as negative nitrogen balance, metabolic disorder, and decreased subjective tolerance [12]. At the same time, the operation of bowel preparation is difficult, causing serious irritation to gastrobowel tract. Mannitol used for bowel preparation may produce a large amount of explosive gases (methane and hydrogen) after being decomposed by bacteria, which may lead to abdominal pain, abdominal distension, bowel obstruction, bowel bleeding, and other complications [13]. At the same time, studies have confirmed that repeated enema may increase the pain of patients, and patients may have negative emotions such as anxiety and depression, so it is difficult to carry out clinical practice [14]. In recent years, the new bowel preparation method is mainly oral electrolyte

Table 4: Comparison of the incidence of adverse reactions between the two groups (n (%)).

Group	Abdominal distention	Abdominal pain	Nausea and vomiting	Fatigue	Total number of adverse reactions
Control group ($n = 140$)	15 (10.71%)	10 (7.14%)	7 (5.00%)	9 (6.43%)	41 (29.28%)
Observation group ($n = 140$)	9 (6.43%)	8 (5.71%)	3 (2.14%)	4 (2.86%)	24 (17.14%)
P			0.01		
χ^2			5.79		

method. Its main action principle is that a large amount of electrolyte-containing liquid enters the bowel tract in a short time and can stay in the bowel canal by its own gravity, directly stimulating the bowel wall mucosa, enhancing its peristalsis, softening feces, and promoting defecation [15, 16]. At present, this method has been widely used in preoperative preparation for colorectal tumor resection, preoperative preparation for gynecological diseases, and preoperative preparation for enteroscopy, and its safety and effectiveness have been confirmed by a large number of studies at home and abroad.

PGEP is the most commonly used electrolyte powder in clinic, which is composed of polyethylene glycol, sodium bicarbonate, sodium sulfate, potassium chloride, and sodium chloride [17]. Pharmacological studies have shown that its main component polyethylene glycol can stably combine with water molecules in bowel contents through hydrogen bonds without being absorbed by the colon, thereby making manure water become isotonic liquid, thus balancing the osmotic pressure inside and outside the bowel mucosa [18]. PGEP can reduce the absorption of bowel mucosa, having the characteristics of non-absorption and non-secretion [19, 20]. Bowel bacteria have a weak decomposition effect on it, with high safety, and the incidence of abdominal pain, abdominal distension, bowel obstruction, and other adverse reactions is low [21, 22]. At the same time, its action time is short, and dehydration and water-electrolyte disorder will not be caused by excessive extravasation of liquid [23]. PGEP is used for bowel preparation before enteroscopy, colorectal cancer resection, and gynecological surgery, which not only saves long-term diet control but also has the characteristics of simplicity and ease of use. After taking the medicine, the bowel cleanliness is high, which will not increase the pain of patients. The patient's compliance is high and the psychological state is good [24, 25]. The results of this study showed that the effective rate of bowel cleaning in the observation group was significantly higher than that in the control group ($P < 0.05$), and the frequency of defecation and duration of diarrhea in the observation group were significantly lower than those in the control group ($P < 0.05$), which suggested that PGEP had a rapid and effective role in bowel preparation. The incidence of adverse reactions in the observation group was significantly lower than that in the control group ($P < 0.05$), and the levels of blood electrolytes in the two groups were not significantly different from those before the intervention ($P > 0.05$). This reflects the non-secretion and non-absorption characteristics of PGEP. PGEP is isotonic in nature, with less fluid exchange and lower incidence of water-electrolyte disturbance, which had less impact on the patient's internal homeostasis and had high safety.

To sum up, using PGEP for gastrobowel preparation before enteroscopy intervention can achieve high bowel cleaning efficiency, short bowel preparation time, and low incidence of adverse reactions, which does not affect the water-electrolyte balance of patients, and the psychological state of patients before enteroscopy intervention is more stable. This program is worthy of clinical promotion. This study has some limitations. It is not only a single-center study with a small sample size but also lacks objective evaluation criteria for adverse reactions. We need to further improve this research to provide evidence for clinical practice.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author upon request.

Disclosure

Yongxin Yuan and Yuqin Li are co-first authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest, financial or otherwise.

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Research Article

Application of Medical-Nursing Integration Multidisciplinary-Assisted Surgical Wound Nursing Mode in Improving the Quality of Wound Treatment

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Surgical treatment is a common clinical intervention for trauma, but postoperative pain and poor nursing lead to slow wound recovery and wound infection. Therefore, it is extremely important to select effective nursing intervention methods to improve the quality of wound treatment. This study explored the application value of the wound care model of medical integration and multidisciplinary-assisted surgery in improving the quality of wound treatment. The results show that medical-nursing integration in multidisciplinary-assisted surgical wound nursing mode can improve the quality of wound treatment and pain level in patients, which is beneficial to improving team cohesion of medical staff and satisfaction evaluation of patients.

1. Introduction

Trauma is a common type of disease in general surgery. It refers to severe trauma to the body, resulting in massive hemorrhage and tissue destruction. Human tissue or organ damage is often caused by mechanical factors. In recent years, with the development of industry, agriculture, and transportation, the trauma caused by various accidents is increasing day by day [1, 2]. Surgical treatment is a common clinical intervention. Debridement, suture, and other methods can effectively promote wound healing at the local injury site. However, in some patients, postoperative pain and poor nursing lead to slow wound recovery and even cause wound infection in severe cases, which increases the difficulty of clinical treatment and medical expenses of patients [3, 4]. Therefore, it is extremely important to choose effective nursing intervention methods to improve the quality of wound management. The medical-nursing integration multidisciplinary-assisted surgical wound care model integrates medical and nursing resources and refers to a multidisciplinary cooperation model between doctors and nurses through information exchange, cooperation, and complement [5]. In this nursing model, through formulating effective nursing intervention countermeasures, the limitation of differential diagnosis and treatment can be effectively avoided, and the situation that patients travel to multiple specialist outpatient clinics after injury can be avoided, thus realizing meticulous management of wound recovery. At present, this nursing model has achieved good nursing results in ophthalmology and oncology, but it is rarely reported in general surgery wound care [6, 7]. Therefore, the purpose of this study was to explore the application of the medical-nursing integrated multidisciplinary-assisted surgical wound care model in improving the quality of wound treatment.

2. Materials and Methods

2.1. General Information. A total of 200 patients admitted to the general surgery department of our hospital from January 2020 to January 2022 were selected as the research subjects. 96 patients admitted from January 2020 to May 2021 were

included in the control group, and 104 patients admitted from June 2021 to January 2022 were included in the observation group. There was no significant difference in baseline data between the two groups ($P > 0.05$), and they were comparable.

2.2. Inclusion Criteria. The inclusion criteria were as follows: age ≥18 years old and all are surgical site wounds.

2.3. Exclusion Criteria. The exclusion criteria were as follows: complicated with severe hepatic and renal insufficiency, critically ill with obvious signs of shock, complicated with severe infection, and incomplete clinical data.

2.4. Nursing Methods. The control group received routine care. After entering the department, conduct education about disease and surgery-related knowledge. During postoperative dressing change, the wounds were washed with normal saline and routinely disinfected with iodophor. Postoperative pain relief and psychological care were given, and changes in the patient's condition were monitored. After the condition was stable, routine functional exercises were guided.

Based on the control group, the observation group was combined with the medical-nursing integrated multidisciplinary-assisted surgical wound care model. (1) Establish a medical-nursing integrated multidisciplinary team to assist in surgical wound care. The head nurse is the team leader, the deputy head nurse is the deputy team leader, and a team is formed with the attending doctor, nutritionist, rehabilitation specialist, and nurses. Each member cooperates with each other and has clear responsibilities. Under the coordination of the nursing department, the pain department, nutrition department, and wound treatment specialists were organized to train the team members. The training content includes anatomical characteristics of the skin, wound types, wound healing, wound assessment, wound measurement, nutritional supplementation, pain management, and dressing selection. The training is carried out in the form of classroom lectures, group discussions, clinical practice, and case studies, to improve the theoretical and operational knowledge level of the team members. (2) Specific implementation plans: after discussion among the team members, a standardized work responsibility table, wound assessment scale, debridement, and informed consent form for special consumables were developed. After the patient is admitted to the hospital, the tube bed doctor initially assesses the wound and is responsible for surgery or arranging a referral. Surgical debridement, wound suture, and skin grafting were used for emergency treatment, and bacterial culture specimens were taken for examination. The dietitian evaluates the patient's postoperative recovery to formulate a dynamic nutritional plan and ensures the intake of nutrients through diet, intravenous, and other means. The responsible nurse nurses dynamically evaluate and use wet healing techniques (different types of dressings) for nursing and take pictures after each nursing to record the wound recovery. When the granulation tissue grows well or reaches the indications for skin grafting, discuss with the doctor and arrange two subskin grafts and sutures. According to the recovery of the patient after the operation, a personalized exercise method is developed under the guidance of a rehabilitation specialist. (3) Condition observation and feedback: the patient's general condition, including wound recovery and nutritional status, is assessed during the morning shift and ward rounds every morning, and the wound condition, including wound area, depth, and pain level of the patient, is checked together. (4) Discharge follow-up: for patients who have reached the indication for discharge but the wound has not yet healed, continue to follow-up and observe, conduct follow-up by telephone or WeChat once a week, understand the recovery of the patient's wound through subjective descriptions and pictures, and provide daily self-care if necessary, which includes rehabilitation training instruction, diet instruction, wound nursing method instruction, and psychological nursing. Both groups continued nursing for two weeks.

2.5. Observation Indicators

2.5.1. Comparison of Wound Repair Levels between the Two Groups of Patients. The wound repair conditions, including wound area, wound depth, and pain level, were compared between the two groups before surgery, after 2 weeks of nursing, and after 4 weeks of nursing. The pain was evaluated using visual analog scoring (VAS), which was scored by a walking scale about 10 cm in length, with 0 indicating no pain and 10 indicating the most severe pain that was unbearable [8].

2.5.2. Comparison of Wound Healing between Two Groups of Patients. The time of granulation growth, the number of dressing changes, and the time of wound healing were compared between the two groups.

2.5.3. Comparison of the Incidence of Complications between the Two Groups of Patients. The incidence of complications during treatment, including wound exudation, wound bleeding, nerve damage, and joint stiffness, were compared between the two groups.

2.5.4. Comparison of Patient Satisfaction Evaluation between Two Groups. When the patient was discharged from the hospital, the self-made satisfaction evaluation questionnaire was used to evaluate the patient's satisfaction, including four items of the hospital environment, medical and nursing professional level, work attitude, and psychological care. Each item was 100 points. A higher score indicates the patients higher satisfaction.

2.5.5. Comparison of No Results of Medical Staff before and after Intervention. Using our hospital's self-made questionnaire to evaluate the medical staff before and after the intervention with a five-point scale of 1–5 points, no results

Table 1: Comparison of two groups of general data.

Group	Gender (n)		Age (years)	Types of operations		
	Male	Female		Joint surgery	Spine surgery	Hand and foot surgery
Observation group ($n = 96$)	70	34	40.45 ± 4.22	29	35	40
Control group ($n = 104$)	63	33	40.36 ± 4.37	30	34	32
χ^2/t	0.063		0.148	0.601		
P	0.801		0.883	0.740		

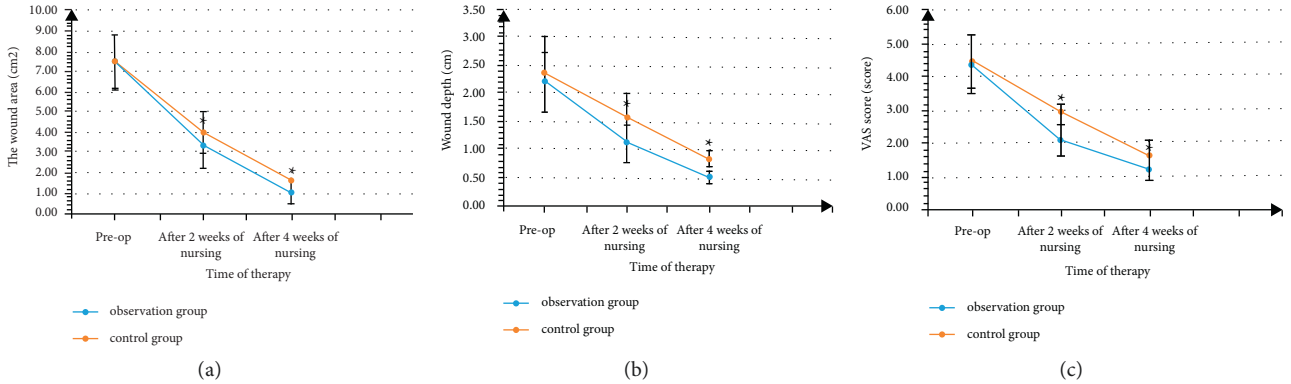

Figure 1: Comparison of wound area, wound depth, and VAS score between the two groups of patients after nursing (Note: ① Comparison of wound area between the two groups. ② Comparison of wound depth between the two groups. ③ Comparison of VAS scores between the two groups. Compared with the control group, $^*P < 0.05$).

were obtained, including optimizing the dressing change process, team cohesion, work responsibility, and communication ability.

2.6. Statistical Processing. We used SPSS 22.0 software to process the data analysis of the patients included in this study, and the data on a linear scale were presented as mean ± standard deviation ($\overline{x}$ ±S). The two-sample independent t-test was used to compare the differences between groups without a time factor, and repeated measures were used. Analysis of variance was used to compare the differences between groups with time factor; enumeration data were expressed as rates, and differences between groups were compared by the χ^2 test. $P < 0.05$ indicates a statistically significant difference.

3. Results

3.1. Comparison of Two Groups of General Data. There was no significant difference in age, sex, and surgical type between the two groups, as given in Table 1.

3.2. Comparison of Wound Repair Levels between the Two Groups of Patients. There was no significant difference in the wound area, wound depth, and VAS score between the groups combined with/without the medical-nursing integrated multidisciplinary-assisted surgical wound care model before surgery ($P > 0.05$). After 2 weeks of nursing and 4 weeks after nursing, the wound area, wound depth, and VAS score of the groups combined with/without the medical-nursing integrated multidisciplinary-assisted surgical wound care model continued to decrease and the group combined with the medical-nursing integrated multidisciplinary-assisted surgical wound care model lower than the group combined without the medical-nursing integrated multidisciplinary assisted surgical wound care model ($P < 0.05$), as shown in Figure 1.

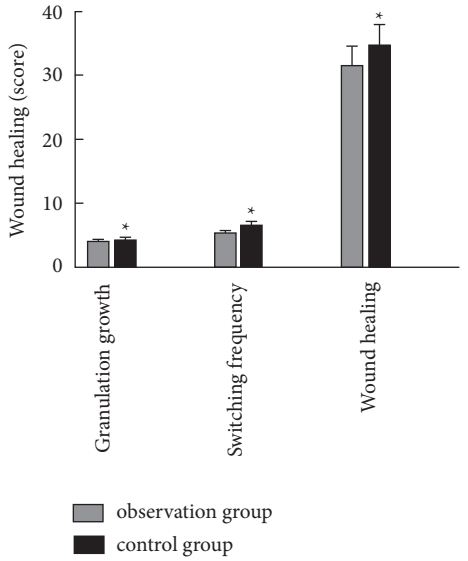

Figure 2: Comparison of wound healing between the two groups of patients (Note: compared with the control group, $^*P < 0.05$).

3.3. Comparison of Wound Healing between the Two Groups of Patients. The granulation growth time, dressing change times, and wound healing time in the group

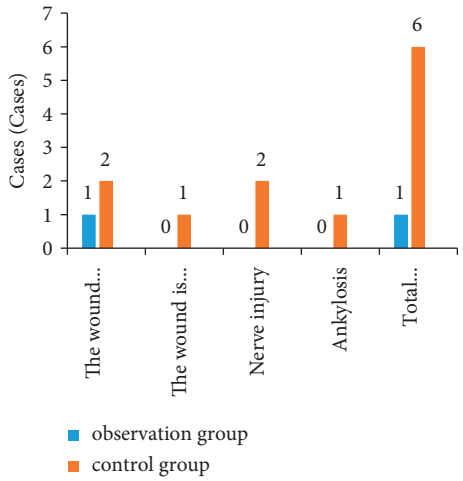

Figure 3: Comparison of the incidence of complications between the two groups of patients.

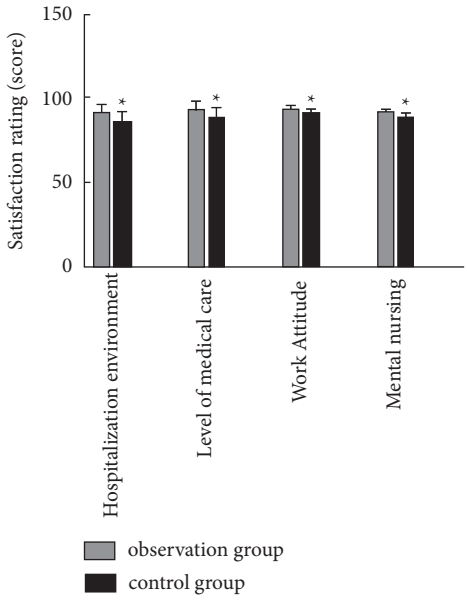

Figure 4: Comparison of patient satisfaction scores between the two groups (Note: compared with the control group, $^*P < 0.05$).

combined with the medical-nursing integrated multidisciplinary-assisted surgical wound care model were all lower than those in the control group ($P < 0.05$), as shown in Figure 2.

3.4. Comparison of the Incidence of Complications between the Two Groups of Patients. The total complication rate of wound exudate, wound bleeding, nerve injury, and joint stiffness in the group combined with the medical-nursing integrated multidisciplinary-assisted surgical wound care model was 0.96%, which was significantly lower than that in the control group (6.25%) ($P < 0.05$), as shown in Figure 3.

3.5. Comparison of Patient Satisfaction Evaluation between Two Groups. The scores of hospitalization environment,

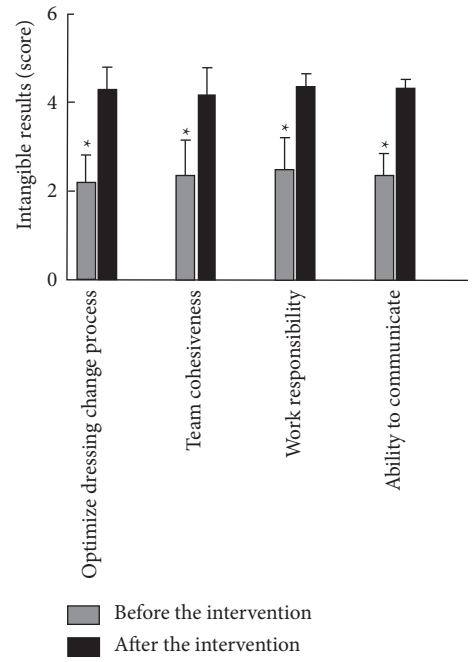

Figure 5: Comparison of no results of medical staff before and after intervention (Note: compared with before intervention, $^*P < 0.05$).

medical and nursing professional level, work attitude, and psychological nursing satisfaction in the group combined with the medical-nursing integrated multidisciplinary-assisted surgical wound care model were higher than those in the control group ($P < 0.05$), as shown in Figure 4.

3.6. Comparison of No Results of Medical Staff before and after Intervention. After the intervention, the medical staff in optimizing the dressing change process, team cohesion, work responsibility, and communication ability were higher than those before the intervention ($P < 0.05$), as shown in Figure 5.

4. Discussion

Trauma refers to the tissue structure and damage caused by external factors acting on the body. In recent years, with the development of industry and economy in China, the turnover rate of surgical trauma beds increases year by year, which brings serious economic losses and disease burden to society and families [9, 10]. With the continuous development of medicine and nursing, attention has gradually been paid to the management of wound quality. At the same time, wound care of trauma patients after surgery has become the focus of clinical attention.

The medical care integrated multidisciplinary-assisted surgical wound care model is a combination of medicine, nursing, and nutrition and other multidisciplinary models to implement a full range of interventions for patients' surgical wound care, aiming to promote early recovery of patients [11, 12]. In the results of this study, after 2 weeks of nursing and 4 weeks of nursing, the wound area, wound depth, and VAS score of the two groups of patients were continuously

decreased, and the observation group was lower than the control group ($P < 0.05$). It is suggested that the integration of medical care and multidisciplinary assistance in surgical wound care can promote the early healing of wounds and improve the pain level of patients. Previous studies have found that traumatic wounds are often accompanied by tissue fragments, dirt, and necrotic tissue, which aggravate the inflammatory response, cause severe pain in the body, and delay wound repair [13, 14]. In this study, a wound care team was quickly established after the patient was admitted to the hospital, and professionals from different disciplines such as attending physicians, nutritionists, rehabilitation specialists, and nurses were trained to learn wound types, healing, and evaluation. Observation, exercise, and dressing promote early wound healing. On the other hand, by establishing the optimal strategy for wound treatment and carrying out patient-centered support and treatment after injury recognition, postoperative wound infection was effectively controlled. Debridement and wound cleaning are practical techniques for controlling wound infection and can effectively reduce bacterial density. The traditional wound treatment mode is mostly operated by clinicians with less seniority, and its focus is on the cure of the disease while ignoring the subjective pain experience of patients. Nursing staff have more contact with patients in their daily work and have more obvious advantages in communication. They can dynamically assess patients' injuries by combining the relevant concepts of humanistic care and provide personalized nursing services; this also effectively relieves the pain [15].

Our study found that the time of granulation growth, the number of dressing changes, and the wound healing time in the observation group were lower than those in the control group, which suggests that the application of the nursing mode in the observation group would help the growth of new tissues and accelerate wound healing. Additionally, this study found that the total complication rate of wound exudate, wound bleeding, nerve injury, and joint stiffness in the observation group was 0.96%, which was significantly lower than that in the control group, which was 6.25%. Studies have shown that good cooperation between doctors and nurses can improve the quality of care, improve patient satisfaction, and improve patient clinical outcomes [16, 17]. In this study, the integrated medical care and multidisciplinary-assisted surgical wound care model have the following advantages. First, the application of appropriate wet wound dressings improved the wounding quality of debridement and dressing changes and reduced the overall complications of wound exudation, wound bleeding, nerve damage, and joint stiffness [18]. The incidence was significantly reduced, with good safety. The second one enhances the work enthusiasm of nurses, broadens their theoretical and operational knowledge, promotes the level of friendly cooperation between teams, and improves the cohesion between teams [19]. Combined with the results of this study, it can be shown that medical staff is optimizing the dressing change process after the intervention, team cohesion, work responsibility, and communication skills were higher than those before intervention. The third one improved the patient's level of satisfaction with nursing work. The results of this study showed that the observation group's scores on hospitalization environment, medical and nursing professional level, work attitude, and psychological nursing satisfaction were higher than those of the control group ($P < 0.05$). Traditional nursing work lacks effective communication, and most of the nursing staff execute the doctor's orders mechanically, which is easy to cause conflicts between doctors and patients and between nurses and patients [20]. In this study, the TCM physicians made medical orders after feedback from nurses after rounds, so that nurses could more accurately and effectively implement medical orders. In the process of discussion and analysis, nurses' understanding of patients' diseases could also be improved, and nursing care was improved. The quality of service has been recognized and praised by patients.

In conclusion, the medical-nursing integrated multidisciplinary-assisted surgical wound care model can improve the quality of patients' wound treatment and improve the patient's pain level, which is conducive to improving the cohesion of the medical and nursing team and the evaluation of patient's satisfaction. In addition, the shortcoming of this study lay in the short follow-up time, which could be extended in the future to further verify the results of this study.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Disclosure

Jinyan Wang and Ting Yuan are the co-first authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Clinical Analysis on the Effects of Tandospirone Citrate Assisted by Drawing Therapy on Medication Compliance and Sleep Quality in Patients with Anxiety Disorders

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] J. Hou and R. Zhang, "Clinical Analysis on the Effects of Tandospirone Citrate Assisted by Drawing Therapy on Medication Compliance and Sleep Quality in Patients with Anxiety Disorders," *Emergency Medicine International*, vol. 2022, Article ID 9295627, 7 pages, 2022.

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Research Article

Clinical Analysis on the Effects of Tandospirone Citrate Assisted by Drawing Therapy on Medication Compliance and Sleep Quality in Patients with Anxiety Disorders

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Objective. To explore the clinical effects of tandospirone citrate assisted by drawing therapy (DT) on medication compliance and sleep quality in patients with anxiety disorders. *Methods*. A total of 128 patients with anxiety disorders treated in the hospital were enrolled between January 2020 and January 2022. According to the random number table method, they were divided into the observation group ($n = 64$) and the control group ($n = 64$). The control group was treated with tandospirone citrate, while the observation group was additionally treated with DT. The clinical curative effect and medication compliance after treatment, scores of Hamilton Anxiety Scale (HAMA), Pittsburgh Sleep Quality Index (PSQI), and the World Health Organization's Quality of Life Questionnaire-Brief Version (WHOQOL-BREF) before and after treatment were compared between the two groups. The occurrence of adverse reactions during treatment was recorded. *Results*. After treatment, the total response rate in the observation group was higher than that in the control group (96.88% *vs* 86.94%) ($P < 0.05$). After treatment, scores of HAMA and PSQI in both groups were decreased, which were lower in the observation group than in the control group ($P < 0.05$). After treatment, medication compliance in the observation group was higher than that in the control group ($P < 0.05$). After treatment, scores of environmental factors, social relations, physiological function, and psychological status in both groups were increased, which were higher in the observation group than in the control group ($P < 0.05$). During treatment, there was no significant difference in the incidence of adverse reactions between the two groups ($P > 0.05$). *Conclusion*. DT-assisted tandospirone citrate can effectively improve the clinical symptoms of patients with anxiety disorders, improve medication compliance, sleep quality, and quality of life, and have a certain degree of safety.

1. Introduction

Anxiety disorder is a pathological worry and anxiety in which patients have unexplained anxiety, nervousness, and autonomic hyperactivity [1]. With the acceleration of the pace of life and the continuous increase of life pressure, the incidence of the disease continues to rise, which brings great mental pain to patients and affects their family and social functions to a certain extent [2]. At present, drugs are mostly used in clinical treatment. Tandospirone citrate is a new type of anxiolytic drug, which has a high affinity for serotonin 1A (5-HT1A) receptors and has a good antianxiety effect [3]. However, studies have shown that drugs can only relieve 60–70% of symptoms, and patients still have the risk of disease recurrence. In recent years, studies have shown that drawing therapy (DT) has a certain effect on the treatment of anxiety disorders. DT is a psychotherapeutic approach based on the division of labor and mental projection theory in the left and right hemispheres of the brain, allowing medical staff to understand the inner activities of patients and thus communicate with them [4]. Based on this, this study used DT to assist tandospirone citrate in the treatment of patients with anxiety disorders, in order to provide a reference for clinical treatment.

2. Materials and Methods

2.1. Research Objects. A total of 128 patients with anxiety disorders who came to our hospital for treatment from January 2020 to January 2022 were selected and divided into an observation group ($n = 64$) and a control group ($n = 64$) according to the random number method. Inclusion criteria were as follows: patients who meet the diagnostic criteria of anxiety disorder [5], Hamilton Anxiety Scale [6] (HAMA) ≥14 points; patients with the first onset; age >18 years old; and all patients informed and agreed to participate in this study. Exclusion criteria were as follows: patients who have used antipsychotic drugs in the past 2 weeks; patients with severe metabolic and endocrine diseases; patients with organic brain diseases; and patients who are allergic to the drugs in this study. In the observation group, there were 35 males and 29 females, aged 35.50 ± 4.94 years, average disease duration of 17.14 ± 2.42 months, and education level: 15 cases of junior high school and below, 29 cases of high school and college, and 20 cases of undergraduate and above. In the control group, there were 31 males and 33 females, aged 34.03 ± 4.01 years, average disease duration of 16.72 ± 2.80 months, and education level: 18 cases of junior high school and below, 27 cases of high school and junior college, and 19 cases of undergraduate and above. There was no significant difference in the general data between the two groups ($P > 0.05$). This study complies with the World Medical Congress Declaration of Helsinki.

2.2. Methods. The control group was treated with tandospirone citrate (Sichuan Creed Pharmaceutical Co., Ltd., approved by H20052328, 5 mg * 24 capsules), 10 mg orally each time, 3 times a day. Insomniacs are allowed to take zolpidem before going to bed (Sanofi (Hangzhou) Pharmaceutical Co., Ltd., approved by Chinese medicine H20044989), and the dose is controlled at 5–10 mg/d [7].

On this basis, the observation group was treated with painting therapy, and the drug usage was the same as that of the control group. Painting therapy: (1) set up a painting team composed compose of the attending physician, head nurse, psychiatrist, and 6 nurses. All members are trained in painting, and at the same time, conduct scenario drills in advance to deepen the nursing staff's ability to interpret the painting, communication skills, and knowledge of psychology. (2) Environmental layout: provide unified painting materials, use methods, play relaxing music, let patients maintain inner peace and relaxation, inform patients that this activity does not require strong painting skills, 2 lessons per week, and 1 hour per lesson. (3) Painting is divided into theme painting, free painting, filling and coloring, and other forms, and relevant guidance is provided by professional painters. Week 1: use secret garden coloring to stimulate the patient's interest in painting. Week 2: ask patients to draw "houses, trees, people," so they can put down psychological guards and let caregivers have a certain understanding of their personality. Week 3: ask the patient to draw a self-portrait, so that caregivers can better understand the patient's heart. Week 4: draw "Today's Mood" and "Man in the Rain," analyze the source of the patient's negative emotions, and at the same time let the patient release their emotions. Week 5: draw "My Childhood," the nursing staff will guide the patient to recall the happy memories of childhood, and inspire the patient to recall the happy and happy moments in life. Week 6: draw "My Ideal" and "Better Future" to inspire patients to imagine a better future. In the 7th and 8th weeks, free painting is carried out, so that patients can freely express their personal emotions and inner emotions. In the process of creation, professional painters assist them, and psychological consultants carefully observe them and empathize with the psychological experience of patients. After each painting activity, the patient explained the content of his painting, subjectively expressed his personal life story, and was properly enlightened by a psychological counselor to help him solve related problems. Both groups were treated for 2 months.

2.3. Observation Indicators

2.3.1. Comparison of Anxiety Scores between the Two Groups. Before and after treatment, HAMA was used to evaluate the degree of anxiety of patients, including 14 items, each of which was scored on a 5-point scale from 0 to 4 points, with a total score of 56 points, and the cutoff value of the standard score 14 points, ≥14 points have anxiety, ≥21 points have anxiety, and ≥29 points have severe anxiety.

2.3.2. Comparison of Clinical Efficacy between the Two Groups. The curative effect of this treatment was judged according to the reduction rate of HAMA: recovery: reduction rate ≥75%; markedly effective: 50% ≤reduction rate ≤74%; effective: 25% ≤reduction rate ≤49%; and invalid: the drop rate is less than 25%. Total effective rate = cure rate + markedly effective rate + effective rate.

2.3.3. Comparison of Sleep Quality between the Two Groups. Before and after treatment, the Pittsburgh Sleep Quality Index (PSQI) [8] is used to assess the quality of sleep in patients. There are 24 items in the table, including 19 self-assessment items and 5 items. There are a total of 7 evaluation factors, each of which is scored on a scale of 0–3, with a total score of 21 points. A higher score indicates poorer sleep quality.

2.3.4. Comparison of Medication Compliance between the Two Groups. After treatment, the medication compliance of the two groups was compared [9]. Complete compliance: the patient took medication exactly as prescribed by the doctor. Partial compliance. the patient takes the medicine as prescribed by the doctor, and the number of missed doses is less than 3 times per week. Noncompliance: patients often miss medication and change the dosage or stop medication without permission. Medication adherence = complete adherence rate + partial adherence rate.

2.3.5. Comparison of Quality of Life between the Two Groups. Before and after treatment, the quality of life of patients was evaluated by the World Health Organization Quality of Life

Scale (WHOQOL-BREF) [10], and the Likert 5-level scoring method was used, mainly including physiological aspects. In psychological aspects, environmental factors, and social relations, the higher the score, the better the quality of life of patients.

2.3.6. Comparison of Adverse Reactions between the Two Groups. The occurrence of adverse reactions in the two groups during treatment including nausea and vomiting and dizziness was recorded.

2.4. Statistical Methods. SPSS 20.0 statistical software was used for statistical analysis, measurement data were expressed as ($\overline{x}\pm s$), and a t-test was used; count data were expressed as a rate (%), and the χ^2 test was used, and $P < 0.05$ was considered statistically significant.

3. Results

3.1. Comparison of Clinical Efficacy between the Two Groups. After treatment, the total effective rate in the observation group was 96.88%, which was higher than 86.94% in the control group, and the difference was statistically significant ($P < 0.05$), as shown in Table 1 and Figure 1.

3.2. Comparison of Anxiety Scores and Sleep Quality between the Two Groups of Patients. After treatment, the HAMA and PSQI scores of the two groups were lower than those before treatment, and the observation group was lower than the control group, and the difference was statistically significant ($P < 0.05$), as shown in Table 2 and Figure 2.

3.3. Comparison of Medication Compliance between the Two Groups of Patients. After treatment, the medication compliance of the observation group was higher than that of the control group, and the difference was statistically significant ($P < 0.05$), as shown in Table 3 and Figure 3.

3.4. Comparison of Quality of Life between the Two Groups. After treatment, the scores of environmental factors, social relations, physiology, and psychology in the two groups were higher than those before treatment, and the observation group was higher than the control group, and the difference was statistically significant ($P < 0.05$), as given in Table 4, Figure 4.

3.5. Adverse Reactions in the Two Groups. During the treatment period, there was no significant difference in the incidence of adverse reactions between the two groups ($P > 0.05$), as shown in Table 5 and Figure 5.

4. Discussion

Anxiety disorder is a common mental disorder, the main symptoms are persistent and significant tension, there are significant symptoms of autonomic dysfunction, and the patient is mentally distressed [11]. Studies have shown [12] that the lifetime prevalence rate is 16%, the course of the disease is long, and the prognosis is poor, bringing a heavy economic burden to patients and their families. At present, drugs are used in clinical treatment. Tandospirone citrate is a partial agonist of the 5-HT1A receptor, which can relieve anxiety and regulate emotions. Although it can relieve some symptoms of patients, patients have fluctuations in disease symptoms, so it is necessary for adjuvant therapy [3]. DT is one of the nondrug treatments for anxiety disorders. This drug can selectively act on the 5-HT1A receptor, one of the subtypes of serotonin receptors in the brain, thereby exerting anxiolytic effects and improving symptoms in psychosomatic disease models. The main mechanism of the antidepressant effect of this drug is related to the downregulation of the density of 5-HT2 receptors in the serotonergic postsynaptic membrane, muscle relaxation, anesthesia enhancement, spontaneous motor inhibition, ataxia motor inhibition, antispasmodic effect. In clinical applications, there is no gait waddling and no muscle relaxation associated with excessive sedation. It was used earlier in foreign countries, and it can reduce the patient's defense mechanism and promote the patient to improve their physical, emotional, and cognitive functions, thereby improving their health status [13].

After the treatment in this study, the total effective rate in the observation group was 96.88%, which was higher than 86.94% in the control group, and the HAMA scores in the observation group were lower than those in the control group, suggesting that DT-assisted tandospirone citrate can effectively improve patients with anxiety disorders clinical symptoms. The author believes that this is mainly because tandospirone citrate can concentrate on the raphe nucleus, amygdala, hippocampus, and other parts, selectively stimulate the 5-HT1A receptors in the postsynaptic membrane, and make 5-HT and 5-HT1A. Binding with 5-HT2A receptors restores balance and relieves anxiety; other studies have shown that it can downregulate the density of 5-HT1A autoreceptors in the presynaptic membrane to achieve anxiolytic effects [12, 14]. It has been confirmed in animal experiments that tandospirone citrate has anxiolytic effects, and no drug dependence and interaction with alcohol have been observed [15]. On the other hand, DT can assist in drug therapy, help patients understand their psychological state, and distinguish between real and illusory, to directly express their inner emotions, thereby diverting their attention, improving their self-awareness, and promoting personality transformation [16].

A large number of studies have shown [17] that the medication compliance of patients with anxiety disorders is related to the drug efficacy, adverse reactions, and drug sensitivity and tolerance of patients. After the treatment in this study, the medication compliance of the observation group was higher than that of the control group, suggesting that DT-assisted tandospirone citrate can effectively improve the medication compliance of patients. Analyzing the reasons, it is mainly because DT can release the subconscious pressure of patients through various forms such as theme painting, free painting, and coloring. Coordinated

Table 1: Comparison of clinical efficacy between the two groups (n, %).

Group	Number of cases	Cure	Significant effect	Efficient	Invalid	Total efficiency (%)
Observation group	64	15	38	7	2	62 (96.88%)
Control group	64	7	26	13	9	55 (86.94%)
χ^2						4.873
P						0.027

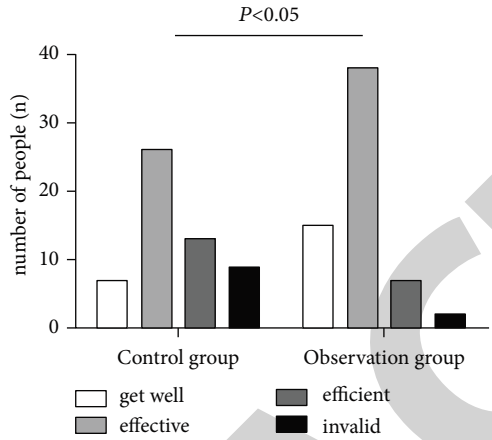

Figure 1: Comparison of clinical efficacy between the two groups.

Table 2: Comparison of anxiety scores and sleep quality between the two groups of patients ($\overline{x}\pm s$, points).

Group	Number of cases	HAMA		PSQI	
		Before the treatment	After the treatment	Before the treatment	After the treatment
Observation group	64	26.38 ± 5.44	9.47 ± 1.73#	16.98 ± 3.30	7.05 ± 1.91#
Control group	64	26.50 ± 5.25	12.72 ± 3.62#	16.88 ± 2.83	10.41 ± 2.45#
t		0.132	6.484	0.201	8.649
P		0.895	<0.001	0.841	<0.001

Note. Compared with before treatment, #$P < 0.05$.

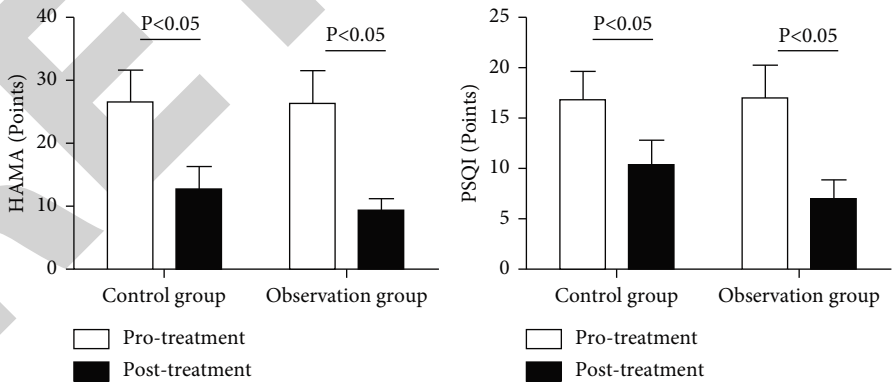

Figure 2: Changes in HAMA and PSQI scores before and after treatment in the two groups.

Table 3: Comparison of medication compliance between two groups of patients (n, %).

Group	Number of cases	Full compliance	Partial compliance	Noncompliance	Medication compliance (%)
Observation group	64	34	26	4	60 (93.75%)
Control group	64	25	27	13	51 (79.69%)
χ^2					5.494
P					0.019

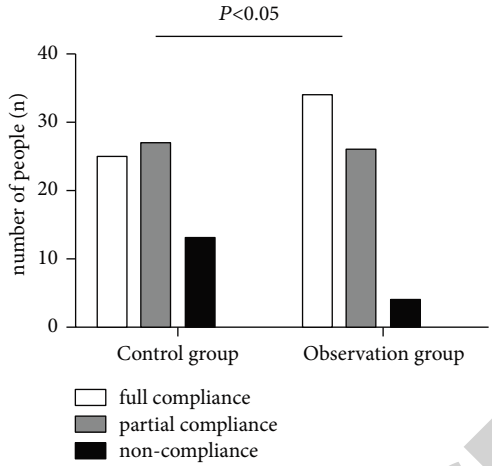

Figure 3: Comparison of medication compliance between the two groups.

Table 4: Comparison of quality of life between the two groups ($\overline{x}\pm s$, points).

Group	Number of cases	Environmental factor		Social relationship		Physiological aspects		Psychological aspect	
		Before the treatment	After the treatment	Before the treatment	After the treatment	Before the treatment	After the treatment	Before the treatment	After the treatment
Observation group	64	77.06 ± 7.35	89.59 ± 4.66#	74.13 ± 6.45	86.44 ± 5.24#	56.98 ± 5.35	73.52 ± 6.87#	51.08 ± 4.87	82.16 ± 6.54#
Control group	64	75.02 ± 5.78	84.05 ± 4.96#	73.39 ± 5.91	80.69 ± 4.67#	56.58 ± 6.28	64.83 ± 5.39#	51.06 ± 6.30	73.83 ± 6.79#
t		1.752	6.524	0.672	6.554	0.394	7.896	0.016	7.066
P		0.082	<0.001	0.503	<0.001	0.694	<0.001	0.988	<0.001

Note. Compared with before treatment, $^{\#}P < 0.05$.

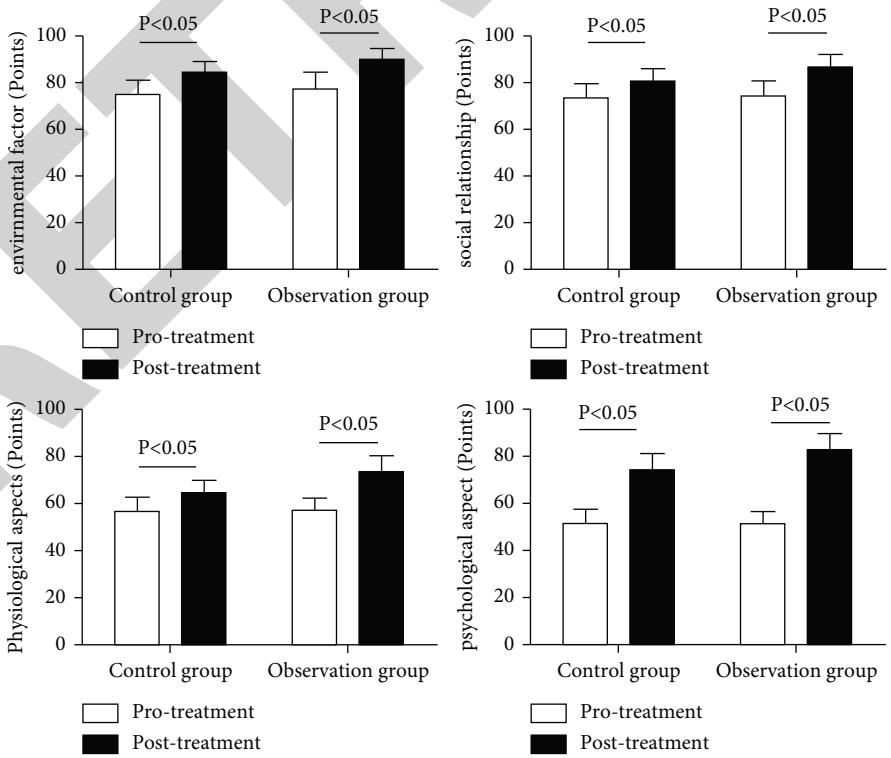

Figure 4: Changes of quality of life scores before and after treatment in the two groups of patients.

Table 5: Comparison of adverse conditions between the two groups (n, %).

Group	Number of cases	Lethargy	Nausea	Decreased appetite	The adverse reaction rate (%)
Observation group	64	2	1	1	4 (6.25%)
Control group	64	1	2	0	3 (4.69%)
χ^2					0.151
P					0.697

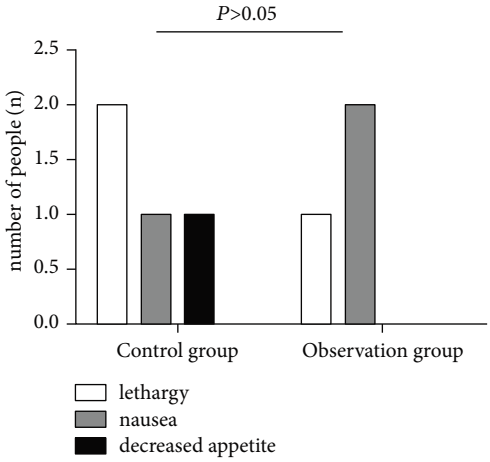

Figure 5: Comparison of adverse reactions between the two groups.

psychological activities can be adjusted; at the same time, DT can make patients feel the support and care of medical staff, thereby increasing medication compliance [18].

After the treatment in this study, the PSQI scores of the observation group were lower than those of the control group, and the scores of environmental factors, social relations, physiology, and psychology in the observation group were all higher than those in the control group, suggesting that DT-assisted tandospirone citrate can effectively improve the patient's health, sleep quality, and improve their quality of life. The author believes that this is mainly because DT can enable medical staff to understand the source of their anxiety through painting, so as to meet their psychological needs; it can also help patients see life from another perspective, understand themselves, and enhance their optimism and hope levels. It can make it full of pursuit and desire for the future, so as to assist the treatment of tandospirone citrate and improve its sleep quality and quality of life [19]. During the treatment, the incidence of adverse reactions in the two groups was lower, and there was no significant difference between the groups, suggesting that DT-assisted tandospirone citrate has certain safety. Of course, this study also has certain shortcomings. The sample size of this study is small, and long-term efficacy has not been observed. Therefore, the sample size will be expanded in the later stage, combined with multicenter, and the study time will be extended to enrich the results of this study.

In conclusion, tandospirone citrate adjuvant DT can effectively improve the clinical symptoms of patients with anxiety disorders, improve medication compliance, improve their sleep quality and quality of life, and have certain safety.

Data Availability

The data used to support this study are available from the corresponding author upon request.

Ethical Approval

This study was approved by the ethics committee of our hospital (2020096).

Disclosure

Jichong Hou and Ruifang Zhang are the co-first authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Curative Effect of Yangxin Dingji Capsule Combined With Mexiletine Hydrochloride on Postoperative Arrhythmia and Its Influences on the Vascular Endothelial Function in Coronary Bifurcation Lesions

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] N. Sun, W. Chen, Y. Wu, Q. Yu, X. Zhou, and B. Guo, "Curative Effect of Yangxin Dingji Capsule Combined With Mexiletine Hydrochloride on Postoperative Arrhythmia and Its Influences on the Vascular Endothelial Function in Coronary Bifurcation Lesions," *Emergency Medicine International*, vol. 2022, Article ID 4078895, 5 pages, 2022.

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Research Article

Curative Effect of Yangxin Dingji Capsule Combined With Mexiletine Hydrochloride on Postoperative Arrhythmia and Its Influences on the Vascular Endothelial Function in Coronary Bifurcation Lesions

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Objective. The aim of the study is to explore the curative effect of Yangxin Dingji capsule combined with mexiletine hydrochloride on postoperative ventricular arrhythmia (VA) and its influences on vascular endothelial function in coronary bifurcation lesions (CBL). *Methods*. A total of 110 patients with CBL admitted to the hospital were enrolled as research subjects between January and December 2021. According to the random number table method, they were divided into a combination group and control group, with 55 cases in each group. The control group was treated with mexiletine hydrochloride, while the combination group was additionally treated with Yangxin Dingji capsules. All were continuously treated for 4 weeks. The clinical response rate between the two groups was compared. The frequencies of 24 h paroxysmal atrial fibrillation, premature atrial contraction, and premature ventricular contraction were compared by the Holter monitoring. The whole blood low-shear viscosity, whole blood high-shear viscosity, and fibrinogen (Fb) in both groups were measured by a full-automatic blood flow analyzer. The levels of plasma nitric oxide (NO), endothelin-1 (ET-1), and von Willebrand factor (vWF) were detected by the nitrate reductase method and enzyme-linked immunosorbent assay (ELISA). During treatment, the occurrence of adverse reactions (vomiting, loss of appetite, dry mouth, diarrhea, nausea) in both groups was statistically analyzed. *Results*. After treatment, the total response rate of treatment in the combination group was significantly higher than that in the control group ($P < 0.05$). After treatment, frequencies of paroxysmal atrial fibrillation, premature atrial contraction, and premature ventricular contraction in the combination group were significantly lower than those in the control group ($P < 0.05$). Whole blood low-shear viscosity, whole blood high-shear viscosity, and the Fb level were significantly lower than those in the control group ($P < 0.05$). After treatment, the NO level in the combination group was significantly higher than that in the control group ($P < 0.05$), while levels of ET-1 and vWF were significantly lower than those in the control group ($P < 0.05$). During treatment, there was no significant difference in the total incidence of adverse reactions between the two groups ($P > 0.05$). *Conclusion*. Yangxin Dingji capsule combined with mexiletine hydrochloride can significantly improve clinical effects in CBL patients, improve VA and vascular endothelial function, and reduce plasma viscosity without increasing the incidence of adverse reactions.

1. Introduction

Coronary bifurcation lesions (CBL) are considered to be a coronary stenosis disease and percutaneous coronary intervention (PCI) is often used in clinical practice, and ventricular arrhythmia (VA) often occurs after surgery [1]. Mexiletine hydrochloride is a class Ib sodium channel blocker. It can reduce the depolarization speed of action potential by inhibiting the influx of Na+ in cardiomyocytes to achieve the purpose of treating VA, but long-term use

will cause vomiting and nausea in patients. Symptoms such as the abnormal liver function and ventricular rapid heart rate aggravate the patient's VA condition and affect the prognosis [2]. Yangxin Dingpai Capsule belongs to a kind of Chinese patent medicine. It has the functions of calming palpitations, restoring pulse, invigorating qi, nourishing blood, etc. It can exert an anti-VA effect by reducing premature ventricular contraction and has been used for various factors causing VA. The effect is remarkable [3]. Previous studies have found that Yangxin Dingji Capsules combined with Western medicine are significantly more effective than pure Western medicine in the treatment of VA and improve the vascular endothelial function and can also reduce the risk of abnormal heart rate caused by long-term use of Western medicine [4]. At present, the application of mexiletine hydrochloride combined with Yangxin Dingji Capsules in postoperative CBL patients is still in its infancy, and relevant reports are rare. In this study, patients with postoperative CBL were treated with mexiletine hydrochloride combined with Yangxin Dingji Capsules, and the effects on VA and vascular endothelial function were observed. The purpose of this study is to provide some ideas and suggestions for the selection of effective clinical treatment plans in the future.

2. Materials and Methods

2.1. General Information. A total of 110 CBL patients admitted to our hospital from January 2021 to December 2021 were selected as the research subjects, and they were randomly divided into the combined group and the control group, with 55 cases in each group. Inclusion criteria are as follows: (1) all patients met the CBL-related diagnostic criteria in "Interventional Treatment of Coronary Artery Bifurcation Lesions" [5]; (2) there were no detours or severe calcification in branch or main blood vessels; (3) all patients were included in the study, in line with PCI indications; (4) all patients had arrhythmias after ECG detection; (5) this study was approved by the patients and their families, and was approved by the Medical Ethics Committee of our hospital. Exclusion criteria are as follows: (1) combined with other malignant tumors; (2) suffering from autoimmune diseases; (3) allergic to mexiletine hydrochloride or Yangxin Dingji capsule; and (4) patients with serious abnormal mental and cognitive functions. Control group: 25 males and 30 females; aged 40–71 years, mean (58.88 ± 5.21) years old; body mass index (BMI) 21–28 kg/m^2, mean (24.67 ± 2.03) kg/m^2. Medina classification: 27 cases of type 1, 1, 1, and 11 cases of type 0, 1, and 1, and 17 cases of type 1, 0, and 1. Combined group: 28 males and 27 females; age 41–70 years old, mean (57.78 ± 5.55) years old; BMI 22–28 kg/m^2, mean (24.51 ± 2.33) kg/m^2. Medina classification: 1 and 1. There were 25 cases of type 1, and 12 cases of type 0, 1, and 1, and 18 cases of type 1, 0, and 1. There was no significant difference in general data such as gender, age, BMI, and Medina classification between the two groups ($P > 0.05$), and the results were comparable.

2.2. Methods. Both groups of patients were given basic treatments such as improving coronary circulation and anticoagulation after the operation. At the same time, the control group was given mexiletine hydrochloride (Shanghai Shanghai Pharmaceutical Xinyi Pharmaceutical Co., Ltd., H31021874, 50 mg/tablet). Patients take oral administration in the morning, middle, and evening, 3 times/d, 150 mg/time. The initial dose is 300–500 mg/d. The maximum daily dose cannot exceed 800 mg.

On the basis of the control group, the combined group was given Yangxin Dingji Capsule (Hebei Yongfeng Pharmaceutical Co., Ltd., Z19991082, 500 mg/capsule). Patients take orally in the morning and evening, 2 times/d, 6 capsules/time. Both groups were treated for 4 consecutive weeks.

2.3. Observation Indicators. (1) After 4 weeks of treatment, the clinical efficacy evaluation was carried out with reference to the relevant basis in the Guidelines for Clinical Research of New Chinese Medicines [5]. The main clinical symptoms of the evaluation were chest tightness and fatigue, palpitations, shortness of breath, dizziness, and insomnia, and the number of arrhythmias was recorded by an electrocardiogram. All clinical symptoms of the patient were significantly improved, and the number of arrhythmias was reduced by more than 90%.The number of arrhythmias reduced by less than 50% is invalid. The total clinical effective rate = (markedly effective + effective)/total number of patients × 100%. (2) Before the treatment and after 4 weeks of treatment, the patients were observed with a dynamic ECG monitor (HWM-112W, Xuzhou Capital Medical Equipment Co., Ltd.) for 24 hours, and the occurrence of paroxysmal atrial fibrillation and atrial fibrillation in the patients within 24 hours was recorded. The number of premature contractions and ventricular premature contractions occurred, and the VA status of the patients was compared. (3) Before treatment and after 4 weeks of treatment, an automatic blood flow analyzer (XT-1800i, Sysmex Medical Electronics Co., Ltd.) was used to analyze the whole blood low-shear viscosity value, whole blood high-shear viscosity value, fibrinogen (Fb) levels were measured. (4) Before treatment and after 4 weeks of treatment, the serum levels of nitric oxide (NO) and endothelin-1 in the two groups of patients were measured by a nitrate reductase method and enzyme-linked immunosorbent assay (ELISA). (endothelin 1, ET-1) and von Willebrand factor (vWF) levels were detected. Both groups of patients underwent fasting venous blood draw of 4–5 mL in the early morning, and the serum was separated by centrifugation (3000 rpm, 8 cm, 10 min). The samples to be tested were stored in a −20°C refrigerator, and then, the NO detection kit (Guangzhou Jiashengkang Biotechnology Co., Ltd.) and ELISA were used. The levels of NO, ET-1, and vWF were measured by the kit (Shanghai Enzyme Research Biotechnology Co., Ltd.), and the operations were carried out in strict accordance with the kit instructions. (5) During the treatment period, the total incidences of adverse reactions such as vomiting, loss of appetite, dry mouth, diarrhea, and nausea were counted in the two groups.

Table 1: Comparison of clinical effects between the two groups of patients (n, (%)).

Group	Number of cases	Effective	Valid	Invalid	Total efficiency
	55	18 (32.73)	20 (36.36)	17 (30.91)	38 (69.09)
Control group	55	29 (52.73)	18 (32.73)	8 (14.55)	47 (85.46)
χ^2					4.193
P					0.041

Table 2: Comparison of arrhythmia between the two groups (n, $\overline{x} \pm s$, times).

Group	Number of cases	*Paroxysmal atrial fibrillation*		*Atrial precontraction*		*Premature ventricular contraction*	
		Before the treatment	4 weeks after treatment	Before the treatment	4 weeks after treatment	Before the treatment	4 weeks after treatment
Control group	55	273.62 ± 32.22	86.64 ± 20.86[a]	4973.89 ± 491.31	1157.67 ± 204.49[a]	8241.31 ± 808.45	1414.87 ± 350.16[a]
Combined group	55	279.82 ± 31.67	58.85 ± 18.78[a]	5086.05 ± 401.38	767.47 ± 186.00[a]	8219.25 ± 935.02	894.85 ± 360.60[a]
T		1.018	7.341	1.311	10.469	0.132	7.673
P		0.311	0.001	0.193	0.001	0.895	0.001

Table 3: Comparison of plasma viscosity between the two groups (n, $\overline{x} \pm s$).

Group	Number of cases	*Whole blood low shear viscosity value (mpa·s $^{-1}$)*		*Whole blood high-shear viscosity value (mpa·s $^{-1}$)*		*Fb (ρ/g·L $^{-1}$)*	
		Before the treatment	4 weeks after treatment	Before the treatment	4 weeks after treatment	Before the treatment	4 weeks after treatment
Control group	55	10.43 ± 1.15	8.76 ± 1.30[a]	6.61 ± 1.15	5.13 ± 0.85[a]	370.32 ± 37.10	331.68 ± 23.75[a]
Combined group	55	10.34 ± 1.44	7.22 ± 1.64[a]	7.01 ± 1.64	4.81 ± 0.70[a]	370.48 ± 40.18	292.98 ± 25.01[a]
t		0.349	5.474	1.477	2.142	0.021	8.320
P		0.727	0.001	0.143	0.034	0.983	0.001

[a]indicates comparison with the same group before treatment, [a]$P < 0.05$.

2.4. Statistical Methods. SPSS 22.0 software was used for statistical analysis of the data. The measurement data were expressed as ($\overline{x} \pm s$), and the differences in measurement data between groups were compared using an independent t test. Differences in measurement data within groups were compared using a paired t test. The count data are expressed in (n (%)). A chi-square comparison test was used. Statistical significance was indicated by $P < 0.05$.

3. Results

3.1. Comparison of Clinical Effects between the Two Groups of Patients. After 4 weeks of treatment, the total clinical effective rate in the combination group was 87.27%, which was significantly higher than that in the control group (69.09%) ($\chi^2 = 5.329$, $P = 0.021$) as shown in Table 1.

3.2. Comparison of Arrhythmia between the Two Groups. Before treatment, there were no significant differences in the number of paroxysmal atrial fibrillations, atrial pre-systole, and ventricular pre-systole between the two groups ($P > 0.05$). The number of contractions and premature ventricular contractions were significantly lower than those before treatment, and the combined group was significantly lower than the control group ($P < 0.05$) as shown in Table 2.

3.3. Comparison of Plasma Viscosity between the Two Groups. Before treatment, there was no significant difference in whole blood low-shear viscosity value, whole blood high-shear viscosity value, or Fb level between the two groups ($P > 0.05$). The viscosity value and Fb level were significantly lower than those before treatment, and the combined group was significantly lower than the control group ($P < 0.05$) as shown in Table 3.

3.4. Comparison of Serum NO, ET-1, and vWF Levels between the Two Groups of Patients. Before treatment, there was no significant difference in the levels of NO, ET-1 and vWF between the two groups ($P > 0.05$); after 4 weeks of treatment, the levels of NO in the two groups were significantly higher than those before treatment, and the levels of ET-1 and vWF were significantly lower than those after treatment before, and the level of the combined group was significantly better than that of the control group ($P < 0.05$) as shown in Table 4.

Table 4: Comparison of the vascular endothelial function between the two groups of patients (n, $\overline{x} \pm s$).

Group	Number of cases	NO (μg/L)		ET-1 (pg/L)		vWF (%)	
		Before the treatment	4 weeks after treatment	Before the treatment	4 weeks after treatment	Before the treatment	4 weeks after treatment
Control group	55	38.95 ± 6.03	49.52 ± 5.42[a]	75.86 ± 10.08	58.00 ± 7.11[a]	172.41 ± 19.88	130.60 ± 20.14[a]
Combined group	55	38.81 ± 5.17	59.51 ± 6.96[a]	72.90 ± 9.98	49.43 ± 7.49[a]	176.22 ± 28.38	118.90 ± 12.50[a]
t		0.128	8.399	1.547	6.153	0.816	3.66
P		0.899	0.001	0.125	0.001	0.416	0.001

Note.[a] indicates comparison with the same group before treatment [a]$P < 0.05$.

Table 5: Comparison of the total incidence of adverse reactions between the two groups (n, (%)).

Group	Number of cases	Vomiting	Lack of appetite	Nervous system damage	dry mouth	Diarrhea	Nausea	Overall incidence of adverse reactions
Control group	55	2 (3.64)	3 (5.45)	1 (1.82)	1 (1.82)	1 (1.82)	1 (1.82)	9 (16.36)
Combined group	55	1 (1.82)	1 (1.82)	0(0.00)	1 (1.82)	1 (1.82)	1 (1.82)	5 (9.09)
χ^2								1.310
P								0.252

3.5. Comparison of Adverse Reactions between the Two Groups of Patients. During the treatment, the total incidence of adverse reactions such as vomiting, loss of appetite, dry mouth, diarrhea, and nausea in the combined group was significantly lower than that in the control group ($P < 0.05$) as shown in Table 5. All patients received corresponding nursing care and treatment when adverse reactions occurred and the symptoms were gradually relieved and disappeared.

4. Discussions

PCI is a common surgical procedure for the treatment of CBL in clinical practice. It uses a catheter to dredge occluded or extremely narrowed coronary arteries. It has the advantages of a good curative effect and little damage. At present, western medicines such as mexiletine hydrochloride are often used in the clinical treatment of VA. Although there is a certain curative effect, in the long run, it will have side effects on the function of the kidneys and liver of the patients, which will lead to the rapid ventricular heart rate of the patients. Studies have found that the combined use of traditional Chinese and Western medicines can largely improve VA and vascular endothelial function in patients with high safety [7].

The results of this study showed that the clinical efficacy of the combined group was significantly better than that of the control group, indicating that the use of Yangxin Dingji Capsules combined with western medicine could further improve the clinical efficacy of CBL patients. Traditional Chinese medicine believes that VA is mainly caused by the obstruction of blood vessels, which can be treated by removing the blood vessels. Yangxin Dingpai Capsule is a kind of Chinese patent medicine often used in clinical practice. The specific medicinal ingredients are red ginseng, cinnamon, ginger, roasted licorice, *Rehmannia glutinosa*, *Ophiopogon japonicus*, etc. The roasted licorice is a royal medicine, which has the effects of dredging blood vessels, nourishing blood, and nourishing yin. Among them, red ginseng, *Rehmannia glutinosa*, and *Ophiopogon japonicus* are used as ministerial medicines, which have the functions of nourishing blood and invigoration. With cinnamon twig and ginger as adjuvants, it has the functions of warming the blood and dispersing the acrid; the combination of multiple drugs can play a role in nourishing the blood, nourishing yin, and reconciling yin and yang [8]. Mexiletine hydrochloride can improve VA by regulating the functions of various myocardial ion channels, and the combined use of the two may have a synergistic effect of improving VA. Abnormal activation of the sinus node is the main factor in the production of VA. Paroxysmal atrial fibrillation, premature atrial contractions, and an abnormally increased number of premature ventricular contractions are common clinical features of VA, which can reflect the severity of VA to a certain extent [9]. Therefore, we conducted statistics on the above three indicators in the two groups of patients, and the results found that the reduction of each index in the combination group was greater than that in the control group after treatment, indicating that compared with mexiletine hydrochloride alone, the combined use of Yangxinding Ji Capsules can better improve postoperative arrhythmia in CBL patients to a certain extent. The results of this study are similar to those of Yaning et al. [10] Analysis of the reason may lie in the Zhigancao and Guizhi contained in the Yangxin Dingpal Capsule. Zhigancao contains glycyrrhetinic acid. Glycyrrhetinic acid can promote the increase of ATPase activity in myocardial tissue and ensure that K+ and Na+ in myocardial cells are normal. To inhibit the concentration of Ca2+, thereby reducing the automaticity of cardiac ectopic pacemakers, to achieve the purpose of improving VA. The two most effective components in cinnamon twig are cinnamic acid and cinnamic aldehyde, both of which can prolong the action potential very well, thereby inhibiting cell autonomicity, and finally reducing the abnormal excitation of the sinoatrial node to improve VA.

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Retraction

Retracted: Risk Factors of Benign Stricture of Anastomotic Stoma after Esophagectomy and Therapeutic Effect of Stent Implantation

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] G. Wu, L. Niu, Y. Yang et al., "Risk Factors of Benign Stricture of Anastomotic Stoma after Esophagectomy and Therapeutic Effect of Stent Implantation," *Emergency Medicine International*, vol. 2022, Article ID 2605592, 5 pages, 2022.

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Research Article

Risk Factors of Benign Stricture of Anastomotic Stoma after Esophagectomy and Therapeutic Effect of Stent Implantation

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With the increase in the number of patients and prolongation of their lives after esophagectomy for esophageal cancer, the quality of life after surgery has attracted more and more attention. Although anastomotic stenosis is a common complication, it seriously affects the quality of life and psychological state of patients or even threatens their lives. At present, the exact independent influencing factors of anastomotic stenosis after esophageal cancer surgery have not been determined, and relevant treatment options are still controversial. Here, we analyzed the independent risk factors leading to good postoperative anastomotic stenosis, in order to provide a basis for late prevention. At the same time, we deeply discussed the advantages and safety of stent implantation in the treatment of anastomotic stenosis.

1. Introduction

Esophageal cancer is a common clinical malignant tumor, and its incidence is second only to gastric cancer [1]. According to an epidemiological survey, the mortality rate of this disease accounts for 20% of all malignant tumors [2]. Therefore, surgical treatment should be carried out as soon as possible. Although the curative effect has been affirmed with the introduction of minimally invasive surgery, postoperative complications have remained high, including gastric emptying disorders, reflux esophagitis, chylothorax, and anastomotic stenosis[3]. Among them, anastomotic stenosis is the most common, with an incidence rate as high as 15.2%–42.7% [4]. At the same time, postoperative esophageal anastomotic stenosis can lead to pain, difficulty, vomiting, food regurgitation, and even malnutrition in severe cases, requiring reoperation [5]. If it is not prevented and treated in time, it can have a serious impact on the prognosis. Therefore, the factors of postoperative stenosis should be included in the key observation objects. Although scholars have explored the prognostic factors after esophageal cancer surgery, there are few related reports, and the exact independent influencing factors have not yet been determined [6]. The basis for later prevention is provided, and the advantages and safety of stent implantation in anastomotic stenosis are further analyzed. The report is as follows.

2. Materials and Methods

2.1. General Information. From February 2018 to December 2021, 92 patients with esophageal cancer surgery were selected as the research subjects. There were 51 males and 41 females, with an average age of 58.65 ± 6.65 years, and an average tumor diameter of 2.31 ± 0.75 cm; TNM stage: 32 cases of stages I~II and 60 cases of stages III~IV. The study was complied with the Declaration of Helsinki for ethical review. According to the presence or absence of benign anastomotic stenosis after the operation, the patients were divided into two groups, namely, the stenosis

group (grades I, II, and III; $n = 55$) and the nonstenosis group (grade 0; $n = 37$).

2.2. Inclusion Criteria. Inclusion criteria were as follows: ① All patients who met the diagnostic criteria for esophageal cancer and underwent surgical treatment [7]. The stenosis group also needed to meet the diagnostic criteria of benign stenosis of the anastomosis, the specific criteria are as follows: grade IV: severe stenosis, cannot be expanded, and needs to be relieved by surgery; grade III: three or more consecutive dilations are required and repeated esophageal strictures; grade II: dilation ≤2 times, anastomotic diameter <1 cm, and eating semiliquid disorder; grade I: slight obstruction to eating, no need for expansion; and grade 0: there is no stricture of the anastomotic stoma, and there is no obstruction to eating [8]. ② Patients whose postoperative survival time was more than 6 months. ③ Patients whose esophagus-stomach anastomosis was used in all operations and the esophagus was reconstructed by the tubular stomach. ④ Patients whose clinical data were complete were included in this study.

2.3. Exclusion Criteria. Exclusion criteria were as follows: ① patients with 2 or more malignant tumors, ② patients with total pharyngeal esophagectomy, and ③ patients with external esophageal pressure, achalasia, hiatal hernia, and neurogenic dysphagia.

2.4. Data Survey. The general data of the patients were evaluated using a questionnaire developed by the hospital, including age, gender, anastomosis method, tumor diameter, pathological type, past medical history, TNM stage, expansion method, anastomotic stoma location, local blood supply, and eating time.

2.5. Therapeutic Method. 0.5 mg of atropine and 10 mg of diazepam were intramuscularly injected 30 minutes before surgery, and 10 mL of lidocaine mucilage was orally administered. Taking the left lateral position, we placed the front end of the OLYMPUS260 electronic gastroscope above the anastomotic stenosis and pushed the guide wire of about 10 cm to the distal end of the anastomosis, and after fixing, gastroscope was withdrawn. Then, we selected a suitable size guide wire to insert into the anastomosis, and by using a dilator expansion, we inserted a stent pusher along the guide wire, then implanted the metal-membrane stent into the stenosis, and withdrew the stent pusher and guide wire. We re-inserted the gastroscope, observed the anastomosis, and then confirmed that there was no stent displacement, perforation, or bleeding. After that, the gastroscope was withdrawn. The patients were kept in a fasting state for 12 hours after the operation, and the eating time was determined according to the recovery situation.

2.6. Efficacy Evaluation. Degree of dysphagia (Stooler grade) and total response rate were assessed after treatment using the following indicators: significant efficiency + effective efficiency = total effective efficiency; markedly effective [9]: lumen diameter >1.2 cm, and symptoms such as dysphagia disappeared; effective: the lumen diameter was 0.6–1.0 cm, and symptoms such as dysphagia were improved; invalid: the above criteria were not met. As per the Stooler classification [10], the patients were classified as follows: grade I: occasional dysphagia, can eat all kinds of food, grade 0: no dysphagia, can eat all kinds of food, grade II: semi-liquid diet, and grade III: only liquid diet.

2.7. Statistical Processing. SPSS 20.0 statistical software was used for processing, and the count data were expressed as (%) and tested by χ^2. The measurement data were represented by $(\overline{x} \pm s)$, and the t-test was performed. Binary logistic regression analysis was used to analyze the independent factors leading to benign anastomotic stenosis in patients after operation, and finally, a prediction model was obtained. AUC was used to evaluate the accuracy of the model, and the Bootstrap method was used for internal verification to draw a calibration chart. $P < 0.05$ was considered statistically significant.

3. Results

3.1. Comparative General Information. Univariate analysis showed that age, gender, anastomosis method, tumor diameter, pathological type, past medical history, TNM staging, and expansion method did not affect postoperative benign anastomotic stenosis ($P > 0.05$) but affected anastomotic location and local blood supply. Eating time, however, will affect the occurrence of benign anastomotic stenosis ($P < 0.05$), as shown in Table 1.

3.2. Binary Logistic Regression. In binary logistic regression analysis, "whether benign anastomotic stenosis occurs after operation" was taken as the dependent variable, (assignment: benign anastomotic stenosis occurs = 0, no benign anastomotic stenosis occurs = 1). "anastomotic position (above tracheal bifurcatio = 0; below tracheal bifurcation = 1), local blood supply (good = 0; poor = 1), and eating time ($12h \geq 0$, $12h \leq 1$)" was taken as independent variables.

The anastomotic stoma located above the tracheal bifurcation, poor local blood supply, and eating time ≥12 hours were independent factors leading to benign anastomotic stenosis after surgery ($P < 0.05$), as shown in Table 2.

3.3. Prediction Accuracy. In order to judge the quality of model fitting, it is necessary to use the model to predict the accuracy. The results show that the overall prediction

Table 1: Comparison of the general information of the two groups.

Indexes	Classification	Stenosis group ($n = 55$)	Nonstenosis group ($n = 37$)	χ^2 value	P value
Age	< 60 year	33 (60.00)	23 (62.16)	0.043	0.835
	≥60 year	22 (40.00)	14 (37.84)		
Gender	Male	31 (56.36)	20 (54.05)	0.048	0.827
	Female	24 (43.64)	17 (45.95)		
Tumor diameter	≤2 cm	35 (63.64)	25 (67.57)	0.151	0.698
	> 2 cm	20 (36.36)	12 (32.43)		
Anastomosis method	By stapler	38 (69.09)	26 (70.27)	0.015	0.904
	By manual anastomosis	17 (30.91)	11 (29.73)		
TNM phase	I~II phase	19 (34.55)	13 (35.14)	0.003	0.954
	III~IV phase	36 (65.45)	24 (64.86)		
Pathological type	Squamous cell carcinoma	44 (80.00)	30 (81.08)	0.016	0.898
	Nonsquamous cell carcinoma	11 (20.00)	7 (18.92)		
Anastomotic location	Above the tracheal bifurcation	30 (54.55)	9 (24.32)	8.272	0.004
	Below the tracheal bifurcation	25 (45.45)	28 (75.68)		
Medical history	Yes	10 (18.18)	6 (16.22)	0.059	0.807
	No	45 (81.82)	31 (83.78)		
Local blood supply	Well	16 (29.09)	25 (67.57)	13.255	< 0.001
	Not well	39 (70.91)	12 (32.43)		
Expansion method	By balloon	27 (49.09)	20 (54.05)	0.218	0.641
	By rod	28 (50.91)	17 (45.95)		
Eating time	< 12 h	16 (29.09)	24 (64.86)	11.519	0.001
	≥12 h	39 (70.91)	13 (35.14)		

Table 2: Factors leading to postoperative benign anastomotic stricture in patients.

Indexes	B	SE	Wald	Degrees of freedom	Significant	OR	95% CI	
							Lower limit	Upper limit
Anastomotic location	2.254	0.661	11.615	1	0.001	9.529	2.606	34.844
Local blood supply	1.818	0.554	10.777	1	0.001	6.158	2.080	18.227
Eating time	2.376	0.648	13.454	1	0.000	10.763	3.024	38.314
Constants	−5.954	1.357	19.247	1	0.000	0.003	—	—

Table 3: Summary of prediction accuracy of binary Logit regression.

—		Predictive value		Prediction accuracy
		0	1	
True value	0	45	10	81.8%
	1	7	30	81.1%
Pool				81.5%

Table 4: Variables in the equation bootstrap.

Indexes	B	Bootstrap[a]				
		Deviation	Standard error	P	95% confidence interval	
					Lower limit	Upper limit
Anastomotic location	2.254	0.562	2.889	0.002	1.086	5.192
Local blood supply	1.818	0.127	0.665	0.002	0.814	3.430
Eating time	2.376	0.563	2.870	0.002	1.205	4.877
Constants	−5.954	−1.219	5.882	0.002	−12.366	−3.606

accuracy of the model is 81.5%, and the model fitting is acceptable as shown in Table 3.

3.4. Validating the Prediction Model. The model is internally verified by the Bootstrap method, and the number of self-sampling is $B = 1000$, as shown in Table 4. At the same time, according to the selected independent influencing factors, a prediction model was obtained, namely, Logit $(P) = 2.254 \times$ anastomotic position $+ 1.818 \times$ retention mode $+ 2.376 \times$ feeding time.

The AUC is used to evaluate the simulation discrimination, where the AUC is 0.739 and the 95% CI is 0.636–0.841, as shown in Figure 1. This model has good

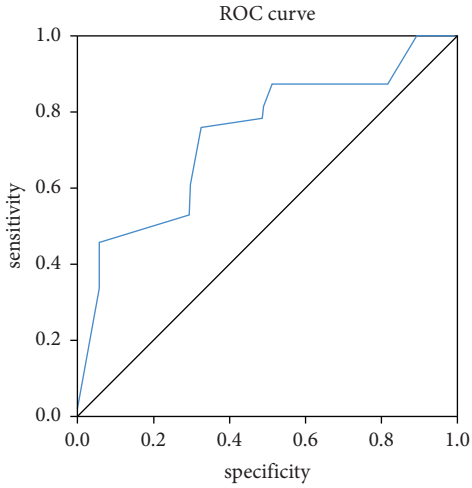

Figure 1: ROC curve for validating the predictive model.

accuracy and can better predict the occurrence of benign anastomotic stenosis in patients.

3.5. Analysis of Treatment Effect. In 55 cases with stenosis, after surgery, 23 cases (41.82%) were markedly effective, 29 cases (52.73%) were effective, 3 cases (5.45%) were ineffective, and the total effective rate was 94.54% (52/55%), of which Stooler 0 32 cases (58.18%) were grade I, 20 cases (36.36%) were grade I, and 3 cases (5.45%) were grade II, with a complication rate of 9.09% (5/55).

4. Discussion

Esophageal cancer is a high-incidence disease in the country. Currently, esophageal cancer is mainly treated by surgery, and although the effect is significant, complications such as postoperative anastomotic stenosis have always been a clinical problem [11]. Through investigation, it was found that 4 weeks after operation was a period of high incidence of anastomotic stenosis, 15% of patients were found to have anastomotic stenosis by endoscopy, and 42% of patients had swallowing function [12]. If effective measures are not taken to prevent it and the already-occurring anastomotic stenosis is not treated in time, the disease can seriously affect the postoperative nutritional status, daily life, and postoperative recovery. Based on this, it is necessary to focus on exploring the reasons for the occurrence of benign anastomotic stenosis after surgery, in order to provide a basis for the improvement of the surgical plan and the selection of preoperative indications in the future [13].

Binary Logistic regression analysis showed that eating time ≥12 hours, poor local blood supply, and anastomotic stoma located above the tracheal bifurcation were independent factors leading to benign anastomotic stenosis after surgery. The factors leading to benign anastomotic stenosis after surgery are as follows: ①Eating time: early eating can reduce the occurrence of anastomotic stenosis. This statement was also corroborated by this study. The results showed that eating time is an independent influencing factor. Earlier eating indicated a lower probability of occurrence. It is because early eating can produce mechanical stimulation and expansion, thereby reducing the occurrence of benign anastomotic stenosis. In this regard, it is necessary to eat within 12 hours, to reduce bleeding and oozing, promote gastrointestinal motility, reduce gastric acid reflux stimulation, and reduce the occurrence of stenosis. At the same time, it is necessary to pay attention to the actual situation of the patient and choose a reasonable eating time [14, 15]. ②Blood supply: univariate analysis showed that patients with poor blood supply had a higher probability of benign anastomotic stenosis because the reduction of oxygen supply to the local tissue of the anastomosis would promote hypercapnia and local anaerobic metabolism and stimulate connective tissue hyperplasia. Reducing the accumulation of acidic products and pH value will lead to a decrease in the healing ability and affect tissue self-repair, thereby increasing the incidence of benign anastomotic stenosis. In this regard, clinical attention should be paid to the preoperative and postoperative blood supply of patients and timely correction of the abnormal situation [16, 17]. ③Anastomotic location: studies have shown that the risk of stenosis varies in different anastomotic locations [18]. The higher the location, the easier and more stubborn it is for anastomotic stenosis to occur. The univariate analysis showed that the anastomotic stoma located above the tracheal bifurcation had a higher probability of stenosis, which may be because the blood supply of the high anastomotic stoma is very different from the gastric fundus and cardia, the blood supply above the tracheal bifurcation is poor, and it is vulnerable to mechanical traction. Due to the influence of tension, the proliferation of fibrous connective tissue is more obvious and the rate of anastomotic stenosis is higher. Therefore, for patients with high anastomotic stoma, it is necessary to choose a wide-diameter and large-sized stapler as much as possible to avoid stenosis [19].

Endoscopic dilatation is a common solution for the treatment of anastomotic stenosis after esophageal cancer surgery. It has the advantages of simple operation, minimal invasiveness, and safety. It can loosen the fibrous scar around the stenosis by an external force, break the muscle fibers at the anastomotic stenosis, and expand it. The esophageal lumen can improve the current symptoms such as dysphagia and eating obstruction [20]. However, with the deepening of stent implantation, it gradually replaced dilatation and became the preferred method, which can not only achieve the effect of dilation but can also reduce the number of expansions, relieve clinical symptoms, and improve postoperative quality of life [21]. Analysis of the results of this study showed that the total effective rate was 94.54%, only 3 cases had Stooler II and 5 cases had complications, indicating that stent implantation can effectively relieve symptoms such as swallowing dysfunction, and the treatment effect is significant and the safety is high. Analysis of the reasons showed that stent implantation can release the tear of fibrous scar tissue and expand the lumen, thereby relaxing and relieving esophageal anastomotic stenosis, and it can be assisted under endoscopy to better ensure clear

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Retraction

Retracted: Clinical Value of Pleural Effusion and Serum MMP-3 and CYFRA21-1 Combined with ADA in Differential Diagnosis of Pleural Exudative Effusion

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] Z. Xu, J. Guan, J. Xu, J. Tu, and J. Cheng, "Clinical Value of Pleural Effusion and Serum MMP-3 and CYFRA21-1 Combined with ADA in Differential Diagnosis of Pleural Exudative Effusion," *Emergency Medicine International*, vol. 2022, Article ID 1615058, 6 pages, 2022.

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Research Article

Clinical Value of Pleural Effusion and Serum MMP-3 and CYFRA21-1 Combined with ADA in Differential Diagnosis of Pleural Exudative Effusion

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Objective. The aim of the study is to investigate the clinical value of matrix metalloproteinases-3 (MMP-3) and cytokeratin 19 fragment antigen 21-1 (CYFRA21-1) combined with adenosine deaminase (ADA) in pleural effusion and serum in benign and malignant pleural exudative effusion (PEE). *Methods.* A total of 119 adult patients with PEE admitted in our hospital from May 2018 to October 2021 were selected. According to the patient's condition, the patients were divided into the benign group ($n = 75$) and the malignant group ($n = 44$). The levels of MMP-3, CYFRA21-1, and ADA in pleural effusion and serum were detected. The receiver operating characteristic (ROC) curve was used to analyze the individual and combined predictive value of MMP-3, CYFRA21-1, and ADA levels. *Results.* In the malignant group, the pleural effusion and serum MMP-3 and CYFRA21-1 levels were higher than those in the benign group and the ADA levels were lower than those in the benign group ($P < 0.05$). In the malignant group, the positive detection rate of pleural effusion and serum MMP-3 and CYFRA21-1 was higher than that in the benign group and the positive detection rate of pleural effusion and serum ADA were lower than that in the benign group ($P < 0.05$). The AUC of pleural effusion MMP-3, serum MMP-3 and the combination of them in the diagnosis of PEE were 0.764, 0.722 and 0.810, respectively. The AUC of pleural effusion CYFRA21-1 and serum CYFRA21-1 and combination of them in the diagnosis of PEE were 0.776, 0.748 and 0.822, respectively. The AUC of pleural effusion ADA, serum ADA and their combination in differential diagnosis of PEE were 0.762, 0.737 and 0.836, respectively. The AUC of pleural effusion and serum of MMP-3 and CYFRA21-1 combined with ADA for differential diagnosis of PEE was 0.923. *Conclusions.* The diagnostic efficacy of MMP-3 combined with CYFRA21-1 and ADA in pleural effusion and serum for benign and malignant PEE are better than single index, which has certain clinical values for the selection of early intervention scheme for PEE patients.

1. Introduction

Hydrothorax is a clinical symptom mainly characterized by excessive pathological fluid accumulation in the pleural cavity. Pleural exudative effusion (PEE) is the most common one in pleural effusion, and it is mainly caused by benign lesions such as tuberculosis, inflammation, and connective tissue disease, as well as malignant tumors such as lung cancer, pleural mesothelioma and metastatic tumor. According to the different properties of PEE, it can be divided into benign PEE and malignant PEE [1, 2]. At present, the identification of benign and malignant PEE is mainly through medical history, pleural effusion examination, pleural biopsy, and exfoliated cytology culture in the thoracic cavity [3–5]. Pleural effusion is different in nature, and the adopted treatment plan and prognosis are also significantly different. Therefore, attention should be paid to the differential diagnosis between benign and malignant pleural effusion. Matrix metalloproteinases-3 (MMP-3) is a multifunctional enzyme in the family of matrix lytic enzymes, which is closely related to the proliferation, invasion and migration of tumor cells and plays a key role in the physiological and pathological remodeling of tissues [6]. Cytokeratin 19 fragment antigen 21-1 (CYFRA21-1) is an

important molecular structure of the epithelial cytoskeleton. When the body cells become cancerous, the activating protease accelerates the degradation of cytokeratin, resulting in the increased serum CYFRA 21-1 level [7]. Adenosine deaminase (ADA) is an enzyme involved in purine metabolism and widely exists in tissues and cells. When the body produces an immune response, ADA activity increases [8]. The primary diseases of malignant PEE are mainly various malignant tumors, so all three indicators are closely related to the nature of PEE. In this study, the levels of MMP-3, CYFRA21-1 and ADA in pleural effusion and serum were detected to explore the clinical value of the separate and combined detection in the differential diagnosis of benign and malignant PEE. The specific reports are as follows.

2. Materials and Methods

2.1. General Information. Patients with pleural effusion were selected from May 2018 to October 2021 in our hospital. The inclusion criteria were as follows: has clinical symptom related to pleural effusion such as dyspnea, chest pain, chest stuffiness, and short of breath; imaging examination shows pleural effusion; be confirmed through pleural fluid cytology examination, pleural, and tissue pathological biopsy (the ratio of pleural effusion to serum protein > 0.5; the ratio of pleural effusion to serum lactate dehydrogenase (LDH) was >0.6; and pleural effusion LDH >2/3 of upper limit of normal serum LDH. Meet any of the above three conditions.). The exclusion criteria were as follows: transudative hydrothorax; patients who underwent invasive pleural cavity examination within the first six months; chest trauma, etc. According to the different nature of pathology, it was divided into the benign group (malignant lesions were excluded and the patient was diagnosed as benign by X-ray and ultrasound examination) and the malignant group (the patient's pleural effusion confirmed by pathology could reveal malignant tumor cells or pleural effusion with mediastinal and pleural surface metastatic nodules.). There were 75 cases in the benign group, including 43 males and 32 females, aged from 24 to 78 years old, with the average age of (48.28 ± 15.54) years old. There were 38 cases of tuberculous hydrothorax, 21 cases of parapneumonic hydrothorax, 10 cases of empyema and 6 other cases. There were 44 cases in the malignant group, including 28 males and 16 females, aging from 22 to 80 years old, with the average age of (49.54 ± 18.66) years old. There were 19 cases of lung adenocarcinoma, 12 cases of squamous cell carcinoma, 8 cases of lymphoma and 5 cases of others. There is no statistical difference in general data such as gender and age between the two groups, which is comparable.

2.2. Detection Method. Cytologic examination: A total of 10 ml of pleural effusion at the time of the patient's first thoracentesis and 5 ml of fasting venous peripheral blood that morning were collected as samples for examination. The difference in collection times was not more than 4 h. Items examined included pleural effusion and serum MMP-3, CYFRA21-1, and ADA levels. The detection of MMP-3 by latex-enhanced immunoturbidimetry, CYFRA21-1 by immuno-electrochemical luminescence, and ADA by enzyme coupling were conducted in accordance with the operating specifications and kit instructions. The reference ranges of normal values were as follows: MMP-3: Pleural effusion < 121.0 ng/mL (male) or<59.7 ng/mL (female), and serum < 125.8 ng/mL (male) or <74.5 ng/mL (female). CYFRA21-1: Pleural effusion < 8.45 ng/mL and serum < 1.37 ng/mL; ADA: Pleural effusion < 50 ng/mL, and serum < 19.3 ng/mL. If the test result was greater than the normal value, it was considered positive, and the positive detection rate = number of positive cases in each group/total cases × 100%

2.3. Statistical Analysis. SPSS 22.0 software was used to process the data. The measurement data were expressed by mean standard deviation (S), and the comparison between groups was made by T test. The data are expressed in %, and the comparison is done by χ^2 test. The receiver operating characteristic curve (ROC) was used to analyze the diagnostic value of MMP-3, CYFRA21-1, and ADA in pleural effusion and serum. $P < 0.05$ is statistically significant.

3. Results

3.1. Comparison of MMP-3, CYFRA21-1, and ADA Levels in Pleural Effusion and Serum. In the malignant group, the levels of MMP-3 and CYFRA21-1 in pleural effusion and serum of patients were higher than those in the benign group, and the level of ADA was lower than that in the benign group, all of which had a statistical significance ($P < 0.05$). See Figure 1.

3.2. Comparison of Positive Detection Rates of MMP-3, CYFRA21-1, and ADA in Pleural Effusion and Serum. The positive detection rates of MMP-3 and CYFRA21-1 in pleural effusion and serum of the malignant group were 70.45% and 68.18%, respectively, which is higher than those of the benign group (24.00% and 21.33%). The positive detection rates of CYFRA21-1 in pleural effusion and serum of the malignant group were 72.73% and 68.18%, respectively, which were higher than those of the benign group by 18.67% and 16.00%, respectively. The positive detection rates of ADA in pleural effusion and serum in the malignant group were 18.18% and 15.91%, respectively, lower than the positive detection rates of 78.67% and 74.67% in the benign group (both $P < 0.05$). See Table 1.

3.3. Differential Diagnostic Value of Pleural Effusion and Serum MMP-3, CYFRA21-1, and ADA in PEE. The AUC of pleural effusion MMP-3, serum MMP-3, and their combination in the differential diagnosis of PEE were 0.764 (95% CI 0.661–0.866), 0.722 (95% CI 0.614–0.831), and 0.810 (95% CI 0.716–0.904), respectively. The AUC of pleural effusion CYFRA21-1, serum CYFRA21-1, and their combination in the differential diagnosis PEE were 0.776 (95% CI 0.667–0.875), 0.748 (95% CI 0.645–0.852), and 0.822 (95%

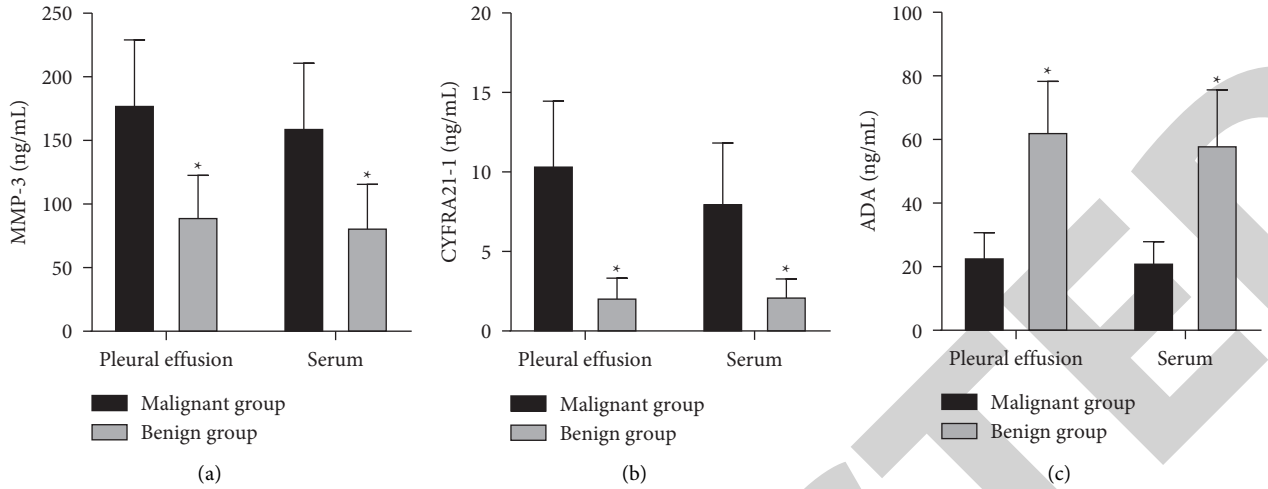

Figure 1: Comparison of MMP-3, CYFRA21-1, and ADA levels in pleural effusion and serum. Compared with the malignant group, $^{*}P < 0.05$. (a) represents a comparison of CXCL-13 levels; (b) represents a comparison of RBP-4 levels; and (c) represents a comparison of IL-6 levels.

Table 1: Comparison of positive detection rates of MMP-3, CYFRA21-1, and ADA in pleural effusion and serum.

Groups	*MMP-3*		*CYFRA21-1*		*ADA*	
	Pleural effusion	Serum	Pleural effusion	Serum	Pleural effusion	Serum
Malignant group ($n = 44$)	31 (70.45)	30 (68.18)	32 (72.73)	30 (68.18)	8 (18.18)	7 (15.91)
Benign group ($n = 75$)	18 (24.00)	16 (21.33)	14 (18.67)	12 (16.00)	59 (78.67)	56 (74.67)
χ^2 value	24.707	25.667	34.178	30.587	41.236	38.429
P value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Table 2: Differential diagnostic value of pleural effusion and serum MMP-3, CYFRA21-1, and ADA in PEE.

Index	AUC	*95% CI*		Optimal cutoff value	Sensitivity (%)	Specificity (%)
		Lower limit	Upper limit			
Pleural effusion MMP-3	0.764	0.661	0.866	0.502	72.31	77.89
Serum MMP-3	0.722	0.614	0.831	0.469	70.82	76.08
Pleural effusion MMP-3 + serum MMP-3	0.810	0.716	0.904	0.607	73.91	86.79
Pleural effusion CYFRA21-1	0.776	0.677	0.875	0.458	65.80	80.00
Serum CYFRA21-1	0.748	0.645	0.852	0.464	74.19	72.21
Pleural effusion CYFRA21-1 + serum CYFRA21-1	0.822	0.724	0.920	0.593	79.14	80.16
Pleural effusion ADA	0.762	0.646	0.858	0.556	75.20	80.40
Serum ADA	0.737	0.634	0.840	0.508	73.37	77.43
Pleural effusion ADA + serum ADA	0.836	0.747	0.924	0.636	81.58	82.02

CI 0.724–0.920), respectively. The AUC of pleural effusion ADA, serum ADA, and their combination in the differential diagnosis PEE were 0.762 (95% CI 0.646–0.858), 0.737 (95% CI 0.634–0.840), and 0.836 (95% CI 0.747–0.924), respectively. See Table 2 and Figure 2.

3.4. Differential Diagnostic Value of Combined Hydrothorax and Serum MMP-3, CYFRA21-1, and ADA in PEE. The AUC of pleural effusion pleural effusion MMP-3 combined with serum MMP-3 in the differential diagnosis of PEE was 0.810 (95% CI 0.716–0.904), the AUC of pleural effusion pleural effusion CYFRA21-1 combined with serum CYFRA21-1 in the differential diagnosis of PEE was 0.822 (95% CI 0.724–0.920), the AUC of pleural effusion ADA combined with serum ADA in the differential diagnosis of PEE was 0.836 (95% CI 0.747–0.924), and the AUC of the three combined differential diagnosis PEE was 0.923 (95% CI 0.868–0.978). See Table 3 and Figure 3.

4. Discussion

PEE is mainly caused by pulmonary tuberculosis, pleuropneumonia inflammation, connective tissue disease, and malignant tumor [9]. For different primary diseases of PEE, its treatment and prognosis are also different. The identification of benign and malignant PEE plays an important role in guiding the clinical treatment [10, 11].

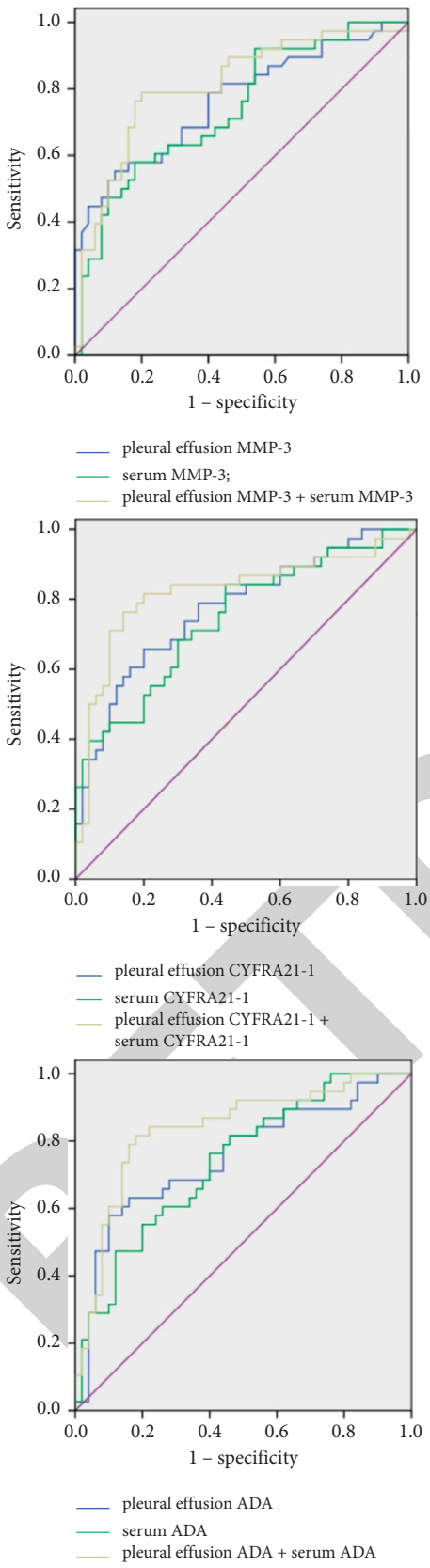

Figure 2: ROC curve of pleural effusion and serum MMP-3, CYFRA21-1, and ADA in the diagnosis of PEE.

The results of this study showed that the pleural effusion and serum MMP-3 and CYFRA21-1 levels in the malignant group were higher than those in the benign group, and ADA levels were lower than those in the benign group. The positive detection rates of MMP-3 and CYFRA21-1 in the malignant group were higher, while the positive detection rate of ADA in the benign group was higher. The expression of MMP-3 is closely related to the growth and metastasis of malignant tumors. In the process of forming PEE, malignant tumors degrade the extracellular matrix, destroy the integrity of the cell basement membrane, and significantly increase the activity of MMP-3, further promoting the invasion and metastasis of tumor cells. The activity of MMP-3 is one of the important factors affecting the prognosis of lung cancer and breast cancer [12–14]. CYFRA21-1 is a soluble fragment of cytokeratin 19 and mainly exists in the cytoplasm of lung adenocarcinoma and lung squamous cell carcinoma. When cells become cancerous, the release of CYFRA21-1 will be increased due to the necrosis and dissolution of tumor cells. Therefore, CYFRA21-1 can evaluate the severity of lung cancer to a certain extent [15–17]. ADA is a mercaptoenzyme involved in purine metabolism. Monocytes, lymphocytes, and organs all contain ADA, especially the human lymphocytes, which are mainly involved in the differentiation and proliferation of T cells. ADA is an important indicator for the diagnosis of tuberculous pleurisy. After the tuberculous pleurisy occurs in the body, the mononuclear phagocytes will be stimulated by *Mycobacterium tuberculosis* and inflammatory mediators, and the number of lymphocytes will be significantly increased, resulting in the increase of ADA level. The immune system of patients with malignant tumors will be inhibited due to antitumors, but the ADA level in the body will be relatively low [18–20]. In addition, the results of this study showed that the positive rates of MMP-3, CYFRA21-1 and ADA in pleural effusion and serum in the differential diagnosis of PEE were slightly different. For the same patient, the expression levels in pleural effusion and serum were not absolutely consistent. Therefore, the joint detection of MMP-3, CYFRA21-1 and ADA in pleural effusion and serum might further improve the detection rate.

The results of ROC curve analysis showed that the AUC of pleural effusion MMP 3, serum MMP 3, and the combination of the two in the differential diagnosis of PEE were 0.764, 0.722, and 0.810, respectively. The AUC of pleural effusion CYFRA21-1, serum CYFRA21-1, and the combination of the two in the differential diagnosis of PEE were 0.776, 0.748, and 0.822, respectively. The AUC of pleural effusion ADA, serum ADA, and their combination for differential diagnosis PEE were 0.762, 0.737, and 0.836, respectively. The AUC of pleural effusion and serum MMP-3, CYFRA21-1 combined with ADA in the differential diagnosis of PEE is as high as 0.923, and the sensitivity and specificity are 86.79% and 88.01%. The results showed that the content levels of MMP-3, CYFRA21-1, and ADA in pleural effusion and serum had certain clinical reference value for the differential diagnosis of PEE. In addition, the

Table 3: Differential diagnostic value of combined hydrothorax and serum MMP-3, CYFRA21-1 and ADA in PEE.

Index	AUC	95% CI		Optimal cutoff value	Sensitivity (%)	Specificity (%)
		Lower limit	Upper limit			
Pleural effusion MMP-3 + serum MMP-3	0.810	0.716	0.904	0.607	73.91	86.79
Pleural effusion CYFRA21-1 + serum CYFRA21-1	0.822	0.724	0.920	0.593	79.14	80.16
Pleural effusion ADA + serum ADA	0.836	0.747	0.924	0.636	81.58	82.02
Combination of the three	0.923	0.868	0.978	0.748	86.79	88.01

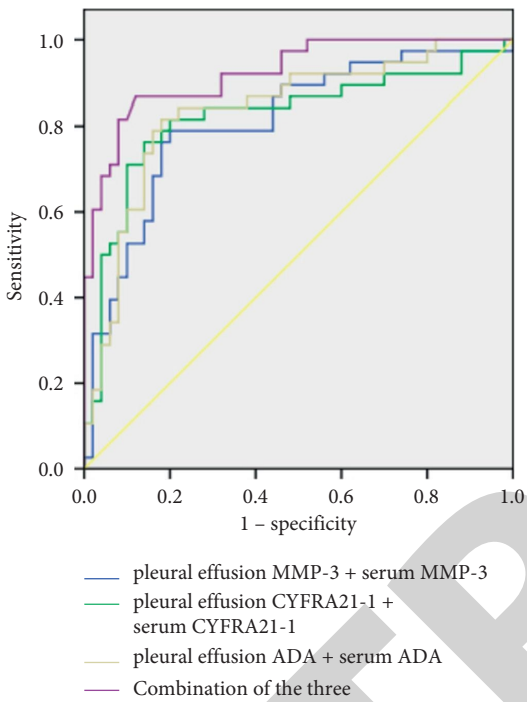

Figure 3: ROC curve of pleural effusion and serum MMP-3, CYFRA21-1, and ADA in the differential diagnosis of PEE.

efficacy of the combined differential diagnosis of the three factors in pleural effusion and serum was better than that of a single index, and the clinical value was further improved.

At present, there are various indicators for clinical differentiation of benign and malignant PEE. The histopathological and cytological examination performed by thoracentesis is the gold standard for the diagnosis of benign and malignant PEE. However, the diagnostic accuracy is still relatively low despite the fact that these two tests are very traumatic for patients. Although the combined diagnosis has the highest accuracy rate in this study, in the clinical practice, the selection of the diagnostic method for PEE should follow the principle of easy first and then complex. If the diagnostic rate is similar, the method that is minimally invasive to the patient (such as serological indicators) should be selected, and several methods should be combined when necessary to improve the diagnostic rate of pleural effusion.

In summary, MMP-3, CYFRA21-1, and ADA are important in the differential diagnosis of benign and malignant PEE and can be used as important indicators for the differential diagnosis of PEE. The combined detection of MMP-3, CYFRA21-1, and ADA in pleural effusion and serum was superior to the diagnostic efficacy of individual indicators in the differential diagnosis, which was of great value for the differentiation of benign and malignant PEE and could better serve the clinical diagnosis and treatment.

Data Availability

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Research Article

Effects of Aerosol Inhalation Combined with Intravenous Drip of Polymyxin B on Bacterial Clearance, Symptoms Improvement, and Serum Infection Indexes in Patients with Pneumonia Induced by Multidrug-Resistant Gram-Negative Bacteria

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In recent years, the incidence of pneumonia caused by multidrug-resistant (MDR) Gram-negative bacteria (*G*–) has increased year by year. Polymyxin B has a good clinical effect in the treatment of MDR, but there is controversy about the administration route of this drug. In this study, we retrospectively analyzed the clinical data of 84 cases of MDR Gram-negative bacterial pneumonia, and aimed to explore the effects of aerosol inhalation combined with intravenous polymyxin B infusion on the bacterial clearance, symptom improvement, and serum infection indexes of MDR patients on the patients with Gram-negative (*G*–) bacterial pneumonia. The results show that aerosol inhalation combined with intravenous drip of polymyxin B can improve bacterial clearance rate, reduce levels of serum inflammatory factors, and improve clinical symptoms in patients with pneumonia induced by MDR G-bacteria.

1. Introduction

In recent years, with the widespread use of broad-spectrum antibiotics, the incidence of pneumonia caused by multidrug-resistant (MDR) Gram-negative (*G*–) bacteria is increasing year by year, which has brought greater difficulties and challenges to the clinical anti-infection treatment [1, 2]. Polymyxin B is one of the peptide antibacterial drugs in clinical practice. It was widely used in the treatment of patients with Gram-negative bacilli in the 1960s, but it was gradually abandoned in clinic because of many adverse reactions. However, with the increasing incidence of MDR in recent years, the role of traditional antibacterial drugs has been limited [3]. Polymyxin B has been reused in the clinical treatment of MDR due to its good antibacterial activity [4]. Foreign studies have found that polymyxin B has a good clinical therapeutic effect in the treatment of MDR, but the route of administration of the drug is controversial. Intravenous administration is a common route of administration, which can significantly improve the clinical symptoms of patients [5]. Other scholar have reported that aerosol inhalation therapy can make polymyxin B enter the airway of patients in the form of aerosol to play a full anti-inflammatory role, and has the advantages of rapid onset, and can rapidly reduce the level of serological infection [4]. However, due to the lack of uniform clinical reports on the drug regimen of polymyxin B in patients with pneumonia caused by MDR Gram-negative (*G*–) bacteria, this study was designed to investigate the effects of aerosol inhalation combined with intravenous polymyxin B infusion on bacterial clearance, symptom improvement, and serum infection index of patients with multiresistant Gram-negative bacterial pneumonia.

2. Materials and Methods

2.1. General Information. A total of 84 patients with pneumonia caused by MDR Gram-negative (*G*–) bacteria who were admitted to the intensive care center of our

hospital from January 2020 to January 2022 were retrospectively selected as the research subjects. According to the different administration methods of polymyxin B, 40 patients who were treated by intravenous drip alone from January 2020 to January 2021 were included in the control group. Forty-four patients who received intravenous drip combined with aerosol inhalation therapy according to the international guidelines for optimal application of prime factors were included in the observation group.

2.2. Inclusion Criteria. (1) In line with the Chinese Medical Association's guidelines for the diagnosis of pneumonia [6]; (2) MDR Gram-negative (*G*–) bacteria detected by sputum culture, and sensitive to polymyxin B; (3) the treatment time of the two groups was ≥3d.

2.3. Exclusion Criteria. (1) Simultaneous infection with multiple MDR Gram-negative (*G*–) pathogens; (2) severe liver and kidney insufficiency; (3) combined with malignant tumors and incomplete clinical data.

2.4. Treatment Options. Both groups received routine broad-spectrum antibiotics for anti-infection, phlegm reduction, nutrition, and electrolyte supplementation.

The control group was treated with simple intravenous drip of polymyxin B for the treatment of pneumonia caused by MDR Gram-negative (*G*–) bacteria. The first dose was 2.0 mg/kg, and the adjusted dose was 1.25 mg/kg on the 2nd day, once every 12 hours, twice a day.

According to the recommendation of the international consensus guideline [4] for the optimal application of polymyxins, the observation group used the regimen of intravenous drip combined with aerosol inhalation to treat pneumonia caused by MDR Gram-negative (*G*–) bacteria. 25 mg/kg nebulized inhalation therapy twice a day.

2.5. Observation Indicators

(1) Judgment of curative effect: after the course of polymyxin B treatment, the bacterial clearance rate and clinical efficacy of patients with pneumonia caused by MDR Gram-negative (*G*–) bacteria were evaluated with reference to the Technical Guidelines for Clinical Trials of Antibacterial Drugs [7]. During the treatment process, the sputum culture was sent for inspection on the 3rd, 7th, and 14th days, respectively, to understand the microbial clearance. ① Cleared: 3 consecutive sputum culture results showed negative; replacement: 3 consecutive sputum cultures result in the disappearance of the pathogenic bacteria, but the growth of other pathogens; ② not cleared: sputum culture results in the original pathogen infection. The total bacterial clearance = clearance + replacement.

Clinical efficacy: ① markedly effective means that the condition has improved significantly, and one of the pathogenic bacteria culture, laboratory indicators and clinical signs has not returned to normal; ② effective means that the condition has improved, but the pathogenic bacteria culture, laboratory indicators and clinical signs are not significantly improved; ③ invalid means that the condition has not improved or even worsened. The total effective rate = markedly effective + effective rate.

(2) Clinical symptoms: the time for body temperature to return to normal, time for disappearance of rales, time for leukocyte recovery, and X-ray recovery time were observed and recorded in the two groups.

(3) Infection indexes: before treatment, 3 days after treatment, and 7 days after treatment, 3–5 ml fasting venous blood was collected from patients, centrifuged (3 500 rpm, 10 min), the supernatant was separated, and lipopolysaccharide (LPS) and interleukin 6 were detected by ELISA. IL-6, C-reactive protein (CRP), and procalcitonin (PCT) levels, strictly follow the instructions of the kit (Shanghai Guduo Biotechnology Co., Ltd.).

(4) Incidence of nephrotoxic reaction: the number of nephrotoxic reactions occurred in the two groups of patients during treatment were observed and recorded.

2.6. Statistical Processing. The SPSS 21.0 software was used to organize and analyze the clinical data of patients with pneumonia caused by MDR Gram-negative (*G*–) bacteria included in this study. The measurement data that meet the normal distribution are expressed as the mean ± standard deviation ($\overline{x} \pm S$). Differences between the two groups were compared using *t*-test analysis. The count data are all expressed as rate (%), and comparisons between categorical data were performed using the χ^2 test. Differences were considered statistically significant at $P < 0.05$.

3. Results

3.1. General Data. There were no significant differences in gender, age, acute physiology, chronic health score II (APACHE II), and distribution of pathogenic bacteria and underlying diseases between the two groups ($P > 0.05$), as shown in Table 1.

3.2. Comparison of Clinical Efficacy between the Two Groups of Patients. After treatment, the total effective rate of the observation group was 95.45%, which was significantly higher than that of the control group, 80.00% ($P < 0.05$), as shown in Table 2.

3.3. Comparison of Bacterial Clearance Rates between the Two Groups of Patients. After the sputum culture test on the 3rd, 7th, and 14th days after treatment, a total of 71 pathogenic bacteria were detected in 44 patients in the observation group, 64 were eliminated and 4 were replaced (2 *Pseudomonas aeruginosa* were replaced by *Escherichia coli*, and 2 strains of *Acinetobacter baumannii* were replaced by *Pseudomonas aeruginosa*), 3 strains were not cleared (2 strains of

Table 1: Comparison of general data of the two groups of patients (±*s*).

Group	Observation group ($n = 44$)	Control group ($n = 40$)	t/χ^2	P value
Gender			2.092	0.148
Male	29 (65.91)	32 (80.00)		
Female	15 (34.09)	8 (20.00)		
Age (year)	60.36 ± 2.98	60.77 ± 3.36		
APACHE II (score)	14.36 ± 2.28	14.98 ± 2.44	0.593	0.556
Pathogenic bacteria (strain)			0.672	0.955
Pseudomonas aeruginosa	20 (14.49)	21 (15.22)		
Acinetobacter baumannii	16 (11.59)	15 (10.87)		
Escherichia coli	17 (12.32)	14 (10.14)		
Staphylococcus aureus	12 (8.70)	13 (9.42)		
Other	6 (4.35)	4 (2.90)		
Combined hypertension			0.585	0.444
Yes	12 (27.27)	14 (35.00)		
No	32 (72.73)	26 (65.00)		
Combined coronary heart disease			1.006	0.316
Yes	10 (22.73)	13 (32.50)		
No	34 (77.27)	27 (67.50)		

Table 2: Comparison of clinical efficacy between the two groups of patients (*n*, %).

Group	Number of cases	Significant effect	Effective	Invalid	Total efficiency
Observation group	44	31 (70.45)	11 (25.00)	2 (4.55)	42 (95.45)
Control group	40	22 (55.00)	10 (25.00)	8 (20.00)	32 (80.00)
χ^2	—				4.772
P value	—				0.029

Acinetobacter baumannii and 1 strain of *Staphylococcus aureus*), and the total clearance rate was 90.14%. A total of 67 pathogenic bacteria were detected in 40 patients in the control group, 52 were eliminated, and 10 were replaced (6 *Pseudomonas aeruginosa* were replaced by *Acinetobacter baumannii*, 4 *Staphylococcus aureus* were replaced by *Pseudomonas aeruginosa*), 5 strains were not cleared (3 strains of *Escherichia coli* and 2 strains of *Pseudomonas aeruginosa*), the total clearance rate was 77.61%, and the total clearance rate of the observation group was significantly lower than that of the control group ($P < 0.05$), as shown in Table 3.

3.4. Comparison of Clinical Symptoms Improvement between Two Groups of Patients. The time for body temperature to return to normal, the time for disappearing rales, the time for leukocyte recovery and the time for X-ray recovery in the observation group were all shorter than those in the control group ($P < 0.05$), as shown in Table 4.

3.5. Comparison of Serum Infection Indicators between the Two Groups of Patients. Before treatment, there was no significant difference in serum LPS, IL-6, CRP, and PCT levels between the two groups ($P > 0.05$). Compared with before treatment, it showed a gradual downward trend ($P < 0.05$), and the downward trend in the observation group was more obvious. There was no significant difference in serum LPS, IL-6, CRP, and PCT levels between the two groups 14 days after treatment ($P > 0.05$), as shown in Figure 1.

3.6. Comparison of the Incidence of Nephrotoxic Reaction between the Two Groups of Patients. During the treatment period, the number of nephrotoxicity cases in the observation group was 3 cases (6.82%), and there was no significant difference compared with 4 cases (10.00%) in the control group ($P > 0.05$).

4. Discussions

Although the aseptic awareness of medical staff has been continuously enhanced and the isolation protection system of patients has been continuously improved, the incidence of MDR is still relatively high, which directly cause hospitalization of patients. Prolonged time and increased hospitalization costs lead to a waste of medical resources [8, 9]. The pathogenic bacteria mainly include *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*. Polymyxin B is sensitive to many of these pathogens, and it has a good effect in clinical treatment.

Controlling bacterial infection and killing the activity of pathogenic bacteria are the principles of medication for the treatment of MDR Gram-negative (*G*–) bacterial pneumonia [10]. The results of this study showed that after treatment, the total bacterial clearance rate of the observation group was 90.14%, which was significantly higher than that of the control group, which was 77.61%, and the time for body temperature to return to normal, the time for disappearing rales, the time for leukocyte recovery, and the time for X-ray recovery in the observation group were shorter than the control group. It shows that aerosol

Table 3: Comparison of bacterial clearance rates between the two groups on the 3rd, 7th, and 14th days after treatment (n, %).

Group	n	3rd day after treatment	7th day after treatment	14th day after treatment
Observation group	71	39 (54.93)	45 (63.38)	64 (90.14)
Control group	67	34 (50.75)	42 (62.69)	52 (77.61)
χ^2	—	0.242	0.007	4.038
P value	—	0.623	0.933	0.044

Table 4: Comparison of clinical symptoms improvement between the two groups ($\overline{x} \pm S$).

Group	Number of cases	Temperature recovery time (d)	Rales disappearing time (d)	White blood cell recovery time (d)	X-ray recovery time (d)
Observation group	44	7.69 ± 1.26	10.34 ± 2.32	11.63 ± 2.56	10.93 ± 2.14
Control group	40	9.57 ± 0.99	12.53 ± 2.96	13.74 ± 2.98	12.68 ± 2.28
χ^2	—	7.603	3.774	3.481	3.627
P value	—	<0.001	<0.001	<0.001	<0.001

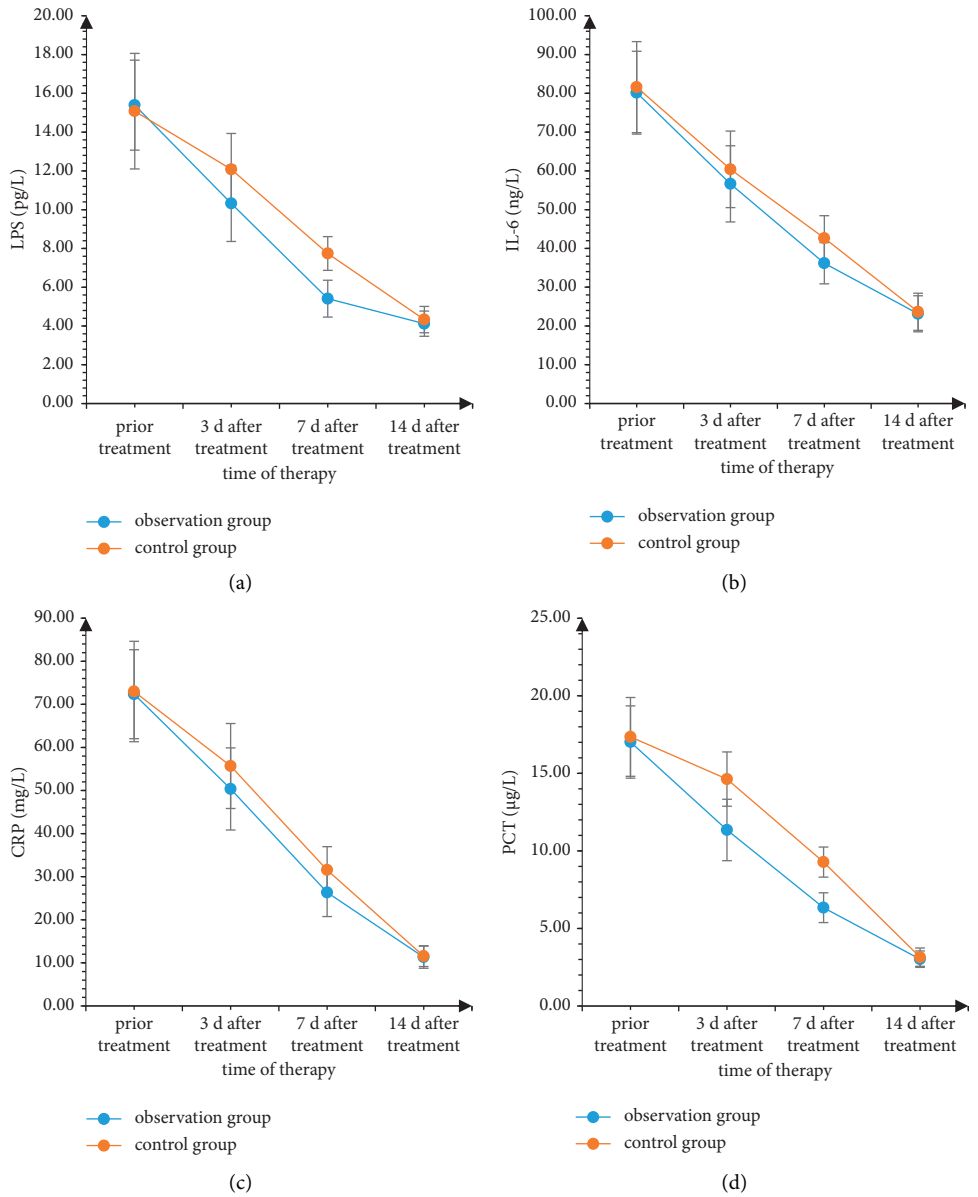

Figure 1: Comparison of serum infection indicators between the two groups of patients.

inhalation combined with intravenous infusion of polymyxin B has a good bacterial clearance effect and improves the clinical symptoms of patients. The reason may be related to the pharmacological mechanism of polymyxin B [11, 12]. After the cationic lipopeptide in polymyxin B interacts with bacterial outer membrane lipopolysaccharide, it replaces the stable magnesium ions and calcium ions on the cell membrane, and increase the permeability of the cell membrane, resulting in disorder of the cell membrane structure, so that the intracellular substances in the bacteria are penetrated to crack and die, so it has a better bactericidal effect, and the combined treatment has a higher bacterial clearance rate [12].

This study found that after treatment, the total effective rate of the observation group was 95.45%, significantly higher than the control group's 80.00%. Analysis of the reasons shows that the molecular weight of polymyxin B is relatively large, and the amount of circulating into the alveoli after intravenous administration is relatively small. Combined with atomization treatment, the drug directly acts on the lesion site, which is beneficial to increase the penetration of antibiotics into the lower respiratory tract, so that the drug can reach a certain bactericidal concentration at the target, so the effect of drug treatment can be improved.

Pulmonary infection in patients with MDR Gram-negative (*G*−) bacteria pneumonia is a gradual process. LPS is the main component of the bacterial wall, which can participate in and activate inflammatory cytokines, thereby increasing the expression level of inflammatory factors. IL-6 is activated. Lymphokines produced by T cells and fibroblasts [13] have high expression levels when the body is infected. CRP is a protein that rises sharply in plasma when the body is infected or tissue damaged, which can activate complement and enhance the phagocytosis of phagocytes to play an opsonizing role. PCT can reflect the active degree of systemic inflammation in the body, and it is significantly increased in severe bacterial, fungal, and parasitic infections and sepsis [14, 15]. Pathogenic bacteria and airway secretions in patients with MDR Gram-negative (*G*−) pneumonia accumulate in the lungs, stimulate the production of mononuclear macrophages and neutrophils, and cause the body to secrete a large amount of IL-6, leading to systemic inflammatory response, and CRP and PCT were significantly increased. In this study, the levels of serum LPS, IL-6, CRP, and PCT in the two groups were gradually decreased at 3 d, 7 d, and 14 d after treatment compared with those before treatment, and the decrease trend was more obvious in the observation group. There was no significant difference in serum LPS, IL-6, CRP, and PCT levels between the two groups 14 days after treatment, suggesting that the two groups of treatment programs have good anti-infective effects. However, the results of this study showed that aerosol inhalation combined with intravenous infusion of polymyxin B can significantly reduce the level of serum inflammation, which mean that aerosol inhalation combined with polymyxin B intravenous infusion is effective in a short term and the anti-infection effect is more obvious.

During the treatment period, the number of nephrotoxicity cases in the observation group was 3 cases (6.82%), which was not significantly different from 4 cases (10.00%) in the control group. Many previous studies have reported [16, 17] that nephrotoxicity is the most common adverse reaction in the clinical application of polymyxin B. Combined with the conclusions of this study, some differences may be related to the relatively small number of samples included in this study. In the future, the expanded sample size and sample inclusion criteria will be discussed and studied in depth.

In conclusion, aerosol inhalation combined with intravenous infusion of polymyxin B can improve the bacterial clearance rate in patients with pneumonia caused by MDR Gram-negative (*G*−) bacteria, which is beneficial to improve clinical symptoms and reduce the level of serum inflammatory infection.

Data Availability

The data can be obtained from the author upon reasonable request.

Disclosure

Hanlu Lin and Xiaobo Liu are co-first authors.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Retraction

Retracted: Pingyangmycin Activates Oral Carcinoma Cell Autophagy via the Phosphorylation of the PI3K/AKT/mTOR Axis to Achieve the Purpose of Treating Oral Carcinoma

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] W. Xu, L. Zhang, Z. Chen, H. Wang, and Z. Yan, "Pingyangmycin Activates Oral Carcinoma Cell Autophagy via the Phosphorylation of the PI3K/AKT/mTOR Axis to Achieve the Purpose of Treating Oral Carcinoma," *Emergency Medicine International*, vol. 2022, Article ID 4522873, 8 pages, 2022.

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Research Article

Pingyangmycin Activates Oral Carcinoma Cell Autophagy via the Phosphorylation of the PI3K/AKT/mTOR Axis to Achieve the Purpose of Treating Oral Carcinoma

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Objective. The aim of the study is to investigate the role of pingyangmycin (PYM) in oral carcinoma (OC) cell autophagy via the PI3K/AKT/mTOR axis. *Methods*. 200 μL PYM culture solution with a concentration of 100 μg/ml (low PYM (L-PYM) group), 300 μg/ml (middle PYM (M-PYM) group), 500 μg/ml (high PYM (H-PYM) group), and the same amount of conventional medium (normal control (NC)) were added to the purchased OC cell line SCC-25, respectively, and the PI3K/AKT/mTOR pathway expression, autophagy protein levels, cell activity, and apoptosis rate were determined. Subsequently, we selected OC cells co-cultured with PYM with the concentration of the most significant intervention effect and 740Y-P, a specific activator of the PI3K/AKT/mTOR axis, and those treated with 740Y-P alone for the aforementioned detection. *Results*. L-PYM, M-PYM, and H-PYM groups all showed decreased PI3K, AKT, mTOR, and phosphorylated protein levels ($P < 0.05$). Beclin1 and LC3-II protein levels and apoptosis rate of PYM-intervened OC cells increased, but the activity decreased ($P < 0.05$). Under 740Y-P intervention, the PI3K/AKT/mTOR pathway was activated, cell activity was increased, and the apoptosis rate and autophagy were decreased ($P < 0.05$). Simultaneous use of PYM and 740Y-P led to no difference in cell condition compared with NC ($P > 0.05$P>0.05). *Conclusion*. PYM can activate OC cell autophagy by inhibiting the phosphorylation of the PI3K/AKT/mTOR axis, and thus, achieving the goal of killing tumor cells.

1. Introduction

Oral carcinoma (OC), one of the most prevalent head and neck malignancies, accounts for about 2%–4% of all tumors, with a reportedly annual new cases count of 300,000 in the world and a growing incidence rate [1]. In the early stage of OC, there are basically no obvious special clinical presentations, but the disease has usually developed in the middle and late stages when there is an obvious burning sensation or pain [2]. Because of this, the prognosis of OC patients is generally poor, with a five-year survival rate of merely 20%–50% for advanced OC patients [3]. Currently, the clinical treatment of OC is still mainly based on surgery or (and) combined with radiotherapy and chemotherapy. Moreover, because the tumor usually invades the maxillofacial bone tissue, the maxillofacial bone tissue needs to be removed during surgery, which seriously affects the patient's appearance, eating, vocalization, and respiratory function [4]. Therefore, clinical efforts have been made to find a new method to treat OC but so far no significant results have been achieved.

Pingyangmycin (PYM) is an antitumor antibiotic isolated from the actinomycetes culture medium, which is similar to bleomycin in composition. It mainly inhibits thymidine from being incorporated into DNA to destroy it. At the same time, it can promote DNA single-strand breakage and release some free bases to destroy DNA templates [5]. At present, PYM has been found to inhibit fibroblast proliferation and enhance vascular endothelial cell atrophy and apoptosis [6]. It has also been proven to have excellent efficacy in killing OC cells and it is often selected for chemotherapy of OC [7]. However, it remains to define

the specific mechanism of action of PYM in OC, and further investigation is needed to clarify the way through which PYM affects OC cell activity.

Besides, the phosphatidylinositol-3 kinase(PI3K)/protein kinase B(AKT)/mammalian target of rapamycin(mTOR) axis is a classic signaling pathway in modern cancer research, which has been confirmed to participate in the occurrence and development of gastric, prostate and other cancers [8, 9]. In OC, the PI3K/AKT/mTOR axis also has an important influence [10]. Moreover, the close connection between this axis and OC cell autophagy has been repeatedly demonstrated, which suggests that the PI3K/AKT/mTOR axis may be a new treatment strategy for head and neck tumors [11, 12]. Peng et al. found that PYM could enhance mouse hemangioma endothelial cell apoptosis via PI3K/AKT/mTOR signaling suppression [13]. It can be seen that there is a certain potential relationship between PYM and the PI3K/AKT/mTOR axis, which may also be related to the mechanism of PYM affecting OC, but there is no research to confirm our conjecture at present.

In order to further understand the mechanism of action of PYM on OC and provide a more reliable treatment guarantee for OC patients in the future, this study analyzes the role played by PYM in OC cell autophagy through the PI3K/AKT/mTOR axis for clinical reference.

2. Materials and Methods

2.1. Cell Data. The culture medium for OC cell line SCC-25 supplied by ATCC was DMEM + 10% fetal bovine serum (FBS). The cells were incubated at 37°C with 5% CO_2 at a constant temperature, which was renewed every 3 days until the cell growth density reached 70%–80% for follow-up experiments.

2.2. Interventions. 200 μL PYM culture solution with concentration of 100 μg/ml (low PYM (L-PYM) group), 300 μg/ml (middle PYM (M-PYM) group), 500 μg/ml (high PYM (H-PYM) group), and the same amount of conventional medium (normal control (NC)) were added to logarithmic growth phase SCC-25 cells (2×10^4/well) that were inoculated into the 96-well plates, respectively. In addition, OC cells co-cultured with PYM with the concentration of the most significant intervention effect and 740Y-P (PYM + 740Y-P group), a specific activator of the PI3K/AKT/mTOR axis, and those treated with 740Y-P alone (740Y-P group) were selected for experiments.

2.3. Western Blot (WB) Test. After being isolated from RIPA-lysed cells, the total protein was transferred to a PVDF membrane by SDS-PAGE, then blocked with 5% FBS and added with a primary antibody. After overnight culture at 4°C, the membrane was immersed in the secondary antibody the next day, developed with the ECL in a dark environment, and photographed for the final calculation of target proteins' relative expression relative to GAPDH. Target protein expression level = gray value of target band/gray value of GAPDH band.

2.4. CCK-8. After cells were digested with trypsin, the cultured cells adjusted to 2×10^4 cells/mL were inoculated into 96-well plates, and 10 μL of CCK-8 solution was added to one well at 0 h, 24 h, 48 h, and 72 h of incubation, respectively. The optical density (450 nm) was detected by a microplate 2 h later, and the cell growth curve was plotted.

2.5. Cell Cloning Experiment. Additionally, cells (200 cells/mL) were inoculated into 6-well plates and dripped with FBS (500 μL/well) on the 5th day after plating. After colony formation, the cells were subjected to supernatant removal, 4% paraformaldehyde immobilization, and 0.1% crystal violet dyeing for counting. Five visual fields were randomly selected from each chamber for statistical analysis.

2.6. Flow Cytometry (FCM) Assay. After cells were digested with trypsin, they were washed 3 times with PBS. A binding buffer was added to suspend the cells, and 5 μL of FITC and 5 μL of PI were added, followed by 15 min of dark incubation at an ambient temperature, and finally apoptosis rate detection by flow cytometry. The number of apoptotic cells, expressed in percentage, was the viable apoptotic cell count (Q3 quadrant).

2.7. Statistical Methods. All the tests in this study were repeated three times, and a statistical analysis was conducted by SPSS22.0 software. The results were all denoted by ($\overline{x} \pm s$), and the methods for intergroup and multigroup comparisons were independent samples t test and one-way ANOVA plus LSD backtesting, respectively. $P < 0.05$ is the level of significance.

3. Results

3.1. Impacts of PYM on PI3K/AKT/mTOR Axis Expression and Autophagy of OC Cells. As indicated by WB, PYM-treated cells had notably lower PI3K, AKT, mTOR, p-PI3K, p-AKT, and p-mTOR protein levels while having higher Beclin1 and LC3-II protein levels than NC ($P < 0.05$). Among PYM intervention groups, L-PYM and M-PYM groups showed no distinct differences ($P > 0.05$), presenting with lower PI3K/AKT/mTOR pathway protein levels and higher Beclin1 and LC3-II protein levels than the L-PYM group ($P < 0.05$) as shown in Figure 1.

3.2. Impacts of PYM on OC Cell Activity. First of all, in the CCK-8 experiment, we found a lower cell growth ability of L-PYM, M-PYM, and H-PYM groups compared with NC ($P < 0.05$). Among the three PYM-intervened groups, H-PYM and M-PYM groups showed similar cell growth ($P > 0.05$) that was lower than the L-PYM group ($P < 0.05$). Similarly, the colony formation assay also showed that the cell clone ability was significantly reduced in the three groups treated with PYM compared with NC ($P < 0.05$), especially in the H-PYM group ($P < 0.05$) as shown in Figure 2.

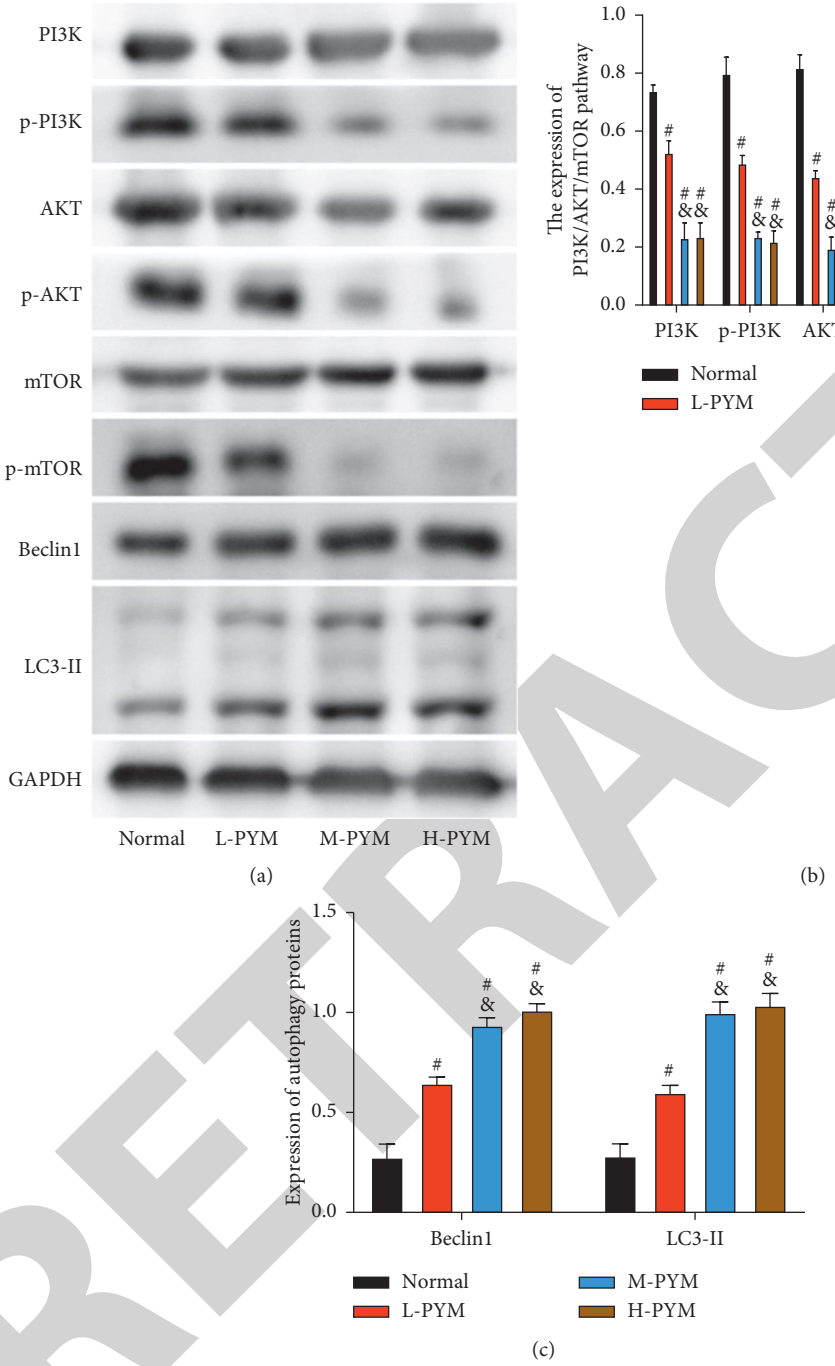

Figure 1: Impacts of PYM on protein expression of OC cells. (a) WB map. (b) PI3K/AKT/mTOR pathway protein expression. (c) Autophagy protein expression. Compared with the normal group, $^{\#}P < 0.05$. Compared with the L-PTM group, & $P < 0.05$.

3.3. Role of PYM in OC Cell Apoptosis. FCM revealed an apoptosis rate similar to H-PYM and M-PYM groups ($P > 0.05$) that was higher than the L-PYM group and NC ($P < 0.05$). Moreover, in comparison with NC, the apoptosis rate was higher in the L-PYM group ($P < 0.05$) as shown in Figure 3.

3.4. PYM Influences OC Autophagy via the PI3K/AKT/mTOR Axis. We selected 300 μg/mL PYM for the follow-up experiment based on the abovementioned experimental results. First, we detected the protein expression in cells and found elevated PI3K, AKT, and mTOR protein levels in the 740Y-P group ($P < 0.05$), indicating the success of the activator intervention. However, the PYM + 740Y-P group had PI3K, AKT, mTOR, Beclin1, and LC3-II levels similar to the blank group ($P > 0.05$), but lower autophagy protein than the 740Y-P group ($P < 0.05$) as shown in Figure 4.

3.5. PYM Influences OC Cell Activity via the PI3K/AKT/mTOR Axis. The cell activity test identified similar cell growth and cloning ability in the PYM + 740Y-P group and

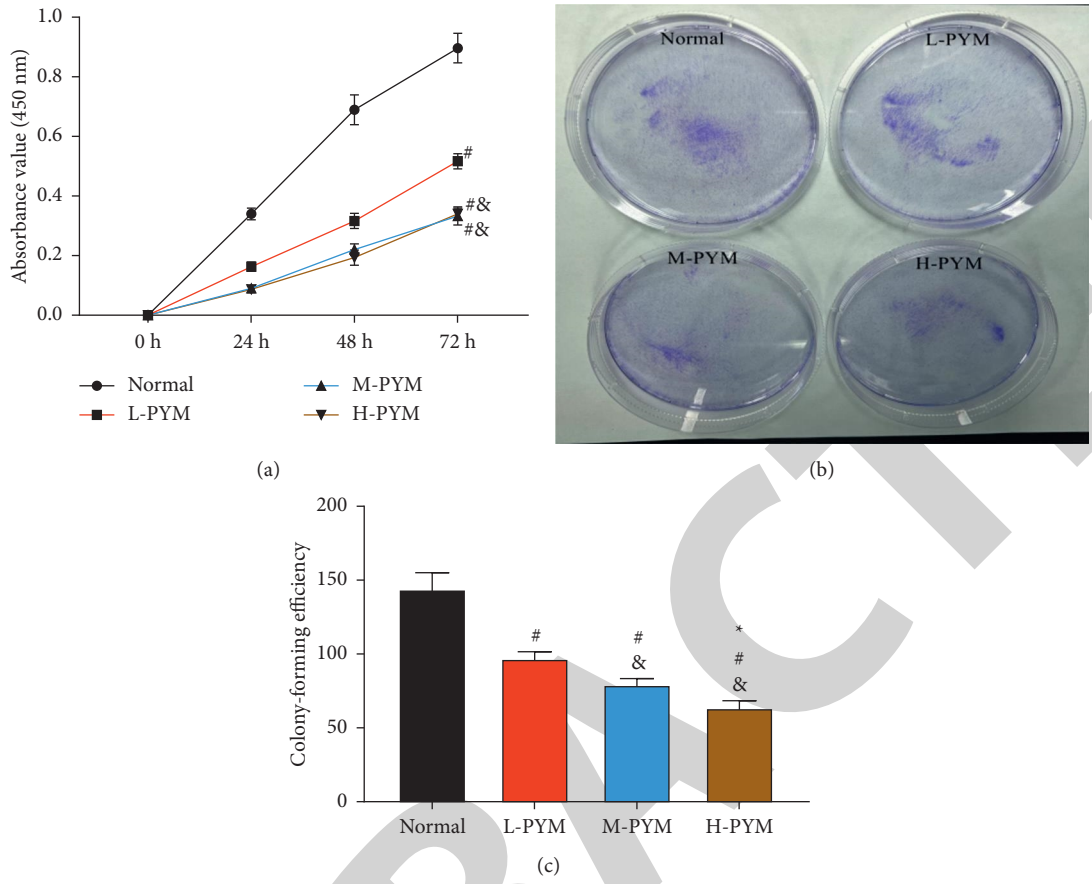

Figure 2: Impacts of PYM on OC cell activity. (a) Cell growth curve. (b) Experimental results of colony formation assay. (c) Colony-forming efficiency. Compared with the normal group, $^{\#}P < 0.05$. Compared with the L-PTM group, & $P < 0.05$. Compared with the M-PTM group, $^{*}P < 0.05$.

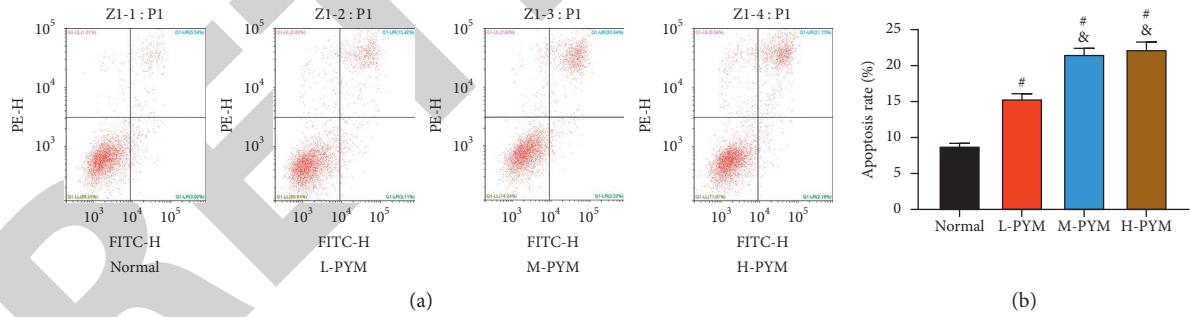

Figure 3: Impacts of PYM on OC cell apoptosis rate. (a) FCM results. (b) Apoptosis rate. Compared with the normal group, $^{\#}P < 0.05$; compared with the L-PTM group, & $P < 0.05$.

the blank group ($P > 0.05$), while higher cell activity of the 740Y-P group was compared to the other two groups ($P < 0.05$) as shown in Figure 5.

3.6. PYM Influences OC Cell Apoptosis via the PI3K/AKT/mTOR Axis. Finally, FCM results showed an apoptosis rate which was not statistically different between the PYM + 740Y-P group and the blank group ($P > 0.05$), which was significantly higher than that of the 740Y-P group ($P < 0.05$) as shown in Figure 6.

4. Discussion

The incidence of OC, a disease with high local invasion and metastasis, has been on the rise in recent years and become a global public health problem, seriously threatening patients' health and life safety [14]. Radical surgery, as the most common and best therapy in the clinic, may not have a significant effect on middle-advanced OC [15]. Therefore, finding a more effective, safe, and convenient treatment for OC is a hot spot and a difficulty of modern medical research. PYM is one of the commonly used drugs for OC

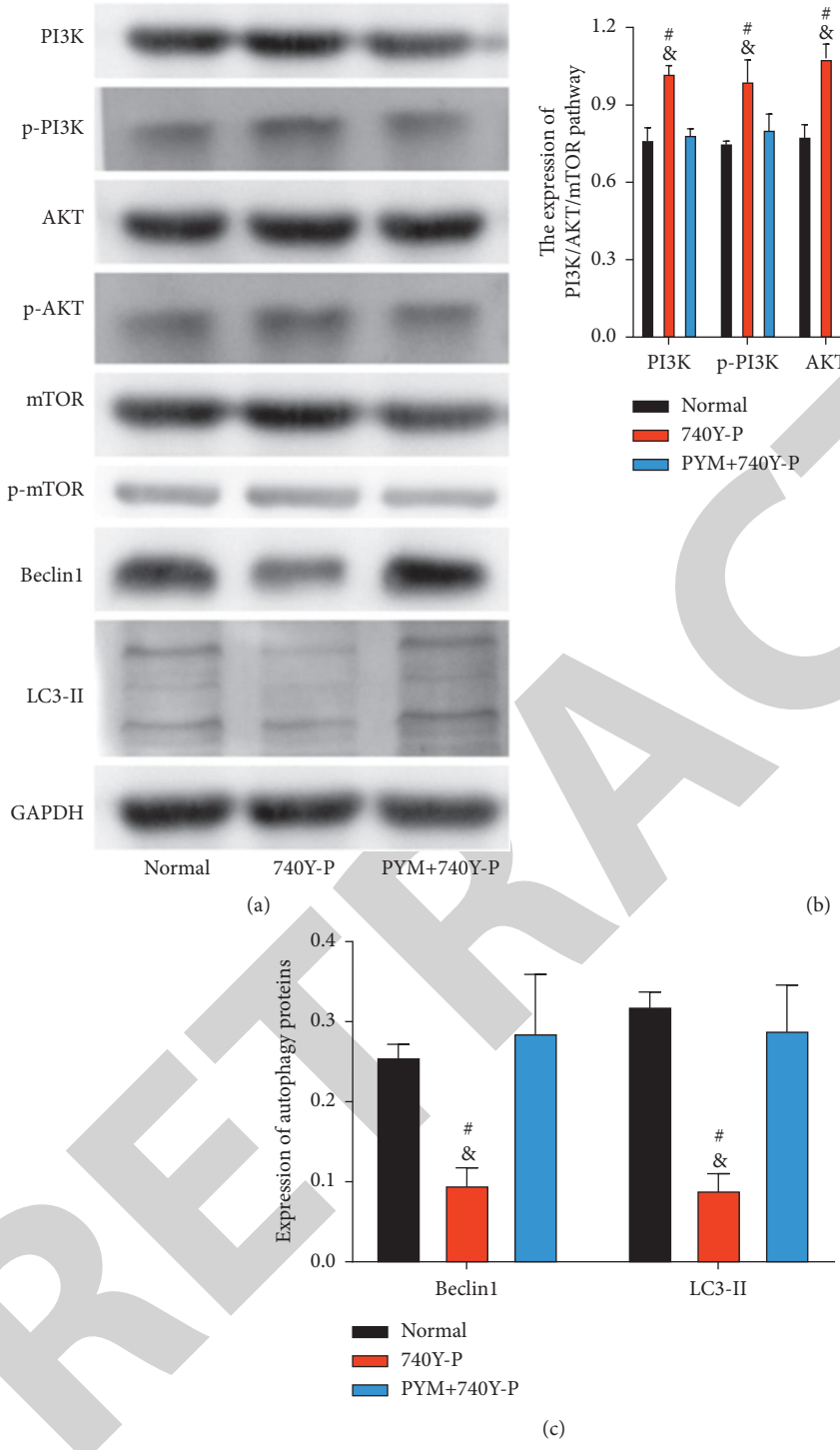

Figure 4: PYM influences OC autophagy via PI3K/AKT/mTOR axis. (a) WB map. (b) PI3K/AKT/mTOR pathway protein expression. (c) Autophagy protein expression. Compared with the normal group, $^{\#}P < 0.05$; compared with the PYM + 740Y-P group, & $P < 0.05$.

chemotherapy, and a thorough understanding of its mechanism of action will be of great help to clinical medication in the future. At present, although some studies have shown that PYM can accelerate tumor cell apoptosis by activating p53 and inhibiting EGFR, its correlations with the PI3K/AKT/mTOR pathway and the autophagy capacity of cells in OC have not been confirmed [16, 17]. Therefore, the results of this study have vital reference significance for the clinical application of PYM.

First, we determined PI3K/AKT/mTOR pathway expression in OC cells following PYM intervention. The results showed that PI3K, AKT, and mTOR protein levels, as well as the phosphorylated protein expression, were all decreased in the L-PYM, M-PYM, and H-PYM groups, which indicated

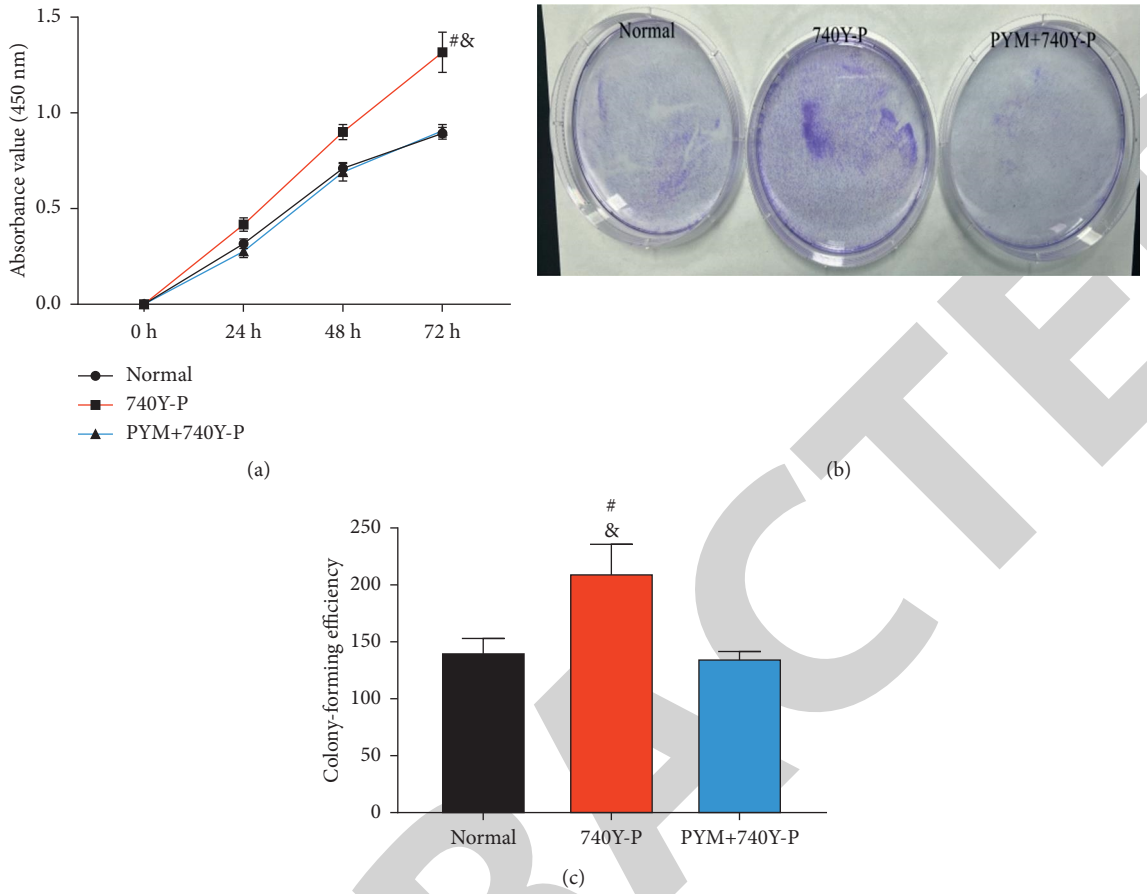

Figure 5: PYM influences OC cell apoptosis via PI3K/AKT/mTOR axis. (a) Cell growth curve. (b) Experimental results of colony formation assay. (c) Colony-forming efficiency. Compared with the normal group, $^{\#}P < 0.05$; compared with the PYM + 740Y-P group, & $P < 0.05$.

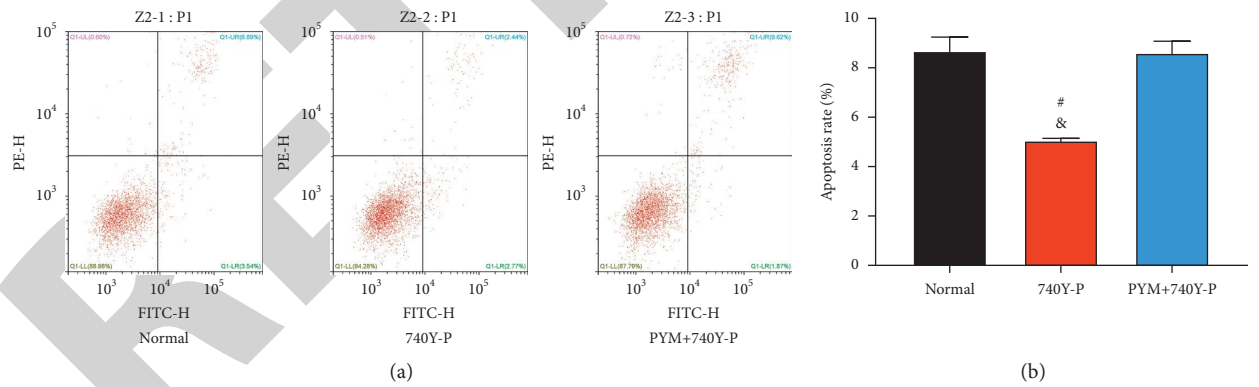

Figure 6: PYM influences OC cell activity via the PI3K/AKT/mTOR axis. (a) FCM results. (b) Apoptosis rate. Compared with the normal group, $^{\#}P < 0.05$; compared with the PYM + 740Y-P group, & $P < 0.05$.

that PYM could inhibit the PI3K/AKT/mTOR axis in OC cells. As we all know, PI3K is a dimer composed of regulatory subunit p85 and catalytic subunit p110. After binding with growth factor receptors, the protein structure of AKT can be changed and activated, activating or inhibiting a series of downstream substrate activities by phosphorylation, thus regulating cell proliferation, differentiation, apoptosis, and migration [18]. mTOR is the downstream target of PI3K/AKT and a pivotal molecule for regulating cell growth and metabolism [19]. Since there have been a lot of studies on the PI3K/AKT/mTOR pathway involvement in OC, they will not be covered here. Autophagy is an extremely important link in cell apoptosis and metabolism and it is also the main mechanism of tumor chemotherapy [20]. Therefore, the autophagy of tumor cells is also an important factor in determining the recovery of patients to a great extent. The application of PYM also effectively activated the expression of autophagy proteins Beclin1 and LC3-II, which also indicates

that PYM can enhance the autophagy ability of OC, thus accelerating cell apoptosis and achieving the goal of killing tumors. Its mechanism may be related to the inhibition of the PI3K/AKT/mTOR axis. In subsequent experiments of CCK-8, colony formation, and FCM, we also found that OC cell activity decreased and apoptosis increased under the intervention of PYM, which verified the above viewpoint. Moreover, we found consistent results from previous studies, which corroborate our findings [21, 22].

In order to confirm that PYM affects OC cells through the PI3K/AKT/mTOR axis, we used 740Y-P to intervene in OC cells. It revealed increased PI3K, AKT, and mTOR protein levels postintervention, suggesting that 740Y-P could activate the expression of this pathway. However, in the activated state of PI3K/AKT/mTOR, the autophagy ability and apoptosis of cells decreased obviously, but the activity increased, demonstrating that the PI3K/AKT/mTOR could promote the autophagy ability and apoptosis of cells decreased obviously, which is consistent with the previous experimental results [23, 24]. In the above-mentioned experiments, the results of the M-PYM and H-PYM groups were basically the same, suggesting that we can achieve an ideal intervention effect by using a concentration of 300 μg/ml in OC cells, so we still chose this dose for subsequent analysis. It can be seen that under the combined action of PYM and 740Y-P, the autophagy capacity, activity, and apoptosis rate of cells were no different from those of normal cells. The results indicate that the influence of PYM on OC can be completely reversed by activating the PI3K/AKT/mTOR axis, which validates our conclusion that PYM affects OC cells through the PI3K/AKT/mTOR pathway.

However, due to limited experimental conditions, this research still has many limitations that need to be addressed. For example, only SCC-25 cells were tested in this study, and more OC cell lines should be purchased to analyze the influence mechanism of PYM. In addition, it is necessary to carry out tumor-bearing experiments in nude mice to further confirm the effects of PYM. Furthermore, the pathway of PYM's influence on OC other than the PI3K/AKT/mTOR axis is also worthy of confirmation by more experiments. In the follow-up research studies, we will conduct a more detailed and comprehensive experimental analysis on the application of PYM in OC, so as to provide a more reliable reference opinion for the clinic.

To sum up, PYM activates OC cell autophagy via inhibiting the phosphorylation of the PI3K/AKT/mTOR axis, thus achieving the goal of killing tumor cells.

Data Availability

The raw data supporting the conclusion of this article will be available by the authors without undue reservation.

Conflicts of Interest

The authors declare that they have no conflicts of interest and the research was conducted in the absence of any commercial or financial relationships.

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Retraction

Retracted: Analysis of the Effect of Mindfulness Behavior Intervention Combined with Progressive Breathing Training on Pulmonary Function Rehabilitation in Patients with Chronic Obstructive Pulmonary Disease

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] S. Yu and H. Fan, "Analysis of the Effect of Mindfulness Behavior Intervention Combined with Progressive Breathing Training on Pulmonary Function Rehabilitation in Patients with Chronic Obstructive Pulmonary Disease," *Emergency Medicine International*, vol. 2022, Article ID 1698918, 9 pages, 2022.

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Research Article

Analysis of the Effect of Mindfulness Behavior Intervention Combined with Progressive Breathing Training on Pulmonary Function Rehabilitation in Patients with Chronic Obstructive Pulmonary Disease

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Purpose. Studies have shown that 50%–70% of patients with chronic obstructive pulmonary disease (COPD) have fatigue in addition to respiratory symptoms, so relieving respiratory symptoms and reducing fatigue are the main treatment objectives for COPD patients. This study focuses on the effect of positive behavioral intervention combined with progressive breathing training on pulmonary function rehabilitation in patients with COPD. *Methods*. 86 patients who underwent COPD treatment in our hospital between August 2020 and December 2021 were selected as study subjects and were divided into control ($n = 43$) and study groups ($n = 43$) using the random number table method. Patients in the control group were given conventional care, treatment, and health guidance, while patients in the study group were given positive behavioral intervention combined with progressive breathing training on this basis. Patients in both groups were compared on the basis of Multidimensional Fatigue Inventory 20 (MFI-20) score, the Medical Coping Questionnaire (MCMQ score), the Massive Attentional Awareness Scale (MAAS) score, and pulmonary function indicators (including the percentage of forced expiratory volume one second (FEV1%), peak expiratory flow (PEF), forced vital capacity (FVC), and 6-min walk distance (6MWD)) and quality of life (MCMQ) scores before and after 12 weeks of intervention. *Results*. After 12 weeks of intervention, the study group had higher MFI-20 scores (comprehensive fatigue, physical fatigue, reduced activity, decreased power, and mental fatigue), confrontation scores on the MCMQ scale, MAAS scores (observation, description, nonjudgmental to intrinsic experience, nonresponsiveness to intrinsic experience, and perceived behavior), FEV1%, PEF, FVC, and 6MWD levels than the control group ($P < 0.05$). The scores of avoidance and submission on the MCMQ scale, and all scores of quality of life (cough, expectoration, shortness of breath, chest tightness, housework, going out, sleep, and energy) were lower than those of the control group ($P < 0.05$). *Conclusion*. Positive behavioral interventions combined with progressive breathing training have a strengthening effect on the clinical treatment of COPD patients. Positive behavioral interventions combined with progressive breathing training are simple to implement as individual self-regulation methods and can be practiced on their own after being familiar with certain methods and techniques, and long-term adherence helps individuals cope with the stimulation of adverse events. *Trail Registration*. The clinical registration number for this research is L2020083.

1. Introduction

Chronic obstructive pulmonary disease (COPD), a common disease in the elderly population, is characterized by airflow limitation, and patients mainly suffer from dyspnea, cough, shortness of breath, and wheezing, which can lead to chronic respiratory failure and spontaneous pneumothorax as the disease progresses, thus seriously affecting their daily lives [1]. Our COPD surveillance report [2] showed that the prevalence of COPD in people aged ≥40 years was about 13.6%. In reality, COPD patients suffer from long-term physical and psychological symptoms such as dyspnea,

fatigue, cough and sputum, decreased activity endurance, anxiety, and depression, and they have physical and psychological disorders that lead to limitations in daily activities, decreased quality of life, and high readmission and mortality rates [3, 4].

There is no curative treatment for COPD, and treatment measures mainly consist of pharmacological and nonpharmacological treatments, and pharmacological treatments are mostly used to control the disease and delay its progression [5]. However, medications cannot address the de-adaptation effect of COPD patients due to dyspnea and limited mobility, and this de-adaptation can cause a further decrease in mobility, creating a vicious cycle [6]. Therefore, pharmacological treatment needs to be accompanied by long-term nonpharmacological treatment. Pulmonary rehabilitation exercises are considered the cornerstone of pulmonary rehabilitation programs and are essential in the rehabilitation of COPD patients to prevent and improve dyspnea and motor dysfunction due to airflow limitation and respiratory and skeletal muscle dysfunction in COPD patients [7, 8]. Progressive breathing training enhances ventilation and ventilation, improves respiratory muscle endurance, corrects pathological breathing patterns, promotes sputum expulsion, and enhances cardiac and pulmonary aerobic endurance, thereby improving the patient's ability to perform activities of daily living [9]. However, patients are prone to fatigue, poor results, and poor compliance with respiratory muscle function training alone. Mindfulness behavior intervention originated from ancient Eastern meditation. Originating from ancient Eastern meditation practices, positive behavioral interventions aim to emphasize the individual's ability to maintain attention and alertness to the task at hand, focus the mind on the activity being performed, promote rehabilitative exercise, and reduce the psychological burden of the patient. The efficacy of mindfulness therapy on clinical patients' quality of life, sleep quality, negative emotions, and postoperative pain has been widely recognized in recent years among a variety of psychological interventions [10, 11].

However, few studies have been reported on the combined use of positive behavioral intervention and progressive breathing training in COPD in China. The aim of this study was to investigate the effects of mindfulness behavioral intervention and progressive breathing training on fatigue and cardiopulmonary function in stable COPD patients, with the aim of providing a theoretical basis for the clinical implementation of this combined training for COPD patients.

2. Information and Methods

2.1. Study Population and Grouping. In this study, 86 patients who underwent COPD treatment in our hospital between August 2020 and December 2021 were selected as study subjects and were divided into control ($n = 43$) and study groups ($n = 43$) using the random number table method.

2.1.1. Inclusion Criteria

(i) Those who were conscious, thinking normally, and able to communicate verbally.

(ii) Patients who met the diagnostic criteria for chronic obstructive pulmonary disease [12].

(iii) Patients and their families who gave informed consent to participate in the study program.

(iv) Stable condition with treatment.

(v) Primary school and above with basic literacy skills.

(vi) GOLD graded as I-III [13].

2.1.2. Exclusion Criteria

(i) Those with a history of mental illness and serious complications such as impaired consciousness, chronic respiratory failure, or pulmonary encephalopathy.

(ii) Those with combined cancer and combined tuberculosis.

(iii) those who required continuous noninvasive or invasive mechanical ventilation and hemodynamic instability.

(iv) Combination of other diseases that affect daily activities, such as muscle, joint, and vascular diseases.

2.2. Methods

2.2.1. Control Group. Patients in the control group were given symptomatic treatment such as expectorants and bronchodilators during hospitalization and routine nursing measures in internal medicine. After admission, the responsible nurse gave targeted nursing interventions according to the patients' complaints and physical symptoms and also provided verbal health education and psychological guidance.

2.2.2. Study Group. Mindfulness behavioral intervention combined with progressive breathing training was given on the basis of conventional care as follows:

(1) A multidisciplinary COPD management team was established. The team members received unified theoretical training and passed the operational skills test, and were proficient in the theories and intervention methods related to positive behavioral intervention and progressive breathing training.

(2) Assess the cognitive ability of the patient. The nurse-in-charge fully understood the patient's condition and past medical history and took the initiative to communicate with the patient and family members to understand their awareness of COPD and self-care ability, to identify the patient's problems in the process of disease treatment and rehabilitation, and to develop a targeted cognitive-behavioral intervention plan accordingly.

(3) Carry out cognitive-behavioral interventions.

(i) Cognitive interventions. The patients and their families were introduced to the etiology, causes, symptoms, treatment, and prognosis of COPD by means of multimedia lectures and the distribution of brochures, and a good patient-nurse relationship was established by using empathy and listening, and the adverse beliefs of the patients were identified through communication. Guide patients to ask questions about bad beliefs and debate with bad beliefs in a way that constantly asks questions to find reasonable solutions and correct misconceptions. When necessary, we could organize a patient meeting to encourage benign communication among patients, share treatment experience, and analyze the bias of disease and treatment perception to establish a correct disease perception.

(ii) Behavioral interventions (progressive breathing exercises) Relaxation training: I. Sitting relaxation involves the patient remaining seated, bending the torso forward 20°, both elbows flexed, the upper arms and shoulder joints doing circular movements, and slowly rotating the head. II. Standing relaxed, the patient stood with feet shoulder-width apart, arms naturally dropping and swinging back and forth, while the trunk rotates left and right, and the above actions were repeated 10~15 times for one group.

(iii) Respiratory muscle training: I. In lip retraction training, the patient was kept in a sitting or standing position, and the physician instructed him/her to inhale through the nose and relax the abdominal muscles, followed by lip retraction and slow exhalation, ensuring that the breathing time was 4~6 s. During the training process, a candle was placed 15–20 cm in front of the patient, and the exhalation strength was appropriate to make the flame tilt but not blow out the flame, while ensuring that the degree of lip retraction was consistent during breathing. II. In abdominal breathing, the patient maintained a lying or standing position, hands were placed on the chest and abdomen, breathing as much as possible to ensure that the chest does not move, exhale when the palm of the hand slightly forces down the abdomen, so that the abdomen retracts, and inhale when the abdomen forces up the palm of the hand. The training time was 15~30 min, 2~4 times/d.

Patients' training intensity should be adjusted according to their heart rate and respiratory rate monitoring results during exercise to avoid sports injuries. At least one caregiver should accompany the patient during the training period and take appropriate treatment measures in time if the patient becomes unwell.

2.3. Observed Indicators

2.3.1. General Information. The data were obtained by reviewing the patients' case data, including age, gender, duration of COPD, GOLD class, education level, family and economic status, whether they had a history of smoking, and comorbidities.

2.3.2. Fatigue Level. The Multidimensional Fatigue Inventory 20 (MFI-20) [14] was used to assess the degree of fatigue before and 12 weeks after the intervention in both groups, which included a total of 20 entries for 5 factors: general fatigue, physical fatigue, reduced activity, decreased motivation, and mental fatigue, with each factor containing 4 entries. A total score of 100 was assigned on a 5-point Likert scale (1 to 5), with higher scores indicating greater fatigue.

2.3.3. Lung Function Indicators. The percentages of forced expiratory volume one second (FEV1%), peak expiratory flow (PEF), and forced vital capacity (FVC), were compared between the two groups before and 12 weeks after the intervention. All of the above indicators were tested using the Japanese CHEST portable spirometer HI-101.

2.3.4. 6-Minute Walking Distance (6MWD). The 6MWD was measured using a 6-minute walking test, in which the patient was asked to walk for 6 minutes at maximum speed in a quiet 30 m long corridor, and the distance walked was measured. It is important to note that the test should be terminated immediately if the patient experiences chest pain, unbearable dyspnea, lower limb cramps, pallor, or sweating during walking.

2.3.5. Coping Styles. The Medical Coping Modality Questionnaire (MCMQ) [15] was used to assess patients' coping styles, including three dimensions of avoidance, submission, and confrontation, with a total of 20 entries, 8 of which were reverse scored, with a total score of 20 to 80, with higher scores on a dimension indicating a greater tendency for the patient to respond in that way.

2.3.6. Level of Positive Thoughts. The patients' level of positive thinking was assessed with the Mindful Attention Awareness Scale (MAAS) [16], which included 5 dimensions of observation, description, nonjudgmental to internal experience, nonresponsiveness to internal experience, and the act of awareness, with 15 entries. A Likert 6-point scale (1 to 6) was used for scoring, with a total score of 15 to 90, and the score was positively correlated with the level of positive thinking.

2.3.7. Quality of Life. The Chinese version of the COPD Assessment Test scale (COPD Assessment Test, CAT) [17] was used to measure the patient's quality of life. The scale contains 8 items: cough, expectoration, chest tightness, shortness of breath, ability to perform daily activities, ability

Table 1: Comparison of baseline data between the two groups before the intervention.

Indicator		Control group ($n = 43$)	Study group ($n = 43$)	t/χ^2 value	P Value
Gender (n, %)	Male	27 (62.79)	30 (69.77)	0.468	0.494
	Female	16 (37.21)	13 (30.23)		
Age (years; mean, SD)		66.70 ± 4.23	67.16 ± 4.49	0.489	0.626
Duration of disease (years; mean, SD)		6.84 ± 2.22	7.12 ± 2.42	0.559	0.578
Smoking status (n, %)	Never	8 (18.60)	9 (20.93)	1.074	0.584
	Quit	32 (74.42)	33 (76.74)		
	Still smoking	3 (6.98)	1 (2.33)		
GOLD grading (n, %)	Grade I	5 (11.63)	7 (16.28)	0.392	0.822
	Grade II	14 (32.56)	13 (30.23)		
	Grade III	24 (55.81)	23 (53.49)		
Education level (n, %)	Primary school	17 (39.53)	15 (34.88)	1.525	0.676
	Junior high school	14 (32.56)	11 (25.58)		
	High school	8 (18.60)	10 (23.26)		
	College and above	4 (9.30)	7 (16.28)		
Per capita monthly income (n, %)	<1000 yuan	7 (16.28)	8 (18.60)	0.329	0.954
	1000~3000 yuan	13 (30.23)	14 (32.56)		
	3001~5000 yuan	20 (46.51)	19 (44.19)		
	>5000 yuan	3 (6.98)	2 (4.65)		
Combined diseases (n, %)	Hypertension	23 (53.49)	25 (58.14)	0.233	0.994
	Coronary heart disease	6 (13.95)	5 (11.63)		
	Cerebrovascular disease	4 (9.30)	4 (9.30)		
	Diabetes	9 (20.93)	8 (18.60)		
	Other	1 (2.33)	1 (2.33)		

to go out, sleep, and energy, and each item has a score of 0–5, with a total score of 0–40. 0–10 indicated mild, 11–20 was moderate, 21–30 was severe, and 31–40 was very severe, with higher scores indicating a more severe impact of the disease on quality of life.

2.4. Data Analysis Methods. The statistical software SPSS23.0 was used to process and analyze the collected data, and the general data such as gender and age of COPD patients were statistically described by frequency and percentage, and the χ^2 test and rank sum test were used for statistical analysis. The mean and standard deviation were used to statistically describe the "MFI-20 score," "MAAS score," and "lung function" of COPD patients before and after the intervention, and the t-test of two independent samples was applied for comparison. Differences were statistically significant as indicated by $P < 0.05$.

3. Results

3.1. Comparison of Baseline Data between the Two Groups before the Intervention. Analysis of the general information of the two groups showed no statistically significant differences in gender, age, disease duration, smoking status, GOLD classification, education level, per capita monthly income, and comorbid diseases ($P > 0.05$) (Table 1).

3.2. Comparison of MFI-20 Scores before and after the Intervention between the Two Groups. There was no statistically significant difference in the scores of comprehensive fatigue, physical fatigue, reduced activity, power drop, and mental fatigue between the two groups before the intervention ($P > 0.05$); the scores of comprehensive fatigue, physical fatigue, reduced activity, power drop, and mental fatigue in the study group were lower than those in the control group after 12 weeks of intervention ($P < 0.05$) (Figure 1).

3.3. Comparison of MCMQ Scores between the Two Groups before and after the Intervention. There was no statistically significant difference between the avoid, yield, and confront scores of the two groups before the intervention ($P > 0.05$); the avoid and yield scores of the patients in the study group were lower than those of the control group after 12 weeks of intervention, and the confront item scores were higher than those of the control group ($P < 0.05$) (Figure 2).

3.4. Comparison of MAAS Scores before and after the Intervention between the Two Groups. There was no statistically significant difference in the scores of observation, description, noncriticality to intrinsic experience, nonreactivity to intrinsic experience, and behavior of awareness between the two groups before the intervention ($P > 0.05$); the scores of observation, description, noncriticality to intrinsic experience, nonreactivity to intrinsic experience, and behavior of awareness were higher in the study group than in the control group 12 weeks after the intervention ($P < 0.05$) (Figure 3).

3.5. Comparison of Pulmonary Function Indexes before and after the Intervention between the Two Groups. There was no statistically significant difference between the FEV1%, PEF, FVC, and 6MWD levels of the two groups before the intervention ($P > 0.05$); the FEV1%, PEF, FVC, and 6MWD

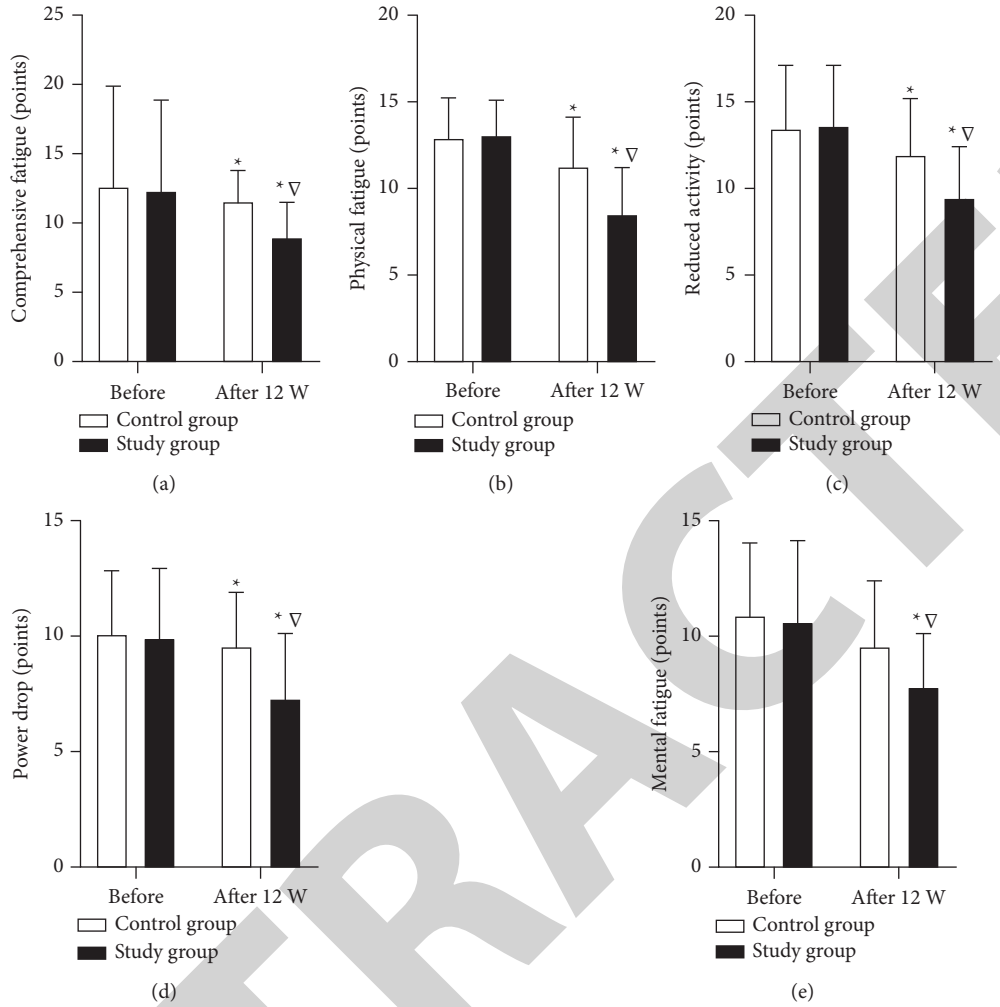

Figure 1: Comparison of MFI-20 scores before and after the intervention between the two groups. Note: (a)~(e) indicates comprehensive fatigue, physical fatigue, reduced activity, power drop, and mental fatigue, respectively. *is compared with the same group before intervention, $P < 0.05$; ∇ is compared with the control group, $P < 0.05$.

levels of the patients in the study group were higher than those in the control group after 12 weeks of intervention ($P < 0.05$) (Figure 4).

3.6. Comparison of the Quality of Life of the Two Intervention Groups. There was no statistically significant difference in the scores of cough, expectoration, asthma, chest tightness, housework, going out, sleep, and energy between the two groups before the intervention ($P > 0.05$); the scores of cough, expectoration, asthma, chest tightness, housework, going out, sleep, and energy in the study group were lower than those in the control group after 12 weeks of intervention ($P < 0.05$) (Figure 5).

4. Discussion

Patients with COPD have severe activity limitations in daily life, especially when performing exercise, due to, for example, restricted airflow, which in turn affects their quality of life [18]. Currently, exercise and respiratory training have become routine care for patients in the stable phase of COPD, but some studies [19, 20] have pointed out that routine care is more about following the treatment plan and observing the condition, while respiratory training alone tends to make patients tired, ineffective, and poorly adhered to. This shows that in addition to effective treatments to control symptoms, COPD patients should be given more behavioral guidance and psychological care during treatment and training to help them develop healthy behaviors.

Progressive respiratory training is based on the individualized situation of the patient to develop exercise prescriptions, adjust the intensity of training in stages, and complete lip retraction training, abdominal breathing, and other training, through such exercises to enhance the strength of respiratory muscles and expand the range of motion of the thorax and diaphragm, in order to effectively expand the airway, reduce resistance, and improve the quality of breathing [21, 22]. In addition, respiratory muscle training can inhibit the reduction of lung tissue elasticity caused by activity limitation, atrophy, and partial loss of function of disused respiratory

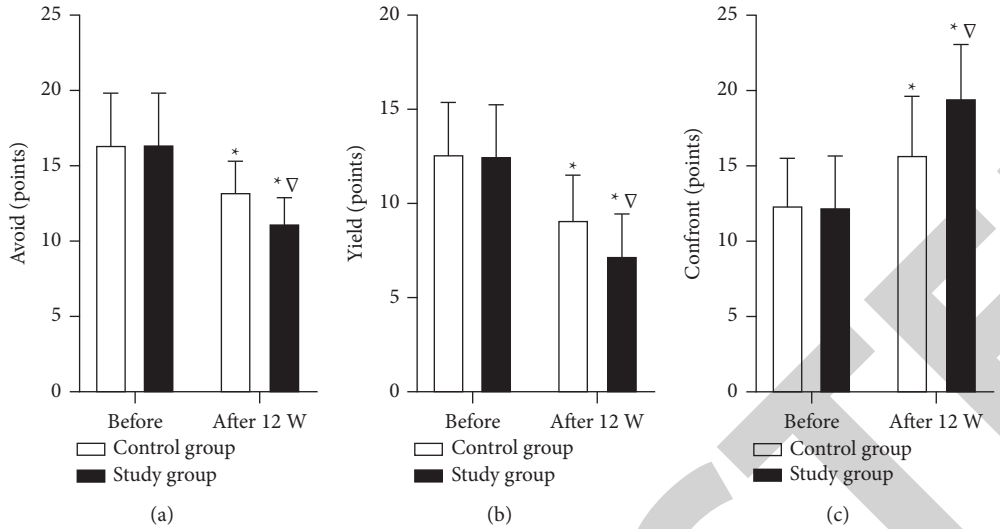

Figure 2: Comparison of MCMQ scores between the two groups before and after the intervention. Note: (a)~(c) indicates avoid, yield, and confront scores, respectively. *is compared with the same group before intervention, $P < 0.05$; ▽ is compared with the control group, $P < 0.05$.

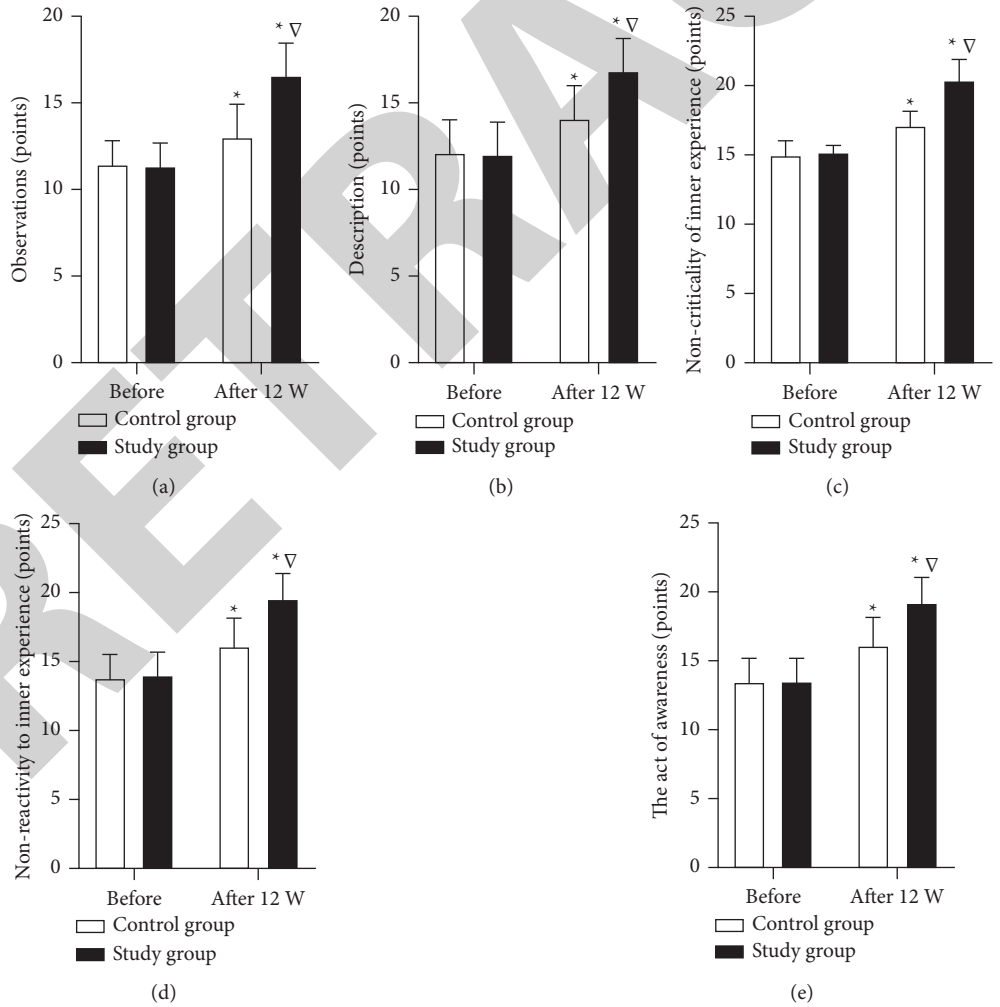

Figure 3: Comparison of MAAS scores before and after the intervention between the two groups. Note: (a)~(e) indicates the behavioral scores of observation, description, noncriticality to intrinsic experience, nonreactivity to intrinsic experience, and behavior of awareness, respectively. *is compared with the same group before intervention, $P < 0.05$; ▽ is compared with the control group, $P < 0.05$.

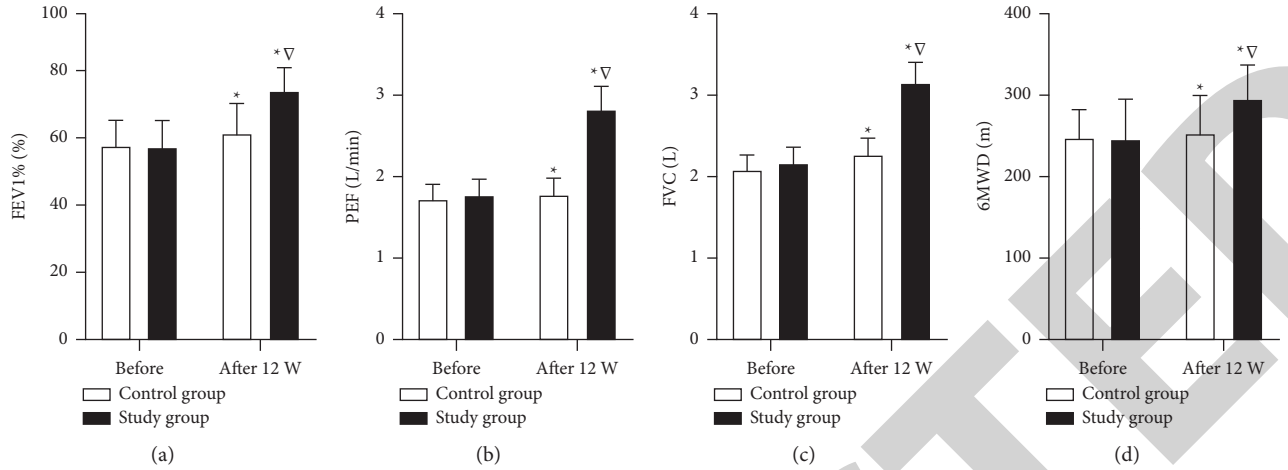

Figure 4: Comparison of pulmonary function indexes before and after the intervention between the two groups. Note: (a)~(d) indicates FEV1%, PEF, FVC, and 6MWD levels, respectively. *is the comparison with the same group before the intervention, $P < 0.05$; ▽ is the comparison with the control group, $P < 0.05$.

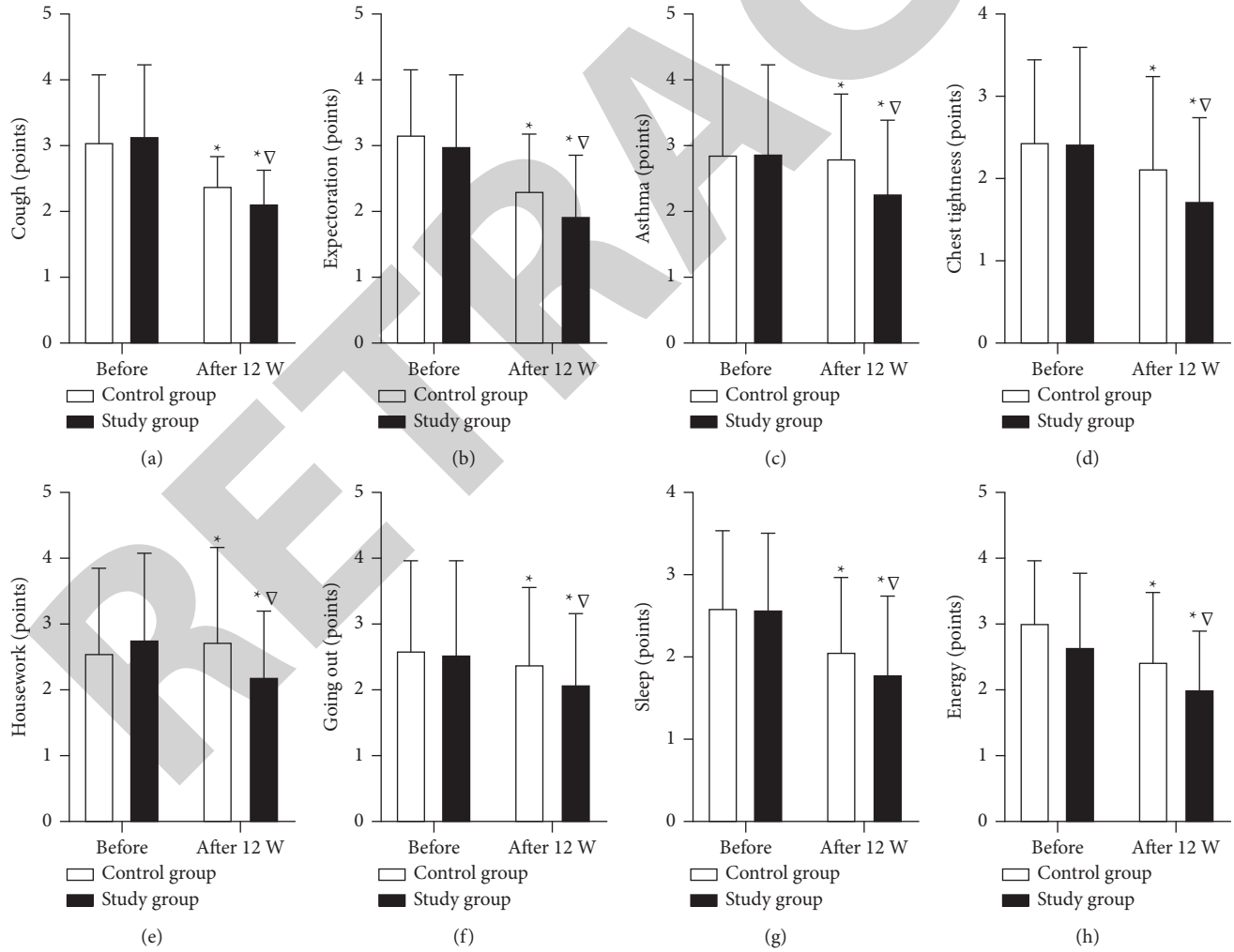

Figure 5: Comparison of the quality of life of the two intervention groups. Note: (a)~(h) indicates the scores of cough, expectoration, asthma, chest tightness, housework, going out, sleep, and energy, respectively. *is compared with the same group before intervention, $P < 0.05$; ▽ is compared with the control group, $P < 0.05$.

muscles; improve lung ventilation and alveolar opening rate; maintain lung tissue elasticity, small airway patency, and thoracic mobility; delay the process of alveolar thickening and aging caused by inactivity; and improve the lung function of the body [23]. Mindful behavioral intervention is a psychological intervention model that helps patients to consciously maintain their attention on internal or external experiences and to self-regulate without making any judgments [24]. At present, mindfulness behavior intervention is widely used in the psychological intervention of chronic pain diseases, anxiety and depressive disorders, and cancer patients, and has achieved good results. Some studies [25] have shown that mindfulness behavior intervention can help patients develop good behavioral habits, strengthen lung function through breathing training, reasonable exercise, etc., balance sympathetic nerve activity, and enhance the quality of life. In addition, the behavioral intervention carried out health behavior guidance based on progressive breathing training, by encouraging patients to ask and answer questions and encouraging positive communication between patients and friends can strengthen their beliefs to cope with the disease and cooperate with treatment and breathing training in a good state [26].

The results of this study showed that after 12 weeks of intervention, the study group had higher levels of each score on the MFI-20 scale (comprehensive fatigue, physical fatigue, reduced activity, power drop, and mental fatigue), each score on the MAAS scale (observation, description, noncriticality to intrinsic experience, nonreactivity to intrinsic experience, and perceived behavior), FEV1%, PEF, FVC, and 6MWD than the control group. The results show that mindfulness behavior intervention combined with progressive breathing training can effectively reduce the fatigue of COPD patients, train patients' observation ability, do not evaluate the observed things and feelings, or even accept the things and feelings, thereby enhancing patients' awareness of stressful events, which has an important role in improving patients' quality of life and guaranteeing physical and mental rehabilitation effects from multiple perspectives. In terms of coping style and quality of life, after 12 weeks of intervention, the study group had higher confrontation scores than the control group, lower avoid and yield scores, and each CAT scale score (cough, expectoration, asthma, chest tightness, housework, going out, sleep, and energy) than the control group. This suggests that mindful behavioral interventions combined with progressive breathing training can patiently guide patients to release processing from inertial thinking and automatic behaviors, focus on the functional state of the present moment and then face the new experience with new thinking patterns and ways, thus gradually developing a positive way of coping. In addition, the full combination of mindfulness behavior intervention and progressive breathing training can effectively adjust the psychological and physiological functions of patients and comprehensively improve the quality of life of COPD patients.

5. Summary

The results of this study showed that mindfulness behavioral intervention combined with progressive breathing training has a strengthening effect on the clinical treatment of COPD patients. Mindfulness behavioral intervention combined with progressive breathing training is simple to implement as an individual self-regulation method, which can be practiced by oneself after being familiar with certain methods and techniques, and long-term adherence helps individuals cope with the stimulation of adverse events. However, the effect of the positive behavioral intervention combined with progressive breathing training on the patient's consolidation period was not studied in this study, and the patient's practice will be followed up in future studies to further verify the effectiveness of the protocol.

Data Availability

All data in this trial are reasonably available from the authors.

Ethical Approval

This study was approved by the ethics committee of our hospital (EA2020024).

Conflicts of Interest

The authors declare that they have no conflicts of interest in any respect.

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Retraction

Retracted: Effect of Cognitive Behavioral Therapy on Stress Disorder, Cognitive Function, Motor Function, and Daily Living Ability of Patients with a Traumatic Brain Injury

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] M. Sun and L. Zhuang, "Effect of Cognitive Behavioral Therapy on Stress Disorder, Cognitive Function, Motor Function, and Daily Living Ability of Patients with a Traumatic Brain Injury," *Emergency Medicine International*, vol. 2022, Article ID 2375344, 6 pages, 2022.

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Research Article

Effect of Cognitive Behavioral Therapy on Stress Disorder, Cognitive Function, Motor Function, and Daily Living Ability of Patients with a Traumatic Brain Injury

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Purpose. The aim of the study is to observe the effects of cognitive behavioral therapy on stress disorder, cognitive function, motor function, and daily living ability of traumatic brain injury (TBI) patients. *Methods*. 84 patients with TBI admitted to our hospital from June 2019 to May 2021 were selected as the research subjects. They were divided into a control group (from June 2019 to May 2020) and an observation group (from June 2020 to May 2021), with 42 cases in each group. The control group received routine intervention; the observation group received cognitive behavioral therapy on the basis of the control group. Before and after intervention, the post-traumatic stress disorder (PTSD), cognitive function, motor function, and daily living ability of the two groups were observed. *Results*. After intervention, the PTSD-self-rating scale (PTSD-SS) scores of both groups were lower than those before intervention, and the PTSD-SS scores of the observation group were lower than those of the control group ($P < 0.05$). After intervention, the scores of the Montreal cognitive assessment (MoCA) scale, Fugl-Meyer assessment (FMA), and modified Barthel index (MBI) in both groups were higher than those before intervention, and the scores of MoCA, FMA, and MBI in the observation group were higher than those in the control group ($P < 0.05$). *Conclusion*. The application of cognitive behavioral therapy to TBI patients is beneficial to reduce the degree of PTSD and improve cognitive function, motor function, and daily living ability, which is worthy of clinical application.

1. Introduction

Traumatic brain injury (TBI) is a kind of brain trauma caused by external force, which has become a common type of trauma in clinic. TBI can cause damage to blood vessels, nerves, and brain tissues, and it is mainly manifested as slurred speech, blurred consciousness, and hemiplegia [1, 2]. Most patients with TBI will have different degrees of dysfunction after surgery, among which cognitive impairment, behavioral impairment, and motor dysfunction are common manifestations of dysfunction [3, 4]. At the same time, patients with TBI are prone to posttraumatic stress disorder (PTSD) due to complex and variable conditions, invasive medical procedures, depression in the medical environment, and other factors [5]. TBI will not only directly affect patients' daily living ability, increase the care burden of family members but also reduce patients' social participation and bring many difficulties for patients to reintegration into society [6].

Cognitive behavioral therapy is a kind of therapeutic method that technically intervenes patients' psychology and behavior. The method uses cognitive and behavioral techniques to intervene with patients' irrational beliefs and bad behavior, so as to correct patients' misconceptions and reconstruct normative adaptive behaviors [7, 8]. In order to improve the irrational cognition and behavior of patients with TBI, this study analyzed the clinical data of 84 patients with TBI, and observed the effects of cognitive behavioral therapy on PTSD, cognitive function, motor function, and daily living ability of patients, so as to provide stable and good conditions for patients' prognosis.

2. Materials and Methods

2.1. Research Subjects. 84 patients with TBI admitted to our hospital from June 2019 to May 2021 were selected as the

research subjects. They were divided into a control group (from June 2019 to May 2020) and an observation group (from June 2020 to May 2021), with 42 cases in each group.

2.1.1. Inclusion Criteria. The inclusion criteria were as follows: ① all patients had definite history of TBI, which was confirmed by physical examination and imaging examination; ② have clear indications for operation; ③ the vital signs were relatively stable; ④ clear consciousness; ⑤ no other severe stress events occurred in the recent past; and ⑥ the clinical data of patients were complete.

2.1.2. Exclusion Criteria. The exclusion criteria were as follows:① mental illness; ② people with speech disorder or cognitive disorder; ③ complicated with severe malignant tumor diseases; ④ complicated with blood system diseases and abnormal coagulation function; and ⑤ unable to actively cooperate with treatment.

2.2. Research Methods. The control group received routine intervention, including surgical nursing, medication guidance, prevention of complications, physical training, psychological intervention, cognitive education, and other measures.

The observation group received cognitive behavioral therapy on the basis of the control group. A cognitive behavioral therapy intervention team was established, including experienced psychological counselors and specialist nurses, and all team members were trained in cognitive behavioral therapy knowledge. ① According to the patient's personal characteristics, investigate the patient's needs for cognitive behavioral therapy, and evaluate the patient's acceptance of cognitive behavioral therapy. Make a targeted intervention plan. ② Cognitive behavioral therapy was initiated after the patients with traumatic brain injury became conscious. Carry out cognitive education to patients, including surgical treatment, psychological comfort, rehabilitation training. Inform them of the knowledge related to surgical treatment of TBI, and encourage them to tell their inner thoughts. Perception of patients' thinking state, correction of patients' unreasonable beliefs. A reasonable cognitive model was established by ways of popular science education, individualized care, peer support, and family support. ③ Accurately evaluate patients' psychological state, and adopt positive guidance and positive psychological suggestion to reduce patients' pessimism and eliminate patients' negative emotions. Use encouraging language to communicate with patients, guide family members to actively cooperate, and give patients adequate emotional support. Encourage patients to communicate with each other as much as possible, and invite patients with traumatic brain injury who have recovered in the past to share their experiences and show them the effects of rehabilitation. ④ Behavioral intervention was carried out on patients by means of exposure behavior method, breathing relaxation training, upper and lower limb functional training, music therapy, etc. Exposure behavior method: Medical staff instruct family members to cooperate, put the patient in an uncomfortable environment, and take targeted behavioral measures to relieve the patient's discomfort. The intervention contents were adjusted according to the specific conditions of patients. Give dietary guidance, exercise guidance and rehabilitation guidance to patients, and encourage them to develop a good life and rest. ⑤ Introduce the precautions after discharge to patients in detail, and demonstrate home nursing operation to patients and their families. Follow-up was conducted by outpatient service, telephone call and visit, and the rehabilitation effect of patients was observed.

2.3. Observation Index. The observation indexes were as follows:

(1) Before intervention and 6 months after intervention, posttraumatic stress disorder self-rating scale (PTSD-SS) was used to evaluate the degree of stress disorder. There are 24 items, including subjective assessment, repeated experience, avoidance of symptoms, increased alertness, impaired social function. Using the 1–5 score method, the total score is 100 points. The higher the score, the more serious the stress disorder. The Cronbach α coefficient of the scale was 0.756.

(2) Before intervention and 6 months after intervention, the Montreal cognitive assessment (MoCA) scale was used to evaluate cognitive function. There are 11 items, including attention and concentration, executive function, memory, language, visual structure skills, abstract thinking, calculation, and orientation. The total score is 30 points. The higher the score, the better the cognitive function. The Cronbach α coefficient of the scale was 0.713.

(3) Before intervention and 6 months after intervention, the Fugl-Meyer assessment (FMA) was used to evaluate motor function, including 0–66 points for upper limb function and 0–34 points for lower limb function. Using the 0–2 score method, the total score is 100 points. The higher the score, the better the motor function. The Cronbach α coefficient of the scale was 0.749.

(4) Before intervention and 6 months after intervention, the modified Barthel index (MBI) was used to evaluate the ability of daily living. There are 10 entries, including bathing, eating, personal hygiene, dressing, urination control, toilet transfer, bed and chair transfer, walking on flat ground, going up and down stairs. The total score is 100 points. The higher the score, the better the living ability. The Cronbach α coefficient of the scale was 0.827.

2.4. Statistical Methods. SPSS 22.0 software was used for analysis. Measurement data were expressed as mean ± standard deviation and t test was used to analyze the comparison. Count data were expressed as a ratio, χ^2-test was used to analyze the comparison. $P < 0.05$ was statistically significant.

3. Results

3.1. Comparison of Clinical Data between the Two Groups. There were no significant differences in gender, age, cause of TBI and degree of education between the two groups ($P < 0.05$). (Table 1)

Table 1: Comparison of clinical data between two groups (n,%).

Group	*Gender*		*Age (years)*		*Causes of TBI*				*Degree of education*		
	Male	Female	≤50	> 50	Traffic accident	Fall	Impact lesion	Other	Primary school and below	Junior high school or senior high school	University or above
Control group($n = 42$)	24 (57.14%)	18 (42.86%)	22 (52.38%)	20 (47.62%)	14 (33.33%)	11 (26.19%)	9 (21.43%)	8 (19.05%)	12 (28.57%)	21 (50.00%)	9 (21.43%)
Observation group($n = 42$)	27 (64.29%)	15 (35.71%)	21 (50.00%)	21 (50.00%)	18 (42.86%)	10 (23.81%)	7 (16.67%)	7 (16.67%)	13 (30.95%)	19 (45.24%)	10 (23.81%)
χ^2 value	0.449		0.048		0.864				0.193		
P value	0.503		0.827		0.834				0.908		

3.2. Comparison of Stress Disorder between the Two Groups. After intervention, the PTSD-SS scores of both groups were lower than those before intervention and the PTSD-SS scores of the observation group were lower than those of the control group ($P < 0.05$). (Figure 1)

3.3. Comparison of Cognitive Function between the Two Groups. After intervention, the scores of MoCA in both groups were higher than those before intervention and the scores of MoCA in the observation group were higher than those in the control group ($P < 0.05$). (Figure 2)

3.4. Comparison of Motor Function between the Two Groups. After intervention, the FMA scores of both groups were higher than those before the intervention and the FMA scores of the observation group were higher than those of the control group ($P < 0.05$). (Figure 3)

3.5. Comparison of Daily Living Ability between the Two Groups. After intervention, the MBI of both groups was higher than that before intervention and that of the observation group was higher than that of the control group ($P < 0.05$). (Figure 4)

4. Discussion

In recent years, with the increase of traffic accidents and accidents, the incidence of TBI is increasing year by year [9]. The main treatment of TBI is surgery, which can effectively clear the intracranial hematoma and reduce the intracranial pressure. However, some patients will be left with some neurological complications after surgical treatment such as cognitive dysfunction and motor dysfunction, which seriously affects the quality of life of patients [10, 11]. Williams MW' team's research showed that for TBI patients with stable condition, giving them reasonable rehabilitation training as soon as possible will help to eliminate and alleviate the dysfunction of patients and improve all aspects of their functions [12]. In routine intervention, the focus of TBI rehabilitation is to control wound bleeding and prevent wound infection, while medical staff often neglect the cognitive, psychological, and physical rehabilitation of patients. The routine intervention program is single and one-sided, lacking pertinence and integrity, and it is difficult to meet the rehabilitation needs of TBI patients, and the postoperative rehabilitation has great limitations [13]. Therefore, there is an urgent need for an active and effective intervention to improve the prognosis of patients with TBI and promote their early reintegration into society.

Cognitive behavioral therapy enables patients to have a comprehensive understanding of themselves and establish correct beliefs and behaviors through various methods and ways [14]. In cognitive intervention, medical staff can correct patients' wrong cognition, help patients gradually recover their correct cognitive function, and make them get back to health as soon as possible by carrying out cognitive education, informing patients about diseases, changing patients' thinking and overcoming negative emotions [15, 16]. In the behavior intervention, it is helpful to reduce the nerve and limb obstacles of patients by guiding them to establish normative adaptive behaviors and form correct habits of rehabilitation and exercise [17]. Cognitive intervention and behavioral intervention have different mechanisms of action, but the combination of the two can play a synergistic effect, ultimately improving the patient's daily living ability and achieving an ideal rehabilitation effect. Cognitive behavioral therapy can activate the cerebral neural circuit in the cognitive functional area of the hippocampus, accelerate the formation of neural pathways and synaptic regeneration, exert the plasticity of the brain as much as possible, and finally realize the compensation of central nervous function and the reconstruction of motor reflex [18, 19]. De Luca R's team believed that cognitive rehabilitation plays an active role in improving TBI patients or patients with cognitive impairment to restore normal functions and make up for cognitive defects [20]. Faedda N's team found that cognitive behavioral therapy can effectively relieve the stress from headaches, relieve the pain of children and adolescents, and have a good role in pain management [21].

In this study, we found that after intervention, the PTSD-SS scores of the two groups were lower than those before intervention, while the scores of MoCA, FMA,

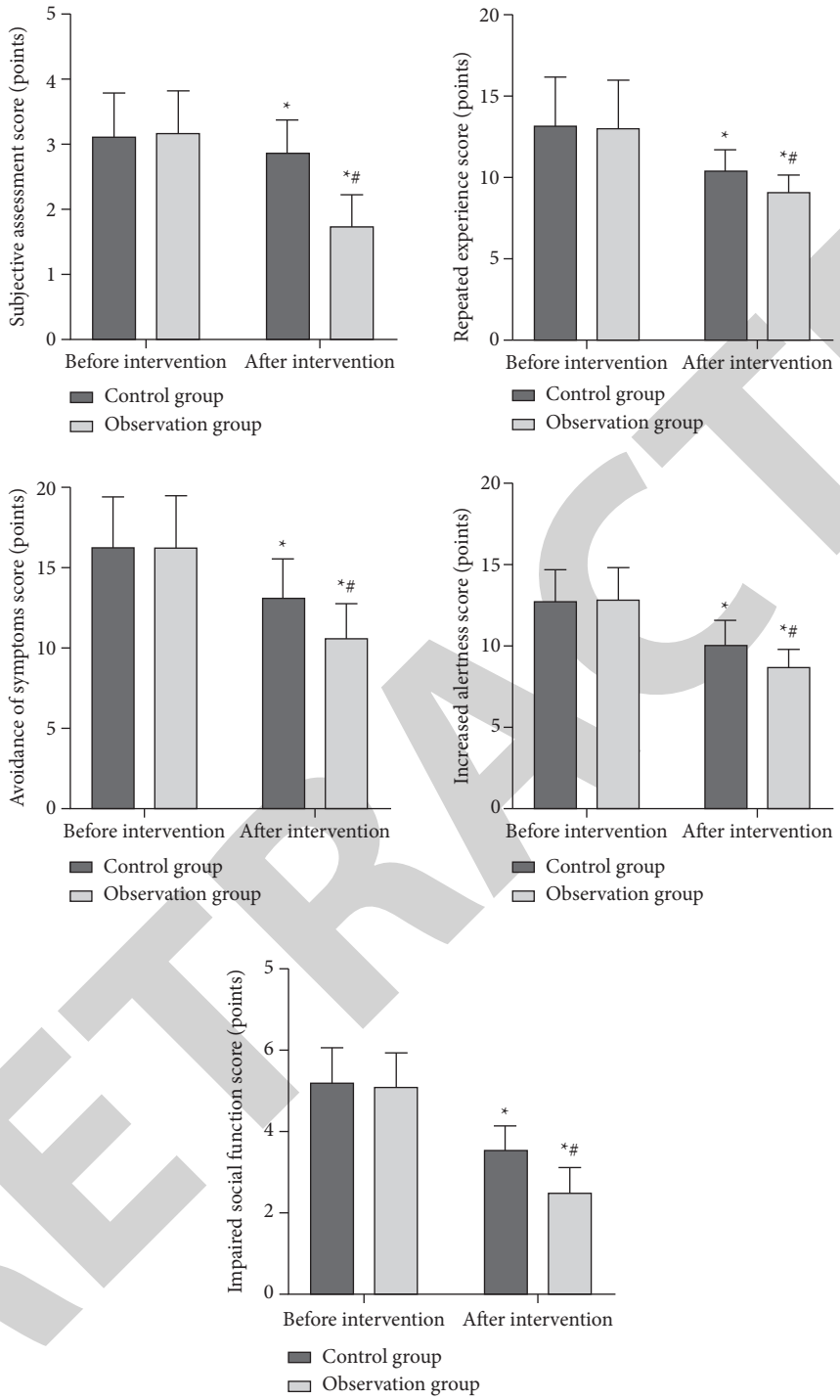

Figure 1: Comparison of stress disorder between two groups. Compared with before intervention, $^{*}P < 0.05$. Compared with the control group, $^{\#}P < 0.05$.

and MBI were higher than those before intervention, and the indexes of the observation group improved more obviously. The results show that the application of cognitive behavioral therapy to TBI patients is beneficial to reduce the degree of PTSD and improve cognitive function, motor function and daily living ability. Through the implementation of cognitive behavioral therapy for TBI patients, the patients can understand the relevant knowledge of disease and the importance of rehabilitation, give them psychological counseling, and obtain adequate family support and social support, so as to reduce their PTSD [22]. Cognitive behavioral therapy can not only increase the expression of brain-derived neurotrophic factor in hippocampus but also increase

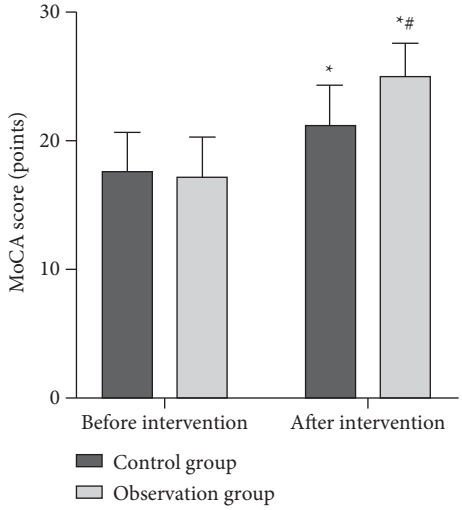

Figure 2: Comparison of cognitive function between two groups. Compared with before intervention, $^{*}P < 0.05$. Compared with the control group, $^{\#}P < 0.05$.

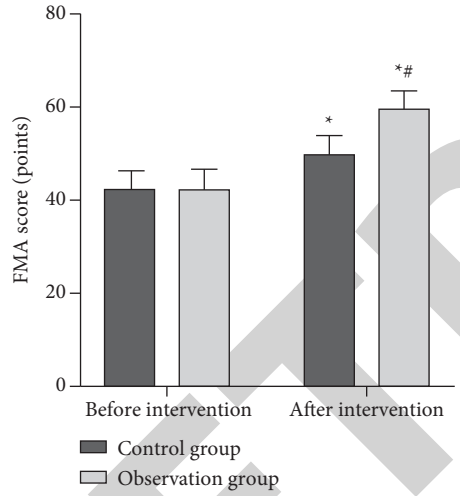

Figure 3: Comparison of motor function between two groups. Compared with before intervention, $^{*}P < 0.05$. Compared with the control group, $^{\#}P < 0.05$.

the density of cholinergic fibers in hippocampus, thus alleviating the cognitive dysfunction of TBI patients [23]. In addition, medical staff give rehabilitation training guidance to patients and carry out a variety of behavioral training activities, which are conducive to activating the damaged neurons in patients' brains, promote the reorganization of damaged brain functions, and regulate the coordination and stability of limbs and joints, thereby effectively improving patients' motor function [24]. After taking measures such as cognitive education, psychological guidance, behavioral intervention, discharge follow-up, and other measures for patients with TBI, patients' enthusiasm for self-rehabilitation has been improved, so that patients can live independently and return to their families and society as soon as possible [25, 26].

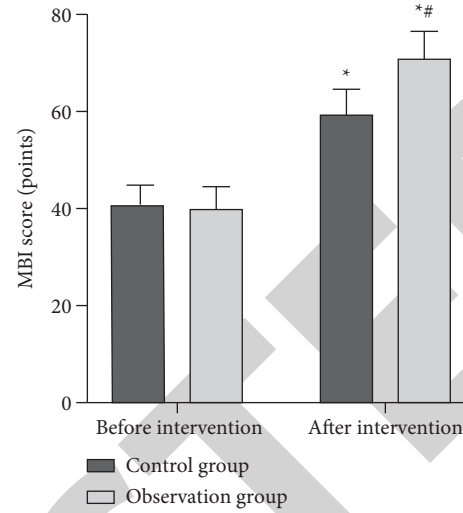

Figure 4: Comparison of daily living ability between two groups. Compared with before intervention, $^{*}P < 0.05$. Compared with the control group, $^{\#}P < 0.05$.

5. Conclusion

To sum up, the application of cognitive behavioral therapy to TBI patients is beneficial to reduce the degree of PTSD, improve cognitive function, motor function, and daily living ability, which is worthy of clinical applications.

Data Availability

All data included in this study are available upon request by contact with the corresponding author.

Conflicts of Interest

All authors declare that there are no conflicts of interest in relation to the manuscript.

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Retraction

Retracted: Clinical Effect of Hufu Copper Scraping on Shoulder-Hand Syndrome after Stroke

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] L. He, X. Chen, and Y. Zhang, "Clinical Effect of Hufu Copper Scraping on Shoulder-Hand Syndrome after Stroke," *Emergency Medicine International*, vol. 2022, Article ID 9165141, 7 pages, 2022.

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Research Article

Clinical Effect of Hufu Copper Scraping on Shoulder-Hand Syndrome after Stroke

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Objective. To explore the clinical effect of Hufu copper scraping on shoulder-hand syndrome after stroke. *Methods.* A total of 60 patients with shoulder-hand syndrome after stroke admitted to the First Affiliated Hospital of Hunan University of Traditional Chinese Medicine were enrolled between January 2020 and June 2021. According to the random number table method, they were divided into the control group ($n = 30$) and the intervention group ($n = 30$). The control group was given routine rehabilitation intervention, while the intervention group was additionally given Hufu copper scraping. The intervention effect, occurrence of adverse reactions during the intervention, pain, swelling degree of affected hands, serum calcitonin gene-related peptide (CGRP), substance P (SP), and Barthel index before and after 2 months of intervention were compared between the two groups. *Results.* After intervention, the total response rate of the intervention group was significantly higher than that of the control group (96.67% *vs* 80.00%) ($P < 0.05$). After intervention, the score of the visual analogue scale (VAS) and water displacement in the intervention group were lower than those in the control group ($P < 0.05$). After intervention, levels of CGRP and SP in the intervention group were lower than those in the control group, while the Barthel index was higher compared to the control group ($P < 0.05$). *Conclusion.* The intervention effect of Hufu copper scraping is good, which can promote the recovery of related symptoms, relieve pain and swelling of affected hands, downregulate levels of disease-promoting markers, and accelerate recovery of related function in patients with shoulder-hand syndrome after stroke.

1. Introduction

Shoulder-hand syndrome, also known as reflex sympathetic dystrophy, complex regional pain syndrome type I, is a common complication of stroke patients, and mostly occurs 2 weeks–3 months after cerebral infarction or cerebral hemorrhage. It is manifested as pain in the shoulder, hand, wrist, other parts of the upper limb on the affected side, limited joint activities, obvious atrophy of skin and muscles in the late stage, and in severe cases, it can lead to complete loss of hand function [1]. The most effective means of shoulder-hand syndrome is early prevention so that the affected limb can maintain its functional position, strengthen the passive and active activities of the affected limb, especially the shoulder and hand, and relieve the pain of the patient. Through proper physical therapy and early rehabilitation training, the disease progression of shoulder-hand syndrome can be controlled and the functional rehabilitation of affected limbs can be promoted [2]. At present, the clinical treatment methods for shoulder-hand syndrome mainly include drug therapy, rehabilitation therapy, and surgical therapy, among which the internal and external treatment schemes of traditional Chinese medicine have good therapeutic effects on the disease (TCM) [3]. Gua sha (scraping) is a nondrug characteristic therapy of TCM. By using special scraping tools such as friction, scraping, and other techniques to produce benign stimulation to meridians and acupoints, it achieves the effects of relaxing tendons

and promoting blood circulation, removing blood stasis, expelling pathogens, and curing diseases [4]. Some studies have confirmed that scraping has important application value in promoting the functional recovery of patients with poststroke shoulder-hand syndrome [5, 6]. Hufu copper scraping therapy is a branch of traditional scraping therapy, which uses special instruments and has a stronger effect. In this study, the Hufu copper Bianstone made of brass will be used for scraping therapy for stroke patients with shoulder-hand syndrome to explore its clinical effect and to provide a certain basis for clinical-related research. The report is as follows.

2. Research Objects and Methods

2.1. Research Objects. A total of 60 inpatients with shoulder-hand syndrome after stroke in the First Affiliated Hospital of Hunan University of Traditional Chinese Medicine from January 2020 to June 2021 were selected. The numbered patients were divided into the control group ($n = 30$) and the intervention group ($n = 30$) by random number table method. Among them, there were 21 males and 9 females in the control group, aged 18–65 years, mean (45.43 ± 8.57) years old, disease duration from 2 weeks to 6 months, mean (3.48 ± 1.17) months, etiology; there were 12 cases of arteriosclerosis type, 6 cases of cardiogenic type, 6 cases of arteriole occlusion type, and 6 cases of other reasons, the affected side; 16 cases in the left hemisphere and 14 cases in the right hemisphere; there were 18 males and 12 females in the intervention group, aged 18–65 years, mean (46.29 ± 8.73) years old, disease duration from 2 weeks to 6 months, mean (3.73 ± 1.05) months, etiology; there were 14 cases of arteriosclerosis type, 5 cases of cardiogenic type, 6 cases of arteriole occlusion type, and 5 cases of other reasons, the affected side; 17 cases in the left hemisphere and 13 cases in the right hemisphere. There was no significant difference in baseline data between the two groups ($P < 0.05$), which was comparable. This study was approved by the hospital ethics committee.

2.2. Diagnostic Criteria. The diagnostic criteria of ischemic stroke include [7] acute onset, focal neurological deficits (one side of the face or limbs weakness or numbness, language disorders), a few facial nerve functional deficits; the responsible lesions or symptoms and signs appear on imaging for more than 24 hours; exclude nonvascular diseases; brain CT excluded cerebral hemorrhage.

TCM diagnostic criteria for ischemic stroke include clinical manifestations: fainting of consciousness, hemiplegia, strong tongue, or even no language, limbs withered and useless; headache, dizziness, changes in pupils and spirits, not blinking eyes, choking when drinking water, and unsteady walking; onset mode: acute onset, most onset is in a quiet state, progressive aggravation, or a history of repeated similar symptoms. A small number of patients may have a sudden onset, rapid disease progression, and dizziness; incentives before the onset: every time, it is induced by emotional injury, improper diet, and impermanence of daily life. There are often aura symptoms, such as dizziness, headache, tinnitus, sudden transient difficulty in speech or numbness of limbs, and blurred vision; age of onset: takes place in people who are more than 40 years old. With the above clinical manifestations, combined with the form of onset, incentives, aura symptoms, and age, the diagnosis can be made. Combined with imaging studies (head CT/MRI), the diagnosis can be confirmed. Let us look into the diagnostic criteria of shoulder-hand syndrome [8]. In accordance with the symptoms, it is divided into three stages, the first stage is swelling of the hands, color changes, and painful movement disorders in the shoulders and hands; stage II: painful movement disorders of the shoulders and hands are relieved, swelling and color changes are partially relieved or completely disappeared, and muscle atrophy begins; stage III is dystrophic changes in the hands and shoulders, with obvious muscle atrophy, limited joint movement, and contractures.

2.3. Inclusion Criteria. The inclusion criteria were as follows: selected patients also meet the diagnostic criteria of Chinese and Western medicine for ischemic stroke patients with stage I shoulder-hand syndrome; the first onset was confirmed by head CT or MRI, and the course of the disease was in the recovery period of 2 weeks to 6 months; age 18–65 years old; vital signs are stable and can cooperate with examination and treatment; patients or their family members gave and signed the informed consent form.

2.4. Exclusion Criteria. The exclusion criteria were as follows: those who are combined with the liver and kidney failure, respiratory failure, heart failure, blood system, and other diseases; those who are unable to cooperate due to aphasia or severe cognitive dysfunction; those who have a history of mental illness or dementia; those who are allergic to the oil scraping or have a history of severe allergy; and patients with poor compliance and readmission.

2.5. Suspension and Rejection Criteria. ① Those who have other serious diseases during the intervention process; ② intolerance or treatment site infection and other adverse reactions occurred during the intervention; ③ patients with recurrence or serious complications during the intervention; ④ those who could not complete the intervention due to insufficient treatment course withdrawal or death.

2.6. Methods. Both groups of patients were given secondary vascular preventive treatment according to the "Guidelines for the Prevention and Treatment of Cerebrovascular Diseases in China" [9], and symptomatic treatment was given according to the patients' underlying diseases, including antiplatelet aggregation drugs, plaque stabilization, antihypertensive drugs, and blood sugar control. For treatment, avoid the use of nonsteroidal anti-inflammatory analgesics. When the patient is sitting or standing, we use the shoulder strap to support the patient's upper limb on the affected side, and place the affected limb in a good position when lying

down. Both groups of patients were given routine rehabilitation therapy, good limb placement, exercise therapy, occupational therapy, physical factor therapy, and so on.

The control group received routine rehabilitation treatment. Each rehabilitation treatment time was 40 minutes, 2 times a day, 5 days per week, and the intervention period was 2 months. The specific method was given according to the patient's condition. For example, properly train the patient to rotate the affected shoulder and bend the elbow joint, taking the patient's conscious feeling as the degree; Medical staff help to move the affected limb, conform to the movements of the joints of the shoulder, elbow and wrist, so as not to cause pain.

On the basis of the control group, the patients in the intervention group were given Hufu Copper Bianstone scraping, 1 time a week, 1-2 hours each time; 4 weeks as a course of treatment, a total of 2 courses of treatment. The patient is placed in a supine position, the upper limbs are exposed, kept warm, and applied an appropriate amount of scraping oil on the skin surface. The details are as follows: (1) Scraping device and medium: the scraping device used is the Hufu Copper Bianstone made by Wenshatang, and the oil scraping is the special scraping oil made by Wenshatang. After scraping, clean the scraping board with hand sanitizer, then rinse with clean water, dry with a soft cloth, and send it to the supply room for autoclaving and disinfection. If the scraping device is contaminated with blood or body fluids, the contaminants should be removed in time, and then soaked in a disinfectant containing 2000 mg/L–5000 mg/L of effective chlorine for more than 30 minutes, rinsed with clean water, and sent to the supply room for autoclaving and disinfection after drying. (2) Meridian and acupoint selection; ① Meridians: mainly Yangming meridian, Du meridian, and bladder meridian of Foot Taiyang, plus the three Yang and three Yin meridians on the inside and outside of the hands and feet, and combined with some parts of the patient's symptoms; ② Acupuncture points on the back: Dazhui (DU14), Dazhu(BL11), Gaohuang(BL43), and Shentang(BL44); ③ Acupuncture points for the head and face: Baihui (DU20), Yintang(DU29), Jiache(ST6), and Dicang(ST4); ④ Acupuncture points for upper limbs: Jianyu(LI15), Quchi(LI11), Shousanli(LI10), Waiguan(SJ5), Lieque(LU7), and Hegu(LI14) on the Yang side, Jiquan(HT1), Chize(LU5), Quze(PC3), Daling(PC7), and Neiguan(PC6) on the yin side. (3) Gua sha method, first open the four acupuncture points, namely Dazhui, Dazhu, Gaohuang, and Shentang to stabilize the lower Jiao, then scrape the Du meridian on the back and the bladder meridian of Foot Taiyang, and then scrape the third hand on the outer side of the upper limb on the healthy side in turn. The Yang meridian runs through the part of the hand, the Sanyin meridian on the inner side of the upper limb runs through the part of the limb until the end of the limb, the affected side is first acupunctured on points with fingers, and then scraping is carried out. Scraping strength depends on the patient's tolerance, rather than forcing scraping on the spot. (4) Notes: ① the treatment time for the first-time scraping patients should not be too long, and the patients should be frequently asked about their feelings, and those with a small amount of sha should not force the sha; before scraping, the operator should trim the nails to avoid damage to the patient's skin. The strength should be tolerated by the patient, and violence should be avoided; when scraping, you should pay attention to shelter from wind and stay warm. Do not scratch on an empty stomach, excessive fatigue, hypoglycemia, excessive weakness, and nervousness; the scraping board should be used exclusively by special personnel. If conditions do not allow , it needs to be sterilized by high pressure to prevent cross infection; after scraping, the patient should be instructed to drink a cup of warm water, or 200–300 ml of brown sugar water if possible, to promote the discharge of the toxins, and instruct the patient to abstain from cold and greasy food.

2.7. Observation Indicators

2.7.1. Comparison of Intervention Effects between the Two Groups. After 2 months of intervention, calculated by nimodipine method; symptom improvement rate = [(total score before treatment—total score after treatment)/total score before treatment] × 100%. Cure, joint pain and swelling disappeared, and there was no significant limitation on motor function or pain or atrophy of small muscles of the hand, or the improvement rate of the main symptoms is 90% or more. Marked improvement, the pain of the joints was relieved, the swelling basically disappeared, the joint movement was slightly restricted, the small muscles of the hands were not obviously atrophied, or the improvement rate of the main symptoms was 70%–89%; Effective, joint pain is slightly improved. There is still swelling. Joint movement is obviously limited. Hand muscle atrophy is not obvious, or the improvement rate of main symptoms is 30%–69%. Ineffective, symptoms did not improve, the range of motion of the shoulder joint was the same as before the treatment, muscle atrophy gradually increased, or the improvement rate of main symptoms was less than 30%. Total effective rate = ((number of cured cases + number of marked improvement cases + number of effective cases)/total number of cases)×100%.

2.7.2. Comparison between the Visual Analogue Scale Score (VAS) and the Degree of Swelling of the Affected Hand before and after the Intervention in the Two Groups. The VAS score was used to evaluate the pain conditions of the two groups of patients before treatment and after 2 courses of treatment. A 10 cm long horizontal line was drawn, with one end being 0 and the other end being 10, indicating different degrees of pain, respectively. Draw a mark on the horizontal line to indicate the level of pain. 0–2 points for comfort, 3-4 points for mild pain, 5-6 points for moderate pain, 7-8 points for severe pain, and 9-10 points for severe pain. Changes in the degree of swelling of the affected hand were graded according to LENT-SOME lymphedema [10]. Grade 1 means that the circumference of the swelling of the upper limb on the affected side is 2–4 cm larger than that of the unaffected limb, and the patient's function is normal; grade II , the swelling circumference of the upper limb on the

affected side is 6 cm larger than that of the unaffected limb; grade III is marked thickening of the skin of the entire affected limb and fingers, folds and edema appear, the patient's limb function is severely affected, and the shoulder joint movement is limited. Drainage was recorded by quantifying the difference in drainage volume of the affected hand.

2.7.3. Comparison of Calcitonin Gene-Related Peptide (CGRP) and Substance p (SP) Content and Barthel Index before and after Intervention in the Two Groups. Before the intervention and 2 months after the intervention, 3 ml of fasting cubital venous blood was drawn from the patient, centrifuged at 3000 r/min for 10 min, and the serum was separated, placed in an EP tube, and stored in the refrigerator for testing. The serum CGRP and SP contents of patients in each group were detected by enzyme-linked immunosorbent assay. The kits were purchased from Shanghai Zhenke Biotechnology Co., Ltd., and the detection steps were carried out in accordance with the instructions. Barthel index [11]: scores the degree of independence of 10 items of the daily life of patients (eating, bathing, dressing, controlling bowel and bladder, walking on level ground, and going upstairs). Based on a total score of 100 points, it is divided into mild functional impairment, able to complete a part of daily activities independently, and need some help> 60 points. Moderate functional impairment need great help to complete activities of daily living 40–60 points; severe functional impairment, most of the activities of daily living cannot be completed or need help from others 20–39 points; complete disability <20 points.

2.8. Statistical Methods. SPSS 22.0 statistical software was used for statistical analysis of the data obtained in this research, and the χ^2 test was used for counting data. The rank-sum test was used for grading data. According to the distribution characteristics of the measurement data, the method is selected, and the measurement data with homogeneity of variance and normal distribution are selected by the *t*-test. Nonparametric tests were used for measurement data that did not conform to the normal distribution. $P < 0.05$ was considered a significant difference, with statistical significance.

3. Results

3.1. Comparison of Recent Intervention Effects between the Two Groups. After intervention, the total effective rates of the intervention group and the control group were 96.67% and 80.00%, respectively. The total effective rate in the intervention group was significantly higher compared to the control group ($P < 0.05$), as shown in Figure 1.

3.2. Comparison of Changes in VAS and the Degree of Swelling of the Affected Hand before and after the Intervention in the Two Groups. After intervention, the VAS score and drainage volume of the two groups of patients were significantly better than those before treatment. The VAS score and drainage volume of the intervention group were lower than those of the control group ($P < 0.05$), as shown in Figure 2.

3.3. Comparison of CGRP and SP Contents and Barthel Index before and after Intervention in the Two Groups. After intervention, the CGRP and SP contents and Barthel index of the two groups were better than those before treatment. The CGRP and SP contents of the intervention group were lower than those of the control group, and the Barthel index was higher than that of the control group ($P < 0.05$), as shown in Figure 3.

4. Discussion

Stroke is a common neurological disease in my country and even in the world with the rapid onset and severe disease. In recent years, with the development of diagnosis and treatment technology, the mortality rate of this disease has gradually decreased, but the disability rate has shown an upward trend. Among them, shoulder-hand syndrome after stroke, one of the common complications of stroke, is seriously harmful [12]. The onset of shoulder-hand syndrome after stroke varies in priority, which can cause swelling, pain, and severe impairment of motor function in the upper limbs of the patient. If no active treatment is performed, it will cause long-term upper limb dysfunction and even contracture deformities, which will seriously affect the prognosis of patients and quality of life. The effect of scraping mainly depends on the penetration depth of qi and blood, so as to go deep into the viscera and increase the curative effect. The Hufu copper bianstone scraping method is a new technology for poststroke rehabilitation that has been clinically developed and applied in recent years. Hufu copper bianstone is mainly made of copper, and the human body maintains a certain resonance frequency. At the same time, the temperature of the wiping part will also increase to give a warm stimulus. Once the temperature entering the pulse increases, it will be conducive resolving the stasis in the pulse. Besides, the Hufu copper bianstone is rotationally ground on the acupuncture points, so the penetrating power is good, and it is beneficial to transmitting qi and blood to deeper parts [13]. Some studies have confirmed that Hufu copper bianstone scraping can effectively relieve the clinical symptoms of stroke patients [14, 15], but there are relatively few studies on the application of this method to shoulder-hand syndrome after stroke. Therefore, this study will mainly explore the effect of this method on shoulder-hand syndrome after stroke.

Scraping has always been relatively a safe treatment method. During the course of treatment in this study, there were no cases falling off in both groups, and no adverse reactions and complications occurred in the patients, so this point was not highlighted. The results of this study showed that after the intervention, the total effective rates of the intervention group and the control group were 96.67% and 80.00%, respectively. The total effective rate of the intervention group was significantly higher than that of the

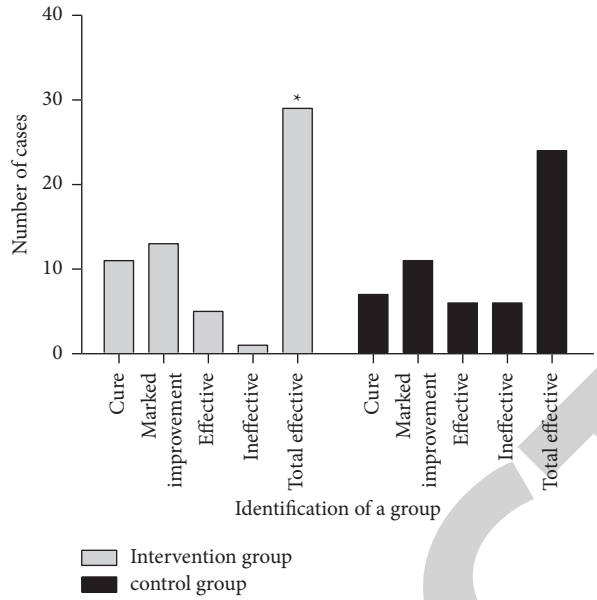

Figure 1: Comparison of recent intervention effects between the two groups. (Note: compared with the control group, $^{*}P < 0.05$).

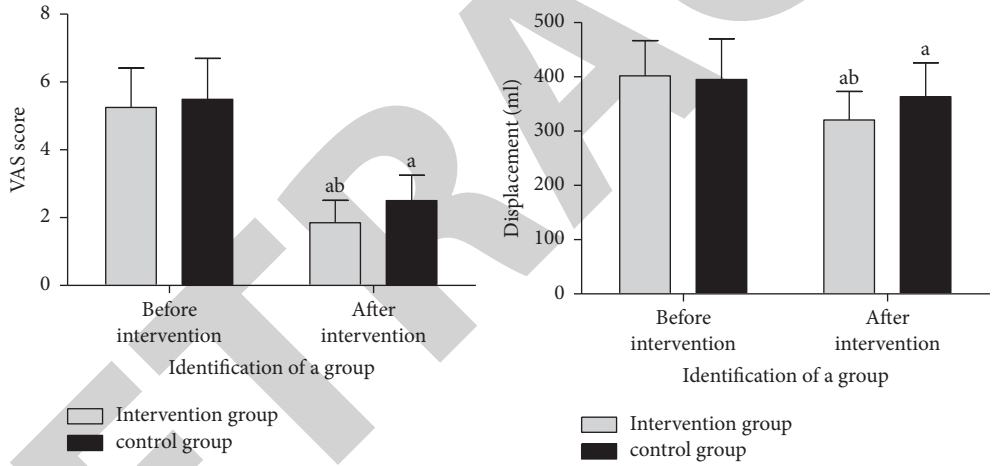

Figure 2: Comparison of the VAS and swelling degree of the affected hands between the two groups before and after intervention (Note: compared with the group before treatment, $^{a}P < 0.05$; compared with the control group, $^{b}P < 0.05$).

control group, and the VAS score and drainage volume of the intervention group were lower than those of the control group. This is similar to some research findings [16]. Analysis of the reason is that the Hufu copper scraping bianstone scraping is mainly based on regulating qi, which can mobilize the body's qi and blood activities. The appearance of Sha spots mobilized good recovery ability. Previous studies have shown [17] that the Hufu bianstone is made of copper and can maintain a certain resonance frequency with the human body. At the same time, the temperature of the scraping part will also increase, which has a warming and stimulating effect. The temperature entering the pulse is increased, which is beneficial to resolve the stasis of the pulse. Studies have shown [18] that repeated scraping can promote the production of local stimulants in the skin, accelerate blood circulation, significantly reduce pain, and effectively subside edema. Besides, scraping and grinding can promote vasodilation and rupture, make blood overflow to form ecchymosis, strengthen the body's hemolysis and metabolism, and then resist inflammation. At the same time, it can activate immune cells, strengthen immunity, effectively regulate body functions, and promote the recovery of patients' related symptoms. Above all, it shows that the intervention of Hufu copper bianstone scraping has a significant effect, which can significantly reduce the pain of patients, relieve swelling, and speed up the recovery of patients.

Previous studies have shown [19] that CGRP is a neuropeptide belonging to the calcitonin gene-related peptide family, which is highly expressed in peripheral sensory nerves and the central nervous system, and is involved in the transmission of nociceptive information and the formation of pain sensitization in the periphery and the spinal cord, and interacts with biologically active substances or receptors

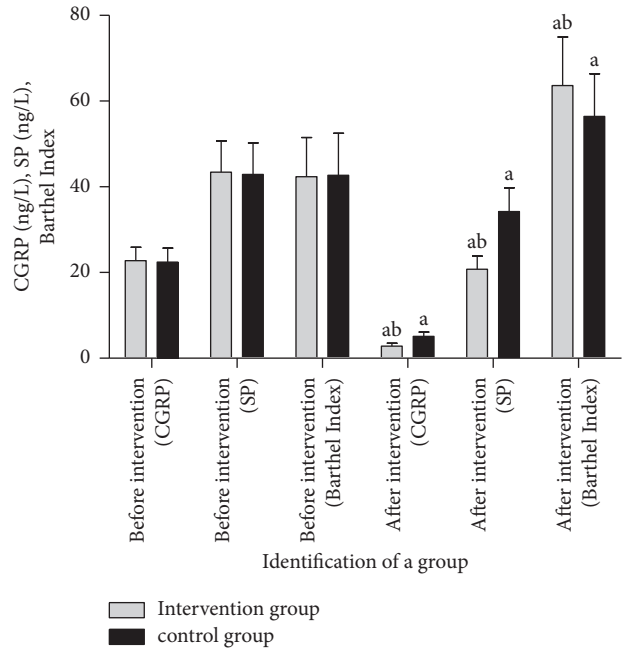

Figure 3: Comparison of CGRP, SP content, and Barthel index between the two groups before and after the intervention (Note: compared with the group before treatment, $^{a}P < 0.05$; compared with the control group, $^{b}P < 0.05$).

such as substance P in the process of pain modulation, which has a strong vasodilatory effect. Some studies have shown [20] that the change of CGRP level is related to the severity of nerve damage after hemorrhagic stroke, and it is also an important indicator for evaluating the prognosis of hemorrhagic stroke. The results of this study showed that the content of CGRP in the intervention group was lower than that in the control group after the intervention, indicating that Hufu copper bianstone scraping can effectively promote the recovery of neurological function in patients. SP is a neuropeptide widely distributed in thin nerve fibers. When the nerve is stimulated, SP can be released at the central and peripheral terminals, and can directly or indirectly participate in pain transmission by promoting the release of glutamate, etc., causing nerve neurogenic inflammatory reactions such as vasodilation in the innervation area, increased permeability, and extravasation of plasma proteins, further aggravate the ischemia-hypoxic injury [21]. The decrease of SP level can indicate that the symptoms of county officials in stroke patients can be effectively relieved. The results of this study showed that after the intervention, the SP content of the intervention group was lower than that of the control group, and the Barthel index was higher than that of the control group. Studies have shown that [22], Hufu copper bianstone scraping and grinding the Sanyin and Sanjiao meridians of the hand can stabilize the qi movement and resolve liver qi congestion and blood stasis; Scraping and grinding Dazhui, Dazhu, Gaohuang, Shentang, strengthening the Yang, strengthening the root, strengthening the healthy qi and eliminating the pathogenic factors; Scraping and grinding the acupoints on the head and face, such as Baihui, relax the tendons and activate the collaterals; Scraping the acupoints of the upper limbs can replenish qi so that the qi and blood can reach the end of the body. This method is based on copper for treatment, copper for health, copper for the regulation of liver qi, and copper for the dissipation of wind-phlegm and blood stasis, thereby promoting the recovery of the patient's limb motor function, with few side effects and high safety.

In conclusion, Hufu copper scraping has a significant effect on rehabilitation intervention in patients with post-stroke shoulder-hand syndrome, which effectively relieves related symptoms, relieves pain, and promotes the recovery of limb function. It can be used as standardized and effective prevention and treatment method in clinical application.

Data Availability

The data to support this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Acknowledgments

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Retraction

Retracted: Effectiveness and Safety Analysis of Plasma Beam in the Treatment of Facial Depressed Scars

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] J. Li and X. Zhang, "Effectiveness and Safety Analysis of Plasma Beam in the Treatment of Facial Depressed Scars," *Emergency Medicine International*, vol. 2022, Article ID 1194355, 5 pages, 2022.

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Research Article

Effectiveness and Safety Analysis of Plasma Beam in the Treatment of Facial Depressed Scars

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Objective. The study aimed to analyze the effectiveness and safety of microplasma beam in the treatment of facial depression scars. *Methods*. 106 patients with facial depression scars treated in the hospital between January 2017 and September 2021 were selected as the observation subjects. According to different treatment methods, the patients were divided into the control group (receiving ultrapulsed carbon dioxide lattice laser treatment, $n = 51$) and the observation group (undergoing plasma beam treatment, $n = 55$). The two groups were treated for 6 months, and the treatment effects were compared between the two groups. The Visual Analogue Scale (VAS) was used to compare the pain between the two groups, and the duration of pain and the time of scab shedding were recorded. The improvement of scars was compared between the two groups according to the Evaluation Clinique des Cicatrices d' Acne (ECCA), and the adverse reactions during treatment were compared between the two groups. *Results*. A clinical effective rate of 94.55% in the observation group was higher than a clinical effective rate of 82.35% in the control group ($P < 0.05$). The VAS score in the observation group was lower than that in the control group, and the pain duration and the scab shedding time were shorter than those in the control group ($P < 0.05$). ECCA scores in the observation group after twice and 3 times of treatments were lower than those in the control group ($P < 0.05$). The total incidence rate of adverse reactions of 10.91% in the observation group was lower, whereas it was 25.49% in the control group ($P > 0.05$). *Conclusion*. Plasma beam has a significant efficacy in the treatment of facial depressed scars, and it has mild pain, quick recovery, and high safety. *Clinical Trial Registration Number*. The clinical trial registration number is T2017081.

1. Introduction

Depressed scars mainly refer to scars caused by defects in the dermis and subcutaneous tissue of the skin, also known as atrophic scars. Postacne scars on the face are the most common type of depressed scars [1]. Facial acne scars are mainly caused by the overflow of the contents of the hair follicles into the dermis, resulting in different degrees of inflammation around the hair follicles, proliferation or defect and rupture of collagen fibers in the dermis, and formation of facial concave scars [2]. Depressed scars can be divided into different types according to their texture, size, depth, etc., but different types of scars will affect the patient's facial appearance and social activities, and those with severe scars may suffer from poor self-esteem. Psychologically, it is not conducive to the physical and mental health of patients [3]. The treatment of depressed scars includes skin grinding, surgical excision, and filler injection, but there are also certain traumas, and the risk of pigmentation after treatment is high, so the acceptance of patients in clinical practice is not high [4]. Ultrapulse carbon dioxide (CO_2) fractional laser is a treatment that stimulates collagen hyperplasia, remodeling through surface vaporization and heating of deep skin tissues. It has an ideal effect on facial beauty, but it is also prone to new scars due to individual differences, skin sensitivity, and other problems [5]. Microplasma beam therapy is a new type of dermatological treatment technology. It uses radio frequency technology to release energy to slightly peel off the

epidermis at the scar and form micropores, which has a good effect on scar treatment [6]. In order to clarify the effective and safe treatment of depressed scars, this study compared the effects of ultrapulse CO_2 and microplasma beam therapy, aiming to guide clinical treatment, and the report is as follows.

2. Materials and Methods

2.1. General Information. A total of 106 patients with facial depression scars who were admitted to our hospital from January 2017 to September 2021 were selected as the observation objects.106 patients were divided into the control group (receiving ultrapulsed carbon dioxide fractional laser treatment, $n = 51$) and the observation group (receiving plasma beam therapy, $n = 55$) according to different treatment methods. There were 51 cases in the control group, 27 males and 24 females; the age ranged from 18 to 33 years, with an average age of (26.75 ± 2.39) years; the course of disease was 1 to 4 years, with an average of (2.39 ± 0.75) years; Fitzpatrick skin classification: 28 cases of type III and 23 cases of type IV. There were 55 cases in the observation group, including 30 males and 25 females; the age ranged from 19 to 34 years, with an average age of (27.38 ± 2.80) years; the course of disease was 1–5 years, with an average of (2.67 ± 0.79) years; Fitzpatrick skin classification: 29 cases of type III and 26 cases of type IV. Inclusion criteria were as follows: ① conform to the diagnosis of facial depression [7]; ② Fitzpatrick skin classification III to IV [8]; ③ no inflammatory exudation, papules, etc., at the scar; ④ no other scar-related treatments in the past six months; ⑤ the course of disease is more than half a year, and the condition is stable. Exclusion criteria were as follows: ① severe scar constitution or combined with other facial skin diseases; ② recent sun exposure history or use of photosensitizing drugs; ③ mental disorders; ④ pregnant and lactating women. There was no significant difference in general data between the two groups ($P > 0.05$).

2.2. Methods. Preparation before treatment: both groups were in the supine position. After selecting the patient's facial treatment area, the skin was cleaned, and photos were taken at the same location under the lighting environment. The treatment area was coated with compound lidocaine ointment and wrapped with plastic wrap. The skin was anesthetized for 1 hour; then, the ointment was wiped off, and the treatment area was disinfected with alcohol.

The control group was treated with an ultrapulse CO_2 therapeutic apparatus (produced by Beijing Hertz Medical Technology Co., Ltd., HL-1C). We set the parameters of the therapeutic apparatus as wavelength 10600 nm, power 1~30 w, spot diameter ≤ 0.1 mm, and single pulse energy 0.025~250 mj. We adjusted the size and density of the scan pattern to perform random discrete scans 1 to 3 times at the treatment site.

The observation group was treated with a plasma therapy device (produced by Feridun Medical Laser Company, Israel). Plasma 6 row image beam fixed-point treatment was selected, with a diameter of 7 mm, a beam spot spacing of 1 mm, and a power setting of 70~90 w, 3~5 times for each treatment.

Precautions after treatment: after the treatment, the two groups were treated with ice packs for 30 minutes, and the control group was thickly coated with sodium hyaluronate on the affected area. The observation group used erythromycin eye ointment to prevent infection. The two groups were treated for 3 consecutive times, and the interval between each treatment was 8 weeks. The patients were instructed to avoid touching water after 7 days of treatment, so that the scabs would fall off naturally, and to avoid sun exposure and the use of cosmetics.

2.3. Observation Indicators. ① Clinical efficacy [9]: After 3 times of treatment, the clinical effects of the two groups were compared according to the repaired area of facial scars. The recovered area was ≥90%, and the appearance was normal; the marked effect was 60% < repaired area ≤ 89%, and the skin of the affected area was close to normal; the effective rate indicated that the appearance of the affected area was basically close to normal, 30% < repaired area ≤ 60%; the invalid rate indicated that the appearance did not improve, and the repaired area was less than 30%. ② Treatment-related indicators: According to the Visual Analogue Score (VAS) [10], the pain conditions of the two groups were compared, and the VAS was recorded as 0–10 points according to "no pain"~"unbearable pain," and the higher the score, the more severe the pain; the VAS score, the duration of pain, and the time of scab falling off were recorded in the two groups during treatment. ③ Recovery of acne scars: Before treatment and after 3 treatments, respectively, the scars were evaluated according to the Echelle d'Evaluation Clinique des Cicatrices d'Acne score (ECCA) [11]. Weight 15 points: the *U*-shaped scar has a sharp edge and a diameter of 2–4 mm with a weight of 25 points. Intensity of scars: no scars were scored 0, the number of scars ≤5 was scored 1, the number of scars was more than 5 and less than 20 was scored 2, the number of scars >20 was scored 3, and the total ECCA score was weighted score × intensity score. ④ Adverse reactions: during the treatment period, the number of patients with severe burning pain, skin sensitivity, and pigmentation were recorded, and the incidence of adverse reactions between the two groups was compared.

2.4. Statistical Methods. SPSS 22.0 statistical software was used to analyze the data, and the measurement data between groups were compared by the independent samples *t*-test. The count data were expressed in %, the χ^2 test was performed, and the Mann–Whitney U test was used for the rank data. $P < 0.05$ was considered to be statistically significant.

3. Results

3.1. Clinical Efficacy of the Two Groups. In the observation group, 26 cases (47.27%) were cured, 15 cases (27.27%) were markedly effective, and 11 cases (20.00%) were effective. The total clinical effective rate in the observation group was

94.55% (52/55), which was higher than 82.35% in the control group ($P < 0.05$), as shown in Figure 1.

3.2. Comparison of Treatment-Related Indicators between the Two Groups. The VAS score of the observation group was lower than that of the control group, and the duration of pain and the time of scab falling off were shorter than those of the control group, and the above differences were statistically significant ($P < 0.05$), as shown in Figures 2–4.

3.3. Comparison of ECCA Scores between the Two Groups before and after Treatment. There was no significant difference in ECCA scores between the two groups before and after treatment ($P > 0.05$). After 2 and 3 treatments, the ECCA scores of the observation group were lower than those of the control group ($P < 0.05$), as shown in Figure 5.

3.4. Comparison of the Incidence of Adverse Reactions between the Two Groups. In the observation group, 4 cases of severe burning pain occurred after treatment, and the pain was significantly relieved after ice compress; 4 cases of skin sensitivity were reported, and the symptoms disappeared after 8 weeks of treatment; the total incidence of adverse reactions in the observation group was 10.91%, which was lower than 25.49% in the control group. However, the difference was not statistically significant ($P > 0.05$), as shown in Figure 6.

4. Discussions

The formation of acne scars is closely related to the nature, location, and treatment of skin lesions. Depressed scars are the most common scars after acne healing. After the inflammatory nodules and cysts produced by acne rupture, sebum, keratin, etc., enter the dermis, resulting in a cascade reaction that induces dermal fibrosis and deposition and uneven skin surface morphology and scarring [12]. Depressed scars not only show uneven skin shape but also affect the texture and color of the skin. Research reports show that patients with acne scars have different degrees of limitations in choosing a career, a spouse, and work because of their lack of self-confidence. Therefore, taking active and effective treatment can greatly improve social communication and interpersonal relationships [13]. The key to the treatment of facial concave scars is to regenerate the collagen of the skin tissue, make up for the depression, and restore the normal shape of the skin [14]. Plasma can directly act on the collagen in the skin scar, and microplasma can break the chaotic collagen arrangement in the scar and produce nongasified mild exfoliation in the superficial layer of the skin, while radio frequency can generate heat, plasma, and radio frequency on the collagen in the deep tissue. Plasma is a technology that combines image beam radio frequency and microplasma, which does not interact with the target chromophore of the skin, can retain the separated epidermis, and has an obvious effect on the repair of scars.

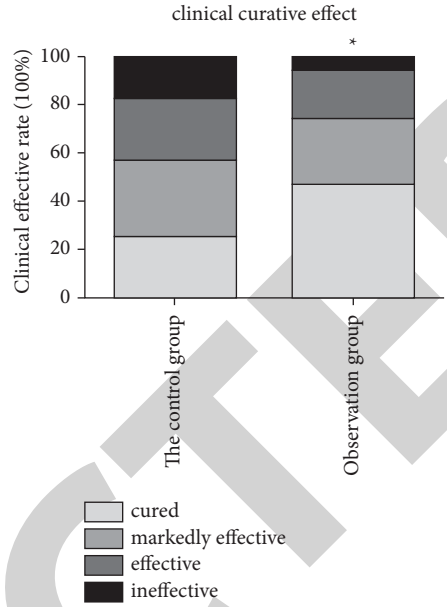

Figure 1: Comparison of clinical efficacy between the control group and the observation group. *Note.* Compared with the control group, $Z/\chi^2 = -2.572/3.919$; $^*P < 0.05$.

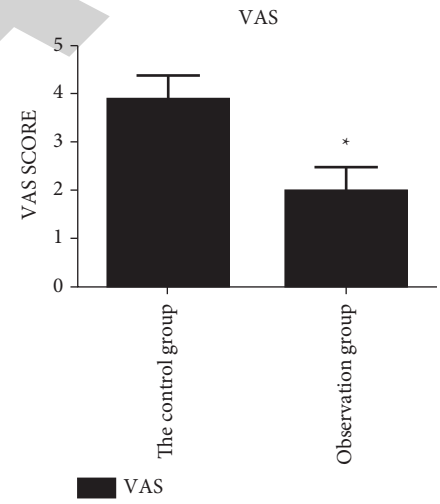

Figure 2: Comparison of VAS scores between the two groups.

A study compared the effects of microplasma and fractional erbium laser in the treatment of depressed scars [15], and the results showed that the efficacy of microplasma beam was more obvious, and the ECCA score was reduced. Based on the previous research study, this study compared the effects of ultrapulsed CO_2 fractional laser and plasma beam in the treatment of depressed scars. The reason for the lack of a statistically significant difference in ECCA scores between the two sets before and after treatment may be that plasma beam requires a certain amount of time to act. The data further showed that the clinical effective rate of the observation group was higher than that of the control group, and the ECCA scores were lower after 2 treatments in the control group, which shows that plasma beam has an obvious effect on the treatment of depressed scars, which is

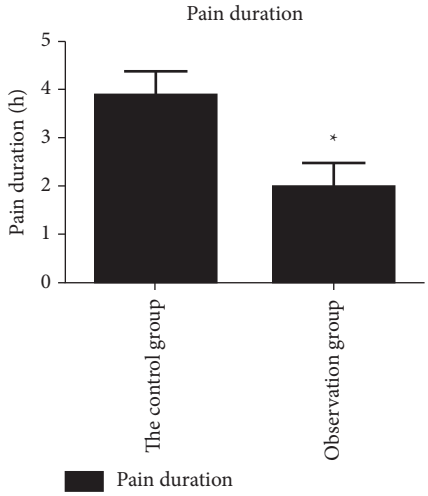

Figure 3: Comparison of the duration of pain between the two groups.

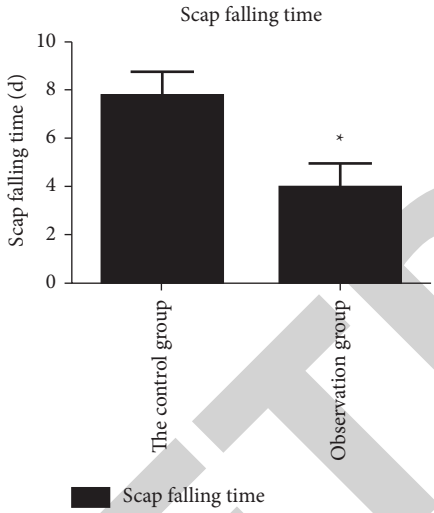

Figure 4: Comparison of the scab shedding time between the two groups. *Note.* Compared with the control group, t = 17.378, 21.059, and 8.465; $^{*}P < 0.05$.

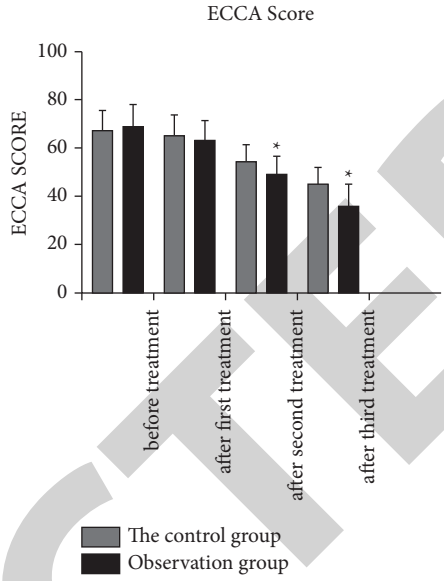

Figure 5: Comparison of ECCA scores between the two groups before and after treatment *Note.* Compared with the control group, $t = 4.184$ and 5.629; $^{*}P < 0.05$.

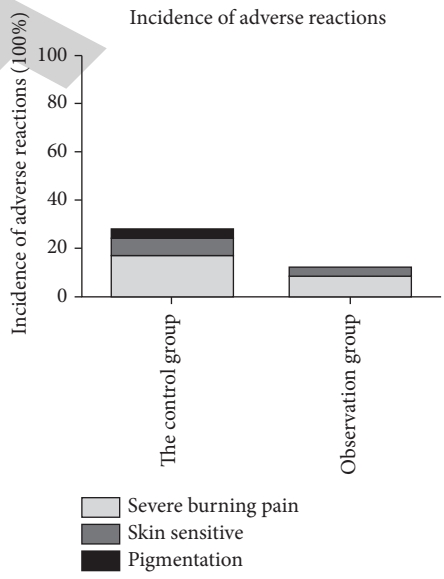

Figure 6: Comparison of the incidence of adverse reactions between the two groups ($\chi^2 = 2.498$, $P > 0.05$).

helpful for scar recovery. The reason is that after the plasma contacts the skin, a thin air gap is formed between the skin surface and the electrode, causing a relatively mild epidermal ablation and forming a microchannel directly to the dermis, which helps eliminate damaged cells and stimulate collagen in the dermis. The two energies work together, and they help improve the flatness and uniformity of the superficial scar and are conducive to the proliferation and rearrangement of the deep collagen layer of the skin tissue, thereby quickly and effectively rebuilding the dermis structure. On the other hand, the thermal effect produced by plasma can stimulate the deep tissue of the skin, induce fibrocyte-mediated thermal degeneration, and promote the regeneration of the dermis. Therefore, the clinical efficacy of the observation group was more significant, and the ECCA score of the patients decreased after 2 treatments.

Some studies have pointed out that the effect of ultrapulsed CO_2 fractional laser treatment of scars is worthy of recognition, but there are many adverse reactions after surgery, which is related to the greater damage to skin tissue after ablative fractional laser treatment [16]. The results of this study showed that the total incidence of adverse reactions in the observation group was lower than that in the control group, which is consistent with the above research point of view. The data also showed that the VAS score of the observation group was lower than that of the control group, and the duration of pain and the time of scab shedding were shorter than those of the control group, which indicated a

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Retraction

Retracted: Cohort Study on the Effect of Psychological Education for Nurses in Psychiatric Department

Emergency Medicine International

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Research Article

Cohort Study on the Effect of Psychological Education for Nurses in Psychiatric Department

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With the deepening of the medical and health system, high-quality nursing service with the reform of nursing service model and the provision of holistic nursing care for patients as the core connotation is being comprehensively carried out. With the continuous improvement of medical quality, people's awareness of health has gradually increased. They have put forward higher requirements for medical quality, nursing service quality, and medical care safety. Under the influence of these conditions, the workload and work pressure of clinical nurses continue to increase, and mental health problems become increasingly prominent. According to relevant data, the detection rate of occupational stress among nurses was 100%, and the proportion of nurses who perceived considerable stress was 60.9%, which seriously affected their work efficiency and quality of life. However, the physical and mental health of the frontline nurses working in psychiatric hospitals is not optimistic. This study explored the effects of psychological education among nurses in the department of psychiatry. The results showed that psychological education intervention among nurses in the department of psychiatry could alleviate their professional tiredness, effectively improve their psychological elasticity and happiness index, and thus improve sleep quality and promote their physical and mental health development.

1. Introduction

With the accelerated pace of life, the incidence of mental illness is increasing year by year [1]. Due to heavy work burden, interpersonal contradictions, and role conflicts, psychiatric nurses often face serious accidents such as patients' impulse, wounding, self-injury, suicide, and running away. They have a high risk of work. In particular, nurses working in shift three have a long contact time with patients, fewer staff, heavy responsibilities, and a high level of mental stress for a long time, which will have a great impact on their physical and mental health [2, 3]. Therefore, the occupational stress borne by nurses in psychiatric department was significantly higher than that of nurses in other departments [4, 5].

Related studies have shown that the negative psychological state of psychiatric nurses affects not only the outcome of patients with mental disorders, but even the overall development level of mental health in China [6]. Therefore, it is of great practical significance to strengthen psychological education intervention for psychiatric nurses. Psychological intervention refers to the process of exerting influence on a certain object's psychological activities, personality characteristics, or psychological problems in a planned and step-by-step manner under the guidance of psychological theory to make them change toward the expected goal. Through psychological education, nurses can improve their abilities of self-guidance and self-regulation, then live actively, and love work [7]. Not only is high-quality psychological education mode the key to improve the overall quality of nurses, but it is also a powerful guarantee to improve the quality of nursing service [8]. However, there are few studies on the application value of psychological intervention in psychiatric nurses in recent years, and how to effectively implement this intervention program has become the focus of study. Therefore, a cohort study was conducted

among 183 psychiatric nurses in our hospital, and psychological education intervention was conducted. The report is shown below.

2. Materials and Methods

2.1. General Information. A total of 183 nurses who worked in the psychiatric department of our hospital from March 2020 to May 2021 were selected as the research subjects. They were divided into a research group of 93 cases and a control group of 90 cases according to whether they received psychological education. There was no statistically significant difference in the general information of nursing staff between the two groups with comparability ($P > 0.05$). This study was approved by the Hospital Medical Ethics Committee and informed consent was obtained from the nursing staff or family members.

2.2. Inclusion Criteria. The inclusion criteria were as follows: (1) female, (2) those who were still engaged in medical care in the ward half a year before participating in this study and were expected to be still engaged in medical care in the next one year, (3) those with normal emotional self-control, and (4) patients voluntarily participating in the study.

2.3. Exclusion Criteria. Exclusion criteria were defined as follows: (1) nurses with a history of antianxiety and antidepression drugs before participating in this study, (2) nurses who had received other psychological counseling before entering the group, and (3) nurses with underlying conditions that affect the quality of life were excluded.

2.4. Method. The control group did not receive psychological education and only received routine communication. The research group was given psychological education intervention.

(1) First, a professional psychological counseling group was set up. The team members included one psychologist with many years of clinical nursing experience and qualified through psychological counseling training and two psychological counselors who have obtained the qualification of national grade II psychological counseling and have at least 5 years of psychological counseling experience. Psychological education was completed under the guidance of psychologists and with the assistance of psychological counselors. The purpose of psychological education was clearly defined as reducing the occupational psychological pressure of psychiatric nurses, and the time of psychological education was stipulated as once a week, each time 50–60 minutes.

(2) Psychological education methods

(i) Self-exploration (weeks 1–2): The methods included holding psychological adjustment lecture and experience-sharing salon meeting. By proposing the method of identifying the existing psychological problems and discussing how to solve the psychological problems, the nurses' understanding of the psychological problems was deepened and their skills of identifying the problems and adopting the coping strategies for the nursing staff with psychological problems were gradually improved.

(ii) Acceptance and self-adjustment (weeks 3–4): The research team members guided the nurses to discuss the causes of their anxiety and fear, encouraged them to truly disclose their feelings for adverse events, realistically evaluated the possibility of similar events in the future, and exchanged strategies for improving psychological trauma to minimize the impact of adverse events. At the same time, the psychotherapist guided the nurses to face the psychological problems after the adverse events and learn the prevention skills and self-adjustment skills. Through self-affirmation, scene simulation, role-playing, mutual catharsis, and behavior training, we can change bad cognition and cultivate a healthy personality and good psychological adaptability to prevent adverse events. The method of relaxation was introduced to nurses. The nurses were guided to practice and to learn to actively seek more social support to minimize the physical and mental effects of adverse events.

(iii) Team cooperation (weeks 5–6): A group psychological education plan was designed with the guidance of psychoanalysis theory, need level theory, and group dynamics theory. Nurses were encouraged to open their hearts to each other, establish a deep relationship of mutual trust, and talk to each other.

(iv) Improving the relationship with others and adopting behavior patterns (weeks 7–8). The change and growth of nurses were recognized; they were organized to conduct self-evaluation and summary and apply the learned knowledge and skills to practical work.

Both groups were intervened for 8 weeks.

2.5. Observation Indicators. All scales were preinvestigated, and they had good internal consistency after inspection. All the subjects completed the questionnaire independently under the guidance of a trained psychologist and by themselves using the anonymous method.

2.5.1. Mental Health Status. The self-report inventory (symptom checklist 90 (SCL-90)) was used to assess the mental health status of psychiatric nurses before and after the intervention. There were 90 items in the SCL-90 scale, including somatization (12 items), obsessive-compulsive symptoms (10 items), interpersonal sensitivity (9 items), depression (13 items), anxiety (10 items), hostility (6 items), phobic (7 items),

paranoia (6 items), psychosis (10 items), and others (7 items). Each item was scored according to a 5-level score ranging from 1 to 5 points, with 1 point = never, 2 points = mild, 3 points = moderate, 4 points = quite heavy, and 5 points = severe. The total score ranged from 90 to 450. A higher score indicated a lower mental health level. The Cronbach's α coefficient of the scale was 0.86. In this study, the Cronbach's α coefficient of the scale in this study was 0.91 [9].

2.5.2. Psychological Resilience Score. The Chinese version of Connor–Davidson Resilience Scale (CD-RISC) was used before and after the intervention. The questionnaire included three dimensions and 25 items of toughness (13 items), strength (8 items), and optimism (4 items). Each item was scored by 5 points. The scores from "never" to "almost always" were 0–4, respectively. The higher the score, the higher the psychological resilience level. The Cronbach's α coefficient of the scale was 0.91 [10].

2.5.3. Sleep Condition. Before and after the intervention, the patients were scored using the Post-Pittsburgh Sleep Quality Index (PSQI), which included seven dimensions: subjective sleep quality, sleep latency, sleep persistence, sleep efficiency, sleep disorder, use of hypnotic drugs, and daytime dysfunction. The scores for each dimension were 0–3 points, with a total score of 0–21. A higher score indicated poorer sleep quality, and a PSQI total score >7 indicated sleep disorder [11]. The Cronbach's α coefficient of PSQI scale was 0.88.

2.5.4. Job Burnout. Before and after the intervention, the M's Job Burnout Inventory (MBI) was used to assess the job burnout, which included three subscales. The three dimensions of job burnout, namely, emotional exhaustion, depersonalization, and lack of personal satisfaction, were measured with the three subscales. All items were scored on a scale of 0–6 and the score for each area was calculated by accumulation. Emotional fatigue included nine items (1, 2, 3, 6, 8, 13, 14, 16, and 20), which mainly evaluated the emotional response caused by work stress. The score range was 0–54. Job apathy consisted of five items (5, 10, 11, 15, and 22), which mainly evaluated the attitude and feeling toward service objects caused by work pressure. The score ranged from 0 to 30. The items in the above two aspects were positive scores, that is, the higher the score was, the more serious the job burnout would be. The sense of non-work achievement included eight items (4, 7, 9, 12, 17, 18, 19, and 21), which mainly evaluated the view on one's work caused by work pressure. The score ranged from 0 to 48. The item in this aspect was reverse scoring, that is, the lower the score was, the more serious the job burnout was. The Cronbach's α coefficient in the total amount table was 0.80, and the Cronbach's α coefficient in the three dimensions was 0.81–0.91 [12].

2.5.5. General Well-Being. The General Well-Being Schedule (GWBS) was used before and after the intervention. There were 6 dimensions and 18 items including worry about health (2 items), energy (4 items), satisfaction and interest in life (2 items), depression or pleasant state of mind (3 items), control over emotion and behavior (3 items), and relaxation and tension (4 items). Items 1–14 were scored with 5 points, and items 15 and 16 were scored with 10 points. According to the cumulative score of the options, the higher the score, the stronger the subjective well-being [13]. The Cronbach's α coefficient of GWBS was 0.842.

All questionnaires were collected on the spot with an effective recovery rate of 100%.

2.6. Statistical Methods. All data were processed with SPSS 22.0 statistical software, and GraphPad prism 8 was used to make statistical graphs. Measurement data are expressed as mean ± standard deviation ($\overline{x} \pm s$), independent sample t-test is used for comparison between groups, count data are expressed as (n (%)), and chi-square (χ^2) test is performed. The difference is statistically significant when $P < 0.05$.

3. Results

3.1. Baseline Data. There were no significant difference in general data between the two groups, which were comparable ($P > 0.05$, Table 1).

3.2. Comparison of Symptom Self-Evaluation between the Two Groups of Nurses. There was no significant difference in symptom self-evaluation between the two groups before the intervention ($P > 0.05$). After the intervention, the self-evaluation scores of somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, phobic, paranoia, psychosis, and other symptoms and the total score in the research group were significantly lower than those in the control group ($P < 0.05$, Table 2).

3.3. Comparison of Nurses' Resilience Scores between the Two Groups. There was no significant difference in the resilience scores between the two groups before the intervention ($P > 0.05$). After the intervention, the scores of toughness, strength, and optimism and the total score were significantly higher in the research group than those in the control group ($P < 0.05$, Table 3).

3.4. Comparison of Sleep among Nurses of the Two Groups. There was no significant difference in PSQI scores between the two groups before the intervention ($P > 0.05$). After the intervention, the scores of subjective sleep quality, sleep latency, sleep persistence, sleep efficiency, sleep disorder, use of hypnotic drugs, and daytime dysfunction and the total score in the research group were significantly lower than those in the control group ($P < 0.05$, Table 4).

3.5. Comparison of Job Burnout of Nurses between the Two Groups. There was no significant difference in job burnout scores between the two groups before the intervention ($P > 0.05$). After the intervention, emotional exhaustion,

Table 1: Comparison of general data of nursing staff between the two groups.

Group	n	Age (years)	Professional title					Educational background			Working years (years)			
			Professor of nursing	Deputy director nurses	Supervisor nurse	Senior nurse	Nurse	Masters	Undergraduate	Junior college	Technical secondary school	≤5	>5~10	>10~20	>20
Research group	93	36.25 ± 12.46	2	4	33	44	10	1	77	11	4	16	32	41	4
Control group	90	36.59 ± 12.15	1	3	31	42	13	1	76	8	5	15	31	39	5
χ^2/t	—	0.186		0.928						0.542				0.160	
P	—	0.852		0.921						0.910				0.984	

Table 2: Comparison of symptom self-evaluation between the two groups of nurses ($\overline{x} \pm s$, score).

Group	n	Somatization		Obsessive-compulsive symptoms		Interpersonal sensitivity		Depression		Anxiety	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Research group	93	15.13 ± 2.06	7.45 ± 1.23[a]	16.24 ± 2.12	6.23 ± 2.41[a]	17.23 ± 2.73	8.11 ± 2.03[a]	15.14 ± 2.93	7.57 ± 1.01[a]	19.24 ± 3.56	10.35 ± 2.27[a]
Control group	90	15.21 ± 2.11	12.83 ± 2.41[a]	16.13 ± 2.20	12.32 ± 1.52[a]	17.30 ± 2.66	11.26 ± 1.14[a]	15.20 ± 2.89	12.06 ± 2.34[a]	19.30 ± 3.47	13.01 ± 2.78[a]
t	—	0.260	19.112	0.345	20.370	0.176	12.885	0.139	16.946	0.115	7.100
P	—	0.796	<0.001	0.731	<0.001	0.861	<0.001	0.889	<0.001	0.908	<0.001

Group	*n*	*Hostility*		*Phobic*		*Paranoia*		*Psychosis*		*Other symptoms*		*Total score*	
		Before intervention	*After intervention*	*Before intervention*	*After intervention*	*Before intervention*	*After intervention*	*Before intervention*	*After intervention*	*Before intervention*	*After intervention*	*Before intervention*	*After intervention*
Research group	93	17.78 ± 4.02	8.13 ± 3.02[a]	15.83 ± 3.54	5.04 ± 1.21[a]	15.24 ± 3.56	5.24 ± 1.11[a]	16.71 ± 2.54	7.02 ± 2.12[a]	14.45 ± 2.62	6.09 ± 2.24[a]	162.99 ± 29.68	71.23 ± 18.65[a]
Control group	90	17.89 ± 4.11	12.73 ± 4.14[a]	15.34 ± 3.82	8.12 ± 1.25[a]	15.41 ± 3.72	9.04 ± 1.37[a]	16.69 ± 2.73	9.33 ± 2.78[a]	14.89 ± 2.77	8.28 ± 1.67[a]	163.36 ± 30.48	108.98 ± 21.40[a]
t	—	0.183	8.607	0.900	16.937	0.316	20.648	0.051	6.333	1.104	7.479	0.083	12.734
P	—	0.855	<0.001	0.369	<0.001	0.752	<0.001	0.959	<0.001	0.271	<0.001	0.934	<0.001

Note. Compared with before intervention, [a]$P < 0.05$.

Table 3: Comparison of nurses' resilience scores between the two groups ($\overline{x} \pm s$, score).

Group	n	Toughness		Strength		Optimism		Total score	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Research group	93	30.13 ± 2.94	38.87 ± 2.98[a]	19.24 ± 2.45	25.76 ± 2.87[a]	10.23 ± 1.04	16.43 ± 2.89[a]	59.60 ± 6.43	81.06 ± 8.74[a]
Control group	90	30.21 ± 2.76	35.38 ± 2.76[a]	16.9.56 ± 2.64	23.93 ± 2.54[a]	10.17 ± 1.12	14.94 ± 1.32[a]	59.94 ± 6.52	74.25 ± 6.62[a]
t	—	0.190	8.213	0.850	4.562	0.376	4.461	0.355	5.927
P	—	0.850	<0.001	0.396	<0.001	0.708	<0.001	0.723	<0.001

Note. Compared with before intervention, [a]$P < 0.05$.

Table 4: Comparison of job burnout of nurses between the two groups ($\overline{x} \pm s$, score).

Group	n	Subjective sleep quality		Sleep latency		Sleep persistence		Sleep efficiency	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Research group	93	1.78 ± 0.42	0.79 ± 0.12[a]	1.89 ± 0.41	0.63 ± 0.35[a]	1.27 ± 0.64	0.70 ± 0.16[a]	0.99 ± 0.56	0.62 ± 0.14[a]
Control group	90	1.72 ± 0.39	1.14 ± 0.32[c]	1.97 ± 0.52	1.04 ± 0.24[c]	1.29 ± 0.72	0.95 ± 0.24[c]	0.93 ± 0.61	0.77 ± 0.32[c]
t	—	1.001	9.857	1.158	4.924	0.199	8.316	0.694	4.131
P	—	0.318	<0.001	0.249	<0.001	0.843	<0.001	0.489	<0.001
Group	n	*Sleep disorder*		*Use of hypnotic drugs*		*Daytime dysfunction*		*Total score*	
		Before intervention	*After intervention*	*Before intervention*	*After intervention*	*Before intervention*	*After intervention*	*Before intervention*	*After intervention*
Research group	93	1.24 ± 0.62	0.57 ± 0.11[a]	0.12 ± 0.04	0.10 ± 0.02[a]	2.25 ± 0.56	0.63 ± 0.16[a]	9.54 ± 3.25	4.14 ± 1.06[a]
Control group	90	1.26 ± 0.67	0.75 ± 0.32[c]	0.13 ± 0.05	0.11 ± 0.03[a]	2.33 ± 0.59	0.79 ± 0.18[a]	9.62 ± 3.55	5.55 ± 1.65[a]
t	—	0.210	5.121	1.496	2.661	0.941	6.360	0.159	6.900
P	—	0.834	<0.001	0.136	0.009	0.348	<0.001	0.874	<0.001

Note. Compared with before intervention, [a]$P < 0.05$.

Table 5: Comparison of job burnout of nurses between the two groups ($\overline{x} \pm s$, score).

Group	n	Emotional exhaustion		Depersonalization		Lack of personal satisfaction	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Research group	93	23.35 ± 7.24	15.23 ± 2.19[a]	8.24 ± 4.05	4.02 ± 1.23[a]	22.92 ± 5.25	39.15 ± 1.34[a]
Control group	90	23.43 ± 7.06	19.63 ± 2.74[a]	8.33 ± 4.11	6.63 ± 3.28[a]	22.74 ± 5.53	37.13 ± 1.25[a]
t	—	0.075	12.019	0.149	7.170	0.226	10.537
P	—	0.939	<0.001	0.881	<0.001	0.823	<0.001

Note. Compared with before intervention, [a]$P < 0.05$.

depersonalization, and lack of personal satisfaction in the research group were significantly better than those of the control group ($P < 0.05$, Table 5).

3.6. Comparison of General Well-Being Scores of Nurses between the Two Groups. There was no significant difference in the overall well-being scores between the two groups before the intervention ($P > 0.05$). After the intervention, the scores of satisfaction and interest in health, energy, satisfaction and interest in life, depression or pleasant state of mind, and relaxation and tension and the total score in the research group were significantly higher than those in the control group ($P < 0.05$, Table 6).

4. Discussion

Psychiatry department is a clinical department that diagnoses and treats nervous system diseases mainly due to behavioral and psychological activity disorders, and it is an important part of medical and health institutions [14]. According to the survey, the occupational stress of psychiatric nurses mainly comes from workload, work object, work environment, interpersonal relationship, and so on. The above factors can easily lead to nurses feeling tired, losing enthusiasm for work, and increasing turnover intention, which have seriously affected the physical and mental health of nurses, their work efficiency, and the

Table 6: Comparison of general well-being scores of nurses between the two groups ($\overline{x} \pm s$, score).

Group	n	Satisfaction and interest in life		Satisfaction and interest in health		Control over emotion and behavior	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Research group	93	6.04 ± 1.78	7.85 ± 1.79[a]	7.82 ± 2.46	9.89 ± 3.42[a]	12.47 ± 1.35	11.79 ± 1.97
Control group	90	6.01 ± 1.63	6.83 ± 2.93[a]	7.84 ± 2.52	8.04 ± 3.11[a]	12.36 ± 1.42	11.96 ± 1.93
t	—	0.119	2.852	0.054	3.825	0.537	0.586
P	—	0.906	0.005	0.957	<0.001	0.592	0.556

Group	*n*	*Depression or pleasant state of mind*		*Relaxation and tension*		*Energy*		*Total score*	
Research group	*93*	*Before intervention*	*After intervention*	*Before intervention*	*After intervention*	*Before intervention*	*After intervention*	*Before intervention*	*After intervention*
Control group	90	12.03 ± 2.24	15.23 ± 3.45[a]	13.72 ± 3.14	16.33 ± 2.90[a]	16.03 ± 3.14	18.85 ± 3.45[a]	68.11 ± 14.11	79.94 ± 22.98[a]
t	—	12.22 ± 2.01	12.35 ± 2.46[a]	13.15 ± 3.05	13.25 ± 3.72[a]	16.22 ± 3.02	15.25 ± 3.02[a]	67.80 ± 13.65	67.87 ± 17.17[a]
P	—	0.827	6.483	0.2545	6.258	0.417	7.501	0.151	4.015
Group	n	0.410	<0.001	0.215	<0.001	0.677	<0.001	0.880	<0.001

Note. Compared with before intervention, [a]$P < 0.05$.

recovery of mental patients [15]. Faced with such stressful environment, it is extremely important for psychiatric nurses to use positive coping styles to eliminate the negative state for improving the treatment and nursing level of psychiatric patients.

The results of this study showed that the scores of each dimension of SCL-90 were significantly decreased after the intervention in the research group ($P < 0.05$). It shows that psychological education intervention can improve the mental health of psychiatric nurses. The reasons for the results were analyzed. First, in this study, we established a platform for communication among nurses, through which each psychiatric nurse could release the pressure caused by patients' bad emotions and obtain identity, comfort, and support [16]. Second, by helping nurses to constantly understand and discuss themselves, they are prompted to find that the events they suffered are not unique, and this change in their own concepts has a positive effect on their understanding of themselves and others. Third, the nurses reasonably let off their negative emotions through stress reduction training, which effectively relieved the psychological pressure. This also helped nurses to adjust and improve their relationships with others and made them fully psychologically prepared for the reoccurrence of negative events in nursing work. When facing the bad behaviors of patients, they can better control and adjust their emotions. Fourth, by encouraging nurses to share their experiences and handling methods with each other, they have helped them learn to release their psychological pressure well and seek better countermeasures to deal with the pressure [17].

This study found that the job burnout of psychiatric nurses was serious before the intervention, but after psychological education intervention, the job burnout score of the research group was significantly better than that of the control group ($P < 0.05$). This shows that positive psychological education intervention for psychiatric nurses can help reduce nurses' psychological load and job burnout and provide a solid foundation for clinical treatment. A large number of studies have found that job burnout and psychological condition of psychiatric nurses are more serious than those of general medical and surgical nurses [18]. They not only need to give life care to patients who don't know how to take care of their lives, but may also face the risk of personal injury and verbal attack on some patients at any time because they are dominated by mental symptoms such as auditory hallucination and visual hallucination [19]. All these reasons will make psychiatric nurses lose their due respect and reward for a long time and make their professional identity and job commitment at a low level, which will lead to their mental burnout and psychological problems. In this study, through some incentive means in psychological intervention, nurses can fully realize their sense of work value and achievement, guide nurses to correctly understand their work status, then mobilize the enthusiasm and initiative of the work, and reduce the sense of job burnout.

Psychological resilience refers to a person's good adaptability when facing crises and risks and also refers to taking active and effective countermeasures when facing pressures [20]. Good psychological elasticity can promote individuals to better face pressure and negative emotional reactions and maintain a stable psychological state, which is conducive to physical and mental health [21]. Relevant studies have found that positive psychological intervention can improve nurses' psychological flexibility, improve anxiety, motivate individual positive qualities and individual advantages, and effectively help individuals to overcome difficulties. The mental health of nurses is closely related to sleep quality. The better the resilience, the higher the sleep quality [22]. In addition, subjective well-being is an important factor to improve the quality of life and is a comprehensive psychological index to measure the quality of life

of individuals. Through psychological education intervention, they can release the pressure caused by negative events, obtain identity, comfort, and support, reduce the psychological pressure caused by negative events, and improve the mental health level of psychiatric nurses and their subjective well-being. The purpose of the psychological counseling group of psychiatric nurses established in this study was to "reduce the occupational psychological pressure of psychiatric nurses." Through promoting interpersonal communication and communication between nurses, they were prompted to consciously adjust their wrong cognition and bad emotions, and they gradually realized the process of adapting to reality with a healthy, confident, and optimistic attitude toward life. The results showed that the nurses who received psychological education were significantly superior to those before the intervention and the control group in psychological elasticity and sleep quality ($P < 0.05$). This strongly confirmed that psychological education intervention could improve the psychological elasticity of nurses, especially in the aspects of toughness and optimism, and was very significant in improving anxiety, depression, and sleep quality.

In summary, psychological education intervention for nurses in psychiatric department can alleviate their occupational fatigue, effectively improve their psychological elasticity and happiness index, thereby improving sleep quality and promoting their physical and mental health development. However, there were still some problems such as small included sample size and short follow-up time in this study. In the future, the sample size could be further expanded and the survey time could be extended to further confirm the advantages of psychological intervention in the application of psychiatric nurses.

Data Availability

Relevant data are available upon reasonable request.

Conflicts of Interest

All authors declare that there are no relevant conflicts of interest.

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Retraction

Retracted: The Role of Jinhuang Powder to Prevent Adverse Effects of Subcutaneous Injection of Enoxaparin Sodium

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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Research Article

The Role of Jinhuang Powder to Prevent Adverse Effects of Subcutaneous Injection of Enoxaparin Sodium

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Objective. To determine the role of Jinhuang Powder to prevent adverse effects of subcutaneous injection of enoxaparin sodium. *Methods.* The clinical data of 97 patients with cervical cancer who were treated with subcutaneous injection of enoxaparin through the lower margin of the deltoid muscle of the upper arm in Zhejiang Tumor Hospital from August 2020 to August 2021 were retrospectively analyzed. All patients were divided into the control group ($n = 39$) and the research group ($n = 58$) according to the different use time periods of Jinhuang Powder. The research group was treated with Jinhuang Powder and enoxaparin sodium at the same time. The control group started to use Jinhuang Powder after the adverse reactions occurred. The induration, subcutaneous bleeding events, and pain were statistically analyzed. *Results.* The incidence of induration (3.4% vs 15.4%, $P = 0.036$) and subcutaneous hemorrhage (37.9% vs 76.9%, $P = 0.003$) in the research group was significantly lower than that in the control group. The pain in the research group was lighter than that in the control group (grade 0–4 pain: 70% vs 28.2%, 19% vs 30.8%, 8.6% vs 23.1%, 1.7% vs 12.8%, 1.7% vs 5.1%, $P = 0.001$). *Conclusion.* Preventive use of Jinhuang Powder can significantly reduce the incidence of subcutaneous induration and subcutaneous bleeding and can effectively alleviate the local pain of injection. It is worthy of further study to clarify its role and mechanism.

1. Introduction

Cervical cancer is the fourth most common type of cancer in women after breast, colorectal, and lung cancer, and it is also the fourth most common cause of cancer death in women. The International Agency for Research on Cancer (IARC) estimated that more than 600,000 women worldwide were diagnosed with cervical cancer in 2020, and about 340,000 women died from the disease. The literature has shown that the incidence of deep vein thrombosis (VTE) in cervical cancer patients is as high as 41.5% [1]. In addition to increasing the mortality rate of patients, VTE will interfere with patient care plans and treatment plans and will also reduce the quality of life of patients. Therefore, anticoagulant drugs are often used clinically for cervical cancer patients to reduce the occurrence of VTE.

Enoxaparin sodium is mainly used for the prevention and treatment of various thromboembolic diseases. Its antithrombotic activity is comparable to that of heparin. Compared with other parenteral anticoagulants, it has rapid absorption and predictable pharmacokinetic characteristics. It has high bioavailability in vivo. It has a long half-life and low bleeding risk, can be administered by subcutaneous injection, and is more and more widely used in clinical practice [2]. However, affected by factors such as its pharmacological effect, injection method, and injection site selection, patients are prone to local pain, subcutaneous bleeding, and hematoma after subcutaneous injection.

Cervical cancer patients are at high risk of thrombosis, and the use of enoxaparin is high. Radiotherapy is one of the main treatment methods for cervical cancer, and 70% of cervical cancer patients require external pelvic irradiation. During pelvic radiotherapy, subcutaneous injection around

the umbilicus is not feasible, and subcutaneous injection at the lower border of the deltoid muscle of the upper arm should be used instead. However, ecchymosis, hematoma, and even induration are prone to occur after injection at this site, which affects drug absorption, and the patient feels obvious pain. In addition to causing physical discomfort to patients, these symptoms can also have adverse psychological effects and limit subsequent injection sites [3]. There is a clinical study on the use of the abdominal imaginary line to make the injection positioning card and the symmetrical injection in the abdomen to reduce the subcutaneous hemorrhage caused by the low molecular weight heparin sodium injection [4]. However, subcutaneous injection at the lower margin of the upper arm deltoid muscle is the traditional injection method of the drug. Compared with abdominal injection, it is easier and faster and is more suitable for ambulatory patients. However, there is no study on the prevention of adverse events caused by subcutaneous injection of the upper arm deltoid muscle. Jinhuang Powder is prepared from turmeric, rhubarb, phellodendron, *Atractylodes*, *Magnolia officinalis*, dried tangerine peel, licorice, *Angelica*, and Trichosandra, which has repercussive and analgesic effects. In China, it is often used for carbuncle, furuncle, swelling and pain, traumatic injury, acute lymphadenitis, mastitis, and other diseases in clinics. The combination of these herbs has the effects of dispersing blood stasis and dredging collaterals, reducing swelling and analgesia, clearing heat, and dehumidifying. At present, Jinhuang Powder combined with honey, iced potato chips, and other related items has been used to treat subcutaneous hematoma caused by anticoagulant drugs or venipuncture [5, 6]. In this paper, the effect of Jinhuang Powder on the prevention and treatment of local complications after subcutaneous injection of enoxaparin sodium in the deltoid muscle of the upper arm is discussed retrospectively, and a new method is provided for clinical practice.

2. Materials and Methods

2.1. Research Subjects. The clinical data of cervical cancer patients who received pelvic external radiation and received enoxaparin sodium anticoagulation in our hospital from August 2020 to August 2021 were analyzed retrospectively. All patients received a subcutaneous injection of enoxaparin sodium through the lower border of the deltoid muscle of the upper arm. Patients were divided into two groups according to the use time of Jinhuang Powder: the research group was treated with topical Jinhuang Powder from the time of injection of enoxaparin sodium, and the control group was treated with topical Jinhuang Powder after subcutaneous induration, subcutaneous bleeding, or pain. This retrospective study complies with ethical requirements (ethical approval number: IRB-2020-276).

2.2. How to Use Jinhuang Powder. 8 g of Jinhuang Powder was added to 10 ml of normal saline, and they are mixed well. The thickness of the application is 1.5–2 mm, and the range is 5 cm × 5 cm. We wrap it with a disposable treatment towel, avoid the puncture needle, and change the dressing every day. Research group: from the first day of injection of heparin sodium, every day after subcutaneous injection of enoxaparin sodium at the lower edge of the deltoid muscle of the upper arm for 30 minutes, the top of the puncture site was externally applied with Jinhuang Powder. Control group: after subcutaneous injection, only routine nursing was performed, and when pain, induration, or hematoma occurred, Jinhuang Powder was applied locally. The method was the same as that of the research group. The injection methods of enoxaparin sodium in the two groups were the same, and and kept for 5 s after the injection. The purpose was to wait for the basic diffusion of the drug solution and avoid excessive retention of the drug solution at the needle tip. The needle was withdrawn, and the needle plug was withdrawn at the same time to avoid leaving a small amount in the needle cavity. The liquid medicine is brought into the eye of the needle with the needle tip, irritating the skin and causing bleeding [7].

2.3. Observation Indicators and Evaluation Criteria [8]. The criteria are as follows: (1) the appearance and duration of subcutaneous induration; (2) subcutaneous hemorrhage: a hematoma with a diameter of less than 2 mm is called a bleeding point (Figure 1); a hematoma with a diameter of 3–5 mm or more, which does not fade under pressure, is called purpura (Figure 2); a hematoma with a diameter greater than 5 mm is called ecchymosis (Figure 3); those with a diameter greater than 10 mm, with local bulges or fluctuations, are called subcutaneous hematoma (Figure 4); (3) local pain score. It is divided into 5 grades. Grade 0 means that the patient does not feel pain; grade 1 means that the patient feels tenderness, but the patient can tolerate it without treatment; grade 2 means the degree of pain of the patient is very obvious; grade 3 is that the patient has severe tenderness and needs medical intervention; grade 4 is that the patient refuses any touch because of pain, and the degree of pain affects sleep.

3. Statistical Methods

Statistical analysis was performed using IBM SPSS v24. The *t*-test was used for measurement data that conformed to normal distribution, and chi-square analysis was used for count data. $P < 0.05$ was considered statistically significant.

4. Results

(1) There were no significant differences in age, BMI, underlying diseases, ECO score, and coagulation indexes between the two groups. There were statistical differences in diabetes history and concurrent chemotherapy between the two groups. The characteristics of the two groups are shown in Table 1.

(2) There were 2 cases of subcutaneous induration in the research group, the appearance time was 8.5 ± 0.7 days, and the duration was 5.5 ± 2.1 days; there were 6 cases of subcutaneous induration in the control group, and the appearance time was 8.2 ± 1.7 days

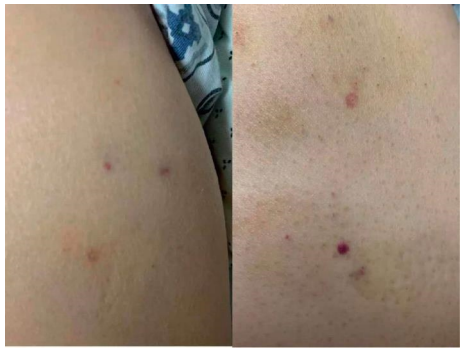

Figure 1: Bleeding point.

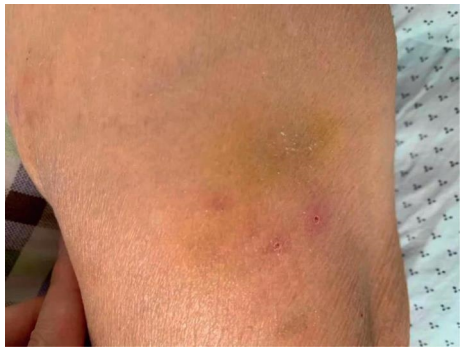

Figure 2: Purpura.

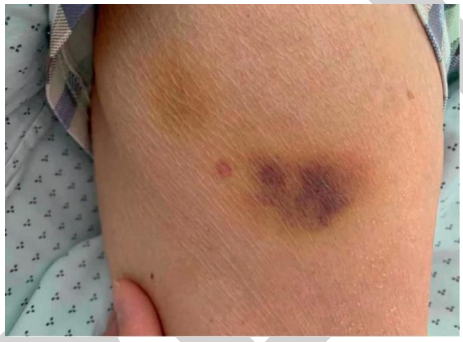

Figure 3: Ecchymosis.

and lasted for 8.5 ± 2.5 days. The incidence of induration in the research group was significantly lower than that in the control group ($P < 0.05$); the appearance time of induration was similar between the two groups, and there was no statistical significance; the duration of induration in the research group was less than that in the control group, but there was no significant difference ($P = 0.184$) (Table 2).

(3) The incidence of subcutaneous hemorrhage in the research group was significantly lower than that in the control group (37.9% vs 76.9%, $P = 0.003$). In the research group, the appearance time of purpura, ecchymosis, and the hematoma was slightly delayed, and the duration was slightly shortened. The time of

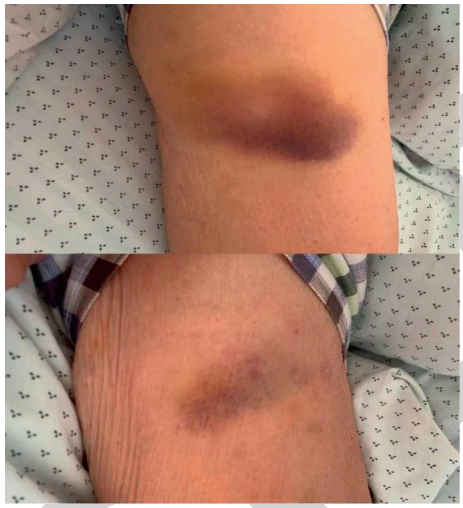

Figure 4: Hematoma.

the appearance in the two groups was 6.1 ± 2.0 vs 6.0 ± 1.6, 6.3 ± 1.5 vs 7.6 ± 2.4, and 5.6 ± 2.4 vs 4.3 ± 1.3, and the duration was 8.4 ± 2.4 vs 9.8 ± 1.5, 8.3 ± 2.1 vs 11.2 ± 2.4, and 8.0 ± 3.4 vs 8.6 ± 2.6 days (Table 3).

(4) The incidence of pain in the research group was significantly lower than that in the control group. The incidences of grade 0–4 pain in the two groups were 70% vs 28.2%, 19% vs 30.8%, 8.6% vs 23.1%, 1.7% vs 12.8%, and 1.7% vs 5.1%, respectively, with $P = 0.001$. The time of onset of grade 2 and above pain was similar between the two groups, but the duration of pain was 4.7 ± 1.5 days in the research group and 9.6 ± 6.5 days in the control group. (Table 4).

5. Discussion

There is no clear plan for the prevention of side effects after subcutaneous injection of enoxaparin sodium in the arm deltoid muscle. This study compared the prophylactic and therapeutic use of topical Jinhuang Powder. The results showed that the preventive use of golden yellow powder could significantly reduce the incidence of sclerosis and subcutaneous hemorrhage caused by subcutaneous injection of enoxaparin sodium and effectively relieve local pain during injection.

Injection induration is due to the high concentration of the local drug and the hypertonic state, which is not easy to absorb, but absorbs the moisture of the surrounding tissue, causing local swelling. The outer edge of the deltoid muscle of the upper arm and the outer side of the thigh have a small injection range and a thin subcutaneous fat layer, which is not conducive to drug absorption, and repeated injections are prone to induration [9]. Traditional Chinese medicine believes that injection induration is caused by obstruction of the meridians, stagnation of qi, and blood stasis [10]. The ingredients of Jinhuang Powder include turmeric, rhubarb, phellodendron, *Atractylodes*, *Magnolia officinalis*, dried

Table 1: Basic information of patients.

	Research group ($n = 58$)	Control group ($n = 39$)	P
Age (years)	60.2 ± 9.5	56.2 ± 10.7	0.056
BMI	23.19 ± 3.49	22.46 ± 3.67	0.328
Diabetes (n)			
Yes	9	0	0.010
No	49	39	
Hypertension (n)			
Yes	20	14	0.886
No	38	25	
ECO score (n)	1 (0–3)	1 (0–3)	0.224
Concurrent chemotherapy (n)			
Yes	38	35	0.007
No	20	4	
Platelet count (10/L)	239 ± 103	227 ± 119	0.600
Dimer (ng/ml)	1144.2 ± 1004.8	1070.7 ± 859.3	0.709
PT (s)	12.6 ± 1.2	12.8 ± 0.7	0.359
APTT(s)	29.1 ± 2.9	29.7 ± 3.7	0.342

Table 2: Cases of subcutaneous induration.

	Research group ($n = 58$)	Control group ($n = 39$)	P
Subcutaneous induration (n)	2	6	
No subcutaneous induration (n)	56	33	0.036
Time of occurrence (days)	8.5 ± 0.7	8.2 ± 1.7	0.807
Duration (days)	5.5 ± 2.1	8.5 ± 2.5	0.184

Table 3: Subcutaneous bleeding events.

	Research group ($n = 58$)	Control group ($n = 39$)	P
Grade of subcutaneous hemorrhage			0.003
No	36	9	
Bleeding point	7	13	
Purpura	7	5	
Ecchymosis	3	5	
Hematoma	5	7	
Occurrence time of purpura (days)	6.1 ± 2.0	6.0 ± 1.6	0.899
Purpura duration (days)	8.4 ± 2.4	9.8 ± 1.5	0.282
Occurrence time of ecchymosis (days)	6.3 ± 1.5	7.6 ± 2.4	0.452
Duration of ecchymosis (days)	8.3 ± 2.1	11.2 ± 2.4	0.137
Occurrence time of hematoma (days)	5.6 ± 2.4	4.3 ± 1.3	0.242
Duration of hematoma (days)	8.0 ± 3.4	8.6 ± 2.6	0.746

Table 4: Pain conditions.

	Research group ($n = 58$)	Control group ($n = 39$)	P
Pain grading			0.001
No	40	11	
Grade 1	11	12	
Grade 2	5	9	
Grade 3	1	5	
Grade 4	1	2	
Occurrence time of grade 2 and above pain (days)	6.7 ± 1.9	6.0 ± 2.3	0.481
Pain duration of grade 2 and above (days)	4.7 ± 1.5	9.6 ± 6.5	0.064

tangerine peel, licorice, Radix Radix, *Angelica dahurica*, and Trichosandra. Rhubarb has the effects of promoting blood circulation and eliminating blood stasis, clearing heat, and detoxifying. *Angelica dahurica* can warm and dispel wind and dry dampness, reduce swelling, and relieve pain. Modern pharmacological experiments have confirmed that phellodendron and turmeric can promote local blood circulation [11]. This study also found that the prophylactic use of Jinhuang Powder could not shorten the time of the formed subcutaneous induration, showing the importance

of preventing the formation of induration. At the same time, after the formation of induration, it is necessary to find a more effective method to treat induration.

On the one hand, enoxaparin sodium is used due to its anticoagulant effect. After injection of the drug, the coagulation mechanism of the self-damaged capillaries is damaged and the coagulation time is prolonged. Compared with other drugs, subcutaneous bleeding events are more likely to occur after subcutaneous injection. On the other hand, the dermis is rich in capillaries, so when a patient is injected subcutaneously, local high concentrations of enoxaparin sodium may damage the blood vessels and cause local bleeding events [12]. So even after improving the injection method, the above situation still occurs. The phellodendron and turmeric in the Jinhuang Powder can promote local blood circulation and reduce vascular permeability. *Angelica* can reduce swelling and relieve pain. In addition, rhubarb in Jinhuang Powder can promote local vasoconstriction, shorten the bleeding time, and promote platelet adhesion and aggregation. In some studies, its hemostatic effect is even better than norepinephrine [13]. The results of this study show that the preventive use of Jinhuang Powder can significantly reduce the incidence of subcutaneous bleeding events caused by subcutaneous injection of enoxaparin sodium, which confirms the effect of Jinhuang Powder on reducing swelling and removing blood stasis. However, the prophylactic use of Jinhuang Powder did not cause subcutaneous bleeding events to subside faster than the therapeutic use of Jinhuang Powder. Therefore, prophylactic use should be emphasized in clinical use to reduce the occurrence of subcutaneous bleeding events.

Enoxaparin sodium can easily cause hematoma due to its subcutaneous injection. Once the hematoma is formed, the patient will show obvious pain, which not only brings pain to the patient but also makes it more difficult to continue subcutaneous injection in this area. Li et al. [11] have shown that the main chemical components of Jinhuang Powder are quercetin, β-sitosterol, stigmasterol, etc. Quercetin is a flavonoid compound that can effectively inhibit TNF (tumor necrosis factor) and IL (leukocyte). The expression of inflammatory factors such as interleukin) can dilate blood vessels and scavenge oxygen free radicals, thereby achieving anti-inflammatory, antioxidant, anti-inflammatory, and analgesic effects. A study has found that β-sitosterol has a strong anti-inflammatory effect on some nonspecific acute inflammations, and stigmasterol can significantly reduce IL-6 (interleukin 6), IL-1B (interleukin 1β), etc. [14]. The quercetin in the traditional Chinese medicine compound Jinhuangsan mainly comes from *Phellodendron phellodendri*, β-sitosterol mainly comes from *Phellodendron phellodendri*, rhubarb, and Tian Nanxing, and stigmasterol mainly comes from *Phellodendron phellodendri*, turmeric, and Tian Nanxing. Therefore, the combination of various drugs has a strong anti-inflammatory and analgesic effect, and the external application of Jinhuang Powder is also widely used in the treatment of phlebitis in clinics [15, 16]. Therefore, for patients with long anticoagulation courses, prophylactic use of Jinhuang Powder is beneficial to relieve pain and reduce the inflammatory response, which provides conditions for subsequent subcutaneous injections in this area.

In view of the side effects of subcutaneous injection of enoxaparin sodium, some scholars have studied the combination of Jinhuang Powder with other ingredients. Zhang [5] has shown that the use of Jinhuang Powder and honey modulation has a significant effect on subcutaneous induration caused by anticoagulant drugs. Xu [6] has shown that external application of iced potato chips can reduce tissue permeability, reduce exudation, and reduce swelling. Combined use with Jinhuang Powder can accelerate the absorption of hematoma. However, honey and iced potato chips are cumbersome in the process of storage and preparation and cannot guarantee sterility or cleanliness, which increases the risk of local infection. This study shows that the single use of Jinhuang Powder can not only reduce the workload but also achieve a good effect.

In conclusion, the prophylactic external application of Jinhuang Powder to patients who need a long-term subcutaneous injection of enoxaparin sodium can significantly reduce the incidence of subcutaneous induration and subcutaneous bleeding and can effectively relieve the local pain of injection. Further research is needed to clarify its role and mechanism. There are still deficiencies in this study. First, this study is a retrospective study, and the data are inevitably biased; second, the sample size of this study is small, and some phenomena cannot be explained at present, such as why the preventive use of Jinhuang Powder cannot shorten the formed induration and subcutaneous bleeding events; these need to be further studied.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author.

Conflicts of Interest

The authors declare no conflicts of interest.

Acknowledgments

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Research Article

Impact of Optimizing the Emergency Care Process on the Emergency Effect and Prognosis of Patients with Hepatic Encephalopathy

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Hepatic encephalopathy (HE) is a serious complication caused by liver disease and is one of the leading causes of death in patients. Studies have shown that proper emergency care for patients after the occurrence of HE can improve their prognosis and quality of life. Therefore, this study focuses on the effect of optimizing the emergency care process on the effectiveness and prognosis of emergency care for patients with hepatic encephalopathy. In this study, we set 32 patients with HE admitted to receive routine emergency care between May 2020 and March 2021 as the control group and 34 patients with HE admitted to receive optimized emergency care processes between April 2021 and February 2022 as the observation group. The satisfaction of patients' families with this care was assessed using a self-administered nursing satisfaction questionnaire to record the outcome of emergency care, quality of care, and prognosis of patients in the two groups of palliative care. The data collected were analyzed using SPSS17.0 software, and the results showed that the time spent on diagnosis, resuscitation, DTP, and DTT was much lower in the observation group than in the control group, and the scores related to the quality of care, such as ambulance technique, humanistic care, resuscitation efficiency, and resuscitation effect, were all higher than those of the control group, and the satisfaction of the family members in the observation group was also significantly higher than that of the control group ($P < 0.05$). The success rate of first aid in the observation group was 100.00%, which was higher than 93.72% in the control group, but the difference between the two groups was not significant ($P > 0.05$). It can be seen that the application of an optimized emergency nursing process in HE patients is effective, which can effectively improve the success rate of HE resuscitation, shorten the resuscitation time and condition diagnosis, improve the resuscitation effect, improve the quality of nursing care, and improve the prognosis of patients to a certain extent.

1. Introduction

Hepatic encephalopathy (HE) is a potentially serious complication occurring in patients with acute and chronic states, which can occur in 60–80% of cirrhotic patients and is clinically characterized by a complex array of nonspecific neurological and psychiatric symptoms [1, 2]. Because it often starts insidiously, most patients do not seek treatment until the late stage of the disease, when they are mostly in critical condition with complex changes, and if emergency care is not timely or inappropriate, it may affect the quality of life of patients in the later stages, and in serious cases, it may be life-threatening [3, 4]. Due to the complex and diverse pathophysiological basis of HE, the pathogenesis of HE has not been fully elucidated yet, and the theory of ammonia toxicity is still the core of the theory that high blood ammonia is one of the main causes of HE [5, 6]. Regarding the treatment of HE, some studies [7] have pointed out that early identification of predisposing factors for the occurrence of HE and targeted indicators are key and that lactulose is the drug of choice for the treatment of recurrent HE, while rifaximin is considered an effective complementary treatment for the prevention of HE recurrence.

Studies [8, 9] have shown that standardized and procedural emergency procedures are crucial in the treatment of

HE, and emergency care is a holistic and comprehensive nursing intervention in the process of resuscitation of patients, which can effectively improve the success rate of resuscitation and facilitate the recovery of patients' conditions. However, there is a lack of unified standards and norms regarding the systematic nursing process, and there are many participants with the unclear division of responsibilities and division of labor, which can easily lead to a busy, disorganized, and inefficient resuscitation process [10]. It not only causes waste of manpower and time but also delays the resuscitation time and causes medical disputes. In recent years, along with the increase in the incidence of HE in China, the optimized nursing emergency process meets the current development of emergency department nursing as well as the actual clinical needs [11, 12]. This study compares the effect of 66 cases admitted to our hospital from May 2020 to February 2022 on the treatment of HE patients given conventional nursing emergency procedures and optimized nursing emergency procedures, respectively, and is reported below.

2. Information and Methods

2.1. Research Data

2.1.1. Subjects and Grouping. 66 HE patients admitted to our hospital from May 2020 to February 2022 were selected for this study, and the patients were divided into a control group (33 cases: conventional nursing emergency process, admitted from May 2020 to March 2021) and an observation group (34 cases: optimized nursing emergency process, admitted from April 2021 to February 2022) according to the order of admission.

2.1.2. Inclusion Criteria. Inclusion criteria were defined as follows: (1) history of severe liver disease and/or extensive portal-body shunt, neuropsychiatric symptoms, and signs, all confirmed by CT examination, evoked potential examination, and blood ammonia test; (2) informed consent has been obtained from the patient or family for all treatments and tests; and (3) admission within 2 to 48 h after the appearance of HE.

2.1.3. Exclusion Criteria. Exclusion criteria were defined as follows: (1) patients who have received other treatments prior to admission to the hospital for emergency care; (2) suffering from severe immune system or hematologic disorders or other serious organ dysfunction; (3) suffering from malignant tumors; (4) having a history of psychosis or psychiatric disorders; (5) no other disabling or fatal diseases of the head; and (6) other diseases that might cause neuropsychiatric abnormalities, such as psychiatric diseases, toxic encephalopathy, intracranial lesions, other metabolic encephalopathies, and sedative overdose.

2.2. Study Methods

2.2.1. Data Collection. The clinical data of patients who met the criteria, including gender, age, place of residence, smoking history, drinking history, underlying diseases, etiology, and causative factors, were recorded in detail by reviewing medical records on a copy-by-copy basis to establish a database.

2.2.2. Control Group. Routine emergency nursing procedures were performed:

(1) General emergency measures: after the emergency department staff received the patient, they assessed whether the patient had personality and behavior changes, abnormal consciousness, coma, jaundice, fluttering wing-like tremor, etc. The nursing staff prepared all kinds of resuscitation items such as suction materials, infusion materials, emergency care, cardiac monitor, restraint belt, enema materials, etc., and kept calm and collected throughout the whole process to quickly and skillfully cooperate with the resuscitation. By determining the patient's consciousness and circulation of the limbs, the patient was assisted to assume a flat position with the pillow removed, the patient's limbs were restrained, the patient's pupils were checked, and the physician was notified for resuscitation. Cardiac monitoring was given, intravenous access was established, and resuscitation measures such as blood transfusion, fluid transfusion, anti-infection, various hemostatic treatments, and medications were implemented in cooperation with the physician after emergency assessment of the patient's condition, and treatment effects and adverse reactions were observed. For some conscious patients, certain encouragement and comfort were given to increase patients' belief in survival.

(2) After the condition was stabilized, closely observe the patient's vital signs, major symptoms, and physical signs, and immediately inform the doctor of any abnormalities and cooperate with the treatment.

(3) Nursing staff reassessed the patient's physical condition and severity of illness, applied antihepatic encephalopathy drugs, actively treated the primary disease, and corrected metabolic disorders and water and electrolyte disorders in a timely manner according to medical advice. They promptly explained the condition to the patient's family, did a good job of psychological guidance for the family, eliminated all unsafe factors in the ward, and transferred the patient to a safe bed to avoid accidents. When the patient appeared irritable, do not abuse sedatives to avoid aggravating hepatic coma, and use a restraint belt if necessary.

2.2.3. Observation Group. Optimized emergency flow nursing was performed, with the following specific contents:

(1) Optimize the consultation process: before the patient was admitted to the hospital, the emergency department nurse informed the ward to prepare for the admission of the patient, and the responsible nurse

Table 1: Comparison of general data of the two groups.

Information		Control group ($n = 32$)	Observation group ($n = 34$)	t or χ^2 value	P value
Gender (female, mean ± SD)		10 (31.25)	12 (35.29)	0.121	0.728
Age (years, mean ± SD)		50.25 ± 10.13	51.46 ± 9.77	0.494	0.623
Occupation (n, %)	Employee	4 (12.50)	5 (14.71)	2.040	0.844
	Worker	2 (6.25)	2 (5.88)		
	Farmer	1 (3.13)	2 (5.88)		
	Self-employed	0 (0.00)	1 (2.94)		
	Retired	15 (46.88)	17 (50.00)		
	Unemployed	10 (31.25)	7 (20.59)		
Geography (n, %)	Urban	24 (75.00)	28 (82.35)	0.533	0.465
	Rural	8 (25.00)	6 (17.65)		
Etiology (n, %)	Cirrhotic disease	26 (81.25)	27 (79.41)	0.035	0.851
	Noncirrhotic disease	6 (18.75)	7 (20.59)		
Causes (n, %)	Infection	15 (46.88)	18 (52.94)	0.243	0.622
	Upper gastrointestinal bleeding	12 (37.50)	11 (32.35)	0.192	0.661
	Electrolyte disturbances	13 (40.63)	16 (47.06)	0.277	0.599
	Diarrhea, constipation	4 (12.50)	5 (14.71)	0.068	0.794
	Others	2 (6.25)	4 (11.76)	0.607	0.436
Smoking history (n, %)		11 (34.38)	14 (41.18)	0.324	0.569
Alcohol consumption history (n, %)		12 (37.50)	14 (41.18)	0.093	0.760
Underlying disease (n, %)	Diabetes mellitus	4 (12.50)	6 (17.65)	0.138	0.933
	Coronary heart disease	1 (3.13)	1 (2.94)		
	Hypertension	4 (12.50)	7 (20.59)		

sent the patient directly to the resuscitation room after receiving the patient and completed the assessment of the patient's condition within 2 min, following the principle of "one look, two questions, three checks" to determine whether the patient had any fatal risk factors. Blood pressure, pulse rate, oxygen saturation, and consciousness were assessed every 15 minutes.

(2) Optimize the ambulance process: ① implement prehospital-in-hospital integrated ambulance, before the ambulance arrives, telephone the family to instruct the awake patient to adopt a flat position, and if possible, give oxygen and remove respiratory secretions to avoid obstruction of the respiratory tract by vomit or resuscitation. ② open the green channel, and one prescreening nurse informed the internist and assisted the family to register, and another one immediately prepared various resuscitation items to cooperate with the resuscitation. ③ establishment of emergency field auxiliary center, by the unified training of field personnel to send specimens, transport patients, etc., to save time in all aspects and improve the efficiency of treatment. ④ establish intravenous access; the patient's condition is complicated and changeable in the process of resuscitation, and multiple drugs need to be used constantly for treatment, so more than two intravenous accesses should be established in time to facilitate infusion and timely injection of resuscitation drugs. ⑤ Re-evaluate the patient's physical condition and severity of illness, and observe the patient's vital signs, including blood pressure, pulse rate, and finger pulse oxygen saturation every 10–15 min, paying attention to the patient's temperature change and systemic response.

(3) The emergency department holds monthly departmental meetings to summarize the problems in emergency department nursing as the first witness to HE treatment, and in order to improve the level of emergency nursing staff, HE-related emergency nursing skills training should be conducted regularly, while paying attention to the impact caused by the patient's family during the patient's emergency and timely reassuring the patient's emotions.

2.3. Observed Indicators. (1) Effectiveness of first aid: assessed according to the time indicators of each part of the process, including the time from admission to seeing the emergency physician (door to physician, DTP), the time from admission to the emergency team (door to stoke team, DTT), the resuscitation time, and the diagnosis time of the condition. (2) Clinical outcome indicators: the clinical outcomes of cured discharge, improved discharge, and death were recorded for both groups. (3) Quality of nursing care: the quality of nursing care assessment scale was developed with reference to relevant literature, including four items of ambulance technique, humanistic care, resuscitation efficiency, and resuscitation effect, with a total score of 10 for each item. (4) Family satisfaction: the families of patients in both groups evaluated the degree of satisfaction with clinical care based on the dimensions of emergency speed, professionalism of the emergency nursing staff, and sense of responsibility for emergency care, with a score interval of 10 points for each item and a total score of 30 points, 30 being very satisfied, 15–29 being basically satisfied, and less than 14 being unsatisfied, with satisfaction = ((very satisfied + basically satisfied)/total number of cases) × 100%.

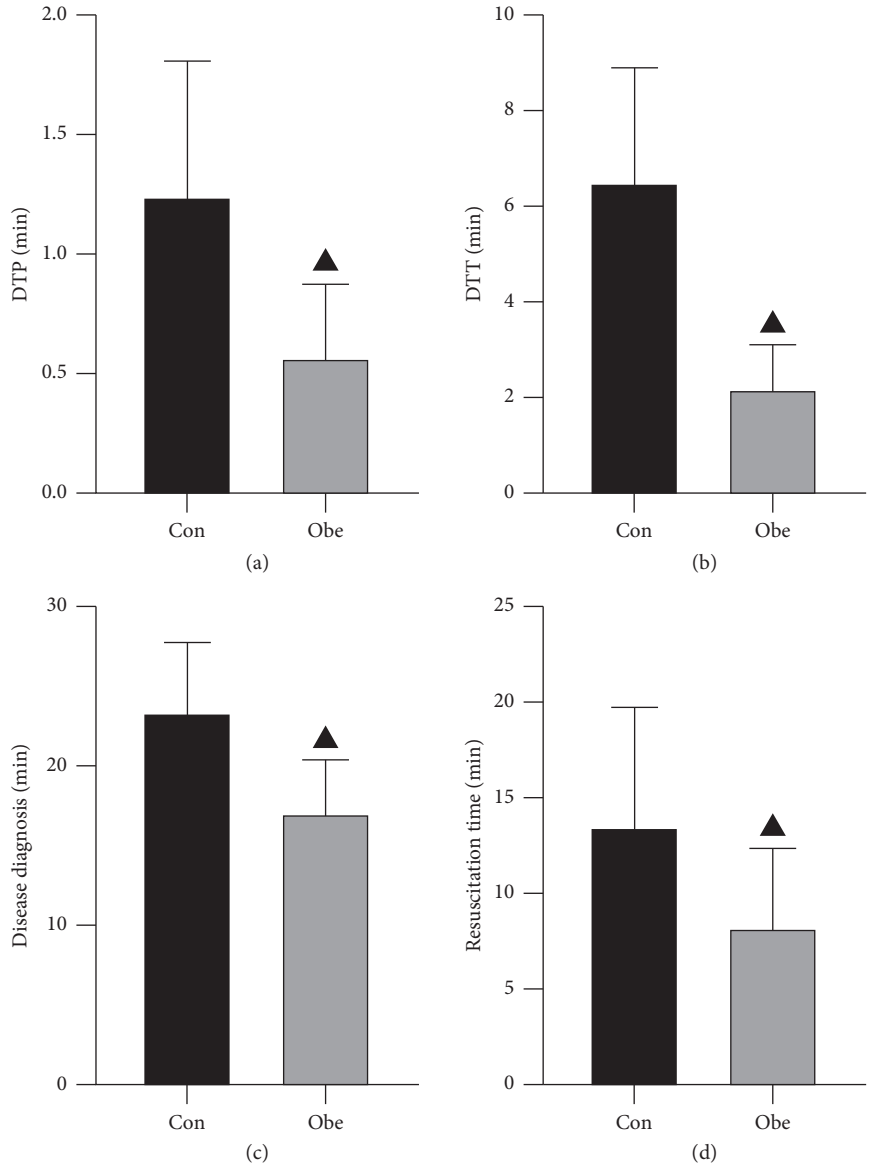

Figure 1: Comparison of the effect of first aid between the two groups. Note. ▲ indicates $P < 0.05$ compared with the control group.

2.4. Statistical Methods. SPSS21.0 was applied to process the variable data, n (%) was used to express the relevant count data, and the χ^2 test was used to express the relevant measurement data. The measurement data were described by means ± standard deviation (mean ± SD), and independent samples t-test was performed to compare the two groups. $P < 0.05$ indicates that the differences between groups are statistically significant.

3. Results

3.1. Comparison of General Data of the Two Groups. There was no statistically significant difference between the control group and the observation group in terms of gender, age, occupation, place of residence, smoking history, drinking history, underlying diseases, etiology, and causative factors ($P > 0.05$) (Table 1).

3.2. Comparison of the Effect of First Aid between the Two Groups. The time spent on diagnosis, resuscitation, DTP, and DTT of patients in the observation group was much lower than that in the control group ($P < 0.05$). (Figure 1).

3.3. Comparison of Clinical Outcomes between the Two Groups. After resuscitation and follow-up treatment, 26 patients in the control group were discharged with cure, 4 patients were discharged with improvement, and 2 patients died of ineffective first aid, with a success rate of 93.72% (30/32). In the observation group, 29 patients were discharged with cure, 5 patients were discharged with improvement, and 0 patients died of ineffective first aid, with a success rate of 100% (34/34). The success rate of first aid in the observation group was higher than that in the control group, but the difference was not statistically significant ($P > 0.05$) (Figure 2).

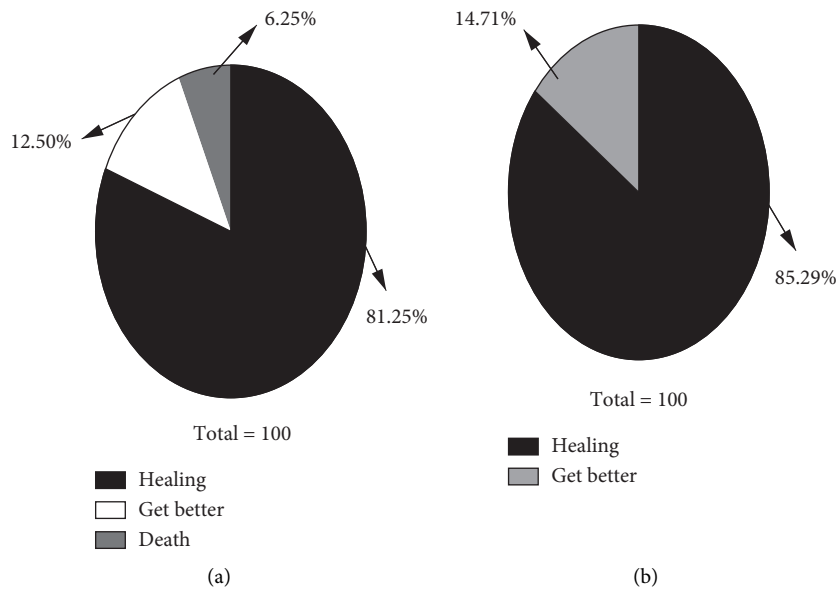

Figure 2: Comparison of clinical outcomes between the two groups.

3.4. Comparison of Nursing Quality between the Two Groups. The scores related to each quality of care, such as ambulance technique, humanistic care, resuscitation efficiency, and resuscitation effect, were significantly higher in the observation group than in the control group ($P < 0.05$) (Figure 3).

3.5. Comparison of Family Satisfaction between the Two Groups. After emergency care and after obtaining the consent of the family, the families of the patients in both groups were invited to evaluate the degree of satisfaction with clinical care based on the dimensions of the speed of emergency care, professionalism of the emergency nursing staff, and sense of responsibility for emergency care. In the control group, the percentages of very satisfied, basic satisfaction, and dissatisfaction with nursing care were 46.88%, 25.00%, and 28.13%, respectively, with a satisfaction rate of 71.88%. In the observation group, 76.47%, 17.65%, and 5.88% were very satisfied, basically satisfied, and dissatisfied with the nursing care, respectively, with a satisfaction rate of 94.12%. Statistical analysis of satisfaction between the two groups showed that the observation group was significantly higher than the control group ($P < 0.05$) (Table 2).

4. Discussion

HE is a syndrome of neuropsychiatric abnormalities of varying severity based on metabolic disorders caused by acute or chronic severe hepatic dysfunction of various etiologies or various portal vein-body circulation shunt abnormalities, mostly induced by upper gastrointestinal bleeding, constipation, infection, high-protein diet, and electrolyte disturbances [12–14]. The clinical manifestations of HE are diverse, manifesting only as reduced attention, memory, or abnormal brain electrophysiology in the early stages of the disease, and as the disease progresses, symptoms of neurological dysfunction such as drowsiness, delirium, or even coma may appear [15]. Studies [16, 17] have shown that HE can cause serious pathological changes related to cerebral edema, gastrointestinal bleeding, renal insufficiency, etc. If patients do not receive timely and effective treatment, it can cause sequelae of multisystem functional disruption and affect their normal life. At present, there is no specific clinical treatment for HE, and most of the treatment measures are comprehensive, while the factors affecting the prognosis of HE are treated as early as possible, but because the pathogenesis of HE is still unclear, there are few effective means of diagnosis and treatment, resulting in a very high mortality rate.

Studies [18, 19] have shown that the traditional resuscitation care procedures are mainly focused on the rescue after the emergence of the problem, and the prognostic impact of the operations related to the assessment and prognosis of the disease, detailed management, and the interface of the resuscitation process is easily neglected, so there is a high risk of procedural confusion and delayed implementation of care measures in the rescue of HE patients, even if the health care workers are experienced and competent, which makes it difficult to ensure the effectiveness and orderliness of resuscitation. Optimizing the emergency care process means fully mobilizing the role of the nursing staff in the emergency department in the resuscitation procedure, when the emergency department receives the nursing staff to assess the patient's condition and immediately carry out life-saving measures as well as improve the success rate of emergency resuscitation [20]. The results of this study showed that the DTP, DTT, emergency time, and condition diagnosis time of the observation group were shorter than those of the control group, and the mortality rate was lower than that of the control group, suggesting that optimizing the emergency care process in the clinical treatment of HE patients can significantly reduce the

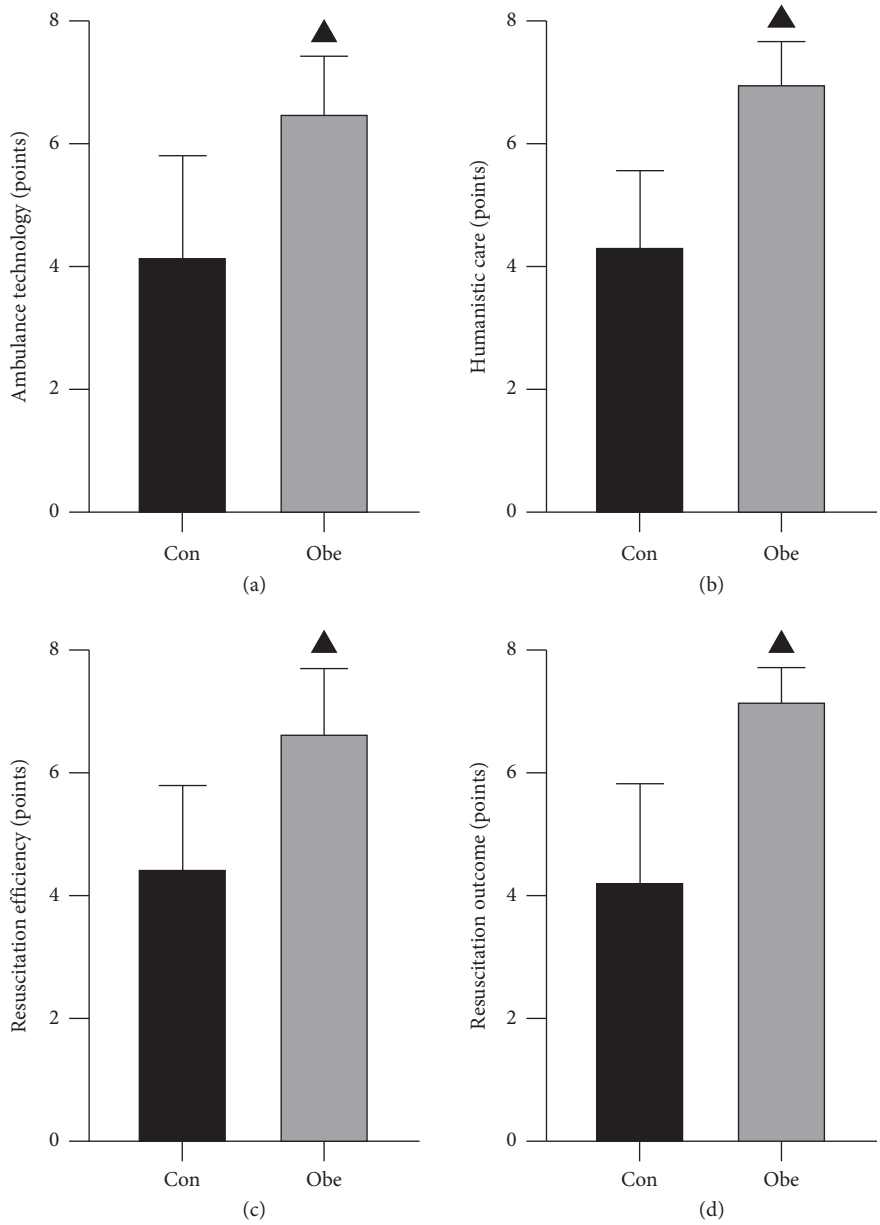

Figure 3: Comparison of nursing quality between the two groups. Note. ▲ indicates $P < 0.05$ compared with the control group.

Table 2: Comparison of family satisfaction between the two groups (n, %).

Group	Very satisfied	Basically satisfied	Unsatisfied	Satisfied
Control group ($n = 32$)	15 (46.88)	8 (25.00)	9 (28.13)	23 (71.88)
Observation group ($n = 34$)	26 (76.47)	6 (17.65)	2 (5.88)	32 (94.12)
χ^2 value	—	—	—	5.872
P value	—	—	—	0.015

adverse prognosis of patients, shorten the emergency time and condition diagnosis time, and relieve the clinical symptoms of patients. After optimizing the emergency care process, a standard emergency care process can reduce the unnecessary links, and the patient's condition can be assessed systematically, comprehensively, and in a timely manner to avoid delaying the emergency time due to multidisciplinary consultation, which can not only improve the success rate of resuscitation but also improve the resuscitation effect [21, 22].

At the same time, close monitoring of changes in patients' vital signs and systemic reactions during resuscitation and observation of whether the operation method affects patients' physiology can fully reflect the humanistic care in resuscitation [23]. The results of this study showed that the quality of care scores in the observation group was

significantly higher than those in the control group; this indicates that resuscitation of HE patients according to the optimized emergency care process can ensure the quality of care while ensuring the effectiveness of resuscitation. In addition, the results of this study also showed that the family members of the observation group were significantly more satisfied with the nursing care than the control group. The optimization of the emergency care process involved monthly nursing meetings, the formulation and implementation of solution measures in conjunction with the problems of emergency nursing staff in the process of HE emergency care, the regular implementation of skill training examinations for emergency nursing staff, and communication between nursing staff and patient's families to stabilize the patient's family emotions so that the patient's family could feel the care from the medical staff and thus receive good feedback.

In conclusion, the application of an optimized emergency care process in HE patients is effective, which can effectively improve the success rate of HE resuscitation, shorten the resuscitation time and diagnosis, enhance the resuscitation effect, and improve the quality of care, and is worthy of clinical promotion.

Data Availability

Raw data related to the results of this trial are available from the corresponding author.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Changes in Serum CRP and PCT Levels in Patients with Acute Simple Lower Urinary Tract Infection and Evaluation of the Efficacy of Treatment with Shuangdong Capsules

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] Y. Tang and Q. Zhou, "Changes in Serum CRP and PCT Levels in Patients with Acute Simple Lower Urinary Tract Infection and Evaluation of the Efficacy of Treatment with Shuangdong Capsules," *Emergency Medicine International*, vol. 2022, Article ID 9750237, 7 pages, 2022.

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Research Article

Changes in Serum CRP and PCT Levels in Patients with Acute Simple Lower Urinary Tract Infection and Evaluation of the Efficacy of Treatment with Shuangdong Capsules

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Objective. The aim of this study is to investigate the changes and significance of serum C-reactive protein (CRP) and procalcitonin (PCT) levels in patients with acute simple lower urinary tract infection (ALUTI) and to analyze the efficacy of treatment with Shuangdong capsules, so as to provide a basis for the rational clinical application of drugs. *Methods*. 92 patients with ALUTI (observation group) were randomly divided into 46 cases each in group A and group B. Group A was treated with basic anti-infective drugs, while group B was treated with Shuangdong capsules, and the duration of treatment in both groups was 14 days. The curative effect of the two groups was analyzed, and the changes in serum PCT and CRP levels were compared before and after treatment and compared with 40 healthy people in the control group. *Results*. The serum PCT and CRP levels, the number of urinary leukocyte count (LEU), and the number of urinary bacterial count (BACT) were significantly higher in Group A and Group B than in the healthy control group before treatment ($P < 0.05$). After treatment, the total clinical efficiency of patients in group B (97.83%) was significantly higher than that in group A (78.26%) ($P < 0.05$). The serum PCT and CRP levels, the number of urinary LEU, and the number of urinary BACT decreased in both groups after treatment compared with those before treatment, and all of them were significantly lower in group B than in group A ($P < 0.05$). The area under the curve (AUC) values of serum PCT and CRP levels for the diagnosis of acute simple lower urinary tract infection were 0.747 (95% CI 0.633–0.860) and 0.926 (95% CI 0.870~0.982), both with high sensitivity and specificity. *Conclusion*. The Shuangdong capsule combined with conventional antibacterial drugs has better clinical efficacy in the treatment of acute simple lower urinary tract infection; serum CRP and PCT levels in patients with acute simple lower urinary tract infection can be used as indicators for diagnosis and efficacy determination of the infection.

1. Preface

Acute urinary tract infections (AUTIs) develop as a result of multiple pathogenic bacteria attacking the urinary system and are most common in women of reproductive age, and acute lower urinary tract infections (ALUTIs), as one of the two most common types of AUTI, are most common mainly in urethritis and cystitis [1, 2]. ALUTI is generally a clinical manifestation with bladder irritation signs such as urinary frequency, urinary urgency, and urinary pain and may present with typical symptoms such as pain in the pubic area, purulent urine, hematuria, or even systemic symptoms such as fever, headache, nausea, and vomiting [3]. For LUTI, not only early recognition and timely diagnosis are needed but also a rational selection of antibiotics is essential as soon as possible, which is the key to improve its prognosis and reduce the incidence of serious complications [4]. Traditional Chinese medicine has a long history in the treatment of various infectious diseases and the curative effect is accurate. Recent studies [5, 6] have shown that the combination of the Shuangdong capsule with conventional anti-infective treatment has a better alleviating effect on

symptoms such as urinary frequency, urinary urgency, burning and stinging urethra, and yellow urine in acute mild to moderate simple lower urinary tract infection with damp-heat in the lower jiao and deficiency of both qi and yin, which provides a better treatment option for AUTI.

Patients with ALUTI can be complicated by bacteremia in severe cases, which increases the risk of death; therefore, it is of great clinical importance to find effective diagnostic indicators to accurately evaluate patients' infections and guide their treatment in ALUTI patients [7, 8]. Confirmation of the diagnosis of infectious diseases relies on pathogenic testing, but bacterial culture is time-consuming and not conducive to guiding the early application of antimicrobial drugs. Inflammatory indicators that are widely used clinically and have a high reference value include white blood cell count (WBC), absolute neutrophil count (ANC), C-reactive protein (CRP), and procalcitonin (PCT) [9, 10]. CRP is an acute chronotropic response protein, a nonspecific inflammatory indicator that can be elevated in bacterial infections, and PCT is a non-hormonally active glycoprotein that can be significantly elevated in systemic infections [11, 12]. Both are important biological indicators for the serological diagnosis of infectious diseases and have great clinical significance in identifying infectious diseases and assessing the severity of bacterial infections.

In this study, we selected patients with acute simple lower urinary tract infection divided into two groups, analyzed the therapeutic effect of Shuangdong capsule treatment on acute simple lower urinary tract infection by comparing the efficacy of the two groups and the changes in serum CRP and PCT levels in the two groups during the treatment, and evaluated the diagnostic value of serum CRP and PCT levels on acute simple lower urinary tract infection.

2. Data and Methods

2.1. Case Selection

2.1.1. Western Medical Diagnostic Criteria. As referenced in the relevant authoritative literature [13, 14], acute simple lower urinary tract infections, which occurred in patients with normal functioning urinary tract anatomy and no comorbidities such as diabetes mellitus or immunocompromise, were cured by short-term antimicrobial therapy and usually did not affect the renal function.

Symptoms such as (1) frequency, urgency, painful urination, discomfort in the suprapubic bladder area or perineum, and burning sensation in the urethra; (2) terminal hematuria was frequently observed, and the body temperature was normal or only hypothermia; (3) pressure pain in the suprapubic bladder area on physical examination; (4) elevated WBC count on urinalysis (>7.41 WBC/ul in men and >12.47 WBC/ul in women); (5) positive culture of middle urine specimen; (6) positive urine nitrite; and (7) bacterial count >105/ml in urine. One or more of the symptoms in (1) and also in (4), with or without (2), (3), (5), (6), and (7) could be diagnosed.

2.1.2. Traditional Chinese Medicine Diagnostic Criteria. Referring to the relevant authoritative literature [15], according to the characteristics of the formula and the functional principles of the Shuangdong capsule, it is proposed to select damp-heat in the lower jiao and deficiency of both qi and yin as the TCM evidence types in this study.

2.1.3. Inclusion Criteria. The inclusion criteria were as follows:

(1) Those who met the diagnostic criteria of Chinese and Western medicine.
(2) Duration of disease <72 h.
(3) Age ≥18 years.
(4) Chinese medicine diagnosis of damp-heat in the lower jiao and deficiency of both qi and yin.
(5) Those who did not take antifungal drugs or antibiotics within the last 3 days.
(6) Those who were conscious, able to cooperate with the completion of this study, and signed the informed consent, which was reviewed and approved by the ethics committee of our hospital.

2.1.4. Exclusion Criteria. The exclusion criteria were as follows:

(1) The presence of urinary tract stones, urinary tract malformations, tumors, and other diseases.
(2) Diagnosis of complicated urinary tract infection or upper urinary tract infection.
(3) Being pregnant or in lactation.
(4) Presence of abnormal cognitive, consciousness, mental, and other states.
(5) Those with insufficiency of heart, liver, kidney, and other organs.
(6) Allergic to drugs related to this study.
(7) Combined with vaginal inflammation, genital ulcers, or gonorrhea.

2.2. Clinical Data. 92 patients with ALUTI (observation group) attending our hospital from July 2020 to January 2021 were randomly divided into 46 cases each in group A and group B. Group A was given basic anti-infective drug treatment, and group B was treated with the Shuangdong capsule, and the duration of treatment in both groups was 7 days. 40 healthy individuals were also selected as the control group, and there was no statistically significant difference in the comparison of the general conditions of the three groups ($P > 0.05$). See Table 1.

2.3. Treatment Methods. In the observation group, patients in group A received basic treatment after admission, using the appropriate antibiotics (quinolones, penicillins, cephalosporins, etc.) for no more than 7 days of antibiotic treatment, and those whose symptoms and signs

Table 1: Comparison of clinical data of the three groups (n, Mean ± SD).

Indicator		Control group ($n = 40$)	Group A ($n = 46$)	Group B ($n = 46$)	$F/t/\chi^2$ value	P Value
Gender (%)	Male	6 (15.00)	7 (15.22)	6 (13.04)	0.105	0.949
	Female	34 (85.00)	39 (84.78)	40 (86.96)		
Age (years)		45.26 ± 4.28	46.36 ± 4.13	47.06 ± 3.89	2.087	0.129
Height (m)		1.62 ± 0.08	1.61 ± 0.12	1.62 ± 0.10	0.143	0.867
Body weight (kg)		60.40 ± 6.25	59.80 ± 7.10	60.64 ± 7.23	0.180	0.836
Duration of illness (h)		—	36.38 ± 10.12	37.24 ± 9.87	0.269	0.789
Smoking (%)		8 (20.00)	10 (21.74)	9 (19.57)	0.074	0.964
Drinking alcohol (%)		7 (17.50)	8 (17.39)	6 (13.04)	0.434	0.805
First attack (%)		—	25 (54.35)	22 (47.83)	0.392	0.532
Relapse (%)		—	21 (45.65)	24 (52.17)		

disappeared and whose urine leukocytes and bacterial culture were negative during the medication period; although the course of treatment was not enough for 7 days, they could stop the medication at any time and record the time to attain healing. The end follow-up was performed on day 8 to determine whether there was a relapse (relapse criteria: those with symptoms and signs recurring, along with positive urine leukocytes, or positive urine bacterial culture). Patients in group B were given Shuangdong capsules (produced by Guizhou Long-range Pharmaceutical Co., Ltd., 0.3 g/capsule), 0.9 g/dose, 3 times/day, for 7 days on top of group A.

2.4. Observation Indexes

2.4.1. Efficacy Evaluation. The efficacy evaluation was performed in 3 aspects: symptoms and signs, routine urine examination, and bacteriological examination. Cure: subjects' symptoms and signs reached the level of cure, urine routine and white blood cells returned to normal, and there was a negative bacterial culture at the return visit on the 8th day after the end of 7 days of drug administration. Improvement: clinical symptoms and signs were significantly improved, and 2 consecutive bacteriological examinations at different time periods converged to the normal value range, but the relevant laboratory examination indexes were partially and completely restored. Ineffective: subjects were clinically ineffective (no significant relief, persistent signs and symptoms of infection, or recurrence of signs and symptoms at or before the day 8 visit after 7 days of dosing), not cleared of bacteria, elevated urine leukocytes, or all three at the end of the 7-day visit. If one of the subject's clinical signs and symptoms and bacteriological findings were invalid and the other was missing, it was determined to be ineffective.

2.4.2. Serum CRP, PCT Assay, and Urine Biochemical Indexes. The PCT level was measured before treatment by using the Ultimate semi-automatic quantitative analyzer (Shenzhen Mindray Biomedical Electronics Co., Ltd.) with the microimmunofluorescence method, and the CRP level was measured before treatment by using the automatic specific protein analyzer (Beckman Array, USA) with the rate scattering turbidimetric method, and each index was measured by the same method after treatment. The urine biochemical indicators included urine leukocyte count (LEU) and urine bacterial count (BACT), and the specimens were all midstream urine.

2.5. Statistical Methods. SPSS22.0 statistical software was applied. The mean, standard deviation, and percentage were used for statistical description; one-way variance (F), t test, or χ^2 test were used to compare the serum CRP, PCT, and urine biochemical indexes and the western clinical efficacy of patients before and after treatment. The receiver operating characteristic curve (ROC) and the area under the curve (AUC) were used to judge the diagnostic efficacy of PCT and CRP. $P < 0.05$ was considered a statistically significant difference.

3. Results

3.1. Comparison of Clinical Data of the Three Groups. The clinical data of the three groups were compared, and the results showed that the comparison of gender, age, height, weight, proportion of smoking, and the proportion of alcohol consumption in the control group, group A, and group B indicated no statistically significant differences ($P > 0.05$); no statistically significant differences were found between group A and group B in terms of disease duration, proportion of initial disease onset, and the proportion of recurrence ($P > 0.05$). Table 1.

3.2. Comparison of Serum and Urine Indexes before Treatment in the Three Groups. The data of serum indexes and urinary biochemical indexes of diseased patients and healthy individuals were compared, and the results showed that the serum CRP, PCT level, number of urinary LEU, and number of urinary BACT in the healthy control group were significantly lower than those in group A and group B ($P < 0.05$); the differences between serum CRP, PCT level, number of urinary LEU, and number of urinary BACT before treatment in group A and group B were not statistically significant ($P > 0.05$). See Figure 1.

3.3. Clinical Efficacy of Group A and Group B. The proportion of cured, improved, and invalid patients in group A was 34.78%, 43.48%, and 21.74%, respectively, and the total effective rate was 78.26%. The proportion of cured, improved, and invalid patients in group B was 65.55%, 43.48%, and 21.74%, respectively, and the total effective rate was

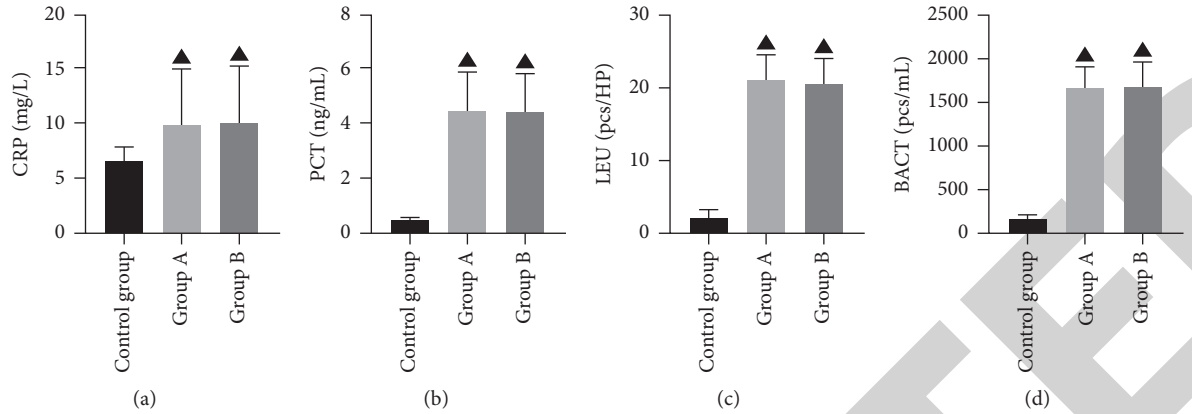

Figure 1: Comparison of serum and urine indexes before treatment in the three groups. Contents in (a–d) are CRP, PCT, LEU, and BACT, respectively. ▲$P < 0.05$ compared with the control group.

Table 2: Clinical efficacy of group A and group B (n, %).

Group/Effectiveness	Group a ($n = 46$)	Group B ($n = 46$)	χ^2 value	P Value
Cure	16 (34.78)	30 (65.55)	—	—
Improvement	20 (43.48)	15 (32.61)	—	—
Ineffective	10 (21.74)	1 (2.17)	—	—
Total effective rate	36 (78.26)	45 (97.83)	8.364	0.004

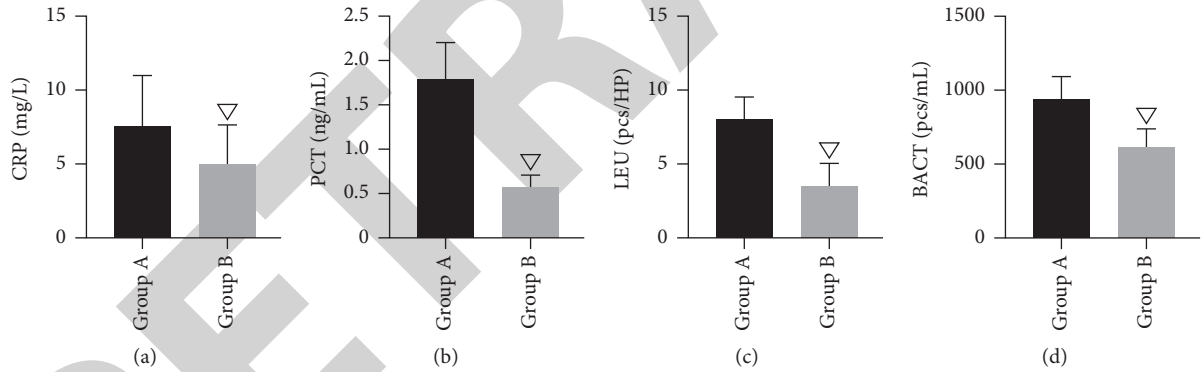

Figure 2: Comparison of serum and urine indexes between group A and group B after treatment. Contents in (a–d) are CRP, PCT, LEU, and BACT, respectively. ▽$P < 0.05$ compared with group A.

97.83%. A comparison of the total effective rate between group A and group B showed that group B was significantly higher than group A ($P < 0.05$). See Table 2.

3.4. Comparison of Serum and Urine Indexes between Group A and Group B after Treatment. Comparing the data of serum indexes and urinary biochemical indexes between group A and group B after treatment, it could be found that the two treatment regimens had different degrees of influence on the levels of serum CRP and PCT, the number of urinary LEU, and the number of urinary BACT in patients with acute simple lower urinary tract infection, and all of them could reduce the levels of serum inflammatory factors and urinary biochemical indexes, but the reduction was more significant in group B with the combined application of the Shuangdong capsule ($P < 0.05$). Figure 2.

3.5. Analysis of the Value of Serum CRP and PCT Levels for the Diagnosis of Acute Simple Lower Urinary Tract Infection. The AUCs of serum CRP and PCT levels for the diagnosis of acute simple lower urinary tract infection were 0.747 (95% CI 0.633–0.860) and 0.926 (95% 0.870–0.982), respectively. Among them, PCT had the highest diagnostic value for acute simple lower urinary tract infection, with a sensitivity of 80.40% and specificity of 95.00% when the optimal cutoff value was 0.754. See Table 3 and Figure 3.

Table 3: Analysis of the value of serum CRP and PCT levels for the diagnosis of acute simple lower urinary tract infection.

Indicator	AUC	95% CI	Best cutoff value	Sensitivity (%)	Specificity (%)
CRP	0.747	0.633~0.860	0.584	60.90	97.50
PCT	0.926	0.870~0.982	0.754	80.40	95.00

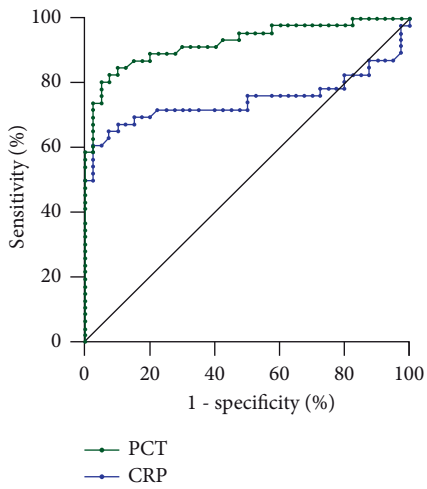

Figure 3: ROC curve of the diagnostic value of serum CRP and PCT levels for acute simple lower urinary tract infection.

4. Discussion

ALUTI is a common and frequent clinical disease with a high incidence, and patients often present with symptoms such as urinary frequency, urinary urgency, and painful urination; in severe cases, symptoms of systemic infection may occur, requiring reasonable antimicrobial therapy with antibacterial drugs [16]. Clinically, different antibacterial drugs are often taken for the treatment of different pathogenic bacteria, and among the treatments for UTI, antibiotics are definitely effective, but before the results of urine bacterial culture drug sensitivity are obtained, drugs can only be used based on clinical experience, which sometimes delays the treatment and prolongs the treatment time [17, 18]. Inflammation caused by LUTI stimulates local leukocytes or platelets to trigger coagulation, leading to the production of vasoactive chemokines and cytokines as well as triggering an increase in the synthesis of serum CRP, making serum CRP a useful indicator for detecting infection [19]. Serum CRP levels can play a positive role in the diagnosis and prognosis of infectious diseases, which is consistent with the results of this study.

In recent years, many herbs that clear heat and detoxify toxins and dampness have been shown to have inhibitory effects on pathogenic microorganisms and can inhibit or destroy the formation of toxic substances. Acute simple lower urinary tract infection belongs to the category of "hot lung" in ancestral medicine, and its pathogenesis is the accumulation of dampness and heat in the lower jiao and unfavorable qi-transformation in the kidney and bladder. While the Shuangdong capsule is composed of *Gardenia jasminoides*, *Astragalus membranaceus*, *Oldenlandia diffusa*, lilyturf root, bitter wood, and cluster mallow fruit, which has the effect of clearing heat and clearing lung, benefiting qi and nourishing yin, and can better relieve symptoms such as urinary frequency, urinary urgency, burning and stinging pain in the urethra, and yellow urine [20] Therefore, in this study, some patients were treated with the Shuangdong capsule in addition to conventional antibacterial therapy. The results showed that the clinical efficacy and improvement of urinary biochemical indexes of patients in group B treated with the Shuangdong capsule were significantly better than those in group A treated with conventional antibacterial therapy. Comparing patients with acute simple lower urinary tract infection with healthy physical examiners, we were able to find that serum CRP and PCT levels increased in patients after acute simple lower urinary tract infection, while serum CRP and PCT levels responded differently to the effects of different treatment regimens, and under the effect of therapeutic drugs, serum CRP and PCT levels in both group A and group B decreased compared with those before treatment, and the decrease in group B was significantly greater than that in group A. Analyzing the reasons for this, the Shuangdong capsule has the function of clearing heat and promoting lymphatic flow, benefiting qi and nourishing yin, and it can be used in combination with antibacterial drugs to treat both the symptoms and signs of patients, as well as potentially enhance the immunity of the body, which can obtain better efficacy and improve the rational use of drugs [21, 22].

ALUTI is a common clinical inflammatory disease that requires timely and effective treatment, and the prerequisite for such treatment is an accurate diagnosis. The current "gold standard" for clinical diagnosis of ALUTI is a urine midstream culture, which takes a long time and is influenced by the sample taken from the patient, so other tests are needed. The biomarker procalcitonin (PCT) has been shown to be a good diagnostic indicator for predicting bacterial infections such as sepsis and pneumonia, thereby reducing unnecessary antibiotic exposure [23, 24]. PCT provides additional benefits in guiding antibiotic therapy in UTI patients compared to other biomarkers. CRP is an acute timing reactive protein secreted by liver cells and is one of the indicators for early diagnosis of inflammation [25]. When the body is affected by a bacterial or fungal infection or tissue damage, its level can be rapidly increased and can be rapidly decreased when the disease recovers. In this study, CRP and PCT had a certain diagnostic value for acute simple lower urinary tract infection, and the levels of PCT and CRP in serum decreased with the gradual improvement of the disease in both groups, suggesting that the levels of PCT and CRP in serum can be used as an auxiliary parameter to judge the efficacy and prognosis of ALUTI.

In conclusion, the Shuangdong capsule combined with conventional antibacterial drugs for the treatment of acute simple lower urinary tract infection has better clinical

efficacy, and different treatment regimens for patients with different efficacy values also caused different changes in CRP and PCT levels. These changes can be more accurate and sensitive to determine the patient's condition, that is, CRP and PCT levels can be used as indicators for the diagnosis and efficacy of acute simple lower urinary tract infection.

Data Availability

The data involved in this trial were obtained from the authors through reasonable requests to the corresponding author.

Ethical Approval

This study was approved by the ethics committee of our hospital (E2020086).

Conflicts of Interest

None.

Acknowledgments

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Retraction

Retracted: Application of Doctor-Nurse-Patient Co-Decision-Making Nursing Intervention Based on Evidence-Based Problems in the Rehabilitation of Acute Ankle Lateral Collateral Ligament Injury

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] N. Wei, Y. Du, and S. Chen, "Application of Doctor-Nurse-Patient Co-Decision-Making Nursing Intervention Based on Evidence-Based Problems in the Rehabilitation of Acute Ankle Lateral Collateral Ligament Injury," *Emergency Medicine International*, vol. 2022, Article ID 2363230, 6 pages, 2022.

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Research Article

Application of Doctor-Nurse-Patient Co-Decision-Making Nursing Intervention Based on Evidence-Based Problems in the Rehabilitation of Acute Ankle Lateral Collateral Ligament Injury

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Objective. The aim of this study is to study the application effects of doctor-nurse-patient co-decision-making nursing intervention based on evidence-based problems in the rehabilitation of acute ankle lateral collateral ligament injury. *Methods*. 150 patients with acute ankle lateral collateral ligament injury who were treated in the hospital between December 2020 and December 2021 were selected, and they were divided into the routine group and the evidence-based group by the random number table method, with 75 cases in each group. The patients in the routine group received routine nursing intervention, while the patients in the evidence-based group adopted doctor-nurse-patient co-decision-making nursing intervention based on evidence-based problems, and both groups were intervened for 1 month. The rehabilitation time (swelling subsidence time, fixation removal time, and normal walking time), ankle active range of motion (dorsiflexion and plantar flexion), ankle function (ankle Kofoed score) before and after intervention, and the total incidence rate of complications (tendon injury, ankylosis, and traumatic arthritis) within 1 month of intervention were compared between the two groups of patients. *Results*. The swelling subsidence time, fixed removal time, and normal walking time in the evidence-based group were significantly shorter than those in the routine group ($P < 0.05$). After 1 month of intervention, the ranges of motion of dorsiflexion and plantar flexion and ankle Kofoed scores of the two groups were significantly higher than those before intervention, and the abovementioned indicators in the evidence-based group were significantly higher than those in the routine group ($P < 0.05$). Within 1 month of intervention, the total incidence rate of tendon injury, ankylosis, and traumatic arthritis was significantly lower in the evidence-based group than that in the routine group ($P < 0.05$). *Conclusion*. Nursing intervention of doctor-nurse-patient co-decision-making based on evidence-based problems in patients with acute ankle lateral collateral ligament injury can promote postoperative rehabilitation and restore the ankle function of patients.

1. Introduction

Ankle lateral collateral ligament injury is one of the common soft tissue injuries, usually caused by sudden varus force of acute sprain, and the degree of lateral collateral ligament injury is related to the magnitude of varus force [1]. Improper rehabilitation of acute lateral collateral ligament injury of the ankle joint will lead to ligament relaxation, which will affect the patient's subsequent activities such as walking, running, and squatting. Routine nursing intervention in the rehabilitation of patients with acute lateral collateral ligament injury of the ankle joint is due to the lack of individualized nursing intervention for patients with different rehabilitation conditions and the difficulty in setting the rehabilitation training plan to meet the needs of the patients, resulting in an unsatisfactory rehabilitation effect, which will prolong the acute lateral ankle joint ligament injury. However, the duration of ligament injury is closely related to the prognosis of patients. When the injury time is too long, patients often have poor prognosis, which easily leads to an irreversible functional damage of joints [2]. Evidence-based problem-based nursing intervention for

doctors, nurses, and patients to accompany decision-making is to implement individualized rehabilitation interventions based on the clinical condition of patients, combining the ideas and suggestions of doctors, nurses, and patients, which can fit the clinical situation of patients and meet the needs of patients as much as possible. At present, evidence-based medicine has become the mainstream of development in the medical field, and its application in nursing has gradually attracted attention. In many diseases, the nursing staff are advised to carefully, clearly, and wisely combine scientific research conclusions with clinical experience and patients' wishes to obtain evidence and use it as the basis for clinical nursing decision-making in the process of planning their nursing activities. Many reports have shown that adopting such measures can effectively promote patients' rehabilitation and reduce the adverse reactions and complications during hospitalization, but it is rarely used in the rehabilitation of patients with acute lateral collateral ligament injury of the ankle joint [3]. This study analyzes the application effect of the nursing intervention based on evidence-based problem-based doctor-nurse-patient accompaniment decision-making in the rehabilitation of acute lateral collateral ligament injury of the ankle joint.

2. Materials and Methods

2.1. General Information. A total of 150 patients with acute lateral collateral ligament injury of the ankle joint who were treated in our hospital from December 2020 to December 2021 were selected and divided into the routine group and the evidence-based group by the random number table method, with 75 cases in each group.

2.1.1. Inclusion Criteria. The inclusion criteria were as follows: diagnosed with acute lateral collateral ligament injury of the ankle [4]; aged 15 to 60 years old; lateral ligament injury was grade I or II; all patients had unilateral injuries; and the patients and their guardians signed the informed consent.

2.1.2. Exclusion Criteria. The exclusion criteria were as follows: chronic and repeated ankle sprain; lateral ligament injury ≥ grade III; ankle dysfunction caused by other injuries; history of ankle surgery; communication impairment; bilateral ankle lateral collateral ligament injury; disturbance of consciousness or mental illness; and no tumors or major organ dysfunction.

In the routine group, gender (male/female): 38/37 cases; aged 15–59 years, mean 36.76 ± 8.90 years old; affected side: 36 cases on the left side and 39 cases on the right side; the degree of ligament injury: 31 cases with grade I, 44 cases with II; educational level: 15 cases of primary school and below, 37 cases of junior high school, technical secondary school, and high school, and 23 cases of college and above.

In the evidence-based group, gender (male/female): 39/36 cases; age 17–60 years old, with an average of 37.17 ± 10.53 years old; affected side: 35 cases on the left side and 40 cases on the right side; the degree of ligament injury: 33 cases with grade I, 42 cases with II; educational level: 16 cases of primary school and below, 35 cases of junior high school, technical secondary school, and high school, and 24 cases of college and above.

There was no significant difference in general data between the two groups ($P > 0.05$), which was comparable. This study conforms to the principles of the Declaration of Helsinki.

2.2. Methods. The patients in the routine group with acute lateral collateral ligament injury of the ankle joint were given routine rehabilitation nursing intervention, such as health knowledge education before rehabilitation training, affected area nursing, psychological nursing, dietary guidance, complication prevention, and ankle function training guidance.

The patients in the evidence-based group implemented the nursing intervention based on the evidence-based problem of doctor-nurse-patient co-decision-making.

2.2.1. Health Education. Nurses use questionnaires, questions, and answers, etc., to understand the patient's knowledge about the rehabilitation of acute lateral collateral ligament injury before starting rehabilitation training for patients with acute lateral collateral ligament injury of the ankle joint. For example, for patients who do not understand the purpose and method of rehabilitation of acute lateral collateral ligament injury of the ankle joint, nurses can use video explanations, simulation training, etc., to show patients the content of rehabilitation training and how rehabilitation training helps patients restore the active range of motion and ankle function of the ankle joint. We take the patient's rehabilitation training plan as an example, explain the rehabilitation training objectives of each stage, and emphasize to the patient that the training plan is formulated by the medical staff after a detailed assessment of the patient's condition and physical condition and will fully fit the patient's clinical situation.

2.2.2. Psychological Nursing. Nursing staff increase the frequency of communication with patients, deeply understand the psychological conditions and needs of patients with acute lateral collateral ligament injury, and provide targeted psychological counseling for patients with different psychological states. For patients with acute lateral collateral ligament injuries who have a negative attitude towards the effect of rehabilitation training and are worried that the ankle joint function cannot be restored, the nursing staff can take a case that has recovered well in the past and is similar to the patient's condition as an example and inform the patient that careful cooperation with rehabilitation training can achieve recovery effects.

2.2.3. Rehabilitation Training Plan Formulation. Before formulating a rehabilitation training plan, medical staff need to give a comprehensive and detailed introduction to the patient with acute lateral collateral ligament injury of the

ankle joint to explain their condition and the possible impact of the injury of the lateral collateral ligament of the ankle joint on their ankle joint activities. This should be combined with targeted health education to help patients understand and master the knowledge of acute lateral collateral ligament injury and rehabilitation of the ankle joint. Then, the medical staff formulate a general rehabilitation training plan and explain to the patient the purpose and adjustable range of each stage in the plan, emphasizing that the plan is to meet the patient's requirements as much as possible and encourage the patient to actively provide opinions to strive for the best rehabilitation results. For some elderly patients who find it difficult to fully understand the content of rehabilitation training, nurses can use video and other methods to introduce the purpose and training parts of each rehabilitation training action, and appropriately guide patients to practice different rehabilitation training methods, and then ask patients their own feelings. The best training method is to work out a rehabilitation training plan with the patient.

2.2.4. Rehabilitation Training Implementation. During the implementation of rehabilitation according to the rehabilitation training plan jointly formulated by doctors, nurses, and patients, nurses can ask patients about the training experience of the week in the early stage and whether they need to increase the training intensity or reduce the training intensity. The staff evaluates the rationality of their opinions, and reasonable opinions can be included. For some unreasonable opinions, the medical staff need to ask the patients the reasons for their opinions and euphemistically point out that their opinions are not conducive to the rehabilitation of the ankle joint of patients with acute lateral collateral ligament injury. During the implementation of the rehabilitation training plan, the medical staff try their best to meet the needs of patients and adjust the rehabilitation training plan in a targeted manner when conditions permit.

2.2.5. Complication Prevention. Nursing staff inform patients of possible tendon injuries, ankle stiffness, traumatic arthritis, and other complications and related influencing factors through health education before rehabilitation training. During rehabilitation training, medical staff guide patients to avoid mistakes, training methods, correcting their behavior, and instructing patients to report to the medical staff in time when they feel uncomfortable with the training intensity, adjusting the training plan, and avoiding excessive training intensity and damage to the tendon. Both groups were treated for 1 month.

2.3. Observation Indicators. The observation indicators were as follows: (1) Comparison of rehabilitation time: we record and compare the time of swelling subsidence, immobilization removal, and normal walking time between the two groups of patients. (2) Comparison of the active range of motion of the ankle joint: we measure and compare the active range of motion of the ankle joint in dorsiflexion and plantar flexion before and after the intervention in the two groups [5]. Measurement of dorsiflexion: the patient remains in a sitting position, bends the knee to 90°, the ankle joint is placed in a neutral position, the protractor is placed 2.5 cm from the midpoint line of the ankle, the patient's toes are raised, and the dorsum of the foot is approaching the front of the calf to form the ankle joint, we measure the dorsiflexion angle, the normal range is $0 \sim 25°$. Determination of plantar flexion: The patient's posture is the same as the test dorsiflexion, the toes are drooping, the dorsum of the foot is far from the front of the calf, and the ankle joint is measured. The higher the range of dorsiflexion and plantar flexion, the higher the active range of motion of the ankle joint. (3) Comparison of ankle joint function: The ankle joint Kofoed score [6] was used to measure and compare the ankle joint function of the two groups of patients before and after intervention, including pain, function, and range of motion. 75< the score ≤85 was considered as good, < the score ≤75 was considered as passing, and the score ≤70 was considered as poor. The higher the score, the better the ankle function of the patient. (4) The total incidence of complications: The total incidence of tendon injury, ankle stiffness, and traumatic arthritis in the two groups of patients within 1 month of intervention was recorded and compared.

2.4. Statistical Methods. SPSS 22.0 was used for analysis, % was count data, χ^2 test was performed, and rank data were subjected to rank sum test; $\overline{x} \pm s$ was measured data, t test was performed, and $P < 0.05$ was considered a significant difference.

3. Results

3.1. Comparison of Recovery Time. In the evidence-based group, the swelling subsided, the fixation was removed, and the normal walking time was significantly shorter than those in the routine group ($P < 0.05$) as shown in Table 1 and Figure 1.

3.2. Comparison of Active Range of Motion of the Ankle Joint. After 1 month of intervention, the dorsiflexion and plantar flexion activities of the two groups were significantly higher than those before the intervention, and the values of the evidence-based group were significantly higher than those of the routine group ($P < 0.05$) as shown in Table 2 and Figure 2.

3.3. Comparison of the Ankle Joint Function. One month after the intervention, the ankle Kofoed scores of the two groups were significantly higher than those before the intervention, and the values of the evidence-based group were significantly higher than those of the routine group ($P < 0.05$) as shown in Table 3.

3.4. Comparison of the Total Incidence of Complications. Within 1 month of intervention, the total incidence of tendon injury, ankle stiffness, and traumatic arthritis in the

Table 1: Comparison of recovery time between the two groups of patients ($n = 75$, d, $\overline{x} \pm s$).

Group	Swelling subsided	Fixation removal	Normal walking
Evidence-based group ($n = 75$)	8.16 ± 1.74	17.09 ± 4.51	41.69 ± 5.37
Regular group ($n = 75$)	9.15 ± 2.11	18.88 ± 4.51	44.29 ± 5.90
T	3.124	2.424	2.822
P	0.002	0.017	0.005

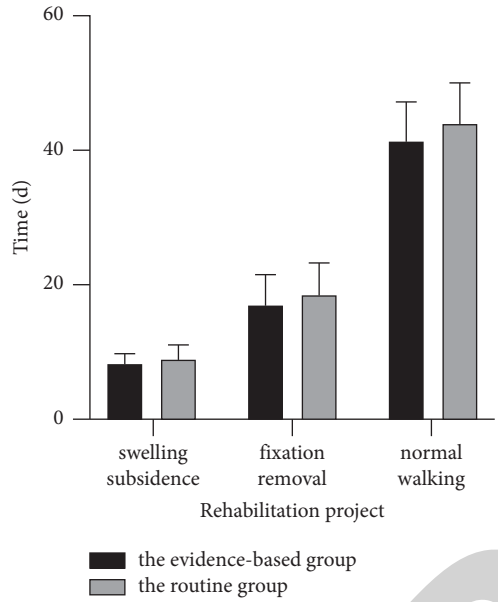

Figure 1: Rehabilitation time of the two groups of patients.

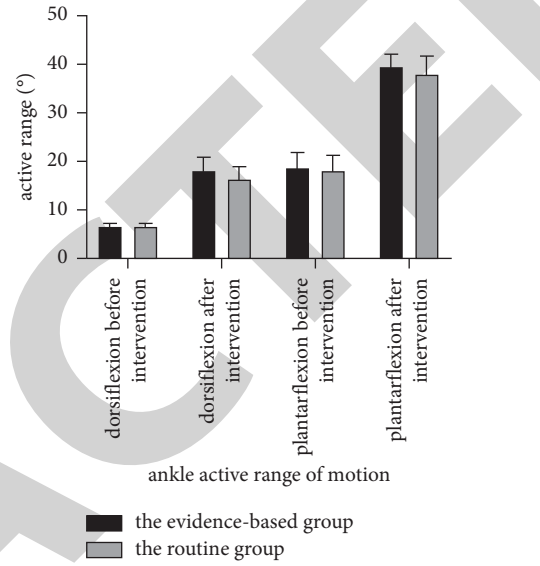

Figure 2: Active range of motion of ankle joint before and after intervention in the two groups of patients.

Table 2: Comparison of active ankle range of motion before and after intervention in the two groups of patients ($n = 75$, °, $\overline{x} \pm s$).

Group	Time	Dorsiflexion	Plantar flexion
Evidence-based group	Before intervention	6.25 ± 1.00	18.65 ± 3.24
	After intervention	17.97 ± 3.07^a	39.27 ± 2.97^a
Regular group	Before intervention	6.48 ± 0.96	18.13 ± 3.09
	After intervention	16.33 ± 2.69^a	37.89 ± 3.76^a
T after intervention		3.480	2.677
P After intervention		0.001	0.008

Compared with the group of before intervention, $^aP < 0.05$.

evidence-based group was significantly lower than that in the conventional group ($P < 0.05$) as shown in Table 4.

4. Discussion

Acute lateral collateral ligament injury of the ankle joint is mostly caused by a sports sprain, which affects the function and stability of the patient's ankle joint and can seriously lead to repeated ankle joint injury. Rehabilitation training is very important for patients with an acute lateral collateral ligament injury of the ankle joint, which directly affects the recovery of the patient's ankle joint [7]. Therefore, it is necessary to study the appropriate nursing intervention mode for the rehabilitation of patients with acute lateral collateral ligament injury in order to promote their ankle recovery.

After conservative treatment, patients with acute lateral collateral ligament injury still need to implement rehabilitation training to restore the balance of their ankle muscles. However, conventional rehabilitation training interventions are usually implemented by medical staff after making a rehabilitation training plan. Most patients are passively trained and lack understanding of rehabilitation training conditions and activities, resulting in insufficient participation and enthusiasm for rehabilitation training, which affects the effect of rehabilitation training and increases the time required for their ankle joint to recover [8]. Evidence-based problem-based nursing intervention for doctors, nurses, and patients to accompany decision-making is a nursing intervention based on the patient's condition requirements to achieve the ideal rehabilitation effect [9]. In the results of this study, the swelling subsided, the fixation was removed, and the normal walking time of the patients in the evidence-based group was significantly shorter than those in the conventional group. After 1 month of intervention, the dorsiflexion, plantar flexion range of motion, and ankle Kofoed scores of the two groups were significantly higher than those before the intervention, and the scores of the evidence-based group were significantly higher than

Table 3: Comparison of ankle joint function before and after intervention in the two groups ($n = 75$, cases, %).

Group	Time	First rate	Well	Qualified	Poor
Evidence-based group	Before intervention	0 (0.00)	3 (4.00)	21 (28.00)	51 (68.00)
	After intervention	20 (26.67)[a]	34 (45.33)[a]	18 (24.00)[a]	3 (4.00)[a]
Routine group	Before intervention	0 (0.00)	5 (6.67)	23 (30.67)	47 (62.66)
	After intervention	11 (14.67)[a]	25 (33.33)[a]	31 (41.33)[a]	8 (10.67)[a]
Z after intervention			3.033		
P after intervention			0.002		

Compared with the group of before intervention, [a]$P < 0.05$.

Table 4: Comparison of the total incidence of complications between the two groups of patients during the intervention period ($n = 75$, cases, %).

Group	Tendon injury	Ankle stiffness	Traumatic arthritis	Total incidence
Evidence-based group	3 (4.00)	2 (2.67)	1 (1.33)	6 (8.00)
Routine group	9 (12.00)	4 (5.33)	3 (4.00)	16 (21.33)
χ^2	3.261	0.174	0.257	5.327
P	0.071	0.677	0.612	0.021

those of the routine group, suggesting that the joint decision-making nursing intervention of doctors, nurses, and patients based on evidence-based problems has obviously promoted the recovery degree of the ankle joint. One month after the operation is the critical period for the functional recovery of the ankle joint, and the progress of functional recovery in this period is very important for the patients in the future [10, 11]. The reason is that the nursing intervention based on evidence-based problem-based decision-making with doctors, nurses, and patients first analyzes the factors that affect the recovery time and effect of patients with acute lateral collateral ligament injury of the ankle joint and then implements the nursing intervention from the aspects of health knowledge, psychology, rehabilitation training plan, complications, etc. Nursing intervention can comprehensively reduce the risk of risk factors affecting the rehabilitation of patients with acute collateral ligament injury, mainly because when formulating and implementing the rehabilitation training plan, medical staff first conducted a questionnaire survey on patients with acute ankle collateral ligament injury to understand their lack of health knowledge and then implemented targeted health education to achieve the effect of filling the examination gap [12, 13]. Before formulating the rehabilitation training plan, we fully explain the purpose, meaning, and method of the rehabilitation training to the patient; formulate a preliminary rehabilitation training plan according to the clinical condition of the patient; introduce the reasons for the training to the patient in detail; encourage the patient to express their own ideas and propose plan revision suggestions; and jointly formulate a rehabilitation training plan with patients, which can improve the patient's participation and subjective initiative, so that the rehabilitation training plan can be carried out smoothly, ensure its application effect, and promote the recovery of the patient's ankle joint [14, 15].

In the rehabilitation process of patients with acute collateral ligament injury of the ankle joint, some patients suffer from complications such as improper rehabilitation training intensity, ankle stiffness, and traumatic arthritis, which affect the ankle joint recovery effect and daily living function [16]. In routine rehabilitation training, because the training plan is formulated by medical staff and there is a lack of communication with patients, it is easy to cause the rehabilitation training plan to fail to meet the needs of patients and there is an insufficient participation of patients, which affects their enthusiasm and cooperation and increases the risk of complications. In the results of this study, within 1 month of intervention, the total incidence of tendon injury, ankle stiffness, and traumatic arthritis in the evidence-based group were significantly lower than that in the conventional group, indicating that the evidence-based problem-based medical-nursing-patient accompanying decision-making nursing intervention for acute rehabilitation of patients with lateral collateral ligament injuries of the ankle can reduce the risk of complications. The reason is that the nursing intervention model based on evidence-based problems can be patient-centered, fully adapt to the clinical situation of patients, and implement targeted nursing interventions from health knowledge, psychology, complications, etc., and rehabilitation training plans. We ask patients for their thoughts and opinions when formulating to improve patient participation, thus increasing patients' enthusiasm and cooperation for rehabilitation training. This can effectively avoid the occurrence of improper training intensity in the process of rehabilitation training and reduce the risk of complications such as tendon injury, ankle stiffness, and traumatic arthritis [17, 18].

In conclusion, nursing intervention based on evidence-based problem-based decision-making with nursing intervention for patients with acute lateral collateral ligament injury of the ankle joint can reduce the risk of complications, shorten the rehabilitation time, and help restore the active range of motion of the ankle joint and ankle joint function. It can be used as one of the clinical nursing intervention programs.

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Retraction

Retracted: A Study on the Impact of Perioperative Pain Care Management on Pain, Comfort, and Defecation of Patients in Anorectal Surgery

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] Y. Liao, J. Jiang, J. Luo, W. Du, W. Zhao, and Y. Zhang, "A Study on the Impact of Perioperative Pain Care Management on Pain, Comfort, and Defecation of Patients in Anorectal Surgery," *Emergency Medicine International*, vol. 2022, Article ID 9885540, 6 pages, 2022.

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Research Article

A Study on the Impact of Perioperative Pain Care Management on Pain, Comfort, and Defecation of Patients in Anorectal Surgery

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Purpose. The aim of the study is to explore the impact of perioperative pain care management on patients' pain, comfort, and defecation in anorectal surgery. *Methods*. From January to December 2021, 126 patients who underwent anorectal surgery in our department were selected for the study and were randomly divided into a study group and a control group of 63 patients each after consent was obtained from the patients. The control group was given the usual care protocol and the study group was given the perioperative pain care management on top of the usual care. The two groups of patients were compared in terms of postoperative anal pain rating, comfort score, time to first bowel movement and time spent in bowel movement, the Pittsburgh sleep quality index (PSQI) scores at night, related complications, and satisfaction with care. *Results*. ① Postoperative anal pain was less severe in the study group than in the control group ($P < 0.05$). ② Postoperative comfort scores were higher in the study group than in the control group ($P < 0.05$). ③ The time to first bowel movement and its duration after surgery were shorter in the study group than in the control group ($P < 0.05$). ④ Patients in the study group had lower postoperative night-time PSQI scores than the control group ($P < 0.05$). ⑤ Patients in the study group had a lower rate of postoperative complications than the control group ($P < 0.05$). ⑥ Patients in the study group had higher postoperative care satisfaction scores than the control group ($P < 0.05$). *Conclusion*. The application of perioperative pain care management to patients undergoing anorectal surgery plays an important role in reducing anal pain, improving treatment comfort, and relieving difficult defecation symptoms, with significant improvement in postoperative sleep quality and reduction in complications. It is worthy of clinical reference and promotion.

1. Introduction

Department of Proctology is one of the most important departments in the hospital. The study of diseases that occur in the organs at the end of digestion, i.e., between 8 and 12 cm from the anal opening to the rectum, treats constipation, anal fistula, haemorrhoids, perianal abscesses, anal fissures, and rectal cancer, with a tendency to be located in the anus and rectum [1, 2]. With advances in medical care, many patients with anal diseases can be treated surgically with good results. However, it is inevitable that patients will experience a certain amount of pain, difficulty in defecation, and urinary retention during their postoperative recovery. In particular, the perianal skin is delicate and has a rich distribution of nerves and blood vessels, making the area more sensitive to pain, which can have a serious impact on wound recovery and even on the recovery of anal function if not treated properly [3, 4]. In response, some scholars [5, 6] have shifted the focus of their research towards the protocol of postoperative care in anal surgery, trying to find scientific and feasible nursing measures to improve patients' symptoms of anal pain and defecation difficulties and to promote their prognosis in a comprehensive manner. It is thus clear that postoperative anal care measures are essential for a better recovery outcome. Pain care management is one of the widely used clinical models in recent years. With the goal of alleviating patients' pain, we provide services to patients in many aspects, with good results, which are recognized and praised by patients and their families." [7, 8]. This paper discusses the specific measures and application value of

perioperative pain care management in 126 patients treated with anorectal surgery in our anorectal surgery department from January to December 2021. The specific results are reported below.

2. Materials and Methods

2.1. General Data. A total of 126 patients who underwent anal surgery in our department from January to December 2021 were selected for the study. The inclusion criteria were as follows: ① those who met the diagnostic criteria for relevant anorectal diseases in anorectal pathology [9] and the indications for surgical procedures in practical anorectal surgery [10]; ② those who are 18–70 years old; ③ those with complete clinical information; and ④ those who voluntarily signed the informed consent form. The exclusion criteria were as follows: ① those with combined mental illness, impaired consciousness, speech impairment, or hearing impairment; ② those with organic pathology, cardiopulmonary, hepatic or renal insufficiency, coagulation disorders, or malignant tumours; ③ those who were transferred to another hospital midway, changed their surgical procedure, or lost contact during the follow-up period; and ④ those with inadequate treatment compliance. The patients were randomly divided into a study group and a control group of 63 cases each after consent was sought. The baseline data for both groups are shown in Table 1 and they were not significantly different and were comparable ($P > 0.05$).

2.2. Care Methods. Both the groups performed the relevant anal surgery with reference to the relevant protocols in practical anorectal surgery [10]. The control group used the conventional perioperative care protocol. Patients with a perianal disease had certain worries due to the specific location of the disease, so nursing staff were needed to treat the patients with enthusiasm and patience, explain relevant disease knowledge to them, help them to dispel their worries, and build up their confidence in treatment. The room was kept tidy, quiet, and comfortable with appropriate temperature and humidity. The patients were asked to wear loose cotton clothing and trousers and to change them daily. The patients were instructed to use soft toilet paper after defecation to avoid rubbing the wound and increasing the pain. The patients were instructed and provided help to prepare for the procedure, including skin preparation, a light diet, and oral polyethylene glycol electrolyte powder on the night before the procedure. Routine postoperative care measures such as timely administration of the medication, monitoring of signs, communication of medical advice, and discharge instructions were provided. The study group was given perioperative pain care management on top of the abovementioned care. The main contents are as follows specifically:

2.2.1. Formation of a Pain Care Management Team. The pain care management team was formed by the head of our anorectal department, consisting of experienced attending physicians and head nurses. The members were responsible for analysing the patient's condition, formulating a pain prevention and management plan in conjunction with the clinical reality, updating and improving the plan to ensure its effective implementation and to improve the quality of pain management.

2.2.2. Organization of Training Activities for Members of the Pain Care Management Team. The training focused on the rational use of analgesic drugs, various modes of analgesic methods, and several measures to prevent wound infection. The training of nursing staff was regularly evaluated and the results were linked to their salaries, thus increasing their motivation to work.

2.2.3. Specific Implementation of Pain Care. ① Dietary interventions: The patient's diet was under strict control before and after the operation; the patients were strictly prohibited from consuming spicy, cold, greasy, and other foods to avoid stimulation of the gastrointestinal tract, especially for patients with haemorrhoids, before and after the operation, the diet should mainly contain liquid or semi-liquid food, as far as possible to reduce the amount of bowel movements, in order to reduce the pain in the anus. During the later stages of hospitalisation, the diet was adjusted appropriately according to the patient's recovery although no stimulating foods could be used, and vegetables and fruits of coarse fibre and that were easy to digest could be added appropriately. In addition, the nursing staff could communicate with the patients and adapt recipes to their daily dietary preferences to provide better quality care. ② Wound pain care: Postoperative caregivers needed to select a pain rating scale to assess the patient's pain level on a continuous basis and make a dynamic scale of the specific data collected to reflect the various stages of the patient's recovery. The nursing staff should give corresponding nursing care according to the specific pain degree of the patient. When the pain was mild, they could be instructed to choose the knee bending lateral position or deep breathing method to relieve the pain; when the pain was obvious, the attending doctor could be informed, and the patient could be given analgesic drugs in strict accordance with the doctor's advice. At the same time, the patient should be warned not to stand for a long time during normal activities and should also avoid pulling the wound due to impulsive movement of the lower limbs. ③ Dressing change care: Regular postoperative wound dressing changes are required. Sitz bath fumigation was provided 30 minutes prior to dressing change to improve peri-incisional subcutaneous blood circulation and enhance the drug absorption. When changing the dressing, the exact location of the wound should be determined, the existing dressing should be removed with warm water and the skin should be wiped dry, and a new dressing should be applied, following aseptic standards to prevent postoperative infection. The movement in the process must be smooth and gentle, and the drainage gauze should be properly placed to avoid the pain caused by dressing and pressing. Attention should be paid to creating a private space for patients during the whole dressing change procedure. ④ Functional

Table 1: Baseline data for both groups.

Data	Control group ($n = 63$)	Study group ($n = 63$)	t/χ^2	P
Age ($\overline{x} \pm s$, years old)	46.98 ± 8.25	47.75 ± 10.12	0.480	0.632
Disease duration ($\overline{x} \pm s$, years)	3.37 ± 0.92	3.33 ± 1.08	0.224	0.823
Male (n, %)	34 (53.97)	30 (47.62)	0.508	0.476
Disease classification (n, %)			1.804	0.614
Hemorrhoids	24 (38.09)	21 (33.33)		
Anal fistula	12 (19.05)	15 (23.81)		
Anal fissure	15 (23.81)	19 (30.16)		
Anal stenosis	12 (19.05)	8 (12.70)		

exercise: In the recovery stage, the nursing staff should guide the patients to carry out the corresponding rehabilitation training, including moderate simple exercises such as raising and shrinking the anus. During exercise, the nursing staff should help the patient to maintain a state of muscular and psychological relaxation, with a variety of options such as autonomous deep breathing, distraction methods and if necessary, music or television programmes. It was important to advise the patient to pay attention to the strength of the muscle contraction during the specific exercise and not to rush it, but to gradually increase the strength of the contraction to ensure that the wound could adapt to the intensity of the exercise. If pain was felt in the wound during training, it was necessary to stop immediately and continue only after the pain has disappeared; if the pain was not relieved for a long time, the wound was needed to be checked for secondary tears and treated promptly. ⑤ Defecation care: Creating a private space for patients to defecate, eliminating their nervousness, shyness, and embarrassment, etc., and promoting smooth bowel movements; patients were advised not to squat/sit for long periods of time when toileting and not to use excessive force to avoid retearing the wound and increasing perianal pain; it was important to clean thoroughly after defecation and to maintain anal and perianal hygiene and to take one to two sitz baths per day as directed by your doctor to reduce the risk of infection and relieve pain. ⑥ Psychological care: Some patients had severe postoperative pain that was also associated with factors such as psychological cues. For those with such tendencies, caregivers could eliminate the negative effects of tension, anxiety, fear, and other negative emotions on postoperative pain through music therapy and distraction methods to increase their comfort with treatment and improve their satisfaction with care. Nursing staff could also introduce patients to success stories on the ward to help build their confidence in recovery in a patient-directed way, as well as increase the communication between patients and alleviate negative psychology.

2.2.4. Regular Induction of Management Effects. At regular intervals, patient feedback was used to assess the content of nursing care and to identify the oversights and shortcomings during the work and improve them. The nursing staff were rewarded for excellent performance with pay and goods to stimulate their motivation and enthusiasm for their work. Nursing staff who performed poorly were punished with verbal criticism or bonuses. In this way, the management was improved and quality care was provided to patients.

2.3. Assessment Indicators

2.3.1. Pain Level. The verbal rating scale (VRS) [11] was used as the basis for postoperative anal pain grading in both groups. 0 level: no pain; mild: tolerable pain, not disturbed sleep; moderate: unbearable pain, disturbed sleep; and severe: severe pain, unbearable, severely disturbed sleep, may be accompanied by autonomic disturbance or passive body position.

2.3.2. Comfort Score. Kolcaba's general comfort questionnaire (GCQ) [12, 13] was used to evaluate the comfort level, which consisted of 30 questions on the following four dimensions: environmental, physical, psychological, and sociocultural comfort, using a 1–4 Likert scale, with a total score of 30–120. The higher the score, the higher the comfort level.

2.3.3. Defecation. The time to first bowel movement and duration of bowel movement after surgery were compared between the two groups.

2.3.4. Sleep Quality Score. The Pittsburgh sleep quality index (PSQI) [14] was used to assess the quality of sleep at night after surgery, with a total score of 0–21, with higher scores indicating poorer sleep quality.

2.3.5. Complications. The occurrence of complications related to the care period was compared between the two groups.

2.3.6. Satisfaction. The self-made nursing satisfaction scale in hospital was used as the basis for assessing satisfaction with nursing care, which consisted of 24 items; all assessed on a 5-point scale from 0 to 4, with a total score of 0–96, the higher the score, the better the satisfaction with nursing care.

2.4. Statistical Methods. The statistics and validation of this care outcome were completed by using the SPSS 20.0 statistical software. The measurement data were expressed as ($\overline{x} \pm s$) by the t test and the count data were described as (%)

by the χ^2 test, with $P < 0.05$ being a statistically significant difference.

3. Results

3.1. Comparison of the Postoperative Anal Pain Level within the Two Groups. Postoperative anal pain was less severe in the study group than in the control group ($P < 0.05$). See Figure 1.

3.2. Comparison of Postoperative Comfort Scores within the Two Groups. Postoperative comfort scores were higher in the study group than in the control group ($P < 0.05$). See Figure 2.

3.3. Comparison of Postoperative Bowel Movements within the Two Groups. The time to first bowel movement and its duration after surgery were shorter in the study group than in the control group ($P < 0.05$). See Figures 3 and 4.

3.4. Comparison of Postoperative Night-Time PSQI Scores within the Two Groups. Patients in the study group had lower postoperative night-time PSQI scores than the control group ($P < 0.05$). See Figure 5.

3.5. Comparison of Postoperative Complications within the Two Groups. Patients in the study group had a lower rate of postoperative complications than the control group ($P < 0.05$). See Figure 6.

3.6. Comparison of Care Satisfaction Scores within the Two Groups. Patients in the study group had higher postoperative care satisfaction scores than the control group ($P < 0.05$). See Figure 7.

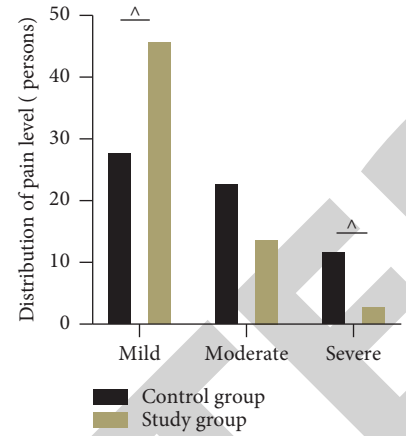

Figure 1: Comparison of the postoperative anal pain level within the two groups (persons). ^ represents a significant difference between the two groups.

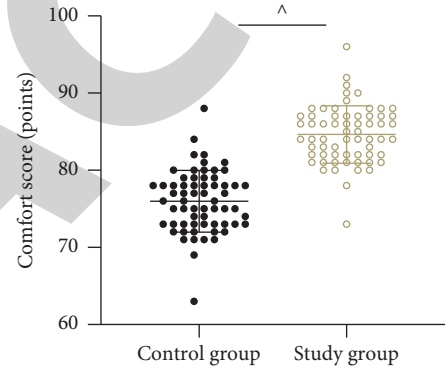

Figure 2: Comparison of the postoperative comfort score within the two groups (points). ^ represents a significant difference between the two groups.

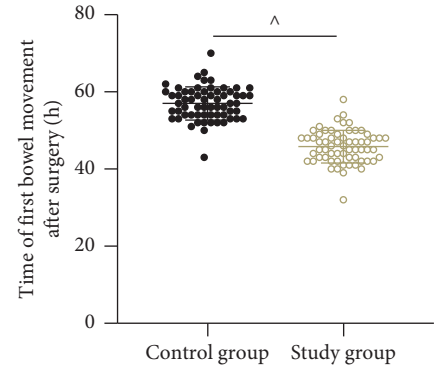

Figure 3: Comparison of time to postoperative first bowel movement within the two groups (h). ^ represents a significant difference between the two groups.

4. Discussion

Pain is an unpleasant sensory and emotional experience that occurs when the body is injured and is accompanied by existing or latent tissue damage [15, 16] . Although anorectal disease is less likely to endanger patients' lives, the special anatomical site of the anal canal, with its high distribution of blood vessels and nerves, the release of postoperative inflammatory mediators, perianal tissue oedema, bowel irritation, psychological factors, and medication changes by health care workers can all irritate the patient's wounds and lead to severe postoperative pain [17, 18]. Also, due to the high level of bacteria in the anorectal area, frequent dressing changes are required to prevent infection of the wound, which aggravates the patient's postoperative pain. Postoperative pain can also lead to poor defecation, affecting the body's neuroendocrine system and prompting a series of stress reactions, with patients suffering from constipation and difficult defecation in mild cases, or impaired digestion, cardiac arrhythmia, and even cardiac arrest in severe cases [19, 20]. The abovementioned scenarios will not only affect the patient's normal life but also cause physical and mental disorders, which are detrimental to the patient's prognosis level and quality of life.

In the conventional model of care, the healthcare provider only pays attention to the changes associated with the patient's incision after surgery. Pain management, on the other hand, means caring for the patient's postoperative

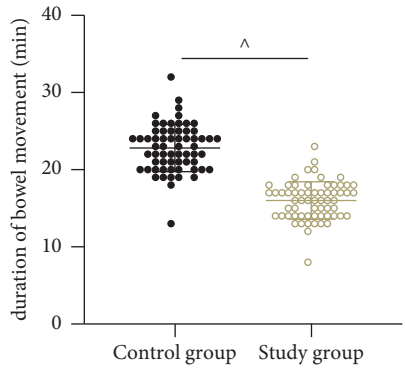

Figure 4: Comparison of the duration of postoperative bowel movements within the two groups (min). ^represents a significant difference between the two groups.

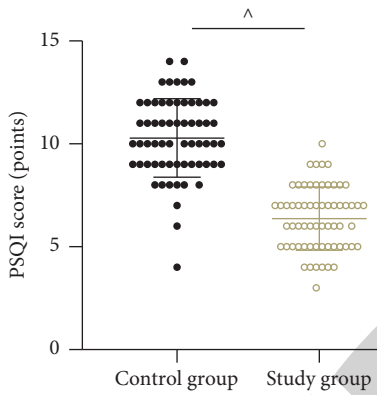

Figure 5: Comparison of postoperative night-time PSQI scores within the two groups (points). ^represents a significant difference between the two groups.

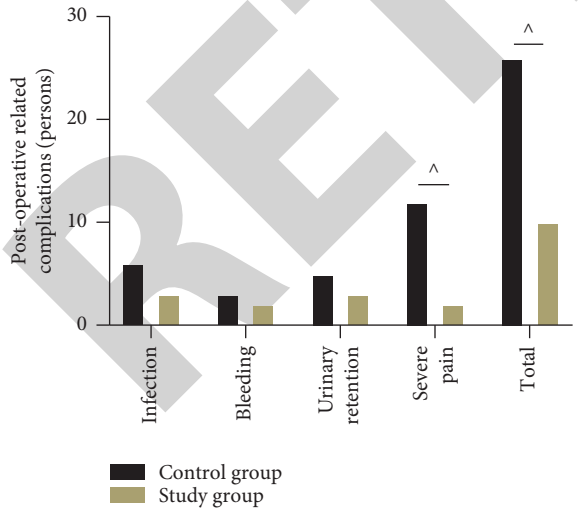

Figure 6: Comparison of postoperative complications within the two groups (persons). ^represents a significant difference between the two groups.

incision recovery status while also being mindful of the patient's physical and mental health, resulting in a significant reduction in pain and a further increase in patient

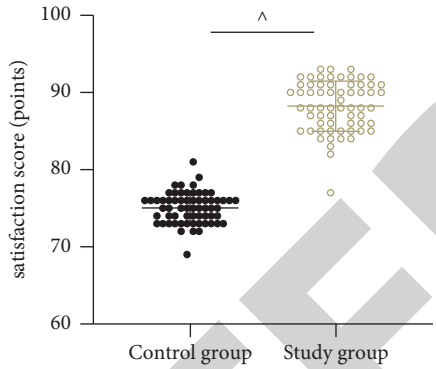

Figure 7: Comparison of care satisfaction scores within the two groups (scores). ^represents a significant difference between the two groups.

comfort. In recent years, our department has advocated the implementation of pain care management for surgical patients, focusing on six aspects of dietary intervention, wound pain care, dressing change care, functional exercise, bowel care, and psychological care. It is also a continuous process of improvement and refinement of care measures, with the main aim of reducing anal pain triggers and adverse factors affecting the wound recovery, in order to provide a more detailed, quality and comfortable healthcare experience for patients.

The results of this study showed that patients in the study group who were managed with timely pain care after surgical treatment had significantly better pain relief, postoperative comfort, bowel movement, and sleep quality than the control group who were treated with routine perioperative care during the same period and that the study group had fewer postoperative complications and higher patient satisfaction, making it more valuable. Possible reasons for the analysis of the above results are the following: ① enhanced postoperative dietary interventions not only avoid painful irritation from irritating foods but also reduce the risk of haemorrhoids and are beneficial in enhancing the prognosis of patients; ② anal function training can be done by lifting and retracting the anal sphincter to promote postoperative smooth bowel movements and to reduce the anal stimulation caused by the prolonged toilet time and the retearing of the anal opening caused by difficult defecation, so as to reduce the pain symptoms; ③ trauma pain care through the development of a dynamic pain score scale, which allows healthcare professionals to understand the patient's specific situation at each stage of recovery in real time and to provide appropriate care and pain relief instructions; ④ during dressing change care, attention is paid to maintaining appropriate strength and protecting the wound, as well as to the psychological needs of the patient, focusing on the protection of the patient's privacy, so that the patient is more receptive psychologically, reducing the sense of rejection and facilitating the postoperative rehabilitation treatment; ⑤ the study also improved the quality of patients' prognosis through defecation instructions, which consisted of three components: creating a private space, controlling the intensity of defecation, and cleaning after defecation to

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Retraction

Retracted: Preoperative Nutritional Risk Assessment for Predicting Complications after Radical Cystectomy plus Urinary Diversion for Bladder Cancer

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
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(5) Incoherent, meaningless and/or irrelevant content included in the article
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The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] X. Wei, J. Wang, H. Liu, W. Fan, and G. Guo, "Preoperative Nutritional Risk Assessment for Predicting Complications after Radical Cystectomy plus Urinary Diversion for Bladder Cancer," *Emergency Medicine International*, vol. 2022, Article ID 2901189, 6 pages, 2022.

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Research Article

Preoperative Nutritional Risk Assessment for Predicting Complications after Radical Cystectomy plus Urinary Diversion for Bladder Cancer

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Objective. To investigate the predictive value of preoperative nutritional risk assessment on the occurrence of complications after radical cystectomy plus urinary diversion for bladder cancer. *Methods*. Retrospective analysis of 178 patients with bladder cancer between July 2010 and March 2022 who underwent elective radical cystectomy plus urinary diversion was conducted. The occurrence of complications within 90 days after surgery was counted for all patients, and the postoperative complication rates of patients with and without nutritional risk were compared and analyzed. Also, logistic regression analysis was used to assess the relative risk coefficients of NRS-2002 and the occurrence of postoperative complications. *Results*. Comparison of clinicopathological characteristics and surgical conditions between the two groups showed that the proportion of combined diabetes mellitus, operative time, and postoperative hospital stay were higher in the nutritional risk group (NRS ≥3 score) than in the no nutritional risk group (NRS <3 score), while the preoperative blood albumin (ALB) level was lower than that in the no nutritional risk group (NRS <3 score). The results of multifactorial risk regression analysis showed that low preoperative ALB level and high NRS score were independent risk factors for postoperative complications in bladder cancer ($P < 0.05$). *Conclusion*. The NRS-2002 nutritional risk score has good predictive value for the incidence of postoperative complications in patients with bladder cancer and provides a scientific basis for perioperative nutritional support.

1. Preface

Bladder cancer is the most common malignant tumor in urology, which is divided into two types, non-muscle layer invasive bladder cancer (NMIBC) and muscle layer invasive bladder cancer (MIBC) [1, 2]. Under normal circumstances, the clinical symptom of bladder cancer is mainly manifested as intermittent painless hematuria which occurs throughout the urination, while some patients take bladder irritation symptoms (i.e., frequency, urgency, painful urination, and so on) or pelvic pain as the main symptoms [3, 4]. Currently, radical cystectomy combined with urinary diversion has become the main surgical method for MIBC and recurrent high-risk NMIBC [5]. This technique can reduce the recurrence rate and mortality of bladder cancer after surgery and improve the survival rate. However, due to the complexity of the combined surgery, the long operation time, and the large trauma to the patient's body, the incidence of postoperative complications is at a high level, which is detrimental to the patient's postoperative recovery and adversely affects the surgical outcome. Therefore, finding reliable indicators to predict the incidence of postoperative complications in patients with bladder cancer has become one of the hot spots in clinical research [6].

The NRS-2002 nutritional risk scoring system is a simple and easy tool for nutritional risk screening, which was already recommended by ESPEN in 2002 as the tool of choice for nutritional risk screening in hospitalized patients, and has since been gradually promoted worldwide [7]. In 2006, the Chinese Society of Parenteral and Enteral Nutrition

(CSPEN) recommended the "current recommendation of the NRS-2002 as a tool for assessing nutritional risk" as level A evidence [8]. There is existing evidence that complications may decrease nutritional status of patients [9]. But whether changes of NRS-2002 nutritional risk score are related to complications after bladder cancer surgery is still not scientifically reported. On this basis, this study analyzed the value of NRS-2002 nutritional risk scoring system in predicting the complications after bladder cancer surgery. The results are now reported as follows.

2. Information and Methods

2.1. Study Population and Grouping. The method of this study was retrospective case analysis, and we retrospectively searched electronic medical record database system, and the time interval of the search was set from July 2010 to March 2022. A total of 207 adult patients who underwent inpatient treatment in our urology department during this period were retrieved, and all of them were clinically diagnosed with bladder cancer and had detailed clinical and follow-up records. All patients were then screened according to predefined inclusion and exclusion criteria, and a total of 178 patients were eventually enrolled in this study.

2.1.1. Inclusion Criteria

(1) Adult patients with clinical and first confirmed diagnosis of bladder cancer.
(2) Received surgical treatment for the first time.
(3) Surgical treatment option chosen as radical total bladder dissection combined with urinary flow diversion.
(4) Patients with preoperative perfection of relevant laboratory, imaging, pathology, and other tests.
(5) At least 18 years old.

2.1.2. Exclusion Criteria

(1) Pediatric patients.
(2) Those with relapsed bladder cancer.
(3) Patients who had received adjuvant radiotherapy or bladder irrigation prior to surgery.
(4) The first surgical treatment plan was partial cystectomy or radical cystectomy for bladder cancer.
(5) Intraoperative conversion to open surgery for radical cystectomy plus urinary diversion.

2.2. Methodology

2.2.1. Data Collection. Patient data were collected through the hospital information management system, which included (1) preoperative general information: patient gender, age, BMI, NRS-2002 score, presence of hypertension, diabetes mellitus (DM), coronary heart disease (CHD), preoperative serum albumin (ALB), and hemoglobin (HB); (2) surgery-related information: operation time, intraoperative bleeding, intraoperative blood transfusion, surgical procedure (transabdominal open and transabdominal laparoscopic), urethral diversion method (ileal neobladder (IN) and ileal cystectomy (IC)), tumor site, postoperative pathological staging; and (3) prognostic information: postoperative complications, hospitalization time, etc.

2.2.2. Preoperative Nutritional Assessment. NRS-2002 was used for preoperative nutritional assessment, which included three aspects: disease severity score (0~3), impaired nutritional status score (0~3), and age score (0~1). The final nutritional risk score was the sum of age score, impaired nutritional status score, and disease severity score. Those with a final score greater than or equal to 3 were considered to be at nutritional risk. Those with a final score less than 3 were considered to be patients without nutritional risk (the specific investigation methods are shown in Table 1).

2.2.3. Definition of Postoperative Complications. The severity of postoperative complications was classified according to the Clavien–Dindo grading criteria: grade I did not require surgery, drugs, intervention, or endoscopy; grade II required drugs, blood transfusion, or total parenteral nutrition therapy; grade III required surgery, endoscopy, or intervention; grade IV could endanger the patient's life and required intensive care; and grade V led to the patient's death. Among them, grades I and II were defined as minor complications, and grades III to V were defined as serious complications [10].

2.3. Statistical Methods. SPSS 17.0 statistical software was used for data processing. Measurement data are expressed as mean ± standard deviation ($\overline{x} \pm s$), independent sample t-test is used for comparison between groups, count data are expressed as [n (%)], and chi-square (χ^2) test is performed. Logistic regression analysis was used for multifactorial analysis of the risk of postoperative complications. The difference is statistically significant when $P < 0.05$.

3. Results

3.1. Comparison of Clinicopathological Characteristics. The 178 bladder cancer patients were grouped according to the NRS-2002 score, and those with NRS ≥3 were included in the nutritional risk group (62 patients, 34.83%), and those with NRS <3 were included in the no nutritional risk group (116 patients, 65.17%). There were no statistically significant differences in gender, age, BMI, presence of hypertension, coronary artery disease, ASA classification, preoperative hemoglobin, pathological grade, tumor size, and tumor location between the two groups ($P > 0.05$). The proportion of patients with combined diabetes mellitus and preoperative blood albumin levels were higher in patients with NRS ≥3 than in patients with NRS <3 ($P < 0.05$) (Table 2).

3.2. Comparison of Surgical Treatment. The operative times of patients in the nutritional risk group (NRS ≥3 points) and the patients in the no nutritional risk group (NRS <3 points) were (322.19 ± 46.04) min and (301.27 ± 40.12) min,

Table 1: NRS scores.

Score	Nutritional status	Severity of disease	Age
0 points	Normal.	Normal.	< 70 years old
1 point	Weight loss of more than 5% in 3 months or eating 25% to 50% less than normal requirements in the previous week.	Fractures, chronic diseases such as liver cirrhosis, hemodialysis, general malignancies, diabetes, etc.	≥70 years old
2 points	Weight loss of more than 5% in 2 months or eating 50% to 75% less than normal requirements in the previous week.	Severe pneumonia, major abdominal surgery, shock, stroke, etc.	—
3 points	Weight loss of more than 5% in 1 month or more than 15% in 3 months or eating 75% to 100% less than normal requirement in the previous week or body mass index less than 18.50 Kg/m^2.	Craniosynostosis, bone marrow transplantation, and ICU patients.	—

Table 2: Comparison of clinicopathological characteristics.

Information	NRS <3 ($n = 116$)	NRS≥3 ($n = 62$)	t/χ^2 value	P value
Age (years)	68.19 ± 9.44	66.40 ± 8.50	1.247	0.214
Gender (n, %)			1.367	0.242
Male	98 (84.48)	48 (77.42)		
Female	18 (15.52)	14 (25.81)		
BMI (kg/m^2)	22.80 ± 5.42	21.79 ± 4.73	1.237	0.218
Hypertension (n, %)	43 (37.07)	16 (25.81)	2.313	0.128
DM (n, %)	7 (6.03)	10 (16.13)	4.766	0.029
CHD (n, %)	6 (51.72)	1 (1.61)	1.355	0.244
ASA grading (n, %)			0.517	0.772
Grade I	53 (45.69)	29 (46.77)		
Grade II	52 (44.83)	26 (41.94)		
Grade III~IV	11 (9.48)	8 (12.90)		
Preoperative ALB (g/L)	42.23 ± 5.46	37.25 ± 4.03	6.318	0.000
Preoperative HB (g/L)	133.14 ± 12.30	130.58 ± 16.42	1.173	0.242
Pathological grade (n, %)			0.367	0.545
Low level	31 (26.72)	14 (22.58)		
High level	85 (73.28)	48 (77.42)		
Tumor size (cm)	4.70 ± 0.84	4.74 ± 0.63	0.329	0.743
Tumor site (n, %)			0.041	0.980
Side wall	89 (76.72)	46 (74.19)		
Triangle	20 (17.24)	11 (17.74)		
Bladder neck	7 (6.03)	4 (6.45)		

Table 3: Comparison of surgical treatment.

Information	NRS <3 ($n = 116$)	NRS≥3 ($n = 62$)	t/χ^2 value	P value
Operating time (min)	301.27 ± 40.12	322.19 ± 46.04	3.146	0.002
Intraoperative bleeding volume (mL)	397.59 ± 100.08	402.27 ± 103.30	0.294	0.769
Intraoperative blood transfusion (n, %)			0.258	0.612
Yes	26 (22.41)	16 (25.81)		
No	90 (77.59)	46 (74.19)		
Operation style (n, %)			0.854	0.356
Transabdominal open	10 (8.62)	3 (4.84)		
Transabdominal laparoscopic	106 (91.38)	59 (95.16)		
Urethral diversion method (n, %)			0.166	0.684
IN	34 (29.31)	20 (32.26)		
IC	82 (70.69)	42 (67.74)		
Postoperative hospital stay (d)	15.25 ± 4.02	17.80 ± 4.90	3.730	0.000

respectively, and the postoperative hospital stays were (17.80 ± 4.90) d and (15.25 ± 4.02) d, respectively, and the differences between the two groups were statistically significant ($P < 0.05$). The differences in intraoperative bleeding, intraoperative blood transfusion, surgical procedure, urethral diversion method, and other surgical treatments between the two groups were not statistically significant ($P > 0.05$) (Table 3).

Table 4: Comparison of postoperative complications.

Information	NRS <3 ($n = 116$)	NRS≥3 ($n = 62$)	χ^2 value	P value
Grade I~ II (n, %)				
Leaking of urine	2 (1.72)	3 (4.84)	1.436	0.231
Lung infection	2 (1.72)	2 (3.23)	0.415	0.520
Deep venous thrombosis	4 (3.45)	2 (3.23)	0.006	0.938
Electrolyte disturbance	5 (4.31)	3 (4.84)	0.026	0.871
Poor incision healing	3 (2.59)	3 (4.84)	0.629	0.428
Abdominal infection	2 (1.72)	2 (3.23)	0.415	0.520
Renal insufficiency	3 (2.59)	2 (3.23)	0.061	0.806
Grade III (n, %)				
Intestinal fistula	0 (0.00)	1 (1.61)	1.882	0.170
Intestinal obstruction	5 (4.31)	9 (14.52)	5.807	0.016
Grade IV (n, %)				
Infectious shock	1 (0.86)	1 (1.61)	0.205	0.651
Pulmonary embolism	0 (0.00)	2 (3.23)	3.785	0.052
Sepsis	0 (0.00)	1 (1.61)	1.882	0.170
Grade V (n, %)				
Postoperative death	0 (0.00)	1 (1.61)	1.882	0.170
Total complications (n, %)	27 (23.28)	34 (54.84)	17.869	0.000

Table 5: Analysis of risk factors for postoperative complications in patients.

Indicators	B	SE	Wald χ^2	P value	OR	95% CI
Surgery time	0.245	0.182	1.258	0.230	1.278	0.894~1.825
DM	0.013	0.007	3.231	0.070	1.013	0.997~1.029
Preoperative ALB	0.513	0.116	8.136	0.005	1.670	1.331~2.097
NRS score	1.025	0.331	15.587	< 0.001	2.787	1.457~5.332
Postoperative hospital stay	0.412	0.383	2.240	0.110	1.510	0.713~3.198

3.3. Comparison of Postoperative Complications. The complication rates in the NRS-2002 score ≥3 subgroup and the NRS-2002 score <3 subgroup were 54.84% (34/62) and 23.28% (27/116), respectively, and the differences were statistically significant ($P < 0.05$) when comparing the two groups (Table 4).

3.4. Analysis of Risk Factors for Postoperative Complications in Patients. The presence of postoperative complications in bladder cancer was used as the dependent variable, and five variables such as time to surgery, comorbid diabetes mellitus, preoperative blood albumin level, NRS score, and postoperative length of stay were used as independent variables in Tables 1–3 at $P < 0.05$ for regression analysis. The occurrence of postoperative complications was significantly correlated with patients' preoperative ALB levels (OR = 1.670, 95% CI: 1.331–2.097, $P = 0.005$) and NRS scores (OR = 2.787, 95% CI: 1.457–5.332, $P < 0.001$). Low preoperative ALB level and high NRS score were high risk factors for the development of postoperative complications in bladder cancer (Table 5).

4. Conclusion

As the most common malignant tumor in urinary system, bladder cancer patients with abnormal nutritional status are very common [11]. The reason is that with the proliferation of cancer cells, the body's nutritional consumption gradually increases. Moreover, after suffering from malignant tumor, the body has a series of stress reactions, which can cause metabolic abnormalities such as accelerated glucose utilization, insulin resistance, decreased muscle protein synthesis, and enhanced amino acid gluconeogenesis, thus aggravating nutritional abnormalities [12]. Radical cystectomy plus urinary diversion includes cystectomy, pelvic lymph node dissection, and urinary diversion, which is a complex procedure with a high incidence of postoperative complications that can seriously affect patients' physical recovery and even cause life-threatening conditions. In addition, patients at risk of abnormal nutritional status lack sufficient energy reserve, resulting in low immunity and poor anti-stress ability, so postoperative healing is slow and the incidence of complications is also increased [13]. A vicious circle can thus be formed between nutritional status and complications. So, preoperative assessment of patients' risk of postoperative complications and prognosis is particularly important [13].

More studies have pointed out age, BMI, duration of surgery, and urinary diversion method as risk factors associated with the occurrence of postoperative complications, and more factors are not modifiable and not very accurate [14, 15]. A study concluded that untimely albumin supplementation is a high risk factor for complications in patients in the perioperative period [16]. The results of our study showed that low preoperative serum albumin level is the high risk factor for postoperative complications of

bladder cancer ($P < 0.05$). Serum albumin is one of the indicators of the nutritional status of the body, and its decrease can cause low immune function of the body, which can lead to symptoms such as delayed wound healing and infection [17]. This suggests that strict clinical monitoring of preoperative blood protein levels in patients with bladder cancer may help to reduce the incidence of postoperative complications.

Notably, the results of this study also showed that high NRS score was also a high risk factor for postoperative complications of bladder cancer ($P < 0.05$). This indicates that the nutritional status of the body is closely related to the incidence of postoperative complications in patients with malignant tumors [18, 19]. Further comparison of the severity of complications among patients with different NRS-2002 scores showed that the incidence of intestinal obstruction and the total incidence of complications in the NRS ≥3 group were significantly higher than those in the NRS <3 group ($P < 0.05$), with no significant differences in other groups.

NRS-2002 is the first nutritional risk screening tool developed on the basis of evidence-based medicine [20]. The scale was simple to operate and could be quickly evaluated in a short time through simple counseling. At the same time, the scale was less affected by subjective factors in the evaluation process, and the degree of acceptance by patients was high, so it had the advantage of high accuracy [21]. Karateke et al.'s study [22] demonstrated that the results of the clinical application of NRS-2002 were superior to other screening tools in terms of specificity and sensitivity. Raslan et al. [23] evaluated NRS-2002, MNA, and MUST nutritional screening in 705 patients and compared their ability to predict complications, mortality, and length of stay, respectively, and showed that NRS-2002 and MNA were superior to MUST in predicting clinical outcomes, while showing that NRS-2002 had better predictive power. This study further used logistic regression analysis to assess the relative risk coefficients of each clinical variable with the development of postoperative intestinal obstruction and found that low preoperative blood albumin levels and high NRS scores were high risk factors for the development of postoperative complications. This indicates that the NRS-2002 score has a good predictive value for complications after radical cystectomy combined with urethral diversion for bladder cancer.

In conclusion, the NRS-2002 nutritional risk score has good predictive value for the incidence of postoperative complications in bladder cancer patients and provides a scientific basis for perioperative nutritional support, which is recommended to be promoted. However, considering the relatively small sample included in this study, more randomized controlled studies with multiple samples are still needed to support the study, which is the direction of further research in this topic.

Data Availability

The data can be obtained from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Comparison of Curative Effect between PFNA and PCCP in the Treatment of Femoral Intertrochanteric Fractures

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

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The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

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Research Article

Comparison of Curative Effect between PFNA and PCCP in the Treatment of Femoral Intertrochanteric Fractures

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Objective. To compare and analyze the clinical efficacy of proximal femoral nail anti-rotation (PFNA) and percutaneous compression plate (PCCP) for minimally invasive treatment of femoral intertrochanteric fractures. *Methods*. A retrospective analysis of 98 patients with femoral intertrochanteric fractures admitted to our hospital from January 2019 to December 2020 was used as the research object, and they were divided into PFNA group and PCCP group according to different treatment methods, with 51 cases and 47 cases. The intraoperative and postoperative indicators were compared between the two groups of patients. *Results*. There was no significant difference in the operative time, postoperative fracture healing time, and Harris score of hip joint function between the two groups ($t = -1.43$, 1.86, 1.63; $P > 0.05$). Compared with the PFNA group, the intraoperative blood loss and postoperative drainage volume in the PCCP group were lower than those in the PFNA group ($t = 11.38$, 9.66; $P < 0.05$). Compared with the PFNA group, the time of weight-bearing in the PCCP group was longer than that in the PFNA group ($t = -2.23$, $P < 0.05$). The total incidence of postoperative complications was 7.84% in the PFNA group and 10.64% in the PCCP group, and there was no significant difference between the two groups ($P > 0.05$). *Conclusion*. The PFNA and PCCP are both effective measures for the clinical treatment of intertrochanteric fractures, and internal fixation should be reasonably selected according to the specific conditions of the patients.

1. Introduction

In clinical practice, femoral intertrochanteric fracture is one of the most common diseases in orthopedics, which refers to the fracture between the large and small intertrochanteric of the femur. It is mostly caused by indirect external force and usually manifests as comminuted fracture, and its clinical incidence is increasing year by year [1]. The condition is more common in the elderly. Because the elderly patients' own body bones are relatively loose and most elderly patients often have other diseases, if their intertrochanteric fractures are not treated in time, staying in bed for a long time may increase the risk of complications [2, 3]. The clinical treatment of femoral intertrochanteric fractures is the first choice for surgical treatment. The intraoperative fixation methods include intramedullary fixation and extramedullary fixation. The former is represented by proximal femoral nail anti-rotation (PFNA), and the latter is represented by percutaneous compression plate (PCCP) [4]. The two are the hot spots in the treatment of femoral intertrochanteric fractures. This study compared and analyzed the clinical therapeutic effects of PFNA and PCCP for minimally invasive treatment of femoral intertrochanteric fractures and provided a theoretical basis for clinical surgical treatment. The report is as follows.

2. Objects and Methods

2.1. Research Objects. A retrospective analysis of 98 patients with femoral intertrochanteric fractures admitted to our hospital from January 2019 to December 2020 was used as the research object. Inclusion criteria were as follows: no other systemic diseases; all patients were able to walk independently or with crutches before fracture. Pathological fracture cases and cases with surgical contraindications were excluded. According to different treatment methods, the

Table 1: Comparison of general data between the two groups.

Group	N	Age	Gender		Causes of injury			Fracture type		
			Male	Female	Car accident	High-altitude falling	Crash	A1	A2	A3
PFNA group	51	69.12 ± 9.13	27	24	9	8	34	16	16	19
PCCP group	47	67.06 ± 10.28	24	23	8	8	31	15	18	14
t/χ^2		1.050	0.035		0.034			0.745		
P		0.296	0.853		0.983			0.689		

patients were divided into PFNA group and PCCP group, with 51 cases and 47 cases, respectively. All patients were diagnosed with intertrochanteric fractures by X-ray examination. Among 98 patients, there were 51 males and 47 females, aged 29–83 years, with an average age of 68.13 years. The causes of injury include 17 cases of car accidents, 16 cases of high-altitude falling, and 65 cases of crash. The specific types of fractures were divided into 31 patients with type A1, 34 patients with type A2, and 33 patients with type A3. There was no significant difference in the general data of the two groups of patients ($P > 0.05$), and they were comparable. The general data of the two groups of patients are shown in Table 1. This study was approved by the ethics committee of the hospital, and all participants gave informed consent and signed the informed consent form.

2.2. Surgical Methods. All operations were performed by the same operator. ①Surgical methods of PFNA group: the patients underwent combined spinal-epidural anesthesia, the patient was placed in a supine position, and the affected hip was adducted and flexed for 30°. The C-arm X-ray machine closed the reduction. After the reduction was satisfactory, the towel was routinely disinfected, and a longitudinal incision was made at 3 cm above the greater trochanter to expose the top of the greater trochanter. The slotting device was used to slot in a 6-degree abduction position. Insert the guide needle into the femoral medullary cavity, enlarge the medulla, screw in the PFNA main nail, and make a longitudinal incision 2 cm downward from the bottom of the patient's greater trochanter. A guide needle was inserted through the center of the femoral neck, and after the position of the guide needle was confirmed, a spiral blade with appropriate length was inserted along the guide needle, and the distal screw was locked under the guidance. After the fracture position of the patient was checked and fixed, the tail cap was installed, and the incision of the patient was washed with physiological saline to complete the suture. ②Surgical method of PCCP group: the patients underwent combined spinal-epidural anesthesia, the patient was placed in a supine position, and the operation was performed under a C-arm X-ray machine. An incision of about 3 cm in length was made at the major trochanter, and a second incision about 2 cm was made after the steel plate was inserted. A percutaneous bone hook was inserted into it and fixed to a steel plate guide needle, and the length of the screw in the neck was measured. After the measurement, the first screw was placed in the femoral neck of the patient up to the lower part of the cartilage tissue of the femoral head. After the main sleeve was removed, the second incision was drilled to fix three backbone screws. Two femoral neck screws and other femoral shaft screws were completed by the same method. Under the fluoroscopy of C-arm X-ray equipment, the incision was washed and drainage tube was placed to complete the incision suture. ③After operation, routine ECG monitoring was performed in the two groups until the vital signs were basically normal, antibiotics were applied, and low molecular weight heparin sodium was given to the patients. Medical staff guided patients to exercise for rehabilitation.

2.3. Observation Items. Intraoperative indicators (operation time and intraoperative blood loss) and postoperative indicators (postoperative drainage volume, postoperative fracture healing time, time of weight-bearing, and postoperative Harris score of hip joint function) were compared between the two groups. Patients in the two groups were followed up for 12 months by telephone, Internet platform, and outpatient review. The complications were observed and counted.

2.4. Harris Hip Function Score [5]. At 12 months after operation, Harris hip function was evaluated from four aspects: pain (44 points), function (47 points), deformity (4 points), and range of motion (5 points). The scores of each item were cumulatively superimposed. The total score is 100 points, 90–100 points were considered excellent, 80–89 points were considered good, 70–79 points were considered average, and <69 points were considered poor.

2.5. Statistical Methods. SPSS 19.0 statistical software was used for analysis. Measurement data were represented by "$\overline{x} \pm s$," and t-test was used for comparison between groups; enumeration data were represented by "%," and χ^2 test was used for comparison between groups, and $P < 0.05$ was considered statistically significant.

3. Results

3.1. Comparison of Intraoperative Indicators between the Two Groups. There was no significant difference in the operative time between the two groups ($t = -1.43$, $P > 0.05$). The intraoperative blood loss and postoperative drainage volume in the PFNA group were significantly higher than those in the PCCP group ($t = 11.38$, $t = 9.66$, $P < 0.05$), as shown in Table 2. A typical case is shown in Figure 1.

Table 2: Comparison of intraoperative indicators between the two groups ($\overline{x} \pm s$, $n = 98$).

Group	N	Operation time (t/min)	Intraoperative blood loss (V/ml)	Postoperative drainage volume (V/ml)
PFNA group	51	63.36 ± 21.52	153.25 ± 32.68	68.19 ± 26.28
PCCP group	47	69.15 ± 18.38	58.69 ± 48.64	25.23 ± 16.10
t		−1.43	11.38	9.66
P		0.16	<0.01	<0.01

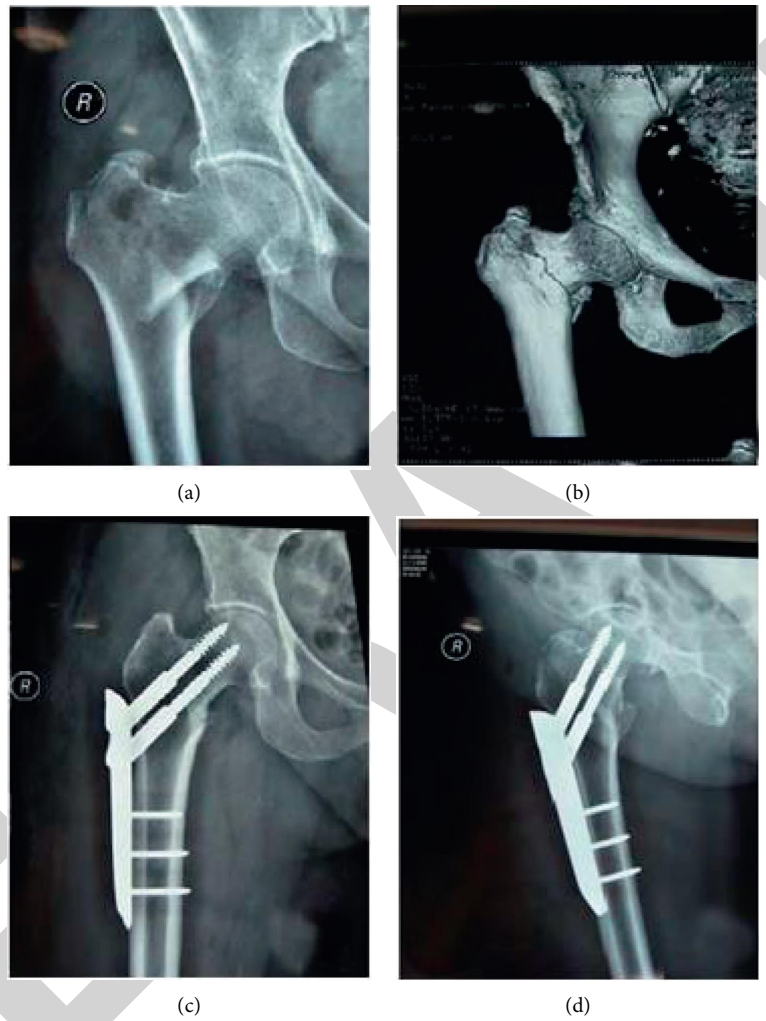

Figure 1: Preoperative and postoperative X-ray images of left femoral intertrochanteric fracture with PCCP. (a) Preoperative left hip joint frontal radiograph. (b) Preoperative 3D CT reconstruction. (c) PCCP postoperative left hip joint frontal radiograph. (d) PCCP postoperative left hip joint lateral radiograph.

3.2. Comparison of Postoperative Indicators between the Two Groups. There was no significant difference in fracture healing time between the two groups ($t = 1.86$, $P > 0.05$). The time of weight-bearing in the PCCP group was longer than that in the PFNA group, and the difference was statistically significant ($t = -2.23$, $P < 0.05$). There was no significant difference in hip function scores between the two groups ($t = 1.63$, $P > 0.05$), as shown in Table 3.

3.3. Comparison of Postoperative Complications between the Two Groups. The total incidence of postoperative complications was 7.84% in the PFNA group and 10.64% in the PCCP group, and there was no significant difference between the two groups ($P > 0.05$), as shown in Table 4.

4. Discussion

In clinical practice, the fracture from the base of the femoral neck to the area above the lesser trochanter is called intertrochanteric fracture. It is the most common type of fracture in the current clinical practice, and it is more common in the elderly. However, because the elderly patients are often accompanied by osteoporosis symptoms, their body resistance is gradually declining, and most of them are often complicated with basic systemic diseases, if

Table 3: Comparison of postoperative indicators between the two groups ($\overline{x} \pm s$, $n = 98$).

Group	N	Fracture healing time (t/week)	Time of weight-bearing (t/week)	Postoperative Harris score of hip joint function
PFNA group	51	17.2 ± 1.8	3.83 ± 1.20	84.68 ± 3.16
PCCP group	47	16.3 ± 2.9	4.35 ± 1.10	83.49 ± 4.05
t		1.86	−2.23	1.63
P		0.066	0.028	0.11

Table 4: Comparison of postoperative complications between the two groups (n, %).

Group	N	Delayed healing	Femoral neck nail cutting	Coxa vara	Nonunion of fracture	Total complications
PFNA group	51	1	2	1	0	4 (7.84)
PCCP group	47	1	3	0	1	5 (10.64)
χ^2						0.274
P						0.659

they are not treated in time, prolonged bed rest can be complicated by diseases such as decreased cardiopulmonary function, which seriously threatens the life safety of elderly patients [6–8]. The clinical treatment of patients with intertrochanteric fractures generally follows the principles of minimal perioperative trauma, easy postoperative recovery, high safety, and mechanical stability [9]. At present, early surgical reduction and internal fixation are preferred. The common internal fixation methods include intramedullary fixation system and extramedullary nail plate system. The former is represented by PFNA, which has the advantages of less surgical trauma, less postoperative complications, and favorable prognosis [10]. The latter is represented by PCCP, which has the advantages of convenient operation and firmness, but its surgical trauma is relatively large, the postoperative healing time is relatively long, and the postoperative complications are relatively high [11].

The PFNA surgical treatment method can complete the corresponding material design according to the specific force principle of the patient's hip joint, which is closer to the patient's negative gravity line, which promotes the patient's load force transmission, and the overall diameter of the main nail is relatively small. Therefore, the joint stability and anti-rotation resistance of the treatment are increased to a certain extent [12, 13]. In PFNA, its force transmission is internal expansion and extrusion, so that the medial and lateral sides of the femur can bear the stress in a balanced manner. It has good biomechanical properties and can effectively prevent femoral shaft fractures. Its distal end is tilt-locked, which can reduce the risk of distant fractures [14]. In addition, the helical blade is operated after the guide needle is inserted into the femoral head, which can effectively increase the contact surface between the patient's head and neck screw and the cancellous bone and compress the cancellous bone, thereby preventing the loss of bone mass, and has a good effect on elderly patients with osteoporosis [15]. PCCP is a new type of internal fixation nail plate system in the current clinical practice. It is a minimally invasive surgery based on dynamic hip screws. The amount of postoperative blood loss, with a good fixation position, can effectively prevent the occurrence of lateral cortical fractures in patients and can effectively relieve postoperative pain [16]. Because the treatment method is biaxial fixation and has a certain sliding compression effect, it can increase the overall stability of the fracture end. However, in the treatment of PCCP, because the femoral neck of the patient is relatively narrow, the number of fixed distances between screws is limited. In addition, this treatment method is an extramedullary fixation method and is not suitable for patients with severe comminuted fractures and reverse trochanteric fractures. Therefore, this internal fixation method has some limitations [17]. In comparison, PFNA's internal fixation has higher requirements on the reduction of trochanteric fractures than PCCP internal fixation. PFNA requires good reduction before surgery; otherwise, the fracture site will be easily separated when the spiral blade is inserted. Previous studies have reported that PFNA surgery is more suitable for unstable intertrochanteric fractures with osteoporosis, while PCCP surgery is more suitable for some patients with basic diseases and poor physical condition [18].

This study showed that the intraoperative blood loss and postoperative drainage volume in the PCCP group were significantly smaller than those in the PFNA group mainly because the PCCP group was a minimally invasive operation, and the trauma was significantly smaller than that in the PFNA group. Therefore, PCCP is suitable for patients with poor physical condition and relatively low surgical tolerance. Some researchers [19] found that the intraoperative blood loss in the PCCP group was significantly lower than that in the PFNA group, which was consistent with the results of this study. In addition, this study found that the weight-bearing time of the PFNA group was shorter than that of the PCCP group. Due to the short force arm of the PFNA fixation and good biomechanical properties and the fact that its distal end is tilt-locked, it can reduce the risk of distant fractures.

This study showed that the total incidence of postoperative complications in PFNA group was 7.84%, and that in PCCP group was 10.64%. The incidence of postoperative complications in PFNA group was lower than that in PCCP group, but there was no significant difference between the two groups. This is consistent with the results reported by Arirachakaran et al. [20]. This is mainly due to the fact that PFNA internal fixation has less damage to surrounding soft tissue, less bleeding, less interference with fracture blood supply, and less loss of osteogenic factors in the fracture end

hematoma, so the incidence of postoperative complications is low. However, PCCP is related to the longer operation time, more intraoperative blood loss, and extensive dissection of the fracture end, which increases the risk of infection.

In conclusion, the PFNA and PCCP are both effective measures for the clinical treatment of intertrochanteric fractures, and each has its own advantages. Among them, PFNA has a wide range of applications and relatively simple surgical operations, while PCCP is suitable for patients with poor surgical tolerance. Therefore, a comprehensive evaluation should be carried out according to the patient's age, fracture type, physical condition, and other factors, so as to select an appropriate surgical plan for internal fixation. The shortcomings of this study are that the sample size of the research object is small and it is a single-center study. Further studies with large samples and multiple centers are needed.

Data Availability

The data can be obtained from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

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Retraction

Retracted: Serum Levels of CXCL-13, RBP-4, and IL-6, and Correlation Analysis of Patients with Graves' Disease

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] Y. Hu, Y. Sun, Y. Huang, Q. Liu, and F. Ren, "Serum Levels of CXCL-13, RBP-4, and IL-6, and Correlation Analysis of Patients with Graves' Disease," *Emergency Medicine International*, vol. 2022, Article ID 5131846, 6 pages, 2022.

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Research Article

Serum Levels of CXCL-13, RBP-4, and IL-6, and Correlation Analysis of Patients with Graves' Disease

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Objective. To investigate the serum levels of CXC chemokine 13 (CXCL-13), retinol binding protein-4 (RBP-4), and interleukin 6 (IL-6) in patients with Graves' disease (GD). The correlation between CXCL-13, RBP-4, and IL-6 levels and the basal metabolic rate (BMR) was analyzed. *Methods*. 118 GD patients diagnosed in our hospital were selected as the observation group from March 2017 to December 2018. According to the measured BMR value, 118 GD patients were divided into the mild group ($n = 39$), the moderate group ($n = 47$), and the severe group ($n = 32$), three subgroups. 60 healthy subjects were selected as the control group. The serum levels of CXCL-13, RBP-4, IL-6, TSH, FT3, and FT4 in every group were measured. Pearson correlation analysis was used to observe the correlation of serum CXCL-13, RBP-4, and IL-6 levels with TSH, FT3, FT4, and BMR. *Results*. The levels of serum CXCL-13, RBP-4, and IL-6 in the observation group were higher than those of the control group, and the differences were statistically significant ($P < 0.05$). The levels of serum CXCL-13, RBP-4, and IL-6 in the moderate and severe groups were higher than those in the mild group, and the differences were statistically significant ($P < 0.05$). The levels of serum CXCL-13, RBP-4, and IL-6 in the severe group were higher than those in the moderate group, and the differences were statistically significant ($P < 0.05$). Pearson correlation analysis showed that the serum levels of CXCL-13, RBP-4, and IL-6 in GD patients were negatively correlated with TSH levels and positively correlated with FT3 and FT4 levels. Serum CXCL-13, RBP-4, and IL-6 levels in GD patients were positively correlated with BMR ($r = 0.915$, $r = 0.942$, $r = 0.926$, $P < 0.001$). *Conclusion*. Serum CXCL-13, RBP-4, and IL-6 levels are elevated in patients with GD, and with the aggravation of the disease, the serum CXCL-13, RBP-4, and IL-6 levels also increase, showing a positive correlation, which can be used as indicators to reflect the degree of GD.

1. Introduction

Graves' disease (GD), also known as toxic diffuse goiter, is an autoimmune disorder closely related to heredity, environment, diet, infection, and mental trauma [1]. GD is a common autoimmune disease in clinics, and it occurs frequently in people aged 20–45 years old in women more than men, with the ratio of men to women being 1 : 4 [2, 3]. Its clinical manifestations are not limited to thyroid symptoms, but also accompanied by other systemic manifestations, such as exophthalmos, thickening of the finger tips, skin lesions, and pretibial myxoedema [4, 5]. Imbalance of cytokines in the body often leads to imbalance of the autoimmune system and triggers autoimmune diseases. Thyroid-stimulating hormone (TSH), free triiodothyronine (FT3), and free thyroid hormone (FT4) are all thyroid hormones secreted by the human body. Determination of their content can effectively identify whether the thyroid function is abnormal, and it is an important index for the diagnosis of hyperthyroidism [6]. Similar to other autoimmune diseases, the pathogenesis of GD is related to the imbalance of related cytokines in the body [7]. The CXC chemokine 13 (CXCL-13) is a proinflammatory chemokine derived from stromal cells, which has a strong proinflammatory capacity and can bind to its receptor CXCR-5, playing an important role in the regulation, aggregation, and migration of B lymphocytes proliferation and differentiation [8, 9]. Retinol-binding protein-4 (RBP-4) is a transporter

protein distributed in blood, urine, and other body fluids, which plays an important role in fat metabolism. It can affect the output of liver glycogen and trigger inflammatory reactions, leading to autoimmune disorders [10, 11]. Interleukin-6 (IL-6), a multifunctional cytokine produced by macrophages and B lymphocytes, is involved in the differentiation, expression, growth, and activity of cells in the immune response of the body. It is able to regulate the immune system and participate in the inflammatory response, and is related to a variety of autoimmune diseases [12]. The basal metabolic rate (BMR) even refers to the unit basal metabolism of the human body in an awake and very quiet state, not affected by muscle activity, environmental temperature, food, mental stress, and other factors. BMR not more than or not less than 15% of normal is normal. Determination of BMR is a main auxiliary method for clinical diagnosis of thyroid disease. In hyperthyroidism, the basal metabolic rate can be significantly increased, while in hypothyroidism, the basal metabolic rate is significantly decreased. Therefore, the BMR level is closely related to the development of GD. The purpose of this study was to investigate the serum levels of CXCL-13, RBP-4, and IL-6 in patients with Graves' disease and to analyze the correlation between serum CXCL-13, RBP-4, and IL-6 levels and the basal metabolic rate (BMR). The specific report is as follows.

2. Materials and Methods

2.1. General Information. A total of 118 GD patients diagnosed in our hospital from March 2017 to December 2018 were selected as the observation group, including 46 males and 72 females. Their ages were from 22 to 50 years, and the average age was 35.56 ± 8.54 years . The inclusion criteria are as follows: they all met the diagnostic criteria for GD [13]; there are hyperthyroidism symptoms; diffuse goiter was confirmed by tentacle and ultrasound examination; there was pretibial myxoedema. The exclusion criteria are as follows: patients with other autoimmune diseases; patients with combined liver and kidney dysfunction; combined with severe cardiopulmonary insufficiency. Then, 60 cases who underwent health examination at the same period were selected as the control group, including 21 males and 39 females. They all aged from 20 to 49 years, and the average age was 34.56 ± 8.23. There was no significant difference between the two groups in terms of general information ($P > 0.05$), indicating that they were comparable. This study was approved by the ethics committee of our hospital, and the patients and their families signed the informed consent form.

2.2. Research Method. In the morning, 4 ml of fasting venous blood was collected from the two groups for further testing. Enzyme-linked immunosorbent assay (ELISA) was used to test serum CXCL-13, RBP-4, and IL-6 levels. Relevant test kits were purchased from Today's Chemical Technology (Shanghai) Co., Ltd., and were operated in strict accordance with the instructions. Serum TSH, FT3, and FT4 levels were determined by electrochemical luminescence immunoassay. The pulse rate and pulse pressure difference of the patients in the awake fasting state were measured in a quiet environment. The commonly used methods for the measurement of BMR include Gale and Reed methods. Gale method: BMR % = (pulse rate + pulse pressure difference) − 111; Reed method: BMR% = 0.75 × (pulse rate + pulse pressure difference × 0.74) − 72. In this study, the abovementioned two methods were used for detection of each patient and the average value was taken. Based on the measured BMR values, the observation groups were divided into the following three subgroups: mild group (39 cases), with a difference of 15%–30% from the normal value, moderate group (47 cases), with a difference of 31%–60% from the normal value, and severe group (32 cases), with a difference of more than 61% from the normal value. In this study, the average basal metabolic rate of normal Chinese people was used as the normal value, as shown in Table 1.

2.3. Statistical Analysis. SPSS22.0 software was used for processing, and the measurement data of the experimental data were expressed as mean standard deviation ($\overline{x} \cdot s$). Analysis of variance was used for multigroup comparison of measurement data between groups, and the SNK method was used for pairwise comparison. Pearson correlation analysis was used for correlation analysis. The test level was $\alpha = 0.05$, and $P < 0.05$ indicated that the difference was statistically significant.

3. Results

3.1. Comparison of Serum CXCL-13, RBP-4, and IL-6 Levels between the Two Groups. Serum CXCL-13, RBP-4, and IL-6 levels in observation group (104.95 ± 9.71 pg/mL, 23.52 ± 6.52 mg/L, 115.84 ± 12.67 ng/mL) were higher than those in the control group (67.72 ± 7.26 pg/mL, 18.89 ± 3.26 mg/L, 58.67 ± 8.52 ng/mL), and the differences were statistically significant ($P < 0.05$), as shown in Figure 1.

3.2. Comparison of Serum CXCL-13, RBP-4, and IL-6 Level in Patients with a Different Degree of GD. Serum CXCL-13, RBP-4, and IL-6 levels in the severe group (122.48 ± 10.02 pg/mL, 26.84 ± 6.05 mg/L, 123.17 ± 14.03 ng/mL) and moderate group (115.06 ± 9.26 pg/mL, 23.06 ± 5.21 mg/L, 114.49 ± 12.71 ng/mL) were higher than those in the mild group (95.26 ± 8.15 pg/mL, 20.68 ± 4.59 mg/L, 106.51 ± 10.37 ng/mL), and the differences were statistically significant ($P < 0.05$). The levels of serum CXCL-13, RBP-4, and IL-6 in the severe group (122.48 ± 10.02 pg/mL, 26.84 ± 6.05 mg/L, 123.17 ± 14.03 ng/mL) were higher than those in the moderate group (115.06 ± 9.26 pg/mL, 23.06 ± 5.21 mg/L, 114.49 ± 12.71 ng/mL), and the differences were statistically significant ($P < 0.05$), as shown in Figure 2.

3.3. Correlation between Serum CXCL-13, RBP-4, IL-6 Levels and the Thyroid Function in GD Patients. Pearson correlation analysis showed that serum CXCL-13, RBP-4, and IL-6 levels

Table 1: Average basal metabolic rate of Chinese people [KJ/($m^2 * h$)].

Age (years)	20~30	31~40	41~50
Male	157.8	158.7	154.0
Female	146.5	146.9	142.4

in GD patients were negatively correlated with TSH levels, and positively correlated with FT3 and FT4 levels, as shown in Table 2.

3.4. Correlation between Serum CXCL-13, RBP-4, and IL-6 Levels, and BMR in GD Patients. Pearson correlation analysis showed a positive correlation between serum CXCL-13 levels and BMR in GD patients ($r = 0.915$, $P < 0.001$). Serum RBP-4 levels positively correlated with BMR in GD patients ($r = 0.942$, $P < 0.001$). Serum IL-6 levels positively correlated with BMR in GD patients ($r = 0.926$, $P < 0.001$), as shown in Figures 3–5.

4. Discussion

GD is an autoimmune disease, and its pathogenesis is closely related to heredity, infection, and immune dysfunction, among which the immune factors are mainly related to the imbalance of Th17/Treg and Th1/Th2 cells. Autoantibodies and thyroid hormone secretion may be increased in GD patients, accounting for about 80% of the total cases of hyperthyroidism clinically [14, 15]. At present, it is generally not difficult to diagnose severe GD patients, but in the early stage of onset, some patients with mild illness, old age, or young age are often easily ignored because of their vague symptoms [16]. Autoimmune imbalances leading to inflammatory responses already exist in patients with early GD. The intervention of related cytokines further affects the endocrine system and immune system [17]. CXCL-13 is a chemokine that binds to its receptor CXCR-5 on the surface of B cells, causing B cells to aggregate and promote the synthesis of immunoglobulin by plasma cells, thus participating in the inflammatory response. It can also participate in the expression of inflammatory factors such as tumor necrosis factor-α and thus promote the inflammatory response [18]. RBP-4, as a retinol transporter protein secreted by adipose tissues, plays an important role in atherosclerosis and adipocyte dysfunction, and can bind to thyroxine transporter protein to form a complex to transport vitamin A, thus participating in the regulation of the cellular immune function and the maintenance of endocrine [19, 20]. IL-6 is one of the important cytokines in inflammatory immune response, which can promote the secretion of antibodies by B cells, the growth of *T* cells, and the production of IL-2. In addition, it can also regulate the growth and differentiation of many kinds of cells, regulate the immune response, acute reaction, and hematopoietic function, and play an important role in the body's anti-infection immune response. IL-6 has obvious changes in various diseases, and its level is closely related to the active period and progress of diseases. In addition, the increase of IL-6 in inflammatory reaction is earlier than that of other cytokines, CRP and PCT, and it has higher sensitivity, so it can be used to efficiently evaluate the degree of inflammation of patients [21].

The results of this study showed that the serum CXCL-13, RBP-4, and IL-6 levels in the observation group were higher than those in the control group. These results suggested that CXCL-13, RBP-4, and IL-6 might play strong pro-inflammatory roles in the pathogenesis of GD. Analysis of one of the reasons is that GD, as a common autoimmune disease, has its pathogenesis related to the imbalance of Th1/Th2 in the body. Th1 can secrete cytokines such as IL-2 and TNF-α, while Th2 cells can secrete cytokines such as IL-5 and IL-6 to mediate humoral immunity, which causes the accumulation and activation of inflammatory cells in the body, causing abnormal immune system function and ineffective monitoring. CXCL-13 can bind to its CXCR-5 receptor and is highly expressed on the surface of B lymphocytes and helper *T* cells, causing *B* cells to aggregate and thus triggering inflammation. In addition, after the body's immune regulatory dysfunction, a large number of IL-6 and other cytokines are released, while IL-6 can significantly increase the expression of CXCL-13, so the level of CXCL-13 will also be increased [22].

The main symptom of GD is hyperthyroidism, which is caused by excessive thyroid hormone secretion. When the patient's condition worsens, the body's hypermetabolism may occur, and at this time, the BMR value will increase abnormally. Therefore, the severity of clinical symptoms of GD patients can be simply judged by BMR. The results of this study showed that the serum CXCL-13, RBP-4, and IL-6 levels in the severe group and the moderate group were higher than those in the mild group, and the serum CXCL-13, RBP-4, and IL-6 levels in the severe group were higher than those in the moderate group. In addition, serum CXCL-13, RBP-4, and IL-6 levels of GD patients were negatively correlated with TSH levels and positively correlated with FT3 and FT4 levels. Serum CXCL-13, RBP-4, and IL-6 levels in GD patients were positively correlated with BMR. These results indicated that the serum levels of CXCL-13, RBP-4, and IL-6 were higher with the severity of the disease. The reason was analyzed as follows: with the aggravation of the disease, the immune response of the thyroid gland was started, resulting in further imbalance of the immune system in the body and further aggravation of the inflammatory response, inducing the differentiation of a large number of macrophages and nerve cells, and further increasing the level of inflammatory factors. The increased levels of inflammatory factors aggravate the further stimulation and damage of thyroid follicular cells, thereby releasing more thyroid hormones and further enhancing the inflammatory response of the body, forming a vicious circle [23, 24].

To sum up, serum CXCL-13, RBP-4, and IL-6 levels in GD patients were increased, and as the patient progressed, serum CXCL-13, RBP-4, and IL-6 levels also increased in a positive correlation. Serum CXCL-13, RBP-4, and IL-6 levels could be used as indicators to reflect the severity of GD. The shortcoming of this study lay in the small sample size. The

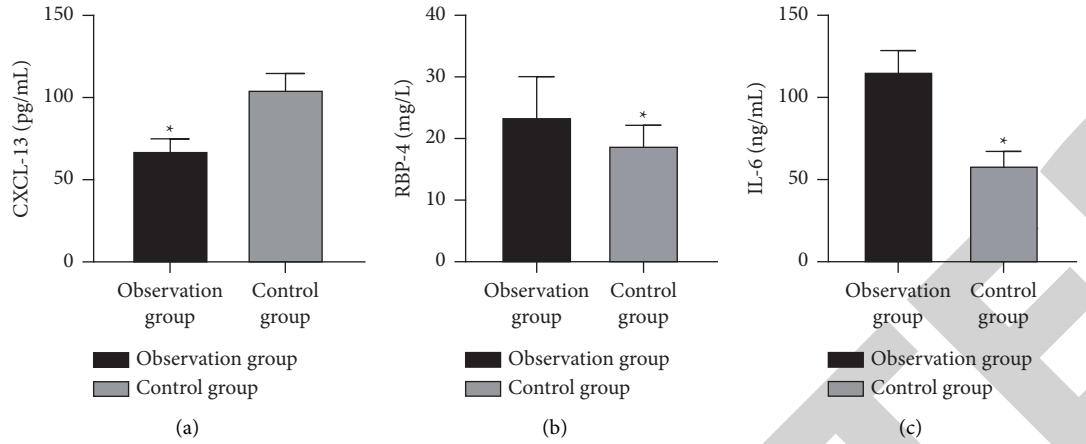

Figure 1: Comparison of serum CXCL-13, RBP-4, and IL-6 levels between the two groups. Note: compared with the control group, $^{*}P < 0.05$. (a) Represents a comparison of CXCL-13 levels; (b) represents a comparison of RBP-4 levels; (c) represents a comparison of IL-6 levels.

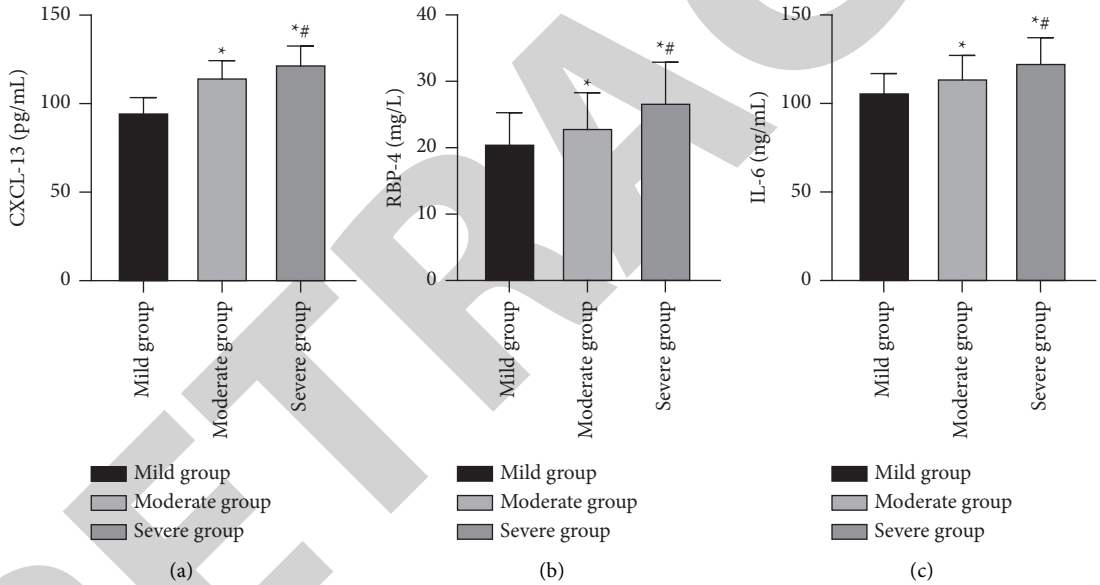

Figure 2: Comparison of serum CXCL-13, RBP-4, and IL-6 levels in patients with different a degree of GD. Note: compared with mild group, $^{*}P < 0.05$; compared with the moderate group, $^{\#}P < 0.05$. (a) Represents a comparison of CXCL-13 levels; (b) represents a comparison of RBP-4 levels; (c) represents a comparison of IL-6 levels.

Table 2: Correlation between serum CXCL-13, RBP-4, and IL-6 levels, and thyroid function in GD patients.

Index	TSH		FT3		FT4	
	r value	P value	r value	P value	r value	P value
CXCL-13	−0.692	0.022	0.675	0.024	0.653	0.028
RBP-4	−0.802	0.003	0.812	0.000	0.792	0.004
IL-6	−0.756	0.007	0.726	0.010	0.742	0.008

selected samples were all from our hospital, and further multicenter and in-depth studies with an expanded sample size is required in the future. Second, this study was only conducted in humans, without exploring the specific mechanism. Further experiments are required to investigate the cellular biological mechanism in the future.

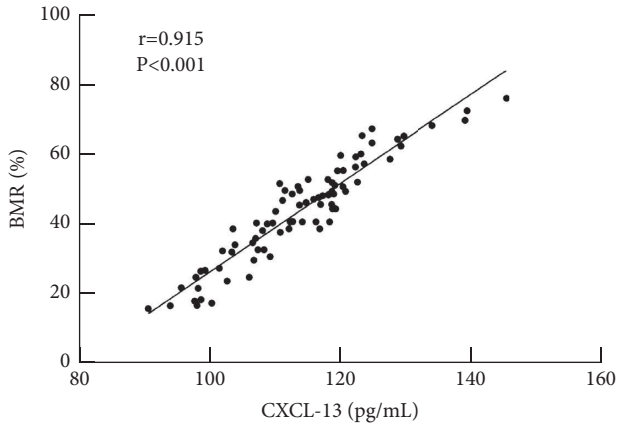

Figure 3: Scatter plot of correlation between the serum CXCL-13 level and BMR in patients.

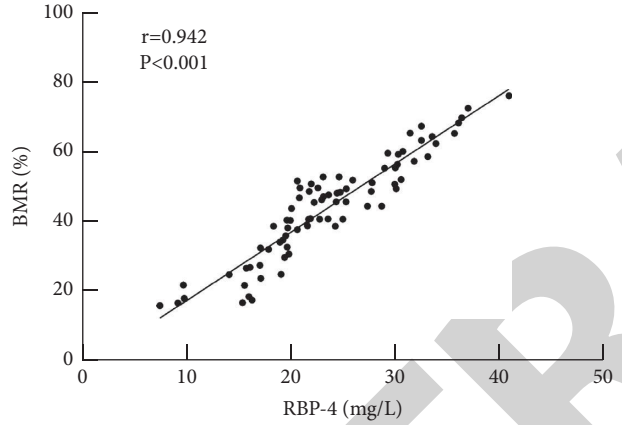

Figure 4: Scatter plot of correlation between theserum RBP-4 level and BMR in patients.

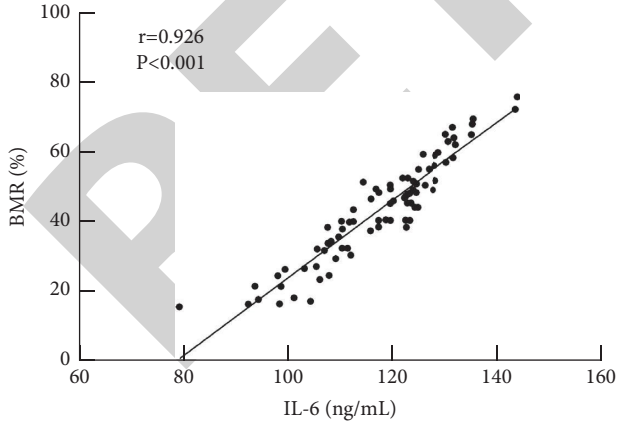

Figure 5: Scatter plot of correlation between the serum IL-6 level and BMR in patients.

Data Availability

The datasets generated during and/or analysed during the current study are available from the corresponding author upon reasonable request.

Disclosure

Yanqin Hu and Yue Sun are the co-first authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Application and the Effect of the Triple Prerehabilitation Nursing Model in the Perioperative Period of Knee Arthroplasty in Diabetic Patients

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] S. Zhao, L. Peng, T. Mo, and Q. Ruan, "Application and the Effect of the Triple Prerehabilitation Nursing Model in the Perioperative Period of Knee Arthroplasty in Diabetic Patients," *Emergency Medicine International*, vol. 2022, Article ID 1858631, 6 pages, 2022.

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Research Article

Application and the Effect of the Triple Prerehabilitation Nursing Model in the Perioperative Period of Knee Arthroplasty in Diabetic Patients

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Objective. The aim of the study was to explore the application and the effect of the triple prerehabilitation nursing model in the perioperative period of knee arthroplasty in diabetic patients. *Methods*. The prospectively included 60 patients with diabetes who underwent total knee replacement were admitted from August 2021 to April 2022 and were divided into 2 groups according to the (1 : 1) ratio. The control group was mainly given routine nursing care. On the basis of the control group, the observation group received triple prerehabilitation nursing. The postoperative knee flexion, hospital for the special surgery knee score (HSS), the daily living ability (Barthel) score, the modified fall efficacy scale (MFES) score, the recovery of the lower-limb muscle strength, and the incidence of complications were compared between the two groups. *Results*. The knee flexion degree and lower-limb muscle recovery of the observation group were better than those of the control group at 3 d, 7 d, and 14 d after operation ($P < 0.05$). The HSS score, Barthel score, and MFES score of the observation group were higher than those of the control group ($P < 0.05$). There was no significant difference in postoperative complications between the two groups ($P > 0.05$). *Conclusion*. The triple prerehabilitation nursing care for diabetic patients undergoing total knee replacement can promote the recovery of limb function.

1. Introduction

Diabetes has become the third largest threat to health after tumors and cardiovascular and cerebrovascular diseases, with an incidence of more than 170 million worldwide [1]. If diabetes is complicated with knee joint diseases, total knee arthroplasty should be performed as soon as possible, which can effectively improve the functional state of the affected limbs and joints, correct joint deformities, and improve the quality of life. Although the treatment effect is remarkable, due to concurrent diabetes, the postoperative recovery time may be prolonged and the possibility of postoperative complications may even be increased. In this regard, medical staff should pay attention to nursing guidance for patients to improve their prognosis [2]. Although routine nursing can provide high-quality care in the perioperative period, it lacks targeted nursing guidance, especially the overall effect of postoperative rehabilitation is poor [3]. Triple prerehabilitation nursing is a newly proposed nursing strategy in recent years. It can be patient-centered, optimize various detailed nursing care, and better promote postoperative functional recovery of patients. However, it is now commonly used in the fields of thoracic surgery and abdominal surgery [4]. Scholars use triple prerehabilitation nursing in patients with diabetes complicated by knee replacement. Due to the late start, the effect is still in the exploratory stage. Based on this, this article conducts an investigation and further explores the advantages of triple prerehabilitation nursing, in order to provide a basis for the improvement of nursing programs in the future.

2. Materials and Methods

2.1. Basic Information. From August 2021 to April 2022, 60 patients with diabetes who underwent total knee replacement were prospectively selected as the research subjects. They were divided into the observation group and the control group according to the (1 : 1) ratio. In the observation group, there were 19 males and 11 females, with an average age of (62.38 ± 4.25) years, and random blood glucose of (11.35 ± 2.35) mmol/L; bone and joint classification: 20 cases were grade III and 10 cases were grade IV. In the control group, there were 17 males and 13 females, with an average age of (62.49 ± 4.33) years, and random blood glucose (11.29 ± 2.78) mmol/L; bone and joint classification: 18 cases were grade III and 12 cases were grade IV. There was no statistical difference in sex, age, bone, joint grade, and blood sugar between the two groups ($P > 0.05$). The research complies with the Declaration of Helsinki. Inclusion criteria are as follows: ① patients who meet the diagnostic criteria for diabetes [5]; ② all of them have severe knee osteoarthritis and are in line with the indications for knee replacement [6]; ③ patients who are able to perform bilateral lower extremity exercise training before surgery; ④ those aged ≥18 years old; ⑤ those who signed written informed consent should have no communication or cognitive impairment. Exclusion criteria are as follows: ① patients with diabetic foot with poor blood sugar control; ② those with severe peripheral arterial disease; ③ those with abnormal coagulation function; ④ those with bilateral total knee arthroplasty; ⑤ those with combined neurogenic disease that may affect postoperative joint function recovery.

2.2. Methods. The control group was mainly given routine nursing care [7], including (1) preoperative nursing: routine examinations were performed before the operation to control the blood sugar level (give oral hypoglycemic drugs or insulin injections) to lay a good foundation for the success of the operation and inform the patients before the operation. The fasting and water duration should be explained to the patient. (2) Postoperative care: ① blood sugar control: we should pay attention to dietary choices such as reasonably mix protein, fat, sugar, and closely monitor postoperative blood sugar changes. For those with high blood sugar, hypoglycemic treatment should be given on time. ② Complication care: nursing staff closely observe the local skin condition of the incision, whether there is bleeding, exudation, etc., and monitor the change in body temperature, nursing staff closely observe venous return, skin temperature, and swelling of the affected limb, and the patient should be instructed to move the ankle joint as soon as possible to prevent thrombosis. ③ Rehabilitation training: rehabilitation training should be carried out step by step, from passive exercise to active exercise.

On the basis of the control group, the observation group received triple prerehabilitation nursing. (1) Formation of a nursing team: it is formed by nurses specialized in accelerated recovery nursing, specialized nurses in rehabilitation, orthopaedic surgeons, and psychiatrists. The members of the team discuss the nursing plan together, conduct a nursing assessment once a week, and adjust the nursing procedures appropriately according to the patient's recovery. (2) Sports training: ① exercise training: the warm-up exercise includes five parts ankle joint movement, trunk movement, body extension, neck movement, and head movement. a: Head movement: the patient takes a standing position, puts hands on both sides naturally, rotates the head to the left and right sides, and repeats it five times; b: body extension: the patient takes a standing position, puts hands on the waist, with the feet and the shoulder width apart, keeps the center of gravity backwards, tries to lean back as far as possible, and then repeats it several times; c: neck movement: it naturally relaxes the neck, and the patient slowly pushes up the lower jaw with one hand, keeps the back stretched, returns to the position, and repeats it several times; d: ankle joint movement: the patient takes the lying or sitting position, straightens one leg, uses the ankle joint as the fulcrum, flexes the toes, and flex the toes for 10 s each; e: trunk movement: the patient takes the standing position, places the hands on the right and left iliac bones, slightly separates the feet, and slowly tries their best to turn the torso. ② Quadriceps strength exercise: a: knee joint exercise: the patient puts a soft pillow under the ankle joint, ties the muscles on the front of the thigh, straightens the knee joint as much as possible, presses down on the bed hard, continues for 10 s, relaxes for 10 s, and repeats it several times; b: knee extension exercise: the patient ties an elastic motion fixing belt on an immovable object. The patient sits in a chair with armrests and a backrest, ensuring that the edge of the seat is 2 cm behind the knee, and a soft pillow is placed under the thigh. The patient wraps the elastic belt around the ankle, lean backs against the back of the chair, lifts the leg with the fixed belt off the ground, extends the knee joint forward, parallel to the ground, holds the position for 4 seconds, slowly flexes the knee joint until it remains at 80°~90°, and holds the back position for 4 seconds; c: recumbent straight leg raising training: the patient straightens both lower limbs, raises the legs alternately, leaves the bed at the highest position, holds the position for 10 s, gently lowers it, and repeats it 10 times. ③ Balance exercises include stair climbing, tip-toe walking, heel walking, standing on one leg, sitting and walking on the left and right sides, walking with "8" characters, walking backwards with auxiliary tools, and bending your knees. (3) Nutritional support: we should maintain a balanced choice of food, we should choose appropriate food according to the patient's preference, condition, and taste, we should limit the intake of high-fat and high-calorie diet, change unhealthy eating habits, and appropriately increase high-quality protein (soybeans, eggs, milk, lean meat, and fish) and fresh fruits and vegetables, and we should selectively supplement whey protein powder according to the situation. We should choose the quantitative supplement method, 15 g per day for women and 20 g per day for men, so as to promote muscle synthesis (4) Psychological intervention: during the training period, it is necessary to cooperate with psychological counseling to teach patients some techniques to eliminate anxiety, such as breathing training and relaxation training to relieve inner anxiety, tension, and other emotions.

2.3. Observation Indicators. (1) We should instruct the patient to take the supine position, straighten the legs, bend the lower legs, and the fixed arm should be parallel to the longitudinal axis of the femur, and we should use a protractor to align the lateral malleolus of the femur and measure the knee joint before and 3 d, 7 d, and 14 d after the operation. (2) Hospital for the special surgery knee score (HSS) score [8]: 14 days after the operation, we should evaluate the patient's preoperative and postoperative joint stability, flexion deformity, muscle strength, range of motion, limb function, and other items, with a maximum score of 100 points. >85 points are excellent, 70–84 points are good, 60–69 points are fair, and <60 points are poor. The higher the score, the better joint function. Abilities of the daily living (Barthel) score [9]: 14 days after the operation, we should evaluate 10 items such as going up and down stairs, control of bowel and bladder, bathing, eating, and going to the toilet, with a maximum score of 100 points. The better the ability of daily living, the higher the score. The modified fall efficacy scale (MFES) score [10]: 30 days after the operation, 14 items including bathing, changing clothes, getting in and out of bed, simple shopping, and crossing the road should be evaluated, and each item is marked with 0–10 points, if the score is lower, it indicates the greater degree of fear of falling. (3) 30 days after the operation, the recovery of lower extremity muscle strength was recorded: The lower extremity muscle strength was divided into 5 grades according to the examination. Normal muscle strength: Grade 5; limbs can resist partial resistance: Grade 4; the limb cannot resist the resistance, and the limb can be raised: Grade 3; limbs cannot be lifted off the bed surface but can only be moved in parallel on the bed: Grade 2; the limbs cannot complete the movement, only the muscles can contract: Grade 1; complete paralysis: Grade 0. (4) Complications such as lower extremity venous thrombosis, postoperative infection, and prosthesis loosening were compared between the two groups within 30 days after the operation.

2.4. Statistical Processing. SPSS 20.0 statistical software was used for processing, and measurement data were represented by ($\overline{x} \pm s$). The differences between the two groups at multiple time points were analyzed by repeated measure analysis of variance. Pairwise comparisons were performed using the LSD-t-test. The count data are expressed in (%), and generalized estimating equation analysis and the χ^2 test were performed. $P < 0.05$ indicated a statistically significant difference.

3. Results

3.1. Comparison of Knee Flexion Degrees. Repeated measure data analysis of variance showed that knee flexion was statistically significant in terms of the time factor and group interaction ($P < 0.05$). After the pairwise comparison of LSD-t, there was no significant difference in preoperative knee flexion ($P > 0.05$). However, the recovery of knee flexion in the observation group was better at each time period after operation ($P < 0.05$) as shown in Table 1.

3.2. Comparison of HSS Scores. The preoperative HSS score of the observation group was (56.65 ± 4.15), and the HSS score was (88.65 ± 2.32) at 14 days after the operation; the preoperative HSS score of the control group was (56.79 ± 4.23), and the HSS score at 14 days after the operation was (81.02 ± 2.41). The postoperative HSS score of the observation group was higher than that of the control group ($t = 12.837$; $P < 0.001$) as shown in Figure 1.

3.3. Comparison of Barthel Scores. The Barthel score of the observation group was (62.35 ± 2.32) before the operation, and the Barthel score was (90.68 ± 2.11) at 14 days after the operation; In the control group, the Barthel score was (62.49 ± 2.55) before the operation, and the Barthel score was (82.79 ± 2.52) at 14 days after the operation. The postoperative Barthel score in the observation group was higher than that in the control group ($t = 13.250$; $P < 0.001$) as shown in Figure 2.

3.4. Comparison of MFES Scores. The preoperative MFES score of the observation group was (60.87 ± 2.15), and the 30-day postoperative MFES score was (86.65 ± 2.54). In the control group, the preoperative MFES score was (60.59 ± 2.43) and the postoperative 30-day MFES score was (80.32 ± 2.11). The postoperative MFES score of the observation group was higher than that of the control group ($t = 10.488$; $P < 0.001$) as shown in Figure 3.

3.5. Comparison of Lower-Limb Muscle Strength Recovery. The recovery of lower-limb muscle strength in the observation group was better than that in the control group ($P < 0.05$) as shown in Table 2.

3.6. Comparison of Complication Rates. In the observation group, 1 case of infection and 1 case of lower extremity venous thrombosis occurred after the operation, totaling 6.67% (2/30). In the control group, there was 1 case of prosthesis loosening, 1 case of postoperative infection, and 1 case of lower extremity venous thrombosis, totaling 10.00% (3/30). There was no significant difference in postoperative complications between the two groups ($\chi^2 = 0.218$; $P = 0.640$) as shown in Figure 4.

4. Discussion

With the improvement of the application of imaging technology and computer simulation technology, total knee arthroplasty has been promoted in clinical practice. Compared with traditional surgical methods, it is more in line with the biomechanical characteristics of the knee joint, can improve the function of the knee joint, relieve local pain, and improve the quality of life. Total knee arthroplasty has irreplaceable advantages, but for patients with concurrent diabetes, it can increase the risk factor of surgery, cause a

Table 1: Comparison of knee flexion degrees between the two groups at different time periods.

Group	n	Preoperative	3 d after surgery	7 days after surgery	14 days after surgery
Observation group	30	77.46 ± 4.52	88.61 ± 5.32	94.78 ± 5.54	104.68 ± 7.19
Control group	30	77.59 ± 4.36	83.33 ± 4.47	89.45 ± 4.39	96.65 ± 6.65
F value	—	$F_{time} = 1675.532$, $F_{Interaction} = 44.532$, $F_{betweenthegroups} = 15.419$			
P value	—	P time < 0.001, P Interaction < 0.001, P between the groups < 0.001			

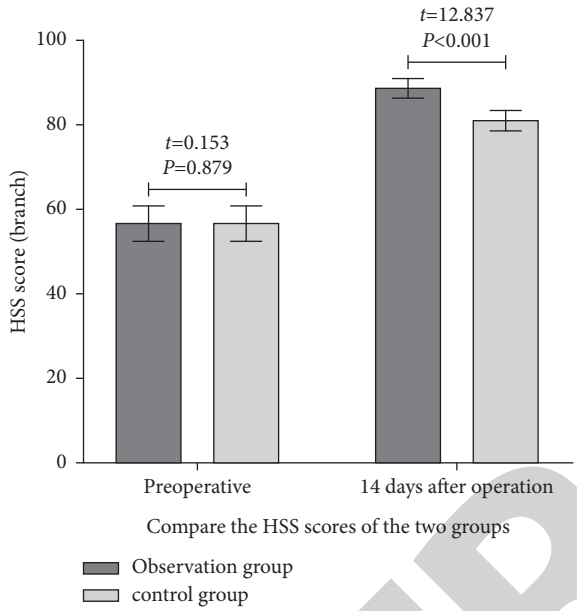

Figure 1: Comparison of the HSS scores between the two groups.

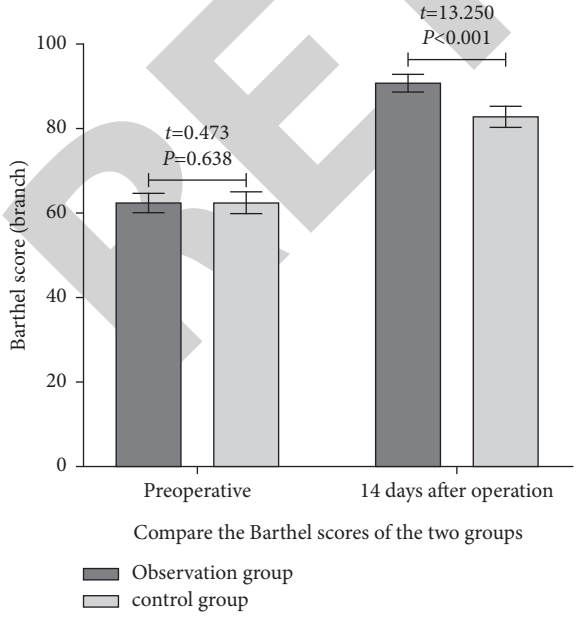

Figure 2: Comparison of the HSS scores between the two groups.

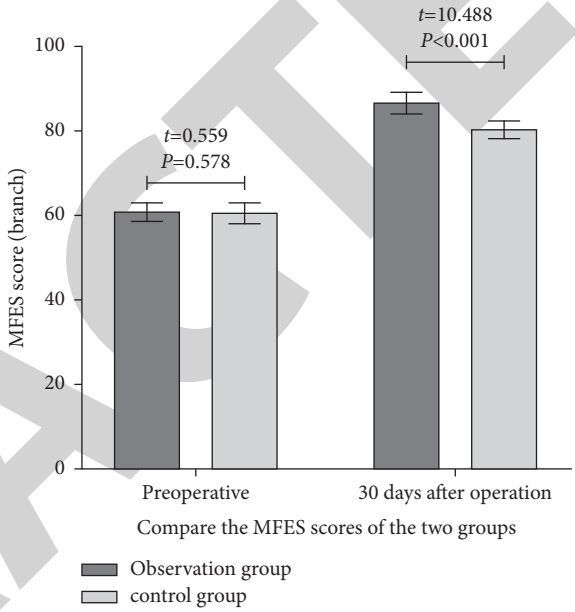

Figure 3: Comparison of the MFES scores between the two groups.

stress response, and affect the prognosis. For this, corresponding nursing guidance should be given according to the characteristics of the patient's condition to improve the prognosis [11, 12]. In the past, it was difficult for routine nursing to meet the needs of such special groups of patients. It is necessary to provide patients with more satisfactory, more complete, and more comprehensive nursing services through innovative nursing models so as to ensure the quality of nursing and to meet the needs of patients [13]. With the promotion of the concept of fast recovery, scholars have found that it can greatly improve the prognosis and promote postoperative recovery [14]. The triple prerehabilitation nursing is a comprehensive nursing plan based on the concept of rapid rehabilitation. The nursing mode is divided into three aspects, namely, rehabilitation nursing, nutritional support, and psychological support. It can better promote the patient's recovery after surgery, but there are few relevant studies in my country, and the effect remains to be explored.

Analysis of the results of this study showed that there was no statistical difference in postoperative complications between the two groups, indicating that paying attention to preoperative and postoperative nursing in routine nursing

Table 2: Comparison of the recovery of lower-limb muscle strength between the two groups.

Group	n	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Observation group	30	0	0	0	1	2	27
Control group	30	0	0	1	2	4	23
Z value	—			−5.838			
P value	—			<0.001			

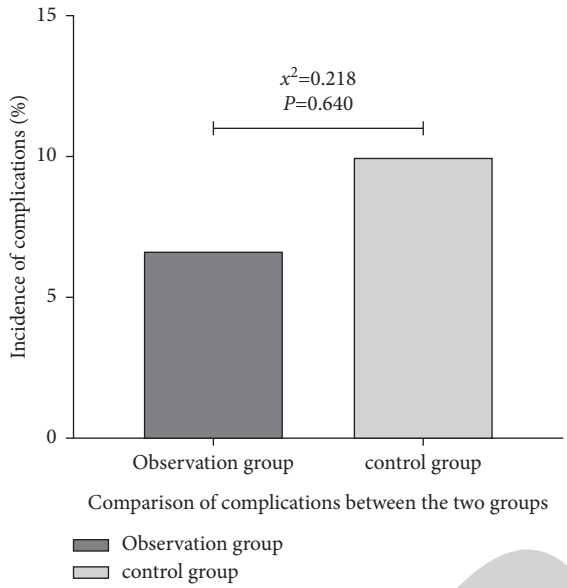

Figure 4: Comparison of complications between the two groups.

can lay a good foundation for postoperative rehabilitation and prevent postoperative complications. In addition, compared with the control group, the observation group had better knee flexion, lower-limb muscle strength recovery, and higher HSS score, indicating that triple prerehabilitation nursing can better prevent muscle atrophy around the knee joint, give full play to "brain plasticity", and increase muscle strength. Triple prerehabilitation nursing can fully mobilize various reflexes of the body, better restore the maximum muscle strength of the limbs, and improve the function of the limbs. We analyze the reasons as follows: on the one hand, triple prerehabilitation nursing fully considers the anatomical position and stress of the knee joint and adopts a special biomechanical movement mode, such as ankle joint, trunk, neck, head movement, and body extension, which is beneficial to the recovery of the quadriceps femoris muscle and prevent knee flexion contracture [15]. On the other hand, early standardized exercise can prevent joint capsule and tendon contractures and adhesions, enhance muscle strength, increase local blood circulation, soften scars, improve knee joint function, and restore normal limb and joint function [16, 17]. In addition, the Barthel score and MFES score of the observation group were higher than those of the control group. This shows that triple prerehabilitation nursing can better improve the patients' cooperation, enthusiasm, and initiative, promote disease recovery, and improve the quality of life. In triple pre-rehabilitation nursing, warm-up exercise, balance training, and quadriceps strength exercise can improve the swelling of the surgical site, promote venous lymphatic return, prevent the occurrence of flexion contracture, improve the function of the knee joint and the contraction ability of the surrounding muscles, enhance the strength of the knee joint, and improve the postoperative quality of life. Through nutritional support, the body's nutrient needs can be supplemented and the body's resistance and immunity can be improved. Psychological intervention can stabilize patients' emotions so that rehabilitation training can be carried out smoothly [18, 19].

In conclusion, triple prerehabilitation nursing can promote functional rehabilitation of the knee joint and improve postoperative discomfort symptoms. However, this study also has shortcomings. First, the sample size is limited, and second, long-term follow-up and observation are not carried out. Therefore, the long-term effect of this nursing model remains to be explored.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author on request.

Ethical Approval

This study was approved by the ethics committee of our hospital (KY2021104101).

Conflicts of Interest

The authors declare no conflict of interest.

Acknowledgments

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Retraction

Retracted: Clinical Effect of Apatinib Mesylate Tablets Combined with Paclitaxel Concurrent Radiotherapy and Chemotherapy in the First-Line Treatment of Locally Advanced Nasopharyngeal Carcinoma

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] D. Zhan, Z. Chen, D. Yang, J. Wen, and W. Liu, "Clinical Effect of Apatinib Mesylate Tablets Combined with Paclitaxel Concurrent Radiotherapy and Chemotherapy in the First-Line Treatment of Locally Advanced Nasopharyngeal Carcinoma," *Emergency Medicine International*, vol. 2022, Article ID 6293816, 8 pages, 2022.

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Research Article

Clinical Effect of Apatinib Mesylate Tablets Combined with Paclitaxel Concurrent Radiotherapy and Chemotherapy in the First-Line Treatment of Locally Advanced Nasopharyngeal Carcinoma

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Objective. To explore the clinical efficacy and safety of apatinib combined with paclitaxel in the first-line treatment of locally advanced nasopharyngeal carcinoma. *Methods*. From March 2016 to June 2018, 114 patients with locally advanced nasopharyngeal carcinoma who received first-line treatment in our hospital were selected as the patient group, and those who received apatinib combined with paclitaxel concurrent radiotherapy and chemotherapy were selected as the research group ($n = 54$), while those who received paclitaxel concurrent radiotherapy and chemotherapy were selected as the control group ($n = 60$). Sixty healthy individuals in our hospital were recruited in the same period as the healthy group. The clinical effective rate, adverse reactions, 2-year overall survival rate (OS), 2-year progression-free survival rate (PFS), and quality of life were compared between the two groups, and the expression of miR-655 in the serum of each group was tested by RT-qPCR. *Results*. The total clinical effective rate of the research group was higher than that of the control group, and the 2-year OS and PFS of the research group were also higher than those of the control group ($P < 0.05$). Both groups of patients could tolerate the treatment, but the incidence of hypertension and proteinuria in the research group was higher than that in the control group ($P < 0.05$). The expression of miR-655 in the serum of patients was lower than that of the healthy group ($P < 0.05$). After treatment, miR-655 in serum increased in both the groups and miR-655 in the research group was higher than that in the control group ($P < 0.05$). The 2-year survival rate of OS and PFS in patients with low expression of miR-655 was significantly lower than that in patients with high expression of miR-655 ($P < 0.05$). *Conclusion*. Apatinib combined with paclitaxel concurrent radiotherapy and chemotherapy is effective and well-tolerated in the treatment of locally advanced nasopharyngeal carcinoma, which improves the quality of life of patients and can be popularized in clinical practice. In addition, the increase of miR-655 may be a target for treating nasopharyngeal carcinoma.

1. Introduction

Nasopharyngeal carcinoma is an epithelial malignancy, which is prone to local infiltration and early distant metastasis [1]. It is estimated that there are about 130,000 new cases of nasopharyngeal carcinoma in the world in 2018, with the highest incidence in south China, southeast Asia, and North Africa [2]. Because of the deep location of nasopharyngeal carcinoma and the lack of obvious clinical signs in the early stage, more than 70% of the patients were diagnosed as locally advanced at the time of visit, and the prognosis is still poor [3]. At present, concurrent radiotherapy and chemotherapy are often used as the standard treatment strategy for locally advanced nasopharyngeal carcinoma, which can effectively reduce the local recurrence rate and improve the survival rate and local control rate [4]. However, some patients with nasopharyngeal carcinoma will relapse after radiotherapy and chemotherapy [5]. Therefore, finding ways to improve the effectiveness of an antitumor regimen and to prolong the disease-free survival time of patients is a hot spot in clinical research.

Tumor angiogenesis is a necessary step for tumor development and metastasis, and the vascular endothelial

growth factor (VEGF) and its receptor (VEGFR) act in this process [6]. Previous studies have found that the VEGF/VEGFR is overexpressed in most NPC patients, which is related to the increased risk of metastasis and the decreased survival time of NPC [7–9]. Therefore, inhibiting the VEGF signaling is considered as one of the effective ways to treat NPC patients. The apatinib is an inhibitor of the VEGFR-2, which can inhibit tumor angiogenesis by selectively binding and inhibiting VEGFR-2, so as to control the tumor development [10]. In 2014, apatinib was approved by China Food and Drug Administration for the treatment of advanced gastric cancer. However, apatinib has not been approved for the treatment of nasopharyngeal carcinoma, and relevant clinical trials are still needed. The microRNA (miR) is a kind of noncoding small RNA, which is widely distributed in animals and plants. By binding to the 3′UTR region of the target gene, it leads to the degradation of mRNA or the inhibition of mRNA translation, thus regulating gene transcription and translation [11, 12]. Through deep understanding of miR, it is found that miR can participate in various tumor development processes and is considered as an important potential target for tumor therapy [13]. MiR-655 is a member of miR, which has been widely considered because its expression is downregulated in many malignant tumors and plays a role in inhibiting tumors [14–16]. However, the role of miR-655 in nasopharyngeal carcinoma is not clear.

This research explored the clinical efficacy and safety of combining apatinib with paclitaxel concurrent chemoradiotherapy in the treatment of locally advanced nasopharyngeal carcinoma [17].

2. Materials and Methods

2.1. Research Participants. Altogether 114 patients with locally advanced nasopharyngeal carcinoma (stage III, IVa of the seventh edition ofAJCC) who received first-line treatment in our hospital from March 2016 to June 2018 were selected as the patient group, and those who received apatinib combined with paclitaxel concurrent radiotherapy and chemotherapy were selected as the research group ($n = 54$), while those who received paclitaxel concurrent radiotherapy and chemotherapy were selected as the control group ($n = 60$). Inclusion criteria: patients were first diagnosed with nasopharyngeal carcinoma by endoscopic pathological biopsy; the estimated survival time was ≥12 months; the status of the eastern cooperative oncology group (ECOG) was ≤1; Karnofsky (KPS) score was ≥80 points. Exclusion criteria: those with contraindications of radiotherapy; those with distant metastasis; those with contraindications for the use of drugs in this research; those combined with malignant tumors of other systems; those who suffered from mental system diseases; those with dysfunction of important organs such as heart, liver, and kidney; those with incomplete clinical data; due to mental illness or poor compliance, the patient was unable to cooperate with the established treatment plan; those dropped halfway; and pregnant or lactating women. In the same period, 60 healthy individuals in our hospital were recruited as the healthy group, and there were 36 males and 24 females, with an average age of 48.36 ± 5.71 years and an average BMI of 23.91 ± 1.21 kg/m^2 in the healthy group. There was no statistical difference in the general information between the patient group and the health group. All participants voluntarily signed the informed consent, and this study conformed to the ethics committee.

2.2. Therapeutic Method. The control group was treated with paclitaxel concurrent radiotherapy and chemotherapy. The operation was as follows: in the supine position, the patient's neck, nasopharynx, and skull base were irradiated in vitro by MV-X-ray. The total dose of nasopharyngeal irradiation was 66~74 Gy for 6.5~7.5 weeks. Patients with lymph node metastasis were administered with 66–74 Gy irradiation. On the 1st, 22nd and 43rd days during radiotherapy, paclitaxel (135-175mg/m^2) was administered intravenously, for 3 weeks as one chemotherapy cycle, and the patients had undergone 3 cycles of treatment. In the research group, on the basis of the treatment in the control group, at the same time each day, half an hour after a meal, patients were orally administered 500 mg apatinib mesylate tablets (Approval number:H20140103; Jiangsu Hengrui Pharmaceutical Co., Ltd.; 250 mg/s) once daily with concurrent radiation and chemotherapy. Adverse reactions were closely monitored during the use and were adjusted as needed to allow the patient to tolerate the treatment with continuous administration of apartinib mesylate until disease progression or intolerable adverse reactions occurred/disappeared.

2.3. Outcome Measures. After the treatment, the clinical curative effect was evaluated according to RECIST1.1, which was divided into complete remission (CR), partial remission (PR), stable disease (SD), and progressive disease (PD). The total effective rate was calculated as total effective rate = (CR + PR)/total cases × 100%.

Two groups of patients were followed up for 2 years by outpatient service, telephone calls and by visiting, and the 2-year overall survival (OS) and the disease progression-free survival (PFS) curves were established. The OS is the time from the start of the treatment to the death or the last follow-up, while PFS is the time from the start of treatment to tumor progression or death.

Adverse reactions of the two groups during treatment were recorded, including the bone marrow suppression, impaired liver and kidney function, dermatitis, diarrhea and vomiting, dry mouth and sore throat, leukopenia, and thrombocytopenia.

The EORTC QLQ-C30 was used to evaluate the quality of life, including body, role, emotion, cognition, and society. The higher score indicated the better quality of life.

2.4. RT-qPCR Detection. Before and after treatment, 5 ml of venous blood was collected from the patients in the two groups, while 5 ml of venous blood in the healthy group was collected after entering the group. The samples were sent to the laboratory for centrifugation, and the upper serum was

collected and placed for later use. The total RNA was extracted from the serum samples using the TRIzol kit (Invitrogen, USA), and the purity, concentration, and integrity of the extracted total RNA were tested using the ultraviolet spectrophotometer and agarose gel electrophoresis, followed by reverse transcription by using the reverse transcription kit (Invitrogen, USA). The amplification was carried out by using the SYBR_Premix ExTaq II (Takara, China) and the ABI 7500PCR instrument (Applied Biosystems, USA). The amplification system was the SYBR Premix Ex Taq II (2X) (10 μL), the cDNA (2 μL), and the upstream and downstream primers (0.8 μL). Sterile purified water was supplemented to 20 μL, and the amplification conditions were predenatured at 95°C for 30 s, then denatured at 95°C for 5 s, and annealed and extended at 60°C for 30 s, for a total of 40 cycles. Each sample was provided with 3 repeated wells, and the experiment was repeated 3 times. The U6 was applied as the internal reference of the miR, and $2^{-\triangle\triangle ct}$ was applied to test these data [18].

2.5. Statistical Method. The research data were analyzed by using the SPSS 18.0 (EASYBIO), and the pictures were visualized by the GraphPad Prism 7. The counting data were expressed by n (%) and compared by the Chi-square test. The measurement data were expressed by (x±sd) and compared by the independent sample t-test, and the paired t-test was applied for intragroup comparison before and after treatment. The Kaplan–Meier method was used to visualize the OS curve for 2 years, and the log-rank test was used to analyze the difference in survival rate between the two groups. $P < 0.05$ represented a statistical difference.

3. Results

3.1. General Data. There was no significant difference in the general data such as gender, age, BMI index, KPS score, TNM stage, smoking history, and ECOG score between the two groups ($P > 0.05$) (Table 1).

3.2. Clinical Efficacy. In the control group, there were 21 cases of CR (35.00%), 18 cases of PR (30.00%), 17 cases of SD (28.33%), and 4 cases of PD (6.67%), with a total effective rate of 65.00%. In the research group, there were 26 cases of CR (48.15%), 19 cases of PR (35.19%), 8 cases of SD (14.81%), and 1 case of PD (1.85%), with a total effective rate of 83.33%. The total effective rate of the research group was higher than that of the control group ($P < 0.05$) (Table 2).

3.3. Comparison of OS and PFS in Two Years. During the two-year follow-up, in the research group, 4 cases died and 6 cases experienced disease progression, and in the control group, there were 13 cases and 18 cases who experienced disease progression. The two-year OS ($P = 0.0333$, logrank test) and PFS ($P = 0.025$, logrank test) of the research group were higher than those of the control group (Figure 1).

3.4. Adverse Reaction. During the treatment, no drug allergies occurred in the patients, and the patients tolerated the treatment well. There was no significant difference in the incidence of bone marrow suppression, impaired liver and kidney function, dermatitis, diarrhea and vomiting, and hand-foot syndrome between the two groups during treatment ($P > 0.05$), but the incidence of hypertension and proteinuria in the research group was higher than that in the control group ($P < 0.05$) (Table 3).

3.5. Comparison of Quality of Life. The QLQ-C30 showed that there was no significant difference in the scores of QLQ-C30 before treatment between the two groups ($P > 0.05$). After treatment, the scores in the two groups increased significantly, but the scores in the research group were higher than those in the control group ($P < 0.05$) (Figure 2).

3.6. Comparison of miR-655 in Serum of Each Group. miR-655 in the serum of the healthy group and the patient group before treatment was tested using the RT-qPCR, and miR-655 in the patient group was significantly lower than that of the healthy group ($P < 0.05$). There was no significant difference between the two groups before treatment ($P > 0.05$). After treatment, miR-655 in both the groups increased significantly, and miR-655 in the research group was higher than that in the control group ($P < 0.05$) (Figure 3).

3.7. Relationship of miR-655 with the Prognosis of Patients. According to the median expression of miR-655 in serum before treatment, the patients were divided into the high expression group and low expression group. During the two-year follow-up, in the research group, 5 cases died and 5 cases experienced disease progression; in the control group, there were 12 cases and 19 cases experienced disease progression. The two-year OS and PFS curves showed that the two-year OS of the high expression group was higher than that of the low expression group ($P = 0.024$, log-rank test), and the two-year PFS of the high expression group was also higher than that of the low expression group ($P = 0.019$, log-rank test) (Figure 4).

4. Discussion

At present, concurrent radiotherapy and chemotherapy have become the main choice for nasopharyngeal carcinoma. However, nasopharyngeal carcinoma is prone to recurrence and early metastasis, thus leading to poor prognosis [19]. In recent years, with the clinical application of targeted drugs, there is one or more treatments for cancer patients. In the tumor microenvironment, the growth and metastasis of the cancer cells depend on the angiogenesis of the new tumor, and this process is closely related to the activation of the VEGF signaling pathway [20]. Apatinib is a new type of oral antiangiogenesis agent, and its anticancer effect is by inhibiting the activation of the VEGF pathway, which can inhibit tumor angiogenesis [21]. Previous studies have

Table 1: Comparison of the general data (n (%), ($x \pm$ sd).

Group	Control group ($n = 60$)	Research group ($n = 54$)	χ^2/t	P
Gender			0.199	0.656
Male	38 (63.33)	32 (59.263)		
Female	22 (36.673)	22 (40.743)		
Age (years)	48.48 ± 7.25	47.26 ± 6.89	0.918	0.360
BMI (kg/m^2)	23.75 ± 1.48	24.05 ± 1.38	1.116	0.267
KPS score	86.45 ± 4.64	87.55 ± 4.34	1.303	0.195
TNM staging			0.958	0.619
III	44 (73.33)	36 (66.67)		
IVa	11 (18.33)	14 (25.93)		
IVb	5 (8.33)	4 (7.41)		
History of smoking			0.594	0.441
Yes	29 (48.33)	30 (55.56)		
No	31 (51.67)	24 (44.44)		
ECOG score			0.691	0.406
0	21 (35.00)	23 (42.59)		
1	39 (65.00)	31 (57.41)		

Table 2: Comparison of clinical efficacy (n (%)).

Group	Control group ($n = 60$)	Research group ($n = 54$)	χ^2	P
CR	21 (35.00)	26 (48.15)		
PR	18 (30.00)	19 (35.19)		
SD	17 (28.33)	8 (14.81)		
PD	4 (6.67)	1 (1.85)		
Total effective rate	39 (65.00)	45 (83.33)	4.926	0.026

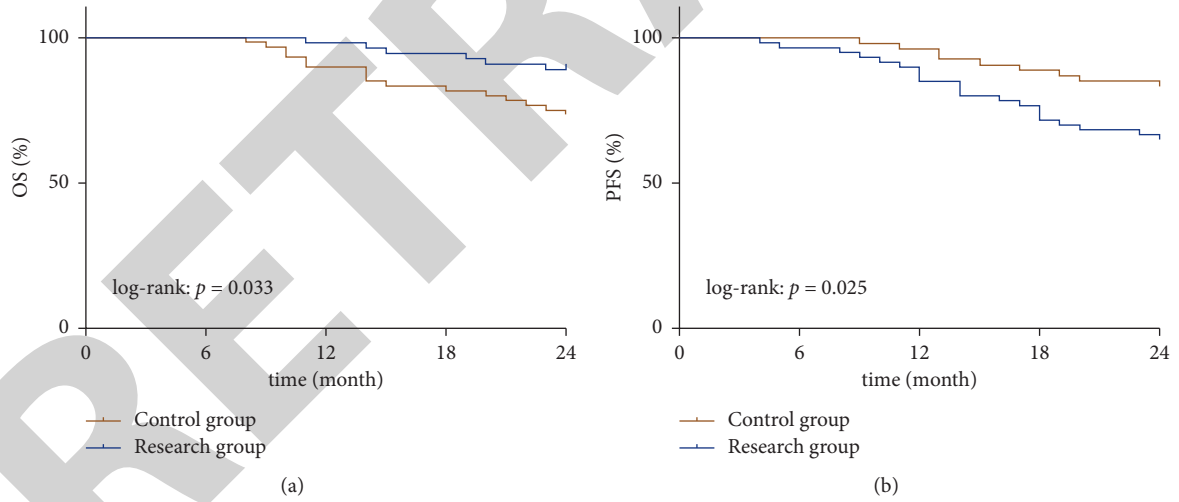

Figure 1: Comparison of the OS and PFS in two years. (a) The OS of the research group was higher than that of the control group in 2 years. (b) The PFS of the research group was higher than that of the control group in 2 years.

Table 3: Comparison of toxic and side effects (n (%)).

Group	Control group ($n = 60$)	Research group ($n = 54$)	$\chi 2$	P
Bone marrow suppression	12 (20.00)	17 (34.18)	1.975	0.160
Impaired liver and kidney function	7 (11.67)	11 (20.37)	1.619	0.203
Dermatitis	10 (16.67)	17 (34.18)	3.451	0.063
Diarrhea and vomiting	19 (31.67)	22 (40.74)	1.016	0.313
High blood pressure	12 (20.00)	20 (37.04)	4.086	0.043
Proteinuria	9 (15.00)	17 (31.48)	4.385	0.036
Hand-foot syndrome	8 (13.33)	14 (25.93)	1.913	0.089

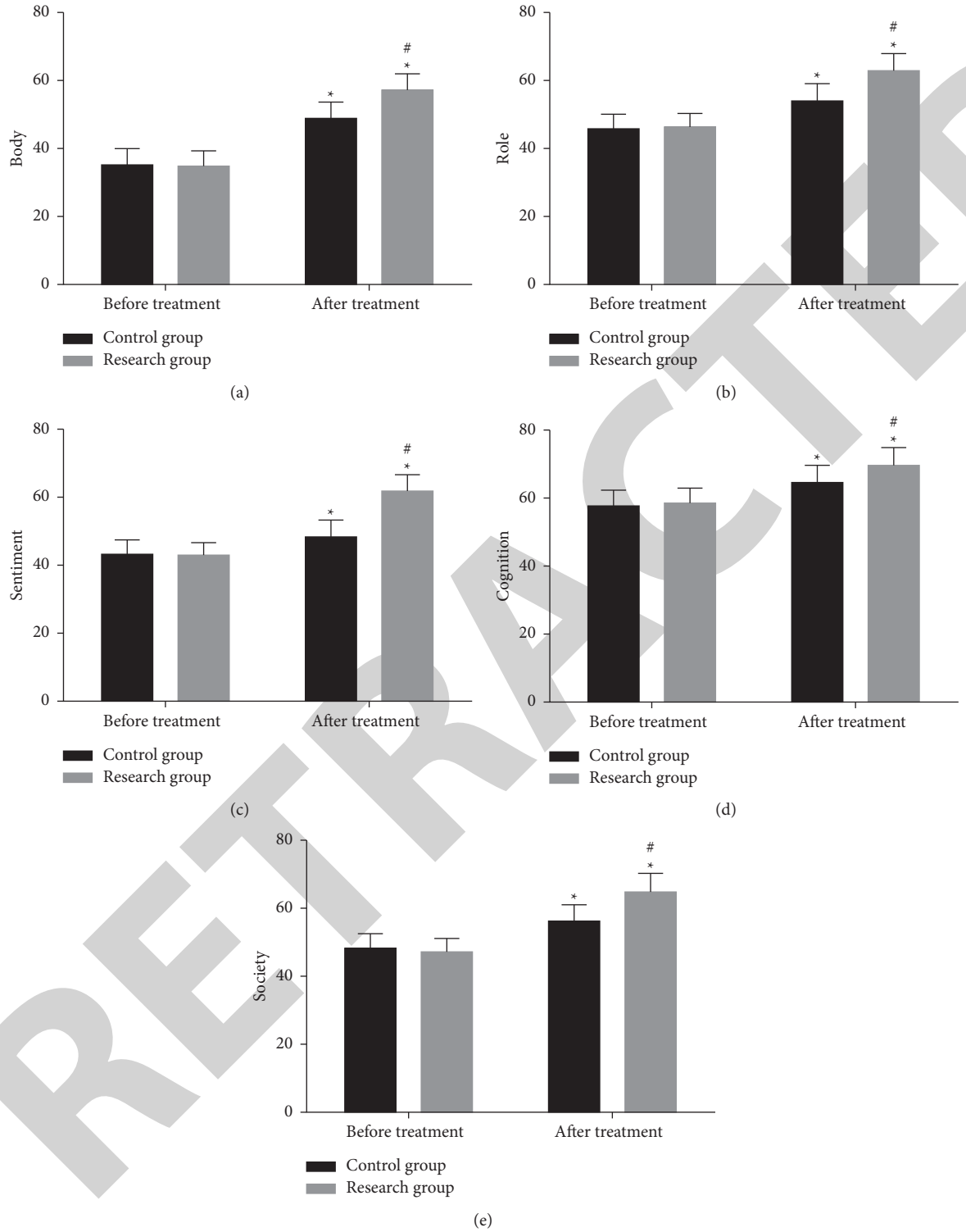

Figure 2: Comparison of the QLQ-C30 scores. Comparison of (a) body scores, (b) role scores, (c) emotional scores, (d) cognitive scores, and (e) social scores between the two groups before and after treatment. Note: * represents the comparison before and after treatment, $P < 0.05$; # means compared with the control group at the same time, $P < 0.05$.

shown that the apatinib can inhibit the growth of nasopharyngeal carcinoma xenografts [22]. There is also a retrospective study, which shows that apatinib has good efficacy and safety in patients with recurrent and refractory nasopharyngeal carcinoma [23]. However, there is a lack of clinical control studies on the apatinib in the treatment of nasopharyngeal carcinoma. The results of this study showed that the total clinical effective rate of the research group was higher than that of the control group, and the 2-year OS and PFS of the research group were also higher than those of the

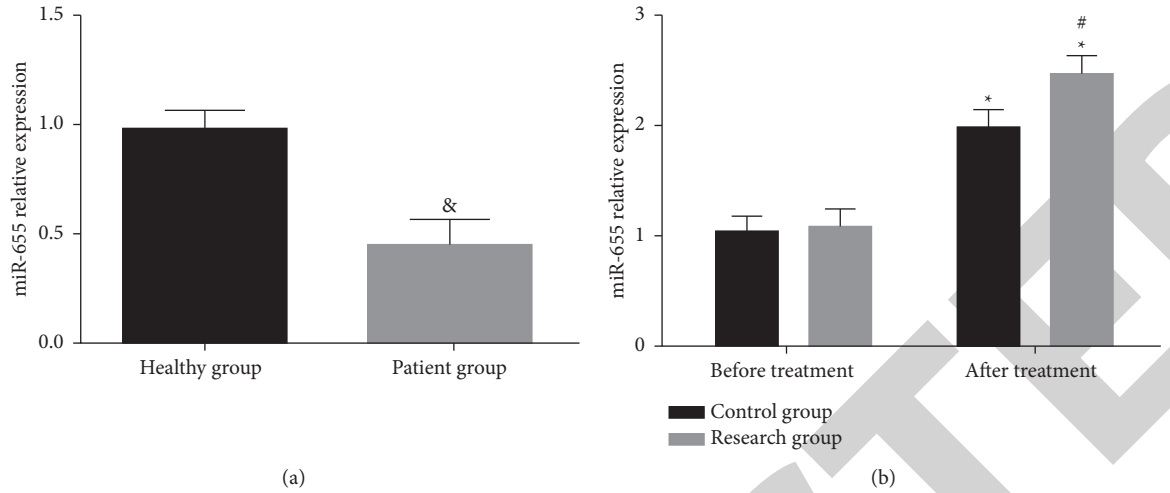

Figure 3: Comparison of miR-655 in serum of each group. (a) MiR-655 in the patient group was significantly lower than that of the healthy group. (b) After treatment, miR-655 in both groups increased significantly, and miR-655 in the research group was higher than that in the control group. Note: & means compared with the healthy group, $P < 0.05$; * means the comparison before and after treatment, $P < 0.05$; # means compared with the control group at the same time, $P < 0.05$.

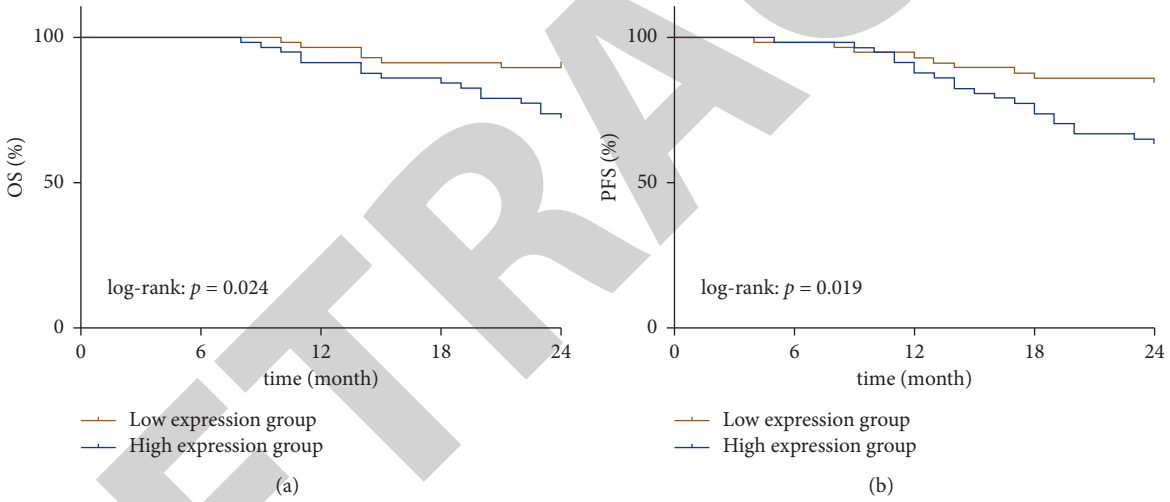

Figure 4: Relationship of miR-655 with the prognosis of patients. (a) OS of the high expression group was higher than that of the low expression group in 2 years. (b) PFS of the high expression group was higher than that of the low expression group in 2 years.

control group, indicating that paclitaxel concurrent chemoradiotherapy combined with apatinib can improve the therapeutic effect on locally advanced nasopharyngeal carcinoma. As we all know, chemotherapy or radiotherapy will cause a series of side effects, such as oral mucosal disease, pain, fatigue, and dysphagia, which can seriously affect the quality of life of the patients. The occurrence of the adverse reactions in the two groups of patients during treatment was recorded, and both the groups of patients could tolerate the treatment, and only the incidence of hypertension and proteinuria in the research group was higher than that in the control group. With the development of oncology, the survival rate of nasopharyngeal carcinoma patients has been greatly improved, and the high survival rate makes the quality of life high[24]. Therefore, finding ways to prolong the survival time and to ensure the quality of life of patients has become a research hotspot. The quality of life of the patients in the two groups was tested, and the scores of the QLQ-C30 scale in the research group were higher than those in the control group after treatment. This may be because of the better clinical efficacy, which enhances patients' confidence in overcoming diseases and reduces their negative emotions.

MiR has been proved to act as a tumor promoter or inhibitor in the pathogenesis of tumors and is considered as a new target for tumor therapy [25]. miR-655 is a newly reported miR in the recent years, and many research results show that it acts as a tumor suppressor gene in tumors. Studies have found that the miR-655 can inhibit the proliferation and the migration of ovarian cancer cells by targeting the RAB1A [26]. Other studies suggested that low miR-655 correlated with the worse prognosis of esophageal

cancer patients, and high miR-655 can inhibit the proliferation and invasion of esophageal cancer cells [27]. However, the role of miR-655 in nasopharyngeal carcinoma is unclear. In this study, miR-655 was low as expressed in the serum of the patients with locally advanced nasopharyngeal carcinoma, and the low expression of miR-655 was related to the worse 2-year OS and PFS of the patients with nasopharyngeal carcinoma, indicating that miR-655 also plays as an anticancer gene in nasopharyngeal carcinoma. Subsequently, this paper also found that miR-655 in both the groups increased significantly after treatment, and miR-655 in the research group was higher than that in the control group. This further indicated that miR-655 was closely related to the patient's disease progression and was expected to be a therapeutic target and an indicator for monitoring the adverse prognosis of nasopharyngeal carcinoma.

There are some shortcomings in this study. Firstly, the small sample size will lead to inevitable selection deviation or measurement deviation, which may weaken the relative reliability of our research results. Secondly, only two years of follow-up were conducted, and the long-term results of the two groups of patients could not be obtained. Finally, this study is a clinical trial, and no basic experiment has been added to analyze the effect of the miR-655 on the growth of nasopharyngeal carcinoma cells. These are expected to be supplemented by more studies in the future.

To sum up, apatinib combined with paclitaxel concurrent radiotherapy and chemotherapy is effective and well-tolerated in the treatment of locally advanced nasopharyngeal carcinoma, which improves the quality of life of patients and can be promoted in clinical practice. In addition, the increase of miR-655 may be a target for treating nasopharyngeal carcinoma.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author.

Conflicts of Interest

The authors declare no conflicts of interest.

Acknowledgments

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Retraction

Retracted: Study of the Significance of Thromboelastography Changes in Patients with Dyslipidemia

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] Q. Lin, G. Yang, J. Ruan, P. Yu, C. Deng, and W. Pan, "Study of the Significance of Thromboelastography Changes in Patients with Dyslipidemia," *Emergency Medicine International*, vol. 2022, Article ID 1927881, 6 pages, 2022.

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Research Article

Study of the Significance of Thromboelastography Changes in Patients with Dyslipidemia

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Purpose. To investigate the changes in thromboelastography (TEG) in patients with dyslipidemia to study its effect on the blood coagulation status. *Methods*. 131 patients hospitalized in Fujian Provincial Jinshan Hospital from January 2018 to December 2020 were selected, and 64 cases in the hyperlipidemia (HL) group and 67 cases in the non-HL group were set according to whether their blood lipids were abnormal. By measuring the changes of each parameter of TEG in patients, the relevant parameters *R* value, *K* value, *α* angle, and MA value were calculated. And routine blood coagulation (PT, APTT, INR, FIB, and TT) and routine blood (platelet count) tests were performed on all study subjects to analyze the changes of each index of the coagulation function and each parameter of TED in both groups and explore the clinical value of TEG on HL diseases. *Results*. Compared with the non-HL group, *R* and K values decreased, and angle and MA values increased in the HL group ($P < 0.05$). PT, APTT, and INR values decreased, and FIB values increased in the HL group compared with the nonhyperlipidemic group ($P < 0.05$). The TT levels were similar in the non-HL group and the HL group ($P > 0.05$). Compared with the non-HL group, PLT values decreased, and PDW and MPV values increased in the HL group ($P < 0.05$). *R* value was positively correlated with APTT, $r = 0.373$, $P = 0.002$. *K* value was negatively correlated with PLT, $r = -0.399$, $P = 0.002$. *α* angle and MA values were positively correlated with PLT, $r = 0.319/0.475$, $P = 0.010/P < 0.001$. The rest of the indexes did not correlate with each parameter of TEG significant correlation. *Conclusion*. TEG can predict the hypercoagulability and hypocoagulability of blood by the changes of *R* value, *K* value, *α* angle, and MA to evaluate the effect of hyperlipidemia on the coagulation status, which is important for guiding the adjustment of lipid-lowering, antithrombotic, and anticoagulation programs in patients with atherosclerosis combined with hyperlipidemia or postsurgery combined with hyperlipidemia.

1. Preface

Dyslipidemia refers to the abnormalities of lipid mass and quality in plasma, which actually manifests as lipoprotein abnormalities, and the process of lipoprotein metabolism is complex [1]. Modern medical disease establishment data [2, 3] show that the number of cardiovascular and cerebrovascular disease deaths caused by hyperlipidemia is about 3600 cases per day worldwide, and the number of cardiovascular and cerebrovascular diseases caused by hyperlipidemia in China is increasing at a rate of 12% per year. In hyperlipidemia (HL), it can damage systemic arterial endothelial cells and lead to their dysfunction, and some studies [4, 5] have confirmed that HL is an independent risk factor for atherosclerosis and coronary heart disease. In addition, HL can also cause systemic or local blood circulation disorders and cause the risk of associated arterial thrombosis, which shows that early detection of dyslipidemia and monitoring its level changes is an important basis for effective implementation of atherosclerotic

cardiovascular disease (ASCVD) prevention and treatment measures. Conventional hemagglutination is a part of the overall coagulation process and is a microscopic reflection of some of the coagulation factor activity and is also used to determine coagulation function conventional assays that cannot assess the entire dynamic changes in blood coagulation [6]. In contrast, the thromboelastograph (TEG) has a significant role in real-time monitoring of the time and rate of clot formation, the hardness and stability of clot formation, and objectively evaluating the aggregation function of platelets, which is more prominent in clinical treatment [7, 8]. TEG dynamically reflects the whole process of coagulation cascade reaction by rapidly assessing the physical properties of clots and can detect both the bleeding status and thrombus and prethrombotic status, and it is now widely used in various clinical departments [9]. The parameters of TEG hematocrit clot formation time (K), hematocrit clot formation rate (α-Angle), and maximum clot strength or hardness (MA) have different clinical significance. Based on the changes in the parameters, the changes in the function of the hemostatic, coagulation, and anticoagulation systems of patients with HL can be initially determined, and the coagulation status of patients can be detected to provide a theoretical basis for clinically targeted anticoagulation and antithrombotic treatment [10–12]. The aim of this study was to observe the changes in various parameters of TEG in patients with HL and analyze the relationship between them and their blood coagulation status.

2. Data and Methods

2.1. Study Population and Grouping. 131 patients hospitalized in Fujian Provincial Jinshan Hospital from January 2018 to December 2020 were selected for inclusion criteria: patients with proposed hernia surgery, benign thyroid nodules, breast hyperplasia or benign nodules, and who underwent lipid and TEG examinations in the internal medicine clinic; had not taken lipid-lowering drugs within 1 month before enrollment; were older than 20 years; and all patients in the HL group met the diagnostic criteria for hyperlipidemia. Exclusion criteria were hypertension, coronary heart disease, diabetes, stroke, acute or chronic infectious diseases, malignant tumors, autoimmune system diseases, and hematologic diseases; patients with severe hepatic or renal insufficiency; women who were pregnant or planning to become pregnant or lactating; and patients who were judged to be unsuitable for participation in this study. According to the patients' lipid levels, they were divided into 64 cases in the HL group and 67 cases in the non-HL group. There was no statistically significant difference between the two groups in terms of gender ratio and age (all $P > 0.05$), which could be studied in a controlled manner.

2.2. Data Collection. General information (gender, age), biochemical indices (GLU: glucose, CR: creatinine, UA: uric acid, WBC: white blood cells, RBC: red blood cells, and HB: hemoglobin) and lipid index levels (TG: triglycerides, TC: total cholesterol, HDL-C: high-density lipoprotein cholesterol, and LDL-C: low-density lipoprotein cholesterol) were collected by reviewing the medical records of the two groups. These data were also counted and compared.

2.3. Diagnostic Criteria for HL. Refer to the diagnostic criteria in the "Guidelines for the prevention and treatment of dyslipidemia in Chinese adults" developed by the Chinese Journal of Circulation in 2016 [12], triglycerides (TG) ≥ 1.7 mmol/L and/or total cholesterol (TC) ≥ 5.2 mmol/L.

2.4. Measurement of Coagulation Indexes. The ACLTOP 300CTS fully automated blood coagulation assay analyzer (Beckman, USA) was used for testing. The detection indexes were PT (plasma prothrombin time), TT (prothrombin time), APTT (activated partial thromboplastin time), FIB (fibrinogen), and INR (international normalized ratio).

2.5. Platelet Index Detection. The automatic blood cell morphology analyzer was used for detection. The detection indexes were the blood platelet (PLT), platelet distribution width (PDW), and mean platelet volume (MPV), respectively.

2.6. Determination of TEG Index Testing. TEG-5000 and its original supporting reagents were purchased from HAEMONETICS Corporation, USA. All study subjects collected 2 ml of venous blood in the early morning on an empty stomach, mixed with 3.8% sodium citrate and venous blood 1:9, using the whole blood recalcitrance method; aspirated 1 ml was added to the kaolin cup after 30 min of rewarming at room temperature and mixed slowly 6 times, placed at room temperature for 5 min and then prepared for use, loaded the disposable test cup into the testing rack of the instrument, added calcium chloride to the cup, and then added the above mentioned components slowly according to the proportion. Kaolin samples were added to the cup, and the test was performed according to the corresponding procedure. All specimens were tested within 2 h after blood collection.

2.7. Lipid Determination. All subjects had 5 ml of venous blood drawn, including 3 ml of blood without the added anticoagulant, and serum was collected for the lipid assay after centrifugation at 4000 r/min for 15 min. Serum TC, TG, HDL-C, and LDL-C levels were measured by the Roche cobas c701/702 automatic biochemical analyzer (Roche, Switzerland), TC by the cholesterol oxidase method, TG by the enzyme colorimetric method, and HDL-C and LDL-C by the phase enzyme colorimetric method.

2.8. Statistical Methods. The SPSS 25 software package was used for analysis, the measurement data were expressed as (Mean ± SD), *t*-test was used to compare the means between the groups, the statistical data were expressed as n (%), and the chi-square test was used for comparison between the groups. Pearson or spearman software was used to analyze

the correlation between the parameters of TEG and coagulation indexes, and the difference was statistically significant at $P < 0.05$.

3. Results

3.1. Comparison of General Conditions. There was no statistically significant difference in age and gender between the non-HL group and the HL group ($P > 0.05$) (Table 1).

3.2. Comparison of Various Parameters of TEG. Compared with the non-HL group, the HL group had lower *R* and *K* values and higher angle and MA values, which were statistically significant ($P < 0.05$) (Figure 1).

3.3. Comparison of Coagulation Test Indexes. Compared with the non-HL group, the PT, APTT, and INR values decreased, and the FIB values increased in the HL group, which was statistically significant ($P < 0.05$). The TT values in the non-HL group were similar to those in the HL group, which were not statistically significant ($P > 0.05$) (Figure 2).

3.4. Comparison of Platelet Indexes. Compared with the non-HL group, PLT values decreased, and PDW and MPV values increased in the HL group, which was statistically significant ($P < 0.05$) (Figure 3).

3.5. Correlation Analysis of Each Parameter of TEG and Coagulation Indexes in the HL Group. The correlation analysis among the conventional coagulation indexes, platelet indexes, and each parameter of TEG in the HL group patients was performed by using Pearson or speaeman software to analyze the correlation between the two of them. The results showed that *R* value was positively correlated with APTT, $r = 0.373$, $P = 0.002$, which was statistically significant. *K* value was negatively correlated with PLT, $r = -0.399$, $P = 0.002$, which was statistically significant. A-angle and MA values were positively correlated with PLT, $r = 0.319/0.475$, $P = 0.010/P < 0.001$, which was statistically significant. The rest of the indexes did not correlate with each parameter of TEG significant correlation (Table 2).

4. Discussion

HL is a condition of elevated lipid levels due to abnormal fat metabolism, often accompanied by changes in blood rheology and has now become a common clinical condition, which can cause blood viscosity and is an important risk factor for complications of cardiovascular and cerebrovascular diseases [13, 14]. One study [15] confirmed that TG increases blood viscosity, promotes the production of coagulation factor VII, and is a high risk factor for venous thrombosis. High concentrations of TC can increase the deposition of TC in platelets, which in turn enhances platelet sensitivity and makes platelets more susceptible to activation and aggregation. Previous studies [16] suggest that hyperlipidemia has a more pronounced effect on the coagulation status, and timely and effective detection of coagulation in these patients can help early symptomatic management and improve patient prognosis.

Routine coagulation functions such as PT and APTT mainly target a certain stage and segment of the coagulation process and do not reflect the whole thrombosis process well. It has limited accuracy in determining hemostatic function and predicting bleeding risk in patients with important diseases and does not allow obtaining clot strength and clot stability, as these tests are detected at the beginning of the fibrin polymerization process when only about 5% of thrombin is produced and cannot evaluate the relationship between platelets and fibrinogen due to the inability to evaluate the relevant platelet function, fibrinolysis, and hypercoagulable state [17, 18]. The mechanism of TEG is based on the entire coagulation process from clotting to fibrinolysis, reflecting the interaction between the elements, with the end result being the formation of a blood clot whose physical properties determine whether the patient has normal coagulation [19]. The TEG integrates the contribution of plasma components and cellular fractions and their concentrations to coagulation during the coagulation process, and therefore, whether the changes in K, Angle, and MA values of the TEG are indicative of the state of coagulation caused by HL.

The *R* value reflects the combined effect of factors participating in coagulation, including endogenous, exogenous, and common coagulation pathways, and a decrease in *R* value represents hypercoagulation. Both K and α angle reflect the rate of clot formation, the size of which depends on the levels of coagulation factors, platelets, and fibrinogen; MA reflects the strength of the clot after formation [20, 21]. In this study, 64 patients with HL and 67 patients with non-HL, the results of the study concluded that the *R* value, *K* value, PLT value, PT, APTT, and INR value decreased, and the angle value, MA value, FIB value, PDW, and MPV value increased in HL patients. Decreased PT and APTT values indicate that HL patients are more active in endogenous and exogenous coagulation pathways than non-HL patients, all of which leads to the conclusion that HL patients have more hypercoagulable blood than non-HL patients. In addition, correlation analysis showed that K values were negatively correlated with PLT values, and α angle and MA values were positively correlated with PLT values. The most commonly used method for clinical evaluation of platelet aggregation function is TEG, which can reflect not only the abnormalities in various parts of the coagulation process in patients but also the changes in platelet function before and after the application of antiplatelet aggregation drugs in patients and evaluate whether patients are sensitive or resistant to the drugs [22]. Based on the results of this study, it can be hypothesized that the coagulation system is relatively active in HL patients, with more prothrombin and fibrin content than in nonhyperlipidemic patients.

In summary, TEG can infer the HL and HL status of blood by the changes of the K value, angle, and MA values, suggesting the effect of HL on the coagulation status, which is important for guiding the adjustment of lipid-lowering, antithrombotic, and anticoagulation regimens in patients with atherosclerosis combined with HL or postsurgical combined with HL.

Table 1: General information of patients.

General	HL group ($n=64$)	Non-HL group ($n=67$)	Statistical quantity	P value
Age (years)	53.06 ± 11.68	50.24 ± 14.26	1.235	0.219
Sex (number of cases) male/female	34/30	35/32	0.010	0.919
GLU (mmol/L)	5.16 ± 0.49	5.23 ± 0.53	0.784	0.435
CR (μmol/L)	66.09 ± 13.10	68.57 ± 10.87	1.181	0.240
UA (μmol/L)	312.86 ± 70.16	298.43 ± 56.14	1.303	0.195
WBC ($\times 10^9$/L)	5.97 ± 1.32	5.79 ± 1.06	0.862	0.390
RBC ($\times 10^{12}$/L)	4.62 ± 0.48	4.71 ± 0.50	1.050	0.296
HB (g/L)	140.41 ± 12.71	136.13 ± 14.77	1.774	0.078
TG (mmol/L)	1.94 ± 1.81	1.40 ± 0.89	2.182	0.031
TC (mmol/L)	5.03 ± 0.83	4.37 ± 0.41	5.810	< 0.001
HDL-C (mmol/L)	1.28 ± 0.45	1.60 ± 0.41	4.258	< 0.001
LDL-C (mmol/L)	3.52 ± 0.82	2.12 ± 0.31	13.036	< 0.001

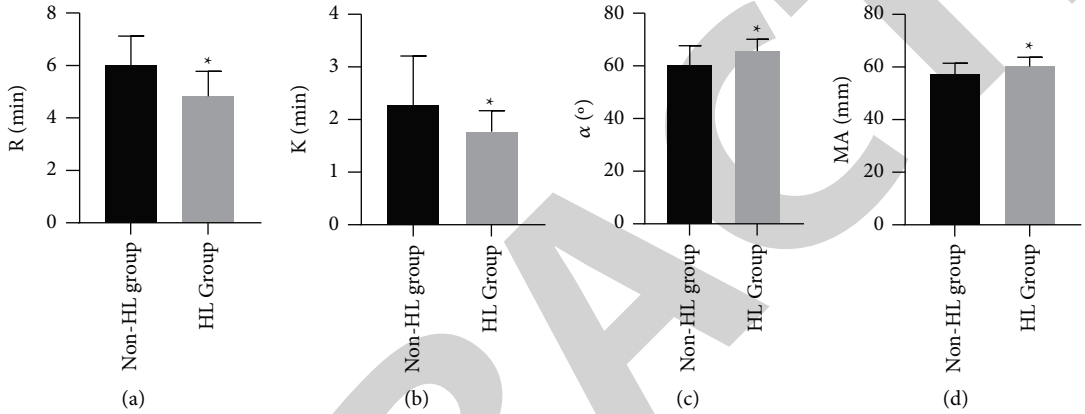

Figure 1: Comparison of various parameters of TEG. Note: * indicates $P < 0.05$.

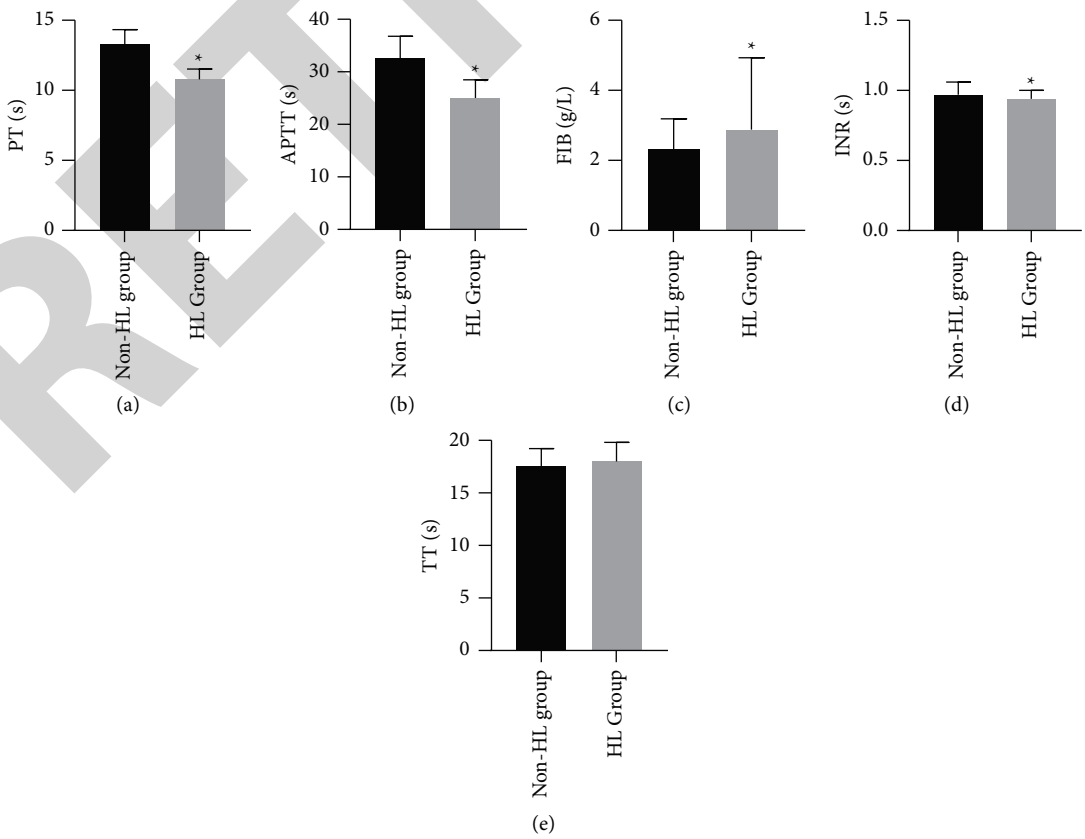

Figure 2: Comparison of coagulation test indexes. Note: * indicates $P < 0.05$.

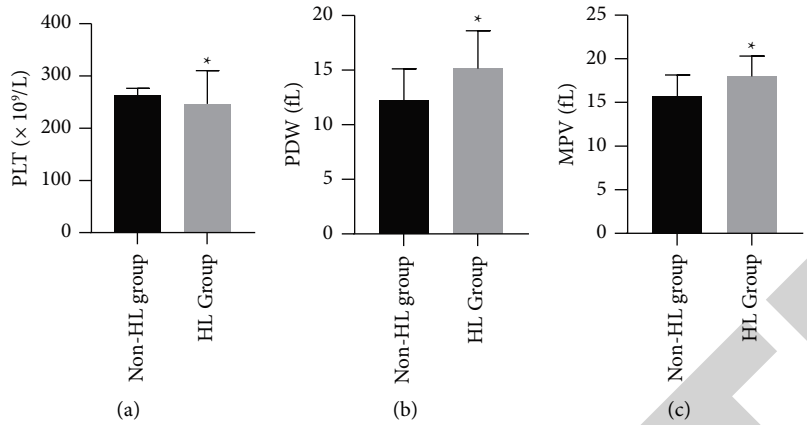

Figure 3: Comparison of platelet indexes. *Note*: * indicates $P < 0.05$.

Table 2: Correlation analysis of each parameter of TEG and coagulation indexes in the HL group.

Indicators/parameters	R		K		α		MA	
	r	*P*	*r*	*P*	r	*P*	*r*	*P*
PT	0.195	0.124	0.072	0.572	−0.030	0.814	−0.088	0.491
APTT	0.373	0.002*	0.034	0.791	−0.035	0.784	0.010	0.939
FIB	−0.217	0.085	−0.182	0.150	0.212	0.092	0.127	0.319
INR	0.196	0.120	0.066	0.607	−0.023	0.858	−0.074	0.563
TT	−0.113	0.373	0.014	0.913	−0.024	0.849	−0.028	0.827
PLT	0.200	0.113	−0.388	0.002*	0.319	0.010*	0.475	< 0.001*
PDW	−0.192	0.130	−0.081	0.524	0.082	0.520	0.136	0.283
MPV	−0.132	0.299	−0.086	0.506	0.089	0.486	0.168	0.184

Note. * indicates that the two indicators are correlated.

Data Availability

Data are available from the corresponding author on request.

Ethical Approval

Approval was obtained from the Medical Ethics Committee of Fujian Jinshan Hospital.

Conflicts of Interest

The authors declare no conflicts of interest.

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Retraction

Retracted: A Signature of Genes Featuring *FGF11* Revealed Aberrant Fibroblast Activation and Immune Infiltration Properties in Keloid Tissue

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] B. Yuan, L. Miao, D. Mei, L. Li, and Z. Hu, "A Signature of Genes Featuring *FGF11* Revealed Aberrant Fibroblast Activation and Immune Infiltration Properties in Keloid Tissue," *Emergency Medicine International*, vol. 2022, Article ID 4452687, 12 pages, 2022.

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Research Article

A Signature of Genes Featuring *FGF11* Revealed Aberrant Fibroblast Activation and Immune Infiltration Properties in Keloid Tissue

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Keloid is a fibroproliferative disorder in the skin, which manifested with extensive deposition of collagen and extracellular matrix. Its etiology remains a mystery and its recurrence rate remains high despite combinative treatment regimens. Current hypotheses of its pathogenesis centered on the role of inflammatory processes as well as immune infiltration in the microenvironment. However, there are a lot of discrepancies when it comes to the verification of certain well-recognized pathways involved in the dysfunctional fibroblast. Further exploration and characterization are required to reveal the driving force and even leading genes responsible for keloid formation. In this study, we provided supportive evidence of the immunologic nature of keloids distinct from normal fibroblasts and physiological scars by incorporating multiple available expressional profiles in the Gene Expression Omnibus (GEO). Through differential analyses and functional analyses, we identified a set of genes that successfully captures the dissimilarities between keloid lesions and nonlesions. They were differentially regulated in keloid samples and had opposite behavior in exposure to hydrocortisone. A key signature of six genes featuring *FGF11* not only was highly correlated with significantly dysregulated fibroblast activation but also reflected various levels of immune cell infiltration. *FGF11*, in particular, revealed the heterogenous immunologic nature of keloid lesions. This study further supported that aberrant fibroblast was one of the main contributing factors and shed some light on investigating immune properties in future studies.

1. Introduction

Damaged tissue undergoes a complicated process of repair and regeneration till the wound is healed, which starts right after the skin injury and can consume a significant amount of time. Under pathological circumstances like excessive collagen deposition, hypertrophic scars or keloids develop. The exact mechanism of abnormal wound healing processes has yet to be clarified. In most cases, the differences between keloid and hypertrophic scars can be understood by clinical observation, in that hypertrophic scars remain within the confines of the original wound. In contrast, the keloid extends way beyond the boundaries of the injury [1]. However, there are more distinctive features of keloid underlying a significantly different nature of it than hypertrophic scars. The keloid pathology is not well understood but has been speculated to be related to the imbalance between collagen synthesis and degradation [2]. The most common vulnerable sites to keloid include the earlobes, presternal skin, and all areas with no hair follicles or other glands. A wide range of types of skin injuries seem to be responsible, but no particular type has been specified to be

associated with keloid formation. Keloidogenesis can arise even without any antecedent injuries [3]. Researchers suspect that consistent inflammation near the injured site can induce fibroblast malfunction, hindering the scar's maturation. The inability of the fibroblast within keloid tissue to respond normally to stimulation triggers the resistance of the keloid to treatments and high rates of recurrence [4].

Keloids, most of the time, occur as sporadic cases but can be familial [5]. Its high occurrence in darker-skinned ethnicities suggests a genetic predisposition or even a hereditary component in the pathogenesis. Both autosomal recessive and dominant modes have been proposed, but these studies' scale is too narrow to draw convincing conclusions [6, 7]. Moreover, single nucleotide polymorphisms and other epigenetic mechanisms have also been associated with keloidogenesis [8].

Most hypotheses about the formation of keloids focus on the overproduction and excessive deposition of collagen. Still, an increasing body of evidence shows the importance of the inflammatory and immunologic responses as potential initiators of this pathologic process. High concentrations of infiltrating inflammatory cells [9] and comorbidities with autoimmune disorders [10] indicate the value of exploring the correlation between dysregulated inflammatory responses and aberrant immune function execution.

Although keloid is labeled as an abnormal but benign dermal growth where excessive scar tissue results from failed suppression of wound healing, it resembles malignant tumor cells in terms of its hyperproliferative nature and capability of invasion. There is also growing evidence showing that keloid-prone populations, especially males, face a significantly higher risk of developing skin malignancies [11]. This, along with the cosmetic burden and disabling potential of large keloids, entails more advanced, effective treatment regimens. However, despite the efforts that have been put into the research of the pathophysiology of keloid formation, it is still unclear what modulators or pathways are controlling the process. The mainstay of currently available therapies is to reduce the keloid recurrence, but the optimal results cannot be achieved unless its mechanism gets unrevealed.

Therefore, in this study, we incorporated multiple available expression profiles associated with keloids and conducted a series of bioinformatical analyses to further explore the immune properties of keloid lesions. A small signature of genes featuring *FGF11* was found to be differentially regulated in keloids with a different pattern under hydrocortisone treatment and depicted the increased lymphocyte infiltration in keloid lesions. Furthermore, the expression level of *FGF11* also reflected the heterogenous nature of keloid lesions in terms of immunologic signatures. This study reinforced the importance of investigating the role of Th1 and Th2 balance and brought up the necessity of observing keloid development dynamically. The shortage of the latter could have contributed to some current discrepancies on this inflammatory fibroproliferative disease.

2. Materials and Methods

2.1. Datasets. One expression profile acquired from Gene Expression Omnibus (GEO) was adopted (GSE7890, available at https://www.ncbi.nlm.nih.gov/geo). Samples in this dataset included keloid fibroblasts and normal scar tissue, with or without hydrocortisone treatment. To validate the value of identified differentially expressed genes (DEGs) in identifying the differences between keloid and nonkeloid lesions, GSE92566 was accessed from the same database. The expression matrix of six samples containing three biopsies of large keloid lesions and their adjacent nonlesioned skin samples from GSE92566 was used. The batch effect was removed and these two expression profiles were merged into a larger dataset to further explore the functional pathways implied by the aberrant expressions of these genes. GSE121618 was also used to investigate the microenvironment of epithelial samples from keloid patients versus healthy control.

2.2. Differential Analyses. We separated the expression matrix available from GSE7890 into two groups and compared them based on limma analysis [12]. Group 1 was keloid samples without hydrocortisone treatment versus normal scar tissue with no treatment; Group 2 was between treated and untreated keloid samples. The absolute fold change value (FC) was set as 2, shown as $|\text{Log2FC}| > 1$ in figures, and a p value less than 0.05 was considered statistically significant.

2.3. Gene Ontology Analyses. Gene ontology (GO) enrichment analysis was conducted on the DEGs in R (version 3.1.0). GO annotation was acquired through the R package "org.Hs.eg.db" and the actual enrichment process was analyzed with package "clusterProfiler" (version 3.14.3). Major molecular functions of DEGs were presented, and p value = 0.05 was set as the threshold.

2.4. Immune Infiltration Score. One algorithm named xCELL [13] was applied in this study to calculate the infiltration scores of different types of cells (primarily immune cells and stromal cells) and immune scores and microenvironment scores.

2.5. Gene Set Variation Analysis. To reveal the alterations of major pathways involved in fibroblast functions, four sets of functionally curated genes were acquired from the Molecular Signatures Database (https://www.gsea-msigdb.org/gsea/msigdb/index.jsp). These included gene sets: GOBP_FIBROBLAST_ACTIVATION, GOBP_FIBROBLAST_PROLIFERATION, GOBP_FIBROBLAST_APOPTOTIC PROCESS, and GOBP_FIBROBLAST_MIGRATION. Genes involved in these processes were considered a signature profile. Based on these signatures, gene set variation analysis (GSVA) was performed, and enrichment scores were calculated.

2.6. Gene Set Enrichment Analysis. Differential analyses were first conducted to acquire the fold changes in gene expression (1) between keloid lesions and nonlesion keloids; and (2) between keloid samples expressing high or low level of *FGF11* (separated by 50% median). Then, GSEA analyses were conducted based on annotations from Hallmark gene sets and c7 (immunologic signatures) from the molecular signatures database (MSigDB, v7.2).

2.7. Correlation Analyses. Pearson's correlation analyses were performed to explore the following relationships: (i) expression levels of key genes and biological processes associated with fibroblast function; and (ii) expression levels of key genes and infiltration scores of immune-related cells calculated by xCELL.

2.8. Cell Lines. KEL FIB (CTCC-001-0209) and BJ (CTCC-400-0144) cells were purchased from MeisenCTCC (Zhejiang, China). KEL FIB cells are keloid fibroblasts acquired from a 35-year-old black women, while BJ cells are fibroblasts established from the normal foreskin of a male neonatal. Keloid fibroblasts were cultured in Dulbecco's modified Eagle medium (DMEM) containing 10% fetal bovine serum (FBS), 100 U/ml penicillin, and 100 μg/ml streptomycin in a humidified incubator with 5% CO_2 and 95% air at 37°C.

2.9. Quantitative Polymerase Chain Reaction (qPCR). Total RNAs were extracted from cell cultures, and cDNAs were subsequently synthesized with HiScript II First Strand cDNA Synthesis Kit from Vazyme Biotech Co., Ltd (Nanjing, China), following the manufacturer's instructions. The qPCR was performed using Taq Pro Universal SYBR qPCR Master Mix Kit from Vazyme Biotech Co., Ltd (Nanjing, China), matrix and the following primers were used: H-IGFBP5-F4 (5′-CAAGAGAAAGCAGTGCAAACC-3′), H-IGFBP5-R4 (5′-AGGTGTGGCACTGAAAGTCC-3′); H-FGF11-F4 (5′-CCTCAGCTCAAAGGCATCGT-3′), and H-FGF11-R4 (5′-CAGGTTGAAGTGGGTGAAGGA-3′). Actin β was chosen as the internal reference and the following primers were used: H-ACTB-F2 (5′-CTCCTTAATGTCACGCACGAT-3′) and H-ACTB-R2 (5′-CATGTACGTTGCTATCCAGGC-3′). Experiments were designed and repeated with three biological replicates, each of them containing three technological replicates.

2.10. Statistical Analyses. For comparisons among multiple groups, one-way analysis of variance (ANOVA) or Kruskal–Wallis one-way ANOVA was used when applicable. Dunn's multiple-comparison corrections were adopted for post hoc comparisons. For comparisons between two groups, Student's *t*-test or Mann–Whitney test was used when applicable. A *p*value less than 0.05 was considered statistically significant in all situations.

3. Results

3.1. Identification of Genes Differentially Upregulated in Keloid Tissue but Downregulated in Treated Keloids. The volcano plots in Figure 1 show significantly ($|\text{Log2FC}| > 1$, $p < 0.05$) up or downregulated genes during comparisons between (1) keloid samples without hydrocortisone treatment and normal scar tissue without treatment (Figure 1(a)) and (2) treated and untreated keloid samples (Figure 1(b)). Totally 167 genes were significantly downregulated under the influence of hydrocortisone treatment compared with keloids without exposure to it. What is more, of the 112 genes upregulated in keloid tissues compared with normal scar, 22 were significantly downregulated after hydrocortisone treatment (Figure 1(c)). Some of these genes were functionally enriched to insulin-like growth factor (IGF)-binding and other growth factor-binding pathways (Figure 1(d), Table 1).

We verified the actual expression levels of these 22 DEGs in the abovementioned four conditions. As shown in Figure 2(a), except for *KCND3* ($p = 0.07$), *LRRC17* ($p = 0.35$), and *RHOJ* ($p = 0.10$), the rest of these genes were expressed at statistically different levels. Specifically, for the comparisons within groups, *CA12* ($p = 0.02$), *CAMK1D* ($p = 0.01$), *ESM1* ($p = 2.7e - 3$\), *FGF11* ($p = 0.03$), *FOXP1* ($p = 0.04$), *GXYLT2* ($p = 0.03$), *HOMER1* ($p = 0.04$), *IGFBP5* ($p = 0.03$), *KIT* ($p = 0.04$), *MEST* ($p = 0.04$), and *RAB3B* ($p = 0.04$) were consistently expressed at statistically different levels between keloids without hydrocortisone and normal scar tissue without treatment. In paired keloid lesion samples given hydrocortisone treatment, most of them were comparatively lower than the statistically significant level except *HOMER1* ($p = 0.06p = 0.06$), *KIT* ($p = 0.05$), *MEST* ($p = 0.05$), and *RAB3B* ($p = 0.05$).

The dimensionality of the expression profile consisting of 22 DEGs was reduced and depicted with principal component analyses (PCA) at the two-dimensional and three-dimensional levels (Figures 2(b) and 2(c), respectively). The distinct features of keloid lesions and nonlesions could be observed well from the separated clusters in both levels. Collectively, these results indicated that these DEGs represented a possible trend existing in keloids different from nonlesions.

3.2. Keloid Lesions Exhibited Patterns of Aberrant Activation of Fibroblast and Increased Immune Infiltration. We next investigated if the following signatures involved in fibroblasts were aberrantly changed in keloids: proliferation, activation, migration, and apoptosis. Compared with physiologic scars, keloid samples (regardless of the lesioned situation) exhibited significantly increased activation of fibroblast ($p = 0.05$, Figure 3). There was no significant up- or downregulation of the rest of the three signatures. With a threshold of p less than 0.01 and a correlation coefficient over 0.60, *ARHGAP29*, *C4orf47*, *DOK3*, *FGF11*, *MEST*, and *PFKFB4* were significantly correlated with the activation of fibroblast positively (Figure 3) Because the expression levels of these genes are also elevated in keloids compared with

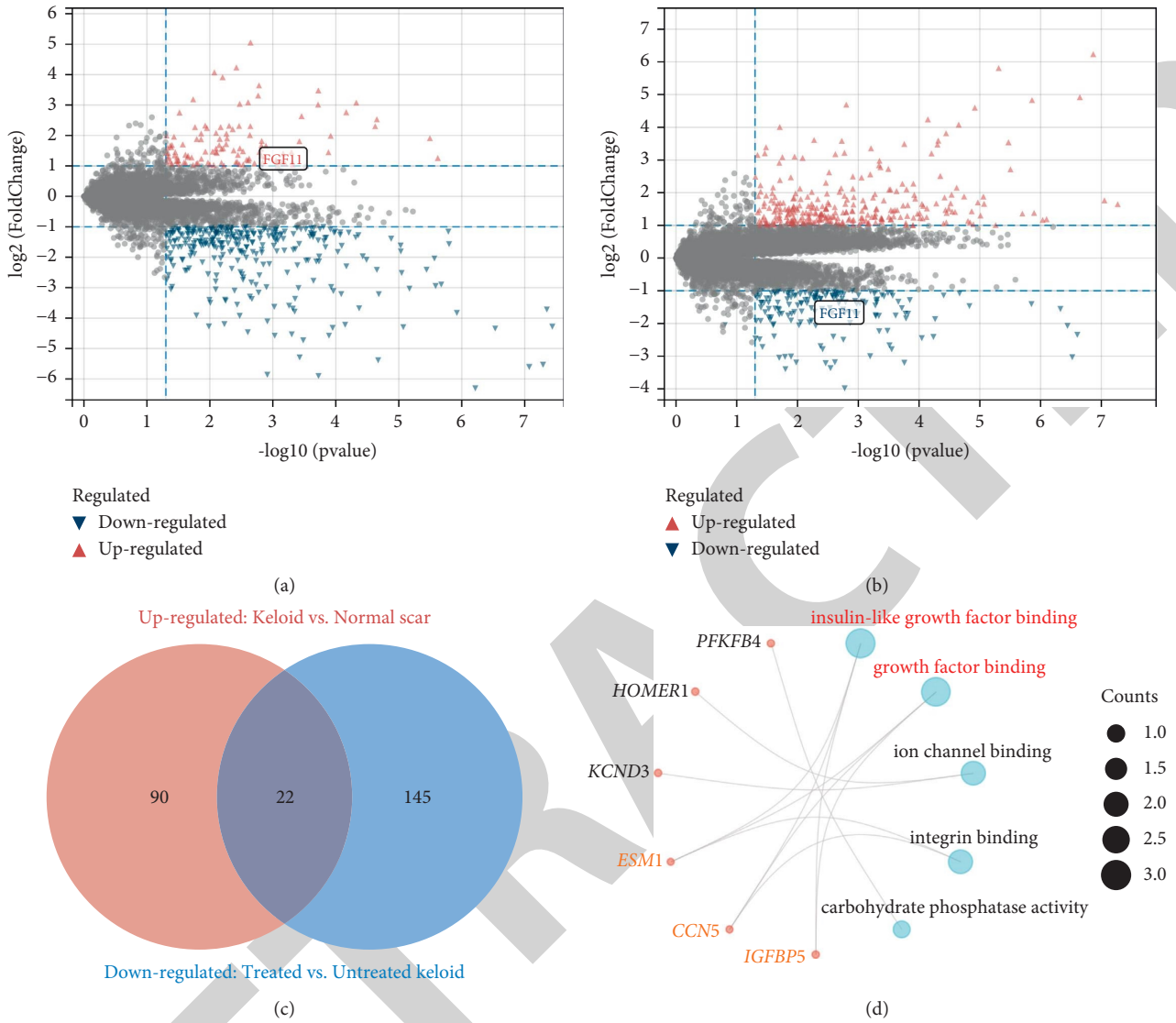

Figure 1: The intersection of differentially upregulated genes in keloids but downregulated after hydrocortisone treatment. (a) Differential analysis between keloid samples without hydrocortisone treatment versus normal scar tissue without treatment. (b) Differential analysis between treated and untreated keloid samples. (c) Venn plot of genes not only upregulated in keloid tissue but also downregulated after exposure to hydrocortisone treatment. (d) Major molecular functions of common DEGs enriched based on gene ontology.

Table 1: Functional enrichment analysis (gene ontology) revealed major molecular functions of common DEGs.

Ontology	ID	Description	Gene ratio	p	Adjusted p	Q
MF	GO: 0005520	Insulin-like growth factor binding	3/18	$2.85e-06$	$2.39e-04$	$1.74e-04$
MF	GO: 0019838	Growth factor binding	3/18	$3.40e-04$	0.014	0.010
MF	GO: 0044325	Ion channel binding	2/18	0.007	0.098	0.071
MF	GO: 0005178	Integrin binding	2/18	0.008	0.098	0.071
MF	GO: 0019203	Carbohydrate phosphatase activity	1/18	0.010	0.098	0.071

normal scars, these genes may contribute to the proliferative phase in the early formation of keloids by promoting fibroblast activation.

We further explored the cells infiltrating the microenvironment of keloids. The algorithm named xCELL was used to calculate a wide range of scores from the overall immune scores to individual infiltration scores of different cells. A merged cohort including GSE7890 and GSE92566 plus another one focusing specifically on epithelial cells were used at this stage. The key genes identified above were also significantly correlated with infiltrating scores of lymphocytes and major proinflammatory cells (Figure 4). With a threshold of p less than 0.05 and a correlation coefficient over 0.60, $CD4^+$ naïve T cells, $CD4^+$ Tcm cells, $CD4^+$ Tem

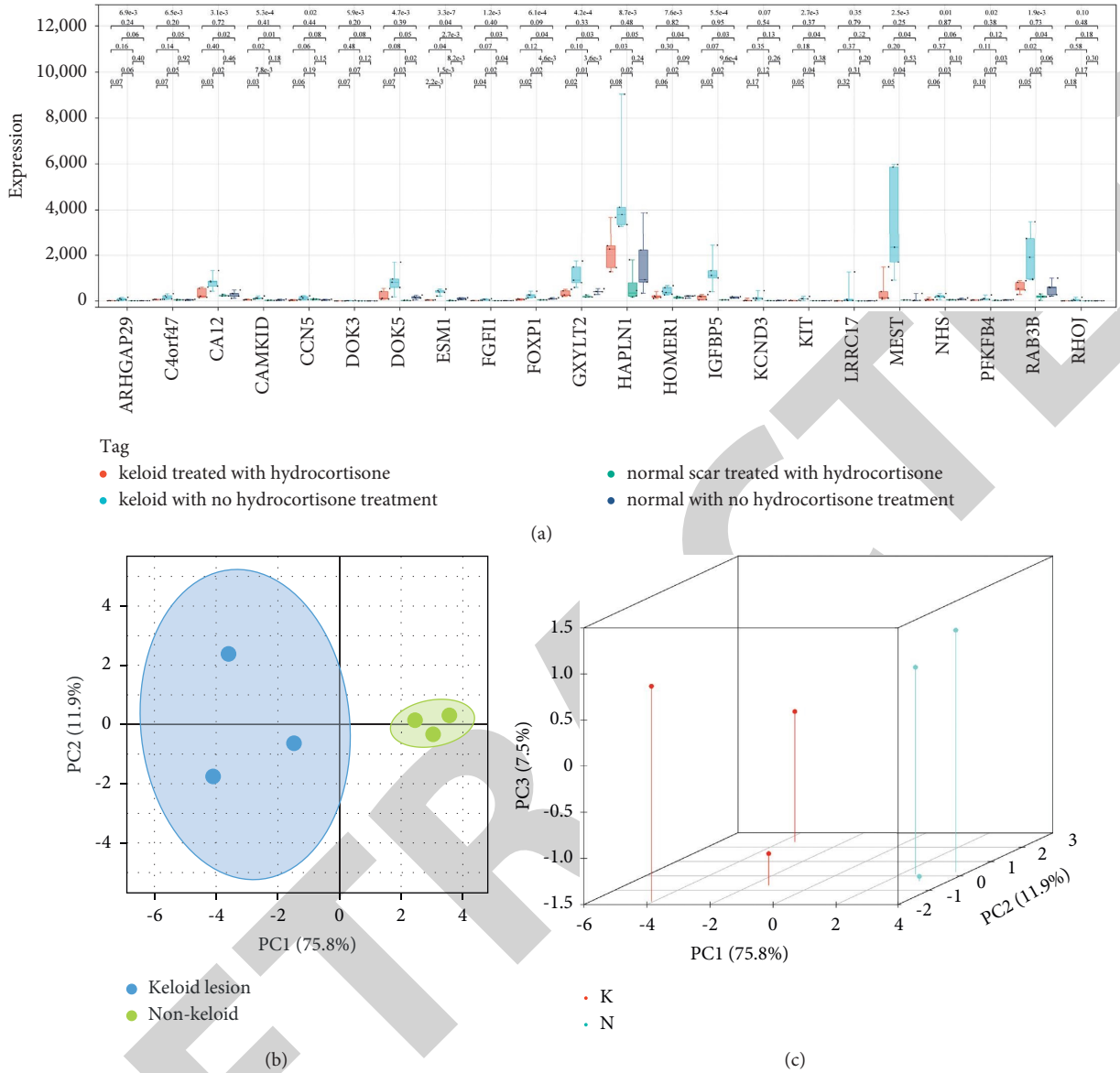

Figure 2: Expression levels of 22 DEGs in GSE7890 (a) and distinct separation using the expression feature of these 22 DEGs of keloid and nonkeloid lesions in GSE92566: (b) two-dimensional principal component analysis and (c) three-dimensional principal component analysis.

cells, $CD8^+$ T cells, class-switched memory B cells, DC, mast cells, iDC, pro-B cells, and the overall Th1 cells and Th2 cells were included. *FGF11* consistently correlated with the infiltration scores of $CD4^+$ Tcm cells, iDC, pro-B cells, and the overall Th2 cells when the subject of expressional profiling was purified epithelial cells. The previously weak negative correlations between *FGF11* and fibroblast, macrophages, and pDC became additionally significant. While most of the correlations were in a similar fashion as they were in mixed keloid lesions and nonlesions, some became the opposite in GSE121618. The most noticeable ones would be the correlations between gene *DOK3* and $CD4^+$Tcm cells, $CD8^+$ T cells, and neutrophils. Interestingly, the overall immune score of keloid lesions was significantly higher than that of nonlesion samples ($p = 0.01$), but the opposite was observed between keloid epithelial samples versus normal epithelial cells.

We wanted to further capture the functional differences between keloids and nonlesions. From the merged cohort containing both keloid and its nonlesion control, significantly enriched well-defined biological states or processes from Hallmark and curated immunologic signature gene sets from C7 were identified. Representative gene sets and processes are shown in Figure 5. Significantly different enrichment of processes associated with mitotic cell spindle, G2M checkpoint, and apoptosis was observed (not shown). On the other hand, up to 163 immune-related gene signatures were also enriched according to c7 curated sets; they were mainly centered on the function of proinflammatory cytokines and lymphocytes such as Th1, Th2, and Th17 cells.

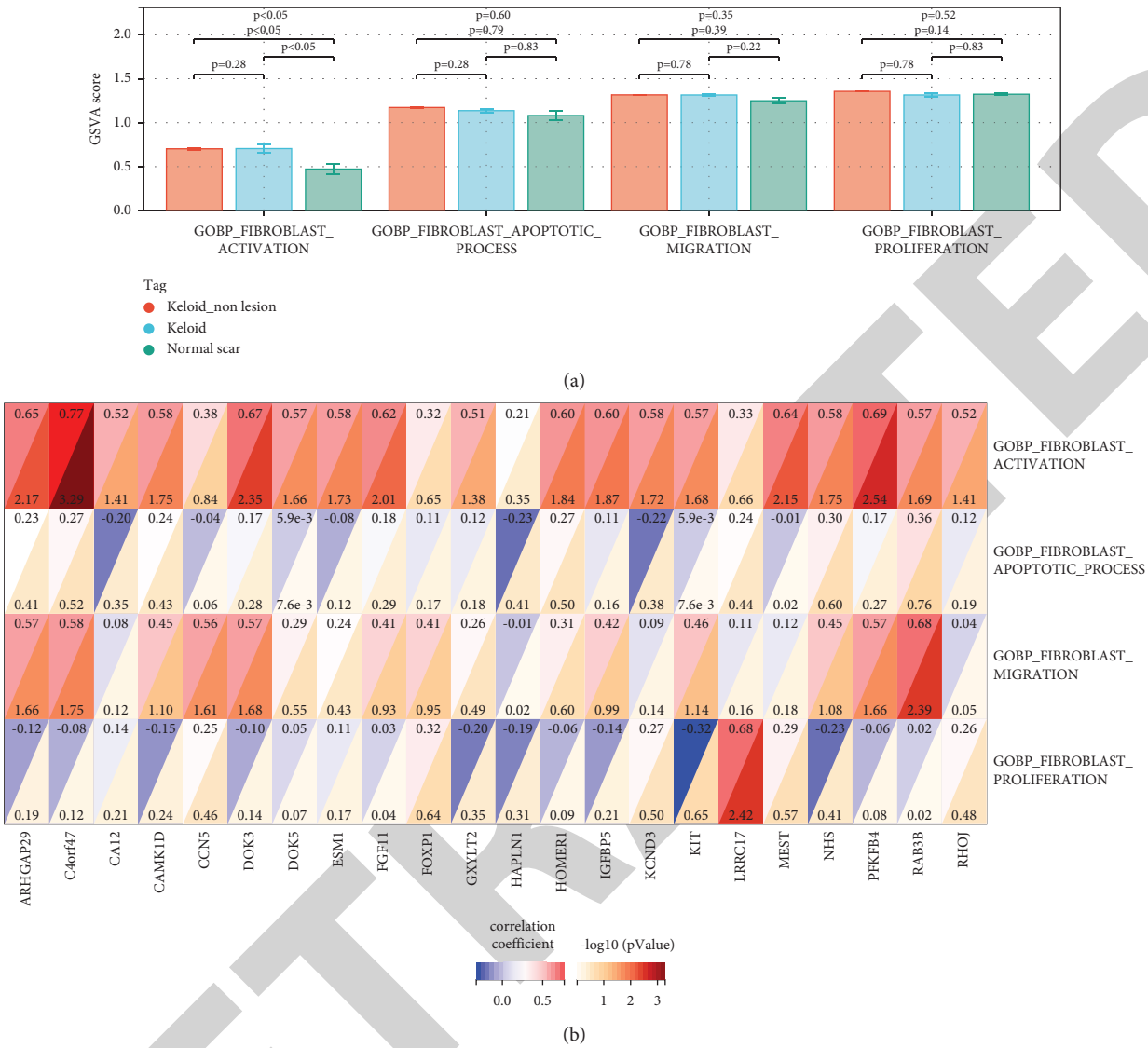

Figure 3: Comparison of enrichment scores of fibroblast-related pathways in keloid and nonkeloid lesions contrary to normal scar and their correlations with the expression levels of DEGs.

3.3. Potential Role of FGF11 in Driving the Altered Immune Properties in Keloids. In the previous correlation analyses, *FGF11* is consistently correlated with major lymphocyte lineages. Of all identified key genes, it is also the only one in the complete list of immune-related genes curated by ImmPort (updated in July 2020, ID 2256, available at https://www.immport.org/shared/genelists). Thus, we again explored the possible differences in gene enrichment between keloid samples with higher FGF11 and those with lower levels (Figure 6). Consistently significant differences in hallmark processes related to the mitosis and proliferation of cells were observed. Responses to interferon-alpha and gamma were also significantly enriched (ES = −0.515, $p = 0.007$; ES = −0.469, $p = 0.007$, respectively) in addition to hypoxia-related processes (ES = 0.493, $p = 0.005$) and inflammatory responses (ES = −0.464, $p = 0.007$). We also verified its expression between keloid-derived fibroblasts and normal fibroblasts with PCR (Figure 7). The expression level of FGF11 in our experiment was significantly lower in keloid fibroblasts ($p = 0.0171$), which was consistent with what was observed in keloid epithelial cells overall, contrary to the trend observed in keloid tissue (Figure 7). Another gene, *IGFBP5*, that was possibly associated with the proliferative stage of keloid development, identified in our first step, was also tested. Even though the IGF pathway has been long suspected to be important in keloidogenesis, the role of IGFBP5 has been inconsistently reported. In our PCR analysis, it was significantly lower in keloid fibroblasts ($p = 0.0006$), opposite to the trends universally observed in the rest of the expression profiles.

4. Discussion

An abnormal wound healing process can induce the development of keloid, a fibrous hyperplastic skin disease. While keloid exhibits similar histological features as hypertrophic scars, it behaves like malignant tumors with the

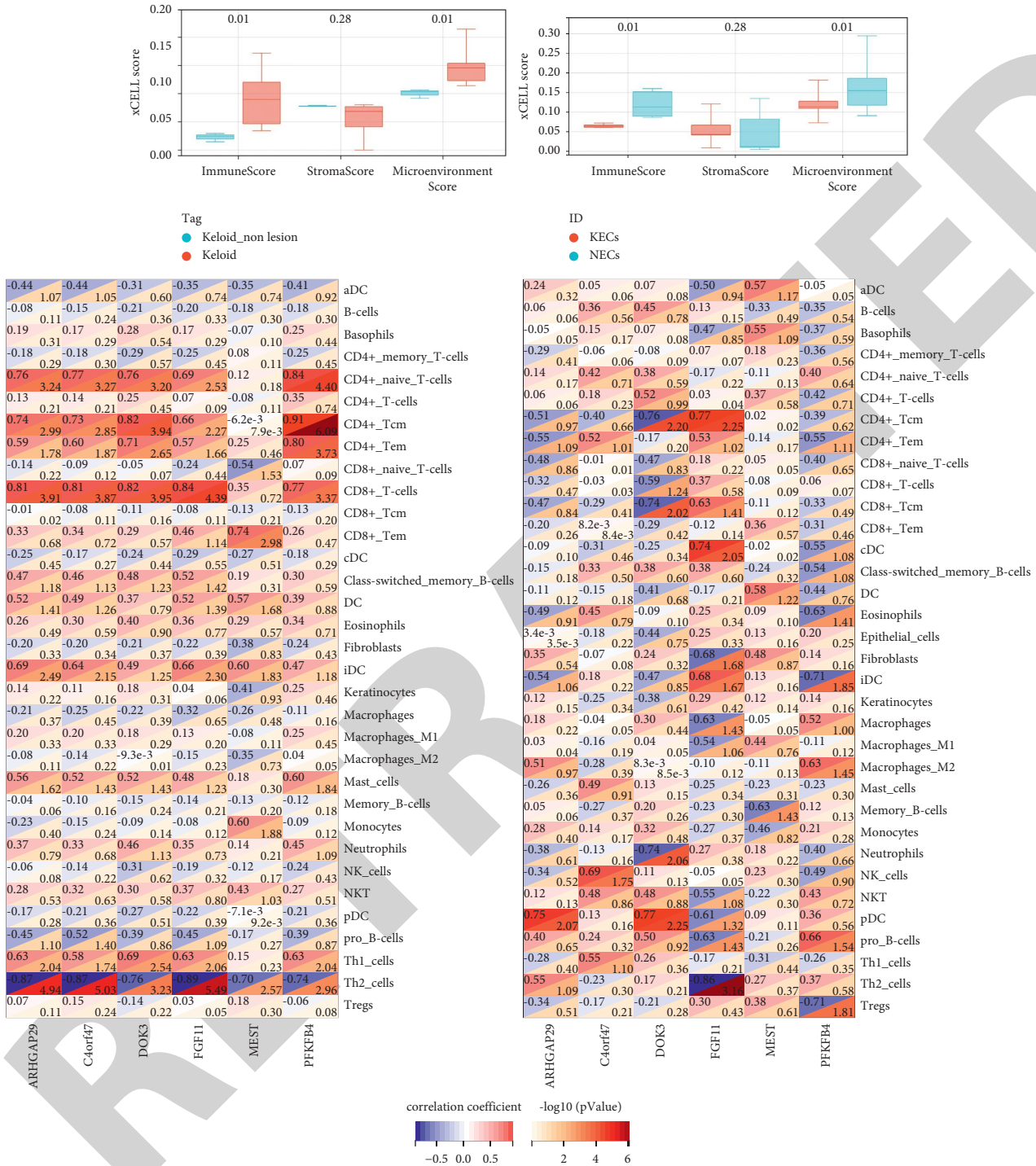

Figure 4: Comparison of immune infiltration scores in keloid and nonkeloid lesions contrary to normal scar and their correlations with individual infiltration scores of immune-related cells. verification of the immune infiltration differences and correlations between key genes and infiltration of immune-related cells in GSE121618.

ability to invade deeply and extend beyond the wounds' original edge. The pathophysiology of keloid development is still under investigation, but it is speculated to be rather complex. Overall, excessive collagen deposition could be observed as a primary characteristic manifestation. Health concerns from keloids have been mostly centered on cosmetic defects and intense itching or pain in some patients. It has a high prevalence of recurrence despite various treatments available clinically. Keloids grown in certain areas can also become symptomatic by limiting joint mobility and even causing deformity. Although keloids have been considered benign, growing evidence shows that the underlying pathogenesis and recurrent episodes entail regular skin examinations as the keloid-prone population faces a

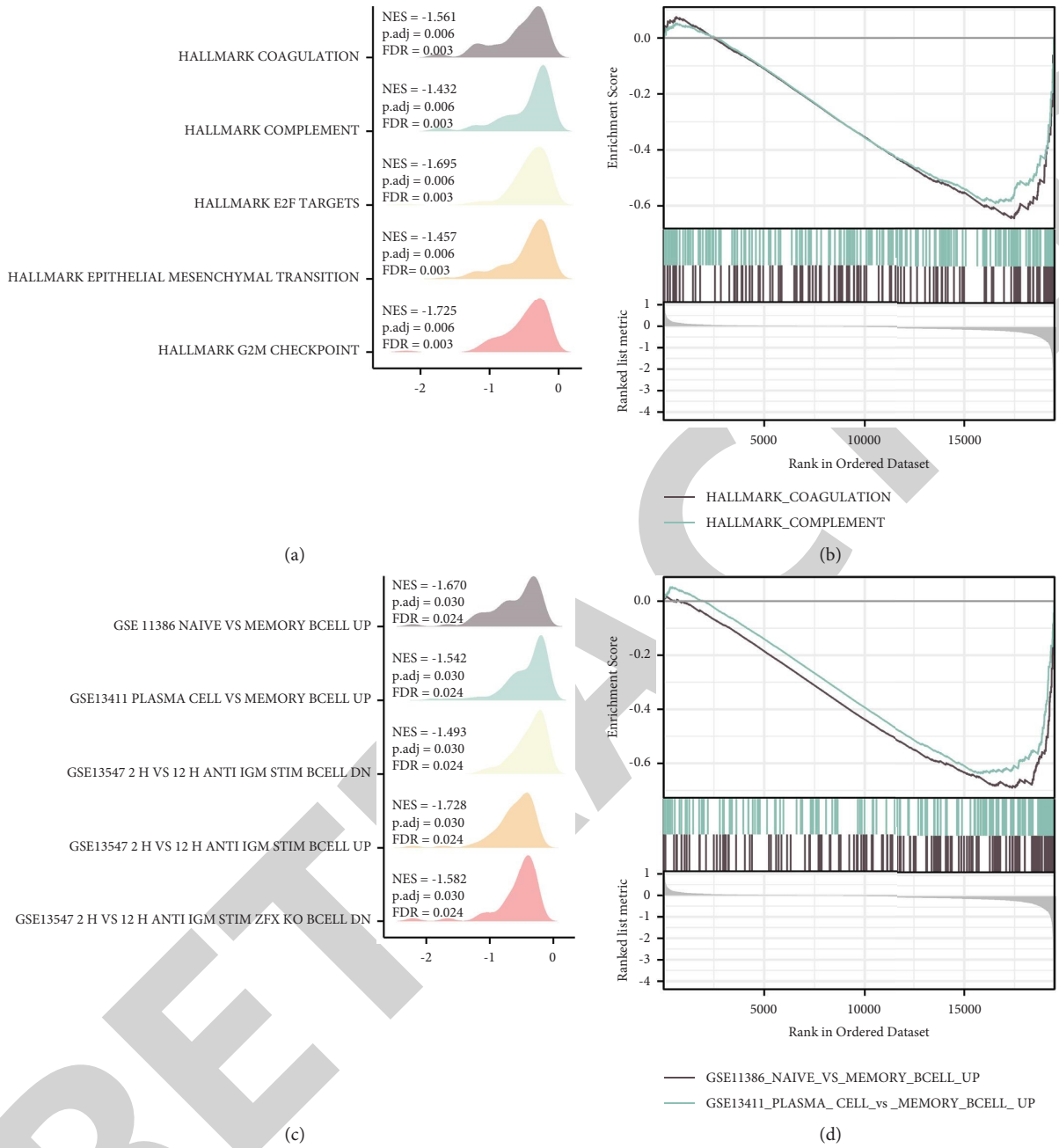

Figure 5: GSEA analyses between keloid lesions and nonlesion keloids based on annotations from hallmark gene sets and c7: immunologic signatures from the molecular signatures database.

significantly higher risk of developing skin cancer, especially males [11].

Fibroblast has been presumed to be the primary cell driving this abnormal excessive collagen formation [9]. After all, it is a significant component of keloid tissues with a significantly higher concentration than normal tissues [14]. Fibroblasts are usually recruited near the wound or differentiated from resident stem cells in the very early stages of wound healing. Imbalanced proliferation and apoptosis of keloid fibroblasts might have contributed to the increase in cell content, hypersecretion of cytokines from keloid fibroblasts, and high sensitivity of themselves to other signal transductions also play an important role [15–17]. Zhang et al. have revealed higher levels of proliferation of keloids compared with physiological scars and normal tissue, but the apoptosis levels seemed to be similar [18]. However, this observation might be opposite in different stages or regions of keloids as there is other evidence showing decreased apoptosis plus higher proliferation in early keloids [19]. This indicates that the relationship between apoptosis and proliferation of keloid fibroblasts could be dynamic, and a reversed pattern of high apoptosis in addition to low proliferation might prevent keloids from becoming malignant. The balance can also be reachieved when treatments such as

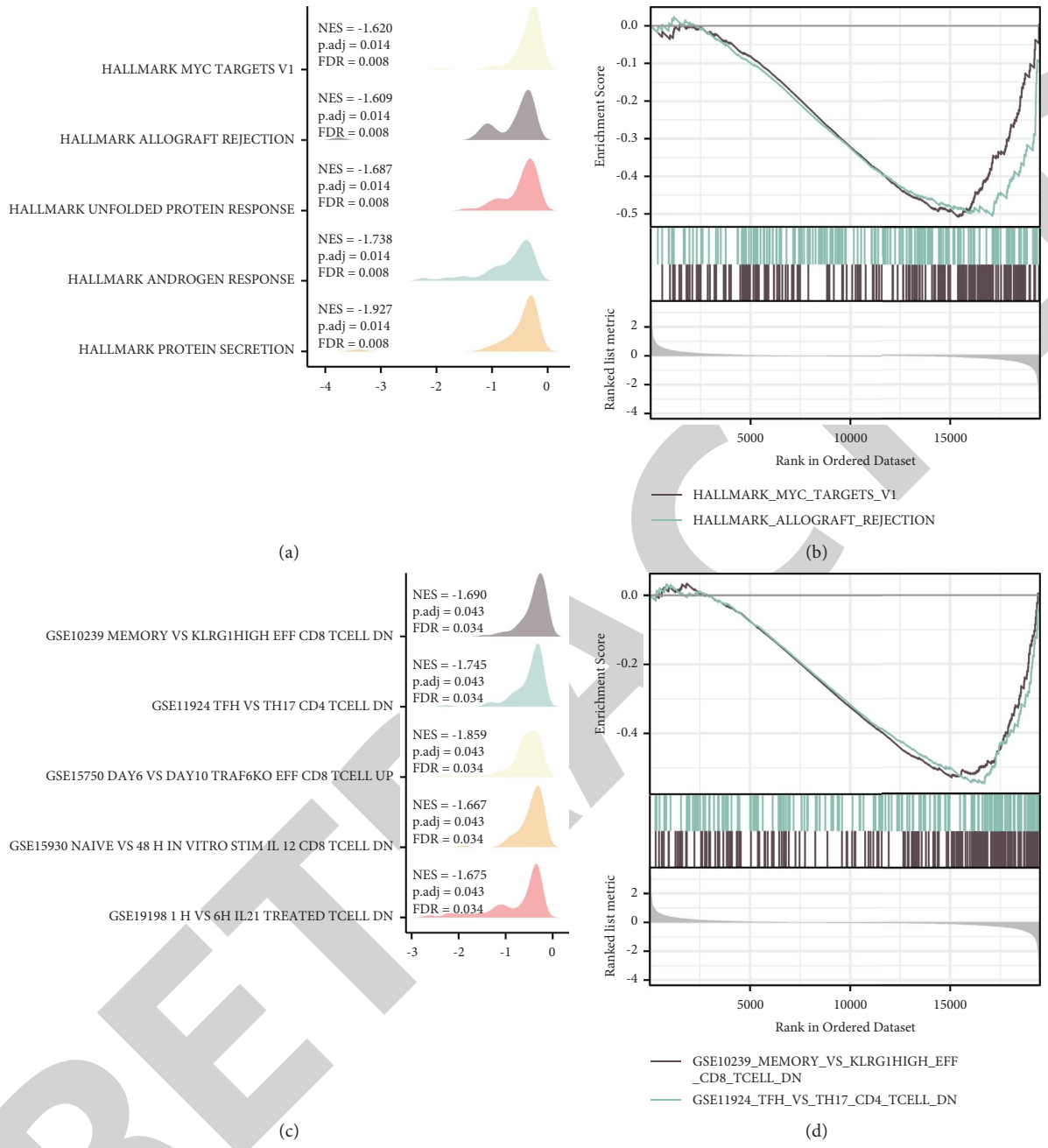

Figure 6: GSEA analyses between keloid samples expressing high and low levels of *FGF11* (separated by 50% median) based on annotations from hallmark gene sets and c7: immunologic signatures from the molecular signatures database.

hydrocortisone are introduced into the microenvironment of keloids. In our study, we specifically focused on the part of the gene profile that was upregulated in keloid scars compared with normal scars, which was also downregulated under hydrocortisone; they depicted the key molecular functions such as IGF binding, integrin binding, ion channel binding, and other growth factor binding. From the work of Zhang et al. mentioned above, we did not find significant differences among keloid lesion, nonlesion, and physiological scar in terms of the apoptotic profile of fibroblast. Meanwhile, fibroblast activation, instead of aberrant proliferation, was revealed to be significantly higher in keloid-prone subjects. This was highly correlated with the expression levels of DEGs identified between keloid and nonkeloid that were also potentially regulated under the influence of hydrocortisone.

IGF pathway is crucial for cell proliferation and growth. Some IGF-binding proteins (IGFBPs) and IGF receptors have been hypothesized to be therapeutical for malignancies. IGFBP-2 through 5 have been frequently associated with the pathogenesis of keloids, but their exact functional significance in the skin has not been clarified [20–22]. The influences on the activities of IGF can be either inhibitory or enhancing, which will lead to either

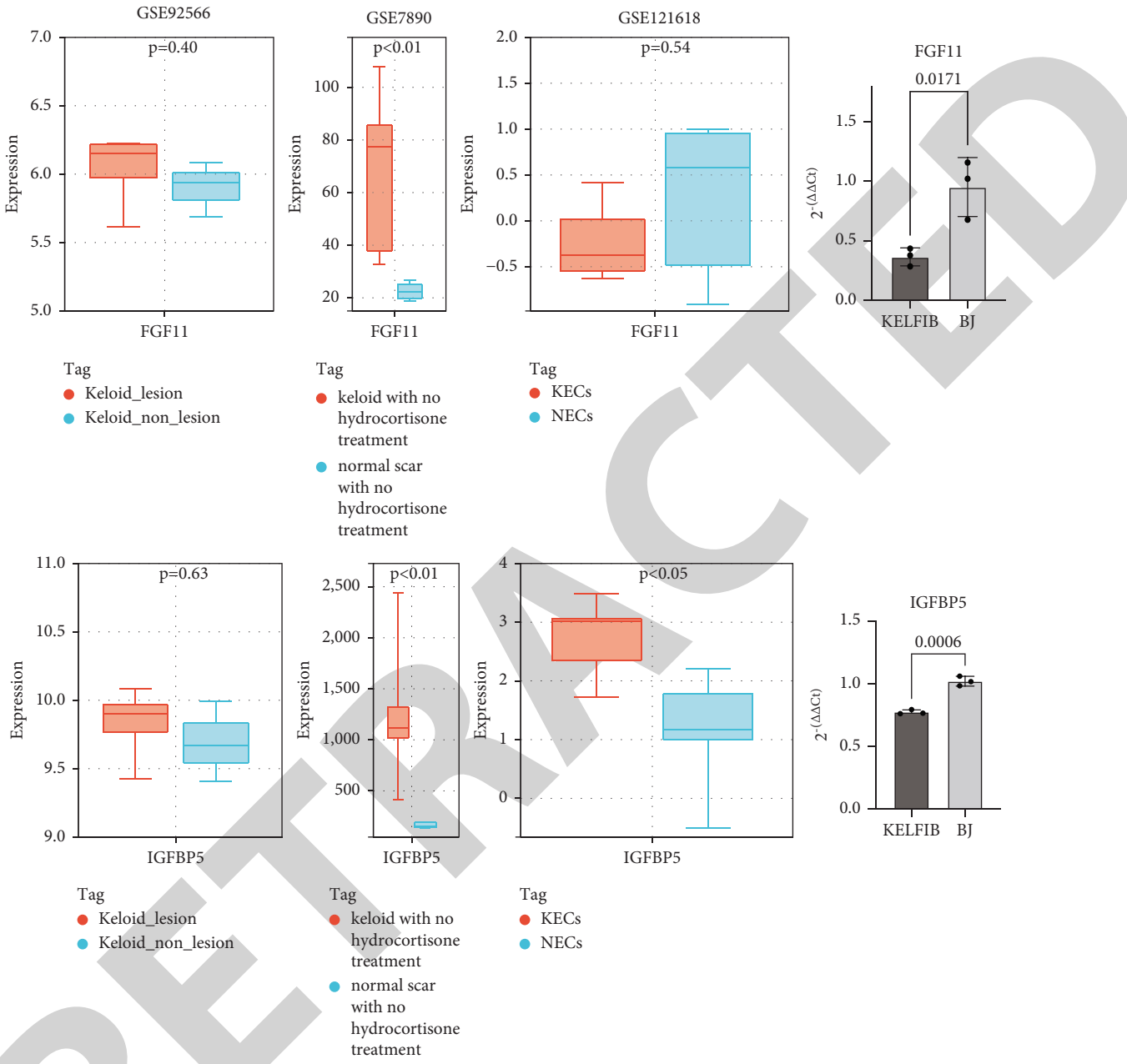

Figure 7: Expression levels of *IGFBP5* and *FGF11* in different datasets and verification by PCR.

anti or proapoptotic effects on fibroblasts. We verified the expression level of *IGFBP5*, one major gene within the group of DEGs associated with the IGF pathway. In commercially available keloid fibroblasts, its expression turned out to be significantly higher than that of BJ cells, normal fibroblasts derived from the normal foreskin. This supports the negative correlation previously identified between *IGFBP5* expression and fibroblast proliferation induced by keloid keratinocytes [23].

As an inflammatory fibroproliferative process, keloid formation is believed to be under regulation by a series of inflammatory cytokines released by proinflammatory cells or immune cells infiltrated in the microenvironment of keloids or lesions with a potential to become keloids. Macrophages play a crucial role in the wound healing process, and the adjustment of inflammation versus tissue repair partially relies on the balance between M1 and M2 [24, 25]. High infiltration of macrophages and lymphocytes was observed in keloid specimens, and M2 was consistently the dominant type [26, 27]. Using the xCELL algorithm, we explored the infiltration of major cell types of lymphoid and myeloid lineages in the microenvironment of both keloid lesions and nonlesion keloids. Samples collected from keloid lesions had significantly higher immune scores than those collected from nonlesion areas. Most of the DEGs significantly correlated with the activation process of fibroblast ($p < 0.01$, correlation coefficient over 0.6) were highly correlated with the infiltration of CD4-positive naïve T cells, central memory T cells (Tcm),

effector memory T cells (Tem), CD8-positive T cells, dendritic cells, and mast cells. They also exhibited significantly opposite correlations with Th1 and Th2 cells. In terms of the balance of M1 and M2, though not significantly correlated, these genes seem to affect the two types of macrophages in opposite directions. However, the immune landscape was reversed when we repeated similar scoring and correlation analyses in GSE121618, where epithelial cell samples acquired from keloid patients and healthy subjects were employed. The opposite effects of the key DEGs on Th1 and Th2 cells also failed to be observed. Currently available studies have agreed on the promotive effects of Th2 cytokines such as interleukin 4 and interleukin 13 on the development of fibrosis [28]. However, whether they control the direction of keloid progression extensively is debatable. Their low expression profiles in both keloid and normal fibroblast, and the clinical evidence of the failure of medications that specifically block Th2 cytokines [29, 30], all necessitate further explorations in the balance of Th1 and Th2 responses. Again, consistent with a hypothesis mentioned earlier, a cross-sectional observation of these samples might be inadequate if keloid development is a dynamic process in terms of the balance between Th1 and Th2. The inconsistent actual expression levels of key genes such as *FGF11* might be associated with the stages of keloid samples.

With that being said, the aberrant nature of immune responses within keloids could be appreciated from our GSEA analyses. What is more, *FGF11* consistently correlated with Th2 cell infiltration in mixed tissue samples or epithelial cells; thus, it was selected as the grouping factor to conduct single-gene GSEA. Interestingly, this gene depicted the heterogenous immune properties of keloids, even though the function of this gene, especially in the skin, is yet to be determined. As a member of the FGF family, it possesses broad mitogenic and cell survival activities, including cell growth, morphogenesis, tissue repair, tumor growth, and invasion, and is reasonable to hypothesize the role of *FGF11* in regulating tissue repair and fibrosis in keloidogenesis [31]. However, despite repeated validation of the PCR results for FGF11 in this study and the selection of more appropriate primers, the peak pattern of the lysis curve was still rather haphazard, which may be related to the poor expression of the two cells themselves. However, we still expected that other scholars would explore this point.

Data Availability

The datasets generated for this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Review Article

The Use of Bacteria in Cancer Treatment: A Review from the Perspective of Cellular Microbiology

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Cellular microbiology, which is the interaction between harmful microbes and infected cells, is important in the determination of the bacterial infection processes and in the progression of data of different cellular mechanisms. The therapeutic role of bacteria has gained attention since the known methods such as radiation, chemotherapy, and immunotherapy have got drawbacks. Bacteria have demonstrated a favorable impact in treating cancer through eradication of tumors. Bacteria, in cancer treatment, have proven to be promising and have been shown in some of the previous work that it can successfully suppress the growth of tumors. In this paper, we analyzed the difficulties and settlement for using bacteria in cancer therapy as well the mechanisms in which bacteria works in order to achieve tumor eradication. Future works may focus on the use of bacteria along with other treatments in order to achieve effective tumor therapy.

1. Introduction

Cancer is a fatal disease and has caused quite a lot of deaths all over the world to an extent that it is predicted that by 2030 the number of deaths related to cancer will be approximately 20 million [1]. This brings a major concern over looking for new drugs which can be employed in the treatment of cancer because of the drawbacks that the known cancer treatments have. The other cause is the side effects that come along from the common utilize of chemotherapeutic operators for the treatment of cancer [2]. Healthy cells are damaged during chemotherapy and eventually cells become drug resistant; therefore, it is very complicated to treat cancer in such a way that causes more damage. The drug resistance that frequently develops lessens the initial efficacy of chemotherapy, which eventually results in poor management of tumors. It is also very difficult to treat different malignancies because of the complex physiology that tumors have [3].

A good strategy that could be able to get around some of the abovementioned drawbacks of usual treatments to date is the use of therapeutic microorganisms particularly bacteria. Although some of the cancers are caused by bacteria as shown in Figure 1, a number of studies have proven that microbes are also capable of curing the deadly disease, considering that their genes can be altered so as to modify their capacity to produce and release in particular very toxic chemicals which have anticancer properties [4].

Bacteria with altered genes have proved to be much efficient in the treatment of cancer as they have fewer side effects. Currently, in most studies, they have utilized

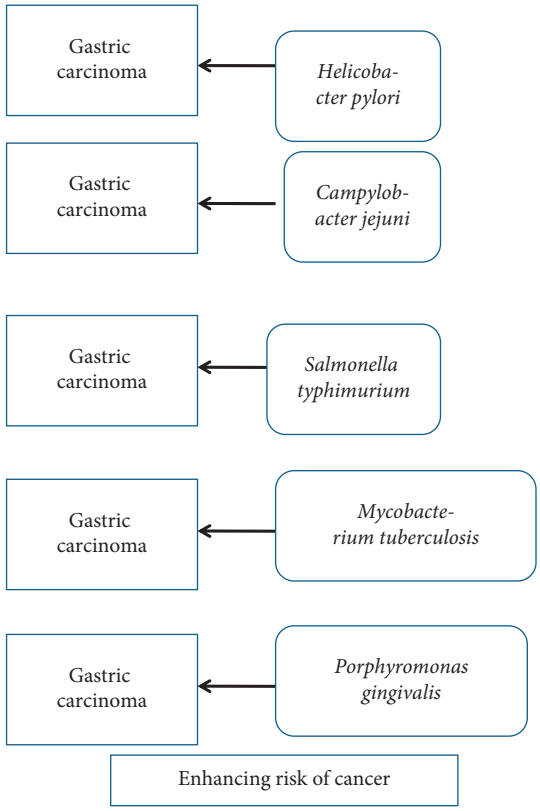

Figure 1: Bacteria involved in causing different types of cancer.

recombinant DNA technology to come up genetically engineered bacteria which is then capable of delivering the toxins through reporter genes in the treatment of cancer [5]. Bacterial species of *Salmonella and Clostridium butyricum M55* are the ones which have been mostly used in experimental studies using mice with tumors to express reporter genes that encodes for enzymes from bacteria that destroy tumors. The enzymes that are required to be expressed involve those belonging to the category of deaminases and nitroreductases. The genetically modified strains of *Salmonella and Clostridium* showed to activate the immune system of the host, increasing the production of cytokines, specifically the interleukins [6].

Bacteria including *Salmonella* amongst many others are involved in the curing of cancer and have the capability of invading the hypoxic tumor sites which is very crucial towards the destruction of tumor cells. This will definitely review the capability of bacteria to produce enzymes and toxic chemicals that are capable of limiting the growth of tumors in experimental models [6]. The enzyme have receptors and use mechanisms at the molecular level to kill solid tumors, for example, ClyA is a bacterial enzyme that achieves solid tumor destruction by creating holes in the membrane of the tumor which results in death of the tumor cells [6]. Some of the bacterial strains with the ability to produce ClyA toxin belongs to the genus of *Staphylococcus* as this was confirmed in a recent study [7]. The other toxins that bacteria produce are specialized in blocking cell division and these are called cyclomodulins. *E. coli* is amongst bacteria that are capable of producing enzymes or toxins that block cell division. It has been reported that it produces a necrotizing factor that has been proved by a number of studies carried out using mice models that it increases replication of DNA whilst maintaining the number of cells, which eventually leads to apoptosis. This was shown to be achieved because of the nature of the necrotizing factor. It is able to cause multinucleate and this prevents cells from dividing hence stimulating apoptosis [8]. Scientists may as well try to explore the use of bacteria as vectors that deliver the drugs that destroys tumors. Some of the bacteria strains involved in cancer therapy are shown in Figure 2.

The invasions of bacteria on tumors have shown to result in suppressed growth of tumors and in some instances, clearance of the tumors [8]. Bacteria with the capability of destroying tumors consume supplements required by the tumor for its growth [8], such that in some cases anaerobic bacteria end up multiplying in deoxygenated tumors [9].

2. Mechanisms of Bacterial Action in Cancer Treatment

Live strains of *Streptococci* and *Clostridia* were the first strains to be used for trials in cancer treatment. A variety of techniques can be used on bacteria in order to achieve tumor therapy [10]. Bacteria belonging to the genus of *Pseudomonas*, *Caulobacter*, *Listeria*, *Proteus*, *Bifidobacteria*, and *Salmonellae* among many others have been shown to have the capability to destroy tumors through different mechanisms. Some of the mechanisms involve the use of their bacterial toxicity, producing immunotherapic constituents, producing enzymes, producing biofilms, producing bacteriocins, capability to carry out RNA interference as well as prodrug cleavage [11]. These bacterial species have also been tested for their therapeutic effect in cancer in animal models [12, 13]; however, more work has to be done so that the trials can be carried out in humans with different malignancies.

3. Bacteria as Anticancer Operators through a Triggering Immune Response

Bacteria has been shown to induce an immune response that activates specific types of host immune cells that recognize cancer cells as antigens and destroy them. This includes the activation of T lymphocytes and cytokines [14].

3.1. Activation of Cytokines. There are microbes such as *Salmonella typhimurium* that are able to activate cytokines. They achieve this by activating the pathways that increases the production of cytokine such as IL-1β, TNF-α, and Il-18. The production of these cytokines in abundance results in tumor destruction since interleukins are the ones that contribute more in fighting pathogens [15, 16].

3.2. Activation of T Cell Lymphocytes. *Escherichia coli* (*E. coli*) have shown to have the capability of producing lymphocytes *T* cells which are very important in the destruction of tumors [17]. *E. coli* stimulates and

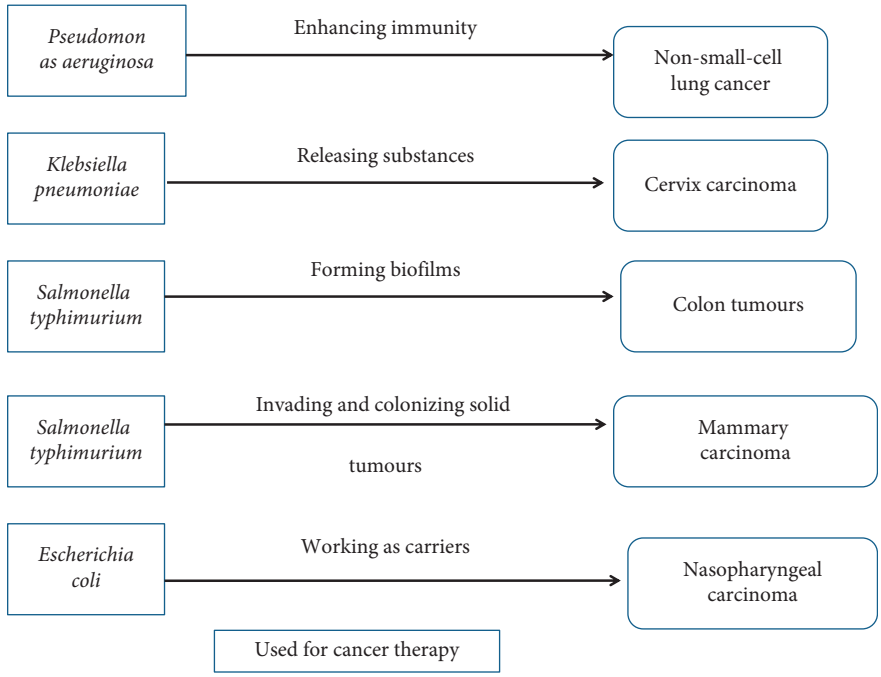

Figure 2: Bacteria involved in treating different types of cancer.

activates the production of $CD8^+T$ which has been proved to have the ability to destruct tumors after bacterial infection [17]. *E. coli* also stimulates the production of $CD4^+T$ cells which also helps in the antitumor activity [17]. These *T* cell lymphocytes also have the ability to eradicate colon cancer and this was confirmed by a trial in severe infected mice which showed cancer reduction upon the administration of *T* cell lymphocytes [18].

3.3. Activation of Tumor Necrosis. Tumor necrosis factor (TN-α) contributes towards the formation of drainage in tumors. The bacterium is able to stimulate the production of tumor necrosis factor, which has been reported with *Salmonella enterica* serovar Typhimurium [19]. The mechanism in which it works also codes for the production of the neutrophilic granulocytes. The neutrophiles enhance the migration of bacteria to the site of infection, which is the tumor [19]. Studies have revealed that increase in host's neutrophils decides the victory of bacteria-mediated tumor treatment; hence, the total clearance of recognized tumors is achievable with the expanding estimate of necrosis [19].

4. Bacteria as Anticancer Operators through Discharged Substances

Bacteria discharge substances which could either be proteins or toxins which are able of hindering the development of tumors. These toxins infiltrate the infected cells and they may change the way that cells function resulting in death of tumor cells.

4.1. Bacteriocins. The synthesis of bacteriocins (cationic) peptides occurs almost in all groups of bacteria. Bacteriocins have cancer cell specific toxicities, are known to be nonimmunogenic, and are also biodegradable. They are much better compared to ordinary cancer drugs [20]. Types of bacteriocins include colicin, pediocin, pyocin, and microcin amongst many others. Colicin, discharged from *Escherichia coli*, has been found to destruct tumors especially in breast cancer [21]. Microcin E492 discharged from *Klebsiella pneumoniae* was also found to have the capability of actuating whereas pediocin produced from *Pediococcus* genus was found to be effective against colon cancer [22]. Similar studies have further proved this finding [23, 24]. Beside, pyocin from the *Pseudomonas* genus had an effect on fibroblast cell line in an experiment carried out on severely infected mice [25, 26].

4.2. Phenazine1, 6-Di-Carboxylic Metabolite. Bacteria can produce numerous metabolites belonging to the phenazine group that have the potential of treating *Candida albicans* [27] and an example of the bacteria is *Pseudomonus aeruginosa*. It was also reviewed that the *P. aeruginosa*'s metabolites are effective on a wide range of cancer cells [28].

5. Biofilms in Cancer Treatment

Bacteria have been recognized to use the strategy of using biofilms in cancer therapy [29] and this has been shown in previous studies [30–33]. Bacteria belonging to the *Streptococcus* genus have been proven to clear tumors by discharging polysaccharides which repress the attachment of cancer cells to endothelial cells [34]. In an experiment [35], they used press oxide nanowires from a biofilm by *Mariprofundus ferroxydans* for cancer treatment and it was successful. However, microbe biofilm in metastasis diversion requires further studies.

6. Bacteria Serving As Carriers of Cancer Therapeutics

Bacteria with the capability of clearing tumors can be utilized as carriers that delivers the anticancer medicine for cancer therapy [36]. One part of this inventive technology involves the implication of genetic engineering of the bacteria which will result in effective killing of cancerous tumors [37].

6.1. The Use of Bacteria in Antiangiogenesis Treatment. Bacteria belonging to the *Salmonella* genus have been reported to weaken tumor development, as well as block tumor angiogenesis. In an experiment carried out on infected mice, *Salmonella* was administered and it resulted in the suppressed growth of the tumor through its ability to express endostatin [38]. A current study utilized *Bifidobacterium adolescentis* for the expression of endostatin inside tumors. The angiogenesis of the tumor was successfully inhibited through creating an antiangiogenic effect [39]. The bacteria-carrier therapy proved to be cost effective and has fewer side effects.

6.2. Combining Bacteria Therapy with Viruses in Cancer Treatment. The combined treatment of microbes and oncolytic infections has been detailed to be efficient against a wide variety of cancers [40, 41]. The treatment is advanced and comes with a package of benefits. One of the benefits is that it is less harmful compared to the current available treatment for cancer. Infections have phenomenal capacities to murder cancer cells [42]. Bacteria combined with viruses mediate a safe reaction against tumor antigens. Cronin et al. [43] found that *Escherichia coli* with the ability to express B18R improved the lysis capability of the vesicular stomatitis virus and in that particular study tumor suppression was achieved.

6.3. Bacteria-Based Microrobot (Bacteriobot). A modern strategy of bacteria-based for tumor treatment, known as the bacteriorobot, employs the use of bacteria as microsensors that treat strong tumors [44]. Microrobots have been made utilizing the nanotechnology [45, 46]. The strategy was carried out in an experiment using *Salmonella typhimurium* and was successful in destroying the solid tumor cells, since encapsulation hides the bacteria from being destroyed by cells of the immune system [47]. Material technology has also been widely applied for medical and other biochemical applications [48].

7. Conclusion

Bacteria are viable in cancer treatment. The treatment of cancer using bacteria is conceivable. In most cases, the treatment has many side effects; therefore, weakened species of microbes able of treating cancer are now being used so as to overcome these side effects. The side effects have shown that they can also be overcome through genetic engineering of the bacteria that has the capability of treating cancerous cells and solid tumors. Effective therapy for cancer using bacteria can also be achieved through using the bacteria in combination with other cancer treatments such as radiotherapy and chemotherapy. The approach of using bacteria in solid tumor clearance is still quite new; therefore, further studies on this subject are of necessity.

Data Availability

The data used to support the findings of this study are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

HM and RA contributed to conception and design of the study and wrote the first draft of the manuscript. NT, LC, SK, RG, MP, AA, DTH, and TNV contribute to the data collection and analysis. All authors approved the submitted version.

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Retraction

Retracted: Effect of Nursing Model Based on Rosenthal Effect on Self-Efficacy and Cognition of Life Meaning in Patients with Non-Small-Cell Lung Cancer

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] L. Mao, H. Lu, and Y. Lu, "Effect of Nursing Model Based on Rosenthal Effect on Self-Efficacy and Cognition of Life Meaning in Patients with Non-Small-Cell Lung Cancer," *Emergency Medicine International*, vol. 2022, Article ID 6730024, 6 pages, 2022.

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Research Article

Effect of Nursing Model Based on Rosenthal Effect on Self-Efficacy and Cognition of Life Meaning in Patients with Non-Small-Cell Lung Cancer

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Objective. To study the influence of nursing model based on Rosenthal effect on self-efficacy and cognition of life meaning in patients with non-small-cell lung cancer (NSCLC). *Methods*. 120 patients with NSCLC treated in the hospital were selected from November 2020 to November 2021 and were randomly divided into the nursing group and the Rosenthal group, with 60 cases in each group. The nursing group received routine nursing intervention, while the Rosenthal group was intervened by nursing model based on the Rosenthal effect, and both groups were intervened for 1 month. The self-efficacy (General Self-Efficacy Scale (GSES)), negative emotions (Hospital Anxiety and Depression Scale (HADS)), self-burden (Self-Perceived Burden Scale for Cancer Patients (SPBS-CP)), meaning of life (Meaning of Life Scale for Advanced Cancer Patients (MiLS)), and quality of life (Functional Assessment of Cancer Therapy-Lung (FACT-L)) were compared between the two groups before and after intervention. *Results*. After 1 month of intervention, the scores of GSES and MiLS of patients in the two groups were significantly higher than those before intervention, and the scores in the Rosenthal group were significantly higher than those in the nursing group ($P < 0.05$). The scores of HADS, SPBS-CP, and FACT-L in the two groups were significantly lower than those before intervention, and the scores were significantly lower in the Rosenthal group than those in the nursing group ($P < 0.05$). *Conclusion*. Nursing model intervention based on Rosenthal effect enhances the self-efficacy and meaning of life and reduces the negative emotions and self-burden in patients with NSCLC.

1. Introduction

Lung cancer is one of the three major tumor diseases in the world, and about 80% of lung cancer patients have non-small-cell lung cancer (NSCLC). The incidence of NSCLC is related to poor air quality, living and working environment, etc., of which the incidence is increasing year by year [1]. Radiotherapy and chemotherapy are the conventional treatment approaches of NSCLC; however, the treatment courses of radiotherapy and chemotherapy are long with high toxicity, side effects, and high cost. All the above disadvantages will bring psychological pressure and self-burden to patients, inducing negative emotions in patients and even having a negative impact on treatment and suicide. Therefore, appropriate psychological intervention is needed to alleviate the negative emotions [2, 3]. Psychotherapy is a green medicine for cancer rehabilitation, and there is no toxic side effect, but it has the irreplaceable function of surgery, chemotherapy, and radiotherapy; a person's heart is full of anxiety and fear of death, despair of survival, and internal ecosystem disorders will occur obviously. The effect will be half the effort. Routine nursing interventions help patients release negative emotions through psychological counseling; however, the outcome is poor, as the patients lose their life expectancy and the meaning of life [4]. The Rosenthal effect enables patients to gain positive emotions through psychological cues such as praise, encouragement, and trust, which is mostly used in patients with advanced

Table 1: General data.

Indexes	Number of cases	
Gender	Nursing group	Rosenthal group
Male	31	32
Female	29	28
Age	22–67 (44.72 ± 10.85) years	23–66 (44.10 ± 10.67) years
The course of disease	6 months–2 years	5 months–2 years
TNM staging		
Stage II	20	22
Stage III	23	24
Stage IV	17	14
Types of NSCLC		
Squamous-cell carcinoma	21	22
Adenocarcinoma	16	17
Large-cell carcinoma	23	21

cancer [5]. This study uses a care model based on the Rosenthal effect to intervene in the treatment of NSCLC patients and observe the effect.

2. Materials and Methods

2.1. General Data. A total of 120 NSCLC patients admitted to our hospital from November 2020 to November 2021 were selected and randomly divided into the nursing group and the Rosenthal group with 60 cases in each group. Inclusion criteria were as follows: diagnosed with NSCLC [6]; expected survival >1 month; and normal communication. Exclusion criteria were as follows: severe mental illness; combined with primary malignant tumors in other parts; and combined with liver, kidney, heart, and other important organ dysfunction and other diseases. There was no significant difference in the general data of the two groups of patients ($P < 0.05$) (Table 1).

3. Method

Routine nursing interventions were used in patients of the nursing group, including NSCLC-related health education, psychological counseling, and so on. Nursing staff communicated with NSCLC patients and their families to understand their emotional and psychological states, helped patients release negative emotions by using patient listening and other methods, and tried to meet the needs of NSCLC patients as conditions permit.

A nursing model intervention based on the Rosenthal effect was used in the Rosenthal group. (1) Before the treatment, when the patient is admitted to the hospital, the nursing staff will register his personality, preferences, illness, treatment situation, etc. and establish a personal health file. Nursing staff introduced the relevant knowledge of NSCLC pathogenesis to patients and their relatives in detail and emphasized the importance of positive attitude for treatment and nursing. During the explanation, the educational level of patients is considered by the nurses to facilitate the patient's understanding and acceptance of the explanation method. Examples are used to explain the correlation between psychological state, treatment effect, and disease outcome. Patients were instructed to express their feelings to nurses or family members in a timely manner. (2) After the treatment starts, ① nursing staff randomly divide NSCLC patients into groups, with about 10 patients as a group, and give lectures as well as communication activities regularly. Nursing staff explain the importance of physical and mental health during lectures, encourage patients to tell their own stories about illness, treatment, psychological thoughts, etc., and encourage patients to conduct self-evaluation. Encourage patients to evaluate themselves positively and instruct group patients to positively encourage and praise others. In group activities, nurses try to invite family members of NSCLC patients to participate in live or participate in short video, voice, etc., guide patients to review positive things in the treatment process or things that they are encouraged and supported, and gradually guide patients to expand their positive impact and significance. Nursing staff invite patients with positive attitudes to give speeches, share their feelings, skills, and experiences in maintaining their positive emotions and mentality. Organize patients to discuss, exchange, and share their own experiences with each other. ② Continuously observe the toxic and side effects of patients with NSCLC and inform the patients and their families of coping methods. Communicate with patients weekly to understand changes in their state of mind and use "Are you confident to persist in treatment and why"? Putting forward some questions, such as "which" to guide the patient to review and think, patiently listen to the patient's expression, and appropriately use affirmation particles and body movements to support the patient. Encourage patients to express positive psychological emotions and thoughts during the treatment process and guide patients to self-affirmation, such as "I can definitely achieve a certain goal," "I can definitely adhere to the treatment," and so on. ③ Establish an online communication platform, such as WeChat group, invite the attending doctor, nursing staff, NSCLC patients, and their family members to participate and share the relevant knowledge of NSCLC and treatment of toxic and side effects in the group regularly, as well as how to self-discharge negative emotions, and set up psychological counseling personnel to give patients psychological counseling at any time. Both groups were treated for 1 month.

Table 2: Comparison of self-efficacy and negative emotions in the two groups before and after intervention ($n = 60$, points, $\pm s$).

Group	Time	GSES	HADS	
			Anxiety	Depressed
Rosenthal group	Before intervention	21.88 ± 4.35	16.52 ± 3.39	16.11 ± 3.25
	After intervention	32.15 ± 3.21[a]	7.49 ± 2.23[a]	7.39 ± 2.36[a]
Nursing group	Before intervention	22.06 ± 4.49	16.83 ± 3.42	15.90 ± 3.31
	After intervention	30.47 ± 3.06[a]	8.92 ± 2.61[a]	8.80 ± 2.78[a]
$t_{\text{after intervention}}$		2.934	3.227	2.995
$P_{\text{after intervention}}$		0.004	0.002	0.003

Note. Compared with before intervention, [a]$P < 0.05$。.

3.1. Observation Indicators. (1) Self-efficacy: the General Self-Efficacy Scale (GSES) [7] was used to evaluate and compare the self-efficacy of the two groups of patients before and after the intervention, including 10 items, each of which was scored 1–4 points, respectively, with a full score of 40. The higher the score, the higher the patient's self-efficacy. (2) Negative emotions: the Hospital Anxiety and Depression Scale (HADS) [8] was used to evaluate and compare the negative emotions of the two groups of patients before and after the intervention. Seven categories of anxiety and depression were included, each with a score of 0–3, and the higher the score is, the more negative emotions the patient had. (3) Self-burden: the self-burden evaluation scale of Chinese cancer patients (SPBS-CP) [9] was used to evaluate and compare the self-burden of the two groups of patients before and after the intervention, including a total of 21 items in 4 aspects of care, economy, psychology, and treatment. 5-level scoring is used for each item. Scores <30 indicate no obvious burden, 30≤score <50 indicates mild burden, 50≤score <70 indicates moderate burden, and score ≥70 indicates severe burden. High indicates that the patient feels more self-burdened. (4) Sense of meaning in life: the Meaning Of Life Scale (MiLS) [10] in patients with advanced cancer was used to evaluate and compare the sense of meaning in life of the two groups of patients before and after the intervention, including 4 items of will, 5 items of frustration, 4 items of satisfaction, and 7 items of control. There are 4 items of tolerance, 4 items of acceptance and 6 dimensions, and each item is scored on a 5-point scale. Higher score indicates stronger sense of life meaning of the patients. (5) Quality of life: the quality of life of patients with lung cancer (FACT-L) [11] was used to evaluate and compare the quality of life of the two groups of patients before and after the intervention, including 7 items of physiology, 7 items of function, 6 items of emotion, and 9 items of additional attention, each using a 5-level score; the lower the score, the higher the quality of life of the patient.

3.2. Statistical Methods. SPSS 22.0 was used for statistics, count data were expressed as %, $\chi 2$ test was performed, rank-sum test was performed between rank data groups, measurement data were expressed as $\pm s$, and t-test was performed. $P < 0.05$ was considered statistically significant.

4. Results

4.1. Comparison of Self-Efficacy and Negative Emotions between the Two Groups after 1 Month of Intervention. The GSES scores of the two groups of patients were significantly higher than those before the intervention, and the scores of the Rosenthal group were significantly higher than those of the nursing group ($P < 0.05$); The HADS scores of the patients in the two groups were significantly lower than those before the intervention, and the scores of the patients in the Rosenthal group were significantly lower than those in the nursing group ($P < 0.05$), as shown in Table 2.

4.2. Comparison of Self-Burden Sense between the Two Groups of Patients. After 1 month of intervention, the SPBS-CP scores in the two groups were significantly lower than those before the intervention, and the scores in the Rosenthal group were significantly lower than those in the nursing group ($P < 0.05$), as shown in Table 3.

4.3. Comparison of the Meaning of Life between the Two Groups of Patients. After 1 month of intervention, the MiLS scores in the two groups were significantly higher than those before the intervention, and the scores in the Rosenthal group were significantly higher than those in the nursing group ($P < 0.05$), as shown in Table 4.

4.4. Comparison of Quality of Life between the Two Groups of Patients. After 1 month of intervention, the FACT-L scores of the patients in the group were significantly lower than those before the intervention, and the scores of the patients in the Rosenthal group were significantly lower than those in the nursing group ($P < 0.05$), as shown in Table 5.

5. Discussion

With the development of medical technology, the 5-year survival rate of NSCLC patients has gradually increased. However, during the process of treatment, diseases, side effects of treatment, and economic pressure will cause psychological pressure to patients and increase their sense of self-burden, which induces patients to consider treatment care and life negatively and affects the outcomes of treatment and care. It is critical to use scientific and appropriate interventions to improve the psychological state of patients [12].

In our study, NSCLC was classified using TNM staging. This staging may be associated with pretreatment clinical staging, pathological staging, postoperative staging, post-neoadjuvant staging, or post-neoadjuvant and surgical

Table 3: Comparison of self-burden before and after intervention in the two groups ($n = 60$, cases, %).

Group	Time	No obvious burden	Mild burden	Moderate burden	Severe burden
Rosenthal group	Before intervention	0 (0.00)	8 (13.33)	25 (41.67)	27 (45.00)
	After intervention	8(13.33)[a]	35 (58.33)[a]	10 (16.67)a	7 (11.67)[a]
Nursing group	Before intervention	0(0.00)	7 (11.67)	24 (40.00)	29 (48.33)
	After intervention	4 (6.67)[a]	26 (43.33)[a]	17 (28.33)[a]	13 (21.67)[a]
Z after intervention			2.440		
P after intervention			0.015		

Note. Compared with before intervention, [a]$P < 0.05$.

Table 4: Comparison of the meaning of life in the two groups before and after the intervention ($n = 60$, points, $\pm s$).

Group	Time	Will	Frustration	Satisfy	Control	Bear	Accept
Rosenthal group	Before intervention	6.28 ± 1.33	7.91 ± 1.78	6.25 ± 1.31	13.97 ± 2.52	6.52 ± 1.42	6.48 ± 1.37
	After intervention	13.84 ± 2.46[a]	17.99 ± 3.56[a]	13.79 ± 2.31[a]	26.81 ± 4.39[a]	13.55 ± 2.29[a]	13.67 ± 2.40[a]
Nursing group	Before intervention	6.09 ± 1.26	7.64 ± 1.70	6.38 ± 1.34	14.35 ± 2.61	6.64 ± 1.49	6.67 ± 1.42
	After intervention	12.47 ± 2.19[a]	16.51 ± 3.16[a]	12.65 ± 2.12[a]	24.72 ± 4.05[a]	12.53 ± 2.01[a]	12.66 ± 2.19[a]
	$t_{\text{after intervention}}$	3.222	2.408	2.816	2.710	2.593	2.408
	$P_{\text{after intervention}}$	0.002	0.018	0.006	0.008	0.011	0.018

Note. Compared with before intervention, [a]$P < 0.05$.

Table 5: Comparison of the quality of life between the two groups before and after intervention ($n = 60$, points, $\pm s$).

Group	Time	Physiological	Features	Emotion	Additional attention
Rosenthal group	Before intervention	20.16 ± 3.35	19.88 ± 3.26	16.49 ± 2.79	26.78 ± 4.31
	After intervention	11.43 ± 2.51[a]	10.79 ± 2.44[a]	8.83 ± 2.11[a]	14.99 ± 2.95[a]
Nursing group	Before intervention	20.84 ± 3.41	19.12 ± 3.34	16.85 ± 2.83	27.57 ± 4.50
	After intervention	12.58 ± 2.69[a]	12.26 ± 2.61[a]	9.70 ± 2.34[a]	16.63 ± 3.26[a]
	$t_{\text{after intervention}}$	2.421	3.187	2.139	2.889
	$P_{\text{after intervention}}$	0.017	0.002	0.035	0.005

Note. Compared with before intervention, [a]$P < 0.05$.

staging. Clinical staging before treatment is based on a combination of history, clinical examination, serology, diagnostic imaging, endoscopic evaluation, diagnostic surgical evaluation, and pathology. Accurate staging and scoring of the fitness status of patients with NSCLC are critical for prognosis and treatment planning.

The toxic and side effects, disease, and economic pressure caused by NSCLC patients receiving radiotherapy and chemotherapy for a long time increase their sense of self-burden, causing many patients to have excessive anxiety, depression, and other negative emotions, resulting in a decrease in their sense of self-efficacy and meaning of life, which in turn affects the treatment progress and effects [13]. Although routine nursing interventions provide psychological counseling to patients and help patients release negative emotions, it is difficult to correct patients' negative thoughts and psychological states, resulting in a strong sense of self-burden and a low sense of self-efficacy and meaning in life [14]. The Rosenthal effect is to use positive evaluation methods such as praise and encouragement to help patients restore self-confidence and self-esteem [15]. In the results of this study, after 1 month of intervention, the GSES and MiLS scores of the two groups of patients were significantly higher than those before the intervention, and the scores of the Rosenthal group were significantly higher than those of the nursing group, and the HADS and SPBS-CP scores of the two groups were obviously lower than those of the nursing group. Before intervention, the scores of patients in the Rosenthal group were significantly lower than those in the nursing group, suggesting that the nursing model based on the Rosenthal effect intervening in NSCLC patients can effectively relieve their negative emotions, reduce their sense of self-burden, and enhance self-efficacy, life expectancy, and sense of meaning of patients. The reason is that in the nursing model based on the Rosenthal effect, before the start of the patient's treatment, the nurses fully understand the personality of patients, preferences, and other basic information, conduct health education in a way that the patient is easy to accept, and help the patient understand the relationship between the psychological state and the treatment effect. They provide health education in a way that is easy for patients to understand, help patients understand the correlation between psychological status and treatment outcomes, and prepare patients for subsequent psychological adjustments [16]. After the treatment begins, the nurses divide the patients into a group mode, organize the NSCLC patients between the groups to share their disease and treatment feelings, and guide the patients themselves, their families, and members of the group to make positive evaluations, so as to help the patients gain a sense of emotional belonging and support. It can effectively enhance self-efficacy of patients and reduce their self-burden [17].

Nursing staff establish a good emotional outlet for NSCLC patients in the mode of group communication, help patients vent their negative emotions through expressions, and guide other patients to encourage other patients in a timely manner, so as to effectively relieve the anxiety and depression of NSCLC patients. Nursing staff invite patients with good and positive attitude to give speeches to stimulate the emotions and attitudes of other patients, encourage, and support each other, thereby effectively improving their sense of meaning in life [18].

Negative emotions and physical and mental stress of NSCLC patients will affect their treatment effect and even increase the toxic and side effects of radiotherapy and chemotherapy, affect their physical and mental status, increase the burden on patients' families, and reduce their quality of life [19]. Routine nursing intervention is difficult to correct the negative emotions of patients, resulting in insufficient self-efficacy and meaning of life and negative treatment of survival and treatment, affecting their quality of life. In the results of this study, the FACT-L score of the patients in the 1-month intervention group was significantly lower than that before the intervention, and the scores of the patients in the Rosenthal group were significantly lower than those in the nursing group, indicating that the nursing model based on the Rosenthal effect intervenes in patients with NSCLC and can improve the quality of life of patients. Because basing on the Rosenthal nursing model, the encourages, praises, and supports from other NSCLC patients, their family members, and nurses, which can enable NSCLC patients to fully feel the care of others and organize patients to exchange experiences and ideas with each other. Also, it can help them to improve their sense of self-efficacy, reduce their sense of self-burden, improve their psychological state, which is beneficial for patients to actively face treatment and nursing, provide guarantee for treatment and nursing effects, relieve physical discomfort caused by diseases and toxic side effects, and eventually improve life quality of patients [20].

In conclusion, intervening patients with NSCLC through a nursing model based on the Rosenthal effect reduces the negative emotions and burden, improves self-efficacy and meaning sense of life, and improves quality of life of the patients, which is valuable for clinical application.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Research Article

Analysis of Fast-Track Surgery with Pain Care on Postoperative Pain Improvement and Complication Prevention in Perioperative Spine Surgery Patients

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Objective. The study aimed to analyze the effect of fast-track surgery with pain care on the improvement of postoperative pain and the prevention of postoperative complications in perioperative spinal surgery patients. *Methods*. A total of 126 patients undergoing spinal surgery from January 2021 to September 2021 were chosen as the study population, and the patients were classified into the regular group, the FTS group, and the combined group by random grouping, with 42 cases in each group. Patients in the regular group used routine perioperative care in spine surgery, patients in the FTS group used the FTS care model, and patients in the combined group combined special pain care on the basis of the FTS group. We compared the numeric rating scale (NRS) and pain severity of patients in the three groups post-op, 30 min, 1 h, 3 h, 6 h, and 24 h after surgery; we compared the time to get out of bed, length of stay, and occurrence of postoperative adverse effects in the three groups, compared the incidence of complications in the three groups, and compared the satisfaction of care in the three groups. *Results*. The NRS scores at 12 h, 24 h, 48 h, and 72 h post-op in the combined group and FTS group were lower than those in the regular group, and the NRS scores at 12 h and 24 h post-op in the combined group were lower than those in the FTS group (all $P < 0.05$); the post-op bed activity time, post-op hospitalization time, post-op adverse reaction rate, and post-op complication rate in the combined group and FTS group were shorter or lower than those of the regular group. Nursing satisfaction was higher than that of the regular group, the post-op time to bed activity in the combined group was shorter than that of the FTS group, and nursing satisfaction was higher than that of the FTS group (all $P < 0.05$). *Conclusion*. The use of FTS with pain care interventions helps relieve postoperative pain in perioperative patients in spine surgery, reduce the incidence of post-op adverse effects and complications in patients, accelerate their postoperative recovery, and improve nursing satisfaction.

1. Introduction

Spine disease is one of the most common diseases in surgery, with the neck and shoulder pain, vertigo, and headache as the main clinical manifestations, and some patients may also suffer from lower limb pain due to involvement, unable to walk upright, or even paralysis in the severe cases, which has adverse effects on the quality of life of patients [1, 2]. In recent years, due to the interaction of a variety of factors, the incidence of spinal diseases increases year by year, and the clinical treatment of spinal diseases has become the main focus of attention [3]. Currently, drugs and surgery are usually used to treat spinal diseases. Drugs can play a certain role in the treatment of mild lesions, but surgery is required for severe spinal diseases [4, 5].

However, under the influence of spinal nerve compression, surgical operations, and local inflammatory factor stimulation, patients undergoing spinal surgery often have pain symptoms to different degrees after operation. It is well known that pain refers to an unpleasant sensory and emotional experience of various nociceptive stimuli in the body and abroad, which can cause a series of adverse effects on the patient's body and psyche, reduce the quality of life, and affect the patient's recovery process [6, 7]. Therefore,

how to relieve postoperative pain and improve the quality of life is of paramount importance [8]. Postoperative nursing intervention is an important measure to ensure the therapeutic effect [9]. Fast-track surgery (FTS) is one of the widely used nursing modes. It mainly uses the perioperative optimization measures confirmed by evidence-based medicine to help patients reduce stress and prevent postoperative dysfunction [10]. However, clinical practice found that the nursing effect of using FTS alone for surgical patients was limited [11, 12]. Studies have pointed out that FTS care for patients undergoing spinal surgery combined with other optimized care modes may have a positive impact on improving the patients' postoperative recovery. Based on this, we have explored the implementation of FTS combined with pain-specific care for patients undergoing spinal surgery and its effect and impact on the patients' quality of life in the perioperative period and have gained some experience, which is reported in the following sections.

2. Data and Methods

2.1. General Data. The subjects included in this study were all patients admitted for surgical treatment of the spine from January 2021 to September 2021, with a total of 126 cases. The consent randomized equal division into the regular group, FTS group, and combined group. There is no significant difference in general data such as gender, age, operation time, and body mass index between the three groups ($P > 0.05$), which is comparable.

2.2. Inclusion Criteria. Inclusion criteria were as follows: all patients had obvious signs of spinal injury and were diagnosed by examination. All patients met the surgical indications. Patients aged 18 to 65 years; patients with normal cognitive function, understanding the interpretation of the relevant scales by the medical staff, and being able to cooperate with the completion of the assessment of the relevant scales.

2.3. Exclusion Criteria. Exclusion criteria were as follows: patients with concomitant fractures and obvious painful injuries at other sites; those with the presence of serious cardiovascular, pulmonary, hepatic, renal, respiratory, hematologic, and neurologic diseases, and other diseases affecting postoperative rehabilitation; those with compound spinal injuries; those with coagulation disorders.

2.4. Care methods

2.4.1. Regular Group. Patients in the regular care group received only conventional nursing interventions, mainly including nursing staff administered analgesic drugs according to medical prescriptions and analyzed and evaluated the analgesic effect of patients. Patients were given routine health education one day before surgery and were prepared for surgery. The rehabilitation of patients and the prevention of complications were observed after operation.

2.4.2. FTS Group. Patients were cared for on the basis of conventional care combined with the FTS concept. The content of routine care was the same as that of the regular group, and the content of FTS management was as follows: ① formation of the FTS management group: the head nurse of the department was the team leader, and the nursing staff of the department were the team members. The head nurse and the chief surgeon regularly trained the team members on day surgery operation, day surgery nursing cooperation, and FTS-related knowledge and nursing skills. ② Pre-op care: responsible nurses educate patients about disease-related knowledge, surgical procedures, perioperative precautions, postoperative FTS concepts, pain care, etc., before the hospitalization and before surgery. In health education, nursing staff encouraged and affirmed the patients and improved their emotions and treatment compliance through positive psychological suggestion. At the same time, the successful cases of surgical treatment were listed to reduce patients' tension, anxiety, and other negative emotions ③Intra-op care: intra-op warming blankets were given to the patients to keep them warm, and the input fluid and rinse solution should be warmed to 37°C; the amount of intraoperative infusion should be controlled. ④Fast postoperative rehabilitation care: patients needed to receive analgesic care as prescribed by the doctor 3 d after surgery, and the patient's pain level was assessed and analyzed using the numerical assessment method; the attending physician needed to add analgesic medication according to the actual situation of the patient. Patients were allowed to drink a little warm water 4 h after surgery and to eat a little liquid or semiliquid food if they did not have any adverse reaction such as nausea and vomiting within 30 min. In the early postoperative period, patients were encouraged to try to get out of bed for moderate activities, and the amount of exercise could be gradually increased according to their recovery status.

2.4.3. Combined Group. The combined group combined pain special nursing on the basis of the FTS group, including the following measures: ①pain education was performed by distributing education manuals, watching videos, and attending a pain salon. Pain education can correct the misconception that patients must bear the pain, so that patients can enhance the sense of pain control, and eliminate the fear, anxiety, and helplessness of pain. It enables patients to understand and master the assessment method of pain severity, report pain timely and accurately, and facilitate timely and effective treatment of pain and discomfort. At the same time, it can help patients correctly understand the pain, alleviate their inner fear and tension, and relieve psychological pressure. Besides, music therapy and suggestion therapy were adopted to distract the patients' attention and help them maintain a relaxed and happy mood and raise pain threshold. The patients were also taught to take deep breaths and meditate to relieve pain. ②Drug analgesic care: the formulation of analgesic treatment plan should be based on the patient's age, health status, expected postoperative pain level, etc., to select the appropriate drug type, dose,

route of administration and time so as to achieve the best analgesic effect with the smallest dose. For example, mild pain could be diverted by playing light music, guiding reading, and reading newspapers to reduce their pain level. For moderate pain, alternating hot and cold wet compresses with 50% magnesium sulfate can be applied for 15 min each time, 2~3 times a day; for patients with severe pain, intramuscular injection of parecoxib 40 mg can be administered twice a day for 3 d, while an intravenous self-administered analgesic pump is applied for 48 h of continuous treatment.

2.5. Observation Indexes

2.5.1. Postoperative Rehabilitation-Related Indexes. The postoperative bed activity time, hospitalization time, and occurrence of postoperative adverse reactions were compared between the two groups.

2.5.2. Pain Scores and Degrees at Different times. Patients' pain conditions were assessed by the numeric rating scale (NRS), and different degrees of pain were indicated by scores from 0 to 10, where 0 indicated no pain, 1 to 3 indicated mild pain, >3 to 6 indicated moderate pain, and >6 to 10 indicated severe pain. The pain scores and pain severity of the three groups of patients at the time of admission, 24, 48, and 7 2 h after surgery were recorded.

2.5.3. Complications. The occurrence of complications such as postoperative bleeding, postoperative pressure sores, urinary retention, and incisional infections were recorded and compared between the two groups.

2.5.4. Satisfaction with Nursing Care. On the day of discharge, a survey was conducted using our homemade nursing satisfaction survey scale, which consisted of 25 items with individual scores ranging from 1 to 4, and a total score of 100, with higher scores indicating higher patient satisfaction with nursing care. A score of ≥90 was considered satisfactory, a score of 70–89 was considered more satisfactory, and a score of <70 was considered unsatisfactory. Satisfaction = number of cases (satisfied + more satisfied)/total number of cases × 100%.

2.6. Statistical Analysis. Statistical software SPSS 18.0 was used to analyze the data, and the mean ± standard deviation (mean ± SD) was used to express the measurement data; the *t*-test was used to compare the age, operation time, BMI, hospital stay, NRS score, and postoperative venting time between the two groups; the χ^2 test was used to compare the gender, satisfaction, and complications between the groups, and the pain level was used to compare the groups. Fisher's exact probability test was selected and the test criterion $\alpha = 0.05$. $P < 0.05$ was considered statistically significant between the groups.

3. Results

3.1. Comparison of General Information among the Three Groups. The differences were not statistically significant ($P > 0.05$) when comparing the gender, age, time of surgery, body mass index, etiology, PLT, Hb, PT, TT, FIB, and APTT in the three groups (Table 1).

3.2. Comparison of Postoperative Recovery-Related Indexes among the Three Groups. The differences were statistically significant ($P < 0.05$) when comparing the postoperative time to the bed activity, the hospital stay, and the incidence of postoperative adverse reactions in the three groups. Among them, the postoperative bed activity time, the hospitalization time, and the incidence of postoperative adverse reactions in the combined group and FTS group were lower than those in the regular group, and the postoperative bed activity time in the combined group was lower than that in the FTS group ($P < 0.05$, Figure 1).

3.3. Comparison of Pain Scores at Different times among the Three Groups. The differences were statistically significant ($P < 0.05$) when comparing the NRS scores at different times after surgery in the three groups. Among them, the NRS scores at 12 h, 24 h, 48 h, and 72 h postoperatively in the combined group and FTS group were lower than those in the regular group, and the NRS scores at 12 h and 24 h postoperatively in the combined group were lower than those in the FTS group ($P < 0.05$, Figure 2).

3.4. Comparison of Pain Levels among the Three Groups at Different times. The differences were statistically significant ($P < 0.05$) when comparing the pain levels of the three groups at 12 h, 24 h, and 48 h postoperatively. Among them, the pain level at 12 h postoperatively in the combined group was lower than that in the conventional group, and the pain levels at 24 h and 48 h postoperatively in both the FTS group and the combined group were lower than those in the conventional group; the pain level at 24 h postoperatively in the combined group was lower than that in the FTS group ($P < 0.05$). The differences in the NRS scores at 72 h postoperatively were not statistically significant in any of the three groups ($P > 0.05$, Table 1).

3.5. Comparison of Complications among the Three Groups. The total complication rates of postoperative bleeding, postoperative pressure sores, urinary retention, and incisional infections were statistically significant ($P < 0.05$) when compared among the three groups. The total complication rates in the FTS and combined groups were lower than those in the conventional group ($P < 0.05$), and the differences between the FTS and combined groups were not significant ($P > 0.05$, Table 2).

3.6. Comparison of Nursing Satisfaction among the Three Groups. When comparing the nursing satisfaction of the three groups, the differences were statistically significant

Table 1: Comparison of pain levels among the three groups at different times (n, %).

Group/time	Regular group ($n = 42$)			FTS group ($n = 42$)			Combined group ($n = 42$)		
	Mild	Moderate	Severe	Mild	Moderate	Severe	Mild	Moderate	Severe
Pre-op	0 (0.00)	16 (38.10)	26 (61.90)	0 (0.00)	19 (45.24)	23 (54.76)	0 (0.00)	16 (38.10)	26 (61.90)
12 h post-op	1 (2.38)	37 (88.10)	4 (9.52)	2 (4.76)	39 (92.86)	1 (2.38)	7 (16.67)*	35 (83.33)	0 (0.00)
24 h post-op	11 (26.19)	31 (73.81)	0 (0.00)	22 (52.38)*	20 (47.62)	0 (0.00)	35 (83.33)*#	7 (16.67)	0 (0.00)
48 h post-op	21 (50.00)	21 (50.00)	0 (0.00)	37 (88.10)*	5 (11.90)	0 (0.00)	38 (90.48)*	4 (9.52)	0 (0.00)
72 h post-op	38 (90.48)	4 (9.52)	0 (0.00)	42 (100.00)	0 (0.00)	0 (0.00)	42 (100.00)	0 (0.00)	0 (0.00)

Note. Comparison with the regular group, $^{*}P < 0.05$. Comparison with the FTS group, $^{\#}P < 0.05$.

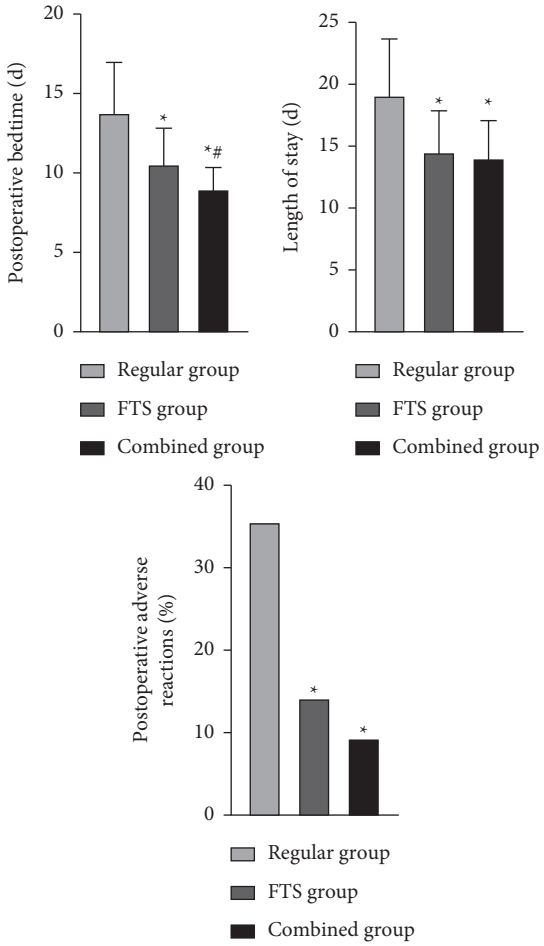

Figure 1: Comparison of postoperative recovery-related indexes among the three groups. *Note*. Comparison with the regular group, $^{*}P < 0.05$. Comparison with the FTS group, $^{\#}P < 0.05$.

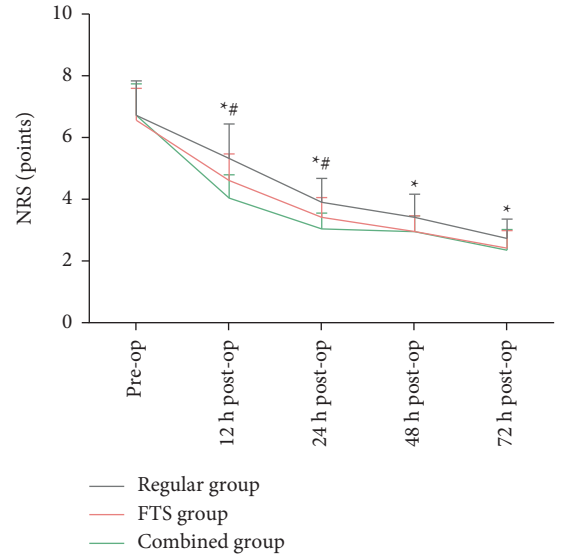

Figure 2: Comparison of pain scores at different times among the three groups. *Note*. Comparison with the regular group, $^{*}P < 0.05$. Comparison with the FTS group, $^{\#}P < 0.05$.

($P < 0.001$), in which the nursing satisfaction of the FTS group and the combined group were higher than that of the conventional group, and the nursing satisfaction of the combined group was higher than that of the FTS group ($P < 0.05$, Table 3).

4. Discussion

Patients after spinal surgery need absolute bed rest after surgery due to the special location of the lesion, which restricts patients' activities to a certain extent. At the same time, the body will be in a state of stress when the patient is subjected to various physical or chemical injuries or is in a large emotional fluctuation, in which the patient's neurological and endocrine functions and the internal environment of the body will undergo certain changes, resulting in pain, fatigue, nausea and vomiting, immune dysfunction, and other external manifestations [13, 14]. Among them, pain is the most common irritant in orthopedic clinics. Pain is a negative emotional experience caused by tissue damage or potential tissue damage and is an important vital sign in addition to pulse, blood pressure, temperature, and respiration during surgical treatment [15]. Postoperative pain can easily lead to patients' irritability, anxiety, and other negative emotions and has a serious impact on the quality of sleep and postoperative rehabilitation of patients, which in turn leads to delayed discharge events of patients undergoing surgery, as well as unscheduled visit and admission events after discharge. Therefore, nursing staff should carry out various interventions for patients after surgery [16, 17].

The results showed that the NRS scores of the combined group and FTS group at each time point after surgery were lower than those of the conventional group, and the NRS scores of the combined group at 12 h and 24 h after surgery were lower than those of the FTS group ($P < 0.05$). FTS is a collaborative therapeutic intervention system, and FTS-based care management aims to reduce surgical stress and

Table 2: Comparison of complications among the three groups (n, %).

Group	Postoperative bleeding	Postoperative pressure sores	Urinary retention	Incisional infections	Total
Regular group ($n = 42$)	1 (2.38)	2 (4.76)	4 (9.52)	4 (9.52)	11 (26.19)
FTS group ($n = 42$)	1 (2.38)	0 (0.00)	1 (2.38)	2 (4.76)	4 (9.52)*
Combined group ($n = 42$)	0 (0.00)	1 (2.38)	1 (2.38)	1 (2.38)	3 (7.14)*
χ^2 value					7.389
P value					0.025

Table 3: Comparison of nursing satisfaction among the three groups (n, %).

Group	Satisfied	Quite satisfied	Dissatisfied	Total
Regular group ($n = 42$)	9 (21.43)	22 (52.38)	11 (26.19)	31 (73.81)
FTS group ($n = 42$)	21 (50.00)	17 (40.48)	4 (9.52)	38 (90.48)*
Combined group ($n = 42$)	28 (66.67)	14 (33.33)	0 (0.00)	42 (100.00)*#
χ^2 value				14.076
P value				<0.001

postoperative complications and accelerate postoperative recovery of patients; this care model is highly adaptable in the application of various surgical care processes [18]. In addition to helping patients get a comfortable position, removing various factors that induce pain aggravation, and creating a good hospital environment through routine nursing, special pain care also provides preoperative and postoperative pain education through brochures, videos, etc. Patients' mastery of the concept of postoperative pain can help patients understand the pain evaluation methods, report pain timely and accurately, master self pain relief methods, and strengthen pain control [19, 20]. Through psychological care to ease patients' fear and anxiety and other psychological aspects, we give patients appropriate emotional support such as sympathy and comfort so that patients can maintain a relaxed and stable mood and improve their pain threshold. Through multimodal, individualized, and timely administration of analgesic programs, an individualized and reasonable analgesia is administered according to the patient's pain level, effectively relieving patients' pain discomfort [21, 22].

In this study, the ambulation time, hospital stay, and incidence of adverse reactions and complications after surgery in the combined group and FTS group were shorter or lower than those in the conventional group, and the ambulation time after surgery in the combined group was shorter than that in the FTS group ($P < 0.05$). These results indicated that combined nursing was better than FTS management in reducing perioperative pain severity, shortening postoperative rehabilitation time, and reducing the incidence of adverse reactions and complications in spine surgery. In this study, our nursing staff formed an FTS nursing team to optimize the traditional perioperative care methods in spine surgery, develop a professional nursing plan, and combine FTS theory in the nursing process to provide special care for patients, including preoperative education, targeted intraoperative care, and rapid postoperative rehabilitation, to relieve patients' preoperative tension through comprehensive management, encourage patients to get out of bed early on the basis of adequate postoperative pain relief, improve patients' ability to take care of themselves, and promote rapid recovery.

In addition, the nursing satisfaction levels in the combined group and FTS group were higher than that in the routine group, and the nursing satisfaction level in the combined group was higher than that in the FTS management group ($P < 0.05$). The possible reason why combined care can improve patients' satisfaction with nursing care may be the addition of pain-specific care on top of FTS, and comprehensive care is carried out for patients under the guidance of personalized and holistic thinking. This not only relieves patients' bad emotions but also improves patients' pain, postoperative adverse reactions, and complications and accelerates the rehabilitation process, thus improving their satisfaction with nursing work [23, 24].

In conclusion, FTS care combined with pain-specific care for spine surgery patients can effectively relieve patients' pain discomfort, shorten their hospital stay, and improve patient satisfaction.

Data Availability

The data are available from the corresponding author upon request.

Ethical Approval

The study was approved by the ethics committee (clinical trial registration number: EA2021-003).

Consent

Informed consent was obtained from the subjects.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Effect of Arthroscopic Acromioplasty Combined with Rotator Cuff Repair in the Treatment of Aged Patients with Full-Thickness Rotator Cuff Tear and Rotator Cuff Injury

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] S. He, H. Xu, and S. Liu, "Effect of Arthroscopic Acromioplasty Combined with Rotator Cuff Repair in the Treatment of Aged Patients with Full-Thickness Rotator Cuff Tear and Rotator Cuff Injury," *Emergency Medicine International*, vol. 2022, Article ID 4475087, 8 pages, 2022.

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Research Article

Effect of Arthroscopic Acromioplasty Combined with Rotator Cuff Repair in the Treatment of Aged Patients with Full-Thickness Rotator Cuff Tear and Rotator Cuff Injury

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Full-thickness rotator cuff tear and rotator cuff injury are frequently occurring diseases and widely exist in the social population. Surgical repair is the most effective treatment for rotator cuff tears and injuries. With the continuous development of arthroscopy, more and more surgeons choose arthroscopic acromioplasty plus rotator cuff repair for the treatment of rotator cuff injury. However, previously published systematic reviews or meta-analyses still cast doubt on the efficacy of such concomitant procedures for postoperative patient function and pain recovery. In this study, we analyzed the effects of parameters such as shoulder function and acromion morphology on aged patients with full-thickness rotator cuff tear combined with rotator cuff injury treated with arthroscopic acromion plasty and rotator cuff repair. The results showed that arthroscopic acromion plasty and rotator cuff repair helped to promote the joint function recovery of the aged patients with full-thickness rotator cuff tear combined with rotator cuff injury and alleviate the pain of the patients. Compared with simple rotator cuff repair, this technique can increase the postoperative AT and reduce the ACEA and to some extent reduce the risk of postoperative rotator cuff reinjury, which is worthy of promotion.

1. Introduction

Full-layer rotator cuff tear and rotator cuff injury are common shoulder joint diseases in clinics, mainly causing shoulder pain and dysfunction. Rotator cuff injury is a common disease in the elderly and one of the main causes of shoulder pain and dysfunction in the elderly. If not treated in time, it will seriously affect the quality of life of patients [1]. There are mainly conservative treatments and surgical treatments for full-thickness rotator cuff tear and rotator cuff injury [2]. Among them, surgical treatments include open rotator cuff repair, arthroscopically assisted small incision rotator cuff repair, and full arthroscopic rotator cuff plasty. Since Codman first proposed rotator cuff injury in 1911, open rotator cuff repair has become the "gold standard" for the treatment of rotator cuff injury [3]. However, with the development and promotion of arthroscopy, arthroscopic repair of the shoulder has become the main treatment for rotator cuff injury, owning to the advantages of small operation trauma, low postoperative adhesion risk, low infection probability, and easy early rehabilitation after operation [4]. In addition, because most patients with rotator cuff injury have subacromial impingement, that is, the greater tubercle of the humerus will collide with the lower surface of the acromion in the process of shoulder abduction of 60–120 [5]. So, acromioplasty is also particularly important in the treatment of rotator cuff injury. However, some studies have suggested that the combined use of acromioplasty and arthroscopic repair for patients with rotator cuff injury is of little significance due to the reproducible morphological structure of the acromion [6]. The value of the combined use of these two procedures remains controversial. On this basis, this study explored the effects of arthroscopic acromioplasty plus rotator cuff repair on the shoulder function and acromion morphology of aged patients with full-thickness rotator cuff tear and rotator cuff injury, aiming to analyze the clinical effect of this treatment. The results are now reported as follows.

2. Materials and Methods

2.1. General Information. All patients with shoulder pain who were admitted to our hospital from January 2019 to June 2020 were selected. Among the patients initially diagnosed with rotator cuff injury by ultrasound examination, 84 patients met the inclusion and exclusion criteria. According to the difference in treatment methods, the patients were divided into a study group and a control group, with 42 cases in each group. This study has been approved by the Hospital Medical Ethics Committee.

2.2. Inclusion Criteria. (1) Compliant with the diagnosis of rotator cuff tear combined with rotator cuff injury, and age >60 years old [7]. (2) Patients with indications for rotator cuff repair. (3) No previous operation history of shoulder. (4) No recent infectious disease. (5) The skin is not damaged. (6) Voluntary participation in the study and timely follow-up.

2.3. Exclusion Criteria. (1) Patients with shoulder pain and abnormal anatomical structure caused by infection, deformity, and other reasons. (2) Combined with periarticular fractures.(3) Patients who refuse to be interrupted during surgery or treatment and cannot be followed up on time. (4) Coagulation dysfunction. (5) Passive movement of the shoulder joint was performed to confirm the surgical effect.

2.4. Method. Patients in the study group underwent arthroscopic acromioplasty plus rotator cuff repair. The surgical procedures were as follows: after the patient's endotracheal general anesthesia was successful, the healthy lateral decubitus position was taken. The body is reclined 20°, the shoulder joint abduction is 45–60°, and the anterior flexion is 15–20°. Abduction of the affected shoulder joint is 45–60°. Limb sleeve set good, with a bandage and film. Anterior superior flexion of the healthy limb was performed to maintain the mild abduction, anterior flexion, and traction state of the affected upper limb. The affected limb was suspended by the shoulder arthroscopic traction device. The systolic blood pressure was controlled to 90–100 mmHg during the operation. After the acromion, coracoid process, and scapular ridge were marked, the operation fields were disinfected and draped. Normal saline was first injected into the shoulder joint to expand the joint capsule. Then, a posterior approach to the shoulder was selected for puncture, followed by continuous irrigation with epinephrine normal saline (3,000 mL of normal saline plus 1 mL of epinephrine). After a thorough examination of the glenohumeral joint, the arthroscopic sheath and blunt round trocar were repositioned in the subacromial space. A plane knife was inserted through the anteromedial approach to the acromion to clear the glide sac of the acromion and fully expose the lower surface of the acromion and the coracoacromial ligament. Carefully explore the shape of the anterior outer edge of the acromion. Anterior and posterolateral approaches were established. The rotator cuff tear was observed, and the injury margin of the supraspinatus tendon was explored. According to the size of the tear, the quality of humerus bone, and the condition of the suture port, double rows of anchors were used to strengthen the suture. Stop bleeding, and move the shoulder joint. After the examination and repair were satisfactory, the wound was fully sutured. During the operation, a grinding drill was used to grind the anterior 1/3 bone cortex of shoulder peak to a depth of about 4 mm and a width of about 10 mm. After that, passive movement of the shoulder joint was performed to confirm the surgical effect.

Patients in the control group were treated with simple arthroscopic rotator cuff repair, and the operation procedures were the same as those in the study group.

All the patients received routine anti-infection treatment 24 h after operation, and the drainage tube was removed within 48 h after operation. Meanwhile, procedural rehabilitation was performed by the same rehabilitation physician according to the same principles of rehabilitation treatment.

2.5. Observation Indicators

(1) Shoulder joint function: all patients received shoulder joint function scoring examination before operation and 6 months after operation. Constant–Murley shoulder joint scoring system and UCLA shoulder joint scoring system were used as scoring tools. The Constant–Murley shoulder joint scoring system was divided into four aspects including pain, arm posture, range of motion, and abduction muscle strength, with scores ranging from 0 to 100 points [8]. The UCLA shoulder joint scoring system was divided into five aspects, i.e., pain, function, active upper limb anteflexion, upper limb anteflexion muscle strength, and patient satisfaction. The full score was 35 points, and a score less than 27 points indicated that the recovery was not ideal [9].

(2) Pain conditions: two groups were assessed with visual analogue scales (VAS) before operation, 2 weeks after operation, 2 months after operation, and 6 months after operation. According to clinical evaluation, "0–2" was classified as "no pain or almost negligible," "3–5" as "mild pain," "6–8" as "moderate pain," and "8" as "severe pain" [10].

(3) Active range of motion of affected shoulder: the range of motion of affected shoulder flexion, abduction, neutral external rotation, abduction 90 internal rotation, and abduction 90 external rotation of the two groups were evaluated before operation and six months after operation.

(4) Morphological parameters of acromion: standard anteroposterior radiographs of the shoulder were taken before and six months after the operation, and the critical shoulder angle (CSA), acromial tilt angle (AT), lateral acromion angle (LAA), acromion index (AI), and acromiohumeral centre edge angle (ACEA) were recorded. Among them, CSA angle refers to the

angle formed by the angle between the upper and lower edges of glenoid fossa and the lower edge of glenoid fossa to the outermost lower edge of acromion. AT was the line connecting the rearmost point and the forwardmost point of the lower margin of acromion and the line connecting the rearmost point of the lower margin of acromion and the lower margin of coracoid process, respectively. LAA was the angle between the line connecting the outermost upper and lower edges of the glenoid and the line connecting the lower surface of the acromion. AI refers to the ratio of the distance between the glenoid plane and the lateral surface of the acromion to the distance between the glenoid plane and the lateral surface of the humeral head. ACEA refers to on the positive X-ray film of shoulder joint, the circle with the largest area covering the whole humeral head was firstly simulated according to the articular surface of humeral head, the line between the midpoint of this circle and the outermost point of acromion, and the angle between this line and the parallel line of glenoid across the circular midpoint.

(5) The operation time, bleeding volume, incision length, and length of hospital stay were compared between the two groups.

(6) The complications such as vascular and nerve injury, postoperative infection, postoperative joint adhesion, and retear were compared between the two groups.

2.6. Statistical Methods. All data were processed with SPSS 22.0 statistical software, and GraphPad prism 8 was used to make statistical graphs. Measurement data are expressed as mean ± standard deviation ($\overline{x} \pm s$), independent sample t-test is used for comparison between groups, count data is expressed as n (%), and chi-square (χ^2) test is performed. The difference is statistically significant when $P < 0.05$.

3. Results

3.1. Baseline Data. There was no significant difference in general data between the two groups, which was comparable ($P > 0.05$, Table 1).

3.2. Comparison of Constant–Murley and UCLA Scores before and after Surgery in Two Groups. There was no significant difference in the Constant–Murley score and UCLA score between the two groups before operation ($P > 0.05$). After surgery, the Constant–Murley scores and UCLA scores in the two groups were higher than those before surgery, and the scores in the study group were higher than those in the control group ($P < 0.05$, Table 2).

3.3. Comparison of VAS Scores of Patients between the Two Groups before and at Each Time Point after Surgery. There was no significant VAS score between the two groups before operation ($P > 0.05$). The VAS scores of the patients in the two groups two weeks after the operation, two months after the operation, and six months after the operation were lower than those before the operation, and the VAS scores of the patients in the study group at each time point after the operation were lower than those in the control group ($P < 0.05$, Table 3).

3.4. Comparison of Active Range of Motion between the Two Groups before and after Surgery. There was no significant difference in the range of motion of preoperative shoulder flexion, abduction, neutral external rotation, abduction 90 internal rotation, and abduction 90 external rotation between the two groups ($P > 0.05$). After surgery, the range of motion of anterior shoulder flexion, abduction, neutral external rotation, abduction 90 internal rotation, and abduction 90 external rotation in both groups were significantly increased as compared with those before surgery, and the range of motion in the study group was higher than that in the control group ($P < 0.05$, Table 4).

3.5. Comparison of Morphological Parameters of Acromion between the Two Groups before and after Surgery. Before surgery, the comparisons of CSA, AT, LAA, AI, and ACEA between the two groups were not statistically significant ($P > 0.05$). After surgery, CSA decreased, AT increased, and ACEA decreased in both groups ($P < 0.05$), but LAA and AI were not different from those before surgery. After surgery, CSA and ACEA levels in the treatment group were smaller than those in the control group, and AT level was larger than that in the control group ($P < 0.05$, Table 5).

3.6. Comparison of Surgical Indexes between the Two Groups. The length of hospital stay in the study group was shorter than that in the control group ($P < 0.05$). However, the operation time, blood loss, and incision length between the two groups were not statistically significant ($P > 0.05$, Table 6).

3.7. Comparison of Postoperative Complications between the Two Groups. There was 1 postoperative infection in the study group and 1 postoperative joint adhesion in the control group. There was no statistical significance in the incidence of complications between the two groups ($P < 0.05$).

4. Discussion

At present, it is considered that the causes and pathogenesis of full-thickness rotator cuff tear and rotator cuff injury include advanced age, trauma, rotator cuff blood supply insufficiency, chronic impingement injury of the rotator cuff, and rotator cuff degeneration [11]. Nowadays, arthroscopic rotator cuff repair is widely used; however, in the research on the treatment of rotator cuff injury, with the proposal of the theory of subacromial impingement, researchers have paid attention to the effect of acromion morphology on the degree of rotator cuff injury [12, 13].

Table 1: General information.

Group	Gender (n)		Age (years)	Course of disease (months)	Tearing length of rotator cuff (cm)	Affected side (n)	
	Male	Female				Left shoulder	Right shoulder
Study group ($n = 42$)	25	17	68.91 ± 3.45	6.73 ± 2.58	2.34 ± 0.75	19	23
Control group ($n = 42$)	24	18	68.78 ± 3.61	6.89 ± 2.41	2.31 ± 0.84	20	22
t/χ^2	0.049		0.169	0.294	0.173	0.048	
P	0.825		0.866	0.770	0.863	0.827	

Table 2: Comparison of Constant–Murley and UCLA scores before and after surgery in two groups ($\overline{x} \pm S$, score).

Group	Constant–Murley		UCLA	
	Before surgery	After surgery	Before surgery	After surgery
Study group ($n = 42$)	73.20 ± 7.16	91.89 ± 3.64[a]	23.47 ± 3.69	32.05 ± 1.75[a]
Control group ($n = 42$)	73.52 ± 7.23	86.51 ± 6.33[a]	23.85 ± 3.73	29.96 ± 1.82[a]
t	0.204	4.775	0.469	5.365
P	0.839	<0.001	0.640	<0.001

Note: "a" is $P < 0.05$, compared with the same group before operation.

Table 3: Comparison of VAS scores of patients between the two groups before and at each time point after surgery ($\overline{x} \pm S$, score).

Group	Before surgery	2 weeks after operation	2 months after operation	6 months after operation
Study group ($n = 42$)	6.22 ± 1.41	4.23 ± 1.26[a]	3.10 ± 1.16[ab]	1.89 ± 0.98[abc]
Control group ($n = 42$)	6.29 ± 1.53	4.97 ± 1.33[a]	3.65 ± 1.27[ab]	2.25 ± 0.63[abc]
t	0.218	2.618	2.072	2.003
P	0.828	0.011	0.041	0.049

Note: "a" is $P < 0.05$, compared with that in the same group before surgery; "b" is $P < 0.05$, compared with that in the same group two weeks after surgery; "c" is $P < 0.05$, compared with that in the same group six months after surgery.

Acrominoplasty has become an auxiliary project of arthroscopic rotator cuff repair [14].

This study showed that, after surgery, the Constant–Murley and UCLA scores of patients in the study group were higher than those of the control group, and the VAS score was lower than that of the control group. Moreover, the joint range of motion of patients in the study group was also superior to that of the control group ($P < 0.05$). This indicates that arthroscopic acromioplasty plus rotator cuff repair is conducive to promoting the joint function recovery of elderly patients with full-thickness rotator cuff tear combined with rotator cuff injury and reducing the pain in the patients. Acromioplasty is defined as a surgery in which the osteophytes on the anterior and inferior border of the acromion are excised so that the type II and III acromions can be converted into type I acromion [15]. We believe the clinical advantages of acromioplasty while arthroscopic rotator cuff repair lies in the following aspects: ① performing acromioplasty before repair of a damaged rotator cuff can change the morphology of the acromion and reduce the rate of postrepair injury of rotator cuff injury due to the acromion impingement sign [16]. ② Acrominoplasty can clean the glide sac of acromion that can cause pain, alleviate the pain, and increase the subacromial space, providing convenience for arthroscopic operation and improving the surgical effect [17]. ③ Acromioplasty has little effect on the deltoid muscle, and it can increase the expression of bone marrow stem cells and related mediators, helping the patient recover faster. ④The injury to the deltoid muscle is small, so that the probability of shoulder joint activity limitation and retearing caused by the deltoid muscle function injury after the operation is reduced [18]. This study showed that the patients in the study group had no postoperative complications such as vascular and nerve injury, postoperative joint adhesion, and retear, confirming the safety of arthroscopic acromioplasty plus rotator cuff repair.

The purpose of rotator cuff repair is to anatomize and reconstruct the stop point of the rotator cuff, so as to minimize the pain of patients and restore their joint function. Previous studies have reported that the absence of simultaneous acromioplasty during rotator cuff repair increases the risk of rotator cuff reoperation [19]. Therefore, in this study, the morphological parameters of the acromion in patients undergoing arthroscopic rotator cuff repair together with acromioplasty were measured before and after the operation, in order to find out the effect of this surgical scheme on the morphological parameters of the acromion in elderly patients with full-thickness rotator cuff tear combined with rotator cuff injury and further explore the effect of this operation on the risk of rotator cuff reinjury. Previous studies think that CSA >35 would significantly increase the risk of rotator cuff injury [20]. In this study, CSA in both groups was above 35 before the operation, but it was <35 after treatment. Besides, CSA in the study group was smaller than that in the control group after the operation. This indicates that it is obvious that acromioplasty during the operation can change the angle of CSA and reduce the

Table 4: Comparison of active range of motion between the two groups before and after surgery ($\overline{x} \pm S$,°).

Group	Anterior shoulder flexion		Abduction		Neutral external rotation		Abduction 90 internal rotation		Abduction 90 external rotation	
	Before surgery	After surgery	Before surgery	After surgery	Before surgery	After surgery	Before surgery	After surgery	Before surgery	After surgery
Study group ($n = 42$)	80.13 ± 11.86	160.45 ± 5.37^{a}	76.25 ± 5.66	162.53 ± 7.11^{a}	24.96 ± 5.28	43.33 ± 3.19^{a}	63.22 ± 6.28	84.14 ± 4.11^{a}	66.19 ± 4.73	84.15 ± 3.41^{a}
Control group ($n = 42$)	81.14 ± 11.52	155.74 ± 5.63^{a}	76.79 ± 5.81	157.58 ± 6.34^{a}	24.75 ± 5.31	40.39 ± 3.41^{a}	63.58 ± 6.31	80.19 ± 3.52^{a}	67.14 ± 4.52	80.17 ± 3.59^{a}
t	0.396	3.923	0.432	3.368	0.182	4.080	0.262	4.731	0.941	5.209
P	0.693	<0.001	0.667	0.001	0.856	<0.001	0.794	<0.001	0.349	<0.001

Note: "a" is $P < 0.05$, compared with the same group before operation.

Table 5: Comparison of morphological parameters of acromion between the two groups before and after surgery ($\overline{x} \pm S$, °).

Group	CSA		At		LAA		AI		ACEA	
	Before surgery	After surgery	Before surgery	After surgery	Before surgery	After surgery	Before surgery	After surgery	Before surgery	After surgery
Study group ($n = 42$)	42.52 ± 3.63	32.17 ± 2.29[a]	32.24 ± 5.47	35.29 ± 4.19[a]	67.59 ± 7.84	66.72 ± 5.34[a]	0.69 ± 0.09	0.69 ± 0.02[a]	18.79 ± 2.41	15.53 ± 2.28[a]
Control group ($n = 42$)	42.37 ± 4.17	33.49 ± 2.18[a]	32.15 ± 5.67	34.38 ± 4.27[a]	67.83 ± 7.53	66.90 ± 5.41[a]	0.69 ± 0.08	0.69 ± 0.01[a]	18.63 ± 2.57	16.94 ± 2.71[a]
t	0.176	2.706	0.074	0.986	0.143	0.154	0.000	0.000	0.294	2.580
P	0.861	0.008	0.941	0.327	0.887	0.878	0.001	1.000	0.769	0.012

Note: "a" is $P < 0.05$, compared with the same group before operation.

Table 6: Comparison of surgical indexes between the two groups ($\overline{x} \pm S$).

Group	Operation time (min)	Blood loss (mL)	Incision length (cm)	Length of hospital stay (d)
Study group ($n = 42$)	92.15 ± 10.52	23.79 ± 4.75	4.53 ± 0.31	5.47 ± 1.12
Control group ($n = 42$)	89.43 ± 11.16	22.98 ± 4.66	4.47 ± 0.32	6.69 ± 1.25
t	1.149	0.789	0.873	4.712
P	0.254	0.433	0.385	<0.001

occurrence of rotator cuff reinjury [21]. The decrease in Ming AT is related to the increase in rotator cuff injury. The increase of ACEA suggested that the coverage area of the humeral head covered by acromion was increased [22]. In case of acromion impact, the risk of rotator cuff injury was increased. The results showed that the AT of patients in the study group after surgery was larger than that of the control group, and the ACEA of patients in the study group after surgery was smaller than that of the control group ($P < 0.05$). It indicated that acromioplasty significantly increased the postoperative AT angle and decreased the ACEA, which might decrease the risk of postoperative rotator cuff reinjury. The above conclusions further confirmed the significance of acromioplasty. However, it is important to note that acromioplasty may lead to shoulder instability when there is a huge rotator cuff tear or a hard-to-repair rotator cuff injury [23]. Therefore, in order to further ensure the effectiveness of the combined surgical plan, care should be taken in performing acromioplasty, and the evaluation of shoulder function should be perfected before surgery. In addition, there was 1 postoperative infection in the study group. This suggests that we need to suture the injury according to the patient's condition and strengthen postoperative care to prevent the occurrence of postoperative infection.

In summary, arthroscopic acromion plasty and rotator cuff repair helped to promote the joint function recovery of aged patients with full-thickness rotator cuff tear combined with rotator cuff injury and alleviate the pain of the patients. Compared with simple rotator cuff repair, this technique can increase the postoperative AT and reduce the ACEA, and to some extent reduce the risk of postoperative rotator cuff reinjury, which is worthy of promotion. In addition, the shortcoming of this study lies in that, due to the trial time limit, a follow-up visit for a long time cannot be conducted in this study. In future relevant studies, the follow-up time should be appropriately extended in order to better observe and compare the clinical efficacy.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author.

Conflicts of Interest

The authors declare no conflicts of interest.

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Retraction

Retracted: Predictive Value of Preoperative Dynamic Contrast-Enhanced MRI Imaging Features in Breast Cancer Patients with Postoperative Recurrence Time

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] Z. Wu, S. Gao, Y. Yao, L. Yi, J. Wang, and F. Liu, "Predictive Value of Preoperative Dynamic Contrast-Enhanced MRI Imaging Features in Breast Cancer Patients with Postoperative Recurrence Time," *Emergency Medicine International*, vol. 2022, Article ID 9556880, 6 pages, 2022.

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Research Article

Predictive Value of Preoperative Dynamic Contrast-Enhanced MRI Imaging Features in Breast Cancer Patients with Postoperative Recurrence Time

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Although the implementation of surgery has reduced the mortality of breast cancer, postoperative recurrence is still an important problem bothering patients. DCE-GMRI can not only clearly display the morphological characteristics of breast lesions but also dynamically observe the blood perfusion of the lesions. On account of this, we explored the predictive value of preoperative dynamic contrast-enhanced magnetic resonance imaging (DCE-MRI) imaging features in breast cancer patients on postoperative recurrence time of breast cancer. The results showed that DCE-MRI images can clearly show the hemodynamic characteristics and morphological characteristics of tumor lesions, and have important value in predicting the recurrence time of breast cancer after surgery. The prognosis of early recurrence of breast cancer is worse. DCE-MRI can predict the time of postoperative recurrence and provide important clinical references.

1. Introduction

Breast cancer refers to the malignant proliferation of breast epithelial tissue, and is one of the most common malignant tumors in women, which seriously threatens women's health. Breast lumps, nipple discharge, and nipple depression are the main clinical symptoms of breast cancer patients [1]. In recent years, with the development of medical technology, the survival rate of breast cancer patients has greatly improved, but about 40% of patients still experience recurrence after receiving surgical treatment [2]. Therefore, how to predict breast cancer recurrence early and accurately by preoperative noninvasive routine examination is of great significance to reduce the recurrence rate of patients. Common imaging tests for breast cancer include mammography, ultrasound, dynamic contrast-enhanced magnetic resonance imaging (DCE-MRI), etc. DCE-MRI has high soft tissue resolution and can clearly display the hemodynamic characteristics and morphology of tumors. It provides imaging features of tumors for clinical decision-making. Many researchers have predicted the benign and malignant conditions of tumors by extracting the image features in the DCE-MRI of the breast. However, its role in predicting tumor recurrence is still controversial. This article aims to analyze the predictive value of postoperative recurrence time by studying the preoperative DCE-MRI imaging characteristics of breast cancer patients.

2. Information and Methods

2.1. General Information. The clinical data of 86 patients with postoperative recurrence of breast cancer who were diagnosed and treated in our hospital from May 2012 to May 2015 were retrospectively analyzed. The age ranged from 25

to 75 years old, with an average age of (51.32 ± 9.25) years. According to the recurrence time, 66 patients were divided into the early recurrence group (47 cases) and the late recurrence group (39 cases).

2.2. Inclusion Criteria. (1) The diagnosis results were confirmed by postoperative pathology. Conform to the diagnosis of postoperative recurrence of breast cancer in "China Anti-Cancer Association Guidelines and Specifications for Breast Cancer Diagnosis and Treatment" [3]; (2) preoperative breast DCE-MRI examination; (3) the patient had no distant metastasis at the time of diagnosis; (4) recurrence was confirmed after follow-up.

2.3. Exclusion Criteria. (1) A history of biopsy, neoadjuvant chemotherapy, or endocrine therapy before DCE-MRI; (2) the pathological stage is T4; (3) male breast cancer.

2.4. Research Methods. Philips Ingenia 3.0 T magnetic resonance imaging was used to examine the patient before the operation. During the examination, the patient was kept in a prone position, the breasts were naturally draped, and an 8-channel phased array coil was used for signal acquisition. The patient underwent a conventional triplane localization scan, and the bilateral breast sagittal T2 weighted imaging (T2WI) (with fat suppression) was used for a plain scan. The repetition time/echo time was 4650 ms/85 ms, the slice thickness was 4 mm, the slice spacing was 1.0 mm, the matrix is 320 × 224, the number of excitations is 3, and the field of view is 20 cm × 20 cm. Then, multiphase DCE-MRI was performed with transverse-axis dynamic contrast-enhanced volumetric imaging, and gadopentetate meglumine contrast agent was injected intravenously at a dose of 0.2 mmol/kg and a rate of 3.0 ml/s. After 15~25 s of contrast agent injection, the 3D FLASH sequence was used for 6 consecutive scans without interruption. The single scan time was 30 s. The parameters were set as follows: repetition time/echo time was 8 ms/3.93 ms, The layer thickness is 0.8 mm, the layer spacing is 0.4 mm, the matrix is 350 × 350, the number of excitations is 0.6, and the field of view is 34 mm × 34 cm. The raw DICOM images of the dynamic enhancement sequence were imported into the Omni-Kinetics software for postprocessing. The reference region model was used, combined with T2WI and DCE-MRI images to determine the location of the lesion, the region of interest (ROI) was manually delineated, the contralateral pectoralis major at the ROI level was selected as the reference, and the hemorrhage in the full pixel area of the tumor lesion was automatically generated by software calculation. Fluid dynamics parameters were measured. DCE-MRI morphological features: select 6-phase dynamic enhanced images under the same scanning parameters and input them into Omni-Kinetics software for morphological feature parameter sphericity measurement.

2.5. Observation Indicators. Observation and recording of preoperative DCE-MRI imaging features of breast cancer patients: background parenchymal enhancement (BPE), morphology, lesion edge, intralesional enhancement, increased degree of whole breast blood vessels, adjacent blood vessels of the lesion, and time-signal intensity curve (TIC). DCE-MRI hemodynamic parameters: time to peak (TTP), contrast max concentration (Max Conc), area under the time signal curve (AUC), time signal curve maximum slope (Max Slope), K^{trans}, K_{ep}, and V_p. The 6-phase DCE-MRI images and the morphological characteristic parameter sphericity of the same period were compared and analyzed. If it is a true sphere, the result of this parameter is 1. The closer to the sphere, the more regular the lesion, and the closer the value is to 1; otherwise, it deviates from 1 and is less than 1.

Breast cancer recurrence: patients were followed up every 6 months after surgery for more than 5 years. All patients were diagnosed with suspected recurrence by magnetic resonance imaging, bilateral breast ultrasound or bone scan, and confirmed recurrence by biopsy. Postoperative recurrence ≤2 years was regarded as early recurrence, and postoperative recurrence >2 years was regarded as late recurrence.

2.6. Statistical Methods. The SPSS 22.0 software was used to process the data analysis, and the measurement data of the experimental data were presented as mean ± standard deviation ($\overline{x} \pm S$), and enumeration data were presented as %. Pairwise comparison of measurement data between groups was analyzed by t-test. Differences between groups were compared by the χ^2 test. The receiver operating characteristic curve (ROC) was drawn, and the area under the ROC curve was used to evaluate the prediction of DCE-MRI on postoperative recurrence time in breast cancer patients. Kaplan–Meier survival curves were used to analyze the prognosis and survival curves of breast cancer patients with recurrence in different periods, and the log-rank test was used for comparison. $P < 0.05$ indicates a statistically significant difference.

3. Results

3.1. Comparison of DCE-MRI Features of Breast Cancer Recurrence between Two Groups. There were no significant differences in BPE, morphology, lesion margin, intralesional enhancement, and TIC between the two groups of breast cancer recurrence in DCE-MRI ($P < 0.05$). The increase of severe whole breast blood vessels and the proportion of adjacent blood vessels in the early recurrence group were higher than those in the late recurrence group, and the differences were statistically significant ($P < 0.05$), as shown in Table 1.

3.2. Comparison of Breast Cancer Recurrence and DCE-MRI Hemodynamics between the Two Groups. There was no significant difference in TTP, K^{trans}, K_{ep} and V_p values in DCE-MRI hemodynamics between the two groups ($P < 0.05$). The values of Max Conc, AUC, and Max Slope in the early recurrence group were higher than those in the late

Table 1: Comparison of DCE-MRI features of breast cancer recurrence between two groups (n, %).

Indexes		Early recurrence group ($n = 47$)	Late recurrence group ($n = 39$)	χ^2 value	P value
BPE	None/Mild	27 (57.45)	24 (61.54)	0.148	0.701
	Moderate/significant	20 (42.55)	15 (38.46)		
Shape	Round/oval	9 (19.15)	3 (7.69)	2.497	0.287
	Lobulated	7 (14.89)	8 (20.52)		
	Irregular shape	31 (65.96)	28 (71.79)		
Edge of the lesion	Smooth	5 (10.64)	4 (10.26)	0.231	0.891
	Irregular	37 (78.72)	32 (82.05)		
	Starburst shape	5 (10.64)	3 (7.69)		
Intralesional enhancement	Ring reinforcement	18 (38.30)	10 (25.64)	1.555	0.212
	Acyclic reinforcement	29 (61.70)	29 (74.36)		
Whole breast vascular increase	Mild to moderate	20 (42.55)	25 (64.10)	3.968	0.046
	Severe	27 (57.45)	14 (35.90)		
Adjacent blood vessels	Yes	30 (63.83)	15 (38.46)	5.499	0.019
	No	17 (36.17)	24 (61.54)		
TIC	Enhanced type	9 (19.15)	8 (20.52)	0.079	0.961
	Platform type	17 (36.17)	13 (33.33)		
	Outflow type	21 (44.68)	18 (46.15)		

recurrence group, and the differences were statistically significant ($P < 0.05$), as shown in Table 2.

3.3. Relationship between Breast Cancer Recurrence and DCE-MRI Morphological Features. Comparative analysis of the morphological characteristics of the 6-stage DCE-MRI images showed that in the 3-stage morphological characteristic parameter sphericity, the median of the early recurrence group was 0.06 (0.04, 0.11), which was lower than the median of 0.09 (0.06, 0.12) of the late recurrence group. That is, the tumor shape in the early recurrence group was more irregular, and the difference was statistically significant $P < 0.05$ ($P < 0.05$), as shown in Figure 1 and Figure 2.

3.4. The Predictive Value of DCE-MRI for Breast Cancer Recurrence. The area under the curve of DCE-MRI predictive value for time to recurrence after breast cancer surgery was 0.918 (95% CI 0.853–0.983), which was higher than the increase in whole milk vessels, adjacent vessels of the lesion, Max Conc, AUC, Max Slope, and the sphericity of stage 3 morphological characteristic parameters. Moreover, when the optimal cutoff value was 0.710, the sensitivity and specificity of DCE-MRI in diagnosing the postoperative recurrence time of breast cancer were 78.1% and 92.9%, respectively, as shown in Table 3 and Figure 3.

3.5. Prognosis of Breast Cancer Patients with Recurrence in Different Periods. As of May 31, 2020, 13 of 86 breast cancer patients died. Among them, the mortality rate of the early recurrence group was 23.40% (11/47), which was higher than 5.13% (2/39) of the late recurrence group, and the difference was statistically significant ($P < 0.05$). The median survival time of the early recurrence group was 26.8 months, which was lower than that of the late recurrence group of 54.3 months. Log-rank test $P = 0.012$, the difference was statistically significant, as shown in Figure 4.

4. Discussions

Breast cancer is one of the most common malignant tumors in women, with a high incidence rate. In recent years, the incidence of breast cancer in the world is still increasing. Although treatment strategies such as surgery have significantly improved the overall prognosis of patients with breast cancer, a significant proportion of patients develop local recurrence or distant metastasis after treatment Therefore, how to accurately predict the postoperative recurrence of breast cancer and guide clinical treatment is extremely important. Tumor recurrence is related to factors such as vascular distribution and vascular permeability around the tumor. The morphological and hemodynamic characteristics of DCE-MRI can reflect the shape and size of the tumor, the distribution of blood vessels around the tumor, and the degree of vascular permeability. Effective imaging tests for cancer [4]. Therefore, we speculate that it is also effective in predicting tumor recurrence.

The results of this study showed that there was no significant difference in BPE, morphology, lesion margin, intralesional enhancement, and TIC between the two groups of breast cancer recurrence DCE-MRI ($P > 0.05$). The increase of severe whole breast blood vessels and the proportion of adjacent blood vessels in the early recurrence group were higher than those in the late recurrence group ($P < 0.05$). The reason is that the recurrence of the tumor is closely related to the abundant blood supply. The severe increase of blood vessels in the whole breast and the blood vessels adjacent to the lesion can provide abundant blood for the recurrence of breast cancer. The more it is, the easier it is for breast cancer to recur early [5]. There was no significant difference in TTP, K^{trans}, K_{ep} and V_p values in DCE-MRI

Table 2: Comparison of breast cancer recurrence and DCE-MRI hemodynamics between two groups (n, $\pm s$).

Indexes	Early recurrence group ($n = 47$)	Late recurrence group ($n = 39$)	t value	P value
TTP (min)	1.94 ± 0.63	1.96 ± 0.65	0.144	0.886
Max Conc (mmol)	0.05 ± 0.02	0.04 ± 0.01	2.840	0.006
AUC (mmol·min)	0.26 ± 0.08	0.21 ± 0.04	3.550	0.001
Max Slope (mmol/min)	0.10 ± 0.02	0.07 ± 0.01	8.520	0.001
K^{trans} (ml/min)	1.28 ± 0.15	1.34 ± 0.18	1.686	0.095
K_{ep} (ml/min)	3.07 ± 0.22	3.08 ± 0.15	0.241	0.810
V_p	0.41 ± 0.19	0.43 ± 0.17	0.509	0.612

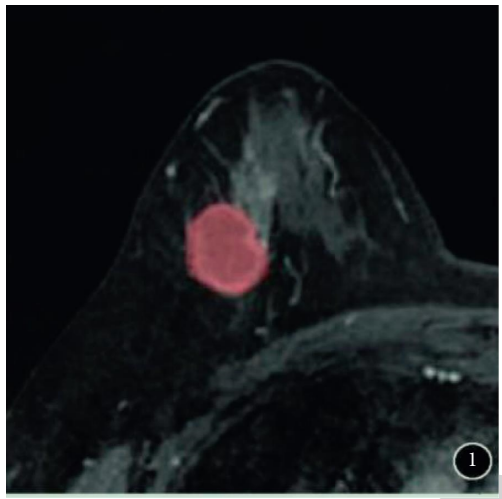

Figure 1: Morphological features of phase 3 DCE-MRI in late recurrence group.

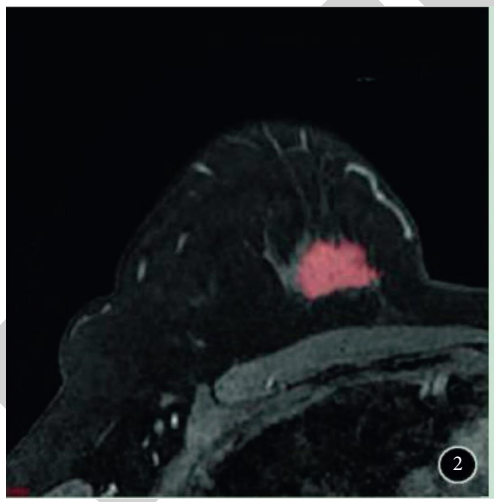

Figure 2: Morphological features of phase 3 DCE-MRI in early recurrence group.

hemodynamics between the two groups ($P > 0.05$). The values of Max Conc, AUC, and Max Slope in the early recurrence group were higher than those in the late recurrence group ($P < 0.05$). The reason is that tumor recurrence depends on abundant blood supply, and DCE-MRI can display the vascular properties of tumor sites through intravenous injection of contrast agents, so the recurrence time of tumor can be predicted by observing the results of DCE-MRI [6]. The Max Conc value is the maximum concentration of contrast agent in the lesion. The more contrast agent retained in the lesion, the greater the concentration and the greater the Max Conc value, indicating that the blood supply of this part is richer and the earlier recurrence is easier [7]. AUC can indicate the blood perfusion volume of different tissues in a certain period of time during the dynamic enhancement process. The larger the AUC value, the more blood perfusion at this site, and the easier it is for the tumor to relapse early. And the Max Slope value reflects the blood perfusion and capillary permeability of the tissue. The increase of the Max Slope value indicates that the abundant blood flow in this part is easy to nourish the tumor through the blood vessels and promote the early recurrence of the tumor [8]. The values of Max Conc, AUC, and Max Slope in patients with early recurrence were larger than those with late recurrence, indicating that the blood supply of early recurrence tumors was more abundant than that of late recurrence tumors. Comparative analysis of the 6-stage DCE-MRI imaging characteristic parameters, in the 3-stage morphological characteristic parameter sphericity, the median of the early recurrence group was 0.06 (0.04, 0.11), which was lower than the median of 0.09 (0.06, 0.12) of the late recurrence group. That is, the tumor shape of the early recurrence group was more irregular ($P < 0.05$). The tumor heterogeneity in the early recurrence group is stronger, and the tumor is more aggressive, which is not conducive to the prognosis and survival of the patients, which may be related to the richer blood supply of the tumor in the early recurrence group. This shows that through the comparison of DCE-MRI imaging characteristic images and parameters, the heterogeneity and invasiveness of tumors can be intuitively understood [9, 10].

Furthermore, the area under the curve of the predictive value of DCE-MRI for breast cancer recurrence time was 0.918 (95% CI 0.853–0.983). When the optimal cutoff value was 0.710, the sensitivity was 78.1% and the specificity was 92.9%. The reason is that breast cancer is a vascular-dependent malignant tumor. The growth, development and recurrence of tumor tissue require an abundant microvascular network for oxygen supply, and the more irregular the tumor shape and the stronger the heterogeneity, the easier it is to relapse early. Preoperative DCE-MRI can predict the recurrence time of breast cancer after surgery, and prompt clinicians to prevent and treat in time, thereby improving the survival rate of patients [11, 12].

The results of this study showed that as of May 31, 2020, 13 of 86 breast cancer patients died. Among them, the

Table 3: The predictive value of DCE-MRI for breast cancer recurrence.

Indexes	Area under the predicted value curve	Asymptotic 95% confidence interval		Best cutoff	Sensitivity (%)	Specificity (%)
		Lower limit	Upper limit			
Whole breast blood vessel increase	0.706	0.573	0.840	0.415	59.4	82.1
Adjacent blood vessels	0.761	0.757	0.948	0.581	68.8	89.3
Max Conc	0.822	0.713	0.931	0.554	87.5	67.9
AUC	0.796	0.675	0.916	0.485	80.6	67.9
Max Slope	0.891	0.812	0.969	0.520	80.6	71.4
Phase 3 morphological characteristic parameter sphericity	0.838	0.737	0.938	0.563	81.3	75.0
DCE-MRI	0.918	0.853	0.983	0.710	78.1	92.9

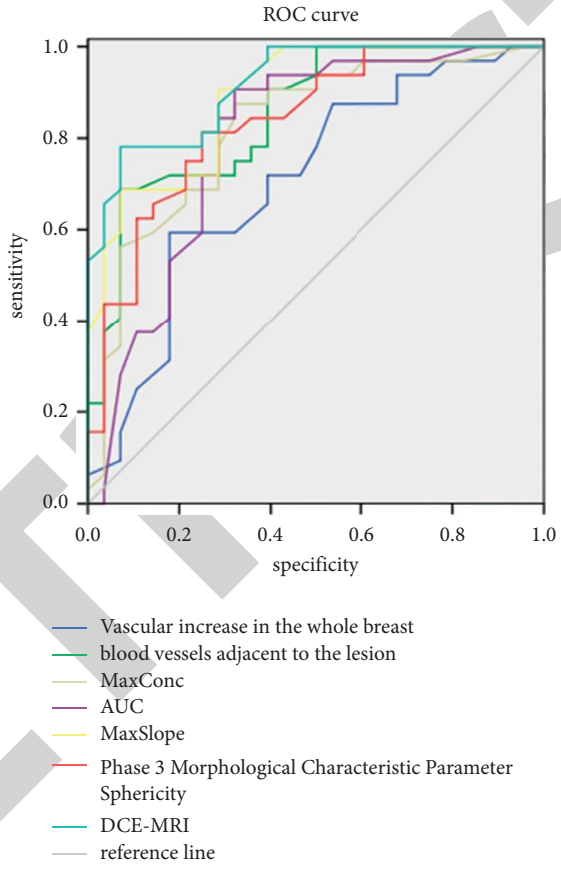

Figure 3: ROC curve of DCE-MRI predicting breast cancer recurrence time.

mortality rate of the early recurrence group was 23.40% (11/47), which was higher than 5.13% (2/39) of the late recurrence group ($P < 0.05$). The median survival time of the early recurrence group was 26.8 months, which was lower than that of the late recurrence group of 54.3 months. Log-rank test $P = 0.012$, the difference was statistically significant. The results showed that breast cancer recurrence time was correlated with survival prognosis, and patients with early recurrence had worse prognoses and higher mortality than patients with late recurrence. Studies have shown that surgical resection of the primary tumor will lead to the proliferation and recurrence of dormant cancer cells, resulting in poor prognosis for patients [13]. Compared with patients with late recurrence, patients with early recurrence have more irregular lesion morphology, stronger tumor heterogeneity, and more abundant blood flow, resulting in more aggressive recurrence of lesions, which is not conducive to the prognosis of patients. This is also the main reason for the significant difference in median survival time between the two groups in this study. DCE-MRI can predict the recurrence time of patients by showing the blood supply and tumor shape of the tumor, providing important reference value for clinical practice [14].

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Retraction

Retracted: Comparison of the Effects of Hysteroscopic Cold Broad Sword Play Combined with Estrogen and Progestin Sequential Therapy and Drospirenone and Ethinylestradiol Tablets in Patients with Severe Intrauterine Adhesion

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] L. Zhou, L. Zhou, and T. Wang, "Comparison of the Effects of Hysteroscopic Cold Broad Sword Play Combined with Estrogen and Progestin Sequential Therapy and Drospirenone and Ethinylestradiol Tablets in Patients with Severe Intrauterine Adhesion," *Emergency Medicine International*, vol. 2022, Article ID 9898228, 7 pages, 2022.

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Research Article

Comparison of the Effects of Hysteroscopic Cold Broad Sword Play Combined with Estrogen and Progestin Sequential Therapy and Drospirenone and Ethinylestradiol Tablets in Patients with Severe Intrauterine Adhesion

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Objective. To compare the effects of hysteroscopic cold broad sword play combined with estrogen and progestin sequential therapy and drospirenone and ethinylestradiol tablets in patients with severe intrauterine adhesion. *Methods*. One hundred and eight patients with severe IUA admitted to our hospital from May 2019 to October 2021 were selected for the study. Patients were divided according to their treatment regimen into group A ($n = 54$) treated with hysteroscopic cold broad sword play- + drospirenone and ethinylestradiol tablets and group B ($n = 54$) treated with hysteroscopic cold broad sword play + estrogen and progestin sequential therapy. The two groups were compared in terms of perioperative indicators, recovery of uterine cavity status, inflammatory factor (C-reactive protein (CRP), interleukin 6 (IL-6), and interleukin 8 (IL-8)] levels), World Health Organization Quality of Life Brief Scale (WHOQOL-BREF) score, and clinical outcome at 3 months postoperatively. *Result*. After surgery, the duration of abdominal pain and vaginal bleeding was shorter in group A than in group B ($P < 0.05$). After surgery, the time of menstruation return was shorter in group A than in group B, and the menstrual flow score was higher than in group B ($P < 0.05$). At 3 months after the surgery, the uterine blood flow index, endometrial thickness, and uterine cavity volume were higher in group A than in group B, and the number of uterine readhesion was lower than in group B ($P < 0.05$). 3 months after the surgery, the CRP, IL-6, and IL-8 levels decreased in both groups and were lower in group A than in group B ($P < 0.05$). At 3 months after the surgery, the WHOQOL-BREF scores for each indicator were higher in both groups than before surgery and were higher in group A than in group B ($P < 0.05$). At 3 months after the surgery, the overall valid rate of group A was 94.44% better than that of group B at 79.63% ($P < 0.05$). *Conclusion*. The combination of hysteroscopic cold broad sword play with drospirenone and ethinylestradiol tablets has been shown to be more effective than combined estrogen and progestin sequential therapy in the treatment of patients with severe IUA, which significantly improves the post-operative menstrual status and uterine cavity morphology, significantly reduces the level of inflammatory factors in the patient's body, and significantly improves the quality of life, which is of value.

1. Introduction

Intrauterine adhesion (IUA), also known as Asherman's syndrome, can be triggered by any intrauterine operation that may cause damage to the endometrium, with painless abortion being the main cause, and its incidence has increased in recent years. The disease refers to the damage of the basal layer of the human endometrium, the destruction of the proliferation and secretion functions of the endometrium, and the partial or complete closure of the uterine cavity [1, 2]. Patients may suffer from abnormal menstruation, placenta praevia, miscarriage, and infertility, which seriously affect their physical and mental health and quality of life [3–5]. To restore the uterine lining to normal,

hysteroscopic surgery is clinically indicated. The two main surgical procedures are hysteroscopic electrosurgery and hysteroscopic cold broad sword play, which have different results. Of these, the former can effectively separate, excise, and stop bleeding at the site of uterine adhesions and is the preferred option for the treatment of uterine adhesions, but the electrothermal effect produced during electrodes separation of adhesions tends to reinjure the human endometrium, causing postoperative uterine readhesions to occur with a recurrence rate of up to 15% or more [6]. Hysteroscopic cold broad sword play is a new separation technique that has been used in recent years to treat IUAs. It belongs to the category of nonenergy instruments. Different microscissors can be selected according to the adhesion status of different parts, such as the uterine floor, uterine body, and uterine angle, to give full play to the best separation effect, which provides the possibility for the effective separation of adhesion in patients with moderate and severe IUA. It also has the characteristics of a high one-time success rate, rapid postoperative menstrual recovery, and a high pregnancy rate [7]. In addition to this, it is essential to provide complementary treatment after the operation for uterine adhesions. The intrauterine device (IUD) is a contraceptive device placed in the uterine cavity. In recent years, our hospital has mostly adopted the method of placing birth control rings during the operation to achieve the role of physical isolation and prevent readhesion, which can be effective. However, the study [8] showed that patients with severe uterine adhesions have a slow postoperative recovery due to the extensive and invasive nature of the procedure. Although an intraoperative birth control ring can be placed, its isolation area is limited and does not completely separate the anterior and posterior walls of the uterus, and patients remain at a greater risk of postoperative readhesions. Since then, it has been suggested that the combination of postoperative manual cycle therapy may reduce the risk of readhesion in patients, but the stability of its effect and the safety of long-term application of these preventive methods are controversial. Drospirenone and ethinylestradiol tablets are a fourth-generation combination oral contraceptive, the main ingredients of which are drospirenone and ethinylestradiol. In recent years, studies have shown that oral drospirenone and ethinylestradiol tablets have a good preventive effect on IUA after cervical cleansing. Based on the above, this study intends to compare the efficacy of estrogen and progestin sequential therapy and drospirenone and ethinylestradiol tablet therapy after intrauterine adhesions decomposition in order to obtain the best medication scheme to prevent readhesions after intrauterine adhesions decomposition.

2. Materials and Methods

2.1. General Data. One hundred and eight patients with severe IUA admitted to our hospital from May 2019 to October 2021 were selected for the study. Patients were divided according to their treatment regimen into group A ($n = 54$) treated with hysteroscopic cold broad sword play + drospirenone and ethinylestradiol tablets and group B ($n = 54$) treated with hysteroscopic cold broad sword play + estrogen and progestin sequential therapy. The baseline data of the two groups are shown in Table 1; all differences were not statistically significant ($P > 0.05$) and were comparable.

2.2. Inclusion and Exclusion Criteria. Inclusion criteria were defined as follows: ① IUA diagnosis referred to the Chinese Expert Consensus on Clinical Management of Uterine Adhesions [9]; ②diagnosis of IUA confirmed by 3D ultrasound and hysteroscopy; ③those with complete clinical information; ④diagnosis of severe IUA according to March's classification; ⑤those who met the indications for hysteroscopic cold broad sword play treatment and underwent the procedure in our hospital; and ⑥combined with psychiatric illness and unable to cooperate with the researcher.

Exclusion criteria were defined as follows: ①Coagulation disorders; ②contraindicated for hysteroscopic surgery; ③combination of serious infectious diseases; ④malformations of the reproductive system; ⑤combined with other reproductive disorders; and ⑥combined with other reproductive disorders.

2.3. Methods. Patients in both groups were treated with hysteroscopic cold broad sword play.

Preoperative preparation: on admission, a detailed history of the uterine cavity disease and surgery was obtained and all gynaecological, internal, and preoperative ancillary investigations were completed. The surgery was performed 3 to 7 days after menstruation. All patients were given misoprostol (China Resources Zizhu Pharmaceutical Co., Ltd., approval No.: H20000668, specification: 0.2 mg) 0.2 mg orally at bedtime 1 night before the surgery and abstained from drinking and eating for 6 hours before the surgery. 25 μg of misoprostol vaginal tablets (Guangzhou Langsheng Pharmaceutical Co., Ltd., approval No.: H20203249, specification: 25 μg)were placed vaginally 3 hours before the surgery to soften and dilate the cervix. All patients were placed in a bladder lithotomy position, intravenous total inebriation was performed, and the vagina was routinely disinfected. The cervix was exposed with a speculum, and a hysteroscope was placed under ultrasound guidance. Surgical treatment was carried out after identifying the intrauterine adhesions.

Intraoperative operations: microscissors were inserted through the instrument hole and the type of scissors was selected according to the site of adhesions. The adhesive band was cut and the scar tissue was removed and an IUD (T-ring) was placed at the same time and postoperative balloon compression was applied to stop bleeding.

Postoperative treatment: both groups were routinely treated with antibiotics for 3 days after the operation. On top of this, group A was treated with drospirenone and ethinylestradiol tablets (Bayer Weimar GmbH and Co. KG, approval No.: J20171071, specification: drospirenone 3 mg + ethinylestradiol 0.03 mg) orally on the day of surgery, 1 tablet/day for 21 days, stopping for 7 days before starting

the second cycle of treatment for 3 cycles; group B was treated with estrogen and progestin sequential therapy on the day of surgery, i.e. estradiol valerate (Peking Union Pharmaceuticals, approval No.: H20000031, specification: 0.5 mg) orally, 2 mg/dose, 2 times/day for 21 days, on the 11th day with the addition of dydrogesterone tablets (Abbott Biologicals B. V., approval No.: H20170221, specification: 10 mg), orally, 10 mg/dose, 2 times/day, stopping after day 21 for 7 days before starting the next cycle of treatment, 3 cycles of treatment. All patients finished treatment in the 3rd month after the procedure and returned to the hospital 3–7 days after menstruation for a follow-up hysteroscopy and removal of the IUD.

2.4. Observed Indicators

(1) Record the duration of abdominal pain and vaginal bleeding after surgery for patients in groups A and B.

(2) Record the time of menstruation return and menstrual flow score after surgery in groups A and B. The latter was assessed on the basis of a score based on the product of the area of menstrual blood stained and the size of the clot. Bloodstained area <1/3 of sanitary napkin, 1/3 to 3/5 of sanitary napkin, and >3/5 of sanitary napkin were counted as 1, 5, and 20 points, respectively, 1, 3, and 5 marks for blood clot size <1 yuan coin, = 1 yuan coin, > 1 yuan coin, respectively. The total score was 1 ~ 100. The higher the score, the greater the amount of menstruation [10].

(3) Record the status of the uterine cavity at the 3-month postoperative follow-up of patients in groups A and B. Vaginal 3D ultrasound was used to detect uterine blood flow index, endometrial thickness, and uterine cavity volume. The criteria for determining uterine readhesion were based on the March classification: absence of adhesions: no adherent tissue was seen at hysteroscopy; mild adhesions: adhesions covering ≤1/4 of the uterine cavity, or only membranous adhesions, with no or only minor adhesions at the tubal orifice and fundus seen microscopically; moderate adhesions: adhesions ranging from 1/4 to 3/4 of the uterine cavity, no adhesions between the uterine walls, hysteroscopic view of the opening of the fallopian tube and partial atresia of the upper uterine cavity; severe adhesions: adhesions >3/4 of the uterine cavity, atresia at the opening of the fallopian tube, and the upper part of the fundus [11].

(4) Measure inflammatory factor levels of patients in groups A and B before and 3 months after the surgery. The main tests were for C-reactive protein (CRP), interleukin 6 (IL-6), and interleukin 8 (IL-8). The assays were all enzyme-linked immunosorbent assays and the kits were purchased from Shanghai Sango Biotechnology Co.

(5) Record the WHOQOL-BREF scores of patients in groups A and B before and 3 months after the surgery. The WHO Quality of Life Brief Scale (WHOQOL-BREF) was used to assess the quality of life, which consists of four items: physical, psychological, environmental, and social relationships, with individual scores ranging from 0 to 100, and the scores are directly proportional to the quality of life [12].

(6) Assess the clinical outcome of patients in groups A and B at 3 months after the surgery. Assessment criteria: the patients were healed when the morphology and size of the uterine cavity returned to normal; the opening of the fallopian tubes was seen bilaterally and the menstrual cycle and menstrual flow returned to normal; the patients were valid if the morphology and size of the uterine cavity were basically normal; the opening of the fallopian tubes could not be expressed bilaterally and the menstrual cycle was restored but the menstrual flow was low; failure to meet the criteria for effectiveness was considered ineffective. Total effective rate = the sum of the ratio of healed to valid.

Table 1: Baseline information for groups A and B.

Items	Group A	Group B	t	P
Age (years)	31.41 ± 2.76	31.85 ± 2.56	0.859	0.392
BMI (kg/m^2)	25.67 ± 1.70	25.69 ± 2.08	0.055	0.957
Disease duration (months)	5.11 ± 0.90	5.17 ± 0.84	0.358	0.721
Pregnancy (times)	2.57 ± 1.14	2.61 ± 0.76	0.215	0.831
Delivery (times)	1.46 ± 0.69	1.54 ± 0.61	0.638	0.525

2.5. Statistical Methods. SPSS 22.0 software was applied, and the measurement data were expressed as mean ± standard deviation and compared by t-test. Count data were expressed as ratios, and the χ^2 test was used for comparison. $P < 0.05$ was considered statistically significant.

3. Results

3.1. Comparison of the Duration of Abdominal Pain and Vaginal Bleeding after Surgery in Groups A and B. After the surgery, the duration of abdominal pain and vaginal bleeding were shorter in group A than in group B. The difference was statistically significant ($P < 0.05$) (Figures 1 and 2).

3.2. Comparison of Time of Menstruation Return and Menstrual Flow Score after Surgery in Groups A and B. After the surgery, the time of menstruation return was shorter in group A than in group B, and the menstrual flow score was higher than in group B. The differences were all statistically significant ($P < 0.05$) (Figures 3 and 4).

3.3. Comparison of the Uterine Cavity Status at 3 Months after Surgery in Groups A and B. 3 months after the surgery, the uterine blood flow index, endometrial thickness, and uterine cavity volume were higher in group A than in group B, and the number of uterine readhesions was lower than in group B. The difference was statistically significant ($P < 0.05$) (Figures 5–8).

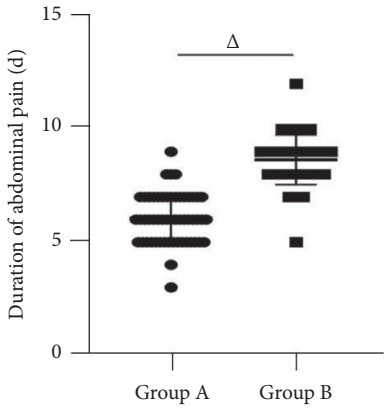

Figure 1: Duration of abdominal pain. *Note*. Δ indicates $P < 0.005$ for the difference between groups A and B.

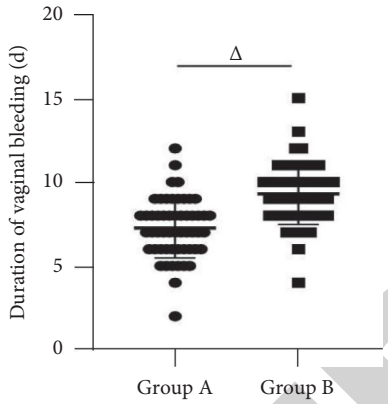

Figure 2: Duration of vaginal bleeding. *Note*. Δ indicates $P < 0.05$ for the difference between groups A and B.

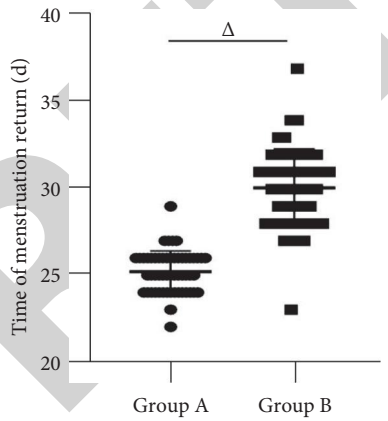

Figure 3: Time of menstruation return. *Note*. Δ indicates $P < 0.005$ for the difference between groups A and B.

3.4. Comparison of Inflammatory Factors Levels before and after Surgery in Groups A and B. 3 months after the surgery, the CRP, IL-6, and IL-8 levels decreased in both the groups and were lower in group A than in group B, and the difference was statistically significant ($P < 0.05$) (Figures 9 and 10).

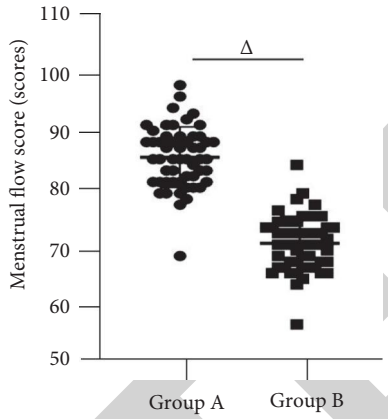

Figure 4: Menstrual flow score. *Note*. Δ indicates $P < 0.05$ for the difference between groups A and B.

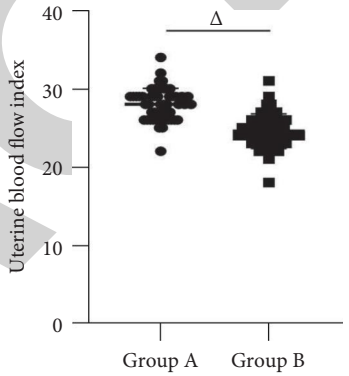

Figure 5: Uterine blood flow index.

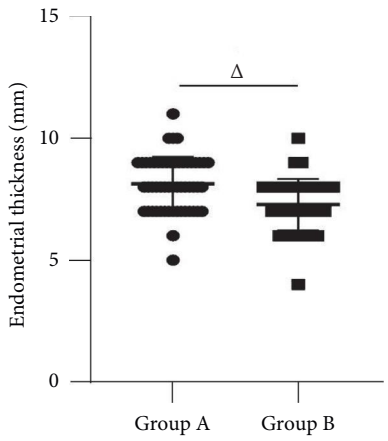

Figure 6: Endometrial thickness.

3.5. Comparison of WHOQOL-BREF Scores before and after Surgery in Groups A and B. At 3 months after the surgery, the WHOQOL-BREF scores for each indicator were higher in both groups than before surgery and were higher in group A than in group B, and the difference was statistically significant ($P < 0.05$) (Figures 11 and 12).

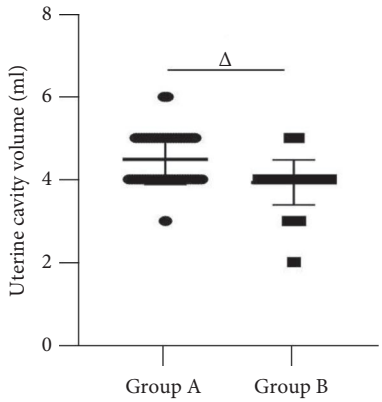

Figure 7: Uterine cavity volume. *Note*. Δ indicates $P < 0.05$ for the difference between groups A and B.

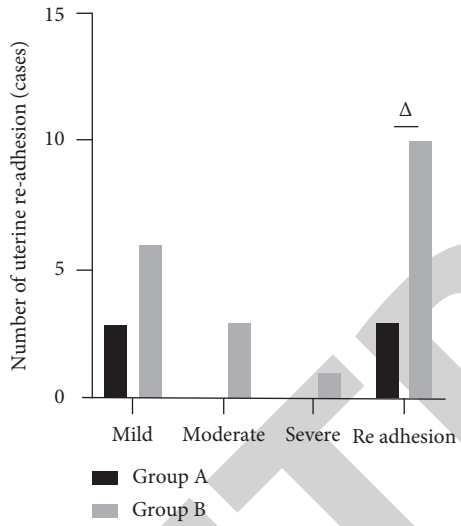

Figure 8: Number of uterine readhesion. *Note*. Δ indicates $P < 0.05$ for the difference between groups A and B.

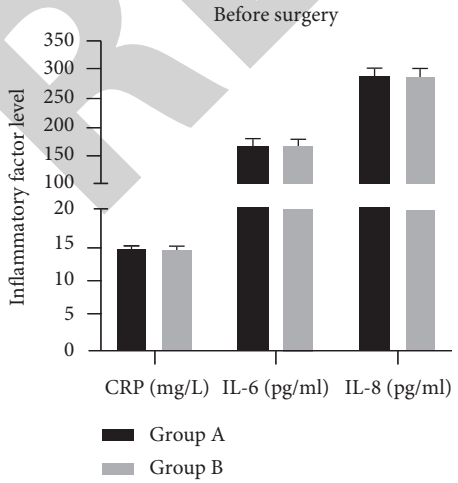

Figure 9: Inflammatory factors levels before surgery. *Note*. Δ indicates $P < 0.005$ for the difference between groups A and B.

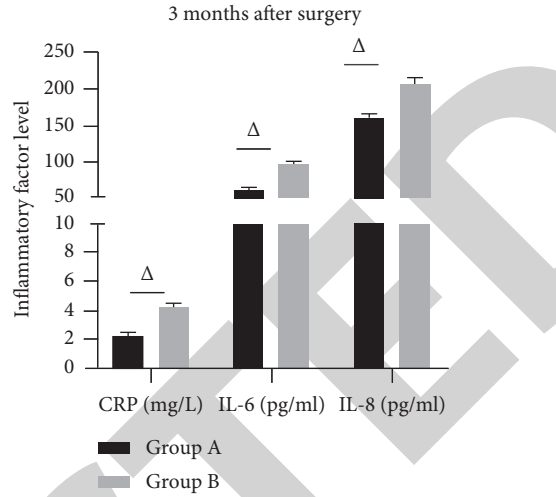

Figure 10: Inflammatory factors levels 3 months after surgery. *Note*. Δ indicates $P < 0.05$ for the difference between groups A and B.

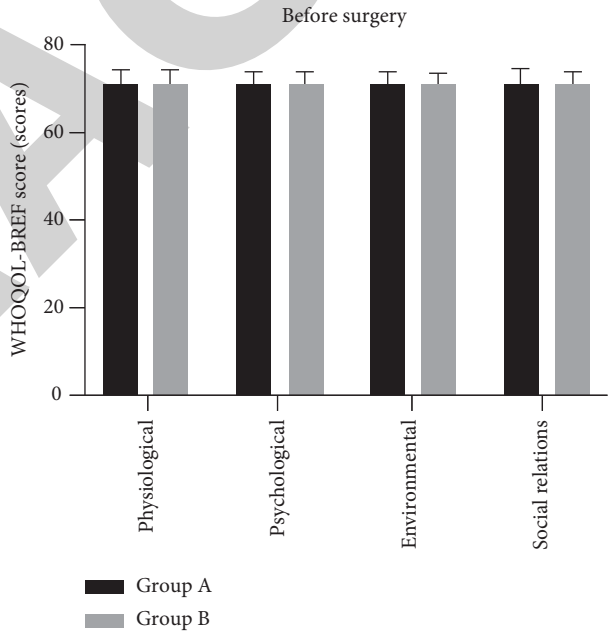

Figure 11: WHOQOL-BREF score before surgery.

3.6. Comparison of Clinical Efficacy in Groups A and B. At 3 months after the surgery, the overall validity rate of group A was 94.44% better than that of group B at 79.63%, and the difference was statistically significant ($P < 0.05$) (Table 2).

4. Discussion

Although with the development of medical imaging, the use of ultrasonography and hysteroscopy provides a visual and complete picture of the uterine cavity, and the IUA separation can be safely performed under hysteroscopy to separate the adherent tissue. However, some patients (especially those with severe IUA) still undergo a second operation at the time of postoperative review due to readhesions, which

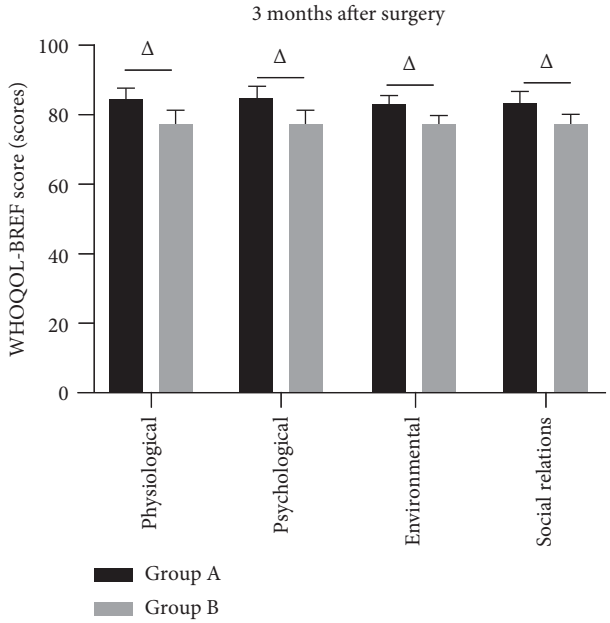

Figure 12: WHOQOL-BREF score at 3 months after surgery. *Note.* Δ indicates $P < 0.05$ for the difference between groups A and B.

Table 2: Clinical efficacy in groups A and B (n,%).

Groups	Healed	Valid	Invalid	Overall valid
Group A	33 (61.11)	18 (33.33)	3 (5.56)	51 (94.44)
Group B	30 (55.56)	13 (24.07)	11 (20.37)	43 (79.63)
χ^2	0.343	1.131	5.252	5.252
P	0.558	0.288	0.022	0.022

aggravates the physical and psychological damage and financial burden on the patient, while also reducing the patient's satisfaction with the treatment.

The cold knife used in hysteroscopic cold broad sword play is free of electrothermal radiation, which can avoid endometrial damage, destruction, and scar formation caused by thermal radiation and can facilitate the recovery of the uterine cavity morphology [13, 14]. The intraoperative placement of the IUD can isolate the adhesive surface and open up the uterine cavity for the purpose of preventing a recurrence. The addition of postoperative estrogen and progestin sequential therapy promotes the growth of the patient's endometrium and interstitial cells, promotes the growth of blood vessels, mesenchyme, and glands in the basal layer of the endometrium, accelerates the thickening of the endometrial layer, and promotes rapid reepithelialisation of the wounds produced by surgical separation [15, 16]. One study [17] pointed out that in patients with severe IUA, given the severe damage to the basal endometrium, high doses of estrogen are required to stimulate endometrial proliferation after surgery, but the local hyperestrogenic environment may promote IUA and endometrial fibrosis by increasing serum levels of proadhesive and profibrotic cytokines such as transforming growth factor beta 1 (TGF-β1) and basic fibroblast growth factor (bFGF). As a result, the ability of the endometrium to regenerate is significantly reduced after severe damage to the basal layer of the endometrium, and the emphasis on high estrogen levels may be counterproductive. The present results show that patients in group B who were treated with postoperative estrogen and progestin sequential therapy had less favourable postoperative menstrual conditions and less rapid recovery of uterine morphology than patients in group A who were treated with drospirenone and ethinylestradiol tablets, and their postoperative IUA recurrence rate was higher than that of patients in group A. The reason for this may be due to the fact that surgery creates favourable conditions for the recovery of the patient's uterine cavity morphology. In addition to postoperative treatment with drospirenone and ethinylestradiol tablets, although the drug is short-lived, it is well absorbed and can reach blood concentration within a short period of time, inhibit ovulation and, at the same time, can play a powerful role in repairing the endometrium after separation of the uterine cavity adhesions, thus effectively shortening the duration of vaginal bleeding. The patient can resume menstruation as soon as possible after stopping the drug and form a new menstrual cycle. It can also effectively improve the cervical mucus viscosity and prevent the development of IUA as well as internal uterine infections. Compared to the estrogen and progestin sequential therapy, drospirenone and ethinylestradiol tablets are lower in ethinylestradiol and have fewer side effects, which ensures patient safety. A recent study [18] in patients with dysmenorrhoea found a significant reduction in the number and intensity of days of menstrual pain in patients treated with the ethinylestradiol (EE)/drospirenone (DRSP) regimen compared to sequential therapy. In this result, the duration of abdominal pain was shorter in group A patients than in group B after treatment. This suggests that the addition of drospirenone and ethinylestradiol tablet treatment after hysteroscopic cold broad sword play also had a significant effect on improving abdominal pain in patients with IUA.

At 3 months after surgery, CRP, IL-6, and IL-8 levels decreased in both groups and were lower in group A than in group B. This suggests that postoperative treatment with drospirenone and ethinylestradiol tablets is better at repairing endometrial damage and reducing the level of inflammatory factors in the body than the addition of estrogen and progestin sequential therapy. Analysis of the reasons for the above results, drospirenone and ethinylestradiol tablets is composed of drospirenone and ethinylestradiol. Drospirenone is a 17α-spirolactone derivative, similar to natural progesterone, with progestogenic activity, antiandrogenic activity, and antisalt corticosteroid activity. It antagonizes estrogen receptors, has a strong affinity for progesterone, induces atrophy of meconium tissue, helps to expel postoperative uterine residues, and also inhibits bacterial entry, reducing the incidence of genital infectious diseases such as pelvic inflammatory disease [19, 20]. At 3 months after surgery, the WHOQOL-BREF scores for each index were higher in both groups than before surgery, and the WHOQOL-BREF scores for each index and overall clinical validity rate were higher in Group A than in Group B. It is suggested that the addition of drospirenone and ethinylestradiol tablets after hysteroscopic cold broad sword

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Retraction

Retracted: Diagnosis of Cervical Intraepithelial Neoplasia and Invasive Cervical Carcinoma by Cervical Biopsy under Colposcopy and Analysis of Factors Influencing

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] Y. Wang, J. Wang, and H. Mei, "Diagnosis of Cervical Intraepithelial Neoplasia and Invasive Cervical Carcinoma by Cervical Biopsy under Colposcopy and Analysis of Factors Influencing," *Emergency Medicine International*, vol. 2022, Article ID 9621893, 5 pages, 2022.

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Research Article

Diagnosis of Cervical Intraepithelial Neoplasia and Invasive Cervical Carcinoma by Cervical Biopsy under Colposcopy and Analysis of Factors Influencing

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Objective. To explore the diagnosis of cervical intraepithelial neoplasia (CIN) and invasive cervical carcinoma (ICC) by cervical biopsy under colposcopy and analyze the factors influencing the detection. *Methods*. The clinical data of 134 CIN confirmed by colposcopy biopsy in our hospital from June 2018 to October 2019 and subsequent LEEP treatment were analyzed retrospectively. All patients were diagnosed pathologically after the operation. The diagnosis of CIN by cervical biopsy under colposcopy was observed. The influencing factors of CIN and ICC detected by colposcopy biopsy were analyzed by the pathological results of loop electrosurgical excision procedure (LEEP) as the gold standard. *Results*. After LEEP, the number of the no intraepithelial or malignant lesions (NILM) or ICC were higher than that of colposcopy biopsy, and CIN-III was lower than that of colposcopy biopsy, the differences were all statistically significant ($P < 0.05$). Among the 134 patients, the coincidence rate between colposcopy biopsy and LEEP examination results was 79.10% (106/134), and postoperative pathological findings showed that there were 13 cases (9.70%) with the pathological upgrade and 19 cases (14.18%) with pathological decrease. Multivariate logistic analysis showed that the image quality of colposcopy image, atypical blood vessels, biopsy sampling method, and visible lesion area of the cervix were the independent influencing factors for the detection of CIN and ICC by colposcopy biopsy ($P < 0.05$). *Conclusion*. CIN and ICC can be diagnosed by colposcopy cervical biopsy and postoperative histopathology. However, there are still some missed and misdiagnosed cervical biopsies under colposcopy, and the combined detection of the two can further ensure the diagnosis rate. The clinical registration number is E2018091.

1. Introduction

Cervical cancer is a primary malignant tumor of the female reproductive system and is closely related to human papillomavirus, HPV) infection. In recent years, with the continuous promotion of early screening technology for cervical cancer, the early detection rate of cervical cancer increases year by year. However, its development shows a trend of younger people. Patients usually have unobservable early symptoms and signs. Stimulated by physicochemical and biological factors such as HPV infection and smoking, normal cervical cells will exhibit inflammatory and reactive changes, which can transition from the normal state to precancerous lesions, further develop into invasive cervical cancer, ICC), and finally develop into cervical cancer [1–3]. Cervical intraepithelial neoplasia (CIN) is the early manifestation of ICC, and its occurrence is diverse. It is a group of precancerous lesions closely related to the cancer process. CIN included cervical dysplasia and cervical carcinoma in situ, reflecting a series of pathological changes from cervical dysplasia, carcinoma in situ, and early invasive carcinoma to invasive carcinoma. CIN can be diagnosed through cytology, colposcopy, and other examinations [4–6]. Among them, cervical biopsy under colposcopy is a common tissue examination method for the diagnosis of CIN, and it refers to observing the state of precancerous lesions of tissues with the

help of a colposcope and taking the corresponding tissues for pathological examination [7, 8]. However, due to the complexity and diversity of CIN and the unclear classification, the effect of CIN by colposcopy cervical biopsy is not very accurate and it is easy to cause a certain misdiagnosis or missed diagnosis. Therefore, in this study, we investigated the diagnosis of CIN and ICC by colposcopy cervical biopsy and analyzed the effects of relevant factors on the detection.

2. Materials and Methods

2.1. General Information. The clinical data of 134 patients who were diagnosed as CIN by colposcopy biopsy and subsequently treated with Loop Electrosurgical Excision Procedure (LEEP) from June 2018 to October 2019 in our gynecological clinic were analyzed retrospectively. All the patients were aged from 20 to 52 years old, with an average age of (36.52 ± 3.26) years old. Inclusion criteria: Inclusion criteria: Contact bleeding, irregular vaginal bleeding, abnormal drainage, and other symptoms; Meet the indications of colposcopy; HPV-DNA test positive; Abnormal cervical cytology. Exclusion criteria: Mental disorder; Low compliance, unable to cooperate with the inspection; In pregnancy; Important organ dysfunction.

2.2. Research Method

2.2.1. Detection of Cervical Cytology. A sterile sampling brush was placed into the cervical canal and rotated 5–10 times to collect the exfoliated cells from the cervical external orifice and the canal, which were then put into a bottle containing the preservation solution. The samples were sent for inspection after being washed ≥10 times and processed by a slide maker. Two pathologists in the hospital performed light microscopic diagnosis and cytological results were processed. The cytological results were divided into the advanced lesion group and conventional lesion group according to The Bethesda System (TBS). TBS includes five types according to the degree of cervical cell lesions. We divide them into advanced lesion groups and conventional lesion groups according to the degree of cervical cell lesions [9]. The advanced lesion group included atypical squamous cell hyperplasia (ASCH), high-grade intraepithelial lesions (HSIL), and ICC. The conventional lesion group included no intraepithelial or malignant lesions (NILM), atypical squamous cells of undetermined significance (ASCUS), and low-grade squamous intraepithelial lesions (LSIL).

2.2.2. Detection of High-Risk HPV (HR-HPV). The cervix was exposed through the vaginal endoscope. After the secretion on the surface of the cervical orifice was wiped, a sterile cotton swab was inserted into the cervix and rotated around the interior of the cervix three times with uniform force. Afterward, the swab was taken out and put into a sample storage box for submission. Samples were quantified by fluorescent PCR typing and an HR-HPV viral load > 5.0 × 102 copies/mL was defined as positive. HR- HPV mainly includes 15 kinds of HPV16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68, 73, 82, and so on. a total of 49 cases of HPV16, 15 cases of HPV26 and 10 cases of other types were detected in this test.

2.2.3. Colposcopic Biopsy. All patients had no sexual activity, vaginal medication, or any gynecological examination within 24 hours, and samples were taken during the non-menstrual period and genital tract infection period. Processing pictures by adopting an electronic colposcope digital imaging system; The patient was told to keep the cystectomy position, and the color, morphology, secretion, and leukoplakia of the cervix were observed by the naked eye. According to the different patients, the appropriate endoscope was used for examination. The cervix of the patient was fully exposed under the endoscope, and the surface of the cervix was gently wiped with a medical cotton swab to remove the foreign body. After the removal of the foreign body, normal saline was uniformly applied to the cervix. Then, the colposcope was adjusted to focus the lens, and the junction of the epithelium and blood vessel by the scale column was observed. Apply 3% acetic acid to the cervix, and carefully observe the abnormal angiogenesis and columnar epithelial edema of the cervix. The Lugol's iodine solution was applied to the cervix to observe the epithelial staining. And single-point or multi-point sampling biopsy was conducted for the abnormal parts. If no abnormality is found, the lower four-quadrant sampling biopsy will be conducted.

2.2.4. LEEP. Preoperative patients were required to empty the bladder and take the lithotomy position of the bladder. After routine disinfection, the cervix of the patient was fully exposed. According to the patient's history and clinical symptoms, and iodine staining test was performed on the cervical lesion site of the patient under a colposcope to determine the lesion site of the patient. The LEEP knife was reasonably selected according to the lesion area and cervix size of the patient. The electrodes were vertically cut into the cervical tissue from the external source of the lesion for 5–6 mm, and the depth was controlled to be about 1.0–2.5 cm for resection, followed by marking, positioning, fixation, and submission of the specimen.

Tissue samples of all patients were pathologically reviewed by two attending physicians of the Department of Pathology and classified into NILM, mild atypical hyperplasia (CIN-I), moderate atypical hyperplasia (CIN-II), severe atypical hyperplasia (CIN-III) and ICC according to CIN classification standard [10]. NILM: HPV infection was negative, the epithelium showed inflammatory cell infiltration reaction, and no obvious lesion area was observed. CIN-I: The epithelial cells are featured with mild atypia, disordered polarity, and abnormal proliferation, accounting for 1/3 of the subcortical range of the upper cortex. CIN-II: The epithelial cells are heterotypic and disorganized, and abnormally proliferate to two-thirds of the subcortical range of the upper cortex. CIN-III: The epithelial cells are heterotypic and nonpolar, with abnormal proliferation (>2/3 of the subepithelial range) and no interstitial infiltration. ICC:

Abnormal proliferation of epithelial cells involving the entire epithelial layer, with pathological mitosis and interstitial infiltration. The highest grade of histological diagnosis was the final pathological examination in all patients.

2.3. Statistical Analysis. SPSS22.0 software was used for data processing. The count data were expressed as (%) using the χ^2 test. A multivariate Logistic regression model was used for multivariate analysis. The test level was $\alpha = 0.05$, and $P < 0.05$ indicated that the difference was statistically significant.

3. Results

3.1. Comparison of Pathological Examination Results after Colposcopic Biopsy and LEEP. The numbers of NILM and ICC cases after LEEP operation were higher than those of colposcopy biopsy, and the number of CIN-III cases was lower than that of colposcopy biopsy. The differences were statistically significant ($P < 0.05$). Among the 134 patients, the coincidence rate between colposcopy biopsy and LEEP examination results was 79.10% (106/134), and postoperative pathological findings showed that there were 13 cases (9.70%) with the pathological upgrade and 19 cases (14.18%) with pathological decrease. See Figure 1.

3.2. Single Factor Analysis of Influencing the Detection of CIN and ICC in Colposcopic Biopsy. Univariate analysis showed that patients with age ≤ 50 years old, satisfactory colposcopic image, atypical blood vessels, four-quadrant biopsy sampling method, number of biopsy samples >2, visible lesion area of cervix ≥1/2, and pathological grade (CIN-III/invasive cervical cancer) had high detection rates of CIN and ICC under colposcopy, and the differences were statistically significant (both $Ps < 0.05$). The detection rates of CIN and ICC in cytology tests and HR-HPV infection were not statistically significant ($P > 0.05$). See Table 1.

3.3. Multivariate Analysis of Influencing Factors on Detection of CIN and ICC in Colposcopic Biopsy. Multivariate Logistic analysis showed that the image quality of colposcopic image, atypical blood vessels, biopsy sampling method, and visible lesion area of the cervix was the independent influencing factors for the detection of CIN and ICC by colposcopy biopsy ($P < 0.05$); see Tables 2 and 3.

4. Discussion

The pathological types of cervical cancer mainly include squamous cell carcinoma, adenocarcinoma, and adenosquamous carcinoma. The pathological change and development process of various types of cervical cancer are closely related to many factors, such as virus infection, bad living habits, and so on, which cause serious impacts on the physical life of women. Cervical cancer has now become the "second largest killer" threatening women s health after breast cancer [11]. Therefore, early screening, early detection, early diagnosis, and early treatment of cervical cancer are particularly important. CIN is an important pathological

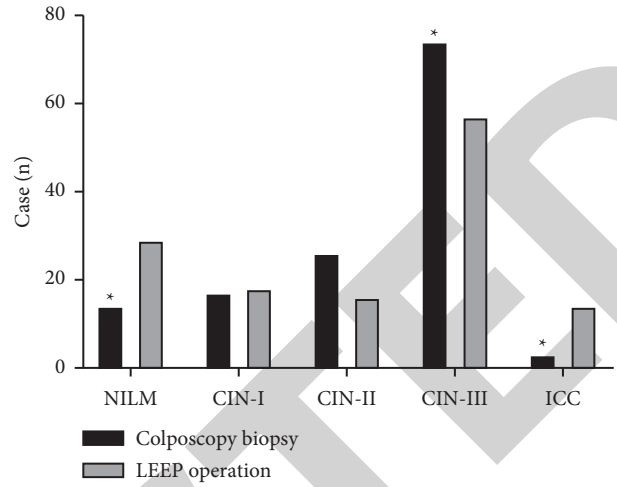

Figure 1: Comparison of pathological examination results after colposcopic biopsy and LEEP operation.

stage before the occurrence of cervical cancer, which is usually manifested as irregular vaginal bleeding, increased leucorrhea, and unpleasant odor. The incidence rate of patients is high and it has certain concealment. Early detection, diagnosis, and treatment of CIN are conducive to interfering with the lesion progression and reducing the incidence of cervical cancer [12].

Cervical biopsy under colposcopy is a technical means for clinical promotion and application of diagnosis of CIN. However, under the magnification of colposcopy, clinicians can identify the lesion area with the naked eye, and conduct biopsy sampling accidentally or blindly, so there are problems of high sensitivity and low specificity. LEEP is an advanced technical means for the treatment of various cervical lesions, which mainly generates thermal effect through ohmic consumption of high-frequency current through the human body, to evaporate the water in the tissue, achieving the effects of dry solid, sterile necrosis [13]. There is a certain error between the accuracy of colposcopic cervical biopsy and the pathological diagnosis after LEEP surgery, and the pathological grade may be increased or decreased [14, 15]. The results of this study showed that the numbers of NILM and ICC cases after LEEP operation were higher than those of colposcopic biopsy, and the number of CIN-III cases was lower than that of colposcopic biopsy. Among 134 patients, the coincidence rate of colposcopic biopsy and postoperative pathological examination results of LEEP was 79.10%, and postoperative pathological findings showed that there were 13 cases (9.70%) with the pathological upgrade and 19 cases (14.18%) with pathological decrease. This result was partially consistent with that of Zhang et al. [16].

ICC is not only a clinical manifestation of high-risk CIN but also an early pathological manifestation of cervical cancer. Because the process of differentiation and expression of cancer cells are very disorderly, the abnormal expression of vascular endothelial genes can lead to invasive invasion of cancer cells and diversified expression of cancer markers, which will cause certain difficulties in direct vision and pathological film reading [17–19]. Many studies have shown

Table 1: Single-factor analysis of influencing the detection of CIN and ICC in the colposcopic biopsy.

Influencing factor		Case ($n = 134$)	Number of detected cases	Number of missed cases	Detection rate (%)	χ^2 value	P Value
Age (year)	≤50	84	72	12	85.71	4.811	0.028
	>50	50	35	15	70.00		
Cytological test	Advanced lesion group	79	47	32	59.49	3.259	0.071
	Conventional lesion group	55	41	14	74.55		
Infection of HR-HPV	Negative	52	45	7	86.54	3.353	0.067
	Positive	82	60	22	73.17		
Colposcopic image	Satisfied	58	44	14	75.86	5.371	0.020
	Dissatisfied	76	43	33	56.58		
Atypical blood vessel	Yes	52	41	11	78.85	4.663	0.031
	No	82	50	32	60.98		
Biopsy sampling method	Four quadrant sampling	65	57	8	87.69	6.485	0.011
	Single/multiple point lesion sampling	69	48	21	69.57		
Number of biopsy sample (s)	≤2	64	43	21	67.19	4.423	0.035
	> 2	70	58	12	82.86		
Visible lesion area of the cervix	< 1/2	65	40	25	61.54	5.356	0.021
	≥1/2	69	55	14	79.71		
Pathological grade	NILM/CIN-I~II	63	39	24	61.90	3.860	0.049
	CIN-III/ICC	71	55	16	77.46		

Table 2: Multivariate analysis of the assignment.

Influencing factor	Assignment
Age	">50" = 0; "≤50" = 1
Colposcopic image	"Dissatisfied" = 0; "satisfied" = 1
Atypical blood vessel	"No" = 0; "yes" = 1
Biopsy sampling method	"Single/multiple point lesion sampling" = 0; "four quadrant sampling" = 1
Number of biopsy sample (s)	"≤50" = 0; ">50" = 1
Visible lesion area of the cervix	"≤2" = 0; ">2" = 1
Pathological grade	"≤1/2" = 0; "≥1/2" = 1

Table 3: Multivariate analysis of influencing factors on detection of CIN and ICC in the colposcopic biopsy.

Influencing factor	*B*	*SE*	*Walds*	df	Sig.	Exp (B)	95% CI
Age	0.279	0.184	2.958	1	0.064	1.639	0.978~2.316
Colposcopic image	0.656	0.227	5.133	1	0.029	2.374	1.786~2.997
Atypical blood vessel	0.712	0.256	5.266	1	0.016	2.241	1.853~2.761
Biopsy sampling method	0.754	0.343	5.307	1	0.009	2.580	2.042~3.159
Number of biopsy sample (s)	0.305	0.229	3.164	1	0.056	2.475	0.768~2.991
Visible lesion area of the cervix	0.816	0.387	4.644	1	0.032	2.837	1.911~3.796
Pathological grade	0.263	0.152	2.548	1	0.120	1.532	0.733~2.910

that the diagnostic rate of ICC colposcopic cervical biopsy remains to be improved, and its detection rate is affected by many factors, such as the number of lesion-involved points [20, 21]. Therefore, exploring the influencing factors of the accuracy of the cervical biopsy under colposcopy is of great significance for improving the detection rate of ICC. The univariate analysis of this study showed that the detection rates of CIN and ICC in the colposcopic cervical biopsy were related to the patient's age, colposcopic image, presence of atypical blood vessels, sampling method, and several biopsy samples, visible lesion area of cervix and pathological grade. The colposcopic image, presence of atypical blood vessels, sampling method of biopsy, and visible lesion area of the cervix were the independent influencing factors for their detection. The possible reason for this analysis was that there was a certain difference in the image quality under colposcopy, which affected the directness of the lesion site and further caused the corresponding deviation of endoscopic sampling. Therefore, continuous improvement of the image quality under colposcopy and the direct visualization of cervical lesions as well as the adoption of sampling methods such as multi-quadrant biopsy can help to reduce the missed diagnosis and misdiagnosis rate of the cervical biopsy under colposcopy in clinical practice [22].

In summary, CIN and ICC can be diagnosed by colposcopic cervical biopsy and postoperative histopathological examination. However, there are still some missed diagnoses and misdiagnoses in cervical biopsy under colposcopy, and the combined detection of the two can further ensure the diagnosis rate.

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Research Article

Practice of Multidisciplinary Collaborative Chain Management Model in Constructing Nursing Path for Acute Trauma Treatment

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Prompt and effective treatment is the key to improve the prognosis of patients with acute trauma, and nursing plays an important role. However, conventional nursing has many limitations. Some studies have pointed out that the multidisciplinary collaborative chain management model can optimize the emergency procedures, ensure the continuity of the emergency treatment process, and optimize the treatment details. This study analyzed the practice of constructing an acute trauma care pathway based on a multidisciplinary collaborative chain management model. The results showed that the application of the multidisciplinary collaborative chain management model in the construction of acute trauma treatment nursing paths can enhance the emergency efficiency and nursing treatment, prevent the occurrence of adverse events, and improve the prognosis of patients.

1. Introduction

The etiology of acute trauma is usually caused by the external forces such as violent blows, falling from high-rise buildings, and car accidents [1]. Due to the vigorous development of the country's transportation and construction industries, the number of acute trauma patients in China is increasing year by year [2]. Previous research data shows that, in recent years, acute trauma has replaced malignant tumors and other diseases as the main cause of death for people under the age of 45 in China [3]. Acute trauma has a golden period of rescue, during which the implementation of effective and timely treatment can improve the prognosis of patients [4] However, there are many unstable factors that affect the efficiency of patients' treatment. Nursing is an important part in the treatment of acute trauma, but there are many loopholes in the conventional emergency management [5]. For example, there is a lack of cohesion in the transfer procedures of patients, and the division of responsibilities of medical staff is not clear. Moreover, most patients with acute trauma suffer from multiple system injuries, requiring multidisciplinary consultation and treatment. However, under the conventional nursing care, each department cannot be efficiently contacted, resulting in long consultation time, delayed treatment to a certain extent, and increased treatment failure rate. Therefore, it is urgent to find an efficient nursing management mode [6]. The multidisciplinary collaboration chain management model is based on multidisciplinary cooperation and establishes an emergency treatment chain, which can not only optimize the emergency treatment process but also save the unnecessary time, ensure the continuity of the emergency treatment process, and optimize the treatment details [7, 8]. Therefore, in this study, the multidisciplinary collaboration chain management model was applied to the nursing pathway of acute trauma treatment and theeffect was observed. The results are reported as follows.

2. Materials and Methods

2.1. General Information. A total of 100 acute trauma patients who received treatment from February 2019 to February 2022 were selected. The grouping was based on the management methods. From February 2019 to August 2020, routine emergency management was adopted ($n = 42$). From September to February 2022, the management mode was

multidisciplinary collaborative chain ($n = 58$). There was no significant difference in the data between the two groups ($P > 0.05$), which can be compared.

2.2. Inclusion Criteria. ① Patients who are admitted to the emergency department by our hospital ambulance due to acute trauma; ② the time from trauma to admission is less than 3 hours; ③ patients who received treatment in our hospital all the way after admission and were discharged from the hospital; ④ patients or patients' families agree to participate in the research and have fully understood the research content.

2.3. Exclusion Criteria. ① Patients with coagulation abnormalities such as platelet purpura; ② patients with severe underlying diseases such as malignant tumors and respiratory failure; ③ those who sign and agree to give up treatment by themselves or their family members.

2.4. Methods. The routine group is given routine management, specifically, sending an ambulance to the accident site to transfer the patient immediately after receiving the emergency call. The ambulance is equipped with standard drugs and equipment, and the ambulance staffing standard is a doctor, a nurse, and a dedicated ambulance driver. After reaching the accident scene, the emergency nurse cooperates with the doctor to complete the first aid measures such as fixing, bandaging, and fixing the oxygen mask and then uses a stretcher to transfer the patient to the ambulance. After arriving at the hospital, the ambulance personnel and the emergency department nurses conduct the routine vital examination and condition assessment of the patient. After basic operations such as debridement and routine intravenous infusion, the corresponding department is notified of the trauma system, such as invitingexperts from orthopaedics and other relevant departments to the emergency department for consultation and proposing measures to improve relevant examinations and treatment.

The chain group accepts a multidisciplinary collaboration chain management model, which is as follows: ① establish an emergency multidisciplinary collaborative team, which consists of acute trauma-related departments, including the emergency department, operating room, anesthesiology, imaging department, laboratory department, and the medical staff in various surgeries such as thoracic surgery, orthopedic surgery, neurosurgery, and general surgery. Refine the responsibilities of nurses and divide the nurses into four categories such as trauma nurses, circulation nurses, drug nurses, and record nurses. After the team is established, training is conducted for the respective job responsibilities of medical staff. After the training, the predrill of acute trauma treatment should be carried out for the medical staff to run in and practice with each other. ② First aid process in chain management mode: (1) prehospital first aid: after receiving the patient's call for help, one nurse from each of the four major categories and one emergency physician will promptly go to the hospital. Upon arrival to that site, the trauma nurse will assist the emergency physician in opening the wound, bandage, hemostasis, fixing the possible fracture site, and transporting the patient to an ambulance. The emergency physician should quickly conduct a physical examination and assess the patient's condition. The assessment should include the cause of the trauma, the location and type of the trauma, the organs that may be involved, the trauma index (TI), injury severity (ISS), and the Glasgow Coma Scale (GSC). The patient's vital signs are closely observed, and the nurse records the rescue process and transmits the basic information of the patient to the corresponding specialist through video, phone, and pictures. Based on the above information, the patient's basic condition is evaluated, and a treatment plan is preliminarily formulated. If necessary, the recording nurse should contact the operating room and imaging and other auxiliary departments by phone in advance to prepare surgical instruments and inspection equipment. For patients with fracture and visceral rupture due to a car accident, the trauma nurse should assist the doctor to fix the fracture position. If the patient has a broken limb, a sterile bag should be used for cryogenic refrigeration. The circulatory nurse evaluates the patient's heart rate and circulatory status, selects an appropriate respiratory support method, and administers epinephrine if necessary. The drug nurse immediately establishes venous access to replenish the blood volume, and for the patient who needs blood transfusion, blood is drawn to determine the blood type. The record nurse should contact the orthopedic trauma department and the general surgeon in advance to clarify the current blood loss, heart rate, fracture location, percussion, and auscultation results, etc., so that the orthopedic trauma surgeon can judge the severity of the fracture and formulate a surgical plan. Identify the organs that may be ruptured, confirm the estimated arrival time to the ambulance driver, and relay it to the corresponding specialist, so that the doctor can arrive in the emergency room in advance to wait. Check the imaging department according to the doctor's requirements and prepare the B-ultrasound, X-ray, and other testing equipment and the operating room. Patients with a large amount of blood loss should contact the hospital blood bank in advance to mobilize and store blood for backup, and patients with severe trauma who need surgery should contact the emergency department to open the emergency green channel. (2) Inhospital first aid: after arriving at the emergency room, improve the relevant examination immediately. Comprehensively assess the patient's condition, and make clear the location, type of trauma, whether there is hidden injury, etc. According to the evaluation results, the specialist formulates a reasonable treatment plan for treatment, and the patients who need surgery are immediately pushed into the preprepared operating room to begin the operation After the patient has been effectively treated, the nurse who is responsible for recording the emergency treatment process can inform the patient's family members of the emergency treatment process and the basic condition, treatment measures, and significance of the patient at this time, so as to do a good job in pacifying the patient's family members. The recording nurse should record the whole

process of the emergency and hand it over to the chief nurse of the emergency department. The chief nurse of the emergency department will evaluate it at the next meeting, and the nurses will jointly analyze the mistakes and advantages in each process. Analyze the time spent in each process and explore whether there is an optimization plan to improve the emergency process.

2.5. Indicator Evaluation Criteria. ① MODS: the patient has two or more organ dysfunctions [9]. ② ARDS: arterial partial pressure of oxygen/inhaled gas oxygen concentration <200 mmHg and positive end-expiratory pressure >10 cm H_2O [10]. ③ Nursing quality: the evaluation questionnaire was used to evaluate the quality of emergency nursing care for patients with severe trauma assessed by the patient and the patient's family. The rest of the items are uniformly evaluated by the chief nurse of the department, and each item is recorded as 1–5 points, and the score is positively correlated with the quality of nursing [11].

2.6. Observation Indicators. Comparison of emergency triage/condition assessment/auxiliary equipment/device preparation/admission to multidisciplinary consultation/admission to receiving effective treatment time, doctor-patient disputes, misdiagnosis, missed diagnosis, MODS, ARDS, treatment success rate, hospitalization time, severe trauma, and the differences in the scores of patients' emergency nursing quality evaluation questionnaire.

2.7. Statistical Analysis. SPSS22.0 software was used for processing. The continuous variable data of experimental data were expressed as mean standard deviation ($\overline{x} \pm s$) and adopted the t-test. The classified variable data and descriptive analysis were expressed as (%) and adopted the χ^2 test. The test level was $\alpha = 0.05$, and $P < 0.05$ indicated that the difference was significant.

3. Results

3.1. Comparison of First Aid Efficiency between the Two Groups. The chain group was significantly lower than that of the routine group in terms of emergency triage, condition assessment, auxiliary equipment/device preparation, admission to multidisciplinary consultation, and admission to receiving effective treatment ($P < 0.05$), as shown in Table 1.

3.2. Comparison of the Incidence of Adverse Events between the Two Groups. The incidences of doctor-patient disputes, misdiagnosis, and missed diagnosis in the chain group were significantly lower than those in the routine group ($P < 0.05$), as shown in Table 2.

3.3. Comparison of Prognosis between the Two Groups. The incidence of MODS and ARDS in the chain group was lower than that in the conventional group ($P < 0.05$), and the treatment success rate was higher than that in the conventional group ($P < 0.05$) as shown in Table 3.

3.4. Comparison of Nursing Quality between Two Groups. The scores of system construction, first aid management, and effect evaluation of the chain group were higher than those of the conventional group ($P < 0.05$), as shown in Table 4.

4. Discussion

Acute trauma patients have the characteristics of critical illness and high mortality. Early identification of trauma types and conditions and the formulation of corresponding treatment plans can improve the prognosis of patients and ensure the life and health of patients. Therefore, ensuring efficient first aid and improving the quality of nursing is the focus of clinical attention [12].

The results of this study show that compared with the conventional group, the chain group has lower rates of first aid efficiency indicators and adverse time rates and higher scores on the emergency care quality evaluation questionnaire for severely traumatized patients ($P < 0.05$). This shows that this kind of management model can improve the emergency efficiency of acute trauma patients, prevent the occurrence of adverse events, and improve the quality of care, which is similar to the research results of other researchers [13]. The routine treatment of acute trauma patients is divided into four parts, and they are prehospital first aid, inhospital first aid, specialist consultation, and effective treatment. Each discipline operates independently, so the connectivity of emergency procedures is not high, and the specialists cannot grasp the patient information early and accurately to formulate preliminary treatment measures, resulting in the coherence of emergency procedures cannot being guaranteed. And, under routine management, the fuzzy division of labor among emergency nurses can lead to low first aid efficiency and affect the quality of care [14]. However, the multidisciplinary collaborative chain management model can make up for the limitations of the conventional nursing mode, and the reasons are as follows: ① multidisciplinary collaboration chain management model by establishing a multidisciplinary collaborative team, medical staff from acute trauma-related subjects are included in the team, and the preliminary assessment results of the condition are reported to the corresponding specialist through video and other forms during the first aid process, which can save consultation time and the information sharing of various departments can ensure that the specialists can grasp the patient's information at the first time, clarify the patient's condition, and prevent misdiagnosis and missed diagnosis [15, 16]. Through the preliminary diagnosis results of the specialists, the inspection equipment, operating room, and blood bank can be contacted in advance to save the preparation time of the equipment and the operating room, which can ensure the efficiency and continuity of the first aid process, simplify the rescue procedure, improve the first aid efficiency, and ensure the quality of care [17]. ② Before participating in the first aid work, the team members all carry out targeted prejob training, master the theory and time skills of job requirements, and promote the team members and nurses to run in through predrills, improve their cooperation and team cohesion, and increase their

Table 1: Comparison of first aid efficiency between two groups ($\overline{x} \pm s$, min).

Groups	Emergency triage time	Time-consuming assessment	Time-consuming preparation of auxiliary equipment/ devices	Time from admission to multidisciplinary consultation	From admission to receiving effective treatment
Chain group ($n = 58$)	4.81 ± 0.78	5.24 ± 1.69	5.72 ± 1.78	7.91 ± 2.52	27.52 ± 3.51
Regular group ($n = 42$)	6.02 ± 1.42	6.48 ± 1.76	6.90 ± 2.25	15.40 ± 3.15	35.76 ± 2.51
t	5.461	3.548	2.924	13.218	13.001
P	<0.001	0.001	0.004	<0.001	<0.001

Table 2: Comparison of the incidence of adverse events between the two groups (n (%)).

Groups	Doctor-patient disputes	Misdiagnosed	Missed diagnosis
Chain group ($n = 58$)	2 (3.45)	0 (0.00)	1 (1.72)
Regular group ($n = 42$)	6 (14.29)	3 (7.14)	5 (11.90)
χ^2	3.848	4.228	4.432
P	0.049	0.040	0.035

Table 3: Comparison of prognosis between two groups.

Groups	MODS (n (%))	ARDS (n (%))	Success rate of treatment (n (%))	Hospitalization period ($\overline{x} \pm s$, d)
Chain group ($n = 58$)	5 (8.62)	9 (15.52)	57 (98.28)	25.69 ± 6.81
Regular group ($n = 42$)	10 (23.81)	14 (33.33)	37 (88.10)	27.02 ± 7.85
t/χ^2	4.364	4.322	4.432	0.907
P	0.037	0.038	0.035	0.367

Table 4: Comparison of nursing quality between two groups ($\overline{x} \pm s$, points).

Groups	System construction	Emergency management	Safety management
Chain group ($n = 58$)	41.76 ± 2.84	92.26 ± 9.56	55.22 ± 5.42
Regular group ($n = 42$)	37.81 ± 4.92	88.12 ± 10.30	51.33 ± 8.03
t	5.065	2.069	2.893
P	<0.001	0.042	0.005

mutual coordination. ③ By clarifying the division of responsibilities of emergency nurses, performing their own duties, implementing emergency operations and responsibilities to individuals, replacing individual operations with group cooperation, and cooperating with team members, it can not only ensure the rapid progress of emergency work and improve emergency efficiency but also ensure the orderliness and pertinence in the first aid process and avoid omissions [18]. ④ Through a dedicated person to record the whole process of first aid and to appease the emotions of the patient's family in a timely manner, the patient's family can grasp the dynamics of the patient, clarify the meaning of the treatment measures, and avoid doctor-patient disputes caused by deviations and delays in information transmission [19]. ⑤ After the completion, the first aid process is reviewed to analyze the problems existing in the process, and the course of treatment is optimized, which can improve the quality of care.

Efficient emergency treatment is a key factor in ensuring acute trauma patients. Previous studies have shown that every 3-minute delay in the effective treatment of acute trauma patients can increase the risk of death by 1% [12]. With the prolongation of injury time, a large amount of blood loss and fluid loss in acute trauma patients can not only lead to hypoxia but also increase the risk of ARDS. The organ perfusion disorder caused by blood loss and fluid loss and organ damage caused by external force also increases the risk of MODS. In addition, acute trauma patients are often accompanied by the multisystem organ damage. Early understanding of the patient's condition and making a reasonable diagnosis to ensure that the patient can receive effective treatment during the golden period of treatment is an important condition to ensure the treatment effect [20]. The results of this study showed that compared with the conventional group, the chain group had a lower incidence of ARDS and MODS and a higher treatment success rate with significant differences ($P < 0.05$), which indicated that the multidisciplinary collaborative chain management model could improve the prognosis of acute trauma patients. The research results are similar. Multidisciplinary collaborative chain management mode can effectively utilize hospital emergency resources and can improve the emergency efficiency by building an integrated chain scraping glass mode with multidisciplinary participation, special personnel and post, and information sharing. Shortening the emergency time, the emergency process has the characteristics of

high efficiency, high cohesion, high cooperation, high standardization, and high order to ensure that patients receive effective treatment as soon as possible to improve their prognosis of patients.

In conclusion, the multidisciplinary collaborative chain management model can shorten the emergency time of acute trauma patients, reduce the risk of adverse events, improve the quality of emergency care, and can improve the prognosis of the patients. The shortcoming of this study lies in that the included sample size is only 100 cases, and the sample size can be expanded in the future to further verify the results of this study.

Data Availability

The data can be obtained from the author upon reasonable request.

Ethical Approval

This study was approved by our hospital's ethics committee (2019008).

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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Research Article

Effect of SWOT Analysis Combined with the Medical and Nursing Integration Emergency Nursing Process on Emergency Treatment Efficiency and Prognosis of Patients with Acute Myocardial Infarction

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Acute myocardial infarction (AMI) is a common clinical emergency. Effective emergency treatment at the early stage of onset can effectively reduce the mortality rate. Time is the key of emergency treatment, which is directly related to the treatment effect and the prognosis of patients, and clinical intensive nursing intervention for emergency treatment is of great significance in improving the efficiency of emergency treatment and prognosis. In this study, the effects of routine emergency care flow and SWOT analysis combined with medical and nursing integration on emergency treatment efficiency and prognosis of patients with acute myocardial infarction were compared. The results showed that the combined scheme could improve the rescue effect and success rate of patients with acute myocardial infarction, shorten the rescue time, and reduce the mortality and complication rate of myocardial infarction, which provided a new direction for clinical emergency treatment of acute myocardial infarction.

1. Introduction

Acute myocardial infarction (AMI) refers to the sudden blockage of coronary vessels, causing myocardial ischemia and necrosis in the corresponding area [1]. The onset of this disease is closely related to factors such as overwork, excitement, excessive drinking, overeating, cold stimulation, and constipation. Patients with AMI present with persistent and severe sternal pain or tightness in the chest, and clinical data show that the comprehensive mortality rate of AMI is close to 20% [2]. Previous studies have suggested that the cooperation of effective medical intervention programs in the rescue process of patients with AMI helps to improve the efficiency of emergency treatment and prognosis [3].

At present, situation analysis and medical and nursing integration are both popular nursing models. Among them, situation analysis method, also known as the SWOT analysis method, is a comprehensive and comprehensive analysis method put forward by a professor of management at the University of San Francisco in the early 1980s [4]. In recent years, the SWOT analysis method has been gradually applied to medical care, playing an important role in optimizing nursing work procedures, improving work efficiency, and reducing work omissions [5]. Medical and nursing integration refers to that doctors and nurses form a relatively fixed diagnosis and treatment team to provide patients with treatment and care in the form of a medical care team [6]. Previous studies have respectively reported the application effects of SWOT analysis method and the integrated medical care process in various diseases, but few studies have analyzed the application value of the combined application of the two methods, and their application in AMI still needs to be studied [7]. In view of this, this study analyzed the impact of the SWOT analysis method combined with the medical and nursing integration emergency care process on the emergency treatment efficiency and prognosis of patients with AMI.

2. Information and Methods

2.1. General Information. A total of 110 patients with AMI who were admitted to our hospital from March 2020 to March 2022 were selected as the research subjects, including 90 males and 20 females. The patients were aged from 40 to 73 years old, with an average age of (62.41 ± 7.55) years old. According to the difference of intervention methods, the patients were divided into a study group and a control group, with 55 cases in each group. There was no statistically significant difference in the general data between the two groups, and they were comparable ($P > 0.05$), as shown in Table 1. This study was approved by the Medical Ethics Committee and informed consent forms were signed for all patients.

2.2. Inclusion Criteria. The inclusion criteria were as follows: ① All patients met the diagnostic criteria for AMI [8]. ② Patients under 80 years of age. ③ Patients who can cooperate well with this study.

2.3. Exclusion Criteria. The exclusion criteria were as follows: ① Patients with other types of heart disease or cerebrovascular disease and those with related dysfunction. ②Combined with coagulation disorders. ③ Patients with liver and kidney dysfunction. ④ Those combined with senile dementia and mental disease.

2.4. Methodology. Patients in the control group were given the routine emergency care procedures. The patient was admitted to the emergency room by medical staff. The patient's medical history was asked in detail, supplemented by an electrocardiogram. At the same time, oxygen inhalation, blood sample collection, and ECG monitoring were performed. The venous access was established immediately after the diagnosis and the preoperative preparation for PCI was completed, after which the patients was transferred to the catheterization room for surgery.

On the basis of the control group, the study group implemented the SWOT analysis of emergency care combined with medical and nursing integration model. The SWOT analysis was as follows: ① Analysis: Analyzing the advantages of our emergency treatment process, we found that our hospital has complete emergency conditions, with adequate staff, high comprehensive level, and complete emergency treatment facilities. According to the summary of clinical work, the disadvantages of emergency treatment in our hospital were mainly as follows: the hospital is in a busy area, which led to a long time for ambulance reception. Analysis of emergency treatment opportunities: The incidence of AMI increased, and the medical-related awareness of the masses was improved. If the number was more than 120 in time, the treatment opportunities for AMI increased. We summarize the challenges faced by our hospital in the first-aid work of AMI. Specifically, the emergency treatment process at 120 is vulnerable to traffic congestion, thus prolonging the treatment time. Due to the tension of medical staff in emergency departments and the insufficient staffing from time to time, emergency rescue has been challenged. In addition, from the perspective of challenges, the high indicators of tasks assigned by the hospital leadership and the high expectations of patients' families have posed a certain degree of challenges to the medical staff in emergency departments. ② Relevant factors such as advantages, disadvantages, opportunities, and threats are arranged in the matrix and systematic analysis is conducted. ③ Implementation of action plan: based on the advantages of our institute, we strengthened the disinfection, device management, and treatment monitoring of ambulances and emergency rooms, and conducted regular and stratified professional comprehensive training for medical staff, as well as real-time simulation training for the mutual cooperation ability of emergency group workers, so as to continuously sum up experience. We comprehensively analyzed the routes of the urban areas where the hospitals are located and the road conditions at different times and planned the receiving routes of the hospitals according to the comprehensive analysis. The ambulance is equipped with a navigation system to understand the road conditions in a timely manner so as to avoid routes with high traffic volume and people flow as much as possible. The optimization of emergency procedures aims to shorten the rescue time as much as possible. The patients in critical condition were treated directly through the green channel in the hospital and explained in detail to their families for simple education.

After the hospital admission, the patients were treated with the integrated medical and nursing integration first-aid care procedures: ① The integrated model was established. According to the situation of department personnel, several integrated teams composed of one emergency doctor and five nurses were formed. ② After patients are admitted, the prediagnosis nurse performs rapid evaluation and triage, and then the doctor conducts the primary diagnosis. The rescue nurse coordinated the whole rescue nursing service. One of the other three nurses was responsible for assisting the examination, monitoring and maintenance of vital signs, and observation of illness records. 1 responsible for the management of venous channel, a variety of pipeline management and medication. One nurse is responsible for communication, recording and transfer. In the early stage, the patient was allowed to stay in bed and assisted to complete basic examinations such as myocardial enzymes and ECG. Low flow oxygen was given for 2–5 L/min. The vital signs of patients were detected by ECG monitoring. Arterial blood was also drawn and blood gas analysis results were monitored. In the middle stage, a venous channel was established for intravenous administration and oral administration of drugs as per doctor's advice. Later stage is the first-aid stage. The rescue nurses assess the risk factors based on the patients' examinations and vital signs, confirm the implementation of doctor's advice, check the examination results, assist the doctors to rescue, and finally escort the patients into the catheter room.

2.5. Observation Indicators. The observation indicators were as follows:

(1) Comparison of the time of emergency rescue indexes between the two groups in emergencies, including

Table 1: Comparison of general data of patients between the two groups.

Group	n	*Gender (n)*		Age (years old)	BMI (kg/m²)	*Types of infarction (n)*			
		Male	Female			Anterior wall and anterior septal wall infarction	Extensive anterior wall infarction	Inferior wall and inferior lateral wall infarction	High lateral wall infarction
Study group	55	48	7	62.54 ± 7.26	24.71 ± 2.74	17	13	10	15
Control group	55	42	13	62.62 ± 7.31	24.63 ± 2.33	15	14	12	14
χ^2/t	—	2.200	0.058	0.165			0.378		
P	—	0.138	0.954	0.869			0.945		

triage evaluation time, ECG reporting time, venous blood collection time, and time from admission to start of PCI.

(2) Comparison of the rescue success rate between the two groups.

(3) The clinical outcomes of the two groups were compared, including the incidence of symptomatic cerebral hemorrhage and mortality of the patients, as well as the National Institutes of Health Stroke Scale (NIHSS) scores [9] at the time of admission and discharge.

(4) Comparison of patients' satisfaction in emergency care between the two groups. Nursing satisfaction was recorded by using the self-made nursing satisfaction questionnaire in our hospital. The full score of the scale was 100, with 90–100 being very satisfactory, 70–89 being satisfactory, 50–69 being general satisfactory and <50 being unsatisfactory. Total satisfaction = (very satisfactory + satisfactory + general satisfactory)/total cases × 100%.

(5) The incidence of complications in the two groups was counted, including deep vein thrombosis, pseudoaneurysm, urinary retention, and local hemorrhage. The total incidence of complications was compared between the two groups.

2.6. Statistical Methods. SPSS 20.0 statistical software was used for analysis. The measurement data were expressed as ($\overline{x}$ ±S) and t test was performed. The count data were expressed as percentage (%) using the χ^2 test, and $P < 0.05$ indicated that the difference was statistically significant.

3. Results

3.1. Comparison of Emergency Rescue Index Time between the Two Groups. The study components' diagnosis and evaluation time, ECG reporting time, venous blood collection time, and time from admission to start of PCI were all shorter than those in the control group ($P < 0.05$) as shown in Table 2.

3.2. Comparison of the Rescue Success Rate between the Two Groups. The success rate of rescue in the research group was higher than that of the control group ($P < 0.05$) as shown in Table 3.

3.3. Comparison of Clinical Outcomes between the Two Groups. The incidence and mortality of symptomatic cerebral hemorrhage in the study group were lower than those in the control group ($P < 0.05$). There was no difference in the NHISS score between the two groups on admission ($P > 0.05$), while the NHISS score in the research group was lower than that in the control group after discharge at ($P < 0.05$) as shown in Table 4.

3.4. Comparison of Patients' Satisfaction with Emergency Care between the Two Groups. The total satisfaction degree of patients in the research group on emergency care was higher than that in the control group ($P < 0.05$), as shown in Table 5.

3.5. Comparison of Complication Rates between the Two Groups. The incidence of complications in the study group was lower than that in the control group ($P < 0.05$) as shown in Table 6.

4. Discussion

AMI is characterized by acute onset and high mortality. The key to treatment is to open the infarct vessel as early as possible in the early stage of onset, to save the frequently died myocardium and to prevent the infarct size from expanding [10]. Research has shown that treatment with timely and effective nursing measures can improve the success rate of clinical rescue and improve the prognosis [11]. Therefore, the establishment of efficient emergency treatment mode has long been the focus of exploration and efforts of health care workers.

This study showed that the durations of emergency rescue indexes in the study group were shorter than those in the control group, and the success rate of emergency rescue in the research group was higher than that in the control group ($P < 0.05$). These results indicated that the combined use of the SWOT analysis method and the medical and nursing integration emergency care process were conducive to reducing the retention time of patients before PCI, effectively shortening the overall treatment time, speeding up the recovery of myocardial blood supply,

Table 2: Comparison of emergency rescue index time between the two groups (min, $\overline{x}$ ±S).

Group	n	Triage evaluation time	ECG reporting time	Venous blood collection time	Time from admission to start of PCI
Study group	55	1.43 ± 0.52	4.25 ± 1.24	4.89 ± 1.37	6.95 ± 1.24
Control group	55	2.17 ± 0.49	5.79 ± 1.57	6.96 ± 1.48	14.53 ± 1.69
T	—	7.681	5.709	7.612	26.819
P	—	<0.001	<0.001	<0.001	<0.001

Table 3: Comparison of the rescue success rate between the two groups (n, %).

Group	N	Number of cases	Percentage
Study group	55	51	92.73
Control group	55	43	78.18
t	—	4.681	
P	—	0.031	

Table 4: Comparison of clinical outcomes between the two groups.

Group	N	NHISS (score)		Symptomatic cerebral hemorrhage (n, %)	Mortality (n, %)
		On admission	After discharge		
Study group	55	19.69 ± 4.52	7.15 ± 2.23[a]	1 (1.82)	4 (7.25)
Control group	55	19.48 ± 4.36	9.46 ± 1.69[a]	7 (12.73)	13 (23.64)
χ^2/t	—	0.248	6.123	4.853	5.636
P	—	0.805	<0.001	0.028	0.018

Compared to the time of admission, [a]$P < 0.05$.

Table 5: Comparison of patients' satisfaction with emergency care between the two groups (n, %).

Group	n	Very satisfactory	Satisfactory	General satisfactory	Unsatisfactory	Total satisfaction
Study group	55	31 (56.36)	12 (21.82)	10 (18.18)	2 (3.64)	53 (96.36)
Control group	55	24 (43.64)	15 (27.27)	7 (12.73)	9 (16.36)	46 (83.64)
χ^2	—					4.949
P	—					0.026

Table 6: Comparison of complications between the two groups (n, %).

Group	n	Deep vein thrombosis	Pseudoaneurysm	Urinary retention	Local hemorrhage	Total incidence
Study group	55	0 (0.00)	1 (1.82)	1 (1.82)	0 (0.00)	2 (3.64)
Control group	55	2 (3.64)	4 (7.27)	2 (3.64)	1 (2.82)	9 (16.36)
χ^2	—					4.949
P	—					0.026

and improving the rescue efficiency of patients with AMI. The SWOT analysis method is an analysis method that measures the internal competitive environment and competitive conditions of the organization, analyzes the advantages and disadvantages and identifies the challenges faced by the related work, and further formulates and implements the solution according to the specific analysis results, so that the related work can be effectively solved. [12]. The study believed that introducing it into nursing management could objectively and comprehensively analyze the internal and external environment of nursing organization, formulate scientific nursing countermeasures according to the constructed situation matrix, and enhance the scientificity of nursing management and the market adaptability of nursing organization [13]. In this study, SWOT analysis has two functions in emergency nursing. On the one hand, the implementation of SWOT analysis comprehensively summarizes the advantages and disadvantages of emergency science and technology, emergency procedures and emergency work in our hospital, and provides a scientific basis for the planning of emergency procedures. On the other hand, at the same time, through a series of measures such as strengthening the quality supervision of ambulances and emergency rooms, strengthening the comprehensive training of medical staff in departments, optimizing the emergency receiving route and treatment process, it helps the emergency department to make full use of our hospital's high-quality emergency treatment conditions and facilities. It greatly improved the quality of AMI emergency care, improve the efficiency of emergency treatment, enhance the effect of treatment, and improve the prognosis of patients [14, 15].

As recommended in the guidelines of the Global Definition of Myocardial Infarction, the patient presented with a balloon dilatation time of less than 90 min, in order to obtain maximum reperfusion [16]. Therefore, the nursing process is also a very important part in the emergency treatment process [17]. The high-quality and efficient emergency nursing process is one of the important guarantees for improving the survival rate of patients with AMI [18]. This study focused on optimizing and improving the emergency process of AMI patients in the emergency department under the SWOT analysis method and applied the medical and nursing integration intervention model to the emergency care process. Moreover, the result showed that the incidence rate and mortality rate of symptomatic cerebral hemorrhage in the study group were lower than those in the control group ($P < 0.05$), which further confirmed that the combination of the SWOT analysis method and emergency medical care process could optimize the emergency procedures of AMI, reduce the incidence and mortality rate of complications such as symptomatic cerebral hemorrhage, and improve the prognosis of patients. First of all, an integrated team composed of one emergency doctor and five nurses was formed to clarify the work content of each person. Meanwhile, the medical care, nursing care, and patient care were integrated into the emergency work through the procedures [18]. The procedures were improved so as to strengthen the cooperation between medical care and avoid the problems such as unclear responsibilities, unclear responsibilities, unclear handover, nursing interruption, and nursing gap from delaying the treatment [19]. In addition, the medical and nursing integration emergency first-aid care process can ensure that the dying myocardial cells are saved in the shortest time, thereby improving the success rate of rescue and reducing the occurrence of complications, death, and relapse [20].

In addition, this study showed that the total satisfaction of patients in the study group on emergency care was higher than that in the control group ($P < 0.05$), indicating that the implementation of this model helped to narrow the relationship between nurses and patients. The reason was that while implementing the SWOT analysis method and the medical integrated emergency care process, the medical staff also effectively managed the emotions and cognition of the family members, thus improving their understanding of and support for the nursing work [21, 22].

In summary, the implementation of the SWOT analysis method combined with the medical and nursing integration emergency care process can improve the rescue effect and the success rate of rescue of patients with AMI, shorten the rescue time, and reduce the mortality rate and the incidence of complications, which is worthy of clinical application. The shortcoming of this study lies in that the included sample size is only 110, and the sample size can be expanded in the future to further verify the impact of the SWOT analysis method combined with the medical and nursing integration emergency care process on patients with acute myocardial infarction.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author upon request.

Ethical Approval

This study was approved by the ethics committee of our hospital. (EA2020096).

Conflicts of Interest

The authors declare that they have no conflicts of interest, financially or otherwise.

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Retraction

Retracted: Clinical Study on Prevention of Irinotecan-Induced Delayed-Onset Diarrhea by Hot Ironing with Moxa Salt Packet on Tianshu and Shangjuxu

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] X. Lai and A. Wang, "Clinical Study on Prevention of Irinotecan-Induced Delayed-Onset Diarrhea by Hot Ironing with Moxa Salt Packet on Tianshu and Shangjuxu," *Emergency Medicine International*, vol. 2022, Article ID 6587884, 9 pages, 2022.

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Research Article

Clinical Study on Prevention of Irinotecan-Induced Delayed-Onset Diarrhea by Hot Ironing with Moxa Salt Packet on Tianshu and Shangjuxu

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Objective. To study the clinical efficacy of hot ironing of the Tianshu and Shangjuxu with moxa salt packet to prevent irinotecan (CPT-11)-induced delayed-onset diarrhea (IIDD). *Methods*. A randomized controlled study was conducted on a sample of 120 patients with advanced colorectal cancer who were hospitalized in our oncology department and treated with FOLFIRI chemotherapy regimen from February 2018 to July 2021. They were equally divided into study group ($n = 60$) and control group ($n = 60$) according to whether they were treated with hot ironing with moxa salt packs or not. The general conditions, occurrence of IIDD, occurrence of delayed chemotherapy due to IIDD, time of occurrence and duration of IIDD, Karnofsky performance score (KPS) score, occurrence of leukopenia, and myelosuppression were compared between the two groups. *Result*. The incidence of grade 1, 2, 3, and 4 diarrhea in the study group was 11.67% (7/60), 5.00% (3/60), 3.33% (2/60), and 0.00% (0/60), respectively, while the incidence of grade 1, 2, 3, and 4 diarrhea in the control group was 21.67% (13/60), 8.33% (5/60), 10.00% (6/60), and 3.33% (2/60). The incidence of severe diarrhea and total diarrhea in the study group was (3.33% and 20.00%) lower than that in the control group (13.33% and 43.33%) ($P < 0.05$). The incidence of delayed chemotherapy was lower in the study group (8.33%) (1/12) than in the control group (23.08%) (6/26) but the difference between the groups was not statistically significant ($P > 0.05$). The time to onset of IIDD in the study group (6.45 ± 1.53) days was comparable to that in the control group (6.40 ± 1.77 days) ($P > 0.05$), but the duration of IIDD in the study group (3.25 ± 1.05 days) was shorter than that in the control group (5.70 ± 1.72 days) ($P < 0.05$). After treatment, the incidence of KPS improvement, stabilization, and reduction in the study group was 38.33% (23/60), 51.67% (31/60), and 10.00% (6/60), respectively, the incidence of KPS improvement, stabilization, and reduction in the control group was 23.33% (14/60), 50.00% (30/60), and 26.67% (16/60), respectively, and the percentage of KPS reduction in the study group was less than that in the control group ($P < 0.05$). During the observation period after treatment, the total incidence of leucopenia in the study group was 11.67% (7/60) which is lower than 31.67% (19/60) in the control group ($P < 0.05$). During the observation period after treatment, the incidence of III°+°IV myelosuppression in the study group was 5.00% (3/60) which is lower than 25.00% (15/60) in the control group ($P < 0.05$). *Conclusion*. The hot ironing with moxa salt packet on Tianshu and Shangjuxu was more effective in preventing IIDD, which could reduce the incidence and severity of IIDD, shorten the duration of diarrhea and significantly increase the quality of life of patients with no significant adverse effects.

1. Introduction

Irinotecan (CPT-11) is a first-line chemotherapy agent approved by the US FDA40 for the treatment of metastatic colorectal cancer; however, its clinical use is often limited by dose-limiting toxicity—delayed diarrhoea [1, 2]. A study [3] has shown that 20–40% of tumour patients treated with CPT-11 may develop diarrhoea, leading to weakness, dehydration, electrolyte disorders, reduced blood volume, or even life-threatening shock, seriously affecting the quality of

survival and the smooth implementation of chemotherapy, resulting in increased treatment costs, forced interruption of chemotherapy, reduction or discontinuation of subsequent chemotherapy, increased psychological burden on patients, and loss of confidence in treatment or even abandonment of treatment.

There are no satisfactory control options for irinotecan-induced delayed-onset diarrhea (IIDD). Western medical treatment of IIDD is mainly a passive antidiarrhoeal and symptomatic treatment with limited efficacy and no fundamental regulation of the gastrointestinal function, which not only imposes a great financial burden on the patient but may also lead to other more serious adverse effects. For example, loperamide, which is commonly used clinically in the treatment of various acute and chronic diarrhoea, with increasing doses applied, carries the risk of paralytic intestinal obstruction, not to mention prophylactic use [4, 5]. Octreotide is effective but is prone to adverse effects associated with its use in the elderly and children [6, 7]. Oral antibiotics can improve the gastrointestinal toxicity of irinotecan, but long-term use can lead to bacterial resistance or dysbiosis of the intestinal flora, which can lead to reduced oral absorption and secondary diarrhoea [8, 9]. As a result, how to prevent IIDD safely and effectively has become a hot topic of current research.

In recent years, there has been more research in Chinese medicine in the prevention of IIDD. It takes the whole as the principle, uses the theory of viscera syndrome differentiation and Qi, blood, and body fluid syndrome differentiation, and adopts traditional Chinese medicine syndrome differentiation and treatment, external application combined with traditional Chinese medicine, acupuncture combined with traditional Chinese medicine, and other therapies to formulate individualized treatment plans for patients, which can often obtain satisfactory curative effects. According to the lower conjunction point in combination with the front-mu point method, our research group used the moxa salt packet hot ironing Tianshu and Shangjuxu to prevent IIDD and achieved satisfactory results in several patients enrolled in the early stage. The report is as follows.

2. Materials and Methods

2.1. Sample Size Estimation. According to the formula, for the number of sample cases for the two-sample rate comparisons is

$$N = \frac{\left[Z_{\alpha/2}\sqrt{2\overline{P}\left(1-\overline{P}\right)\left(Q_1^{-1}+Q_2^{-1}\right)} + Z_{\beta}\sqrt{\left(P_1\left(1-P_1\right)/Q_1\right)+\left(P_2\left(1-P_2\right)/Q_2\right)}\right]^2}{\left(P_1-P_2\right)^2}. \tag{1}$$

Determination of Z_α: at the test level, if $\alpha = 0.05$, then $Z_{0.05/2} = 1.96$. Determination of Z_β: with an error probability of $\beta = 0.2$, that is, a test efficacy of 80%, $Z_{0.2} = 0.842$ is obtained. We then randomly divided them equally into 2 groups according to pre-experiment and plan, that is, $Q_1 = Q_2 = 0.5$. According to the results of clinical pretest, the incidence of IIDD in the two groups was estimated. The incidence of IIDD in the observation group was 20%, that is, $P_1 = 0.8$, and in the control group, it was 60%, that is, $P_2 = 0.4$. $P = Q_1P_1 + Q_2P_2 = (0.5 \times 0.8 + 0.5 \times 0.4) = 0.6$. We substituted the above formula to get $n = 55$ cases, that is, 55 patients were needed in each group. According to the shedding rate of 10%, the total number of samples required is 120 in both the two groups.

2.2. General Data. A randomized controlled study was conducted on a sample of 120 patients with advanced colorectal cancer who were hospitalized in our oncology department and treated with FOLFIRI chemotherapy regimen from February 2018 to July 2021. They were equally divided into study group ($n = 60$) and control group ($n = 60$) according to whether they were treated with hot ironing with moxa salt packs or not.

2.3. Inclusion Criteria. ① They met the diagnostic criteria for colorectal cancer in the "Chinese Code of Practice for the Treatment of Colorectal Cancer (2017 Edition)" [10] and were all clearly diagnosed as metastatic colorectal cancer by imaging and pathological examination. ② Karnofsky performance score (KPS) score >60. ③ Age 25 to 75 years. ④ All were appropriate for chemotherapy with a CPT-11-containing regimen. ⑤ No serious cardiovascular, hepatic, renal or haematopoietic diseases, no mental illness, no connective tissue disease, haemophilia or bleeding tendencies. ⑥ No diarrhoea and no antidiarrhoeal medication within 3 days prior to chemotherapy. ⑦ Expected survival rate of more than 3 months. ⑧ Those who had signed an informed consent form and had good compliance.

2.4. Exclusion Criteria. ① Diarrhoea not caused by the effects of chemotherapy, i.e., excluding radiotherapy diarrhoea, acute intestinal infectious diarrhoea, enteral nutritional diarrhoea, antibiotic-associated diarrhoea, mechanical ventilation diarrhoea, irritable bowel syndrome, ischaemic enteritis, and chronic enteritis. ② People with acute diarrhoea after chemotherapy. ③ Upper respiratory tract infection and/or other symptoms of infection during chemotherapy. ④ Women who were pregnant, breastfeeding, or planning pregnancy during the experimental period. ⑤ Those who were unable to cooperate. ⑥ Those with broken, ulcerated, or infected skin in the treated area.

2.5. Elimination or Shedding Criteria. ① Those who developed serious adverse events, complications, comorbidities, or deterioration of their condition during the course of

the experiment and who, in the judgement of the doctor, were unfit to continue with the experiment. ② Subjects who voluntarily withdrew from a clinical trial due to lack of efficacy or other reasons for not wishing to continue. ③ Those who used other drugs during the experiment that may affect the judgement of efficacy. ④ Factors contributing to the patient's lack of treatment or noncompliance with treatment.

2.6. Treatment Methods. Both groups received FOLFIRI chemotherapy regimen at enrolment: specifically, CPT-11 (Jiangsu Hengrui Pharmaceutical Company) 180 mg/m^2 continuous intravenous drip for 30–90 min on day 1; calcium folinate (Jiangsu Hengrui Pharmaceutical Company) 400 mg/m^2 continuous intravenous drip for 2 h on day 1; fluorouracil (Shanghai Xudong Haipu company) 400 mg/m^2 intravenous injection on day 1; fluorouracil 2400 mg/m^2 intravenous micropump was continuously injected for 46 hours on day 1. 14 days for 1 cycle, 2 cycles for 1 course of treatment. During chemotherapy, ondansetron (Ningbo Tianheng Pharmaceutical company) 8 mg intravenous micropump 2/day was routinely given for antiemetic, reduced glutathione (Chongqing Yoyo Pharmaceutical Company) 1.5 g intravenous drip 1/day for liver protection, and lansoprazole (Centrum Pharmaceuticals) 30 mg intravenous micropump 2/day to protect the gastric mucosa. Those who developed acute diarrhoea withdrew from this experiment and were given symptomatic treatment such as atropine 0.5 mg intramuscularly and rehydration. Management of late-onset diarrhoea: If IIDD developed during treatment, while maintaining fluid and electrolyte balance, loperamide should be given orally for grade 1 and 2 diarrhoea, 4 mg for the first time and 2 mg every 2 h thereafter until 12 h after the last loose stool, continuing for no more than 48 h, or discontinued if ineffective. Patients with grade 3 or 4 diarrhoea or those with no improvement in diarrhoeal symptoms after 24 h of treatment with loperamide were given octreotide and compound phenylephrine, and the administration was discontinued after diarrhoeal symptoms had subsided.

On the basis of the above, the study group was treated with homemade moxa salt packs for hot ironing on the Tianshu and Shangjuxu 1 day before chemotherapy, 80 g of moxa was mixed with 240 g of crude salt (diameter 5 mm) and was placed in the centre of a 25 cm × 25 cm square of canvas,the four corners were lifted and wrapped into a disc with a chassis diameter of about 8 cm, and the four corners were tied vertically with a thick cotton thread to form a cylindrical handle 8 cm high to make a moxa salt packet. A small amount of water was sprayed on the bottom of the disc until the outer cotton canvas was damp, and it was placed in the microwave oven for 3 min at 40–50°C, the heat was adjusted to medium, and then it was removed from the oven. The patient was placed in a flat position, and the moxa salt packet was placed on the Tianshu and Shangjuxu. To avoid burns, a small towel was placed on the hot iron for 5–10 min at first. After the heat of the moxa salt packet had subsided,the small towel was removed and ironing was continued for a total of 30 minutes, the temperature was maintained in such a way that the patient felt warm, and the skin was flushed but not burnt. 1 time daily for 5 days. No other prophylactic treatment in the control group.

2.7. Observation Indicators

(1) Compare the general condition of patients for both groups.

(2) Compare the occurrence of IIDD for both groups. IIDD is defined as drug-related diarrhoea occurring at any time between 24 h of treatment with CPT-11 and the next cycle of chemotherapy. The grading criteria for chemotherapy-associated diarrhoea were developed based on the American Cancer Institute Common Toxicity Criteria (NCI CTCV3.0) [11] and as shown in Table 1. Compare the incidence of severe diarrhoea (%) = number of cases of grade 3 + grade 4 diarrhoea/sample size × 100% in both groups. Compare the incidence of total diarrhoea (%) = number of cases of grade 1 + grade 2 + grade 3 + grade 4 diarrhoea/sample size × 100% in both groups.

(3) Compare the number of cases of delayed chemotherapy sessions due to IIDD for both groups; incidence of delayed chemotherapy (%) = number of delayed cases/sample size × 100%; compare the incidence of delayed chemotherapy for both groups.

(4) Compare the time to onset and duration of IIDD for both groups.

(5) Compare the KPS scores of the two groups of patients before and after treatment. The KPS scoring criteria is shown in Table 2 [12]. KPS improved: patients' scores increased by 10 or more scores after treatment compared with before treatment; KPS stabilized: patients' scores increased or decreased by 0–10 scores after treatment compared with before treatment; KPS reduced: patients' scores decreased by 10 or more scores after treatment compared with before treatment [12]. The percentage of gradings that improved, stabilized, and reduced was counted for both groups.

(6) Record the occurrence of leukopenia and myelosuppression during the observation period after treatment for both groups.

2.8. Statistical Methods. Data analysis was processed by the SPSS 22.0 software. The measurement data was expressed as ($\overline{x} \pm s$) and the t-test analysis was used for comparison. The count data was expressed as (%), and the χ^2-test analysis was used for comparison. $P < 0.05$ indicated that the difference was statistically significant.

3. Results

3.1. Comparison of General Items for Both Groups. As shown in Table 3, there was no statistically significant difference between the two groups when compared with the general

Table 1: IIDD grading criteria.

IIDD grading criteria	Grade
Increase in stool frequency <4 times/d, mild increase in volume of excrement	Grade 1
Increase in the number of stools 4–6 times/d, moderate increase in the volume of excrement, without affecting daily life	Grade 2
Increase in stool frequency ≥7 times/d, incontinence, need for 24 h intravenous rehydration, hospitalization, heavy increase in excretion, affects daily life	Grade 3
Life-threatening (e.g., haemodynamic failure)	Grade 4
Death	Grade 5

Table 2: KPS scoring criteria.

KPS scoring criteria	Rating (score)
Death	0
Near death or critically ill	10
Need to be hospitalized for active treatment or seriously ill	20
Poor quality of life, seriously unable to take care of themselves	30
Largely unable to care for himself and requires special care from a professional carer	40
Often requires dedicated care	50
Life is basically self-care and occasionally needs support	60
Unable to live and work normally, able to take care of themselves	70
The body has certain signs and symptoms, and barely able to carry out normal activities	80
Mild physical signs and symptoms, able to perform normal activities	90
No signs and symptoms, normal life	100

Table 3: Comparison of general items for both groups.

Items	Research group ($n = 60$)	Control group ($n = 60$)	t/χ^2	P
Age (years old)	56.07 ± 8.20	57.22 ± 9.02	0.731	0.466
Gender (n, %)			0.315	0.575
Male	35 (58.33)	38 (63.33)		
Female	25 (41.67)	22 (36.67)		
Education level (n, %)			1.244	0.743
≤Primary School	18 (30.00)	22 (36.67)		
Junior high school/technical secondary school	20 (33.33)	19 (31.67)		
High school				
Junior college	15 (25.00)	15 (25.00)		
≥Undergraduate	7 (11.67)	4 (6.66)		
Disease site (n, %)			0.543	0.461
Colon cancer	32 (53.33)	36 (60.00)		
Rectal cancer	28 (46.67)	24 (40.00)		
Metastasis (n, %)			1.978	0.740
Liver metastases	27 (45.00)	22 (36.67)		
Pulmonary metastases	15 (25.00)	17 (28.33)		
Simultaneous liver and lung metastases	5 (8.33)	8 (13.33)		
Abdominal and pelvic lymph nodes metastasis	7 (11.67)	9 (15.00)		
Other site metastases	6 (10.00)	4 (6.67)		
Differentiation degree (n, %)			2.209	0.530
Highly differentiated adenocarcinoma	17 (28.33)	20 (33.33)		
Intermediate differentiated adenocarcinoma	24 (40.00)	23 (38.33)		
Lowly differentiated adenocarcinoma	8 (13.33)	11 (18.34)		
Mucinous adenocarcinoma	11 (18.34)	6 (10.00)		

items such as age, gender, education level, disease site, metastasis, and differentiation degree ($P > 0.05$).

3.2. Comparison of Incidence of IIDD for Both Groups. As shown in Figure 1, the incidence of grade 1, 2, 3, and 4 diarrhea in the study group was 11.67% (7/60), 5.00% (3/60), 3.33% (2/60), and 0.00% (0/60), respectively, while the incidence of grade 1, 2, 3, and 4 diarrhea in the control group was 21.67% (13/60), 8.33% (5/60), 10.00% (6/60), and 3.33% (2/60) and the incidence of severe diarrhea and total diarrhea in the study group were lower (3.33% and 20.00%) than those in the control group (13.33% and 43.33%) ($P > 0.05$).

3.3. Comparison of Occurrence of Chemotherapy Delay for Both Groups. As shown in Figure 2, the incidence of delayed chemotherapy was lower in the study group 8.33% (1/12)

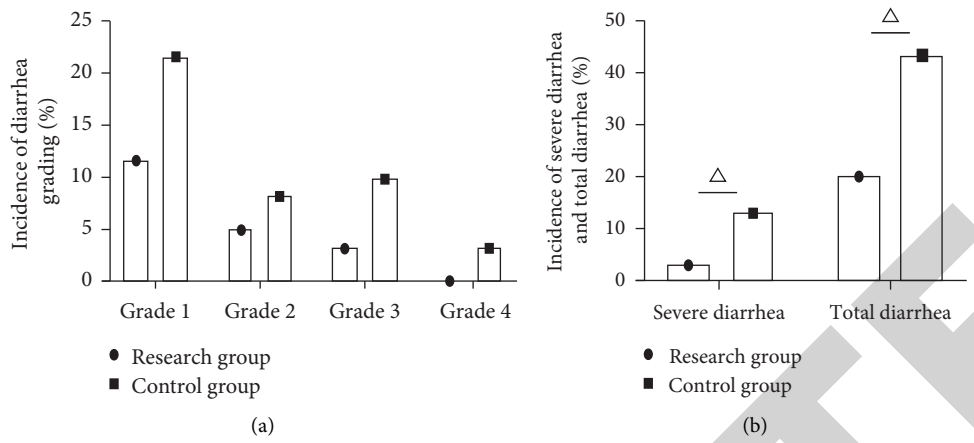

Figure 1: Comparison of incidence of IIDD for both groups. Note: Δ is the difference between the two groups, $P < 0.05$. (a) Incidence of diarrhea grading (%) and (b) incidence of severe diarrhea and total diarrhea (%).

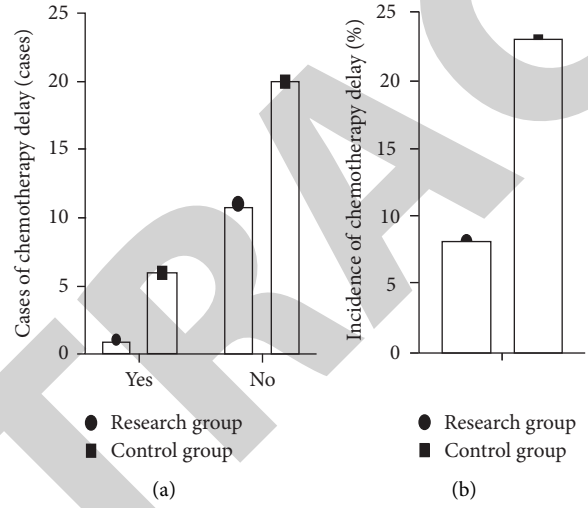

Figure 2: Comparison of the occurrence of chemotherapy delay for both groups. (a) Cases of chemotherapy delay (cases) and (b) incidence of chemotherapy delay (%).

than in the control group 23.08% (6/26), but the difference between the groups was not statistically significant ($P > 0.05$).

3.4. Comparison of Time to Onset and Duration of IIDD for Both Groups. As shown in Figure 3, the time to onset of IIDD in the study group (6.45 ± 1.53 days) was comparable to that in the control group (6.40 ± 1.77 days) ($P > 0.05$) but the duration of IIDD in the study group (3.25 ± 1.05 days) was shorter than that in the control group (5.70 ± 1.72 days) ($P < 0.05$).

3.5. Comparison of KPS Grading Percentages for Both Groups. As shown in Figure 4, after treatment, the incidence of KPS improvement, stabilization, and reduction in the study group was 38.33% (23/60), 51.67% (31/60), and 10.00% (6/60), respectively, the incidence of KPS improvement, stabilization, and reduction in the control group was 23.33% (14/60), 50.00% (30/60), and 26.67% (16/60), respectively, and the percentage of KPS reduction in the study group was less than that in the control group ($P < 0.05$).

3.6. Comparison of Occurrence of Leukopenia for Both Groups. As shown in Figure 5, during the observation period after treatment, the total incidence of leucopenia in the study group was 11.67% (7/60) which is lower than 31.67% (19/60) in the control group ($P < 0.05$).

3.7. Comparison of Occurrence of Myelosuppression for Both Groups. As shown in Figure 6, during the observation period after treatment, the incidence of III + IV myelosuppression in the study group was 5.00% (3/60) which is lower than 25.00% (15/60) in the control group ($P < 0.05$).

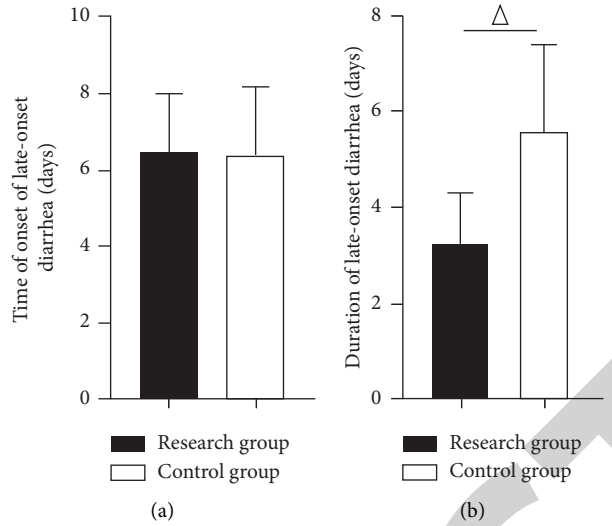

Figure 3: Comparison of time to onset and duration of IIDD for both groups. Note: Δ is the difference between the two groups, $P < 0.05$. (a) Time of onset of late-onset diarrhea (days) and (b) duration of late-onset diarrhea (days).

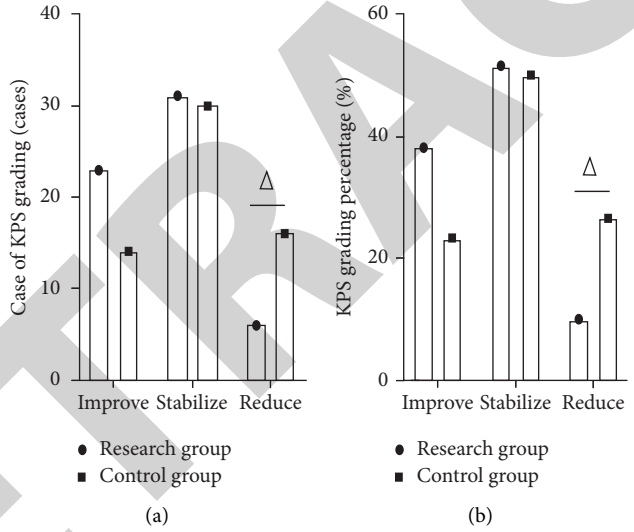

Figure 4: Comparison of KPS grading percentages for both groups. Note: Δ is the difference between the two groups, $P < 0.05$. (a) Case of KPS grading (cases) and (b) KPS grading percentage (%).

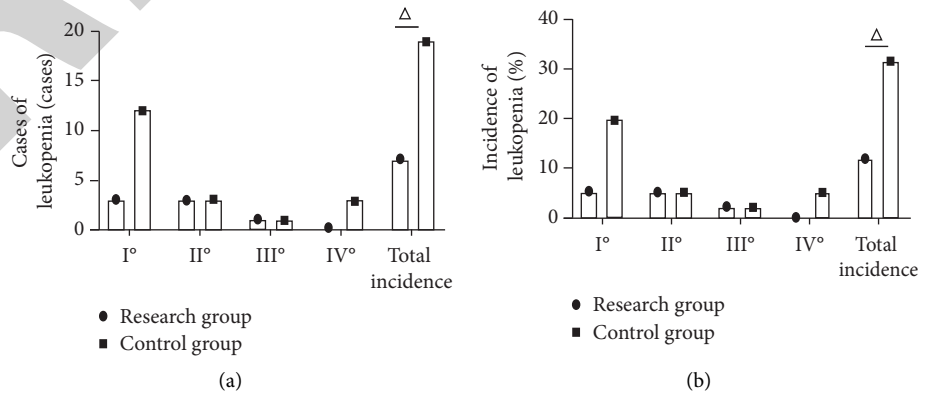

Figure 5: Comparison of occurrence of leukopenia for both groups. Note: Δ is the difference between the two groups, $P < 0.05$. (a) Cases of leukopenia (cases) and (b) incidence of leukopenia (%).

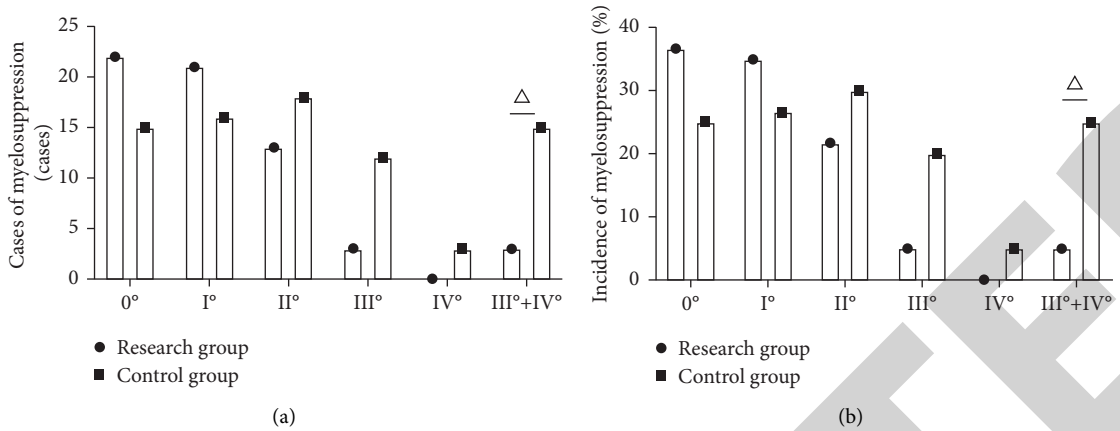

Figure 6: Comparison of the occurrence of myelosuppression for both groups. Note: Δ is the difference between the two groups, $P < 0.05$. (a) Cases of myelosuppression (cases) and (b) incidence of myelosuppression (%).

4. Discussion

IIDD is mainly associated with the concentration of 7-ethyl-1-O-hydroxycamptothecin (SN-38), a metabolite of CPT-11, in the intestine and its contact time with the intestinal epithelium and the genetic polymorphism of uridine diphosphate glucuronosyltransferase (UGT1A1) [13–15]. There are no effective preventive and curative measures in the Western medicine. The aim of this study is to reduce the risk of IIDD in patients and improve the safety of CPT-11 administration while ensuring the efficacy of the chemotherapy regimen.

Diarrhea belongs to the category of "diarrhea" in Chinese medicine. The "Jing Yue Quan Shu" said "The origin of diarrhea is always due to the spleen and stomach." This indicates that the spleen deficiency and the loss of transportation is the key etiology of diarrhea. The "Golden Guide to Medicine" has the saying "No dampness can't make diarrhea," which indicates that dampness is the target. Therefore, it is generally believed that the occurrence of this disease is due to the weakness of patients with advanced colorectal cancer, and then the spleen and stomach damage caused by CPT-11 chemotherapy. The righteousness of the Qi is weakened, the Qi of the spleen and stomach is more deficient, the digestive and absorption functions are reduced, water-dampness flourishes and collects in the large intestine, developing into diarrhoea. In addition, long-term diarrhea will lead to damage to the Yang of the kidney. Yang cannot warm the spleen and stomach, and the water and food you eat cannot be well digested and absorbed. It will also lead to damage to the normal function of the intestines and stomach and develop into diarrhea. It can be seen from the above that the therapeutic principle of transforming dampness and treating spleen should be adopted during treatment.

The "Materia Medica Zheng" recorded "Wormwood leaf is good at warming the body, removing cold and dampness, can warm and dredge the meridians after frying and ironing, or wrap it in a bag to warm the navel and knees." It indicates that wormwood leaf can be effective in warming the meridians and dispersing cold, unblocking the meridians, and tonifying deficiency and helping Yang [16]. Coarse salt is an auxiliary material with long-lasting heat preservation performance, which can enhance the penetrating power of the moxa medicine and can play the role of dispelling dampness, generating muscle, warming the meridians and dispersing cold, and enhancing the healing effect. Our research group used moxa salt packet hot ironing Tianshu and Shangjuxu to prevent IIDD. Among them, Tianshu belongs to the acupoint of Foot Yangming stomach meridian, which is the front-mu point of large intestine meridian. According to the "Compilation of Acupoints Along Meridians": "Tianshu is at the place where heaven and earth meet, so we can see that it has the function of separating the clear from the turbid." It indicates that the Tianshu point has the function of regulating the Qi of the middle jiao and sorting out the clearness of the two stools, making it an effective point for clinical treatment of gastrointestinal diseases. Modern clinical studies have shown that acupuncture of the Tianshu point can directly contact and stimulate the intestinal wall and inhibit intestinal peristalsis through neural and humoral regulation [17]. Shangjuxu, also known as Juxushanglian, is a key point of the Foot Yang Ming Stomach meridian and the lower conjunction point of the Large Intestine meridian, which mainly treats the intestinal and gastrointestinal symptoms, i.e., "the lower conjunction point treats diseases of the internal organs" [18]. The "Lingshu—Evil Qi and Viscera Disease Form" said "Large intestine disease treat it like stomach disease, and take Juxushanglian." It shows that Shangjuxu has the function of dredging and regulating the intestines, strengthening the spleen and stomach, and is good at treating all kinds of intestinal diseases. Some experimental studies have confirmed that Shangjuxu has the ability to modulate immune and gastrointestinal muscle motility, improve intestinal blood flow, promote lesion tissue regeneration, and repair ulcers [19]. Tianshu and Shanjuxu are both gastric meridian points, which belongs to the lower conjunction point in combination with the front-mu point of the large intestine meridian, can help to strengthen the spleen and stomach, regulate the intestinal organs, and separate the clear and turbid functions [20]. The results of this study showed that after treatment, the incidence of severe diarrhoea, the incidence of total diarrhoea,

and the incidence of delayed chemotherapy were lower in the research group than in the control group, the duration of IIDD was shorter in the research group than in the control group, and the percentage of KPS reduce was less in the research group than in the control group. The results suggest that the use of heated moxa salt packs and hot ironing on Tianshu and Shangjuxu for the prevention and treatment of IIDD has a better effect, can reduce the incidence of IIDD, severe diarrhea and delayed chemotherapy, shorten the duration of diarrhea, and improve the quality of life of patients. Analysis of the mechanism of action may be that the moxa salt pack stimulates the meridian Qi through the stimulation of acupuncture points, mobilizes the meridian function and uses the lasting warming effect to increase the efficacy of the medicine, penetrating the medicinal properties into the meridians and blood vessels through the hairy orifices on the body surface and ultimately acting. In this study, the effect of hot ironing with moxa salt packs on Tianshu and Shangjuxu was less significant in reducing the grading of diarrhoea, which may be related to the small sample size. During observation period after treatment, the overall incidence of leukopenia and the incidence of III°+ IV myelosuppression were lower in the study group than in the control group. It is concluded that the treatment is not only inexpensive and easy to perform but also has few side effects and some bone marrow protection. In addition, compared with traditional moxibustion, the moxa salt pack has no ashes flying and smoke stimulation. Patients are happy to accept it, avoiding the disadvantages of traditional moxa strips which needs to be held by hand,time-consuming and laborious, greatly saving medical resources, with a wide range of promotional value and socio-economic benefits.

In summary, the hot ironing with moxa salt packet on Tianshu and Shangjuxu was more effective in preventing IIDD, which could reduce the incidence and severity of IIDD, shorten the duration of diarrhea, and significantly increase the quality of life of patients with no significant adverse effects.

Data Availability

The primary data to support the results of this study are available upon reasonable request to the corresponding author.

Ethical Approval

This study had been approved by the ethics committee.

Conflicts of Interest

The authors declare no conflicts of interest.

Acknowledgments

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Retraction

Retracted: Curative Effect of Prebiotics/Probiotics Preparations Combined with Zoledronic Acid + Calcitriol Regimen on Patients with Primary Osteoporosis and Their Influences on Bone Metabolism Markers

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] R. Jia, N. Liu, Y. Zhu, and Q. Li, "Curative Effect of Prebiotics/Probiotics Preparations Combined with Zoledronic Acid-+Calcitriol Regimen on Patients with Primary Osteoporosis and Their Influences on Bone Metabolism Markers," *Emergency Medicine International*, vol. 2022, Article ID 3293362, 7 pages, 2022.

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Research Article

Curative Effect of Prebiotics/Probiotics Preparations Combined with Zoledronic Acid + Calcitriol Regimen on Patients with Primary Osteoporosis and Their Influences on Bone Metabolism Markers

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Objective. To explore the curative effect of prebiotics/probiotics preparations combined with zoledronic acid + calcitriol regimen on patients with primary osteoporosis (POP) and the influences of prebiotics/probiotics preparations combined with zoledronic acid + calcitriol regimen on markers of bone metabolism. *Methods*. 126 elderly hospitalized patients with POP in our hospital from January 2020 to December 2021 were divided into the control group ($n = 63$) and the observation group ($n = 63$) by the random number table method. The patients in the control group were treated with zoledronic acid and calcitriol, while the patients in the observation group were additionally treated with prebiotics/probiotics preparations. The clinical curative effect, bone metabolism, calcium-phosphorus metabolism indexes, intestinal floras, and cytokines levels before and via treatment between the two groups were compared. *Results*. The total efficiency of the observation group was higher than that of the control group ($P < 0.05$). After treatment, the levels of bone gla protein (BGP), total propeptide of type I procollagen (PINP), and β-crosslaps (β-CTX) in both groups were lower than those before treatment, and the levels of BGP, total PINP, and β-CTX in the observation group were lower than those in the control group ($P < 0.05$). The levels of serum P in the both groups after treatment were lower than those before treatment, and the level of serum P in the observation group was lower than that in the control group ($P < 0.05$). The number of *Escherichia coli* after treatment in the two groups were less than that before treatment, and the number of *Escherichia coli* in the observation group was less than that in the control group ($P < 0.05$). The number of bifidobacteria and lactobacilli in the two groups after treatment were more than that before treatment, and the number of bifidobacteria and lactobacilli in the observation group were more than those in the control group ($P < 0.05$). After treatment, the levels of IL-6 and TNF-α in the two groups were lower than those before treatment, and the levels of IL-6 and TNF-α in the observation group was lower than those in the control group ($P < 0.05$). The levels of IGF-1 in the two groups after treatment were higher than those before treatment, and the levels of IGF-1 in the observation group was higher than that in the control group ($P < 0.05$). *Conclusion*. The response rate of prebiotics/probiotics preparations combined with zoledronic acid + calcitriol regimen is high in the treatment of POP patients, which ameliorates bone metabolism and intestinal floras, and suppresses cytokines release in patients with POP.

1. Introduction

Primary osteoporosis (POP) is a group of systemic bone illnesses primarily associated with increased bone fragility and easy fracture due to low mass, destruction of bone microarchitecture, and decreased bone strength. Nowadays, zoledronic acid, calcitriol, and other drugs are used in clinical treatment. Zoledronic acid is a diphosphate compound that specifically acts on bone, and it can inhibit bone resorption caused by increased osteoclast activity,

thereby increasing bone density and enhancing bone strength [1]. However, related reports pointed out that some patients still have abnormal bone metabolism after zoledronic acid combined with calcitriol treatment [2]. At present, some studies have suggested that the occurrence and development of POP may be related to the abnormal intestinal flora [3]. Disturbance of intestinal flora can lead to decreased intestinal immunity, inhibit intestinal absorption of calcium and phosphorus, and affect bone health. Therefore, it may be possible to improve bone metabolism disorder by regulating intestinal flora. The bifidobacterium quadruple viable comprises four components of bifidobacterium, *Lactobacillus acidophilus*, *Enterococcus faecalis*, and *Bacillus cereus*. It can directly supplement normal physiological bacteria of human body, form biological barrier in intestinal tract, inhibit certain pathogenic bacteria in intestinal tract, promote intestinal peristalsis, adjust balance of intestinal flora, stimulate immunity of organism, participate in synthesis of vitamins, promote digestion and absorption of nutrients, and is the most commonly used medicine related to intestinal flora imbalance in clinical treatment. However, there are few reports on the treatment of POP by adjusting intestinal flora. Therefore, we want to explore the efficacy of prebiotic/probiotic preparations combined with zoledronic acid + calcitriol regimen in the treatment of POP patients and the effect on bone metabolism markers in this study.

2. Materials and Methods

2.1. Clinical Data. 126 elderly hospitalized patients with POP in our hospital from January 2020 to December 2021 were included and randomly divided into the control group (group without prebiotics/probiotics preparations) and the observation group (group with prebiotics/probiotics preparations) by the random number table method, with 63 cases per group. In the control group, there were 22 males and 41 females; the average age was (72.52 ± 3.63) years; body weight (64.03 ± 4.45) kg; course of disease (5.17 ± 0.79) years. In the observation group, there were 39 females and 24 male; the average age was (72.49 ± 3.81) years; the body weight was (62.44 ± 5.11) kg; the course of disease was (5.20 ± 0.73) years old. The difference in the above data between the two groups was not markedly significant ($P > 0.05$).

2.2. Inclusion Criteria. (1) Meet the diagnostic criteria for POP in the Guidelines for the Diagnosis and Treatment of Primary Osteoporosis (2017) [4]; (2) all patients signed the informed consent; (3) age ≥ 60 years old.

2.3. Exclusion Criteria. (1) Patients who have severe kidney, liver, and heart diseases; (2) patients who have secondary osteoporosis; (3) patients who have tumor diseases; (4) patients with severe metabolic dysfunction; (5) those who are sensitive to the drugs used in this study; (6) patients with other inflammatory diseases; (7) patients with severe gastrointestinal diseases.

2.4. Methods. The control group was treated with zoledronic acid (Zhengda Tianqing Pharmaceutical Group, batch number: Guoyao Zhunzi H20041346, specifications: 5 ml: 4 mg) combined with calcitriol capsules (Zheng Haier Pharmaceutical Co. Ltd., batch number: Guoyao Zhunzi H20030491, specifications: 0.25 μg ∗ 10 s), zoledronic acid 4 mg + 100 ml normal saline, intravenous infusion, instillation time over 15 min, a total of 1 injection. Calcitriol 1 tablet/time was taken after lunch, 1 time/d, for a total of 3 months of treatment.

On this basis, the control group was given Bifidobacterium quadruple viable tablets (Hangzhou Grand Bio-Pharmaceutical Co. Ltd., batch number: S20060010, specification: 0.5 g ∗ 24 s), 3 tablets/d, for a total of 3 months.

2.5. Observation Indicators. (1) Clinical efficacy: via treatment for 90 days, the clinical efficacy was evaluated according to the "Osteoporosis Identification, Diagnosis, and Treatment" [5]. Significant valid: the low back pain disappeared, the spinous process did not have percussion pain, the waist and knees were sore and weak, and the lower limbs. Weakness and other symptoms have been significantly improved, bone mineral density has increased by >2%, and activities are free. Effective: low back pain is significantly reduced; waist and knee soreness, lower extremity weakness, dizziness, and other symptoms are improved. The bone mineral density value is increased by ≤2%, and light work can be performed. Invalid: no improvement in clinical symptoms, limited daily life, and activities. (2) Bone metabolism index: collect 3 ml of fasting venous blood from patients, centrifuge at a rate of 3000 r/min, and after separating serum, use the chemiluminescence method to detect the osteocalcin (bone-γ) before treatment and after 3 months of treatment. The kit of Carboxyglutamic acid-containing protein, BGP, total collagen type 1 amino acid extension peptide (propeptide of type I procollagen, PINP), and β-collagen special sequence (β-crosslaps, β-CTX) levels, is provided by Roche. (3) Calcium and phosphorus metabolism: ELISA was used to detect serum Ca and P levels of patients before treatment and for 3 months after treatment. (4) Intestinal flora: take 0.5 g of fresh fecal samples from patients before treatment and 3 months after treatment, dilute it to 10-8 by the 10-fold dilution method, take 10 μL of dilution for inoculation, and use the corresponding medium for cultivated at 37°C for 48 h, and counted the number of colonies after biochemical identification. (5) Cytokines: the radioimmunoassay was used to detect interleukin-6 (IL-6), tumor necrosis factor-α (TNF-α), and insulin-like growth factor-1 (IGF-1) levels, before treatment and 3 months after treatment.

2.6. Statistical Processing. We used the SPSS 22.0 software to process the date analysis, enumeration data were presented as (%), and differences between groups were compared by the χ^2 test. The data in linear scale were presented as mean ± standard deviation (±s) after the normality test, and the independent t-test was used to compare differences between two groups, within-group differences were

Table 1: Comparison of therapeutic efficacy between groups with/without prebiotics/probiotics preparations (n, (%)).

Group	n	Significant valid	Effective	Invalid	Total efficiency
Observation group	63	25	34	4	93.65
Control group	63	20	31	12	80.95
$\chi 2$					4.582
P value					0.032

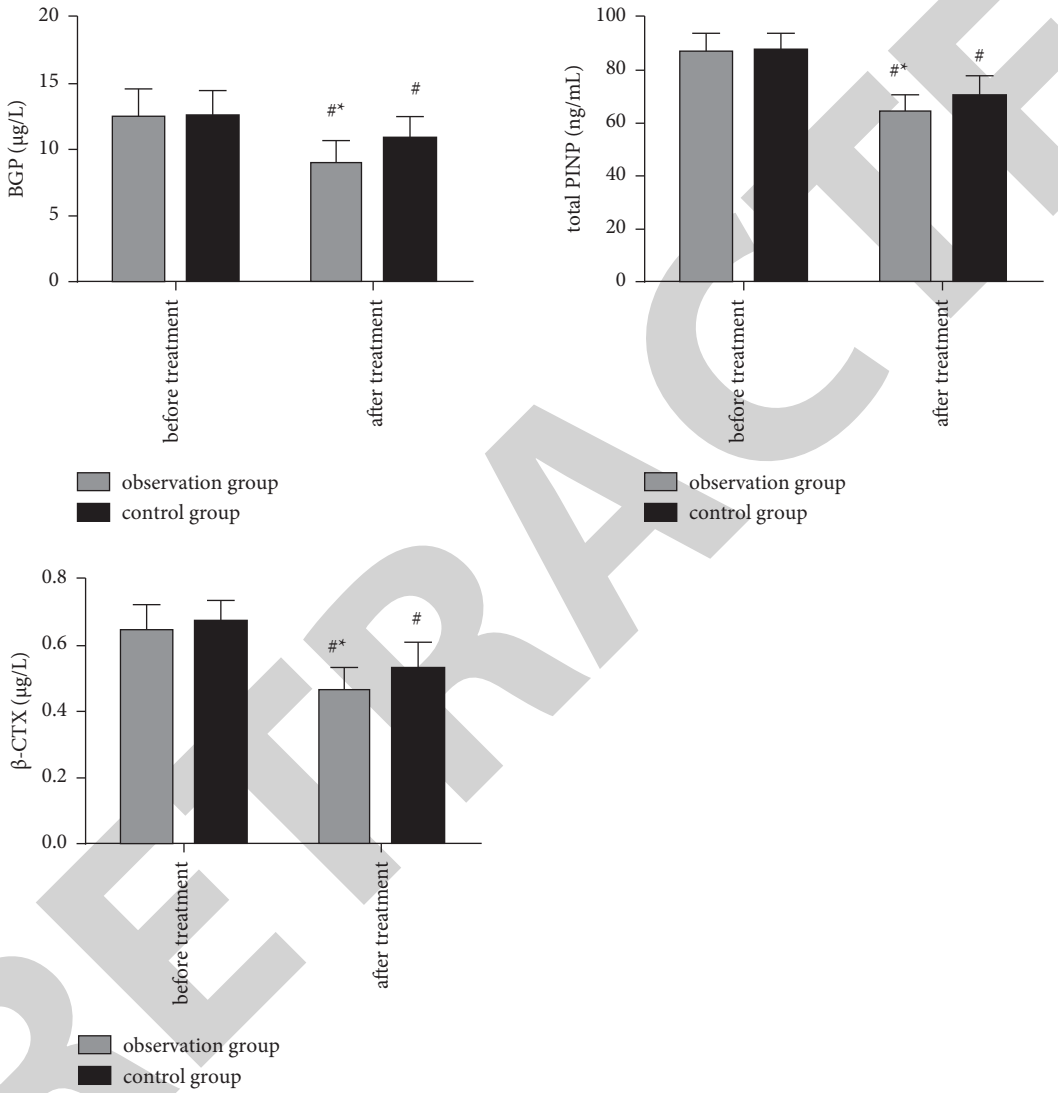

Figure 1: The changes of bone metabolism markers between the two groups with/without prebiotics/probiotics preparations (compared with the same group before the treatment, $^{\#}P < 0.05$; compared with the control group, $^{*}P < 0.05$).

measured by paired A sample t-test. $P < 0.05$ indicates statistically significant difference.

3. Results

3.1. Comparison of Therapeutic Effects among Groups with/without Prebiotics/Probiotics Preparations. The total efficiency of the observation group was higher than that of the control group ($P < 0.05$), and the detail information was shown in Table 1.

3.2. Comparison of Bone Metabolism Markers between Groups with/without Prebiotics/Probiotics Preparations. The difference in the levels of BGP, total PINP, and β-CTX in the two groups before the treatment was not different statistically ($P > 0.05$). After treatment, the levels of BGP, total PINP, and β-CTX in both groups were lower than those before treatment, and the levels of BGP, total PINP, and β-CTX in the observation group were lower than those in the control group ($P < 0.05$), as shown in Figure 1.

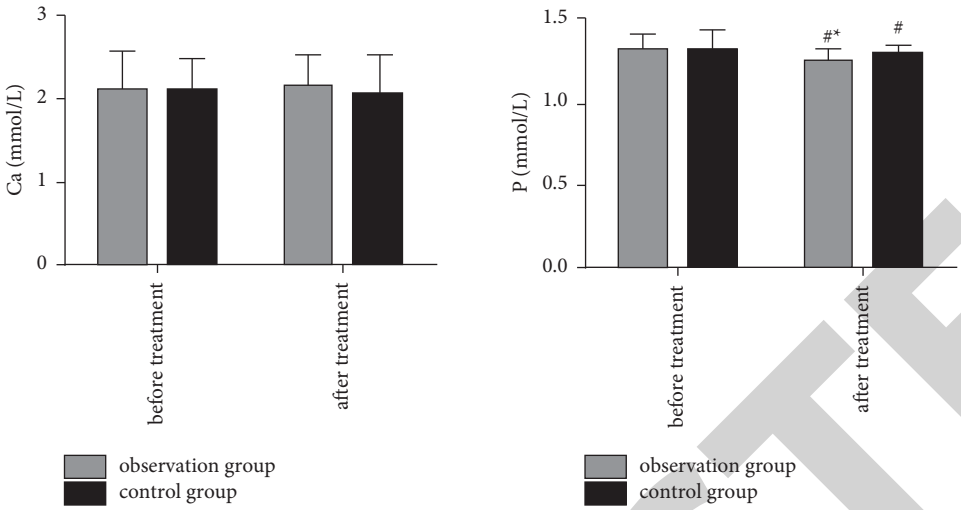

Figure 2: Comparison of calcium and phosphorus metabolism indexes between groups with/without prebiotics/probiotics preparations ($^{\#}P < 0.05$ represents comparing with the same group before treatment; $^{*}P < 0.05$ represents comparing with the control group).

3.3. Comparison of Calcium and Phosphorus Metabolism between Groups with/without Prebiotics/Probiotics Preparations. The level of serum Ca before and after treatment between the two groups was not different statistically ($P > 0.05$). The levels of serum P in both groups after treatment were lower than those before treatment, and the level of serum P in the observation group was lower than that in the control group ($P < 0.05$), as shown in Figure 2.

3.4. Comparison of Intestinal Flora between Groups with/without Prebiotics/Probiotics Preparations. The difference in the number of intestinal flora between the two groups before treatment was not statistically significant ($P > 0.05$). The number of *Escherichia coli* after treatment in the two groups were less than that before treatment, and the number of *Escherichia coli* in the observation group was less than that in the control group ($P < 0.05$). The number of bifidobacteria and lactobacilli in the two groups after treatment was more than that before treatment, and the number of bifidobacteria and lactobacilli in the observation group was more than that in the control group ($P < 0.05$), as shown in Figure 3.

3.5. The Comparison of Cytokines in Groups with/without Prebiotics/Probiotics Preparations. The difference in the levels of IL-6, TNF-α, and IGF-1 between two groups before treatment was not statistically significant ($P > 0.05$). The levels of IL-6 and TNF-α in the two groups were lower than those before treatment, and the levels of IL-6 and TNF-α in the observation group was lower than those in the control group ($P < 0.05$). The levels of IGF-1 in the two groups after treatment were higher than those before treatment, and the levels of IGF-1 in the observation group was higher than that in the control group ($P < 0.05$), as shown in Figure 4.

4. Discussions

POP is a metabolic bone disease, caused by various reasons, which induces a bone density and bone quality decrease as well as increase the risk of fracture. The full name of zoledronic acid is 1-hydroxy-2-(1-imidazolyl) ethylene-1,1-diphosphoric acid monohydrate. The molecular weight of zoledronic acid is 290.11, which is a nitrogen-containing bisphosphonate compound and is a commonly used drug for the treatment of patients with POP. It can act on human bones, inhibit bone resorption by inhibiting osteoclasts, induce their apoptosis, and can regulate osteoblasts and osteoclasts. A cellular transcriptional mechanism reduces osteoclast activity and contributes to the optimization of bone turnover status [6, 7]. Relevant studies have pointed out that zoledronic acid can interfere with the mevalonate metabolic pathway in osteoclasts, induce osteoclast and monocyte precursor cell apoptosis, reduce osteoclast activity, inhibit bone resorption, and play an antibone role of mass loosening [8]. Calcitriol is a 1,25-dihydroxy metabolite of vitamin D3, which is metabolized by liver and kidney hydroxylase. Calcitriol accelerates the formation of new osteoblasts by promoting intestinal calcium absorption and stimulating the activity of osteoblasts in bones. At the same time, calcitriol regulates the transcription mechanism of osteoblasts and osteoclast and reduces the activity of osteoclasts [9, 10]. Some studies have pointed out that abnormal intestinal flora can affect mineral absorption and release serum cytokines to affect bone metabolism [11]. Therefore, we treated the patients with probiotic preparations in this study. Studies have found that combined treatment of probiotics in patients with POP can improve bone metabolism and improve the therapeutic effect. This is mainly related to the fact that probiotics can reduce the release of proinflammatory and osteoclast-related cytokines by improving intestinal flora disturbance [12]. Besides, our results showed the number of *Escherichia coli* in the observation group was less than that in the control group, and the

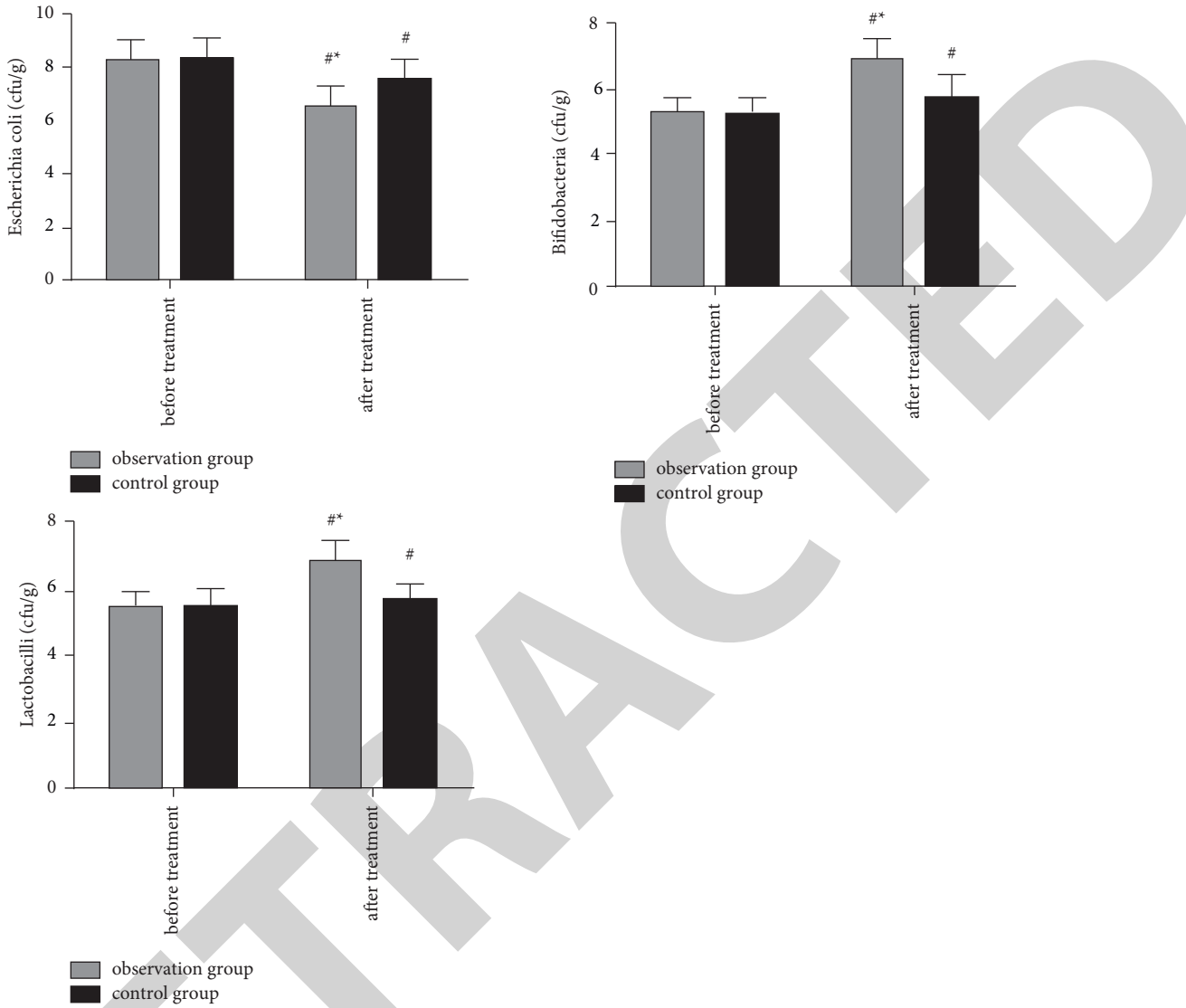

Figure 3: The differences of intestinal flora between groups with/without prebiotics/probiotics preparations ($^{\#}P < 0.05$ represents comparing with the same group before treatment; $^{*}P < 0.05$ represents comparing with the control group).

number of bifidobacteria and lactobacilli in the observation group was more than that in the control group, which indicated the gut flora of POP patients was optimized via the prebiotics/probiotics preparations combined with zoledronic acid + calcitriol regimen. The study about the gut microbiota and osteoporosis has raged unabated recently. Gut microbiota contributes to the metabolisms of bones directly or together with nerve, endocrine, and immune systems, which we suppose, is the main factor contributes the improvement of Disorders of bone metabolism in POP patients. For instance, the unbalanced osteogenic and osteoclast responses resulting in osteopenia may be contributed by the unbalanced gut microbiota [7].

Gut microbes can influence the release of inflammatory factors, resulting in decreased osteoclastogenesis [8, 13]. IGF-1 is an important factor affecting bone metabolism. It can act on bones through endocrine and autocrine pathways, stimulate the differentiation of osteoblasts, and bind to its receptors to participate in the growth and proliferation of osteocytes, which can promote bone formation. IL-6 can regulate the proliferation, differentiation, and apoptosis of osteoblasts through multiple pathways, and can promote the formation of osteoclasts and bone resorption, leading to the occurrence of POP. TNF-α can not only act as an inducer to regulate IL-6 secretion but also act on osteoblasts to indirectly activate mature osteoclasts and inhibit osteoclast apoptosis [14]. The levels of IL-6 and TNF-α in the observation group was lower than those in the control group, and the levels of IGF-1 in observation group was higher than that in the control group, which indicated that probiotics could be contribute bone metabolism by inhibiting the secretion of proinflammatory factors. Lots of studies have indicates the preparations of probiotic regulates bone metabolism by reducing proinflammatory and osteoclast-related cytokines. For instance, probiotic contributes the formation of vitamin K, which is lip-soluble and enhance the density of bones. The

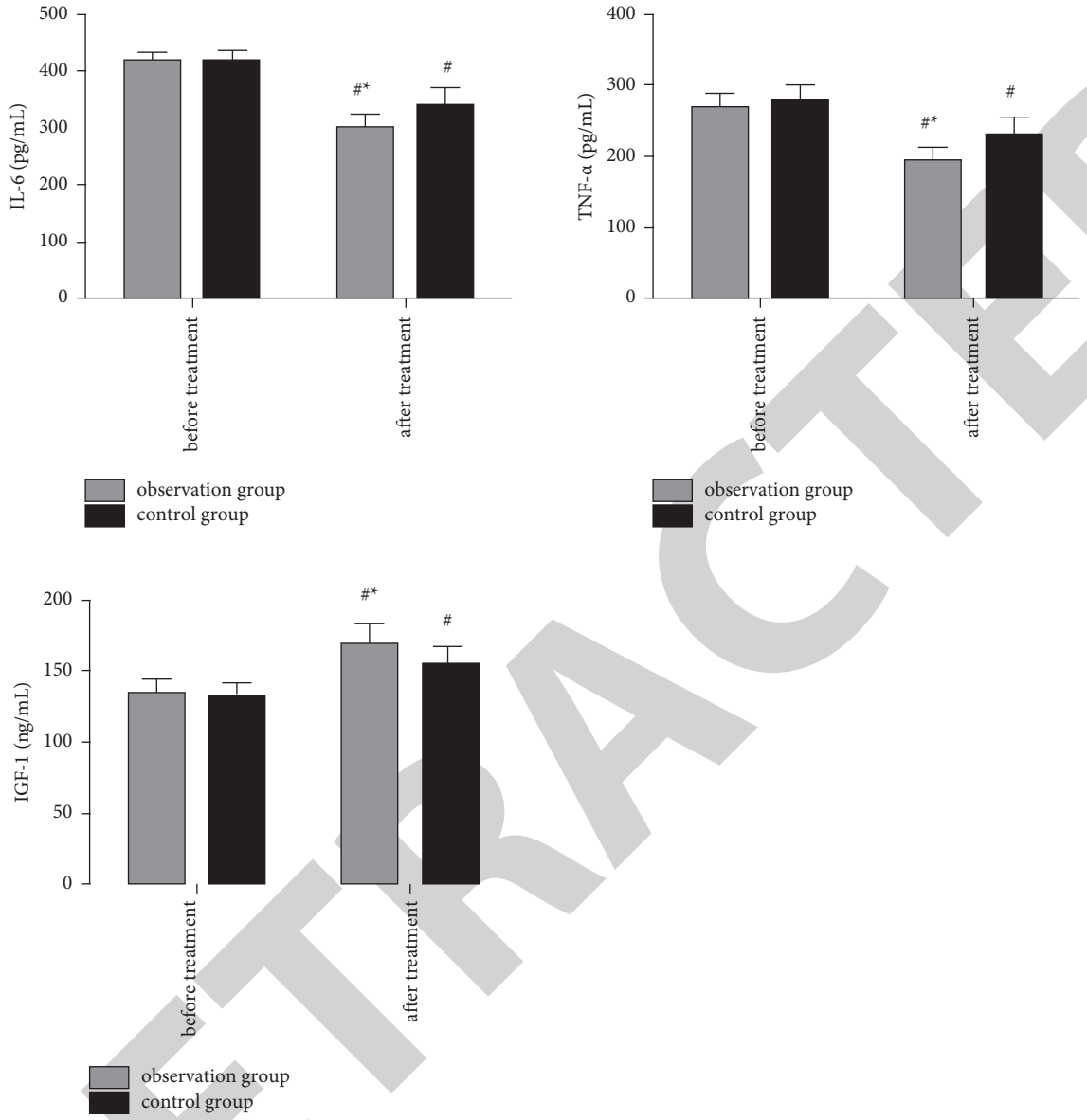

Figure 4: The comparison of cytokines in groups with/without prebiotics/probiotics preparations ($^{\#}P < 0.05$ represents comparing with the same group before treatment; $^{*}P < 0.05$ represents comparing with the control group).

improvement of osteoporosis and decrease in the bone calcium loss is done by in taking probiotic [15]. Calcium and phosphorus are indispensable macroelements in human body, and the metabolism of calcium and phosphorus in hematoma is closely related to bone metabolism. Some scholars have found that serum calcium and phosphorus levels in patients with osteoporosis are significantly abnormal [16]. Some data show that probiotics promote the transfer of calcium in the blood to the bones to form calcium salts, which provide necessary environment for the new bones growth [17]. The results of this study showed that the level of serum P in the observation group was lower than that in the control group, indicating that the calcium and phosphorus metabolism in patients with POP was improved by probiotic preparations, which was fore mostly due to the transfer of calcium and phosphorus into osteoblasts in peripheral blood induced by the probiotics. Additionally, probiotics function in a fine manner to adjust the balance of calcium in the blood.

In conclusion, prebiotic/probiotic preparations combined with zoledronic acid + calcitriol regimen have high efficacy in the treatment of POP, can improve bone metabolism and intestinal flora, and inhibit the release of cytokines in the body.

Data Availability

The raw data supporting the conclusion of this article will be available by the authors without undue reservation.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

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Research Article

Correlation of Glucose and Lipid Metabolism Levels and Serum Uric Acid Levels with Diabetic Retinopathy in Type 2 Diabetic Mellitus Patients

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Objective. The aim of this study was to observe the association between the development of diabetic retinopathy (DR) in type 2 diabetes mellitus (T2DM) and the levels of glucose and lipid metabolism and serum uric acid (SUA) levels. *Methods*. A retrospective analysis was performed on 97 patients with T2DM who were admitted to our endocrinology department from June 2019 to April 2021 with complete data; the patients were divided into DR and no DR groups (NDR) according to the presence or absence of DR. Their clinical history and biochemical test indexes were collected, and the fundus was examined by fundus photography and the fundoscopic examination method, and the vascular diameter was measured by using a computer software. All clinical data, medical history, and biochemical test indexes were compared between the two groups, and logistic regression was used to analyze the risk factors of DR. *Results*. The duration of DM disease, fasting blood glucose (FBG), glycosylated hemoglobin, type A1C (HbA1c) levels, cholesterol (TC), triacylglycerol (TG), low-density lipoprotein cholesterol (LDL-C), and SUA levels were higher in the DR group than those in the NDR group, and the differences were significant ($P < 0.05$). The difference between the NDR group and the DR group in terms of gender, age, BMI, DBP, SBP, family history of DM, FINS, and HDL-C levels was not significant ($P > 0.05$). The results of multifactorial analysis showed that the four variables of DM duration, HbA1c, TG, and SUA were still risk factors for the development of DR ($P < 0.05$). Further receiver operating characteristic (ROC) analysis showed that the areas under the curves (AUCs) for the duration of DM disease, HbA1c, TG, and SUA to predict the occurrence of DR were 0.740 (95% CI 0.639–0.841), 0.767 (95% 0.672–0.862), 0.721 (95% CI 0.617–0.826), and 0.693 (95% CI 0.588~0.797), respectively. *Conclusion*. The lesions of DR in T2DM patients have a close relationship with the course of DM, HbA1c, TG, and SUA, and the course of DM, HbA1c, TG, and SUA has a good predictive value for the occurrence of DR.

1. Introduction

Diabetes mellitus (DM) is a common clinical metabolic disease characterized by chronic and persistent elevation of blood glucose, which can cause damage to multiple tissues and organs, including the heart, eyes, kidneys, nerves, and blood vessels [1, 2]. In recent years, the incidence of diabetes has been increasing in China, and now, it has become the country with the largest number of people with diabetes in the world. It is well known that the danger of diabetes is mainly in its complications, and diabetic retinopathy (DR) is one of the most common diabetic microvascular complications and the leading cause of visual impairment and irreversible blinding disease in the working population [3, 4]. The development of DR is associated with a variety of risk factors as well as biomarkers. According to the literature [5], the severity of DR is associated with the prolonged duration of DM, elevated glycated hemoglobin levels, proteinuria production, hyperglycemia, glucose levels, and dyslipidemia. However, it has been clinically found that even though the above factors have been strictly controlled, they do not completely stop the progression of DR, and there may be other factors involved in the pathogenesis of DR. Therefore, it is important to identify new risk factors that may affect DR and thus slow down its progression.

At this stage, the main indicators commonly used in clinical practice to detect the degree of glycemic control and the degree of abnormal glucose metabolism are glycated hemoglobin (HbA1c) and fasting blood glucose (FPG), and the application of these two indicators plays an important role in the treatment of diabetes and in the prevention and treatment of complications [6]. Uric acid is the end product of purine metabolism, and with increasing research on uric acid, it has been found to be biologically active, causing endothelial dysfunction, inflammation, vasoconstriction, and having both positive and negative antioxidant and prooxidant stress effects [7]. Serum uric acid (SUA) has been reported to be an independent risk factor for cardiovascular disease and is closely associated with various metabolic syndrome components such as obesity, hyperglycemia, dyslipidemia, and insulin resistance [8, 9]. Studies have shown that SUA is closely related to the development of diabetic nephropathy and uric acid-lowering therapy can reduce proteinuria in patients with type 2 diabetes. There are fewer studies on uric acid and diabetic retinopathy, and the relationship between uric acid and diabetic retinopathy is unclear. Elevated blood lipids can increase glomerular pressure and change vascular resistance, causing abnormalities in the body's metabolism, which is an important indicator of the development of diabetes [10]. In this study, we analyzed the risk factors affecting the occurrence of DR in diabetic patients by testing the glucolipid metabolism level and the blood uric acid level, aiming to provide relevant testing indicators for the prevention of DR in clinical practice.

2. Materials

2.1. Study Subject Selection. In this study, clinical data were collected from 97 patients with type 2 diabetes mellitus who were hospitalized between June 2019 and April 2021 in the endocrinology department of our hospital. According to the 2017 American Academy of Ophthalmology Diabetic Retina Guidelines [11], the patients were divided into the DR group (42 cases) and the no DR group (NDR group, 55 cases) according to whether they had DR or not.

2.2. Screening Criteria. ① No previous primary kidney disease, renal insufficiency, viral hepatitis, leukemia, malignancy, and other diseases that can cause elevated blood uric acid. ② No previous retinal vascular obstruction, atherosclerotic, hypertensive, hematologic or diabetic fundoplication, no retinal detachment, retinal tumor, or other related diseases. ③ No previous medication to promote uric acid excretion or to inhibit uric acid synthesis. ④ Patients who have not been previously treated with kidney dialysis or kidney transplantation. ⑤ Patients with no febrile symptoms and no concomitant heart failure, malignancy, or pregnancy on physical examination and ancillary tests. ⑥ With the patient's consent and the ability to perform fundus photography, the resulting images showed clear fundus vascular contours without blurred borders or obscuration.

2.3. Diagnostic Criteria for T2DM. The diagnosis of diabetes mellitus was performed according to the 1999 WHO diagnostic criteria [12], i.e., the patient had clinical manifestations of diabetes mellitus. Hyperglycemia: fasting blood glucose (FBG) ≥7.0 mmol/L at any time or plasma glucose ≥11.1 mmol/L or glucose tolerance test (OGTT test) 2-hour glucose ≥11.1 mmol/L.

2.4. Research Methodology

2.4.1. General Data Collection. Patients' names, gender, age, hospitalization number, duration of DM, family history of DM, height, weight, and blood pressure (BP) were collected from the medical record management system of our hospital. Patients' height and weight were measured by the same height-weight measuring device in the department, and BMI (weight/height^2, kg/m^2) was calculated based on the measured data. BP was measured on the day of admission, after sufficient rest, by the nurses in our department using an electronic blood pressure meter.

2.4.2. Clinical Biochemical Index Collection. All patients fasted from food and water for more than 8 hours, and venous blood was drawn early the next morning. Serum glucolipid metabolic indexes were measured using an automatic biochemical analyzer, including FBG, HbA1c, cholesterol (TC), triacylglycerol (TG), low-density lipoprotein cholesterol (LDL-C), and high-density lipoprotein cholesterol (HDL-C) levels, and fasting insulin (FINS) level was measured by radioimmunoassay. SUA levels were measured by the uricase peroxidase ascorbate oxidase method.

2.4.3. Fundus Radiographs. Diabetic retinopathy was examined by our ophthalmologists using optical coherence tomography (OCT) and fundus fluorescence angiography (FFA) to diagnose the presence or absence of DR, and patients were grouped according to the diagnosis.

2.5. Statistical Analysis of the Experiment. Statistical analysis of the data of this experiment was performed using SPSS17.0 software. The results of normally distributed measures were expressed as mean ± standard deviation, i.e., $\overline{x} \pm s$, and the t-test was used for comparison between the groups. The statistical data were expressed as the number of cases (percentage, %), and the χ^2 test was used to compare between the groups. The risk factors for RD were analyzed by logistic regression analysis. For statistical analysis, differences were considered statistically significant at $P < 0.05$.

3. Results

3.1. Comparison of General Information between the Two Groups. Finally, 42 patients diagnosed with DR were included in the DR group, and the remaining 55 patients were included in the NDR group. We collected basic information on admission such as name, gender, age, hospitalization

Table 1: Comparison of general information between the two groups ($\overline{x} \pm s$; (n, %)).

Information		NDR group ($n = 55$)	DR group ($n = 42$)	t/χ^2 value	P value
Sex (M/F)		31/24	27/15	0.622	0.430
Age (years)		56.24 ± 10.13	58.60 ± 9.00	1.192	0.236
Course of DM (years)		9.25 ± 2.99	12.24 ± 4.07	4.172	0.0001
BMI (kg)		25.42 ± 4.26	26.22 ± 3.13	1.024	0.309
DBP (mmHg)		83.20 ± 12.24	80.48 ± 14.06	1.017	0.312
SBP (mmHg)		136.29 ± 20.24	139.50 ± 21.51	0.753	0.453
Family history of DM	Yes	30 (54.55)	24 (57.14)	0.065	0.799
	No	25 (45.45)	18 (42.86)		

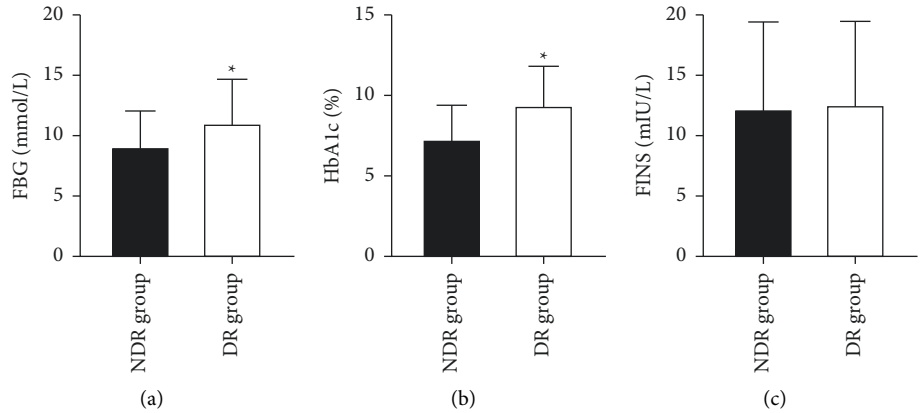

Figure 1: Comparison of glucose metabolism levels between the two groups ($n\overline{x} \pm s$). (a~c) FBG (mmol/L), HbA1c (%), and FINS (mIU/L), respectively; * indicates a significant difference between the DR and NDR groups ($P < 0.05$).

number, duration of DM, family history of DM, height, weight, and blood pressure (BP) of all patients and compared some of them. The results showed that the duration of DM was significantly higher in the DR group than that in the NDR group ($P < 0.05$). The comparison between the NDR and DR groups in terms of gender, age, BMI, DBP, SBP, and family history of DM is shown in Table 1. The differences were not significant ($P > 0.05$).

3.2. Comparison of Glucose Metabolism Levels between the Two Groups. We examined the serum glucose metabolism levels of all patients and the indexes including FBG, HbA1c, and FINS and analyzed the differences between the NDR and DR groups, and the results showed that the FBG and HbA1c levels in the DR group were significantly higher than those in the NDR group ($P < 0.05$). The FINS levels in the NDR and DR groups were not significantly different ($P > 0.05$) (Figure 1).

3.3. Comparison of Lipid Metabolism Levels and Blood Uric Acid Levels between the Two Groups. We examined the serum lipid metabolism and SUA levels of all patients. Lipid metabolism includes TC, TG, LDL- C, and HDL-C. The differences between the NDR and DR groups were analyzed, and the results showed that TC, TG, LDL-C, and SUA levels were significantly higher in the DR group than those in the NDR group ($P < 0.05$). HDL-C levels in the NDR and DR groups were not significantly different ($P > 0.05$) (Figure 2).

3.4. Multiple Regression Analysis of DR Risk Factors. In this study, logistic multiple regression was used to analyze the magnitude of the effect of each factor on DR. The above-mentioned study showed that the duration of DM, FBG, HbAlc, TC, TG, LDL-C, and SUA may all be related to the occurrence of DR. Logistic multiple regression analysis was performed to adjust for risk factors, with the occurrence of DR as the dependent variable, and the duration of DM, FBG, HbAlc, TC, TG, LDL-C, and SUA as independent variables. The results showed that the four variables of DM duration, HbA1c, TG, and SUA were still risk factors for the occurrence of DR ($P < 0.05$), with OR values of 1.110 (95% CI 1.020–1.207, $P < 0.001$), 2.721 (95% CI 1.181–6.271, $P = 0.014$), 1.033 (95% CI 1.018~1.047, $P = 0.008$), and 3.013 (95% CI 1.277~7.110, $P = 0.004$), respectively, as shown in Tables 2 and 3.

3.5. ROC Analysis of DR Risk Factors. According to the results of multifactor regression analysis, the duration of DM, HbA1c, TG, and SUA were risk factors for DR. To further investigate whether the duration of DM disease, HbA1c, TG, and SUA could be used as predictors of DR, we did ROC analysis of DR with the occurrence of DR as the dependent variable and the durations of DM disease, HbA1c, TG and SUA as separate independent variables. The results showed that the AUCs of the duration of DM, HbA1c, TG, and SUA to predict the occurrence of DR were 0.740 (95% CI 0.639–0.841, $P < 0.001$), 0.767 (95% 0.672–0.862), 0.721 (95% CI 0.617 to 0.826, $P < 0.001$), and 0.693 (95% CI 0.588 to 0.797, $P = 0.001$), respectively (Table 4, Figure 3).

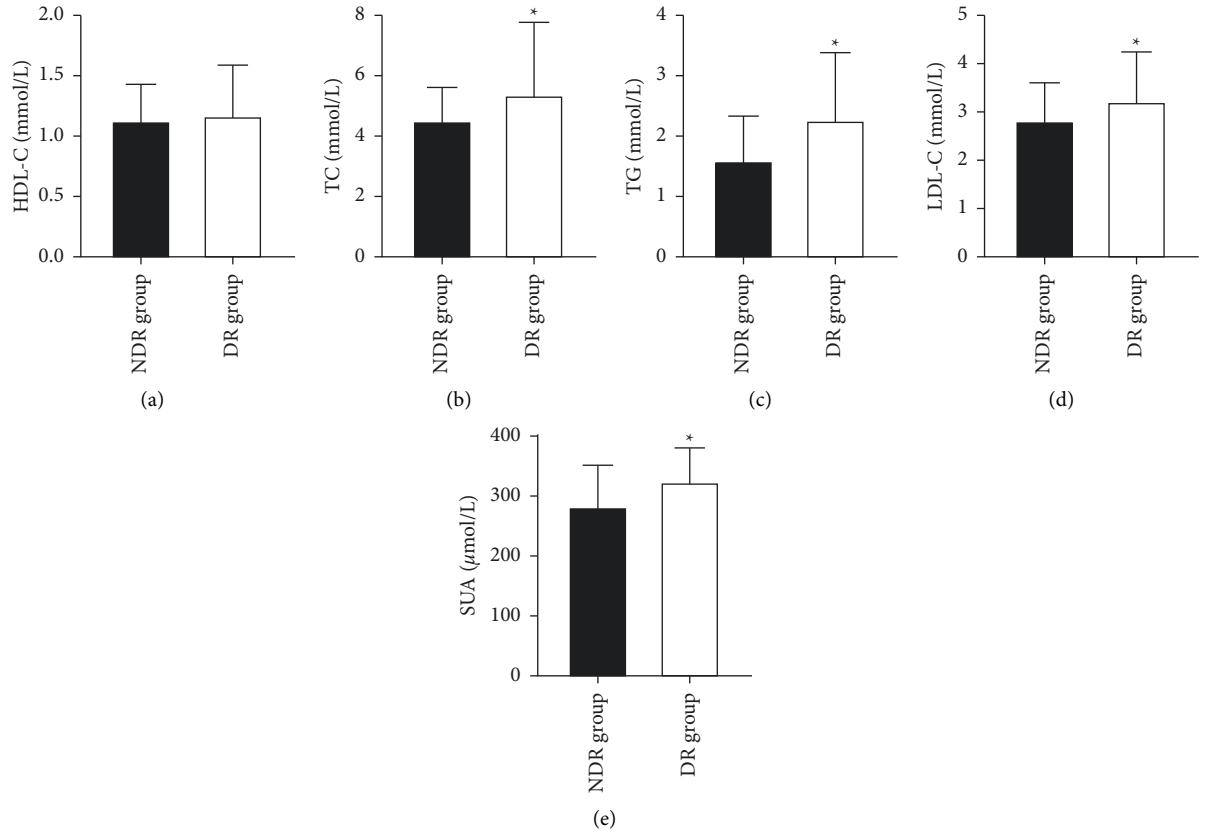

Figure 2: Comparison of lipid metabolism levels and blood uric acid levels between the two groups ($n\bar{x} \pm s$). (a~e) HDL-C (mmol/L), TC (mmol/L), TG (mmol/L), LDL-C (mmol/L), and SUA (μmol/L), respectively; * indicates significant differences between the DR and NDR groups ($P < 0.05$).

Table 2: Multifactor assignment method.

Influencing factors	Assignment
Course of DM	Continuous variables
FBG	Continuous variables
HbA1c	Continuous variables
TC	Continuous variables
TG	Continuous variables
LDL- C	Continuous variables
SUA	Continuous variables

Table 3: Multiple regression analysis of DR risk factors.

Indicators	*B*	SE	Wald x^2	*P* value	OR	95% CI
Course of DM	0.104	0.043	32.236	<0.001	1.110	1.020~1.207
FBG	0.534	0.381	2.170	0.139	1.706	0.808~3.600
HbA1c	1.001	0.426	6.724	0.014	2.721	1.181~6.271
TC	1.120	1.105	0.523	0.471	3.065	0.351~26.730
TG	0.032	0.007	10.138	0.008	1.033	1.018~1.047
LDL-C	0.423	0.326	0.826	0.343	1.527	0.806~2.892
SUA	1.103	0.438	15.235	0.004	3.013	1.277~7.110

4. Discussion

DR is one of the microvascular complications of diabetes mellitus, with a high clinical prevalence, and is the main cause of vision loss in middle-aged and elderly people. The high incidence and high disability rate of DR not only have a serious impact on the physical and mental health of patients, but also greatly increase the economic expenses of families and impose a heavy burden on the healthcare system and society [13]. It has been suggested [14] that the site of chronic complications in diabetes is associated with the activation of pathways such as long-term hyperglycemia, hyperlipidemia, abnormal glucose metabolism, and oxidative stress due to abnormal lipid metabolism. It is now generally accepted in studies that the risk of developing DR in patients with DM increases linearly when the duration of the disease exceeds 10 years and that the duration of DM is an independent risk factor for the development of DR [15]. The results of this study are consistent with previous literature reporting a book. In this study, the mean duration of DM in the DR group was 13 years, which was significantly higher than that in the NDR group, while multiple factors suggest that the duration of DM is a risk factor for the development of DR.

Table 4: ROC analysis of DR risk factors.

Indicators	AUC	95% CI	*P* value	Cutoff	Sensitivity (%)	Specificity (%)
Course of DM	0.740	0.639~0.841	<0.001	0.353	57.10	78.20
HbA1c	0.767	0.672~0.862	<0.001	0.437	61.90	81.80
TG	0.721	0.617~0.826	<0.001	0.409	50.00	90.90
SUA	0.693	0.588~0.797	0.001	0.337	81.00	53.70

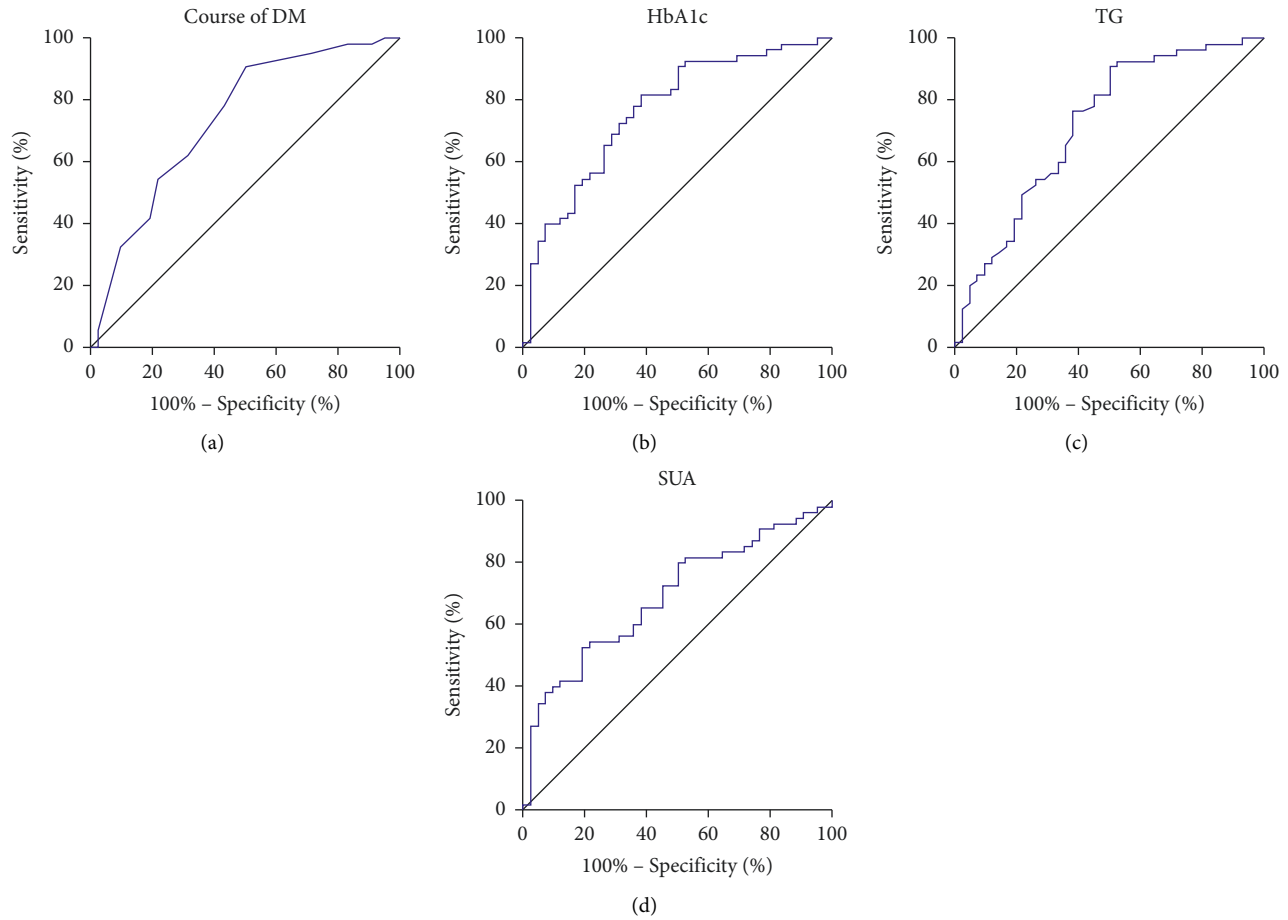

Figure 3: ROC analysis of DR risk factors. (a~c) The predictive value of DM disease duration, HbA1c, TG, and SUA on the occurrence of DR, respectively.

This reminds us that when the duration of DM is more than 10 years, we should be alert to the occurrence of DR, and we can improve the prognosis of patients by providing health education, developing an early screening program for related complications, and timely detection and treatment.

Hyperglycemia is an important factor in triggering DR. A large number of studies [16–18] have confirmed that long-term chronic hyperglycemia is the main cause of chronic complications, and HbA1c is a sensitive indicator reflecting glycemic control, and some literature has reported that glycemic control in diabetic patients is closely related to the occurrence and development of DR. In this study, the HbA1c levels of DR patients were significantly higher than those of MD-NDR patients, and the results of multifactorial analysis and correlation analysis confirmed that HbA1c was the main risk factor for the development of DR in MD patients, which was more consistent with the results of previous studies. A chronic hyperglycemic environment can lead to nonenzymatic glycosylation of proteins in the body, resulting in thickening of the basement membrane and even causing vascular occlusion impeding oxygen diffusion, causing retinal hypoxia, and thus leading to the development or exacerbation of DR. This shows that HbA1c plays an important role in the pathogenesis of DR [19, 20].

Patients with MD are often associated with disorders of lipid metabolism, and elevated lipids will promote the extent of DR and the development of diabetic macular degeneration, which is mainly manifested by macular hard exudates in the early clinical stage [21–23]. The results of this study showed that there were statistically significant differences in blood TC, TG, and LDL-C levels in DR patients compared with those in the NDR group, and multifactorial analysis

showed that TG was a risk factor for the development of DR and had a good predictive value for the development of DR. Elevated lipids cause tissue peroxidation through the nonenzymatic glycosylated polyol pathway, leading to damage to the vascular wall and endothelial dysfunction, causing hemodynamic changes, retinal tissue hypoxia, and consequent microcirculatory disorders, leading to a series of microvascular lesions such as atherosclerosis and hemorrhage in the fundus, and eventually the formation of microthrombi, which destroy the retinal barrier and cause the development of retinopathy [24].

As research has progressed, a large number of investigators have concluded that SUA levels are associated with increased risk in patients with DR. A prospective study [25] found that glucose and uric acid concentrations were significantly higher in the vitreous humor of MD patients compared to controls, while patients with progressive DR had higher levels of uric acid in the vitreous humor compared to those with nonprogressive DR This suggests that uric acid levels in diabetic patients may be associated with the development and progression of DR, as seen in a growing number of studies suggesting a correlation between SUA and DR. The results of this study showed that the level of SUA was significantly higher in the DR group than in the NDR group, and the results of multifactorial analysis showed that SUA was an independent risk factor for the development of DR in patients with DM. We further performed ROC analysis on the risk of DR occurrence and showed that the AUC of SUA to predict DR was 0.693 (95% CI 0.588–0.797, $P = 0.001$), indicating that SUA has some risk predictive value for the occurrence of DR. Most studies [26, 27] suggest that UA may be involved in the development of DR through several aspects such as pro-oxidative stress, proneoangiogenesis, reduced protective effects of promelanocytes, proinsulin resistance, and promotion of retinal atherosclerosis, but the mechanisms involved have not been fully elucidated due to their complexity and variety.

In this study, a retrospective analysis of 97 T2DM patients revealed that the lesions of DR in T2DM patients had a close relationship with the duration of DM, HbA1c, TG, and SUA. Therefore, in clinical work, we should pay attention to the disease course, glucose and lipid metabolism level, and SUA level of DM patients, strengthen patient health education, improve 'patients' lifestyle, actively control 'patients' blood glucose and blood lipid levels, and if necessary, give UA-lowering drug treatment, in order to comprehensively improve the metabolic disorders of DM patients and to prevent or delay the development of DM-related chronic complications.

Data Availability

The data in this study will be made available from the authors upon reasonable request.

Ethical Approval

This study was approved by the Medical Ethics Committee of our hospital (2018006).

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Biochemical Behaviours of Salmeterol/Fluticasone Propionate in Treating Asthma and Chronic Obstructive Pulmonary Diseases (COPD)

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] H. Mills, R. Acquah, N. Tang et al., "Biochemical Behaviours of Salmeterol/Fluticasone Propionate in Treating Asthma and Chronic Obstructive Pulmonary Diseases (COPD)," *Emergency Medicine International*, vol. 2022, Article ID 2593740, 5 pages, 2022.

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Review Article

Biochemical Behaviours of Salmeterol/Fluticasone Propionate in Treating Asthma and Chronic Obstructive Pulmonary Diseases (COPD)

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Chronic obstructive pulmonary diseases (COPD) and asthma are fatal. The respiratory tract may be blocked, robbed of the adequate amounts of oxygen; hence, death ensues if a quick medical attention is not provided. The treatment available for the duo are inhaled corticosteroids (ICS). The ICS can work synergically with LABAS (long-acting β_2-antagonists) and so many other medicines like bronchodilators. The drugs used for the treatment of asthma and COPD are metabolised once in the body system and at the same time exerting the therapeutic effect provided the concentration of the drug is within the therapeutic window. The CYP3A isoforms metabolise the ICS, in this case, salmeterol and fluticasone propionate (FP). Methods of administration are not limited to inhalation. Specific doses are prescribed accurately paying attention to factors like age, gender, race, and genetic makeup since these affect drug metabolisms. Generally, the ICS work by translocating glucocorticoid receptors to the nucleus from the cytosol. The mechanism is potentiated by the β-antagonists and this brings about an anti-inflammatory effect which is greater than either of the two drugs alone. Once this happens, it is not necessary to increase ICS dose. The ICS, in addition, cause more production of β-receptors by activating the β-receptor genes. This mode of action begets the LABAs' bronchodilator-effects. The challenge is that ICS are not limited only to "double" therapy. Analysing such therapies is daunting since coadministration interferes with pharmacology and pharmacokinetics of drugs. This work focuses on salmeterol/fluticasone propionate combination and aspects which has to do with administration, monitoring, metabolism, toxicity, and adverse effects.

1. Introduction

Patients who suffer from chronic obstructive pulmonary diseases (COPD) are mainly treated with inhaled corticosteroids (ICS). The medicine is normally administered to COPD patients who are known to have a history of exacerbation. Reports say that the ICS treatment alone could not restore or improve the pulmonary function in COPD individuals. Howbeit, the ICS monotherapy mitigated COPD exacerbation and revealed symptom improvements. The COPD patients, as a result, are treated with ICS in combination with other drugs like long-acting β_2-antagonists (LABAs). It is reported that the combination treatment (ICS-LABAs) improved lung functionality, health status,

and minimised COPD severity. Therefore, the combination treatment is highly recommended specifically for the patients with exacerbation history regardless of the long-acting bronchodilators monotherapy [1].

The ICS therapy is of great effect to individuals suffering from bronchial inflammation. The diagnosis of the bronchial inflammation is done by determining eosinophil levels in the blood. High levels of eosinophils are a compass that points to the inflammation of the bronchioles. Apart from high eosinophil blood levels, asthma history, and COPD-asthma overlap are also pointers to bronchial inflammation. Occasionally, ICS use has a downside of increasing the risk of pneumonia. Not all of the ICS are known for the aforementioned disadvantage but some specific ones [1].

2. COPD and History of ICS Use

A group of diseases that causes limitation to airflow thus giving rise to some progressive respiratory symptoms are collectively known as chronic obstructive pulmonary diseases (COPD). The management of COPD is daunting mainly because the pathophysiology of the diseases is not well known. Individuals who smoke and those who inhale dangerous particles are subject to inflammatory changes [2]. Some studies conducted in the 1990s on ICS monotherapy for individuals suffering from chronic bronchitis and COPD revealed that anti-inflammatory drugs mitigated inflammation of the bronchioles. The same anti-inflammatory agents showed a variation in lung-function parameters like peak expiratory flow (PEF) and forced expiratory volume (FEV) [3].

It was observed that synergism works perfectly. Consequently, drugs that work via different mechanisms are favourable in achieving synergism. The combination of LABAs and ICS is one of the common combination treatments for COPD [4]. The ICS work by translocating glucocorticoid receptors to the nucleus from the cytosol. The mechanism is potentiated by the β-antagonists and this brings about an anti-inflammatory effect which is greater than either of the two drugs alone [5]. Once this happens, it is not necessary to increase ICS dose. The ICS, in addition, cause more production of β-receptors by activating the β-receptor genes. This mode of action begets the LABAs' bronchodilator-effects [1].

This article serves to highlight the treatment of COPD by salmeterol-fluticasone propionate combination, the metabolism of the drugs in the body, and the mode of action of the drug combination; amongst an endless list of possible treatments. Table 1 shows other possible drug combinations used to treat COPD and their pooled effect estimates (LABA on moderate-severe exacerbations).

3. Salmeterol

The drug salmeterol (Figure 1) is not only known for treating asthma but also COPD. It is an antagonistic β_2-adrenoceptor. It is reported that the salmeterol bronchodilatory effect can last for over 12 hours [7]. Acute asthmatic attacks cannot be subsided by salmeterol since it takes roughly 2 to 3 hours to reach its maximum levels in the blood following a single dose [8]. According to research conducted by Kirjavainen et al. [7]; salmeterol reached its maximum level (peak) 4 minutes following administration with a half-life of 11 hours.

The drug is metabolised mainly by the CYP3A4. The cytochrome P450 isoform, CYP3A4, oxidises the aliphatic base the drug. It is reported that salmeterol is severely metabolised via hydroxylation reactions forming α-hydroxy-salmeterol. The salmeterol-biotransformation products are then eliminated via urine (23%) and faeces (57.4%) [9]. Salmeterol systemic concentrations are undetectable at recommended doses.

Concomitant use of other drugs that metabolise CYP3A4 at low doses cannot cause clinically significant interaction [10]. However, caution should be exercised in patients with reduced clearance due to severe hepatic impairment. In addition, CYP34A inhibitors may exacerbate the cardiovascular and systemic side effects of corticosteroids. Dilation of the bronchi and increased airflow in the bronchioles [11, 12]. Although the mechanisms and doses of administration are different, studies have shown that all treatments and their effectiveness are comparable [13]. Paradoxical bronchospasm has been reported in patients using dose inhalers rather than dry powder inhalers [14].

Fluticasone-salmeterol powder for inhalation twice daily for the treatment of asthma in patients 12 years of age and older [15]. The initial dose is determined by the severity of the asthma. Instead, two inhalations of fluticasone/salmeterol 45/21, 115/21, 230/21 μg inhalations are administered twice a day. After inhalation, the patient should understand that in order to prevent oral candidiasis, rinse their mouth with water, and spit out the contents without swallowing [16]. The standard recommendation for the treatment of asthma in children aged 4 to 11 years is 100/50 μg of fluticasone/salmeterol as an inhalation twice a day [15]. The safety and efficacy of children under 4 years of age have not been established. For the sponsoring treatment of bronchospasm associated with chronic obstructive pulmonary disease, a single 250/50 μg inhalation twice daily is recommended approximately 12 hours apart [17].

The most common side effects with salmeterol in patients are with asthma (frequency ≥3%). The most common side effects in patients with chronic obstructive pulmonary disease are pneumonia, pharyngitis, respiratory viral infection, oral candidiasis, dysphonia, headache, and musculoskeletal disorders [18].

These symptoms include angina pectoris, tachycardia, hypertension, low blood pressure, arrhythmias, palpitations, and fatigue. These adverse pharmacological effects are mainly associated with peripheral vasodilation, hypoxemia, hypokalaemia, and reflex activation in response to direct stimulation of cardiac beta-adrenergic receptors [19]. Paradoxical bronchospasm, laryngeal spasm, and swelling of the throat may occur. Long-acting beta-agonists (LABAs) increase the risk of heart failure in people with COPD [20].

Table 1: Other possible drug combinations used to treat COPD and their pooled effect estimates (LABA on moderate-severe exacerbations) [6].

Combination.	Dosage, respectively	Hazard ratio at 95% credibility interval
Beclomethasone dipropionate/formoterol	200 μg/12 μg	0.96
Mometasone furoate/formoterol	200 μg/10 μg	0.68
Fluticasone propionate/salmeterol	500 μg/50 μg	0.81
Budesonide/formoterol	320 μg/9 μg	0.74
Fluticasone furoate/vilanterol	100 μg/25 μg	0.77

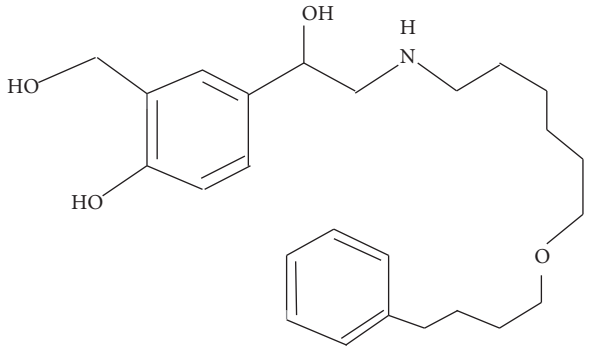

Figure 1: Chemical structure of salmeterol.

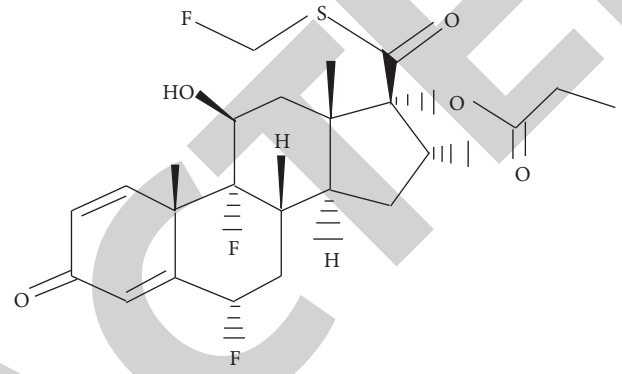

Figure 2: Chemical structure of fluticasone propionate.

4. Fluticasone Propionate

Fluticasone propionate (FP), the chemical structure shown in Figure 2, as corticosteroids.

4.1. FP Metabolism. Scientific research observed that fluticasone propionate, a flunisolide analogue, is only oxidised by 17β-carboxy fluticasone propionate [21]. Nonetheless, more recent research work where fluticasone furoate was analysed, it was found that a number of faecal metabolites were hydroxylated and defluorinated [22]. Consequently, the inference was that FP was metabolised by hydroxylation and oxidative defluorination by CYP3A enzymes. Fluticasone propionate incubations analysis detected the reported 17β-carboxy fluticasone metabolite. There were no any other additional metabolites detected. A fascinating result, without supplying NADPH, FP incubation with either human liver microsomes or CYP3A supersomes did not form any 17β-carboxy fluticasone propionate. This implies that enzymes that belong to esterases do not cut thioester linkages of FP but the hydrolysis is done by the P450 enzymes selectively [23].

4.2. Mode of Action. FP is a corticosteroid that imposes direct and local effects of anti-inflammatory activity and vasoconstriction. Glucocorticoids in general, inhibit the initial inflammatory phenomena like vasodilation, vascular permeability, and leukocyte emigration [24]. Fluticasone cut down inflammatory cells such as eosinophils, monocytes, mast cells, macrophages, dendritic cells, and cytokines produced by these cells. In addition, the drug escalates beta-2 receptors on airway smooth muscle and mitigates mucus gland secretions [25]. Moreover, the medicine cause increments in the anti-inflammatory effects of molecules, namely, annexin-1, secretory leukoprotease inhibitor (SLPI), mitogen-activated kinase phosphatase-1 (MKP-1), glucocorticoid-induced leucine zipper protein (GILZ), and I-kappa B-alpha and inhibitor of NF-kappa B [25].

4.3. Administration. Spray-drying technology has been used for the powder production [26, 27]. Local adverse effects, namely, cough, pneumonia, dysphonia, and oropharyngeal candidiasis are known. Systemic side effects like adrenal suppression, growth suppression, bruising, osteoporosis, cataracts, glaucoma, metabolic abnormalities, and psychiatric disturbances are reported [25].

4.4. Toxicity. There is a report of significant lactic acidosis following an overdose of inhaled salmeterol and fluticasone. The patient inhaled 60 puffs of the drug combination during a suicide attempt and presented with sympathomimetic syndrome, metabolic acidosis, and hyperlactatemia. The patient was proffered a supportive therapy and was within normal health limits the following day. This clinical presentation is ambiguous and supported the idea that fluticasone is a relatively safe drug [19].

4.5. FP Monitoring. Individuals on fluticasone medication ought to undergo monitoring to circumvent the adverse effects. Practitioners should pay attention to any of the side effects described above. In a number of studies, it was observed that stunted growth was permanent in children who were prescribed budesonide. In contrast to budesonide, infants who were under fluticasone prescription had a long-lasting stunted growth effect but potentially not permanent. High doses of ICS are associated with decreased bone density

in children. Therefore, children's growth should be monitored regularly on yearly basis [28].

5. Conclusion

Salmeterol/fluticasone propionate is a great combination therapy for COPD and asthma having good indications and prescriptions. The treatment available for the duo are inhaled corticosteroids (ICS). The ICS can work synergically with LABAS (long-acting β_2-antagonists) and so many other medicines like bronchodilators. The drugs used for the treatment of asthma and COPD are metabolised once in the body system, and at the same time, exerting the therapeutic effect provided the concentration of the drug is within the therapeutic window. The CYP3A isoforms metabolise the ICS; in this case, salmeterol and fluticasone propionate (FP). Methods of administration are not limited to inhalation. Specific doses are prescribed accurately paying attention to factors like age, gender, race, and genetic makeup since these affect drug metabolisms. Generally, the ICS work by translocating glucocorticoid receptors to the nucleus from the cytosol. The mechanism is potentiated by the β-antagonists and this brings about an anti-inflammatory effect which is greater than either of the two drugs alone. Once this happens, it is not necessary to increase ICS dose. The ICS, in addition, cause more production of β-receptors by activating the β-receptor genes. This mode of action begets the LABAs' bronchodilator effects. The challenge is that ICS are not limited only to "double" therapy. Analysing such therapies is daunting since coadministration interferes with pharmacology and pharmacokinetics of drugs.

Data Availability

The data used to support the findings of this study are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

HM and RA contributed to conception and design of the study and wrote the first draft of the manuscript. NT, LC, SK, RG, MP, AA, DTH, and TNV contributed to the data collection and analysis. All authors approved the submitted version.

Acknowledgments

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Retraction

Retracted: Application Effect of the 6S Care Model in Sterilization in the Department of Stomatology and Its Impact on the Incidence of Nosocomial Infection

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] J. Lou, G. Wang, M. Jiang, and G. Xu, "Application Effect of the 6S Care Model in Sterilization in the Department of Stomatology and Its Impact on the Incidence of Nosocomial Infection," *Emergency Medicine International*, vol. 2022, Article ID 4266087, 7 pages, 2022.

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Research Article

Application Effect of the 6S Care Model in Sterilization in the Department of Stomatology and Its Impact on the Incidence of Nosocomial Infection

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Objective. The study aimed to explore the effectiveness of the 6S care model in sterilization in department of stomatology and its impact on the incidence of nosocomial infections. *Methods*. The infection surveillance indicators of the department of stomatology implementing the routine sterilization care model in 2019 were selected as the general group (including 140 patients and 140 cases of oral instrument kits for unpacking), and the infection surveillance indicators of the department of stomatology implementing the 6S care model in 2020 were selected as the 6S group (including 140 patients and 140 cases of oral instrument kits for unpacking). Analysis of the air culture qualification rate of the consultation room + operating room, medical equipment sterilization qualification rate, medical equipment damage rate, incidence of nosocomial infections, satisfaction of medical and nursing staff with instrument sterilization, and patient satisfaction with medical and nursing staff care services under different care models was carried out. *Result*. The air culture pass rate of the consultation room + operating room in the 6S group was 96.43% (135/140), which was higher than 90.00% (126/140) in the general group, and the difference between the two groups was statistically significant ($P > 0.05$). The sterilization pass rate of medical devices in the 6S group was 100% (140/140), which was higher than 95.71% (134/140) in the general group, and the difference between the two groups was statistically significant ($P > 0.05$). The medical device damage rate in the 6S group was 0.71% (1/140), which was lower than 7.14% (10/140) in the general group, and the difference between the two groups was statistically significant ($P > 0.05$). The incidence of nosocomial infection in the 6S group was 0.71% (1/140), lower than 5.71% (8/140) in the general group, and the difference between the two groups was statistically significant ($P > 0.05$). In the 6S care model, the satisfaction score of 38 healthcare workers with the disinfection of instruments was (96.55 ± 2.40), which was higher than that of the general group (87.79 ± 3.14), and the difference between the two groups was statistically significant ($P > 0.05$). The total nursing satisfaction of the 6S group was 97.86% (137/140), which was higher than 91.43% (128/140) of the general group, and the difference between the two groups was statistically significant ($P > 0.05$). *Conclusion*. The application of the 6S care model in the sterilization of the department of stomatology can significantly improve the passing rate of infection monitoring indicators in the department of stomatology, reduce the occurrence of medical device damage and nosocomial infection, and have high satisfaction among doctors and patients, which has the value of promotion.

1. Introduction

The diversification of dental services has led to an increase in the range of dental instruments involved, but with this comes the problem of nosocomial infections in the department of stomatology [1, 2]. For example, when the cleaning and disinfection of oral instruments are unqualified, residual organic matter can form a protective film on the surface of the instrument, and pathogens and other microorganisms grow in the protective film. When the instrument is applied to patients with oral diseases, microorganisms take the opportunity to invade the oral cavity,

causing nosocomial infection and increasing medical disputes [3]. In addition, the oral cavity, as the beginning of the gastrointestinal and respiratory tracts, has long been in contact with the outside world and is itself a place where bacteria can collect and breed, so when traumatic operations are performed on patients in the oral cavity, residual germs can easily colonise the mouth and cause infections in the surgical wound, gastrointestinal tract, or respiratory tract [4, 5]. Therefore, strict enhancement of sterile care management in the department of stomatology is of great significance in reducing the risk of oral infections after treatment, facilitating patients' prognosis for recovery and reducing the risk of nosocomial cross infection in the department of stomatology.

The 6S nursing model originated in Japan and consists of six elements: "seiri, seiton, seiso, seiketsu, shitsuke, and safety." It is a systematic management model used in operating theatres, wards, and outpatient clinics [6, 7]. Its emphasis on improving the quality of care and reducing nosocomial infections through behavioural management and site tidying and cleaning is centred on improving the professionalism of medical staff. However, the effectiveness of its implementation and impact on the occurrence of nosocomial infections when applied to sterilization management in the department of stomatology has been less reported. In this study, the infection surveillance indicators of the department of stomatology without the implementation of the 6S care model in 2019 were used as a control to analyse the effect of the application of the 6S care model in the disinfection of the department of stomatology and the impact on the incidence of nosocomial infections since 2020. This is reported in the following sections.

2. Materials and Methods

2.1. General Data. The study was carried out by 25 dentists, 5 nurses, and 8 assistants in 33 consultation rooms and 2 operating theatres in our department. A convenience sampling method was used to select 140 patients and 140 oral instrument kits used in each of the 2019 and 2020 periods for infection surveillance indicators. The infection surveillance indicators of the department of stomatology implementing the routine sterile care model in 2019 were used as the general group, and the infection surveillance indicators of the department of stomatology implementing the 6S care model in 2020 were used as the 6S group.

2.2. Nursing Mode

2.2.1. The General Group Implemented a Routine Sterile Care Model. (1) To establish and improve various aseptic sterilization systems, such as norms for the use of disposable medical items, dedicated management of dental drugs, hand hygiene system, centralised sentinel sterilization management of dental instruments and tools, air disinfection system in dental consultation rooms, and medical waste management should be followed. (2) To strengthen disinfection and sterilization management, medical personnel should carry out dental treatment operations under the condition of wearing protective gear, operate according to standard procedures, avoid occupational exposure, wash hands, and disinfect strictly before and after each operation; if the treatment chair or lights needed to be readjusted during the treatment process, the nurse should cooperate with the adjustment, and the operating physician should be strictly prohibited from touching surrounding objects with contaminated hands. Disinfection of dental instruments should be in the order of "decontamination, cleaning, and sterilization." Disinfection of dental equipment should be in the "disinfection, cleaning, and sterilization" sequence. Regular disinfection of the environment and air in consultation rooms and operating theatres should be performed. (3) Medical waste was managed separately, and these were registered and handed over daily and recorded and filed.

2.2.2. The Experimental Group Implemented the 6S Care Model. (1) For launching the 6S nursing management conference, the participants were all the medical staff of the department of stomatology. The conference included an introduction to the background, requirements, and objectives of 6S implementation, an announcement of the 6S committee's organisational structure and responsibilities, 6S implementation methods and schedule, 6S inspection standards and audit and evaluation programmes, and an oath for 6S committee members. (2) The nosocomial infection prevention and control team was established in the department with the head nurse as the team leader to coordinate site management, disinfection of items, training, and appraisal. (3) To develop 6S nursing management standards, the prevention and control team shall develop systems and annual management KPIs (key performance indicators) related to nosocomial infection protection. For example, sterilization norms for instruments, management of sterile items, hand hygiene and the surface cleaning system for items, air disinfection system, material collection and management, medical waste management system, and training and assessment system should be followed. The implementation targets were for team members to be familiar with the knowledge and skills within 1 month and to be fully competent and flexible in applying the knowledge and skills within 2 months. (4) To implement and monitor the 6S care system, systematic training, daily supervision, and assessment should be performed. The management team carefully completed the learning and training of relevant knowledge and its skills to ensure that everyone mastered and passed the assessment. The training covered precautions related to infection prevention, aseptic practices, procedures, and methods. This training also covered the cleaning staff in the hospital. In addition, healthcare workers should pay attention to the cleaning and disinfection of hands, ensuring that they always "disinfect after use" and "disinfect after treatment." In outpatient site management, all types of dental items should be sorted and discharged in an orderly manner, and medical waste after dental treatment should be cleaned up in a timely manner. In item management, medical supplies were entered into the system, sterilized items were sorted into categories and placed according to

sterilization expiry dates, and the computer system automatically displayed the sterilization expiry dates. In addition, cleaners were required to place cleaning tools (mops, rags, etc.) in a fixed location according to their function and area of use, and mixing them was strictly prohibited. (5) Group members gave weekly feedback on their own hygiene management and set up 6S hygiene management Kanban boards, and each person must update their respective Kanban records daily. All group members were assessed once a month and the assessment results were linked to performance.

2.3. Evaluation Indicators

(1) Passing of the air culture: We compared the passing of the air culture in the consultation room-+operating room in 140 cases each in the 6S group and the general group.

(2) Evaluation of the sterilization effect of medical devices: the disinfection effect of 140 cases of dental instrument kits that were disinfected after opening and being used during 2019 and 2020 was evaluated according to the "Hospital Disinfection Hygiene Standards" (GB15982-2012) [8] promulgated by the Ministry of Health in 2012. A cotton swab soaked in sterile saline sampling solution was applied to the surface of the instrument for sampling. The finished swab was placed in a test tube containing the sampling solution, and the sample was cultured for bacteria using the agarose culture method. A positive sample with colony growth was considered to have failed sterilization, and a negative sample with no colony growth was considered to have passed sterilization.

(3) Damage to medical equipment: we compared the damage to dental medical equipment in 140 cases each in the 6S group and the general group.

(4) Incidence of nosocomial infections: the diagnostic criteria for nosocomial infections were based on the "Diagnostic Criteria for Hospital Infections" [9] issued by the Ministry of Health in 2001. The number of cases of nosocomial infections in each of the 140 patients in the 6S and general groups was compared.

(5) Healthcare workers' satisfaction with instrument sterilization: the survey scale was self-made within the department. A total of 25 items, each with a score of 0 to 4 out of 100, were used to compare the satisfaction scores of 38 healthcare professionals in the department of stomatology with regard to the sterilization of instruments. Higher scores indicated that patients were more satisfied with the quality of disinfection of the instruments.

(6) Patient satisfaction with care it was evaluated by patients completing a care satisfaction questionnaire. The questionnaire was self-administered within the department and had a 3-point scale, with 3 points for very satisfied, 2 points for satisfied, and 0 point for dissatisfied, for a total of 16 items. The cumulative total rough score for each item was 48, with scores of 0–28 being dissatisfied, 29–38 being satisfied, and 39–48 being very satisfied. Total satisfaction = (very satisfied + satisfied)/total number of cases × 100%. This formula was used to compare the satisfaction ratings of 140 patients in each of the 6S group and the general group with regard to the nursing services provided by the healthcare staff.

2.4. Statistical Methods. Data analysis was processed by SPSS 22.0 software. The count data were expressed as (%), and the χ^2-test analysis was used for comparison. The measurement data were expressed as ($\overline{x} \pm s$), and the t-test analysis was used for comparison. $P < 0.05$ indicated that the difference was statistically significant.

3. Results

3.1. Analysis of Air Culture Compliance in Two Groups of Consultation Rooms + Operating Rooms. The air culture pass rate of the consultation room + operating room in the 6S group was 96.43% (135/140), which was higher than 90.00% (126/140) in the general group, and the difference between the two groups was statistically significant ($P > 0.05$) as seen in Figure 1.

3.2. Analysis of the Disinfection Effect of Dental Medical Devices in Two Groups. The sterilization pass rate of medical devices in the 6S group was 100% (140/140), which was higher than 95.71% (134/140) in the general group, and the difference between the two groups was statistically significant ($P > 0.05$) as seen in Figure 2.

3.3. Analysis of Damage to Medical Devices in Two Groups of Dentists. The medical device damage rate in the 6S group was 0.71% (1/140), which was lower than 7.14% (10/140) in the general group, and the difference between the two groups was statistically significant ($P > 0.05$) as seen in Figure 3.

3.4. Analysis of Nosocomial Infections in Two Groups of Patients. The incidence of nosocomial infection in the 6S group was 0.71% (1/140), which was lower than 5.71% (8/140) in the general group, and the difference between the two groups was statistically significant ($P > 0.05$) as seen in Figure 4.

3.5. Analysis of the Satisfaction of 38 HealthCare Workers with the Sterilization of Instruments. In the 6S care model, the satisfaction score of 38 healthcare workers with the disinfection of instruments was (96.55 ± 2.40), which was higher than that of the general group (87.79 ± 3.14), and the difference between the two groups was statistically significant ($P > 0.05$) as seen in Figure 5.

3.6. Analysis of Patient Satisfaction with Care in Both Groups. The total nursing satisfaction of the 6S group was 97.86% (137/140), which was higher than 91.43% (128/140) of the

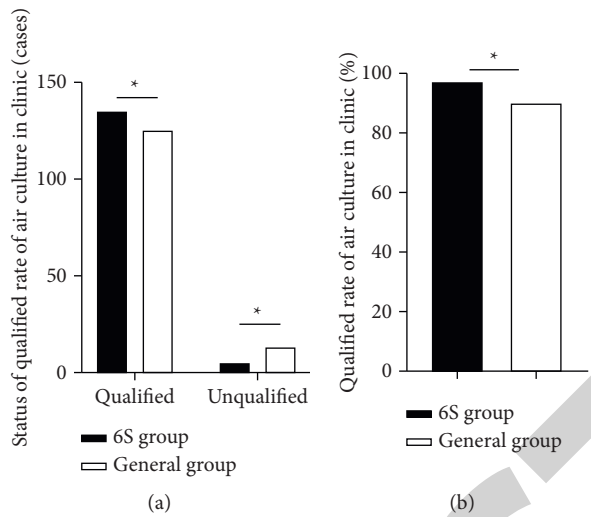

Figure 1: Analysis of air culture compliance in two groups of the consultation rooms + operating rooms. (a) Status of the qualified rate of air culture in clinic (cases). (b) The qualified rate of air culture in clinic (%). The 6S group compared to the general group, $^{*}P > 0.05$.

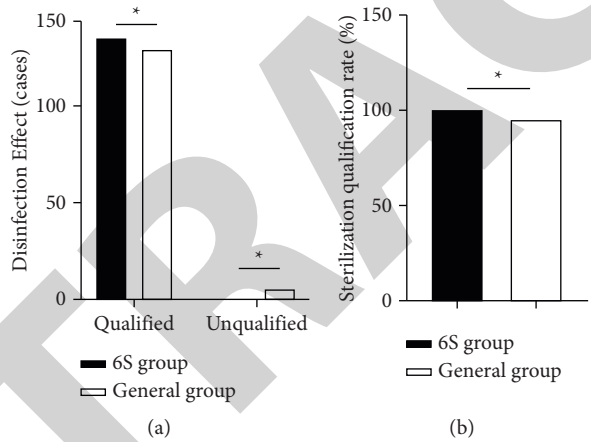

Figure 2: Analysis of the disinfection effect of dental medical devices in two groups. (a) Disinfection effect (cases). (b) Sterilization qualification rate (%). The 6S group compared to the general group, $^{*}P > 0.05$.

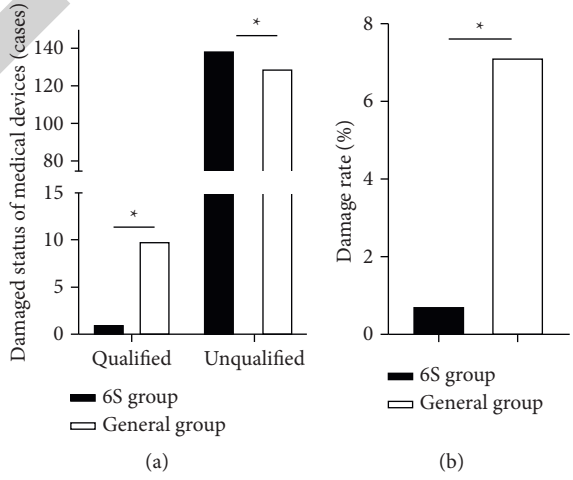

Figure 3: Analysis of damage to medical devices in two groups of dentists. (a) The damaged status of medical devices (cases). (b) Damage rate (%). The 6S group compared to the general group, $^{*}P > 0.05$.

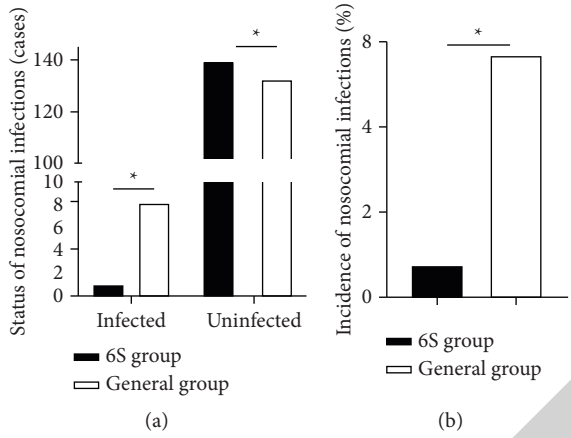

Figure 4: Analysis of nosocomial infections in two groups of patients. (a) The status of nosocomial infections (cases). (b) The incidence of nosocomial infections (%). The 6S group compared to the general group, $^{*}P > 0.05$.

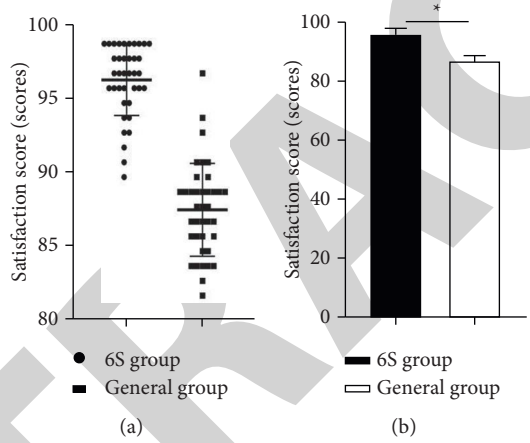

Figure 5: Analysis of the satisfaction of 38 healthcare workers with the sterilization of instruments. (a) Satisfaction score (scores). (b) Satisfaction score (scores). The 6S group compared to the general group, $^{*}P > 0.05$.

general group, and the difference between the two groups was statistically significant ($P > 0.05$) as seen in Figure 6.

4. Discussion

Nosocomial infection, as an important indicator of the level of hospital management and the quality of management, is a constraint on the standard of care. The stomatology department is a high-risk department for nosocomial infections because of its complex treatment environment, high staff mobility, small and precise instruments, complex structure, and frequent use, and tendency to breed and multiply bacterial microorganisms [10–12]. Therefore, it is necessary to strictly control the quality standard of infection prevention and control in the hospital and to manage the related prevention and control. The "6S" management, which originated from the modern Japanese corporate management, consists of six elements: seiri, seiton, seiso, seiketsu, shitsuke, and safety. Seiri, i.e., keeping everything in its place and removing what is unnecessary. Seiton, i.e., the rational arrangement of useful items, sorted, and organised. Seiso, i.e., cleaning the working environment and keeping it clean and tidy. Seiketsu, i.e., maintaining the results of organising, tidying and cleaning, and standardizing, and institutionalising their practice. Shitsuke i.e. taking human nature as a starting point and striving to improve the quality of all staff through the fact of tidying up and cleaning up. Safety, i.e., removing all possible unsafe elements [13]. This management model leads to an overall improvement in the quality of management and to the improvement and refinement of the quality system.

The monitoring of nosocomial infection indicators is an important tool for the prevention and control of hospital-acquired infections and can be used to reflect the current status of prevention and control of hospital-acquired infections and their management in a timely manner. Environmental hygiene indicators include monitoring of air, object surfaces, and hand hygiene of healthcare workers [14–16]. In this result, the air culture pass rate and medical device sterilization pass rate of the 6S group were higher than those of the general group, and the medical device damage rate and the incidence of nosocomial infection of the 6S group were lower than those of the general group ($P > 0.05$). The possible reasons for the analysis are the

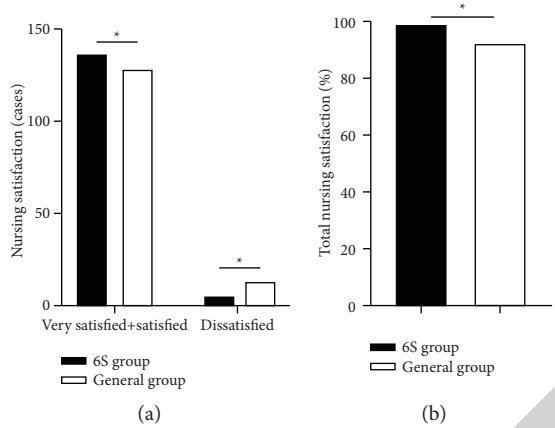

Figure 6: Analysis of patient satisfaction with care in both groups. (a) Satisfaction score (scores). (b) Total nursing satisfaction (%). The 6S group compared to the general group, $^{*}P > 0.05$.

following: firstly, a well-organised nosocomial infection management in the department of stomatology can avoid nosocomial cross infection in addition to providing a clean, tidy, aesthetically pleasing, and safe treatment environment [17]. Secondly, assessment and satisfaction evaluation of healthcare workers' working conditions, especially linked to their performance can motivate healthcare workers to do their jobs better and more effectively and reduce errors in their work [18, 19]. Thirdly, the training of the whole staff to improve the professional nursing knowledge and competence of the medical and nursing staff will help to continuously improve the operation process and the standardization of the operation and enhance the professionalism. Therefore, the application of the 6S care model in the management of nosocomial infections in the department of stomatology has some value for promotion. The results of this study also showed that in the 6S care model, 38 healthcare workers rated their satisfaction with the sterilization of instruments higher than the general group, and the 6S group had higher total satisfaction with care than the general group ($P > 0.05$). This may be due to the fact that this study is based on the original management content of the hospital to regulate the work content of organising and cleaning, which, on the one hand, makes the process of cleaning and disinfection of medical devices in the hospital more standardized and ensures the safe use of dental instruments and medical safety; On the other hand, strengthening the hand hygiene of healthcare workers and reducing contact with pathogenic bacteria and airborne problems will not only provide a better and safer treatment environment for patients and avoid related medical disputes but also reduce the damage caused to instruments by the adhesion of organic materials, indirectly improving patient satisfaction with the use of dental instruments.

This study applied the 6S care model to the sterilization management of the stomatology department, which was widely recognized by the hospital leadership and also received strong support from the medical staff in the department. Both the initial mobilization meeting and the subsequent training activities provide guidance to dental medical workers from an intuitive and convenient perspective. This not only restrains the work behaviour of the medical staff and improves their poor work habits but also allows for timely correction of misconceptions in the workplace through communication and exchange between medical staff, which increases their knowledge of infection and leads to better infection prevention and control, avoiding adverse events and thus ensuring medical safety.

To sum up, the application of the 6S care model in the sterilization of the department of stomatology can significantly improve the passing rate of infection monitoring indicators in the department of stomatology, reduce the occurrence of medical device damage and nosocomial infection, and have high satisfaction of doctors and patients, which has the value of promotion.

Data Availability

The primary data to support the results of this study are available upon reasonable request from the corresponding author.

Ethical Approval

This study was approved by the Ethics Committee of the Department of stomatology, Zhejiang Hospital.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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Retraction

Retracted: Preparation of PCL Electrospun Fibers Loaded with Cisplatin and Their Potential Application for the Treatment of Prostate Cancer

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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Review Article

Preparation of PCL Electrospun Fibers Loaded with Cisplatin and Their Potential Application for the Treatment of Prostate Cancer

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Prostate cancer is a global fatal type of cancer. It is a type of cancer that affect men. Signs and symptoms of the disease include blood in the urine, pain when one micturates, and difficulties in penis erection. Cisplatin chemotherapy is a principal treatment normally given to the prostate cancer patients. Nonetheless, on its own, cisplatin loses efficacy once administered due to liver pass effects and other biochemical attacks. In this paper, we looked at preparation of PCL nanoparticles loaded with cisplatin and their potential for the treatment of prostate cancer. PCL nanoparticles protect cisplatin from biochemical attack, thus increasing drug efficacy. Incorporation of P-glycoprotein inhibitors in PCL nanoparticles (NPs) loaded with cisplatin could improve prostate cancer treatment even more.

1. Cisplatin

It is reported that Rosenberg and colleagues unintentionally observed that cisplatin (Figure 1) has cytotoxicity effects characterized by high antitumor activities. The observation dates back to 1960s. Approximately a decade down the line, cisplatin became the world-renown first platinum-based cancer drug in the medical field. Cisplatin was first introduced by Michele Peyrone in 1845 as a platinum-based chemotherapy [1]. Thereafter, it became the drug for the treatment of majority of cancers, namely, lung cancer, ovarian cancer, testicular, head and neck malignancies, among others. Cisplatin was then modified to give a variety of platinum-based drugs, which were also anti-cancer agents. These cisplatin analogues include nedaplatin, oxaliplatin, and carboplatin [1–3]. Notwithstanding this, cisplatin and its analogues were used limitedly owing to their cross-resistance, toxicity, and poor solubility [4]. These factors were then improved by the development of nanotechnology [5].

Norio Taniguchi is given a credit for coming up with a term nanotechnology in 1974. He defined nanotechnology as the capability to engineer materials of magnitude 10^{-9} m precisely. The modern definition of nanotechnology is the design and "tailor-making" of devices, materials, and systems with control at nanometer dimensions. According to Jeremy [6], a distinction is made between nanoscience and nanotechnology. Nanoscience focuses on the study and observation of "events" at the nanometer scale. In addition, nanoscience involves the ways of manipulating matter at that scale. The discrepancy between the two terms is of no great significance; nonetheless, nanotechnology is versatile.

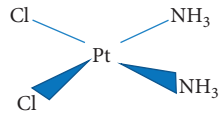

Figure 1: Cisplatin.

Physics, chemistry, biology, and medicine, among others, are fields where nanotechnology is of great importance.

A thorough study of platinum-derived anti-cancer drugs was feasible due to a rapid nanotechnology development [7]. During the preparation or synthesis of cisplatin and its analogues, *cis*-diamminediiodoplatinum (*cis*-DIDP) is the intermediate compound. Both cisplatin and *cis*-DIDP are square planar complexes. The only difference is that chloride ions are substituted by iodide ions in *cis*-DIDP. Cisplatin is less unstable than *cis*-DIDP according to the spectrochemical sequence of crystal field theory. Consequently, iodide ion is a better leaving group than the chloride ion in an aqueous environment [8, 9]. One, therefore, can see that *cis*-DIDP is more of an anti-cancer drug than an intermediate. A number of methods can be employed to enhance therapeutic indices of platinum-derived anti-cancer drugs. Examples of such methods are preparation of drug carriers like polymers, polymeric micelle, cancer-targeting formulations of platinum-containing drugs development, and long-circulating liposome [10–12]. Once controlled-release drug carriers are well developed, cis-DIDP can be an excellent anti-cancer drug [5].

2. Electrospinning

Electrospinning can also be referred to as electrostatic spinning. The formation of micro/nano-sized polymeric fibers either solid or hollow by the applying an electric force on the polymeric solution at the sharp end of a conducting tube is referred to as electrostatic spinning [13–15]. The technique had been highly used for the past 30 years, and its application is still elevating. In 1745, Bose and colleagues became pioneers to describe the formation of aerosols by applying an electric potential to the fluids [16]. It is reported that Lord Rayleigh went on to quantify the charge required by the fluid to surmount the surface tension of a drop. Morton and Cooley designed and made a first device to spray liquids under the influence of electric charge. The duo patented the device in 1902 and 1903. Kiyohiko fabricated artificial silk in 1929 [16]. During the time spun from 1940 to 1960, studies were confined to obtaining uniform-sized particles, designing the instruments, decreasing the size, and understanding and optimizing parameters [17, 18]. It is reported that, by 1990 onwards, fabrication process was incorporated in the curriculum of many educational institutions. A lot of studies, since then, have been conducted on the applications and versatile production of the electrospun-particles [19].

2.1. Process. The electrostatic spinning process requires a high voltage supply of either negative or positive polarity to charge the polymer solution, a syringe, a syringe pump, and a grounded collector. It is recommended that electrospinning procedures are carried out in a hood with minimum atmospheric pressure. The precaution serves to protect both personnel and fibers according to [19]. Upon the accumulation of sufficient repulsive force and a phenomenon when the repulsive force counterbalances the surface tension, on the conducting tube, the drop surface begins to form what is referred to as the Taylor cone. It is reported that, at an angle of 49.3°, the conducting polymer solution can reach an equilibrium state where it forms a cone in an electric field [20]. Further, increments in the electric field strength result in the repulsive force outpowering the surface tension. Consequently, liquid jet formation from the Taylor cone occurs due to sufficient intermolecular and intramolecular forces in the solution. In an event that there is no suffice force of attraction or cohesive attraction, the jets break, and the particles formed are sprayed onto a collector plate. The fiber that originates from the Taylor cone moves through the air approaching the collector plate, and at the same time, the solvent vaporizes, forming solid fiber deposit onto the collector [18, 20]. The jet begins to be unstable for a short displacement following its voyage in the air and then begins to whip. As a result, a path to the collector plate is increased. The phenomenon helps in solvent vaporization and fiber thinning [19].

2.2. Electrospinning Physics. A gradual increase in electric field strength makes the drop surface to be convex-shaped at a particular voltage called critical voltage, V_c. Once V_c is reached, sprays (electrospraying) and jets (electrospinning) begin to occur and can be modelled by the following equation:

$$Vc = \frac{H^2}{L^2}\left(Ln\frac{2L}{R} - \frac{3}{2}\right)[0.117\pi\gamma R]. \quad (1)$$

The parameters are defined as follows: H is the distance between the capillary and the collector; γ is the surface tension; and R is the radius of the capillary [20]. Hendrick and colleagues came up with an equation that relates potential (V) to γ and r (radius of the pendant drop). The potential (V) that is needed for electrospraying a charged pendant polymer drop solution from that in capillary is computed using the following equation:

$$V = 300\sqrt{(20\pi\gamma r)}. \quad (2)$$

[21].

Two important parameters, namely, viscosity and conductivity, are not included in the equation modelled by Hendrick and colleagues regardless the fact that they are crucial electrospinning parameters. Equation (1) is valid for sparingly conducting medium to low conducting solutions [19].

3. Electrospinning Parameters

Electrospinning is a simple technique. Howbeit, solution parameters, and process parameters affect uniformity, porosity, and size of fibers. Studies have been done to try and

grasp these parameters; notwithstanding this, the parameters are not universal. Different modifications in any of the parameters by different researchers in a certain polymer yield different results with another polymer. Below are the crucial parameters to be considered [19].

3.1. Voltage. The voltage supply is one of the principal factors that affect production of fibers. The electric filed strength matters. Formation of jet, beads, and the size of the fiber all depend on the voltage supplied. If one increases the voltage of a polyethylene oxide (PEO)/water system, the site at which the jet originates changes from the tip of the pendant drop to the tip of a capillary. Simultaneously, pendant drop volume decreases [18, 22]. One ought to bear in mind that the jet experiences instability right from the onset of the electrospinning process. Reduction in the electric field strength shifts the position of instability towards the tip of the capillary [23]. Chun and Reneker observed an insignificant fiber diameter change with a change in voltage supply when working with PEO solution [24]. Megelski and colleagues reported that polystyrene fiber size increased when the voltage supply was reduced. However, the team observed an insignificant change in the fiber pore formation [25]. Above 10 kV, electrospun polyvinyl alcohol (PVA)/water solution showed a variety of diameter distribution [26, 27]. The charge carried by the fibers to the plate serves to complete the circuit. As a result, there is a flow of current associated with electrostatic spinning process. When three parameters, namely, flow rate, dielectric constant, and conductivity, are kept constant, an increase in the current flow is noted, which means that the mass of fibers formed has increased. A small increment in current is noted from the beginning of the electrospinning process, and then a sharp increase is observed later from one voltage point. During electrospraying, things are different. Sharp increments in current are observed. Changes in bead density may explain the phenomenon of sharp change in current [19].

Scientist wanted to know what happens if polarity is reversed. However, the findings were inconsistent. Kilic and colleagues carried out an experiment using 7.5 wt (%) PVA/water solution with an intention to study how production and morphologies of nanofibers respond to polarity reversal. The team inferred that a decrease in nanofiber production was because of destitute-columbic force on the jet. However, pore size and diameter of the web layer were found to be much finer and more evenly distributed [28]. Contrary to Kilic and colleagues' findings, Varesano et al. documented good quality production of nanofibers with multijet electrostatic spinning for both reverse polarity and conventional [29].

3.2. Rate of Flow. The rate at which the polymer solution flows has a direct effect on the porosity, shape, and size of fibers. According to Megelski et al., the diameter and pore size of fibers increased at a low flow rate. High flow rates caused bead defects [25]. These findings were for a polystyrene/tetrahydrofuran (THF) solution. Similar morphological effects were reported in a different study using 20 wt (%) nylon-6-formic acid solution at different flow rates at a constant electric field strength of 20 kV. A noble Taylor cone and narrowest fiber diameter distribution were observed at a flow rate of 0.5 ml/h. Notwithstanding this, at a flow rate of 0.1 ml/h, the team observed that the Taylor cone could not be maintained. It could not be reduced with time in order to obtain fiber from within the capillary tips It was observed that, for 1.0 and 1.5 ml/h flow rates, the electric field could not suffice to spin all the solution. Few drops were sprayed, breaking off from the capillary because of the force of gravity [19].

3.3. Distance between Capillary and Collector. According to Bhardwaj and Kundu [30], the capillary-collection distance affects the shape and size of nanofibers. Careful adjustments need to be done with an intention to achieve optimum capillary-collector distance, which allows the production of quality fibers. It is believed that this factor (capillary-collector distance) could be the key parameter that contrasts electrospraying and electrospinning. Nurwaha et al. [31] asserted that a capillary-collector distance that falls within a range of 10–20 cm is effective when one uses the conventional method of electrospinning. The large distance from the Taylor cone had an effect of decreasing the fiber diameter [32]. Similar observations were reported by Jaeger and colleagues. Distance increments from 1, 2 to 3.5 cm changed the diameter of the fiber from 19, 11 to 9 μm, respectively. The distance was measured from the capillary orifice to the collector [23].

3.4. Solution Concentration. Surface tension and viscosity of the polymer solution are the two crucial parameters that cannot be ignored when it comes to the electrospinning process. It recorded that surface tension outweighs viscosity in a low concentration solution. In such a solution, it is difficult to form continuous fibers; instead, drops will be formed. Solutions of this nature are said to have viscosity, which is less than 1 poise. Highly concentrated solutions of viscosity greater than 20 poise are difficult to maintain when they start to flow. According to a statistical study conducted by Sukigara et al. on regenerated silk, silk concentration proved to be the crucial parameter in producing uniformity in fibers of less than 100 nm [33]. Another study by Fong and colleagues on PEO solutions with an intention to understand the effects of viscosity on bead formation is worthy to consider. The team observed that solution viscosity did affect not only bead density, but also bead diameter. A bead morphological change from spherical to spindle-like fibers was observed at higher viscosities [21]. In addition to that, high surface tension-low concentration polymer solutions produced droplets due to insufficient viscoelastic forces to surmount charge repulsive forces. Viscoelastic forces at higher concentrations are large enough to prevent the formation of fiber fragments, thus forming smooth nanofibers [34].

3.5. Viscosity. Fiber formation is governed by solution viscosity. One can obtain smooth continuous fibers at optimum viscosity for a certain polymer solvent combination. Factors like concentration, viscosity, and molecular weight of a particular polymer solution are related, and thus, it is not easy to look at them separately in an effective manner. High electric filed strengths required at high viscosity and thus difficult to manage [33, 35]. According to Baumgarten [34], droplets that were formed at low viscosity were not completely dry. Droplets collided with each other in mid-air because of incomplete drying at higher viscosities with acrylic polymer. A solution mixture of dimethylformamide (DMF) and ethanol in the ratio 50 : 50 was suggested by Yang et al. for obtaining best poly(vinyl pyrrolidone) electrospun fibers [36].

3.6. Molecular Weight. Polymer molecular weight influences polymer solution viscosity. Consequently, a relationship between polymer molecular weight and viscosity is crucial, as it determines fiber morphology. When one decreases the PVA molecular weight and keeps all other parameters constant, bead-like structures are formed. Higher molecular weight results in the formation of smooth fibers at the beginning of the process than ribbon-like structures on further increments in molecular weight [37]. According to Zhao et al. [38], ultra-high molecular weight polymers like polyacrylamide showed a broad spectrum of morphologies even when small changes in concentration were made within the range of 0.3–3.0 wt (%). Smooth and bead-like fibers formed within 0.3–0.7 wt (%) concentration range. At higher concentration range (0.7–2.0 wt%), both ribbon-like and smooth fibers coexisted. Above 2.0 wt (%), helical ribbon-like structures or zig zag ribbons with triangular beads on them were formed. The experiment on melts polypropylene revealed a linear relationship between molecular weight and fiber diameter. A very high degree of entanglement was noted in high-molecular weight polymers and thus daunting for electric filed to pull on each and every polymer chains so as to obtain a thin fiber [39].

3.7. Surface Tension. Molecules possess forces that hold them together. In solutions, such forces are called cohesive forces and are responsible for the surface tension. Surface tension depends on solvent, polymer, and the solution composition. A study conducted by Yang et al. on the effect of solvents on nanofiber formation using poly(vinyl pyrrolidone) revealed that high viscosity with lower surface tension solvent properties of ethanol produced smooth nanofibers. The team recommended the use of multisolvent system in order to obtain optimum viscosity and surface tension for better fiber qualities [36]. Surface tension determines the types of solvents and their concentrations that are required for the electrospinning process [26].

3.8. Surface Charge Density and Conductivity. The surface charge density of polymer solution and conductivity play a critical role during the electrostatic spinning process. High conductivity polymer solutions carry great charge. Highly conductive solution experiences stronger tensile force in the electric field and is thus conducive to electrospinning. The diameter of the nanofibers significantly decreases with the increase in solution conductivity. The relationship can be simplified by stating that the radius of the fiber jet is inversely proportional to the cube root of solution conductivity [40]. According to Baumgarten [34], jet radius is dependent on the reciprocal of the electrical conductivity cube root for acrylic microfiber preparation. Natural polymers are polyelectrolytic and possess a better charge-carrying capacity than synthetic polymers. However, synthetic polymers form better fibers than natural polymers [41]. According to a study conducted by Hayat and colleagues, semiconducting liquid produced stable jets when sufficient voltage was applied. Solvents like paraffin oil could not built a surface electrostatic charge because of insufficient free charges, whereas water produced sparks at higher voltage supplies and unstable stream. Therefore, semiconducting and insulating liquids could produce stability in fibers [42]. A different study on PVA solution revealed that, upon addition of minute amounts of sodium chloride, solution conductivity increased sharply and yet decreasing the fiber diameter at the same time [27]. Frequency of beads formation decreased upon the addition of sodium chloride in PEO solution [21]. Compounds like lithium bromide, ammonium chloride, potassium phosphate, and sodium phosphate can be used to improve fibers by changing solution conductivity [21, 41]. Huang and colleagues used organic-solvent-soluble compounds like pyridine that react in solution with formic acid to form a salt. Pyridine does not only improve conductivity, but the fact that it is not difficult to remove so that dry fibers are obtained makes it favorable. According to Huang et al. [17], adding 0.4 wt (%) pyridine had an effect of doubling the electrical conductivity of 2% nylon-6-formic acid [19].

3.9. Solvent Volatility. It is reported that the time taken by the jet from the capillary orifice to the collector might be fewfold more than the capillary-collector distance. Dry, porous fibers are formed during electrospinning depending on the choice of solvent to solubilize the polymer. If a scenario that the fibers do not completely dry occurs, the fibers attach themselves in the mid-air forming ribbon-like fibers [25]. If the phenomenon does not occur in the mid-air, it occurs on the collector. A research that was done on polystyrene fibers exhibited that a more volatile tetrahydrofuran (THF) solvent did not only produce high-density pores, but also increase the fiber surface area by up to 40%. Nonetheless, the same polymer in DMF completely lost the macrotexture. Different morphological profiles were obtained when THF-DMF solvent mixture ratios were varied [19].

4. Nanofibers as Drug Delivery Agents

Regardless the prominence of nanotechnology in drug delivery process, one ought to grasp conditions on the technology that is of maximal benefit. According to Sill and von

Recum [18], for drug delivery, the materials used should be biodegradable and biocompatible, respond to stimuli, possess mass transfer properties, and permit drug loading, only to mention a few. Table 1 highlights some of the advantages and disadvantages of nanofibers as drug-carrying agents.

4.1. Material Used for Nanofiber Production. A broad spectrum of polymers has been used for the production of nanofibers. Such polymers include poly(L-lactide-co-caprolactone), poly(ethylene oxide), poly(ε-caprolactone), poly(lactic acid), poly(D,L-lactide-co-glycolide), poly(ethylene glycol), poly(urethane), poly(carbonate), poly(-caprolactone), poly(glycolic acid), and poly(L-lactic acid). Nonetheless, not all of them are used for drug delivery purposes [45]. Table 2 shows the examples of materials used for drug delivery.

4.2. Poly(ε-Caprolactone). Poly(ε-caprolactone) (PCL) is a bioresorbable, biocompatible, and biodegradable polymer. It belongs to the aliphatic polyester family. The aliphatic polyester family has many applications in many areas. It is of great importance in drug delivery systems, fixation devices, contraceptive devices, and wound dressing [48]. PCL is well known when it comes to drug delivery aspects. Notwithstanding this, PCL is not limited to that area; rather, its use has been extended to vaccines, peptides, proteins, and other bioactive molecules. Preparation of PCL mainly involves polymerization process using a monomer and an initiator. A monomer and an initiator are mixed at high pressures under purging nitrogen, thus resulting in polymer formation. The obtained polymer is allowed to cool. Afterwards, the polymer is dissolved in an organic solvent and then washed to get rid of remaining unreacted molecules. Freeze-drying the resultant polymer is necessary as a way of preserving the polymer for future use [49].

4.3. Synthesis. Two different methods can be used to synthesize PCL namely ring opening polymerization (ROP) of ε-caprolactone [50] and polycondensation of 6-hydroxyhexanoic acid. Polycondensation involves a step-by-step series of chemical reactions. Two molecules of complementary nature in terms of functional groups react allowing chain elongation and releasing small molecules. The acidic functional group of 6-hydroxyhexanoic acid or that of a growing polymer chain reacts with the hydroxyl group of another 6-hydroxyhexanoic acid. Water molecules are produced during this esterification reaction, in addition to the growing polymer chain. Water production during the synthesis of PCL is crucial since it enhances the equilibrium to favor the products side [51]. Polycondensation, however, is not a favorable method for PCL synthesis. A better method for PCL synthesis is the ROP because polymers with lower polydispersity values and higher molecular weight are attainable. The method comes in different versions, namely, monomer-activated, coordination insertion, and anionic and cationic ROP. Generally, the ROP process is a solution or bulk process in which a polymeric chain that possesses a propagating center allows the addition of cyclic monomers to the structure. The ring strain drives the process. Initial monomer concentration and temperature are crucial when it comes to morphologies of the products [49].

4.4. PCL Physicochemical Properties. Polycaprolactone has the melting temperature, which falls in the range of 332–337 K. The melting temperature depends on the crystallinity of the subject polymer. PCL blends well with other polymers, and its melting temperature enhances scaffold formation. The polymer's glass transition temperature is 213 K. The heat of fusion of a pure (100%) crystalline PCL is 139.5 kJ/kg, which can be used as a crystalline standard to estimate crystalline level of PCL. One good property of PCL is its solubility in a number of solvents [52].

4.5. Methods of Incorporating Drugs Using Electrospinning Process. Electrohydrodynamic (EHD) technology allows the formation of nanofibers with a broad spectrum of morphologies and sizes. Different techniques like surface modulation, coaxial, emulsion, electrospray, and blending, among others, are employed to incorporate drugs and bioactive molecules like DNA and growth factors. Each technique suits the nature of treatment desired [45].

4.6. Prostate Cancer. Prostrate affects the male reproductive system and is the second most prevalent cancer across the globe. It is reported that this type of cancer accounts for 10% of all cancers in males [53, 54]. According to Wilkinson and Chodak [55] and Wang et al. [56], prostate cancer incidences have increased significantly in China. Cisplatin chemotherapy is a principal method of prostate cancer [57]. However, the majority of chemotherapy drugs pose adverse effects even at therapeutic doses. Consequently, it is imperative to probe alternative effective therapeutic methods that may surmount drug toxicity [58].

4.7. Nanoparticles. Polymeric nanoparticles (NPs) are advantageous when it comes to drug delivery. They render drug stability. In addition, NPs reduce the cases of multidrug resistance (MDR), which is a very common phenomenon with other anti-cancer drugs. The mechanism by which polymeric NPs mitigate MDR is the ability of internalizing the drug, hence shielding it from efflux pumps like P-glycoprotein in cancer cells. It is reported that gold NPs have a higher affinity for cancer cells than normal mesenchymal cells; thus, gold NPs preferably destroy cancer cells. Regarding poly(lactic-co-glycolic acid) (PLGA) NPs, regardless their attractive attributes in drug delivery applications, a number of challenges have been encountered. It is daunting to target the diseased tissue using PLGA NPs. Also, a single polymer cannot escape the reticuloendothelial system. Some PLGA NP modifications can meet the aforementioned problems. The introduction biomimetic ligands and the biomolecular processes can reduce the challenges that come with PLGA NPs [59].

Table 1: Advantages and disadvantages of nanofibers as drug-carrying agents [43, 44].

Advantages	Disadvantages
High surface-to-volume ratio accelerates drug solubility in the aqueous environment and improves drug efficiency. Surface structure and morphologies of nanofibers make it possible to curb the drug dose and the rate at which the drug is released. Bioactivity of the drug is maintained because biodegradable polymers shield the drug from corrosive attack by enzymes and gastric acid.	Scaffolds of nanofibers might be used as templates for the formation of conductive drug-loaded polymer systems. Production of nanofibers requires the use of organic solvents and it is impossible to control the 3-dimensional pore structure.

Table 2: Examples of materials used for drug delivery [43, 46, 47].

Nanofiber	Drug(s) loaded	Drug properties
Poly (D,L-lactide-co-glycolide), PLGA/gelatin	Fenbufen	NSAID (non-steroidal anti-inflammatory drug).
PVA	Sodium salicylate, indomethacin, naproxen, and diclofenac sodium	Soluble, soluble, sparingly soluble and insoluble in water, respectively.
Poly (ε-caprolactone)	Naproxen	NSAID that belongs to the propionic acid. relieves fever, pain and swelling.

4.8. Cisplatin Mode of Action. Platinum-based drugs destroy cancer cells by interrupting transcription. The formation of platinum-DNA adducts inhibits cancer cells division. The inhibitory effect of cisplatin is corrected with cancer cell deformation. The cancer cells shrink. The platinum-DNA adducts lead to programmed cell death. Cisplatin loses one of its chloride ligands and binds the DNA forming intrastrand DNA adducts. Consequently, nucleic excision repair (NER) mechanism is activated to try and tackle the DNA damage caused by the cisplatin. The NER is switched on by an activation of ataxia-telangiectasia mutated (ATM) pathway. Cisplatin-DNA adducts switch on a number of signal transduction that prevent programmed cell death. Recent studies revealed that p53 gene is associated with DNA damage and repair [46]. The tumor suppressor gene, p53, is maintained and phosphorylated by the activated ATM pathway. Consequently, transactivation of many genes like Bax, which facilitate apoptosis, DNA damage inducible gene 45 (GADD45), which takes part in DNA repair, and p21 gene, which arrests cell cycle growth, might be induced. The p53 gene helps in cisplatin-mediated apoptosis by binding to the Bax-xL directly, thus negating its antiapoptotic nature. Subsequently, the effectiveness of FLICE-like inhibitory protein (FLIP) needed for p53 gene to activate cisplatin-mediated apoptosis is decreased. The intrastrand lesions caused by cisplatin-induced DNA crosslinks activate the mismatch repair (MMR) system, which is known for potentiating tyrosine kinase c-Abl in response to stress caused by DNA-damaging agents. Extracellular signals that maintain cell growth and sustenance such as JNK and p38 mitogen-activated protein kinase (MAPK) are activated once the c-Abl is activated, to sustain tumor protein p73 resulting in programmed cell death [60].

5. Conclusions

Nanoparticles loaded with drugs for treatment of a broad spectrum of ailments are much more efficient than normal administration of "naked drugs." A body consists of many barriers, namely, cell membrane, BBB, and so on. Barriers are not only a challenge, but also pumps and specialized enzymes that get rid of xenobiotics. Cytochrome P450 (CYP 450) enzymes, conjugating enzymes like glutathione, and liver pass effect account for decrease in drug efficacy. Cancer cells have a specialized pump known as P-glycoprotein, which render cancer cells resistivity to a number of anticancer agents like methotrexate, cisplatin, and many more. PCL/gelatin nanoparticles loaded with cisplatin increase the drug efficacy in treating prostate cancer since it shields cisplatin from attack by CYP 450 enzymes, gastric acid, glutathione, and many other proteins that get rid of xenobiotics, thus alleviating MDR. Loading cisplatin and P-glycoprotein inhibitor together in PCL nanoparticles could escalate the rate at which prostate cancer cells die, thus improving efficacy. A number of ways by which the PCL nanoparticles enter the targeted cells were reported. One of the major ways is receptor-mediated endocytosis. Once in the cell, the cytotoxic cisplatin mechanism is carried out to destroy cancer cells. Thorough understanding of electrospinning techniques and preparation of PCL and PCL nanoparticles loaded with cisplatin will significantly alleviate prostate cancer chaos globally [2, 8, 43, 60–62].

Conflicts of Interest

The authors declare no conflicts of interest.

Authors' Contributions

HM and RA contributed to conception and design of the study and wrote the first draft of the manuscript. NT, LC, SK, RG, MP, AA, DTH, and TNV contributed to the data collection and analysis. All authors approved the submitted version.

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Retraction

Retracted: Clinical Effect of Emergency Dermabrasion Combined with Biological Dressing A on Wound Microcirculation and Preventing Sepsis in Deep Degree-II Burns

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] H. Shao, R. Luo, C. You, Q. Li, and S. Mao, "Clinical Effect of Emergency Dermabrasion Combined with Biological Dressing A on Wound Microcirculation and Preventing Sepsis in Deep Degree-II Burns," *Emergency Medicine International*, vol. 2022, Article ID 4730905, 6 pages, 2022.

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Research Article

Clinical Effect of Emergency Dermabrasion Combined with Biological Dressing A on Wound Microcirculation and Preventing Sepsis in Deep Degree-II Burns

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Objective. The aim of this study is to explore the clinical effect of emergency dermabrasion combined with biological dressing A on wound microcirculation and preventing sepsis in deep degree-II burns. *Methods*. A total of 90 patients with deep degree-II burns admitted to the hospital were retrospectively enrolled between January 2020 and January 2022. According to different treatment methods, they were divided into the control group (42 cases, biological dressing A) and the observation group (48 cases, emergency dermabrasion combined with biological dressing A). The clinical curative effect in both groups was observed. The wound repair rate and wound healing quality, and changes in levels of wound microcirculation-related indexes (serum epidermal growth factor (EGF), wound blood flow, and partial pressure of transcutaneous oxygen) and inflammatory cytokines (C-reactive protein (CPR), interleukin-6 (IL-6), erythrocyte sedimentation rate (ESR), and procalcitonin (PCT)) before treatment, at 3d and 7d after treatment were compared between the two groups. The incidence of wound infection and sepsis in both groups was recorded. *Results*. The wound healing time in the observation group was significantly shorter than that in the control group, and wound healing quality in the observation group was better than that in the control group ($P < 0.05$). At 3 d and 7d after treatment, the levels of serum EGF, wound blood flow and partial pressure of transcutaneous oxygen in both groups were all increased ($P < 0.05$), which were higher in the observation group than those in the control group ($P < 0.05$). The levels of CRP, IL-6, ESR, and PCT in both groups were all decreased ($P < 0.05$), which were lower in the observation group than those in the control group ($P < 0.05$). There was no significant difference in incidence of sepsis between observation group and control group (4.17% (2/48) vs. 7.14% (3/42)) (*Fisher* = 0.539). *Conclusion*. Emergency dermabrasion combined with biological dressing A can effectively improve wound microcirculation in patients with deep degree-II burns, promote wound healing, shorten wound healing time, improve wound healing quality, effectively control inflammatory response, and prevent sepsis.

1. Introduction

The skin plays an important role in protecting and regulating the body and plays an important role in promoting the body's metabolism and maintaining internal stability. Burn refers to the tissue damage caused by the contact of skin tissue with heat, which is a common traumatic disease in surgery [1]. According to the depth of the burn, the clinical treatment plan is also different. For patients with superficial burns, the skin still has the self-healing function that can be healed within 2 weeks and the clinical symptoms are mainly relieved. For patients with deep burns, because the dermis has been damaged, the dermis cannot be regenerated below the papillary layer; the burn wound is difficult to heal and the healing process is easy to be infected [2], which is unfavorable for their prognosis. Therefore, it is of great clinical

significance to improve the wound healing efficiency and improve the quality of wound healing in clinical deep burn patients. Biological dressing A is a commonly used dressing in clinical practice. Its raw material is mainly porcine collagen, which is rich in fibrin, skin trace elements, etc., which can effectively maintain the electrolyte balance of the wound and promote wound healing [3]. Its significance is the most concerned operation of therapeutic care and can be effectively used to treat tissue, care for important parts, and help wounds heal [4]. In order to further understand its application effect in patients with deep burns, this study conducted a retrospective analysis of deep second-degree burns treated in our hospital, which provided clinical supplementary evidence-based basis.

2. Materials and Methods

2.1. General Information. A total of 90 patients with deep second-degree burns who were admitted to our hospital from January 2020 to January 2022 were retrospectively selected and divided into the control group (42 cases) and the observation group (48 cases) according to their treatment plan.

In the observation group, there were 25 males and 23 female. The age ranged from 23 to 47 years old, with an average age of (33.88 ± 5.40) years old; the average burn area was (37.33 ± 3.07)%. Burn sites: 22 cases of head and face, 19 cases of limbs, and 7 cases of trunk. Causes of burns: liquid burns in 20 cases, chemical burns in 15 cases, and flame burns in 13 cases.

The control group consisted of 21 males and 24 females; The age ranged from 24 to 47 years old, with an average age of (35.14 ± 5.13) years old. The average burn area was (37.93 ± 3.34)%. Burn sites: 17 cases of head and face, 19 cases of limbs, and 6 cases of trunk. Causes of burns: liquid burns in 17 cases, chemical burns in 12 cases, and flame burns in 13 cases. There was no difference in the clinical baseline data between the two groups ($P > 0.05$) and a comparison between the two groups was feasible.

The inclusion criteria were as follows: ① those who were diagnosed with deep second-degree burns [5]; ② those who were admitted to the hospital within 48 hours after the burn and there was local infection of the wound; ③ no third-degree and above burns were found. The exclusion criteria were as follows: ① those with severe shock at the time of admission; ② patients with systemic infection or combined with malignant tumor at the time of admission; ③ those with moderate to severe inhalation injury; ④ those with chronic diseases such as diabetes or coronary heart disease before; ⑤ there are long-term immunosuppressive or hormonal drug users; ⑥ superficial burns (first degree or superficial second degree burns); and ⑦ women who are pregnant or breastfeeding.

2.2. Methods. Both groups received basic treatments such as routine wound debridement, maintenance of electrolyte balance, and pit infection.

The wounds of patients in the control group were treated with biological dressing A: Biological dressing A was collected from Shandong Weihai Huate Biotechnology Co., Ltd. and used pig collagen as the main raw material. After routine debridement and rotten skin removal, a sterile biological dressing A larger than 5 cm from the wound edge was cut and applied to the debridement surface. The layer dressing was changed, then we were waiting for the dressing to be closely attached to the wound, and the scab will naturally dry and fall off.

On the basis of the control group, patients in the observation group were combined with emergency escharectomy. When the patients were admitted to the hospital, emergency escharectomy was performed. According to the patient's condition, an appropriate anesthesia method was chosen. After the anesthesia effect takes effect, routine burn wound disinfection is performed. Rub the wound with a steel ball, grind it carefully, and grind the teeth with industrial sand. All scabs were removed, and the wound appeared pale and necrotic, with uniform and dense small bleeding points. After that, the friction was stopped and the wound was rinsed with sterile normal saline. After repeated washing, the wound was wet compressed with amikacin saline for at least 5 min. Then, the sterile biological dressing A larger than 5 cm from the wound edge was cut and applied to the eschar wound. The outside is covered with a gauze and bandage (thickness 3~5 cm), and the outer dressing is changed every 2~3 days, waiting for the dressing and the wound to apply closely, dry, and scab off naturally.

2.3. Indicators

(1) In both groups, the wound repair status after 3 months of wound treatment was used as the evaluation of clinical efficacy. The wound repair rate and wound healing quality of the two groups of patients were compared: Wound healing standard: the basal epithelialization of the wound was ≥95%, and there was no exudate on the wound surface, and no outer dressing was required for the process of bandaging and fixation. Wound quality was assessed using the Vancouver Scar Scale (VSS) [6]. The VSS scale includes skin color, thickness, vascularity, and flexibility, with a total score of 15 points. The higher the score, the worse the wound recovery.

(2) Comparison of wound microcirculation-related indicators (serum epidermal growth factor (EGF), wound blood flow and transcutaneous partial pressure of oxygen (TcpO2)) and inflammatory cytokines (C-reactive protein (CPR), interleukin-6 (IL-6), erythrocyte sedimentation rate (ESR), and calcitonin (PCT)) levels. EGF, CPR, IL-6, and PCT adopt the enzyme-linked adsorption method, and the kits are all from Shanghai Qiyan Biotechnology Co., Ltd., and the ESR adopts an automatic biochemical analyzer (Beckman AU5800). All operations were carried out by the laboratory department of our hospital in strict accordance with the kit

instructions. Wound blood flow and percutaneous oxygen partial pressure were detected by a color Doppler perfusion imager (Bessman BV-520T).

(3) The incidence of wound infection and sepsis within 3 months after wound treatment in the two groups was recorded.

2.4. Statistical Processing. The database of this scientific research project was constructed, and the statistical software SPSS 22.0 was used to complete the statistical processing of the data of this scientific research project. The Shapiro–Wilk test method was used to test the normality of the measurement data, and the measurement data that met the normal distribution and the variance were expressed as $(\overline{x} \pm s)$. Differences between the two groups were compared using an independent t-test. Differences within groups were compared using paired t-test. We infer whether the population means represented by two or more sample means are different using one-way ANOVA. The enumeration data were expressed as rates, and the $\chi 2$ test or Fisher's exact test was used. $P < 0.05$ indicated that the difference was statistically significant.

3. Results

3.1. Illustration of Typical Cases before and after Treatment

3.1.1. Case Illustration of Emergency Escharectomy Combined with Biological Dressing A. Figures 1–3 show a 47-year-old male patient who was admitted to the hospital due to multiple hot iron scalds all over the body. Figure 1 shows the performance before treatment. Figure 2 shows the 3d performance after treatment. Figure 3 shows the performance 7d after treatment.

3.1.2. Illustration of the Case of Using Biological Dressing A Alone. Figures 4–6 show a 25-year-old male patient who was admitted to the hospital due to hot oil flame burns on both upper extremities. After cleaning, the biological dressing A was directly applied. Figure 4 shows the performance before treatment. Figure 5 shows the performance 3d after treatment. Figure 6 shows the performance 7d after treatment.

3.2. Comparison of the Wound Healing Rate and Wound Healing Quality between the Two Groups of Patients. The wound healing time in the observation group was shorter than that in the control group, and the wound healing quality in the observation group was better than that in the control group ($P < 0.05$) as shown in Figure 7.

3.3. Comparison of Wound Microcirculation before and after Treatment between the Two Groups of Patients. At 3d and 7d after treatment, the serum EGF level, wound blood flow, and TcpO2 index increased in both groups ($P < 0.05$) and those of the observation group wereas more significant ($P < 0.05$) as shown in Figures 8–10.

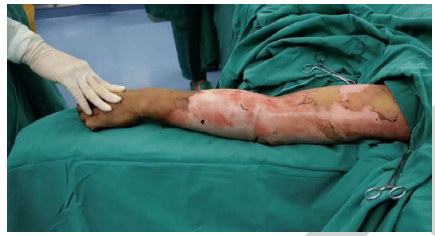

Figure 1: Prior treatment.

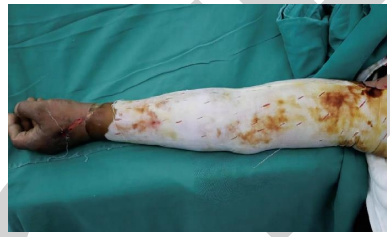

Figure 2: 3d after treatment.

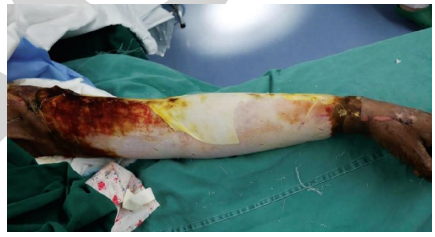

Figure 3: 7d after treatment.

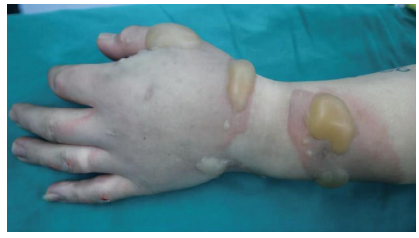

Figure 4: Prior treatment.

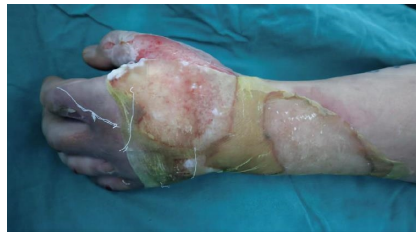

Figure 5: 3d after treatment.

3.4. Comparison of Inflammatory Factor Levels before and after Treatment in the Two Groups of Patients. At 3d and 7d after treatment, the levels of CRP, IL-6, ESR, PCT, and other inflammatory indexes in the two groups were decreased ($P < 0.05$) and those of the observation group were more significant ($P < 0.05$) as shown in Figures 11–14.

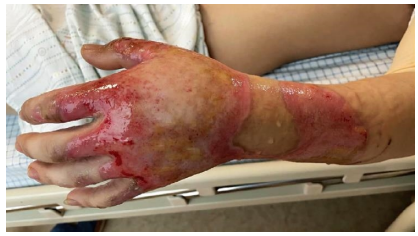

Figure 6: 7d after treatment.

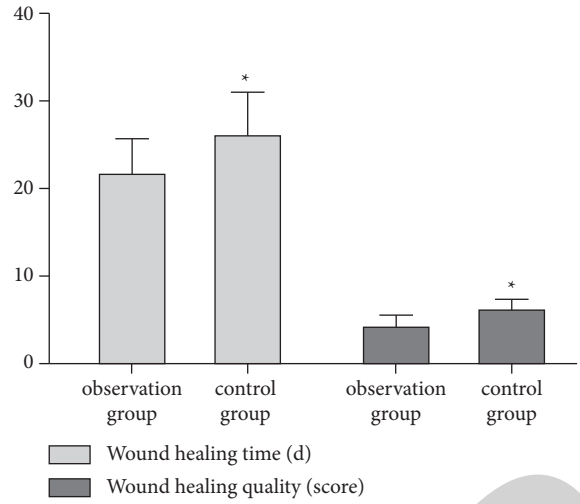

Figure 7: Comparison of wound repair rate and wound healing quality between the two groups.

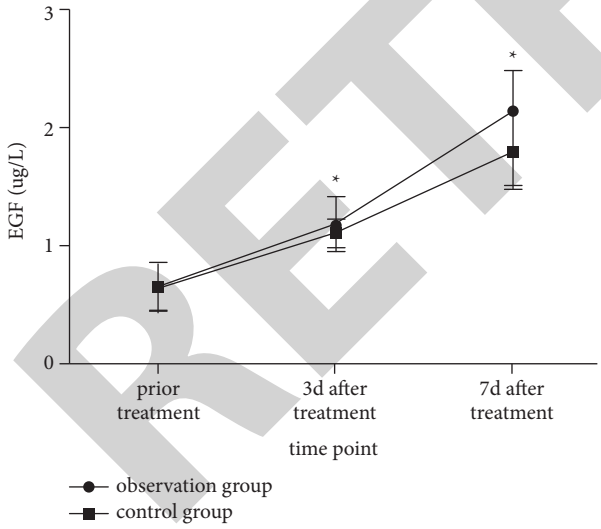

Figure 8: Comparison of EGR between the two groups before and after treatment.

3.5. Comparison of the Incidence of Wound Infection and Sepsis between the Two Groups of Patients. The incidence of sepsis in the observation group was 4.17% (2/48) compared with 7.14% (3/42) in the control group, which had no significant difference (Fisher = 0.539).

4. Discussions

Deep second-degree burns have damaged the dermis layer, the wound heals slowly and may leave large scars, which is not conducive to the recovery of skin function and affects the prognosis [7]. Thus, it is very important to improve the quality of wound healing in patients. Biological dressing A is rich in fibrils and mucins, has good wound adhesion, and can provide a good environment for wound healing. It is a commonly used clinical wound dressing. Escharectomy is a wound treatment method that has received high clinical attention in recent years. It can effectively clean up the necrotic tissue on the wound surface and create a good foundation for subsequent operations, thereby improving the clinical effect and effectively improving the quality of wound healing [8, 9]. This study retrospectively analyzed the application effect of emergency escharectomy combined with biological dressing A, which provided clinical supplementary evidence-based basis.

The results of our study showed that the wound healing time in the observation group was shorter than that in the control group, and the wound healing quality in the observation group was better than that in the control group. It is suggested that the combined application of emergency escharectomy and biological dressing A can effectively improve the wound healing effect. The reason may be that scab rubbing uses a medical friction ball to treat the wound surface with mild force, which has a certain protective effect on the normal tissue around the wound surface [9], avoiding secondary damage, and it should be compared with traditional debridement. Due to the smaller shock response, the quality of subsequent recovery is better. EGF is an active substance in the blood, which can stimulate the growth factor of epidermal cells, promote the repair and regeneration of damaged skin, and accelerate wound healing [10]. Both the wound blood flow and the transdermal oxygen pressure index reflect the An indicator of wound blood flow status. The study showed that 3d and 7d after treatment, the serum EGF level, wound blood flow, and transcutaneous oxygen partial pressure index increased in both groups, especially in the observation group. This result suggests that the treatment regimens of both groups can effectively improve the microcirculation of burn wounds, but the effect of the observation group is better. Analysis of the reason may be that escharectomy also has a massage and dredging effect on the wound stasis belt during the operation, which can effectively improve the blood state of the surface tissue of the wound skin, promote the blood circulation of the wound, and improve the microcirculation of the wound [11], thereby increasing serum EGF levels and promoting wound repair, and it is also a major reason for the shortened wound healing time.

The occurrence of sepsis is closely related to the prognosis of patients, so clinical attention is paid to reduce the incidence of sepsis. CRP is an acute phase reaction protein, and its level increases when the body is infected. It is a routine indicator for clinical detection of

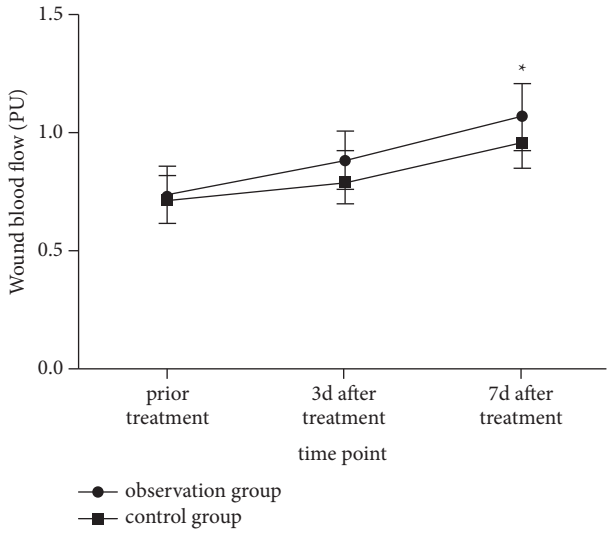

Figure 9: Comparison of wound blood flow between the two groups before and after treatment.

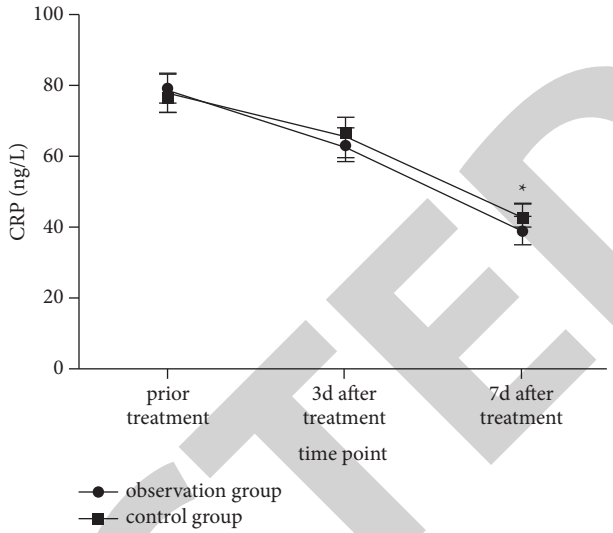

Figure 11: Comparison of CRP between the two groups before and after treatment.

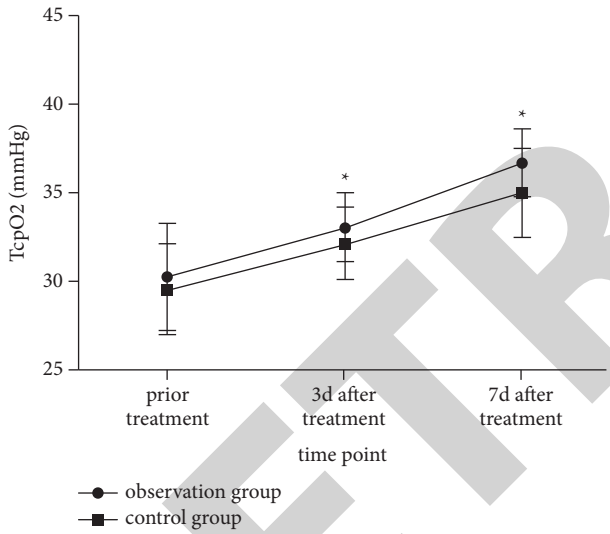

Figure 10: Comparison of $TcpO_2$ between the two groups before and after treatment.

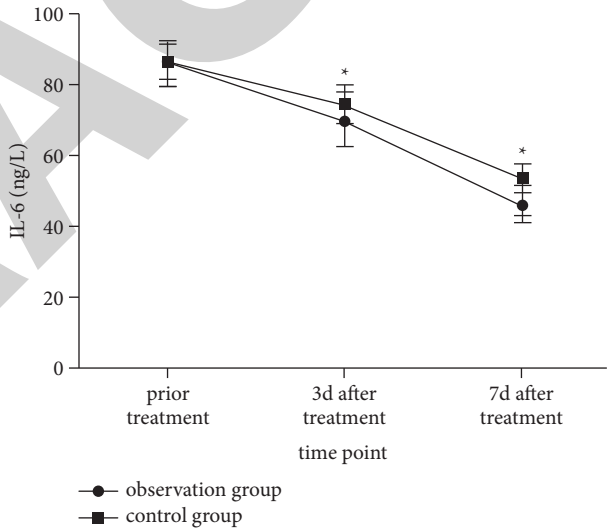

Figure 12: Comparison of IL-6 between the two groups before and after treatment.

inflammation; the change in the IL-6 level is an important indicator to reflect the degree of inflammation in the body [12]. ESR refers to the rate of red blood cell deposition, and its level increases in the event of trauma and infection [13]. PCT has a high specificity in sepsis [14]. The study showed that the levels of CRP, IL-6, ESR, PCT, and other inflammatory indicators decreased in the two groups at 3d and 7d after treatment, among which the observation group was more to be significant. Analysis of the reason may be that escharectomy can improve the blood flow state of the wound, increase the permeability, and effectively reduce the inflammatory response, which was also reflected in an animal study [15]. Biological dressing A has a high degree of adhesion to the wound surface and can effectively isolate the wound surface from contact with the external environment. The combination of the two can effectively reduce the inflammatory response of the wound surface [16]. There was no difference in the incidence of sepsis between the two groups, suggesting that both schemes are effective in the prevention of sepsis. However, because the development of sepsis is related to wound infection, it is believed that emergency dermabrasion combined with biological dressing A is effective for sepsis. Disease prevention is more dominant.

In conclusion, emergency escharectomy combined with biological dressing can effectively improve deep II degree burns, can make the patient's wound microcirculation, promote wound healing, continuous burn wound time, and improve the quality of surface healing, and it can effectively control the inflammatory response and fail to acupuncture.

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Retraction

Retracted: Clinical Effect of Minimally Invasive Percutaneous Pedicle Screw Internal Fixation Combined with Injured Vertebrae Bone Grafting in the Treatment of Thoracolumbar Fractures in Orthopedic Surgery

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] G. Fei and H. Yan, "Clinical Effect of Minimally Invasive Percutaneous Pedicle Screw Internal Fixation Combined with Injured Vertebrae Bone Grafting in the Treatment of Thoracolumbar Fractures in Orthopedic Surgery," *Emergency Medicine International*, vol. 2022, Article ID 3081380, 6 pages, 2022.

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Research Article

Clinical Effect of Minimally Invasive Percutaneous Pedicle Screw Internal Fixation Combined with Injured Vertebrae Bone Grafting in the Treatment of Thoracolumbar Fractures in Orthopedic Surgery

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Objective. To observe the clinical effect of minimally invasive percutaneous pedicle screw internal fixation combined with injured vertebrae bone grafting in the treatment of thoracolumbar fractures in orthopedic surgery. *Methods*. A total of 132 patients with thoracolumbar fractures admitted to the hospital were enrolled between January 2020 and April 2021. Both groups underwent minimally invasive percutaneous pedicle screw internal fixation. According to the presence or absence of intraoperative injured vertebrae bone grafting, they were divided into the grafting group (73 cases) and the injured vertebrae ungrafted group (59 cases). The perioperative indexes, pain at 2 weeks after surgery, surgical stress, recovery of an injured vertebra, self-care ability, quality of life, and postoperative complications were compared between the two groups. *Result*. There was no significant difference in intraoperative blood loss, operation time, or hospitalization time between the grafting group and the nongrafting group ($P > 0.05$).2 weeks after surgery, scores of the Visual Analogue Scale (VAS) in the grafting group were lower than those in the nongrafting group ($P < 0.05$).At 3d after surgery, levels of serum cortisol (COR), epinephrine (E), and norepinephrine (NE) in both groups were higher than those before surgery, which were lower in the grafting group than in the nongrafting group ($P < 0.05$).At 3 months after surgery, the anterior edge height of the injured vertebra in both groups was increased, which was higher in the grafting group than in the nongrafting group ($P < 0.05$). At 3 months after surgery, the Cobb angle of sagittal kyphosis in both groups was decreased, which was lower in the grafting group than that in the nongrafting group ($P < 0.05$). At 3 months after surgery, the scores of activity of daily living (ADL) and the MOS item-short form health survey (SF-36) in both groups were higher than those before surgery, which were higher in the grafting group than in the nongrafting group ($P < 0.05$). The difference in the incidence rate of injured vertebrae collapse, internal fixation breakage, or kyphosis between the grafting group and the nongrafting group was not statistically significant (1.37% *vs* 6.78%) ($P > 0.05$). *Conclusion*. Minimally invasive percutaneous pedicle screw internal fixation combined with injured vertebrae bone grafting in orthopedic surgery can improve postoperative pain and surgical stress in patients with thoracolumbar fractures, which is conducive to the recovery of injured vertebrae and improvement in the quality of life.

1. Introduction

Thoracolumbar fracture, as a common type of spinal injury, is the continuous destruction of the thoracic and lumbar vertebrae caused by external force. In recent years, with the development of transportation, thoracolumbar fractures have a high incidence. Patients are clinically manifested as severe posttraumatic pain, and severe patients are accompanied by nerve damage such as numbness and weakness of both lower limbs, resulting in loss of consciousness and shock [1, 2]. Surgical treatment is a clinically recommended plan, and the purpose of surgery is to restore the spinal

sequence. With the development of minimally invasive techniques, minimally invasive percutaneous pedicle screw internal fixation has gradually been favored by people. It has the advantages of small wounds and quick recovery, and can significantly improve postoperative pain levels in patients and restore the height and curve of the spine, reduce the loss of spinal mobility, and contribute to early recovery [3, 4]. However, in recent years, some researchers have found that although this surgical plan has a significant effect on the recovery of the height of the injured vertebra, it was found in the long-term follow-up that the trabecular bone structure in the patient's vertebral body recovered poorly and was prone to collapse, resulting in spinal instability. Induce spinal nerve injury, which is not conducive to the stability of the spine [5, 6]. Bone grafting of an injured vertebra has the effect of osteoconduction, which can promote fracture healing and induce the secretion of growth factors to promote the healing of the bone tissue. No authoritative research was reported. Therefore, this study aimed to investigate the clinical effect of minimally invasive percutaneous pedicle screw internal fixation combined with injured vertebrae bone grafting in the treatment of thoracolumbar fractures in orthopedic surgery.

2. Materials and Methods

2.1. General Information. A total of 132 patients with thoracolumbar fractures who were treated in our hospital from January 2020 to April 2021 were selected. Case inclusion criteria were as follows: a single vertebral fracture of the thoracic or the lumbar spine was diagnosed by X-ray, CT, or MRI imaging examination, and there were no symptoms and signs of nerve damage; the spinal canal occupying less than 30% of the fracture site; all patients were treated with minimally invasive percutaneous pedicle screw internal fixation. The exclusion criteria were as follows: critically ill patients with life-threatening conditions at any time; severe hepatic and renal insufficiency; combined malignant tumor; patients with severe osteoporosis; previous history of fracture surgery; incomplete clinical data. A total of 132 patients were enrolled and divided into the injured vertebrae bone grafting group and the uninjured vertebrae bone grafting group according to whether the injured vertebrae were grafted or not, with 73 cases and 59 cases, respectively. The general data of the two groups of patients are compared in Table 1.

2.2. Surgical Methods. Both groups of patients were given general anesthesia with tracheal intubation and were placed in the prone position with their chest and abdomen suspended. All patients underwent minimally invasive percutaneous pedicle screw internal fixation.

In the uninjured vertebrae bone graft group, the injured vertebrae were located and projected on a "C"-arm X-ray machine. The surgical site was routinely disinfected. Three longitudinal incisions of 1.5 cm in length were made with the injured vertebrae as the center to the outside. For the surrounding tissue and fascia, the spinal puncture needles were taken and placed in a sequence. After the front and lateral views of the "C"-shaped arm were seen, the insertion points were determined. The puncture needle was gradually expanded with a soft tissue dilator to form a suitable channel, and the thread was inserted through the guidewire to tap the pedicle. After tapping, the dilator was removed, and 3 screws were placed for installation. A connecting rod was placed on one side to distract and reduce the injured vertebra. The same method was used to insert screws on the opposite side and distract and reduce to restore the height of the anterior edge of the injured vertebral body. Installing a connecting rod of appropriate length and locking the tail cap maintain a certain degree of tension in the anterior and posterior longitudinal ligaments of the injured vertebral body. The X-ray film confirms that the compressed vertebral body is well reset, the fascia and nerve tissue are sutured intermittently, and a subcutaneous drainage sheet is placed.

The anesthesia, body position, and reduction of the injured vertebrae were the same as those of the uninjured vertebrae. After X-rays confirm that the injured vertebrae are sufficiently reduced, the connecting rod is removed from the side, and the pedicle of the injured vertebrae is placed at the pedicle with heavier pressure. A puncture was performed and a guide wire was inserted, the channel was expanded, the pedicle was tapped, a 6.5 mm diameter hollow pedicle screw was used to expand the bone channel, and then, the bone graft funnel was placed. Or autologous bone particles are filled through the funnel to the bone graft cavity in different directions. After the filling is completed, a connecting rod is installed in the U-shaped groove of the two screws on the side, and the injured vertebra is opened and reduced.

Both groups were treated with prophylactic antibiotics and anti-infectives after operation. The drainage strips were removed 24 hours after operation, the sutures were removed at 14 days, and the patients stood in bed with waist support for 4 days. After 2 weeks of operation, they underwent functional exercise of the lumbar back muscles. The brace was removed for the next 4 weeks and normal activities were performed.

2.3. Observation Indicators

2.3.1. Comparison of Perioperative Indicators between the Two Groups of Patients. The perioperative indicators of the two groups of patients, including operation time, intraoperative blood loss, and hospitalization time, were observed and compared. The Visual Analogue Scale (VAS) [7] was used to evaluate the pain status of patients 2 weeks after the operation. The highest VAS score was 10 points, and the higher the score, the more severe the pain.

2.3.2. Comparison of Surgical Stress Levels in the Two Groups of Patients. 5 mL of fasting venous blood was collected from patients before operation and on the 3rd day after operation in nonanticoagulated test tubes, centrifuged by using a German Hettich MIKRO220/220R centrifuge to separate the serum (3000 r, 10 min), and the supernatant was collected to detect cortex by radioimmunoassay. Serum cortisol (COR),

Table 1: Comparison of general data of patients with thoracolumbar fractures between the two groups ($\overline{X} \pm S$).

Group	Injured vertebrae bone graft group ($n = 73$)	Uninjured vertebral bone graft group ($n = 59$)	t/χ^2	P
Gender			1.737	0.188
Male	49 (67.12)	33 (55.93)		
Female	24 (32.88)	26 (44.07)		
Age (years)	45.36 ± 6.65	46.78 ± 6.84	1.204	0.231
Position of the injured vertebra			1.874	0.599
T11	19 (26.03)	11 (18.64)		
T12	23 (31.51)	20 (33.90)		
L1	14 (19.18)	16 (27.12)		
L2	17 (23.29)	12 (20.34)		
Cause of fracture			1.737	0.420
Car accident	49 (67.12)	33 (55.93)		
Falling from heights	13 (17.81)	14 (23.73)		
Fall injured	11 (15.07)	12 (20.34)		

epinephrine (E), and noradrenaline (NE) were detected using an automatic immunoassay analyzer (Siemens, ADVIA Centaur CP), and the kit was purchased from Shanghai Jianglai Biotechnology Co., Ltd.

2.3.3. Comparison of the Recovery Level of Injured Vertebra between the Two Groups of Patients. X-ray plain films were performed before and 3 months after the operation, respectively, and the anterior height of the injured vertebra, Cobb angle, and the wedge angle of the injured vertebra were compared and recorded between the two groups. The height of the anterior edge of the injured vertebra = the height of the anterior edge of the injured vertebra/((the height of the anterior edge of the upper vertebral body of the injured vertebra + the height of the anterior edge of the lower vertebral body of the injured vertebra)/2) × 100%. Calculation method of the sagittal kyphosis Cobb angle: on the X-ray, the angle between the vertical line of the upper-end plate of the upper vertebral body of the injured vertebra and the vertical line of the lower end plate of the lower vertebral body of the injured vertebra were measured on the lateral radiograph.

2.3.4. Comparison of Self-Care Ability and Quality of Life between the Two Groups of Patients. The activities of daily living (ADL) [8] were used to evaluate the patients' self-care ability before and 3 months after the operation. The total score ranges from 0 to 100 points. A higher score means a higher self-care ability of patients. The MOS item short-form health survey (SF-36) [9] was used to compare the quality of life of the two groups of patients. SF-36 included the following: physical, physiological, social, and emotional functions; each item is scored from 0 to 100, and the higher the score, the better the quality of life of the patient.

2.4. Postoperative Complications. The incidence of postoperative complications, including vertebral collapse, internal fixation fracture, and kyphosis, was observed and compared between the two groups. 1.5 Statistical processing SPSS 22.0 statistical software was used to organize and analyze the clinical data of patients with thoracolumbar fractures included in this study. The measurement data with normal distribution and equal variance were expressed as ($\overline{X} \pm S$), and the two-sample independent t-test was used to compare the differences between the groups; count data were expressed as rate, using χ^2 test, and $P < 0.05$ indicated statistical significance.

3. Results

3.1. Comparison of Perioperative Indicators between the Two Groups of Patients. There was no significant difference in the amount of blood loss, operation time, and hospital stay between the injured vertebrae bone graft group and the uninjured vertebrae bone grafting group ($P > 0.05$). ($P < 0.05$), as shown in Table 2.

3.2. Comparison of Surgical Stress Levels between the Two Groups of Patients. There was no significant difference in the levels of serum COR, E, and NE between the two groups before surgery ($P > 0.05$). The levels of serum COR, E, and NE in the two groups were higher than those before surgery on the 3rd day after surgery, but those in the injured vertebrae bone graft group is lower than the injured vertebrae ungrafted group ($P > 0.05$), as shown in Table 3.

3.3. Comparison of the Recovery Level of Injured Vertebra between the Two Groups of Patients. There was no significant difference in the height of the anterior edge of the injured vertebra and the sagittal kyphosis Cobb angle between the two groups before surgery ($P > 0.05$). The bone graft group was higher than the injured vertebrae un-grafted group ($P < 0.05$). At 3 months after operation, the Cobb angle of sagittal kyphosis in the two groups was lower than that before operation, and the Cobb angle of sagittal kyphosis in the injured vertebrae bone graft group was lower than that in the injured vertebrae ungrafted group ($P < 0.05$), as shown in Table 4.

3.4. Comparison of Self-Care Ability and Quality of Life between the Two Groups of Patients. There was no significant difference in the ADL score and the SF-36 score between the two groups before operation ($P > 0.05$). At 3 months after

Table 2: Comparison of perioperative indicators between the two groups of patients ($\overline{X} \pm S$).

Group	Number of cases	Bleeding volume in operation (mL)	Operation time (min)	In-patient time (d)	VAS score 2 weeks postoperatively(score)
Injured vertebrae bone graft group	73	40.36 ± 9.84	86.74 ± 12.35	14.37 ± 2.08	2.64 ± 0.52
The injured vertebrae ungrafted group	59	41.59 ± 9.66	87.59 ± 12.89	14.69 ± 2.32	4.53 ± 0.59
T	—	0.719	0.385	0.834	19.546
P	—	0.473	0.701	0.406	<0.001

Table 3: Comparison of surgical stress levels between the two groups ($\overline{X} \pm S$).

Group	Number of cases	COR (nmol/L)		E (pg./L)		NE (mmol/L)	
		Before operation	3rd day after surgery	Before operation	3rd day after surgery	Before operation	3rd day after surgery
Injured vertebrae bone graft group	73	134.32 ± 13.65	158.24 ± 15.32*	15.84 ± 1.63	18.15 ± 1.82*	79.84 ± 7.06	112.35 ± 10.27*
Injured vertebrae ungrafted group	59	135.67 ± 13.59	169.31 ± 15.84*	15.77 ± 1.52	20.33 ± 2.14*	79.63 ± 7.11	129.54 ± 12.35*
T	—	0.389	2.751	0.172	4.251	0.114	5.861
P	—	0.703	0.008	0.864	0.001	0.909	0.001

Note. Compared with preoperative, $^*P < 0.05$.

Table 4: Comparison of the recovery level of the injured vertebra between the two groups of patients ($\overline{X} \pm S$).

Group	Number of cases	Anterior height of the injured vertebra (%) Before operation	Sagittal kyphotic cobb angle (°) 3rd month after operation	Before operation	3rd month after operation
Injured vertebrae bone graft group	73	45.32 ± 4.98	70.32 ± 6.52*	22.14 ± 2.45	4.08 ± 0.86**
Uninjured vertebral bone graft group	59	45.69 ± 4.76	62.75 ± 6.89*	22.39 ± 2.78	4.56 ± 0.89*
T	—	0.432	6.465	0.548	3.138
P	—	0.665	<0.001	0.584	0.002

Note. Compared with preoperative, $^*P < 0.05$.

operation, ADL scores and SF-36 scores of the two groups were higher than those before operation, and those of the vertebral body injury group and bone grafting group were higher than those before operation. The scores of the injured vertebrae ungrafted group ($P < 0.05$) are shown in Table 5.

3.5. Comparison of Postoperative Complications between the Two Groups of Patients. In the injured vertebral bone graft group, the incidence of postoperative collapse of the injured vertebrae, internal fixation fracture, and kyphosis was 1.37%, which was not significantly different from that of the injured vertebrae ungrafted group with bone grafting (6.78%) ($P > 0.05$), as shown in Table 6.

4. Discussions

The clinical incidence of thoracolumbar fractures is high, and the main reason is related to the anatomical structure of thoracic kyphosis and lumbar lordosis. The thoracic spine is relatively stable under the protection of the thoracic cage, and the lumbar spine is highly mobile; the force is concentrated when subjected to external forces [10, 11], so fracture occurs. Minimally invasive percutaneous pedicle screw internal fixation in bone surgery is a common surgical method for patients with thoracolumbar fractures. It has good stability in the reduction and fixation of fractures and maintains a normal physiological curvature. Whether it is necessary to perform bone grafting on injured vertebrae is still controversial.

We found that there was no significant difference in the amount of blood loss, operation time, and hospitalization time between the injured vertebrae and the uninjured vertebrae groups. Both groups had good clinical curative effects, but the combined treatment of injured vertebrae with bone grafting was beneficial to the improvement of postoperative pain. Minimally invasive percutaneous pedicle screw internal fixation in orthopedics surgery has high accuracy for screw placement with guide pin technology, the scope of muscle dissection in the thoracic and lumbar spine is small, and the damage to muscles, nerves, and blood vessels is also small, so intraoperative bleeding satisfactory

Table 5: Comparison of self-care ability and quality of life between the two groups of patients ($P > 0.05$) ($\overline{X} \pm S$).

Group	Number of cases	ADL score (score)		SF-36 score (score)	
		Before operation	3rd month after operation	Before operation	3rd month after operation
Injured vertebrae bone graft group	73	38.54 ± 4.21	69.02 ± 7.85*	45.57 ± 6.74	80.03 ± 7.85*
Uninjured vertebrae bone graft group	59	38.63 ± 4.75	60.15 ± 7.64*	45.98 ± 6.82	74.45 ± 7.63*
T	—	0.115	6.532	0.345	4.112
P	—	0.908	<0.001	0.732	0.001

Note. Compared with preoperative, $^*P < 0.05$.

Table 6: Comparison of postoperative complications between the two groups (n, %).

Group	Number of cases	Collapsed vertebra	Fracture of internal fixation	Kyphosis	Total incidence of complications
Injured vertebrae bone graft group	73	0	0	1 (1.37)	1 (1.37)
Injured vertebrae un-grafted group	59	2 (3.39)	1 (1.69)	1 (1.69)	4 (6.78)
χ^2	—				2.62
P	—				0.106

results were achieved in terms of volume, duration of surgery, and length of hospital stay. However, there are differences in postoperative pain recovery. Analysis of the reasons shows that the postoperative short-segment fixation force is concentrated between the upper and lower pedicles in patients with uninjured vertebral bone grafting, and the pedicle screws are heavily loaded, which is prone to occur. Stress-induced kyphosis increases lower back pain.

In this study, the serum levels of COR, E, and NE in the two groups on the 3rd day after operation were higher than those before operation, but the levels of COR, E, and NE in the injured vertebrae group were lower than those in the uninjured vertebrae ungrafted group. Both are important physiological indicators for evaluating the level of stress response in patients. COR is an important hormone secreted by the hypothalamic-pituitary-adrenal cortex axis [12, 13]. Normally, the body is maintained by negative feedback regulation. In patients with thoracolumbar fractures, this negative feedback regulation mechanism is destroyed, resulting in a significant increase in E and NE levels. The operation process of minimally invasive percutaneous pedicle screw internal fixation in orthopedics surgery will aggravate the stress response, so that the body's decomposition is greater than the synthesis and metabolism levels. After a large amount of COR is secreted, the body's glycogen lysis level is increased, and the sympathetic nerves are improved. The excitability increases the levels of E and NE. The results of this study show that combined bone grafting for injured vertebrae can help reduce the postoperative stress level of patients and is more conducive to postoperative trauma recovery.

3 months after operation, the height of the anterior edge of the injured vertebra in both groups was higher than that before operation, and and the injured vertebrae bone graft group was higher than that of uninjured vertebral bone graft group. Before, injured vertebrae bone graft group was lower than the uninjured vertebral bone graft group. After repairing the defect in the injured vertebral body with bone grafting, it can fill the void in the vertebral body, which helps to form a supporting force for the anterior and central column of the vertebral body to achieve full healing of the broken bone, and rebuild the stability of the spine to prevent the height of the vertebral body from being damaged. Kyphosis correction is lost. At the same time, the recovery of the height and angle of the injured vertebra after surgery can tighten the anterior longitudinal ligament to a certain extent, which can effectively avoid excessive concentration of force between the upper and lower pedicles in daily activities. In short, combined bone grafting of the injured vertebra can not only improve the load capacity of the injured vertebra, but also promote bone resorption and healing, so it has a better recovery effect. And, 3 months after the operation, the ADL scores and SF-36 scores of the two groups were higher than those before the operation, and the scores of the injured vertebrae bone graft group were higher than those of the injured vertebrae ungrafted group, indicating that the minimally invasive percutaneous pedicle screw internal fixation in bone surgery combined with the injury. The self-care ability and quality of life of patients after vertebral bone grafting have been significantly improved, which proves the long-term application effect of this operation.

The results of this study showed that the incidence of postoperative vertebral collapse, internal fixation fracture, and kyphosis in the injured vertebral bone graft group was 1.37%, which was not significantly different from that of the uninjured vertebral bone grafting group, which was 6.78%. It is shown that neither of the two groups of surgical options will increase postoperative complications in patients with thoracolumbar fractures. Previous studies by Zhang et al. have reported that combined bone grafting of injured vertebrae can reduce the "eggshell effect" of patients with thoracolumbar fractures after surgery, which is different from the conclusions in this study [14, 15]. The reason may be related to the small sample size included in this study.

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Retraction

Retracted: Effects of Modified Jianpi Qushi Heluo Decoction on Scores of TCM Syndromes, 24 h Urinary Albumin, and Plasma Albumin in IMN of Spleen-Kidney Qi Deficiency

Emergency Medicine International

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Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] K. Wu, H. Yin, and A. Du, "Effects of Modified Jianpi Qushi Heluo Decoction on Scores of TCM Syndromes, 24 h Urinary Albumin, and Plasma Albumin in IMN of Spleen-Kidney Qi Deficiency," *Emergency Medicine International*, vol. 2022, Article ID 6061709, 5 pages, 2022.

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Research Article

Effects of Modified Jianpi Qushi Heluo Decoction on Scores of TCM Syndromes, 24 h Urinary Albumin, and Plasma Albumin in IMN of Spleen-Kidney Qi Deficiency

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Objective. To explore the effects of modified Jianpi Qushi Heluo decoction on scores of TCM syndromes, 24 h urinary albumin (UA), and plasma albumin (Alb) in idiopathic membranous nephropathy (IMN) of spleen-kidney qi deficiency. *Methods*. A total of 84 patients with IMN of spleen-kidney qi deficiency type admitted to the hospital were enrolled between November 2019 and September 2021. According to the random number table method, they were divided into the observation group (42 cases) and control group (42 cases). The control group was treated with routine Western medicine, while the observation group was additionally treated with modified Jianpi Qushi Heluo decoction. All were continuously treated for 2 months. The clinical curative effect between the two groups was compared. Before and after treatment, scores of TCM syndromes, biochemical indexes (24 h UA, plasma Alb, serum triglyceride (TG), and serum cholesterol (TC)), and T lymphocyte subsets (Th1, Th2, Th1/Th2, and Th17) were compared between the two groups. The occurrence of adverse reactions in both groups during treatment was recorded. *Results*. The difference in the total response rate of treatment between the observation group and control group was not statistically significant (90.48% vs. 73.81%) ($P > 0.05$). After 2 months of treatment, scores of TCM syndromes in the observation group were significantly lower than those in the control group, levels of 24 h UA, TG, and TC were significantly lower than those in the control group, and Alb was significantly higher than that in the control group ($P < 0.05$). After 2 months of treatment, levels of peripheral blood Th1 and Th17 in the observation group were significantly lower than those in the control group, while Th2 and Th1/Th2 were higher than those in the control group ($P < 0.05$). The difference in incidence of adverse reactions between the observation group and control group was not statistically significant (4.76% vs. 14.29%) ($P > 0.05$). *Conclusion*. The modified Jianpi Qushi Heluo decoction can reduce UA, increase Alb, and improve clinical symptoms and immune function of patients with IMN of spleen-kidney qi deficiency.

1. Introduction

The greater the proteinuria, the greater the long-term risk for renal failure. In addition, patients who have membranous nephropathy with nephrotic syndrome have significant morbidity and mortality, in particular related to thromboembolic and cardiovascular complications. There is no specific treatment for membranous nephropathy. Supportive care with the use of diuretics and angiotensin-converting enzyme inhibitors in combination with the angiotensin II receptor blocker is recommended, but these agents have only a limited effect. If the early treatment of kidney disease is not timely, it will cause end-stage renal disease, which will seriously affect the physical and mental health and life safety of patients. Conventional Western medicine treatment of IMN has a long cycle and large drug toxicity and side effects, and the patient's compliance with treatment is low. In addition, the individual differences of patients are large, resulting in poor efficacy [1]. Therefore, it is necessary to find new safe and effective treatment methods. Traditional Chinese medicine believes that IMN of spleen and kidney qi deficiency is caused by factors such as improper diet, fatigue,

wind pathogens, water-dampness, and other factors, resulting in dysfunction of zang-fu organs, deficiency of the spleen and kidney, and internal accumulation of dampness and heat, which in turn leads to poor operation of Sanjiao [2]. Therefore, the treatment of this disease should mainly focus on invigorating the spleen and kidney and promoting water and stasis. The formula of strengthening the spleen and removing dampness and collaterals has the functions of strengthening the spleen and nourishing qi, removing dampness and collaterals [3]. Previous studies have shown that traditional Chinese medicine treatment has great advantages in improving clinical symptoms and renal function in patients with IMN [4]. However, there are few clinical reports on the effects of Jianpi Qushi and Luo Fang on the treatment of spleen-kidney qi deficiency type IMN. In view of this, this article aims to explore and analyze the effects of Jianpi Qushi and Luo Fang on TCM syndrome scores, 24 h urinary albumin (UA), and blood plasma albumin (Alb) in the treatment of spleen-kidney qi deficiency type IMN.

2. Materials and Methods

2.1. General Information. A total of 84 patients with IMN with spleen-kidney qi deficiency type who were admitted to our hospital from November 2019 to September 2021 were selected. Inclusion criteria were as follows: (1) diagnostic criteria: in line with Western medicine IMN diagnostic criteria [5], renal biopsy pathology was grades I and II. (2) TCM diagnostic criteria [6]: syndrome type was spleen-kidney qi deficiency type, main syndrome: waist muscle soreness, fatigue, and foamy urine; secondary symptoms: frequent urination and loose stools; tongue fragrance: thin tongue coating, pale red tongue; and pulse: thin pulse. (3) This study was approved by the hospital ethics committee, and the patients and their families gave their informed consent to this study. Exclusion criteria were as follows: patients with drug allergy in each other, patients with severe liver and kidney dysfunction, patients with mental illness, patients with severe immune organ abnormalities, and patients with infection. They were divided into the observation group and control group by the random number table method, 42 cases in each group. In the observation group, there were 29 males and 13 females, aged 42–60 years, with an average of (51.45 ± 2.14) years, and the course of disease was 4–13 months, with an average of (8.50 ± 1.60) months; in the control group, there were 31 males and 11 females. The age ranged from 42 to 60 years old, with an average of (51.24 ± 2.36) years, and the disease duration was from 4 to 13 months, with an average of (8.26 ± 1.71) months. There was no significant difference in baseline data such as gender, age, and course of disease between the two groups ($P > 0.05$).

2.2. Treatment Methods. Both groups were given a low-salt and low-fat diet, and the daily protein intake was controlled at 1–1.2/kg; blood pressure was maintained at 125/75 mmHg with ACEI and ARB; patients with elevated triglyceride (TG) using fibrates. Using fibrates, patients with elevated cholesterol (cholesterol, TC) use statins; if the patient's plasma albumin (Alb) < 20 g/L, use aspirin enteric-coated tablets (manufacturer: Chenxin Pharmaceutical Co., Ltd., approval number: National Medicine Zhunzi H20113013, specification: 100 mg × 60 tablets) 1 tablet/d; patients with hypercoagulopathy are treated with low molecular weight heparin 5000 IU subcutaneous injection and other conventional treatments.

The control group was given cyclosporine soft capsules (manufacturer: Huabei Pharmaceutical Co., Ltd., approval number: H10960009, specification: 25 mg × 50 capsules) on the basis of conventional treatment. The starting dose was 12–15 mg (kg) d), gradually reduce the dose after 1-2 weeks, reduce the initial dose by 5% every week, and maintain the dose of about 5–10 mg (kg/d).

On the basis of the control group, the observation group was combined with the addition and subtraction treatment of Jianpi Qushi and Luo Fang. Drug composition: 30 g of raw *Astragalus*, 15 g each of Atractylodes Rhizoma, lotus leaf, Su Ye, and white peony root, 10 g of licorice, and 20 g each of Fangji, *Angelica sinensis*, and Fangfeng. Dialectical addition and subtraction: add aconite, cinnamon stick, and dried ginger for those with yang deficiency; add *Coix* seed and *Pinellia* for those with damp-heat; add wax gourd peel and red bean for those with obvious edema; add forsythia, honeysuckle, and dandelion for those with obvious heat toxicity. For those with blood stasis syndrome, add *Angelica* and peony. Take 200 mL of water in simmer, 1 dose/d, in the morning and evening after meals. Both groups were treated continuously for 2 months.

2.3. Methods

2.3.1. Criteria for Judging Efficacy. After 2 months of treatment, the clinical efficacy of the patients was evaluated. Complete remission: the patient's renal function returned to normal, the urine protein quantitative ≤0.3 g/d, and the symptoms of edema proteinuria, hyperlipidemia, and other symptoms basically disappeared. Partial remission: the patient's edema proteinuria, hyperlipidemia, and other symptoms and renal function were significantly improved, 0.3 g/d < quantitative urine protein<3.5 g/d; ineffective: patients with edema proteinuria, hyperlipidemia, and other symptoms and renal function did not improve or even worsened, and the quantitative urine protein was ≥3.5 g/d. Total clinical efficacy = complete remission rate + partial remission rate [7].

2.3.2. TCM Symptom Score. 1 day before treatment and 2 months after treatment, according to the relevant regulations in the "Guidelines for Clinical Research on New Chinese Medicines" [8], the two groups of patients were evaluated for the symptoms of lumbar muscle pain, fatigue, and foamy urine, with each item ranging from 0 to 4. Higher score indicates more severe symptoms.

2.3.3. Biochemical Indicators. One day before treatment and 2 months after treatment, 3 mL of fasting venous blood was

drawn from all patients, left standing for 30 min, and then centrifuged (3000 r/min, 15 min), and upper serum was collected and stored at −40°C for future use. The serum TG, TC, and Alb levels of patients were detected by enzyme-linked immunosorbent assay, and the reagents and kits were purchased from Shanghai Valan Biotechnology Co., Ltd. The 24-hour urine of the patients was collected, and 3 mL was reserved for detection. The AU5800 automatic differentiation instrument (Beckman Coulter) was used to detect the 24-hour UA of the patients. The reagents and kits were matched with the instrument. All operation steps are carried out in strict accordance with the instructions.

2.3.4. Immune Function. The percentages of Th1, Th2, and Th17 in peripheral blood were measured by flow cytometry (Beckman FC500 USA) 1 day before treatment and 14 days after treatment, and the Th1/Th2 ratio is calculated.

2.3.5. Adverse Reactions. The occurrence of adverse reactions in the two groups was observed, including vomiting, nausea, and diarrhea.

2.4. Statistical Methods. SPSS 22.0 statistical software was used for data analysis. The count data such as adverse reactions and clinical efficacy were expressed by n, %, and the chi-square test was performed to meet the normal distribution and homogeneity of the measurement data such as immune function, biochemical indicators, and TCM syndrome scores. The difference between the two groups was compared by the independent sample t-test, and the difference between the groups before and after treatment was tested by the paired t-test, and $P < 0.05$ or $P < 0.001$was considered to be statistically significant.

3. Results

3.1. Comparison of Therapeutic Efficacy between the Two Groups of Patients. The total effective rate of patients in the observation group was 90.48%, and there was no significant difference compared with 73.81% in the control group ($P > 0.05$), as given in Table 1.

3.2. Comparison of TCM Syndrome Scores between the Two Groups of Patients. Before treatment, there was no significant difference in TCM syndrome scores such as lumbar muscle pain, fatigue, and foamy urine between the two groups ($P > 0.05$). After treatment, the scores of the patients in the observation group were lower than those in the control group ($P < 0.05$), as given in Table 2.

3.3. Comparison of Biochemical Indicators between the Two Groups of Patients. Before treatment, there was no significant difference in 24 h UA, Alb, TG, and TC levels between the two groups ($P > 0.05$). 24 h UA, TG, and TC were lower than those of the control group, and Alb was higher than that of the control group after treatment ($P < 0.001$), as given in Table 3.

3.4. Comparison of Immune Function between the Two Groups of Patients. Before treatment, there was no significant difference in Th1, Th2, Th17, and Th1/Th2 between the two groups ($P > 0.05$); after treatment, there was no significant difference in Th2 between the two groups ($P > 0.05$); the observation group's Th17 decreased, Th1/Th2 slightly increased, and Th1 and Th17 and Th1/Th2 were lower than the control group ($P < 0.05$), as given in Table 4.

3.5. Comparison of Adverse Reactions between the Two Groups of Patients. During the treatment period, 3 cases of vomiting, 1 case of nausea, and 2 cases of diarrhea occurred in the control group, with an adverse reaction rate of 14.29%, and 2 cases of diarrhea occurred in the observation group, with an adverse reaction rate of 4.76%. There was no significant difference in adverse reactions between the two groups ($\chi^2 = 4.211$, $P = 0.240$). Adverse reactions resolved with treatment and over time.

4. Discussion

IMN belongs to the categories of "edema" and "chronic kidney wind" in traditional Chinese medicine. After a person reaches middle age and old age, the constitution gradually declines, and the qi of the spleen and kidney gradually weakens. Losing one's place and master and acting recklessly, water and dampness overflows, external prostitution of the skin will cause edema of the limbs, and internal discharge of the viscera will cause pleural effusion, and if the spleen is lacking, the yang will not rise and the essence will sink, and if the kidneys are ischemic, the essence will be lost and leaked out, resulting in proteinuria [9, 10]. This disease belongs to the deficiency of the root and the excess and is based on the deficiency of the spleen and kidney, with damp-heat and congestion as the symptoms. Therefore, treatment should benefit the kidneys, strengthen the spleen, cultivate the roots, promote blood and water to treat symptoms, and captures essence and solid astringency [11]. Therefore, this study investigated the effects of the addition and subtraction of Jianpi Qushi and Luo Fang on TCM syndrome scores, 24 h UA, and Alb in the treatment of spleen-kidney qi deficiency type IMN.

The formula for strengthening the spleen and removing dampness and collaterals was created by Professor Yu Renhuan based on the theoretical guidance of Li Dongyuan's "Yin Fire Theory" and Zhang Zhongjing's "water-qi disease" [12]. The raw *Astragalus* in the prescription is a holy medicine for tonifying qi, which can invigorate the spleen and replenish qi. Atractylodes Rhizoma invigorates the spleen and replenishes qi, dries dampness and invigorates water, and supplemented with *Astragalus*, can tonify qi and solidify the appearance, prevent self-invigorating water, reduce swelling, dispel wind and relieve pain, and is beneficial to enter kidney wind and relieve pain. Disperse dampness, play a role in helping diuresis and exfoliation; lotus leaves clear heat and nourish hair, and Qingyang not only evacuates congestion and edema but also drive away rheumatism and relieve pain. *Angelica* is a blood

Table 1: Comparison of therapeutic efficacy between the two groups of patients (n, %).

Group	Number of cases	Complete relief	Partial relief	Invalid	Overall efficiency
Observation group	42	22	16	4	90.48
Control group	42	17	14	11	73.81
χ^2					4.041
P					0.133

Table 2: Comparison of TCM syndrome scores between the two groups of patients ($\bar{x} \pm s$, points).

Group	Number of cases	Psoas soreness		Tiredness		Foamy urine	
		Before the treatment	After treatment	Before the treatment	After treatment	Before the treatment	After treatment
Observation group	42	2.40 ± 0.54	$0.67 \pm 0.48^*$	2.52 ± 0.59	$0.71 \pm 0.46^*$	2.19 ± 0.45	$0.71 \pm 0.30^*$
Control group	42	2.31 ± 0.47	$0.95 \pm 0.22^*$	2.74 ± 0.63	$0.93 \pm 0.34^*$	2.33 ± 0.61	$1.10 \pm 0.48^*$
T		0.860	3.537	1.608	2.433	1.215	2.602
P		0.392	0.001	0.112	0.017	0.228	0.011

Compared with the group of before treatment, $^*P < 0.05$.

Table 3: Comparison of biochemical indicators between the two groups of patients ($\bar{x} \pm s$, $n = 42$).

Group	24 h UA (g)		Alb (g/L)		TG (mmol/L)		TC (mmol/L)	
	Before the treatment	After treatment	Before the treatment	After treatment	Before the treatment	After treatment	Before the treatment	After treatment
Observation group	3.55 ± 0.94	$1.09 \pm 0.27^*$	27.14 ± 2.32	$42.55 \pm 5.20^*$	6.29 ± 1.26	$2.48 \pm 0.47^*$	8.67 ± 1.12	$3.29 \pm 1.08^*$
Control group	3.62 ± 0.91	$2.39 \pm 0.62^*$	26.80 ± 2.85	$37.54 \pm 3.35^*$	6.24 ± 1.33	$3.31 \pm 0.73^*$	8.49 ± 1.03	$4.23 \pm 1.20^*$
T	0.313	12.556	0.585	5.251	0.177	6.255	0.740	3.746
P	0.755	<0.001	0.560	<0.001	0.860	<0.001	0.461	<0.001

Compared with the group of before treatment, $^*P < 0.05$.

Table 4: Comparison of immune function between two groups of patients ($\bar{x} \pm s$, $n = 42$).

Group	Th1 (%)		Th2 (%)		Th17 (%)		Th1/Th2	
	Before the treatment	After treatment	Before the treatment	After treatment	Before the treatment	After treatment	Before the treatment	After treatment
Observation group	37.71 ± 3.22	$23.53 \pm 3.30^*$	55.07 ± 2.11	$58.26 \pm 4.16^*$	7.46 ± 1.49	$5.15 \pm 1.20^*$	0.67 ± 0.11	$0.42 \pm 0.10^*$
Control group	36.79 ± 1.80	$27.36 \pm 3.21^*$	54.88 ± 2.31	$56.96 \pm 3.26^*$	7.37 ± 1.48	$6.39 \pm 1.02^*$	0.63 ± 0.19	$0.48 \pm 0.14^*$
T	1.611	5.395	0.404	1.588	0.274	5.070	1.096	2.572
P	0.111	<0.001	0.688	0.116	0.785	<0.001	0.276	0.012

Compared with the group of before treatment, $^*P < 0.05$.

medicine, combined with lotus leaf, and Fangfeng can regulate qi and blood dredge meridians and collaterals; licorice tonifies the spleen and replenishes qi, clears heat and detoxifies, and reconciles various medicines. Modern pharmacological studies have shown that *Astragalus* and *Atractylodes* have the effects of enhancing immunity and antioxidation. Fangfeng has antibacterial and anti-inflammatory effects; lotus leaf can be used to treat hyperlipidemia and has a positive effect on preventing thrombosis. Fangji directly acts on adrenal glands, enhances the function of adrenal cortex, and plays an anti-inflammatory role. Atractylodes Rhizoma protects the liver and gallbladder and has anticoagulation and antibacterial activities. The combination of various medicines plays a role in strengthening the spleen and nourishing qi, dehumidification, and collaterals.

In this study, the TCM syndrome scores in the observation group were significantly lower than those in the control group, suggesting that the use of Jianpi Qushi and Luofang modified and subtracted treatment is beneficial to relieve the clinical symptoms of IMN patients with spleen-kidney qi deficiency. The reason may be that the prescription of strong spleen dehumidification can boost the spleen, replenish qi, diuretic, exhaust coordination side branches, dialectical medication according to the patient's condition, help prescribe the correct drug, improve the patient's efficacy, and then alleviate the patient's clinical symptoms and lowered TCM syndrome scores.

24 h UA is closely related to the renal function of the patient. When the renal barrier of the patient is damaged, a large amount of protein is filtered from the glomerulus, which increases the protein content in the urine [13]. Alb, as

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Retraction

Retracted: Application of Health Education Based on Phased Transition Theory Model in Continuous Nursing for Patients with Inflammatory Bowel Disease

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

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[1] H. Xiao and J. Ye, "Application of Health Education Based on Phased Transition Theory Model in Continuous Nursing for Patients with Inflammatory Bowel Disease," *Emergency Medicine International*, vol. 2022, Article ID 4194178, 7 pages, 2022.

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Research Article

Application of Health Education Based on Phased Transition Theory Model in Continuous Nursing for Patients with Inflammatory Bowel Disease

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Objective. To explore the application effect of health education based on phased transition theory model in the continuous nursing for patients with inflammatory bowel disease (IBD). *Method*. A total of 106 patients with IBD admitted to the hospital were enrolled as the research objects between October 2020 and September 2021. According to random number table method, they were divided into observation group and control group, 53 cases in each group. The control group was given routine nursing, while observation group was additionally given health education based on phased transition theory model. The nutritional status (serum prealbumin (PA), albumin (ALB), body mass index (BMI)), scores of Disease Knowledge Mastery Scale, exercise of self-care agency scale (ESCA), and Inflammatory Bowel Disease Questionnaire (IBDQ) were compared between the two groups before and after intervention. *Results*. After intervention, PA, ALB, and BMI in observation group were higher than those in control group ($P < 0.05$), scores of Disease Knowledge Mastery Scale, total mastery rate, scores and total score of ESCA, and scores and total score of IBDQ were significantly higher than those in control group ($P < 0.05$). *Conclusion*. The application of health education based on phased transformation theory model in the continuous nursing improves disease knowledge mastery, self-care ability, nutritional status, and quality of life in IBD patients.

1. Introduction

Inflammatory bowel disease (IBD) is a common chronic intestinal inflammatory disease, including ulcerative colitis and Crohn's disease. The main clinical manifestations of the patients are abdominal pain, diarrhea, and bloody stool [1–3]. IBD is characterized by a long course of disease, prolonged unhealing period, and a high recurrence rate. The treatment of IBD is difficult, and the patient's treatment compliance, dietary habits, and self-management ability can all have an important impact on treatment and recurrence [4]. Some studies have pointed out [5] that self-care and lifestyle of IBD patients after discharge are of great effect to improve the treatment outcome of patients, which is conducive to improving the quality of life and prognosis of patients. However, some patients lack the awareness of continuous care after discharge, which makes them poor in self-care ability and control of the disease. The phased transition theoretical model is a method that focuses on the process and needs of human behavior change, which can help to change the unhealthy behavior of patients and promote the development of their healthy behavior [6]. This theoretical model has been proved to have good effects in healthy education and nursing of chronic diseases such as asthma and diabetic nephropathy [7]. However, the value of its combination with continuous care in the clinical care of IBD patients is unclear. This study mainly explores the effect of the health education program based on the staged transition theoretical model in the continuation of care for IBD patients, to provide a theoretical

basis for finding ways to improve self-care ability and quality of life in IBD patients.

2. Material and Methods

2.1. Clinical Data. 106 inpatients with IBD who were admitted to our hospital from November 2020 to October 2021 were selected as the research subjects. According to the random number table method and random numbers generated by a computer, the patients were randomly divided into observation group and control group, with 53 patients in each group. Inclusion criteria: ① patients with age ≥18 years old and meeting the diagnostic criteria of IBD [8, 9]; ② the first onset, with complete clinical data; and ③ who are mentally and cognitively normal. Exclusion criteria: ① patients with language barrier, unable to communicate; ② with intestinal cancer or other malignant tumors; ③ with organic brain lesions and severe liver and kidney dysfunction; ④ who are unable to review and receive follow-up on time. This study was approved by the Medical Ethics Committee, and all subjects were informed and voluntarily participated in the study. There was no significant difference in baseline data such as age, gender, type of IBD, and years of education between the two groups ($P > 0.05$), as shown in Table 1.

2.2. Methods. The patients in the control group were given routine nursing care, which mainly included health education such as IBD-related knowledge lectures and watching IBD propaganda films to enhance the patients' cognition of the disease and recovery and to provide necessary psychological counseling, environmental care and dietary guidance, etc. Nursing staff urge patients to follow the doctor's orders to take medicines, give hospitalization guidance before discharge, instruct patients to seek medical treatment in time if they have problems, review them on time, and do not carry out any nursing intervention after discharge. We followed up by phone only and notified the patient to review regularly, the follow-up period was 2 months.

Based on the control group, the observation group adopted the health education program based on the theoretical model of phased transformation for continuous nursing. The specific methods are as follows: establishing a staged transformation theory model propaganda team, including 2 physicians, 2 nurses, 1 psychological counselor and 1 nutritionist in the gastroenterology department; learning the theory of staged transition and professional knowledge of postoperative care of IBD; after communicating with the patient, according to the patient's behavior and psychological characteristics, and combining the patient's needs, the continuous nursing work is divided into the following five stages: (1) preintention stage: at this stage, some patients have not yet realized the significance of IBD knowledge, self-care, and complication prevention to IBD. The total score of the scale is 100 points. Patients with a score of fewer than 70 points are included in the key health education goals, and patients with a score of 70 points and above are given normal education. The nursing staff invite relevant medical and nursing experts to hold knowledge lectures, watch videos, etc., to train patients on the mechanism of IBD, dietary precautions, self-care methods, prevention of complications, etc., and inform patients of the importance of following the doctor's prescription for medication in the chronic persistent period of the disease. Focus on educating patients to carry out analysis meetings, informing patients of assessment results and urging them to improve their health awareness. The intervention time is 1 week. (2) Intention stage: in this stage, patients already have a hospital that promotes the formation of healthy behaviors, but no definite plan has been produced. Nursing staff communicate and analyze with patients to find solutions for their current adverse health behaviors and their own health needs. Introduce the key content of health education to patients: instruct patients to evaluate the degree, nature, and location of their abdominal pain, record the nature and frequency of stool during diarrhea, analyze whether there are inducing factors, instruct patients to take targeted medication for relief, and return to the hospital for treatment if necessary. Help patients understand possible complications and corresponding treatment methods, teach patients how to clean the anus correctly, and prevent infection. In terms of medication, the importance of taking medication as prescribed by the doctor is emphasized to patients, the patients and their families are instructed the correct medication method, and the possible adverse reactions and treatment methods are explained. In terms of diet, guide patients to standardize their diet, eat more easily digestible, high-protein, and vitamin-rich foods and avoid fried and spicy foods. In life, guide patients to work and rest regularly, do physical exercise appropriately, and encourage patients to write a health diary. The intervention period was 1 week. (3) Preparation stage: comprehensively assess the patient's psychology, cognition, and condition, formulate clear goals and individualized health behavior promotion plans for the patient's current problems and disease characteristics, and sign a written agreement. Select the positive and negative cases of previous departments to share and provide personalized guidance according to the patient's psychological state and behavioral habits, to improve the patient's treatment and nursing compliance. A "rehabilitation nursing group" was established on the WeChat platform, and nursing staff continued to regularly push 1 piece of health education knowledge every day to improve health awareness. The intervention time was 2 weeks. (4) Action stage: according to the formulated care plan, nurses conduct regular telephone visits and home follow-ups to find out whether the patient is following the continuous care plan. Assess the patient's current cognition and condition, and adjust the plan in time; understand the patient's medication compliance, give guidance on time, make a family visit one month after discharge, urge the patient to adhere to regular and on-time medication, and regularly visit the hospital for follow-up visits. Adjust the medication under the guidance of the doctor, emphasizing the significance of the medication and the possible consequences of noncompliance. The intervention period was 2 weeks. (5) Maintenance stage: at this

Table 1: Comparison of baseline data of two groups of patients.

Group	Gender (number of cases)		Age (year)	Education (year)	IBD type (number of cases)	
	Male	Female			Ulcerative colitis	Crohn's disease
Observation group ($n = 53$)	29	24	36.55 ± 4.88	11.25 ± 2.66	31	22
Control group ($n = 53$)	33	20	36.96 ± 6.50	11.17 ± 2.04	34	19
χ^2/t	0.622		0.372	0.164	0.358	
P value	0.430		0.711	0.870	0.550	

stage, the patient's self-care behavior has changed, but the speed of change may slow down over time, making it difficult to maintain. At this stage, strengthen the encouragement of patients, encourage and praise patients who have completed the plan well, and guide them to consolidate and maintain established healthy behaviors; those who do not complete the plan help them find problems and provide targeted guidance to help them solve problems, and appropriate psychological support is needed to strengthen their confidence in overcoming the disease and self-management, the intervention time was 2 weeks. The intervention time of the observation group was 8 weeks.

2.3. Observation Indicators

2.3.1. Disease Knowledge Mastery. Before and after the intervention, the patient's disease knowledge mastery was evaluated by the self-made "IBD Disease Knowledge Mastery Scale." The scale includes 4 items of IBD occurrence mechanism, common incentives, and complication prevention and daily nursing measures, with a total score of 100 points. Scores <70 points are not mastered, 70 points ≤ -scores ≤90 points are partially mastered, and >90 points are fully mastered. The number of patients with complete and partial mastery of disease knowledge in the two groups after the intervention was counted, and the total mastery rate was calculated.

2.3.2. Nutritional Status Indicators. Before and after the intervention, the body weight and height of the patients on an empty stomach in the morning were measured on-site with a height scale, and the body mass index (BMI) value was calculated. BMI = weight (kg)/height 2 (m2); and fasting cubital venous blood was collected from patients in the morning, and Hitachi 7180 automatic biochemical analyzer was used to detect albumin (Alb) and prealbumin (PA) level of the patients.

2.3.3. Self-Care Ability. Before and after the intervention, the self-care ability assessment (ESCA) was used to evaluate the self-care ability of patients before and after nursing, including self-responsibility (6 items), self-care skills (12 items), health knowledge level (17 items), and self-concept (8 items), and the scores for each item are 24, 48, 68, and 32, respectively [10]. The higher the score indicates the better the patient's self-care ability.

2.3.4. Evaluation of Patients' Quality of Life. Before and after the intervention, the Chinese version of the Inflammatory Bowel Disease Quality of Life Questionnaire [11] (IBDQ) was used to investigate the quality of life of the two groups of patients. The IBDQ includes four aspects: intestinal symptoms, systemic symptoms, emotional ability, and social ability. It is divided into 10, 5, 12, and 5 items. Each item is scored on a 7-point scale (1–7 points), with a total score of 224 points. A higher IBDQ score means the higher life quality of the patients.

2.4. Statistical Analysis. SPSS21.0 statistical software was used to analyze the experimental data, the count index was expressed as %, and the χ^2 test was performed; the measurement indexes such as PA and ALB were expressed as "mean ± standard deviation ($\overline{X} \pm S$)", and the t-test was conducted. $P < 0.05$ was considered statistically significant.

3. Results

3.1. Comparison of Disease Knowledge in the Two Groups before and after Intervention. After the intervention, the scores of disease knowledge mastery of the two groups of patients were significantly higher than those before the intervention ($P < 0.05$), and the disease knowledge mastery score and total mastery rate of the observation group were significantly higher than those of the control group ($P < 0.05$), as shown in Table 2.

3.2. Comparison of Nutritional Status Indicators in the Two Groups before and after Intervention. After the intervention, the levels of PA, ALB, and BMI in the two groups were lower than those before the intervention ($P < 0.05$); and the levels of PA, ALB, and BMI in the observation group were lower than those in the control group ($P < 0.05$), as shown in Table 3.

3.3. Comparison of Self-Care Ability of the Two Groups before and after the Intervention. After the intervention, the ESCA dimension scores and total scores in the two groups were higher than those before the intervention ($P < 0.05$); and the ESCA dimension scores and total scores in the observation group were higher than those in the control group ($P < 0.05$), as shown in Table 4.

3.4. Comparison of Quality of Life before and after Intervention between the Two Groups. After intervention, the scores and total scores of each dimension of IBDQ in the two groups

Table 2: Comparison of the mastery of disease knowledge between the two groups of patients.

Group	Overall mastery rate after intervention (number of cases (%))	Disease knowledge mastery score	
		Before intervention	After intervention
Observation group ($n = 53$)	50 (94.34)	66.35 ± 2.80	84.25 ± 4.29
Control group ($n = 53$)	41 (77.36)	66.91 ± 4.97	72.40 ± 3.40
χ^2/t	6.290	0.481	15.767
P value	0.012	0.632	0.000

Table 3: Comparison of BMI, PA, and ALB levels between the two groups before and after intervention ($\pm s$).

Group	PA (mg/L)		ALB (g/L)		BMI (kg/m^2)	
	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Observation group ($n = 53$)	175.18 ± 12.22	213.34 ± 18.68*	31.47 ± 3.46	32.07 ± 3.48*	20.57 ± 1.15	20.87 ± 1.39*
Control group ($n = 53$)	175.89 ± 11.88	257.23 ± 15.99*	31.12 ± 2.20	34.34 ± 3.00	20.30 ± 1.08	22.86 ± 1.65
t	0.303	12.995	0.627	3.592	1.264	6.731
P value	0.762	0.000	0.533	0.001	0.209	0.000

Note. PA: serum prealbumin; ALB: albumin; BMI: body mass index; compared with the group of before intervention, $^*P < 0.05$.

were significantly higher than those before intervention ($P < 0.05$); and the scores and total scores of each dimension of IBDQ in the observation group were significantly higher than those in the control group ($P < 0.05$), as shown in Table 5.

4. Discussion

IBD is characterized by long course and prone to recurrence. The incidence of IBD is related to poor eating habits, anxiety, and depression. The clinical treatment of IBD is mainly by drug therapy, however the course of treatment is long and the compliance of some patients is poor, which leads to the relapse of IBD, is difficult to cure, and greatly reduces the quality of life of patients. However, IBD patients can still control the disease well and reduce recurrence by controlling diet, regulating emotions, and actively taking drugs. Studies have shown that [12] IBD patients formulate a reasonable care plan and program through continuous care, which can help patients obtain uninterrupted continuous care after discharge, improve their quality of life and treatment, and reduce the recurrence rate of the disease. The theoretical model of staged transition was proposed by the psychologist Prochaska, which mainly divides the process of human behavior change into five different stages, such as the unintentional period and the intentional period, which can promote the development of individual healthy behaviors [13, 14]. The combination of health education and continuous nursing based on the theoretical model of stage transition is conducive to the smooth implementation of continuous nursing measures, and it has been pointed out that it has a good intervention effect in the management of chronic diseases.

This study attempts to apply the health education program based on the staged transition theoretical model to the continued care of IBD patients. The results showed that after the intervention, the PA, ALB levels, and BMI of the patients in the observation group higher than those in the control group were significantly higher than those in the control group. It can be seen that this nursing model has significantly improved the patient's disease knowledge and self-care ability and improved the patient's nutritional status and quality of life. The health education program guided by the theoretical model of staged transformation in this study divides the transformation of patients' health behaviors into different stages and formulates targeted change plans according to the problems and unhealthy behaviors faced by the patients. In the process of implementing the patient plan, this nursing model provides key education and supervision to patients with insufficient cognition to improve their health awareness by assessing the degree of disease knowledge and cognition of patients; by training patients on the mechanism of IBD, dietary precautions, self-care methods, prevention of complications, etc., the importance of adhering to the doctor's prescription for medication is taught to patients, so that patients' disease knowledge and treatment compliance can be improved, which is helpful for patients after discharge [15]. IBD patients are prone to malnutrition, and in the absence of dietary guidance, patients are often confused by food choices. The dietary guidance of patients in the health education program based on the staged transition theoretical model can help patients eat healthy, improve their nutritional status, and reduce the occurrence of malnutrition [16].

In this study, the application of the health education program based on the theoretical model of staged transformation in the continuous nursing of patients with inflammatory bowel disease is based on the formulated targeted nursing plan, allowing patients to continue to receive continuous nursing at the level of nursing during hospitalization after discharge. Through staged behavioral intervention, the patients' awareness of active participation was improved, and they actively cooperated with the nursing plan to enhance their sense of self-responsibility and self-protection behavior; at the same time, this nursing model enables patients to master IBD-related health knowledge

Table 4: Comparison of ESCA scores between the two groups before and after intervention (points, ±*s*).

Group	Self-responsibility		Mastery of health knowledge		Self-care skills		Self-concept		Total score	
	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Observation group ($n = 53$)	15.53 ± 2.33	21.40 ± 2.32*	30.62 ± 3.46	57.30 ± 3.77*	24.34 ± 3.11	35.00 ± 3.61*	17.62 ± 2.40	28.42 ± 3.69*	88.11 ± 5.91	142.11 ± 6.07*
Control group ($n = 53$)	16.19 ± 2.10	17.92 ± 2.98*	30.36 ± 2.96	45.60 ± 3.18*	23.70 ± 2.28	28.25 ± 2.62*	18.09 ± 2.70	21.26 ± 2.22*	88.34 ± 4.45	113.04 ± 5.20*
t	1.533	6.689	0.422	17.288	1.197	11.039	0.952	12.096	0.223	26.494
P value	0.128	0.000	0.674	0.000	0.234	0.000	0.343	0.000	0.824	0.000

Note. Compared with the group of before intervention, $^*P < 0.05$.

Table 5: Comparison of IBDQ scores between the two groups before and after intervention (points, ±s).

Group	Intestinal symptoms		Systemic symptoms		Emotional capacity		Social competence		Total score	
	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Observation group ($n = 53$)	33.58 ± 3.52	53.51 ± 2.93*	22.81 ± 2.42	33.55 ± 2.50*	57.40 ± 4.21	74.98 ± 5.20*	21.15 ± 2.32	32.74 ± 3.79*	135.42 ± 7.49	194.77 ± 8.27*
Control group ($n = 53$)	33.96 ± 3.37	47.58 ± 3.53*	23.38 ± 2.68	29.91 ± 2.73*	56.74 ± 4.49	67.51 ± 4.87*	20.85 ± 3.50	28.40 ± 2.80*	134.92 ± 7.76	173.66 ± 7.57*
t	0.483	8.984	1.142	7.166	0.781	7.631	0.524	6.709	0.013	13.711
P value	0.574	0.000	0.256	0.000	0.437	0.000	0.602	0.000	0.990	0.000

Note. Compared with the group of before intervention, * $P < 0.05$.

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Retraction

Retracted: Effects of Stone Removal via Different Approaches in the Treatment of Incarcerated Upper Ureteral Calculi: A Comparative Study

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] X. Yuan, H. Wei, X. Liu, Z. Jiao, T. Wu, and H. Shi, "Effects of Stone Removal via Different Approaches in the Treatment of Incarcerated Upper Ureteral Calculi: A Comparative Study," *Emergency Medicine International*, vol. 2022, Article ID 7651215, 4 pages, 2022.

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Research Article

Effects of Stone Removal via Different Approaches in the Treatment of Incarcerated Upper Ureteral Calculi: A Comparative Study

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Objective. The aim of this study is to investigate the clinical effects of percutaneous nephrolithotomy and transurethral ureteroscopic lithotripsy in the treatment of incarcerated upper ureteral calculi. *Methods*. This study retrospectively reviewed 400 patients with incarcerated upper ureteral calculi admitted to the hospital from January 2016 to December 2021. Among them, 200 patients treated with percutaneous nephrolithotomy were included in the percutaneous group and 200 patients treated with transurethral ureteroscopic lithotripsy were included in the transurethral group. Perioperative indicators and stone clearance rates on day 7 and 1 month after operation and the reoperation rate were compared between the two groups. The incidence of postoperative complications was recorded. *Results*. The operation time and postoperative hospital stay of the percutaneous group were longer than those of the transurethral group ($P < 0.05$). There was no significant difference in intraoperative blood loss, 24 h postoperative pain score, stone clearance rates on day 3 and day 14 after operation, or the reoperation rate between the two groups ($P > 0.05$). Postoperative complications in the two groups were mainly grade I and II. The total incidence of complications in the percutaneous group was significantly lower than that in the transurethral group ($P < 0.05$). *Conclusion*. Both percutaneous nephrolithotomy and transurethral ureteroscopic lithotripsy are effective in the treatment of incarcerated upper ureteral calculi. The former can reduce the incidence of postoperative complications, but the operation time and postoperative hospital stay are longer.

1. Introduction

Incarcerated upper ureteral calculi are one of the common clinical diseases of the urinary system, with lumbar colic, hematuria, and fever as the main clinical symptoms. In the past, conservative treatment, extracorporeal shock wave lithotripsy, and open surgery were used to treat incarcerated upper ureteral calculi, but the clinical effect was limited [1]. With the development of endoscopic technology, various endoscopic minimally invasive procedures have become the main methods for the treatment of incarcerated upper ureteral calculi, including percutaneous nephrolithotomy, transurethral ureteroscopic lithotripsy, etc. [2,3]. However, the clinical efficacy of the abovementioned two commonly used surgical methods has been controversial and no consensus has been attained [4]. In order to further clarify the clinical effect of percutaneous renal ureteral lithotripsy and transurethral ureteral lithotripsy in the treatment of incarcerated upper ureteral calculi, this study retrospectively analyzed the clinical data of 400 patients with incarcerated upper ureteral calculi, the operative indicators, stone clearance rate, complications, etc., and can provide reference for the selection of surgical methods for the clinical treatment of incarcerated upper ureteral calculi.

2. Materials and Methods

2.1. General Information. The clinical data of 400 patients with incarcerated upper ureteral calculi who were treated in our hospital from January 2016 to December 2021 were

retrospectively analyzed. The inclusion criteria were as follows: ① Ultrasound or CT confirmed that the stone was located in the upper ureter of one side; ② the stone obstruction time was more than 2 months, which was in line with the indication for surgery; and ③ the patient was not limited by gender, and the age was more than 18 years old. The exclusion criteria were as follows: ① patients with kidney stones requiring primary surgical treatment; ② patients with middle and lower ureteral calculi; ③ patients with severe urethra or ureteral stricture; ④ patients with severe urinary tract infection; and ⑤ patients with major organ dysfunction. Among them, 200 patients were treated with percutaneous renal ureteral lithotripsy (percutaneous renal group) and 200 patients were treated with transurethral lithotripsy (transurethral group). This study was approved by the hospital ethics committee, and there was no statistical significance in the general clinical data between the two groups ($P > 0.05$) as shown in Table 1.

2.2. Treatment Methods. Percutaneous kidney group: The patients received percutaneous nephrolithotomy. The patient was placed in the lithotomy position, and after anesthesia was routinely sterilized and draped, the affected ureter was examined by a transurethral ureteroscope, and the F6 ureteral catheter was placed along the guide wire into the affected ureter. The catheter was retained and the catheter was properly fixed. The body position was changed to the prone position, the puncture point (the posterior axillary line to the subscapular line, the 10th intercostal space to the 12th rib) was determined, and the puncture needle was inserted at the puncture point under the guidance of ultrasound wire and the puncture needle withdrawn. The fascia dilator was used for step-by-step expansion along the guide wire (F8~F18). When the channel was expanded to F18, the working sheath was indwelled, and the ureteroscope was inserted through the percutaneous renal microchannel for laser lithotripsy and lithotripsy. After the microscopic examination showed no residual stones, the double J tube was indwelled, the ureteroscope was withdrawn, the urinary catheter was set, and the operation was completed.

Transurethral group: The patients received transurethral lithotripsy. The patient was placed in the lithotomy position, and after anesthesia was routinely disinfected and draped, the transurethral ureteroscope was directly placed into the bladder, and the zebra guide wire was inserted into the ureter on the affected side through the urethra and the ureteroscope was placed along the guide wire into the upper ureteral calculus position, with a 200 μm implant. Through optical fiber and laser lithotripsy, after the stones were cleaned, a 5F ureteral stent was indwelled, the ureteroscope was withdrawn, the urinary catheter was set, and the operation was completed.

2.3. Observation Indicators. The observation indicators are as follows: ①Perioperative indicators: The perioperative indicators such as operation time, intraoperative blood loss, postoperative 24-hour pain score, and postoperative hospitalization time were compared between the two groups. The higher the score, the more pain the patient feels. ② Stone removal status: The stone removal rate and secondary operation rate (referring to nonconcurrent invasive operations) were compared between the two groups at 7d and 1 month after operation. ③ The postoperative complications of the patients were recorded, including pain, fever, nausea and vomiting, urinary tract infection, ureteral stricture, etc., within a month, and the complications were graded with reference to the modified Clavein grading standard [5].

2.4. Statistical Processing. SPSS 20.0 statistical software was used to analyze the data. The measurement data is expressed as independent sample t-test, which is used for the comparison between the two groups the enumeration data were expressed as n (%), and carry out the $\chi 2$ test. $P < 0.05$ was considered statistically significant.

3. Results

3.1. Comparison of Perioperative Indicators between the Two Groups of Patients. The operation time and postoperative hospital stay in the percutaneous renal group were longer than those in the transurethral group ($P < 0.05$). There was no significant difference in intraoperative blood loss and 24 h postoperative pain score between the two groups ($P > 0.05$) as shown in Table 2.

3.2. Comparison of Stone Clearance between the Two Groups of Patients. There was no significant difference in the stone clearance rate and secondary operation rate at 7 d and 1 month after operation between the two groups ($P > 0.05$) as shown in Table 3.

3.3. Comparison of Postoperative Complications between the Two Groups of Patients. No serious complications (Grade III, IV, V) occurred in all patients. Grade I complications were mainly pain, fever, and vomiting. Grade II complications were mainly urinary tract infection and ureteral stricture. The total incidence of complications in the percutaneous group was significantly lower than that in the transurethral group, and the difference was statistically significant ($P < 0.05$) as shown in Table 4.

4. Discussions

Kidney stones descending and draining into the ureter are the main reasons for the formation of ureteral stones. When the stones are larger in diameter and irregular in shape, they are easily incarcerated in the upper ureter, forming incarcerated upper ureter stones. It can cause ureteral obstruction, urinary tract infection, hydronephrosis, etc., and eventually lead to the loss of renal function [6]. Therefore, ureteral calculi should be removed in time, the obstruction should be relieved, and the renal function of the affected side should be protected.

Surgical treatment is an important method for clinical treatment of incarcerated upper ureteral calculi. Among the commonly used percutaneous ureteroscopic lithotripsy and

Table 1: Comparison of general clinical data of two groups of patients (n (%)).

Indexes	Number of cases	Percutaneous kidney group ($n = 200$)	Transurethral group ($n = 200$)	χ^2/t	P
Gender	Male	123 (61.50)	119 (59.50)	0.167	0.682
	Female	77 (38.50)	81 (40.50)		
Age (years)		53.34 ± 10.35	53.00 ± 9.91	0.341	0.734
The diameter of the stone (mm)		10.18 ± 2.09	10.28 ± 3.12	0.377	0.707
Stone location	Left side	105 (52.50)	113 (56.50)	0.645	0.422
	Right side	95 (47.50)	87 (43.50)		
Stone CT value (HU)		771.14 ± 215.16	786.24 ± 201.91	0.724	0.470

Table 2: Comparison of perioperative indicators between the two groups of patients (n, $\bar{x} \pm s$)

Group	Operation time (min)	Intraoperative blood loss (ml)	24-h Postoperative pain score (score)	Postoperative hospital stay (d)
Percutaneous kidney group ($n = 200$)	42.37 ± 9.88	18.64 ± 5.98	5.12 ± 1.22	5.93 ± 1.96
Transurethral group ($n = 200$)	31.86 ± 10.59	17.95 ± 4.55	4.89 ± 1.42	3.68 ± 1.06
T	10.259	1.299	1.697	14.282
P	<0.001	0.195	0.091	<0.001

Table 3: Comparison of stone clearance between two groups of patients (n, %).

Group	Stone clearance rate at 7 d postoperatively	Stone clearance rate at 1 month postoperatively	Secondary surgery rate
Percutaneous kidney group ($n = 200$)	179 (89.50)	197 (98.50)	3 (1.50)
Transurethral group ($n = 200$)	181 (90.50)	195 (97.50)	4 (2.00)
χ^2	0.111	0.510	0.145
P	0.739	0.475	0.703

* row Fisher's exact probability test.

Table 4: Comparison of postoperative complications between the two groups of patients (n,%).

Group	Grade I		Grade II			Overall incidence
	Pain	Fever	Vomiting	Urinary tract infection	Ureteral stricture	
Percutaneous kidney group ($n = 200$)	8 (4.00)	5 (2.50)	3 (1.50)	2 (1.00)	1 (0.50)	19 (9.50)
Transurethral group ($n = 200$)	10 (5.00)	9 (4.50)	5 (2.50)	5 (2.50)	4 (2.00)	33 (16.50)
χ^2						4.332
P						0.037

transurethral calculi, percutaneous renal ureteral calculi in the treatment of intrarenal and upper ureteral calculi have a clear curative effect, but the ureter is tortuous or narrow, which makes the operation difficult. The requirements are higher [7]. However, transurethral lithotripsy is simple to operate but has a high postoperative complication rate and poor efficacy [8]. The efficacy of the two methods in the treatment of incarcerated upper ureteral calculi has been controversial. This study compared the clinical effects of two surgical methods for the treatment of incarcerated upper ureteral calculi. The results of the study showed that the operation time and postoperative hospital stay in the percutaneous renal group were longer than those in the transurethral group, but the intraoperative blood loss and postoperative 24-hour pain were significantly higher. There was no significant difference in the score comparison, suggesting that percutaneous renal ureteral lithotripsy has no obvious advantages in terms of operation time and postoperative hospital stay. Li Lin et al [9] compared the efficacy of minimally invasive percutaneous nephrolithotomy and ureteroscopic lithotripsy in the treatment of upper ureteral incarcerated calculi and found that percutaneous nephrolithotomy may prolong the operation time and the patient's hospital stay. It is believed that the particularity of the location of incarcerated upper ureteral stones and the difference in stone morphology will increase the difficulty of operation and prolong the operation time, and the indwelling operation of nephrostomy tube after operation will further prolong the operation time and hospitalization time of patients. Comparing the stone removal conditions of the two groups of patients, it can be seen that there was no significant difference in the stone removal rate and the second operation rate between the two groups at day 7 and 1 month after operation, which is consistent with

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Research Article

Application of Shewhart Control Chart in Controlling Adverse Events in Patients with Severe Acute Organophosphorus Pesticide Poisoning Undergoing Blood Purification

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Objective. To explore the application effect of the Shewhart control chart in controlling adverse events in patients with severe acute organophosphorus pesticide poisoning (AOPP) undergoing blood purification. *Methods*. A retrospective analysis was performed on the clinical data of 102 patients with severe AOPP admitted to the hospital between January 2020 and December 2021, including 47 cases in the control group and 55 cases in the observation group. The control group was given routine emergency nursing, while the observation group was given emergency nursing under the guidance of the Shewhart control chart on the basis of the control group. The specialized operations, basic operations, specialized theory, and basic theory of nursing staffs were scored to compare the comprehensive nursing quality. The total incidence of adverse nursing events in both groups was statistically analyzed. The dosage of atropine, disappearance time of muscarinic symptoms, recovery time of CHE activity to 60%, and hospitalization time in both groups were recorded. The total incidence of complications in both groups was statistically analyzed. The satisfaction of family members was statistically analyzed by a satisfaction questionnaire. *Results*. The scores of specialized operations, basic operations, specialized theory, and basic theory of nursing staffs in the observation group were significantly higher than those in the control group ($P < 0.05$), total incidence of adverse nursing events was significantly lower than that in the control group ($P < 0.05$), dosage of atropine, disappearance time of muscarinic symptoms, recovery time of CHE activity to 60%, and hospitalization time were significantly lower than those in the control group ($P < 0.05$), total incidence of complications was significantly lower than that in the control group ($P < 0.05$), and scores of nursing attitude, communication process, psychological relief, and drug preparation were significantly higher than those in the control group ($P < 0.05$). *Conclusion*. The Shewhart control chart can effectively improve the clinical effect, comprehensive nursing quality, and satisfaction of patients with severe AOPP and effectively reduce complications and adverse events.

1. Introduction

Organophosphate pesticides (OPS) have been widely used in agricultural and forestry pest control worldwide since the 1930s due to their strong insecticidal effect and low cost [1]. However, in developing countries, especially in Asian countries, the lack of drug supervision and control often leads to acute organophosphorus pesticide poisoning (AOPP) [2]. AOPP is acute, with typical symptoms of salivation, sweating, pupil constriction, and muscle tremors. Critically ill patients also experience respiratory failure, disturbance of consciousness, shock, and death [3]. Timely and reasonable emergency nursing measures for severe AOPP patients can effectively shorten the rescue time and improve the success rate of rescue. In recent years, adverse events have occurred frequently in clinical nursing work. Adverse events mainly include the wrong drug administration, drug extravasation, falling from bed, falls, slippage of pipelines, and other potential safety hazard events other than their own diseases [4]. Therefore, how to establish a more effective and orderly emergency nursing program to ensure the quality of nursing and strengthen the management of

adverse events, so as to improve the rescue effect and satisfaction of patients is a major challenge faced by the emergency department, and it is also a major challenge for emergency department nurses.

The Shewhart control chart was first proposed by Dr. Hasheart in 1924 and used in practical work. It refers to an image method that uses statistical techniques to control the measurement process, which can scientifically manage quality and accurately locate the problem and take timely solutions [5, 6]. With the rapid development of medical statistics and management, the Shewhart control chart is widely used in the field of infectious disease early warning in hospitals [7]. However, the Shewhart control chart is less used in patients with severe AOPP, and its application in nursing work is still in its infancy. Based on this, this study adopts the Shewhart control chart to manage the nursing quality of patients with severe AOPP and explore its application effect, in order to provide some ideas for improving the nursing effect of AOPP patients in the future.

2. Materials and Methods

2.1. General Data. A total of 102 severe AOPP patients admitted to our hospital from January 2020 to December 2021 were retrospectively selected as the research subjects. According to the admission time, 47 patients admitted to the hospital from January 2020 to December 2020 were divided into the control group. 55 patients admitted to the hospital from January 2021 to December 2021 were divided into the observation group. Inclusion criteria were (1) all patients were examined with severe AOPP, which met the relevant criteria in the "Clinical Expert Consensus on Diagnosis and Treatment of Acute Organophosphorus Pesticide Poisoning" [8]; (2) all patients were first organophosphorus poisoning; (3) patients' age ≥18 years old; (4) CHE activity ≤30%. Exclusion criteria were (1) the patient died during hospitalization; (2) the patient had nausea and tumor; (3) the patient had language or mental disorder; (4) the constitution was susceptible to drug allergy and coagulation dysfunction. There was no significant difference in general data such as gender, age, poisoning type, and the course of disease between the two groups ($P > 0.05$), and the results were comparable. As shown in Table 1.

2.2. Methods. The control group was given routine emergency nursing intervention; before admission, the nurses informed the patients or their family members about the way to induce vomiting by telephone and quickly induced vomiting. After the patients were admitted to the hospital, they immediately performed gastric lavage and drainage treatment. At the same time, venous blood was drawn from the patients to detect and analyze the types of toxic substances. The patients were treated with atropine, the patients with severe coma and respiratory failure were treated with pulmonary intubation ventilation to assist breathing, and the patients were treated with blood purification in the hemodialysis room. Afterwards, assist the doctor in the postmedication work, provide psychological counseling to the patient, give reasonable rehabilitation nursing care to control the diet, and instruct the patient and his family to cooperate with the doctor in the treatment, and strictly monitor the changes of patient's vital signs during the treatment.

On the basis of the control group, the observation group underwent emergency nursing intervention under the guidance of the Shewhart control chart. The specific implementation contents are as follows: (1) project monitoring: by reviewing the previous nursing records in our hospital and collecting statistics on adverse events in the nursing process of AOPP patients, it was found that the wrong drug administration, drug extravasation, falling from bed, falling, and slippage of the pipeline were all AOPP patients. Adverse events are common during nursing. Analyze the key factors that cause adverse events to determine whether the influence of this factor on the occurrence of adverse events is a key factor and whether there is a correlation with the usual daily management, and determine the negative impact of these adverse events after they occur. The main relevant items were monitored. It is necessary to focus on monitoring projects that may bring higher security risks or greater volatility. (2) The quality control is completed by the Shewhart control chart: the combination of the Shewhart control chart and the moving average method is used to determine the quality control standard. All data can be regarded as qualified within the control index, otherwise the data are considered to be unqualified. (3) Early-warning procedures: the early-warning system is set as the sequence, quality control chart, and typical cases. Sequence-based early-warning refers to early-warning of those factors that cause high incidence of adverse events. Ranking of incident factors were (1) poor work initiative and lack of sense of responsibility; (2) insufficient shift in shifts and weak inspection efforts; (3) insufficient operating skills and professional knowledge; Accurate; and (5) lack of communication skills. The top three factors should be prioritized for early warning, and then appropriate intervention measures should be formulated. For example, if falling from bed and falling, the ground needs to be kept dry, and patients and their families should be taught to prevent falls. If the drug is extravasated, the nursing staff needs to inform the patient in detail about the correct way of fixing the hand position and ask the family to supervise. When the pipeline slips, the nurses need to strengthen the inspection of the patient, communicate with the patient to prevent it from moving, and inform the patient of the risk of slippage when the patient is awake and try to let the patient cooperate. When the wrong medicine is given, the nursing staff needs to strictly follow the three checks and ten pairs to carry out the work, and the department needs to reasonably arrange the work according to the actual workload and working hours of each nursing staff to ensure sufficient manpower during the peak period. The quality control chart refers to predicting the risk range by setting specific procedures. If the data are within a reasonable range, the AOPP adverse event management work is considered to be effective; otherwise, corresponding adjustments should be made according to the actual situation. A typical case refers to the targeted early

Table 1: Comparison of general data of two groups of patients (n, $\overline{x} \pm s$).

Group	Number of cases	Gender (males/females)	Age (year)	Poisoning type				Disease duration
				Methamidophos	Dichlorvos	Trichlorfon	Dimethoate	
Control group	47	24/23	30.21 ± 4.22	17	11	8	11	2.58 ± 0.54
Observation group	55	30/25	31.05 ± 4.32	15	14	10	16	2.78 ± 0.64
t/χ^2		0.123	0.989		1.012			1.689
P		0.725	0.325		0.798			0.094

warning of the results, which is mainly based on the analysis of the harm caused by the adverse events of AOPP patients, combined with the patient's treatment process to review the auxiliary examination results to locate the fault links, as the basis for the prevention of such adverse events in the next stage, and provide a come up with a reasonable corresponding solution standard, so that the nursing staff can improve it according to the above standards.

2.3. Observation Indicators

(1) Comprehensive nursing quality: the nursing staff is scored in the following four dimensions: specialized operation, basic operation, specialized theory, and basic theory. Each dimension has a full score of 100 points. Higher score indicates a better nursing quality.

(2) The total incidence of adverse events in nursing: the number of adverse events such as wrong drug administration, drug extravasation, falling from bed, falling, and slippage of the pipeline were recorded during the intervention period.

(3) Clinical effect: the dosage of atropine, the disappearance time of muscarinic symptoms, the time when cholinesterase (CHE) activity recovered to 60%, and the hospitalization time of the two patients were recorded.

(4) The total incidence of complications: the total incidence of respiratory distress, organ dysfunction, stress bleeding, rebound, and other complications in the two groups was calculated.

(5) Satisfaction: Satisfaction statistics of patients' family members were carried out using the self-made satisfaction questionnaire of the hospital. This table is divided into 4 dimensions including the nursing attitude, communication process, degree of psychological relief, and drug preparation, with 25 points for each item. The higher the score of each dimension, the higher the satisfaction.

2.4. Statistical Methods. SPSS 22.0 software was used for statistical analysis of the data. When the measurement data satisfies the normal distribution and the variance is homogeneous, it is expressed as ($\overline{x} \pm s$), the difference between the groups is compared by an independent t test, and the enumeration data are expressed by [n (%)], and the chi-square which is used for the comparison test <0.05 indicates statistical significance.

3. Results

3.1. The Comprehensive Quality of Nursing Scores in the Two Groups. The scores of specialized operation, basic operation, specialized theory, and basic theory in the observation group were significantly higher than those in the control group ($P < 0.05$), as shown in Table 2.

3.2. Comparison of the Incidence of Nursing Adverse Events between the Two Groups. During the intervention period, 2 (3.92%) cases of adverse events occurred in the observation group and 8 (15.69%) cases in the control group. The total incidence of adverse events in the observer was significantly lower than that in the control group ($P < 0.05$), as shown in Table 3.

3.3. Comparison of Clinical Effects between the Two Groups of Patients. The dosage of atropine, the disappearance time of muscarinic symptoms, the time for CHE activity to recover to 60%, and the time to discharge in the observation group were significantly lower than those in the control group ($P < 0.05$) as shown in Table 4.

3.4. Comparison of the Total Incidence of Complications between the Two Groups of Patients. There were 4 (7.84%) cases of complications in the observation group and 12 (23.53%) cases in the control group. The total incidence of complications in the observation group was significantly lower than that in the control group ($P < 0.05$) as shown in Table 5. All patients with complications received appropriate treatment and care.

3.5. Comparison of Nursing Satisfaction between the Two Groups. The observers' scores on the nursing attitude, communication process, psychological relief, and drug preparation were significantly higher than those in the control group ($P < 0.05$) as shown in Table 6.

4. Discussions

In clinical practice, AOPP is a common critical illness, which poses a serious threat to the life of patients due to its rapid onset and rapid changes in the condition [9]. Severe AOPP can lead to multiple organ failure, and clinical manifestations include respiratory failure, acute myocardial injury, cognitive impairment caused by nervous system damage, and decreased spatial learning ability. Blood purification

Table 2: Comparison of the comprehensive nursing quality (n, $\overline{x} \pm s$, points).

Group	Number of cases	Specialist operation	Basic operation	Specialist theory	Basic theory
Control group	47	82.56 ± 3.54	84.21 ± 7.01	83.11 ± 5.14	84.08 ± 3.24
Observation group	55	87.56 ± 4.01	90.12 ± 9.54	88.65 ± 6.97	91.54 ± 5.68
t		6.622	3.512	4.501	7.962
P		<0.001	<0.001	<0.001	<0.001

Table 3: Occurrence of adverse events in the two groups of patients (n, %).

Group	Number of cases	Given wrong medicine	Drug extravasation	Falling out of bed	Falling down	Infusion line slippage	Total incidence
Control group	47	1 (2.13)	2 (4.26)	1 (2.13)	2 (4.26)	2 (4.29)	8 (17.02)
Observation group	55	0 (0.00)	0 (0.00)	1 (1.82)	1 (1.82)	0 (0.00)	2 (3.64)
χ^2							4.581
P							0.032

Table 4: Comparison of relevant indicators of the clinical effect (n, $\overline{x} \pm s$).

Group	Number of cases	Dosage of atropine (mg)	The time to disappearance of muscarinic symptoms (min)	Time to CHE activity recovers to 60% (h)	Hospitalization time (d)
Control group	47	348.54 ± 77.65	20.11 ± 2.31	174.87 ± 30.21	14.02 ± 2.78
Observation group	55	284.56 ± 62.35	17.12 ± 2.01	154.68 ± 28.84	12.56 ± 2.24
t		4.614	6.991	3.448	2.937
P		<0.001	<0.001	0.001	0.004

Table 5: Complications in the two groups of patients (n, %).

Group	Number of cases	Respiratory distress	Organ dysfunction	Stress hemorrhage	Rebound phenomenon	Total incidence
Control group	47	3 (6.38)	2 (4.26)	2 (4.26)	3 (6.38)	10 (21.28)
Observation group	55	1 (1.82)	1 (1.82)	2 (3.64)	0 (0.00)	4 (7.27)
χ^2						4.197
P						0.040

Table 6: Comparison of two patients' satisfaction (n, %).

Group	Number of cases	Nursing attitude	Communication process	Degree of psychological relief	Drug preparation
Control group	47	17.01 ± 2.14	17.98 ± 2.04	15.11 ± 1.95	16.21 ± 2.01
Observation group	55	21.54 ± 3.33	20.64 ± 3.22	18.65 ± 2.66	19.39 ± 2.11
t		8.015	4.885	7.551	7.754
P		<0.001	<0.001	<0.001	<0.001

therapy has been widely used in patients with severe AOPP and has achieved remarkable results [10]. Patients often experience symptoms of hypotension during hemodialysis treatment, and the incidence accounts for about 40% of all patients. Therefore, in the treatment of severe AOPP patients, it is of great clinical significance to improve the nursing quality of blood purification centers. The Shewhart control chart, also known as the quality management chart, analyzes and evaluates the stability of the implementation process according to the principles of mathematical statistics. Some quality management work has been applied, and its application value has been confirmed [11]. Using the Shewhart control chart to monitor nursing adverse events in real time and to strictly set the alert limit and control limit, one can effectively improve the level of nursing safety and quality management in clinical practice.

Some researchers [12] found that the Shewhart control chart can effectively warn of nursing risks, greatly reduce the incidence of adverse events in clinical nursing, and improve patients' satisfaction with nursing. Some researchers [13] believe that the early warning of adverse events reported through the quality control chart can greatly reduce the incidence of adverse events in the hospital and effectively improve the quality of care. The results of this study showed that after the application of the Shewhart control chart, the observation group was significantly better than the control group in terms of comprehensive nursing quality score, incidence of clinical adverse events, and patient satisfaction.

The results of this study are partially similar to those reported in other articles [14]. The reason may be that when the Shewhart control chart is used for management and control, all adverse events are first set within the control range, and then the overall data is analyzed in detail. Targeted analysis is used to set the normal range of adverse events in the nursing process, so as to evaluate the probability of adverse events. Normal events are considered to be within the normal range, and those that exceed the normal range are considered to be adverse events. Then, the early warning of adverse events is carried out in sequence and typical cases. At the same time, it is necessary to carry out a comprehensive analysis based on the methods adopted in the clinic and provide effective data to accurately locate the link where the problem occurs. Finally, discussing the solution to the problem with experienced experts and formulating relevant countermeasures can effectively avoid the recurrence of similar events, thereby greatly reducing the incidence of adverse events for patients and reducing the risk of nursing care. The above strategies further ensure the safety of patients, maximize the interests of both doctors and patients, reduce the occurrence of conflicts, and ultimately achieve the purpose of improving the quality of care with the patient at the center.

The results of this study showed that the clinical effect of patients in the observation group was significantly better than that of the control group, and the complications were significantly lower than those in the control group. Evaluate, analyze, and designate improvement plans according to actual problems, and also use the statistical table method to monitor clinical nursing indicators in real time, which optimizes the quality of blood purification care to a certain extent. Therefore, the clinical effect of patients after blood purification treatment is improved, and concurrent symptoms were also reduced.

In conclusion, the application of the Shewhart control chart in patients with acute AOPP blood purification can effectively improve the clinical effect, comprehensive quality, and satisfaction of nursing and reduce adverse reactions and complications.

Data Availability

The raw data supporting the conclusion of this article will be available from the corresponding author without undue reservation.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflicts of interest.

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Retraction

Retracted: Application of the Stratified Nursing Mode of the Prediction Model Constructed Based on Case System Data in the Nursing of Patients with Acute Renal Failure

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] J. Shen, X. Mei, and X. Sun, "Application of the Stratified Nursing Mode of the Prediction Model Constructed Based on Case System Data in the Nursing of Patients with Acute Renal Failure," *Emergency Medicine International*, vol. 2022, Article ID 5666145, 6 pages, 2022.

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Research Article

Application of the Stratified Nursing Mode of the Prediction Model Constructed Based on Case System Data in the Nursing of Patients with Acute Renal Failure

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Objective. To explore the application of the stratified nursing mode of the prediction model constructed based on case system data in the nursing of patients with acute renal failure (ARF). *Methods*. A total of 84 patients with ARF confirmed in the hospital were enrolled between February 2020 and February 2022. According to the simple random grouping method, they were divided into an observation group and a control group, 42 cases in each group. The control group was given routine nursing while the observation group was given stratified nursing of the prediction model constructed based on case system data. All were nursed for 2 months. *Results*. There was no significant difference in general data such as gender, age, body mass index (BMI), serum creatinine (Scr), hemoglobin (Hb), and albumin between the two groups ($P > 0.05$). Age >60 years, weight fluctuation >2 kg during dialysis, vascular blockage or infection, coronary heart disease, diabetes mellitus, chronic hepatopathy and stroke, bleeding tendency, and neuromuscular abnormalities were high-risk factors for ARF patients, hypertension, thyroid abnormalities, hyperlipidemia, persistent or repeated blood volume overload, and usage of antihypertensive drugs were moderate-risk factors for ARF patients, and nonpermeability dehydration was a low-risk factor of ARF patients. The scores of nursing satisfaction and treatment compliance in the observation group were significantly higher than those in the control group ($P < 0.05$). After 2 months of nursing, scores of SAS, SDS, and SPBS in both the groups were significantly decreased ($P < 0.05$), which were significantly lower in the observation group than those in the control group ($P < 0.05$). *Conclusion*. The stratified nursing mode of the prediction model constructed based on case system data is conducive to timely and targeted nursing, with high patient satisfaction and cooperation, and a better psychological state.

1. Introduction

Acute renal failure (ARF) is a phenomenon in which patients experience a sharp decline in renal function in a short period of time, often accompanied by disorders of water, electrolyte, and acid-base balance in the body. The progression can involve other organs and cause multisystem complications [1, 2]. ARF symptoms can be manifested in various systems of the body, the most common being gastrointestinal symptoms, such as nausea, vomiting, and gastrointestinal bleeding. Chest tightness, chest pain, etc., may appear in the respiratory system; increased blood pressure, heart failure, etc., may appear in the circulatory system; anemia and bleeding tendency may appear in the blood system; mental abnormalities may also occur.

In addition to effective interventional therapy such as hemodialysis, perioperative care of patients with ARF is also of great significance to improve the prognosis of patients [3]. Hierarchical nursing based on the predictive model constructed from the case system data is a nursing method that includes the clinical case data of patients in the database, constructs the predictive model based on the actual data, and divides the patients into different levels to carry out different levels of care according to the results [4, 5]. In this study, by comparing the general nursing model and the stratified nursing model based on the predictive model constructed based on case system data, the patient satisfaction, medical

compliance behavior, and psychological state were evaluated under the two models.

2. Materials and Methods

2.1. Clinical Data. ARF patients diagnosed in our hospital from December 2019 to December 2021 were selected, and the patients were divided into a control group ($n = 42$) and an observation group ($n = 42$) by simple randomization. Inclusion criteria were as follows: ①according to the relevant diagnostic criteria, ARF was diagnosed by clinical examination [6]; ②the clinical data was complete; ③it was reviewed and approved by the hospital's ethics committee, and the patients agreed and signed the consent form. Exclusion criteria were as follows: ① patients with other blood system diseases; ② patients with neurological disorders, unable to communicate, and cooperate; ③ patients with chronic renal failure; ④ patients with hypertrophic heart disease; ⑤ patients with liver, kidney, and other important organ dysfunction. The clinicopathological data of the patients were recorded.

2.2. Nursing Methods. Both groups of patients were given basic treatment such as hemodialysis, water, and electrolyte adjustment.

The patients in the control group adopted the routine nursing mode, including strict monitoring of their vital signs, establishment of intravenous access, adjustment of electrolytes, guidance of medication, health education, nutritional support, and close observation of the changes in clinical symptoms and signs of patients.

The observation group adopted the predictive model based on the case system data to construct the stratified nursing mode, collected the clinical pathological data of the patients, and sorted them into the corresponding case database.

(1) The multivariate logistic regression model was used to predict the risk factors affecting the prognosis of patients with acute renal failure. Based on the OR value, the patients in the observation group were divided into three levels: high risk (OR value ≥ 3), intermediate risk ($2 <$ OR value$) < 3$), and low risk ($1 <$ OR value ≤ 2). The primary, secondary, and tertiary stratified care are carried out for patients at different levels.

(2) Establishment of a stratified nursing team: nursing staff with rich work experience, strong workability, strong sense of responsibility, and correct working attitude were selected as members of the stratified nursing team. Bachelor's degree or above, excellent skills assessment, working experience ≥6 years is a first-level nursing staff; excellent or qualified assessment, working experience ≥3 years is a second-level nursing staff; skills assessment passing, working experience <3 years is a third-level nursing staff level nursing staff. The first-level nursing staff cooperate with clinicians to perform tracheal intubation, cardiopulmonary resuscitation, etc., manage nursing work, and supervise the completion of nursing work, etc.; the second-level nursing staff are responsible for guiding and assisting patients to carry out corresponding examinations, collecting test specimens, and instructing patients to take medication, etc.; the tertiary nursing staff are responsible for routine nursing and routine examination of patients, recording basic information such as patient's psychological state, diet, and sleep, and checking medication.

(3) Nursing care of high-risk ARF patients: for high-risk ARF patients aged >60 years, with weight fluctuations >2 kg during dialysis, vascular blockage or infection, complicated with coronary heart disease, diabetes, chronic liver disease, stroke, bleeding tendency, and neuromuscular abnormalities, first-level nursing interventions are carried out, mainly managed by first-level nursing staff, second-level nursing staff, and third-level nursing staff. The nurse-patient ratio was controlled at 1 : 2, and blood pressure and heart rate were measured every 15 minutes. After each hemodialysis, doctors and nurses had to assess the condition before leaving. We communicate with the patients and their families in a timely manner, explain ARF-related knowledge and prognosis in detail, understand their psychological activities and inner concerns, enhance patients' confidence by listing cases of patients who have recovered well from treatment, and guide family members and friends to give care and support to the patients. Detailed interpretation of the patient's case, daily tracking of the patient's liver and kidney function, blood routine, etc., to keep abreast of the patient's condition progress. Adjust the nutritional structure according to the patient's daily hemodialysis times, urine volume, weight changes, etc., to ensure the balance of carbohydrates, energy, protein, and vitamins. The head nurse reviews the patient's nursing measures and plans every day, summarizes the results every 6 hours, and reports the results to the attending physician. Daily summary meetings are required to adjust the nursing plan in time. After the condition is stable for >1 week, patients can be transferred to the secondary nursing intervention.

Nursing care of intermediate-risk ARF patients: secondary nursing intervention is implemented for intermediate-risk ARF patients with hypertension, thyroid abnormality, hyperlipidemia, persistent or repeated blood volume overload, and usage of antihypertensive drugs. The tertiary nursing staff are jointly managed, and the primary nursing staff supervises. Control the nurse-patient ratio to 1 : 3, measure blood pressure and heart rate every 30 minutes; conduct health education to patients through brochures, multimedia videos, and audios; record patients' mental state, psychological state, diet, and sleep; actively carry out

psychological activities. Nursing and targeted nursing according to different problems, after the condition is stable for more than 1 month, patients can be transferred to the tertiary nursing intervention.

Nursing care of low-risk ARF patients: for low-risk ARF patients with nonosmotic dehydration, and well-controlled blood sugar and blood pressure, tertiary nursing intervention is implemented, mainly managed by the secondary and tertiary nursing staff. The nurse-patient ratio is controlled to be 1 : 5, measure blood pressure and heart rate every 60 minutes, provide health education and psychological care for patients, and arrange exercise training according to the condition to promote recovery. Both groups of patients were continuously nursing for 2 months. No patients in either group dropped out during the study period.

3. Observation Indicators

3.1. Comparison of General Data. General patient information such as gender, age, body mass index (BMI), serum creatinine (Scr), hemoglobin (Hb), and albumin levels was collected.

3.2. Compliance Behavior and Nursing Satisfaction. After 2 months of nursing, the hospital-made nursing satisfaction scale and the medical compliance behavior scale were used to evaluate the medical compliance behavior and nursing satisfaction of the two groups of ARF patients. Nursing satisfaction includes 4 subitems: nursing content, nursing method, nursing time, and nursing attitude, each of which is 100 points. A higher score indicates more satisfaction of the patients. The medical compliance behavior scale includes four items: diet control, normal work and rest, ARF cognition, and cooperation inspection, with a total score of 100 points for each item. A higher score means better compliance behavior.

3.3. Mental State Assessment. Before nursing and after 2 months of nursing, the Self-Rating Anxiety Scale (SAS) [7] and the Self-Rating Depression Scale (SDS) [8] were used to evaluate the two groups of ARF patients. Both the scales include 20 items, each of which is 1–4 points, with a total score of 80 points. Standard score = total score × 25 = 100 points. A higher score indicates more severe anxiety and depression of the patients. The Self-Perceived Burden Scale (SPBS) [9] was used to compare the levels of self-perceived burden in the two groups of ARF patients, with a total of 10 items, each with a score of 1 to 5. A higher score means a heavier self-perceived burden.

4. Statistical Analysis

SPSS 21.0 software was used to analyze the obtained data, and the measurement data satisfying the normal distribution were all expressed as $\overline{x} \pm s$; the two-sample independent t-test was used to compare the differences between the groups; the $\chi 2$ test was used to compare the differences between the groups; $P < 0.05$ indicated that the difference was statistically significant.

5. Results

5.1. Comparison of General Data of Patients in the Observation Group and the Control Group. There were no significant differences in general data such as gender, age, body mass index (BMI), serum creatinine (Scr), hemoglobin (Hb), and albumin levels between the two groups ($P > 0.05$). As shown in Table 1.

5.2. Analysis of Risk Factors in Patients with ARF. Age >60 years, weight fluctuation >2 kg during dialysis, and vascular blockage or infection, combined with coronary heart disease, diabetes, chronic liver disease, and stroke, with bleeding tendency and neuromuscular abnormalities are high-risk factors for ARF patients; hypertension, thyroid abnormality, hyperlipidemia, persistent or repeated blood volume overload, and the use of antihypertensive drugs are intermediate-risk factors in ARF patients; anosmotic dehydration is a low-risk factor in ARF patients. As shown in Table 2.

5.3. Comparison of Nursing Satisfaction between the Observation Group and the Control Group. The scores of nursing content, nursing method, nursing time, and nursing attitude in the observation group were significantly higher than those in the control group ($P < 0.05$). As shown in Table 3.

5.4. Comparison of Medical Compliance Behavior between the Observation Group and the Control Group. The scores of diet control, normal work and rest, ARF cognition, and cooperation examination in the observation group were significantly higher than those in the control group ($P < 0.05$). As shown in Table 4.

5.5. Comparison of Psychological State between the Observation Group and the Control Group. After 2 months of nursing, the scores of SAS, SDS, and SPBS in the two groups were significantly decreased ($P < 0.05$); the scores of SAS, SDS, and SPBS in the observation group were significantly lower than those in the control group ($P < 0.05$). As shown in Table 5.

6. Discussion

The renal function of patients with ARF is seriously damaged, and the metabolic wastes and harmful substances cannot be excreted in time, causing the internal environment of the body to be imbalanced. Failure to take effective measures may even threaten the life safety of the patients. Perioperative nursing of patients with ARF is an important part of the treatment process, and effective nursing has clinical significance for improving the prognosis of patients [10, 11].

The results of this study showed that there were no significant differences in general data such as gender, age,

Table 1: Comparison of general data between the observation group and the control group (n, $\overline{x} \pm s$).

Group	Gender		Age	BMI (kg/m^2)	Scr (μmol/L)	Hb (g/L)	Albumin (g/L)
	Male	Female					
Observation group ($n = 42$)	25	17	59.78 ± 8.33	21.19 ± 2.25	89.92 ± 20.44	126.33 ± 22.75	37.92 ± 3.38
Control group ($n = 42$)	23	19	60.05 ± 8.28	21.36 ± 2.34	91.82 ± 20.67	129.62 ± 23.01	39.14 ± 3.55
t/χ^2	0.194		0.149	0.339	0.424	0.659	1.613
P	0.659		0.882	0.735	0.673	0.512	0.111

Note. BMI:body mass index; Scr: serum creatinine; Hb: hemoglobin.

Table 2: Analysis of risk factors in ARF patients.

Index	β	SE	OR
Age (≥60 years vs < 60years)	1.434	0.357	4.195
Gender (male vs female)	0.346	0.387	1.413
Coronary heart disease (yes vs no)	1.275	0.358	3.579
Diabetes (yes vs no)	1.362	0.317	3.904
Hypertension (yes vs no)	1.027	0.385	2.793
Chronic liver disease (yes vs no)	1.192	0.331	3.294
Hyperlipidemia (yes vs no)	0.985	0.326	2.678
Stroke (yes vs no)	1.586	0.364	4.884
Thyroid abnormalities (yes vs no)	1.033	0.345	2.809
Blood clot or infection (yes vs no)	1.453	0.372	4.276
Bleeding tendency (yes vs no)	1.258	0.339	3.518
Neuromuscular abnormalities (yes vs no)	1.306	0.413	3.691
Weight change during dialysis (>2 kg vs ≤ 2 kg)	1.399	0.366	4.049
Usage of antihypertensive drugs (yes vs no)	1.050	0.322	2.858
Overload of blood volume (yes vs no)	0.858	0.319	2.358
Osmotic dehydration (yes vs no)	0.633	0.313	1.883

Table 3: Comparison of nursing satisfaction between the observation group and the control group (score, $\overline{x} \pm s$).

Group	Number of cases	Nursing content	Nursing methods	Nursing time	Nursing attitude
Observation group ($n = 42$)	42	88.42 ± 9.18	90.15 ± 7.72	88.94 ± 7.09	91.66 ± 5.82
Control group ($n = 42$)	42	76.78 ± 8.67	78.58 ± 6.63	77.07 ± 6.12	82.37 ± 4.67
t		5.974	7.368	8.213	8.068
P		<0.001	<0.001	<0.001	<0.001

Table 4: Comparison of medical compliance behavior between the observation group and the control group (score, $\overline{x} \pm s$).

Group	Number of cases	Diet	Regular work and rest	ARF cognition	Cooperate with inspection
Observation group ($n = 42$)	42	89.23 ± 7.69	76.16 ± 5.47	90.23 ± 7.15	92.33 ± 5.51
Control group ($n = 42$)	42	78.86 ± 6.38	69.82 ± 4.41	83.72 ± 6.57	85.38 ± 4.58
t		6.726	5.848	4.345	6.286
P		<0.001	<0.001	<0.001	<0.001

Table 5: Comparison of the psychological status between the observation group and the control group (score, $\overline{x} \pm s$).

Group	Number of cases	SAS		SDS		SPBS	
		Before nursing	After nursing for 2 months	Before nursing	After nursing for 2 months	Before nursing	After nursing for 2 months
Observation group	42	88.37 ± 6.69	62.39 ± 4.58*	85.27 ± 7.36	58.01 ± 4.39*	40.62 ± 3.35	23.29 ± 2.21*
Control group	42	87.21 ± 6.83	73.14 ± 5.31*	84.39 ± 7.18	67.62 ± 5.24*	39.41 ± 3.48	26.34 ± 2.37*
t		0.786	9.935	0.555	9.111	1.623	6.100
P		0.434	<0.001	0.581	<0.001	0.108	<0.001

Note: compared with before nursing $^*P < 0.05$.

BMI, Scr, Hb, and albumin levels between the two groups, indicating that the data of the two groups were comparable, and the differences in basic data would not affect the study results. The results of the multivariate logistic regression model predicting the risk factors affecting the prognosis of patients with acute renal failure showed that age >60 years, weight fluctuation during dialysis >2 kg, and vascular blockage or infection, combined with coronary heart disease, diabetes, chronic liver disease, and stroke, bleeding tendency and the OR value of neuromuscular abnormalities ≥3 are high-risk factors affecting the prognosis of ARF patients; complicated with hypertension, thyroid abnormality, hyperlipidemia, continuous or repeated blood volume overload, the OR value of antihypertensive drugs is in between 2 and 3 are medium-risk factors affecting the prognosis of ARF patients; the OR value of anosmotic dehydration between 1 and 2 is a low-risk factor affecting the prognosis of ARF patients [12, 13]. Carrying out primary, secondary, and tertiary tiered nursing care for patients at different levels can maximize the use of medical resources, enable patients with different risk levels to receive corresponding care, and avoid unreasonable allocation of resources [12, 13].

The nursing satisfaction and compliance scores in the observation group were significantly higher than those in the control group. The reason may be that the stratified nursing method based on the predictive model constructed based on the case system data provides more targeted nursing care by stratifying patients to ensure high-risk patients receive the most adequate care, which is conducive to improving the treatment effect and reducing the incidence of complications. Nutritional intervention according to the patient's own situation will help promote the recovery of the patient. Different ways of health education are adopted for patients at different levels, which are more targeted, more comprehensive in patient care, improved patients' acceptance, optimistic about the learning attitude of the disease, greatly improved the learning effect, and can effectively improve patients' awareness of ARF disease cognition, which is conducive to improving medical compliance behavior. Adjusting the nursing level in a timely manner according to the stable condition of the patient is conducive to the rational allocation of medical resources, so that high-risk patients can receive the most adequate and timely care, which is conducive to improving the prognosis. In addition to controlling a reasonable nurse-to-patient ratio and moderate exercise, it can also improve immunity and accelerate physical recovery for patients with moderate and low risk [14, 15].

The results of this study showed that after 2 months of nursing, the SAS, SDS, and SPBS scores of the two groups of patients were significantly reduced, indicating that effective nursing for patients with ARF is the key to improving the prognosis of patients. In addition, the SAS, SDS, and SPBS scores of the patients in the observation group were significantly lower than those in the control group, indicating that the hierarchical nursing method based on the predictive model constructed based on the case system data has more advantages in improving the psychological state of patients, and can effectively improve negative emotions such as anxiety and depression, and reduce the patient's self-perceived burden level. This may be because of the same routine nursing care, lack of a unified and standardized model, differences in professional knowledge and skills, social responsibility, language skills, and communication skills among nursing staff; it is easy to lead to uneven nursing effects. The stratified nursing mode based on the prediction model constructed from the case system data makes nursing more targeted by stratifying patients. The nursing staff at different levels can do their job well at their own level, which can avoid omissions in nursing items and ensure that all links are carried out in an orderly manner. Under this nursing model, nurses can provide more targeted professional support for the psychological state, so as to enhance the positive emotional communication of the patient group, satisfy the sense of well-being, and promote disease recovery [16–18].

In summary, the stratified nursing method based on the predictive model constructed based on the case system data has higher satisfaction, and plays a positive role in improving patients' disease cognition and implementing effective intervention for ARF. In addition, this nursing mode can adjust the patient's psychological state, which is conducive to the recovery process.

Data Availability

The raw data supporting the conclusion of this article will be available by the authors without undue reservation.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Gene Mutation and Its Association with Clinicopathological Features in Young Patients with Non-Small-Cell Lung Cancer

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] W. Kong, Z. Yu, W. Wang, J. Yang, J. Wang, and Z. Zhao, "Gene Mutation and Its Association with Clinicopathological Features in Young Patients with Non-Small-Cell Lung Cancer," *Emergency Medicine International*, vol. 2022, Article ID 6333282, 6 pages, 2022.

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Research Article

Gene Mutation and Its Association with Clinicopathological Features in Young Patients with Non-Small-Cell Lung Cancer

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Background. We investigated the correlation between genetic mutations and clinical-pathological features in young patients with NSCLC. *Methods*. Clinicopathologic information of 102 young NSCLC patients was collected. Direct ctDNA sequencing of a portion of these patients was performed. The correlation between EGFR mutation and ALK fusions with clinicopathologic parameters was analyzed. *Results*. In young NSCLC patients, adenocarcinoma is the major histology (86.9%), and the misdiagnosis rate was as high as 45.7%. EGFR gene mutation was found in 13 patients (31.7%) and common mutations were with EGFR19del mutation (7 cases, 17.1%) and EGFR21L858R mutation (4 patients, 9.7%). EGFR mutation was constantly found in adenocarcinoma and male gender, and ever smokers (100%, $P < 0.05$). Furthermore, ALK fusions were found in 7 patients (31.8%), which include EML-4-ALK fusions; there was a trend that ALK fusions were associated with adenocarcinoma and female gender. However, there was no significant difference in overall survival between patients with or without gene mutations. *Conclusions*. EGFR mutation and ALK fusions are related to histology, gender, and smoke exposure in young NSCLC patients, and may be effective predictive factors.

1. Introduction

Lung cancer, the most major malignant tumor, has a high incidence and mortality rate worldwide. It is identified as one of the most serious diseases threatening human health and life [1]. Lung cancer occurs in adults over the age of 50, of which the age at onset is typically between 60 and 80 years [2]. The incidence of lung cancer among young people (age < 40 years) is relatively low, with an incidence rate of 1.2% to 6.2% [3, 4]. However, in recent years, epidemiological data suggest lung cancer incidence with a trend toward a younger onset worldwide [5–9], especially with a higher incidence in young females than in young males [10]. In China, the incidence rate of lung cancer in youngers is rising, and a survey from Shanghai showed that younger (<45 years old) accounted for 5.275% of all lung cancer cases [11]. The clinicopathologic features and disease progression in youngers are different from those in middle-aged and old-aged patients with lung cancer. Here, the pathogenesis of young patients (age ≤ 35 years) showing non-small-cell lung cancer (NSCLC) was researched through the clinicopathological characterization combined with analyzing the mutation profiles of serum in circulating tumor DNA (ctDNA) by next-generation sequencing. In recent years, epidermal

growth factor receptor (EGFR) mutations and anaplastic large-cell lymphoma kinase (ALK) rearrangements are now routine biomarkers that have been incorporated into the practice of managing non-small-cell lung cancer (NSCLC).

2. Methods and Materials

2.1. Patients. 102 lung cancer patients who underwent treatments at Fujian Cancer Hospital and Fujian Union Hospital between March 2014 and July 2018 were enrolled. The patients were diagnosed by histopathology analysis and aged less than or equal to 35 years. Clinicopathologic staging was determined according to the 8th Edition of the AJCC/UICC staging system. Patients' characteristics including demographics, smoking background, family history, and clinical data were also recorded. In addition, 10 ml of peripheral venous blood was obtained from every patient for ctDNA assay. Informed consent was gained from all patients. All procedures were approved by the Ethics Committee of Fujian Cancer Hospital and Fujian Union Hospital.

2.2. ctDNA Sequencing. Briefly, the ctDNA from blood samples was extracted by using the QIAamp Circulating Nucleic Acid Kit (Qiagen, Hilden, Germany). DNA concentration was determined by using the NanoDrop1000 spectrophotometer (Thermo Fisher, Wilmington, USA). The library was generated to target all exons and select introns of a custom gene panel of 10, 66, 116, or 448 genes. The ctDNA was sheared, end-repaired, phosphorylated, and adaptor-ligated. Next-generation sequencing was conducted with 200 ng sheared DNA through the custom hybridization capture panel (SureSelectXT, Agilent, CA), hybrid selection, and PCR amplification. Libraries were constructed with 80 ng of DNA and amplified with 12 PCR cycles. Finally, the libraries were sequenced (sequencing depth 300×) on an Illumina NextSeq-500 platform (Illumina, San Diego, CA) for paired reads (read length 151 bp).

2.3. Gene Mutation Analysis. To identify genomic alterations and gene rearrangements, the sequencing results were trimmed by Trimmomatic for the adaptor and mapped to the human genome (hg19) with BWA aligner 0.7.10. Local alignment optimization, variant calling, and annotation were conducted by GATK 3.2, MuTect, and VarScan.

2.4. Follow-Up. The overall survival (OS) of all patients was recorded through telephone or door-to-door follow-up, and the last follow-up time was July 28, 2018. The definition of OS was the number of months from lung cancer diagnosis to the patient's death or the end of follow-up.

2.5. Statistical Analysis. Statistical analysis was conducted by IBM SPSS Statistics 21.0 software (SPSS Inc., USA). Clinical characteristics were compared using the $\chi 2$ test. Age distribution was analyzed using the unpaired t-test. OS was measured by the Kaplan–Meier method and compared using the log-rank test. $P < 0.05$ was considered a statistically significant difference.

Table 1: Clinicopathological features of young patients with NSCLC in the study ($N = 84$ cases).

Clinicopathological features	Cases	Percentage
Gender		
Male	47	56.0
Female	37	44.0
Age		
14–20	2	2.4
21–25	8	9.5
26–30	29	34.5
31–35	45	53.6
Smoking		
No	75	89.3
Yes	9	10.7
Histological classification		
Lung adenocarcinoma	73	86.9
Lung squamous carcinoma	8	9.5
Other types	3	3.6
Family history	3	2.7
Tumor-node-metastasis staging		
I	12	14.3
II	4	4.8
III	13	15.5
IV	55	65.5

3. Results

3.1. General Information. A total of 102 patients who met the inclusion criteria were enrolled. After removing small-cell lung cancer (6 patients), lung carcinoma in situ (5 patients), 4 cases of carcinoid tumor, 1 case of epithelioid hemangioendothelioma, 1 case of undifferentiated sarcoma or undifferentiated carcinoma, and 1 case of atypical adenomatous hyperplasia, 84 young patients with NSCLC were enrolled in the current assessment, including 12 stage I cases (14.3%), 4 stage II cases (4.8%), 13 stage III cases (15.5%), and 55 stage IV cases (65.5%). The NSCLC patients consisted of 37 females (44%) and 47 males (56%), with the mean age of 30.27 ± 4.195 years. Besides, no significant difference in the disease stages was found between the males and females. Patients' characteristics are shown in Table 1. Nine patients (10.7%) were ever smokers and 75 (89.3%) patients were nonsmokers. Only three patients had a family history of lung cancer. For histological classification, there were 73 cases of lung adenocarcinoma (86.9%), 8 cases of lung squamous carcinoma (9.5%), and 3 cases of other types (3.6%).

3.2. Clinical Manifestations and Time of Diagnosis of Young NSCLC Patients. Among the 84 patients, 14 cases (16.7%) had no clinical symptoms and were found through physical examination; 30 cases (35.7%) had cough and expectoration as their first symptoms; 4 cases (4.7%) had neck masses; 5 cases (5.9%) had pain caused by bone metastases; 4 cases (4.7%) had chest pain. The symptoms of other patients were described as follows: hemoptysis in 5 cases (5.9%), chest

Table 2: The characteristics of the 55 young NSCLC patients with distant metastasis.

Metastatic site	Cases	Percentage
Bone	15	27.3
Pleural effusion	14	25.5
Brain	8	14.5
Lung	8	14.5
Pericardial effusion	5	9.1
Lymph node	5	9.1
Pleura	3	5.5
Liver	3	5.5
Adrenal gland	2	3.6
Subcutaneous soft tissue	1	1.8
Breast	1	1.8
Abdominal wall	1	1.8

oppression in 4 cases (4.7%), dizziness and headache in 4 cases (4.7%), shortness of breath in 4 cases (4.7%), numbness and weakness of the extremities in 2 cases (2.4%), dry cough in 3 cases (3.6%), fever in 1 case (1.2%), hoarseness in 1 case (1.2%), edema of the extremities in 1 case (1.2%), weight loss in 1 case (1.2%), and nausea, retching, and sudden unconsciousness in 1 case (1.2%).

Fourteen cases were found during a physical examination and were pathologically confirmed as NSCLC within 7–14 days. The time of diagnosis of the remaining 70 cases ranged from 2 weeks to 6 months, with an average of 102.5 days. Due to the relatively low incidence of lung cancer in youngers, malignant lesions were not taken into account by physicians at the first diagnosis. In this study, we found that 32 cases among the patients without physical examinations had different degrees of misdiagnosis, and the misdiagnosis rate was as high as 45.7%. The misdiagnosis included 18 cases of pneumonia, 4 cases of tuberculosis, 2 cases of lymphadenitis, 2 cases of acute bronchitis, 2 cases of upper respiratory tract infection, 1 case of cervical spondylosis, 1 case of migraine, 1 case of hyperthyroidism, and 1 case of benign lymph nodes.

3.3. Metastatic Sites. A total of 55 young NSCLC patients had distant metastasis consisting of bone metastases (15 cases, 27.3%), pleural effusion (14 cases, 25.5%), brain metastases (8 cases, 14.5%), lung metastases (8 cases, 14.5%), pericardial effusion (5 cases, 9.1%), lymph node metastases (5 cases, 9.1%), pleura metastases (3 cases, 5.5%), liver metastases (3 cases, 5.5%), adrenal gland metastases (2 cases, 3.6%), subcutaneous soft tissue metastases (1 case, 1.8%), breast metastases (1 case, 1.8%), and abdominal wall metastases (1 case, 1.8%), as shown in Table 2.

3.4. Mutation Analysis. A total of 41 patients underwent EGFR mutation testing, and 13 patients (31.7%) suffered EGFR gene mutations consisting of 1 patient (2.4%) with EGFR18 (G719A/G719S/719C) gene mutation, 7 patients (17.1%) with EGFR19del mutation, 4 patients (9.7%) with EGFR21L858R mutation, and 1 patient (2.4%) with EGFR21L858R mutation and concurrent EGFR20 exon 768I mutation. 22 patients underwent ALK fusion gene testing, and 7 patients (31.8%) had ALK fusions including EML-4-ALK fusions, RICTOR, and TP53 gene mutations. All cases with genetic mutations were analyzed histologically and classified as adenocarcinoma.

Table 3: Patient characteristics and EGFR mutation.

Variables	Cases	EGFR mutation (%)	P
Gender			
Female	24	5 (20.8%)	0.07
Male	17	8 (47.0%)	
Smoking history			
Never smoker	39	11 (28.2%)	0.03
Ever smoker	2	2 (100%)	
Histology classification			
Adenocarcinoma	36	13 (36.1%)	0.10
Others	5	0	
Stage			
I-II	8	3 (37.5%)	0.69
III-IV	33	10 (30.3%)	
Age (years)			
14–25	5	1 (20.0%)	0.5483
26–35	36	12 (33.3%)	

$P < 0.05$ was considered a statistically significant difference.

3.5. Gene Mutation and Clinicopathologic Correlations. EGFR mutation was constantly found in adenocarcinoma and male gender of young NSCLC patients and was significantly associated with ever smokers (100%, $P < 0.05$) compared with never smokers (28.2%), as shown in Table 3. Moreover, 2 cases of male patients who ever smoke both showed EGFR mutation. However, there was no significant difference between EGFR mutation, disease stage, and patient age. The median survival times of young NSCLC patients with or without EGFR mutations were 16 and 28 months, respectively. But no significant change in the overall survival was found in these two groups ($P = 0.32$) (Figure 1)(a).

We also explored the relationship between the ALK fusions and clinicopathologic factors. ALK fusions were only found in adenocarcinoma (36.8%), We found that there was a trend that ALK fusions frequently occurred in male patients compared with female patients ($P = 0.29$). In addition, in 6 of the 7 cases, ALK fusions were present in patients at stage IV. However, there was no significant difference between ALK fusions and smoking, ALK fusions and patient age are shown in Table 4. The median survival times of young NSCLC patients with or without ALK fusions were 11 and 10 months. And no significant difference in the overall survival was found in these two groups ($P = 0.73$) (Figure 1)(b). There was no significant difference in the overall survival between the two groups for EGFR mutations (A, $P = 0.32$) or ALK fusions (B, $P = 0.73$).

4. Discussion

Lung cancer has a low incidence in youngers, with only 1.2–6.2% of cases younger than 40 years [3, 4, 12], of which

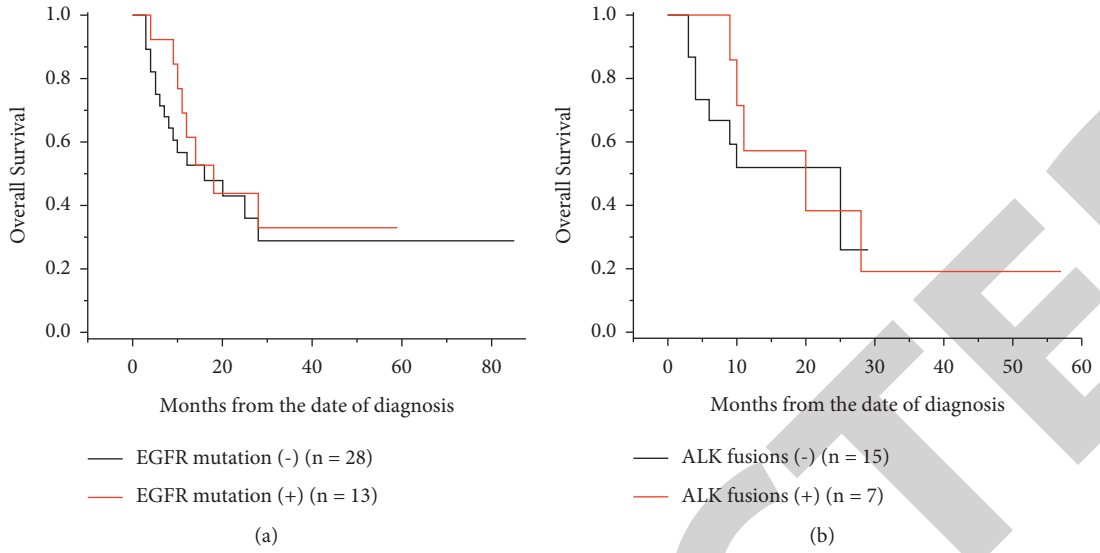

Figure 1: Correlation of EGFR mutation, ALK fusions, and patient survival by the Kaplan–Meier method.

Table 4: Patient characteristics and ALK fusions.

Variables	Cases	ALK fusions (%)	*P*
Gender			
Female	13	3 (23.1%)	0.29
Male	9	4 (44.4%)	
Smoking history			
Never smoker	20	6 (30.0%)	0.56
Ever smoker	2	1 (50.0%)	
Histology classification			
Adenocarcinoma	19	7 (36.8%)	0.20
Others	3	0	
Stage			
I-II	2	1 (50.0%)	0.56
III-IV	20	6 (30.0%)	
Age (years)			
14–25	5	1 (20.0%)	0.51
26–35	17	6 (35.2%)3	

$P < 0.05$ was considered a statistically significant difference.

65% of cases are female, 84% of cases are adenocarcinoma, 4% of cases are squamous carcinoma, and stage IV patients accounted for 65% [13]. However, currently and for some years now, the age of onset of lung cancer is becoming younger. The clinical characteristics and genetic mutations of NSCLC patients aged less than or equal to 35 years. And there was a statistical difference in age-sex comparisons for 84 young patients with small cell lung cancer. Additionally, we found that there were slightly more young male NSCLC patients than young female patients in terms of gender. Adenocarcinoma is the most common histological type. Besides, our findings revealed that the age of NSCLC onset was lower in young females than in young male patients.

In the present study, lung adenocarcinoma was the most common histological type, accounting for 77.7% of cases, which is consistent with the previous findings [13, 14]. The reason may be that it takes a long time to develop squamous carcinoma, but adenocarcinoma or undifferentiated carcinoma derived from respiratory mucosa has a higher susceptibility to carcinogenesis. Certainly, genetic factors and environmental factors also have functional roles in young patients with lung cancer [15].

Clinical symptoms of young NSCLC patients lack in specificity, among which cough and sputum are the most common symptoms, followed by hemoptysis, chest tightness, and chest pain, which are consistent with previous reports [14, 16]. Young patients with symptoms such as cough, sputum, and chest tightness, tend to receive symptomatic treatment, but are usually misdiagnosed as pneumonia or tuberculosis. The misdiagnosis rate is high, reaching 28.6%. Due to the early onset of the patient's illness, doctors rarely carry out further clinical examinations in time, delaying the diagnosis; As a result, most patients have reached the advanced stages of NSCLC by the time they are diagnosed. There were 71 NSCLC patients (63.4%) with advanced stages, which is consistent with those previously published. Besides, Ak et al. found that the time from symptoms appearing to treatment in young patients is longer than that in elderly patients, but without a significant difference [17]. The most common distant metastasis site among advanced NSCLCs who were younger than 50 years was the bone, accounting for 26.9%. Similarly, we found that 55 of the 84 patients had distant metastasis, and the major site was the bone, followed by pleural effusion, the brain, and the lung.

Previous studies have shown that gene mutations including EGFR and ALK were related with cancer diagnosis in youngers [18]. In the present study, young NSCLC patients (histopathologic subtype was adenocarcinoma) underwent genetic testing. Among them, 13 patients (31.7%) had EGFR gene mutation; 7 cases (31.8%) had ALK gene mutation. Moreover, recent data suggest that ALK fusions are related to lung cancer development in youngers [19, 20]. Our findings suggest that young NSCLC patients with ALK

fusion are mostly in advanced stages, suggesting that ALK fusion in younger patients presents NSCLC with high malignant potential, which is consistent with previous studies [21–23]. Tanaka K et al. suggested that oncogenic gene mutations were prevalent in youngers with lung adenocarcinoma, moreover, the positive rates of ALK fusions, HER-2 mutations, ROS1 fusions, and RET rearrangement were higher in younger lung cancer patients than in elderly patients, indicating that younger patients are more likely to benefit from targeted therapy [23]. However, for lung cancer patients without mutations, there may be unknown driver mutations, such as EGFR-RAD51 fusions and EGFR kinase domain duplication, that have been reported as actionable EGFR mutations [24, 25]. Recently, with the rapid development of third-generation DNA sequencing, comprehensive genetic testing is beneficial to young lung cancer patients, providing more opportunities for targeted therapy.

Abbreviations

NSCLC: Non-small-cell lung cancer
ctDNA: Circulating tumor DNA
EGFR: Epidermal growth factor receptor
ALK: Anaplastic lymphoma kinase.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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Research Article

Emergency Nursing Countermeasures and Experience of Patients with Primary Liver Cancer Nodule Rupture and Hemorrhage

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Objective. To explore the emergency nursing countermeasures and nursing experience of patients with primary liver cancer nodule rupture and hemorrhage. *Methods*. 30 patients with primary liver cancer nodule rupture and hemorrhage treated in our hospital since January 2020 after the implementation of emergency nursing countermeasures were selected as the observation group, and another 30 patients with primary liver cancer nodule rupture and hemorrhage treated in our hospital before January 2020 were selected as the control group. The control group received basic nursing intervention, while the observation group received emergency nursing measures. The hemoglobin level, blood oxygen saturation monitoring value, and partial pressure of oxygen of patients with hemorrhagic shock due to nodular rupture of primary liver cancer were compared between the two groups at admission and after nursing care. All indexes of patients during the perioperative period were recorded. The incidence of complications, mortality, and nursing satisfaction rates of the patients' families were compared between the two groups. *Results*. After nursing care, the observation group's patients' hemoglobin level, blood oxygen saturation monitoring value, and partial pressure of oxygen were higher than those of the control group's patients ($P < 0.05$). The intraoperative bleeding volume, shock correction time, and discharge time of patients in the observation group were lower than those of patients in the control group ($P < 0.05$). The incidence of complications and mortality in the observation group was significantly lower than those in the control group ($P < 0.05$). The nursing satisfaction rate of patients in the observation group was higher than that of the control group ($P < 0.05$). *Conclusion*. The results of emergency nursing intervention in patients with primary liver cancer rupture and hemorrhage are reliable, which can significantly improve perioperative indicators of patients, reduce complications and mortality, improve nursing satisfaction, and effectively shorten the hospital stay of patients.

1. Introduction

Primary liver cancer is the fifth largest malignant tumor in the world, and its incidence is increasing year by year. It is estimated that, by 2025, more than one million new cases of liver cancer will be discovered every year [1–3]. There is a large population with liver cancer in China. Fifty-five percent of the world's liver cancer patients are in China. Primary liver cancer has become the second leading cause of cancer death in China. Most of the patients with early primary liver cancer have no obvious symptoms. 85% to 90% of the patients were found to be in the middle and late stages [4–6]. Some patients were first discovered when they were admitted to the hospital because of an acute abdomen rupture caused by liver cancer. Spontaneous rupture and hemorrhage of primary liver cancer nodules are one of the four major factors of death in patients with liver cancer, and its incidence rate is 7%–20%. The rupture of liver cancer can easily cause massive hemorrhage, leading to local tissue ischemia and hypoxia, bacterial translocation, secondary infection, severe hemorrhagic shock, or even septic shock in a short time. The condition is critical and complicated, and the prognosis is poor, which endangers the life of the patient [7, 8]. Hemorrhage due to a rupture of nodules of primary

liver cancer is a serious complication, and its treatment and nursing are difficult. At present, emergency interventional embolization is commonly used clinically to treat primary liver cancer with nodular rupture and hemorrhage, which can effectively control the progression of the disease and prolong the survival time of patients [9, 10]. However, it is very important to treat the ruptured primary liver cancer nodules with emergency interventional embolization, and there are many postoperative complications. Therefore, it is particularly important to take timely and effective nursing intervention on primary liver cancer nodule rupture and hemorrhage, which can reduce postoperative complications and improve the quality of life of patients [11, 12]. This study compared the perioperative nursing effects of patients with nodular rupture and hemorrhage of primary liver cancer before and after the implementation of emergency nursing measures in our hospital and summarized the experience and value of emergency nursing measures. The results are now reported as follows.

2. Data and Methods

2.1. General Information. 30 patients with primary liver cancer nodules rupture and hemorrhage who have been treated in our hospital since January 2020 after the implementation of emergency nursing countermeasures were selected as the observation group, including 21 males and 9 females, aged 40–65 years. In addition, 30 patients who were admitted to our hospital before January 2020 with nodular rupture and hemorrhage of primary liver cancer were selected as the control group, including 22 males and 8 females, aged 42–68 years. Inclusion criteria were as follows: all patients received a clinical physical examination, blood biochemistry, and imaging examinations, which were consistent with the diagnosis of primary liver cancer; all patients had a sudden and severe upper abdominal pain and blood pressure drop, accompanied by symptoms and signs of hemorrhagic shock, such as pale complexion, cold limbs, tachypnea, and syncope; all patients had diagnostic paracentesis to draw blood samples or red hemorrhagic ascites; all patients' clinical data were intact. Exclusion criteria were as follows: early death patients; patients who are delirious and unable to cooperate with the treatment; lack of clinical data; patients who failed to follow-up or were transferred to a hospital for treatment.

2.2. Research Methods. The control group received basic nursing intervention, and the patients were sent to the emergency room quickly. The patient's lower limbs were raised by 30 degrees, lying on his back, and his head was tilted to one side. A venous access was established, and fluid replacement was performed to correct the shock. Patients were treated with routine symptomatic treatment, such as hemostasis, volume expansion, and blood transfusion.

The observation group took emergency nursing measures. Comprehensive emergency care was given to patients from various aspects.

Preoperative nursing was as follows:

(1). Two or more venous pathways were established. First of all, deep vein intubation (internal jugular vein or subclavian vein puncture) was considered to be beneficial to rapid blood transfusion and expansion, and correction of shock. At the same time, central venous pressure was monitored to regulate infusion volume and infusion speed. In addition, a venous indwelling needle was retained through a peripheral venous puncture, which can be used for the infusion of other therapeutic drugs.

(2). Patients with liver cancer rupture bleeding with shock, which can cause organ hypoperfusion, timely expansion to maintain effective circulation blood volume of important organs, and correction of shock is the focus of treatment. A colloid solution (red blood cells and plasma) shall be infused first when rehydrating, and the sequence of rehydration shall be arranged reasonably, so as to replenish blood volume in time and improve the heartbeat. Hemostatic drugs (somatostatin) shall be taken into consideration, and water, electrolyte, and acid-base balance disorders shall be corrected simultaneously. Nurses need to understand the role of drugs, side effects, and incompatibility.

(3). patients with liver cancer rupture and bleeding according to the situation of the blood loss to input a large amount of whole blood, the nurse need to strictly implement the system of blood transfusion check and closely observe the presence of blood transfusion reaction.

(4). patients with liver cancer rupture bleeding hematemesis, easy to cause aspiration and cause suffocation, nursing should be timely cleaning respiratory secretions and vomit, paying attention to keep the patient's respiratory tract patency.

(5). Closely observe the patient's vital signs, every 15 min measurement of patients with blood pressure, pulse, respiration, central venous pressure, and continuous ECG monitoring. Observe the patient's consciousness changes and skin mucosa (color changes of face and lips) to determine the peripheral circulation. The urine volume (hourly urine volume and 24 h urine volume) and abdominal condition (abdominal pain, abdominal distension, and abdominal muscle tension) were observed.

(6). Ready for emergency surgery. We should carry out perfect various preoperative preparations as soon as possible, including skin preparation, urinary catheter insertion, blood typing, coagulation time determination, and biochemical tests.

(7). patients with liver cancer rupture bleeding, consciousness is clear, the spirit is hard to bear, easy to appear fearful, and to have an agitated state of mind. We should pay attention to the transfer of patients' bad emotions, do a good job in psychological counseling, give them spiritual support and encouragement, through counseling, and encourage

them to adjust their emotions through counseling. Doing a good job in all kinds of treatment and life care and concentrating on all kinds of treatment and care as much as possible, so as to reduce the turnover and unnecessary pain of patients. Relying on skilled technology and rigorous work style to win the trust of patients, patients can actively cooperate with treatment and care..

Postoperative nursing was as follows:

(1). Closely monitor the vital signs of patients after operation and accurately record the amount of fluid in and out. Do a good job in surgical handover, give oxygen using a nasal catheter, instruct patients to stay in bed absolutely, reduce physical energy consumption, increase liver blood flow, and promote liver function recovery. Check whether the dressing at the puncture point of the femoral artery in the groin is dry, whether there is bleeding and swelling and whether the dorsalis pedis artery beats.

(2). Maintain effective ventilation in the ward, and conduct disinfection and isolation management on the ward environment, including air disinfection. The ground, walls, and surfaces of objects are cleaned by the wet method to reduce air flow; fixed family escort and strict restrictions on personnel visits; medical staff should wash their hands carefully, wear masks, and strictly implement aseptic operation procedures before contacting patients.

(3). Observe the patient's fever degree and state, record the temperature, and draw the temperature change curve. When the body temperature is less than 38.5°C, the patient can temporarily stop taking medicine, and physical antipyretic methods such as cold compress on the head and bathing can be given. When the body temperature is above 38.5°C, appropriate antipyretic and analgesic drugs can be selected according to the doctor's advice, and patients should be instructed to drink plenty of water to help reduce fever and prevent excessive sweating from collapse.

(4). Postoperative pain in the liver area of the patient is mainly caused by the blockage and spasm of the responsible blood vessel by the embolic material, which causes acute ischemia of the target organ and the vascular tissue around the tumor, resulting in pain. The causes of pain to patients and their families are explained to relieve their worries. If the pain is severe, accompanied by systemic symptoms, those with peritoneal irritation are likely to bleed again.

(5). Improve a variety of nursing documents, records of intensive care were made, not only for the diagnosis and treatment to provide reliable medical data and take the corresponding treatment measures but also to guarantee the means of nursing occupational safety.

The hemoglobin level, blood oxygen saturation monitoring value, and partial pressure of oxygen at the time of admission and after nursing care of patients with hemorrhagic shock due to nodular rupture of primary liver cancer were compared between the two groups. Perioperative indicators of the patients were recorded, such as operation time, intraoperative bleeding volume, time to correct shock, and time to cure and discharge. The incidence of complications and mortality were compared between the two groups.

2.3. Statistical Methods. SPSS22.0 software was used for processing. The measurement data were expressed as mean standard deviation ($\overline{x} \pm s$), and the t-test was used for pairwise comparison. Enumeration data were expressed as (%), and the χ^2 test was used for enumeration data. The test level was $\alpha = 0.05$, and $P < 0.05$ indicated that the difference was statistically significant.

3. Results

3.1. Comparison of General Data between the Two Groups. There were no significant differences in gender, age, Child-Pugh classification, and clinical manifestations between the two groups ($P > 0.05$) as shown in Table 1.

3.2. Comparison of Hemoglobin Level, Blood Oxygen Saturation Monitoring Value, and Partial Pressure of Oxygen between the Two Groups. There was no significant difference in the hemoglobin level, blood oxygen saturation monitored value, and oxygen partial pressure between the two groups at the time of admission ($P > 0.05$). After nursing, the hemoglobin level, blood oxygen saturation monitoring value, and partial pressure of oxygen in the observation group were higher than those in the control group, and the differences were statistically significant ($P < 0.05$) as shown in Figures 1–3.

3.3. Comparison of Perioperative Indicators between the Two Groups. There was no significant difference in operation time between the two groups ($P > 0.05$). The intraoperative bleeding volume, shock correction time, and discharge time of patients in the observation group were lower than those of patients in the control group, and the differences were statistically significant ($P < 0.05$), as shown in Figures 4–7.

3.4. Comparison of Complication, Incidence, and Mortality between the Two Groups. The incidence of complications and mortality in the observation group was significantly lower than those in the control group, and the differences were statistically significant ($P < 0.05$), as shown in Figure 8.

3.5. Comparison of the Nursing Satisfaction Rate between the Two Groups. The nursing satisfaction rate of patients of the observation group was higher than that of the control group, and the differences were statistically significant ($P < 0.05$), as shown in Figure 9.

Table 1: Comparison of general data between the two groups.

Group	*N*	*Male/female*	*Age (years)*	*Child–Pugh classification*		*AFP > 200 μg/L*
				Class II	*Class III*	
Control group	30	22/8	52.96 ± 3.84	14	16	21
Observation group	30	21/9	51.83 ± 3.17	13	17	20
t/χ^2 *value*		0.082	1.243	0.067		0.077
P value		0.774	0.219	0.795		0.781

Group	*N*	*Clinical picture*				
		Jaundice	*Palpitate*	*Abdominal tenderness*	*Hepatomegaly*	*Right upper quadrant palpable mass*
Control group	30	18	15	27	30	15
Observation group	30	19	14	28	29	16
χ^2 *value*				0.124		
P value				0.998		

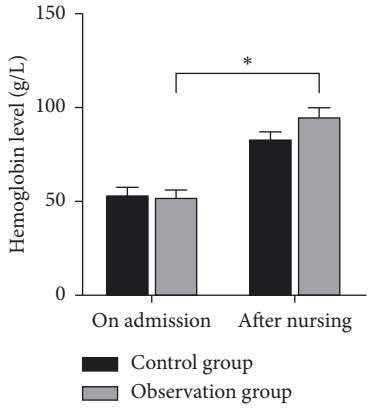

Figure 1: Comparison of the hemoglobin level between the two groups. Note: compared with the control group, $^*P < 0.05$.

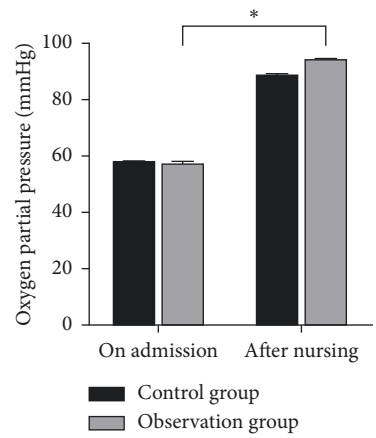

Figure 3: Comparison of oxygen partial pressure between the two groups. Note: compared with the control group, $^*P < 0.05$.

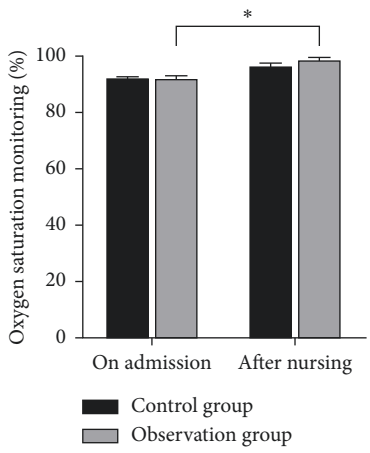

Figure 2: Comparison of oxyhemoglobin saturation monitoring between the two groups. Note: compared with the control group, $^*P < 0.05$.

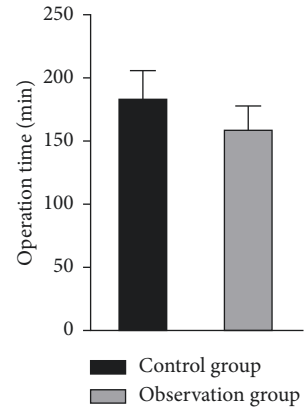

Figure 4: Comparison of the operation time between the two groups.

4. Discussion

Rupture and hemorrhage of primary liver cancer nodules is a serious complication of primary liver cancer nodules with a high mortality rate [13, 14]. Our patient has an acute onset, which is sudden and fierce. His condition is changing rapidly and he often suffers from hemorrhagic shock. In case of rupture and bleeding, we should give priority to controlling bleeding and saving the patients' life, observe the patients' condition dynamically, adjust the treatment and nursing measures in time, and make preoperative prevention and

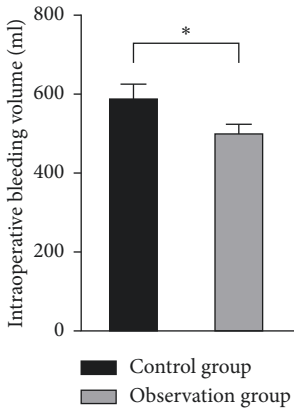

Figure 5: Comparison of the intraoperative bleeding volume between the two groups. Note: compared with the control group, $^{*}P < 0.05$.

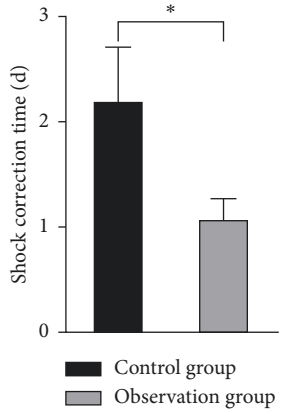

Figure 6: Comparison of the shock correction time between the two groups. Note: compared with the control group, $^{*}P < 0.05$.

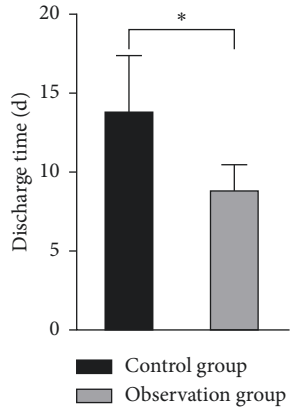

Figure 7: Comparison of the discharge time between the two groups. Note: compared with the control group, $^{*}P < 0.05$.

nursing. Careful observation of the condition, early detection of the changes of the condition, and quick and effective rescue and nursing measures are the key to successful rescue [15–17].

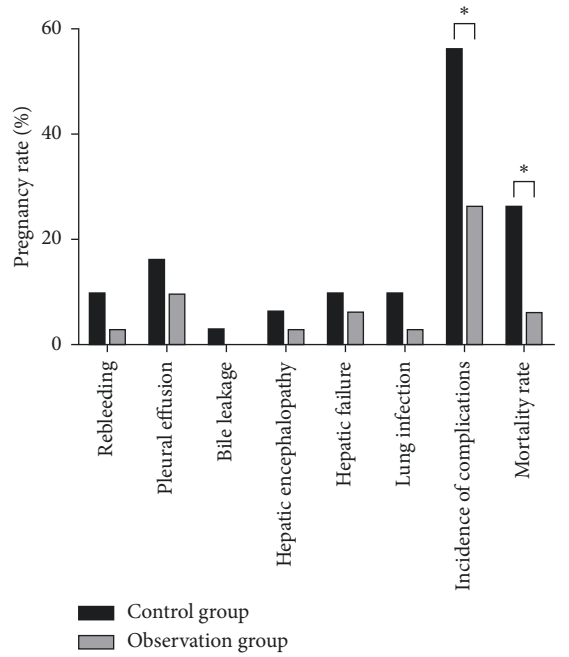

Figure 8: Comparison of complication incidence and mortality between the two groups. Note: compared with the control group, $^{*}P < 0.05$.

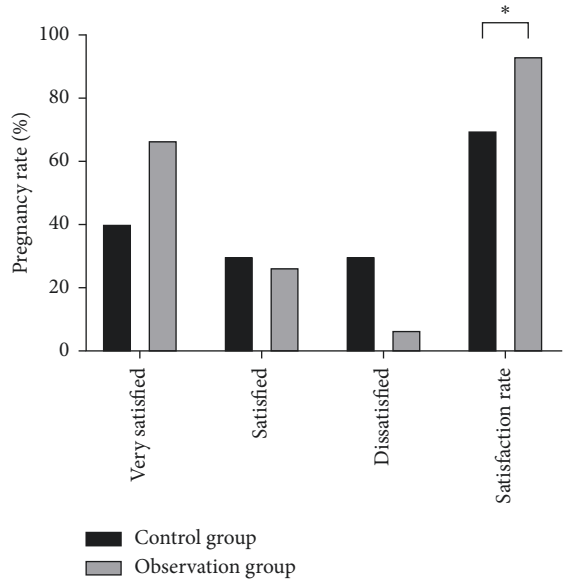

Figure 9: Comparison of the nursing satisfaction rate between the two groups. Note: compared with the control group, $^{*}P < 0.05$.

This research shows that, after nursing, the patients in the observation group were significantly better than those in the control group in hemoglobin level, oxygen saturation monitored value, and partial pressure of oxygen. Correction of the shock not only creates conditions for the operation but also reduces the risk of operation and postoperative complications. Therefore, preoperative antishock therapy is the key to the treatment of rupture and hemorrhage of liver

cancer nodules, and it is also a test of the medical staff's first aid ability [18, 19]. The study also showed that the patients in the observation group had a lower intraoperative bleeding volume, shock correction time, and discharge time than those in the control group. It indicated that the adoption of emergency nursing countermeasures, which improved the quality of nursing care as a whole, actively cooperated with the correction of shock, and preparation for emergency surgery at the same time, had become the key to rescue the rupture and hemorrhage of liver cancer nodules [20, 21].

Emergency nursing countermeasures included rapid establishment of infusion channels, reasonable selection of infusion sequence, dynamic observation of the condition, preparation for emergency surgery, and psychological intervention. Unlike elective liver cancer surgery, the nursing care of patients with ruptured liver cancer nodules in an emergency requires all measures to be based on the principles of stopping the bleeding and saving lives. The nursing procedure is composed of many links, and the nursing risk runs through many links, such as cooperation with rescue and nursing operations. Only by paying attention to the detailed management of all aspects of nursing, making the work carefully, doing well, and controlling the quality of the link, can we improve the cure rate of patients and the success rate of rescuing critically ill patients, avoiding nursing risks and ensuring nursing safety [22–24]. Finally, the complications and mortality between the two groups showed that the incidence of complications and mortality in patients of the observation group was significantly lower than that of the control group. Patients with primary liver cancer nodules rupture and hemorrhage have an urgent disease onset. When patients are admitted to the hospital, the nurses carry out a comprehensive understanding and evaluation of the patients' condition, dynamically observe the changes in the patients' vital signs and consciousness, identify potential and possible risk factors, and complete the emergency and preoperative care procedures, which are conducive to reducing the mortality rate of patients [8, 25, 26].

When facing liver cancer for the first time, most patients are still conscious and overwhelmed, showing fear and despair. At this point, the nursing work should pay attention to transferring the patients' bad emotions and do a good job of psychological counseling. It is necessary to understand the patients' personality and psychology, apply the concept of psychological nursing, provide respect and care for patients, give the patient spiritual support and encouragement, and adjust the patients' emotions through persuasion and comfort. At the same time in nursing, relying on skilled technology and a rigorous work style to obtain the patients' trust, so that patients can actively cooperate with the treatment and nursing [27, 28]. The results showed that the nursing satisfaction rate of patients in the observation group was higher than that of patients in the control group. It indicated that the adoption of emergency nursing countermeasures had good effects on the improvement of nursing satisfaction.

In summary, the emergency nursing countermeasures in patients with primary liver cancer nodules rupture bleeding application effect is good and can significantly improve the perioperative indicators of patients, reduce complications and mortality, improve nursing satisfaction, and effectively shorten the hospital stay of patients.

Data Availability

The data can be obtained from the author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Retraction

Retracted: Short-Term and Long-Term Curative Effect of Partial Hepatectomy on Ruptured Hemorrhage of Primary Liver Cancer after TAE

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] X. Xiao, L. Zhou, L. Zhang, Z. Xu, Q. Dai, and X. Deng, "Short-Term and Long-Term Curative Effect of Partial Hepatectomy on Ruptured Hemorrhage of Primary Liver Cancer after TAE," *Emergency Medicine International*, vol. 2022, Article ID 2484418, 7 pages, 2022.

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Research Article

Short-Term and Long-Term Curative Effect of Partial Hepatectomy on Ruptured Hemorrhage of Primary Liver Cancer after TAE

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Objective. To observe the short-term and long-term curative effects of partial hepatectomy on ruptured hemorrhage of primary liver cancer after transcatheter arterial embolization (TAE). *Methods*. A total of 150 patients with primary liver cancer treated in the hospital were enrolled as research objects between February 2018 and February 2021, including 75 cases undergoing TAE in the TAE group and the other 75 cases undergoing elective partial hepatectomy after TAE in the combination group. The surgical related indexes (leaving bed time, discharge time, success rate of hemostasis, lesion clearance rate), mean arterial pressure (MAP), heart rate (HR), hemoglobin, and liver function indexes (serum alpha-fetoprotein (AFP), albumin (ALB), total bilirubin (TBIL)) before and after treatment, postoperative complications, survival rate, and recurrence rate at 1 year after surgery between the two groups were compared. *Results*. Compared with the TAE group, hospitalization time was shorter ($P < 0.05$), the success rate of hemostasis and lesions clearance rate were higher in the combination group ($P < 0.05$). After surgery, levels of HR and serum AFP were significantly decreased, while levels of MAP, hemoglobin, serum ALB, and TBIL were significantly increased in both groups. The levels of HR and serum AFP in the combination group were lower than those in the TAE group, while levels of MAP, hemoglobin, serum ALB, and TBIL were higher than those in the TAE group ($P < 0.05$). There was no significant difference in the incidence of postoperative complications between the two groups ($P < 0.05$). Compared with the TAE group, the recurrence rate was lower, and the survival rate was higher in the combination group at 1 year after surgery ($P < 0.05$). *Conclusion*. Partial hepatectomy can effectively improve hemostatic effect and liver function in ruptured hemorrhage of primary liver cancer after TAE, increase survival rate, and reduce postoperative recurrence rate.

1. Introduction

Primary liver cancer is a malignant tumor that occurs in hepatocytes or intrahepatic bile duct epithelial cells and is prone to intrahepatic hematogenous metastasis [1]. Rupture and hemorrhage of liver cancer is a serious complication of primary liver cancer, with a mortality rate as high as 25% to 75%, which is the fourth leading cause of death in patients with liver cancer [2]. Due to the rapid onset of the disease, and because it is often accompanied by shock, its treatment is difficult, and the prognosis is poor. If it is not actively treated, it may accelerate the death of patients. In recent years, with the development and popularization of interventional techniques, interventional hemostasis has been widely used in the treatment of ruptured hemorrhage from liver cancer. Transcatheter arterial embolization (TAE) is an interventional minimally invasive surgical method, which is widely used in the treatment of ruptured hemorrhage of liver cancer. A study [3] reported that for patients with ruptured and hemorrhagic hepatocellular carcinoma who could not be resected by emergency surgery, the application of TAE for hemostasis was effective and could prolong the postoperative survival time of the patients. At present, there are many reports about liver resection and TAE in the treatment of primary liver cancer spontaneous rupture and hemorrhage [4–6], but there is no unified guideline for the selection of surgical methods for ruptured hemorrhage of primary liver cancer. Therefore, this study explored the short-term and

long-term curative effects of partial hepatectomy on ruptured hemorrhage of primary liver cancer after TAE in order to provide more evidence-based data support for the selection of surgical options for the clinical treatment of ruptured hemorrhage of primary liver cancer. The study was reported as follows.

2. Materials and Methods

2.1. General Information. A total of 150 patients with primary liver cancer diagnosed and treated in our hospital from February 2018 to February 2021 were selected as the research objects, including 75 cases undergoing TAE in the TAE group and the other 75 cases undergoing elective partial hepatectomy after TAE in the combination group. Inclusion criteria were meeting the criteria of the primary liver cancer [7], abdominal contrast-enhanced CT showing liver cancer ruptures and hemorrhages with abdominal and pelvic cavity and blood, and the diagnostic paracentesis not coagulating; meeting TAE or partial indications for hepatectomy; liver function grade *A* or *B*; and clinical data including postoperative follow-up data were kept intact. Exclusion criteria were severe heart, brain, liver, kidney dysfunction, coagulation dysfunction; previous history of abdominal surgery; distant metastasis or multiple intrahepatic metastasis of liver cancer; and advanced liver cancer. TAE group (75 cases): 43 males and 32 females; aged 43–71 years, mean (56.27 ± 6.03) years old; 71 cases were hepatitis B positive; 66 cases were alpha-fetoprotein (AFP) positive; Child-Pugh grade included grade A (62 cases), grade B (13 cases); the tumor diameter was 6.45–12.53 cm, with an average of (9.24 ± 1.36) cm; tumor sites: left lateral lobe, left medial lobe, right anterior lobe, and right posterior lobe were 19, 22, 25, and 9 cases, respectively; and 31 cases of admission combined with shock. Combination group (75 cases): 40 males and 35 females; aged 43–76 years, mean (56.92 ± 5.99) years old; 71 cases of hepatitis *B* positive; 67 cases were alpha-fetoprotein (AFP) positive; Child-Pugh grade included grade *A* (65 cases), grade *B* (10 cases); the tumor diameter was 6.38–11.60 cm, with an average of (8.87 ± 1.34) cm; tumor sites: left lateral lobe, left medial lobe, right anterior lobe, and right posterior lobe were 20, 21, 21, and 13 cases, respectively; and 38 cases of admission combined with shock. There was no statistical difference between the two groups in gender, age, tumor diameter, and other general data. The hospital ethics committee has reviewed and approved this study. The patients and their families were aware of this study and signed the informed consent.

2.2. Methods

(1) The patients in the TAE group were placed in a supine position. After sterilizing and laying a towel, lidocaine was injected into the femoral artery puncture point for local anesthesia. The femoral artery was punctured first, and a catheter was placed in the celiac trunk. The tumor in the right lobe of the liver is heavily stained with a contrast agent. The catheter was introduced to the proximal end of the common hepatic artery, a microcatheter and a microguide wire were inserted, and the microcatheter was introduced into the tumor supplying artery of the right hepatic artery, which was confirmed by angiography. A mixture of chemotherapeutic drugs such as carboplatin and an embolic agent was slowly injected, and the angiography showed that the blood supplying artery was well embolized, and no tumor was supplied by the artery. The microcatheter was introduced into another feeding artery, and super-liquefied lipiodol and an appropriate amount of 1-2 mm gelatin sponge particles were used for embolization in the same way until all the feeding arteries were embolized; final angiography in the right hepatic artery: no tumor staining. At the end of the operation, the catheter was removed and the groin was bandaged.

(2) Combination group underwent elective partial hepatectomy after TAE, choosing different positions according to the location of the tumor. After continuous epidural anesthesia and combined anesthesia with endotracheal intubation, an oblique incision was made 1-2 transverse fingers below the right costal margin, and the abdominal organs and tumors are explored after laparotomy. Depending on the location of the tumor, the hepatic ligament was selectively dissociated to fully expose the tumor. The first hepatic hilum needed to be blocked according to the actual situation during the operation. The liver capsule and superficial liver tissue, blood vessels were incised with electrocautery at a distance of more than 2 cm from the tumor edge. The liver tissue was separated with forceps, and the tumor was completely removed after cutting off each duct. The stump of the duct was carefully ligated, and the large duct was sutured. The liver section was closed and sutured. The surgical field was flushed with normal saline, and a latex tube was placed under the right diaphragm or in the surgical area for drainage.

2.3. Observation Indicators

(1) The operation-related indicators of the two groups were observed and counted, as well as the number of patients with successful hemostasis and the number of patients with lesion resection. The success of hemostasis was judged according to whether the clinical symptoms of the patient were relieved and whether the biochemical indicators such as hemoglobin, blood pressure, and the basic vital signs were stable.

(2) Comparing the hemostatic effects of all patients by using Mindray DC-N2S Doppler ultrasonography to detect hemodynamic indexes, mean arterial pressure (MAP), and heart rate (HR), the 7060 automatic biochemical analyzer was used to detect the hemoglobin level.

(3) Liver function indexes used ethylenediaminetetraacetic acid anticoagulation tube to collect 5 mL of fasting venous blood before and after surgery, centrifuged at 3000 r/min for 10 min, and took the upper serum part after separation, using 7060 automatic biochemical analyzer to detect blood biochemical indicators, including serum alpha-fetoprotein (AFP), albumin (ALB), and total bilirubin (TBIL).

(4) During hospitalization, the occurrence of complications (pulmonary embolism, secondary hemorrhage, bile leakage in liver section, and pulmonary infection) in the two groups were observed and recorded.

(5) All Patients were followed up by telephone or outpatient visits every 3 months after surgery. The deadline for follow-up is February 2022. The follow-up time ranged from 1 to 12 months. The survival rate and recurrence rate were compared between the two groups. The survival rate was judged based on whether the patient had a liver cancer-related death. The presence of liver cancer recurrence and ruptured hemorrhage was judged based on whether the patient had abdominal symptoms, whether there were abnormal changes of tumor markers α-fetoprotein, routine blood tests, liver function, and other laboratory indicators, and whether there were changes in imaging examinations.

2.4. Statistical Methods. All counting and measurement data were processed by using SPSS 22.0 for statistical data analysis, Shapiro–Wilk was used for measurement data for normality test, and the data satisfying normal distribution was expressed in the form of $(\overline{x} \pm s)$. Independent t-test and paired t-test were used to compare the differences between groups and within groups, respectively, and the data that did not meet the normal distribution were expressed in the form of M (P25, P75), and the Kruskal–Wallis H rank sum test was used; the count data were expressed by the number of cases or rates, and the χ^2 test was used to compare differences between groups; Kaplan–Meier was used for analysis of postoperative 1-year survival rate, log-rank test was used as well. Statistical value $P < 0.05$ indicates that there is statistical significance.

3. Results

3.1. Comparison of Surgery-Related Indicators between the Two Groups. Compared with the TAE group, the combination group had a shorter hospital stay, higher hemostasis success rate, and higher lesion clearance rate ($P < 0.05$), and the above differences were statistically significant ($P < 0.05$), as shown in Table 1.

3.2. Comparison of Hemostatic Effects between the Two Groups. There was no significant difference in MAP, HR, and hemoglobin between the TAE group and the combination group before the operation ($P > 0.05$); after the operation, the HR levels of the two groups were significantly decreased, the MAP and hemoglobin levels were significantly increased, and the HR of the combination group was significantly increased. The levels were lower, and the levels of MAP and hemoglobin were higher, and the above differences were statistically significant ($P < 0.05$), as shown in Figure 1 and Table 2.

3.3. Comparison of Liver Function Indicators between the Two Groups. There was no significant difference in the liver function indicators (AFP, ALB, and TBIL) between the TAE group and the combination group before operation ($P > 0.05$); the serum AFP levels of the two groups after operation were significantly decreased, and the serum ALB and TBIL levels increased significantly. The serum AFP level in the combination group was lower, while the serum ALB and TBIL levels were higher, and the above differences were statistically significant ($P < 0.05$), as shown in Figure 2 and Table 3.

3.4. Comparison of Postoperative Complications between the Two Groups. There was no significant difference in the incidence of postoperative complications (including pulmonary embolism, secondary hemorrhage, bile leakage in the liver section, and pulmonary infection) between the TAE group and the combination group ($P > 0.05$), as shown in Table 4.

3.5. Comparison of 1-Year Survival Rate and Recurrence Rate between the Two Groups. A one-year follow-up showed that 20 patients in the combination group died due to liver cancer, and 35 patients in the TAE group died due to liver cancer. The 1-year overall survival rate in the combination group (73.33%) was significantly higher than that in the TAE group (53.33%), as shown in Figure 3. Compared with TAE group (40.00%), the combination group (17.33%) had a lower recurrence rate and a higher survival rate at 1 year after operation, and the above differences were statistically significant ($P < 0.05$), as shown in Table 5.

4. Discussion

The global incidence of primary liver cancer is increasing, ranking third in the mortality risk of malignant tumors, and it accounts for 80% of hepatocellular carcinoma, which seriously threatens human health and life [8]. The incidence of primary liver cancer rupture and hemorrhage is 10% to 20%. Clinically, it is one of the main causes of death in patients with primary liver cancer [9, 10]. TAE belongs to minimally invasive interventional therapy. It can be used not only for the treatment of liver hemorrhage but also for the treatment of primary liver cancer. Previous studies [11, 12] reported that TAE has a good short-term effect in the treatment of primary liver cancer, and it can be less interventional in the number of embolizations, but when the

Table 1: Comparison of surgery-related indicators between the two groups ($\overline{x} \pm s$, n (%)).

Group	Case	Hospital stay (d)	Hemostasis success rate (%)	Lesion clearance rate (%)
TAE	75	6 (5, 7)	62 (82.67)	55 (73.33)
Combination	75	6 (6, 7)	73 (97.33)	74 (98.67)
Z/χ^2		−1.629	8.963	19.989
P		0.103	0.003	<0.001

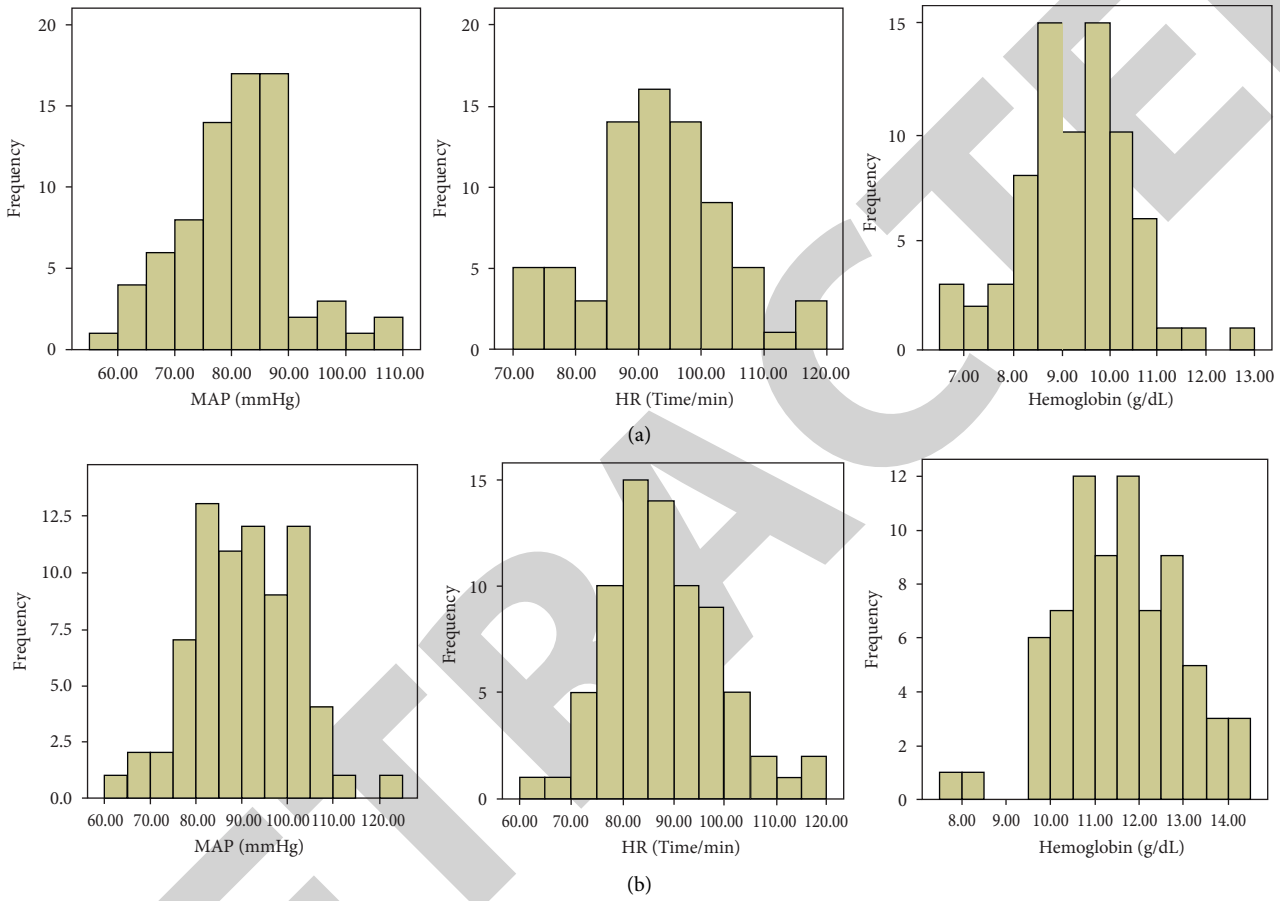

Figure 1: Level distribution of postoperative hemostatic effect-related indicators in the two groups. (a) Level distribution of postoperative hemostatic effect-related indicators in TAE group; (b) level distribution of postoperative hemostatic effect-related indicators in combination group.

Table 2: Comparison of hemostatic effects between the two groups ($\overline{x} \pm s$).

Group	Case	MAP (mmHg)		HR (Time/min)		Hemoglobin (g/dL)	
		Preoperative	Postoperative	Preoperative	Postoperative	Preoperative	Postoperative
TAE	75	71.94 ± 7.96	80.86 ± 9.88*	129.02 ± 15.16	93.29 ± 10.67*	7.13 ± 0.76	9.31 ± 1.14*
Combination	75	72.46 ± 9.11	90.51 ± 11.33*	129.03 ± 15.84	88.12 ± 10.75*	7.33 ± 0.92	11.56 ± 1.34*
t		0.372	5.583	0.004	2.956	1.451	11.076
P		0.710	<0.001	0.997	0.004	0.149	<0.001

Compared with the same group before operation, *$P < 0.05$.

tumor diameter exceeds 10 cm, TAE is less effective. Liver resection is the preferred option and the key to improving patient survival. Relevant studies [13, 14] reported that partial hepatectomy can shorten the recovery time of patients and reduce the recurrence rate of patients after surgery. Therefore, this study selected patients with ruptured hemorrhage of primary liver cancer to undergo partial hepatectomy after TAE.

This study found that compared with the TAE group, the combination group had a shorter hospital stay, a higher rate of successful hemostasis and a higher rate of lesion clearance. For resectable primary liver cancer, partial hepatectomy is

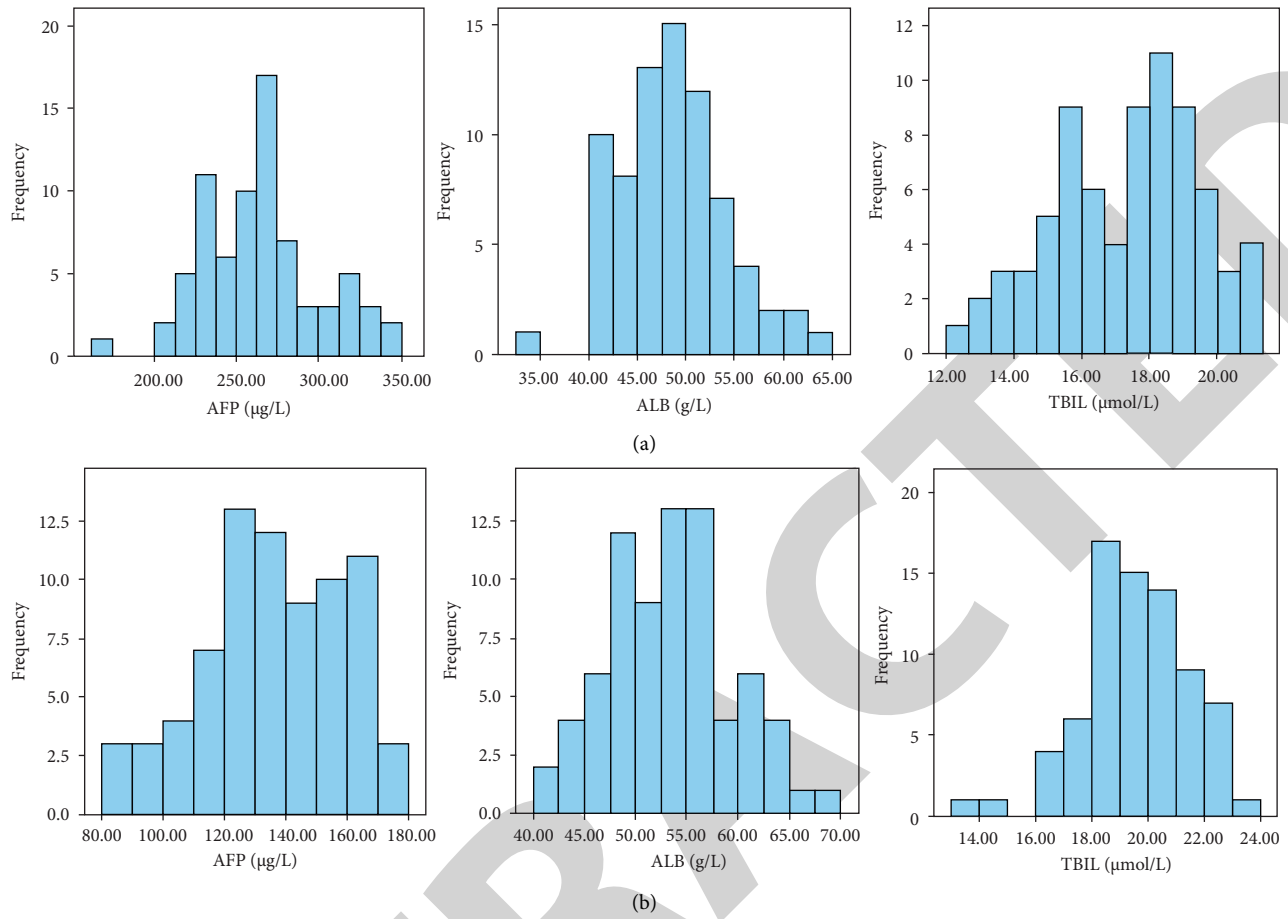

Figure 2: Level distribution of postoperative liver function-related indicators in the two groups. (a) Level distribution of postoperative liver function-related indicators in the TAE group; (b) levels of postoperative liver function-related indicators in the combination group.

Table 3: Comparison of liver function indicators between the two groups ($\overline{x} \pm s$).

Group	Case	AFP (μg/L)		ALB (g/L)		TBIL (μmol/L)	
		Preoperative	Postoperative	Preoperative	Postoperative	Preoperative	Postoperative
TAE	75	529.42 ± 82.15	264.11 ± 35.34*	30.58 ± 5.52	48.63 ± 5.54*	10.26 ± 1.49	17.33 ± 2.10*
Combination	75	520.76 ± 86.87	135.92 ± 23.13*	30.88 ± 4.58	53.28 ± 6.03*	10.43 ± 1.89	19.51 ± 1.91*
t		0.627	26.284	0.362	4.918	0.612	6.651
P		0.531	<0.001	0.718	<0.001	0.542	<0.001

Compared with the same group before operation, *$P < 0.05$.

Table 4: Comparison of postoperative complications between the two groups (n (%)).

Group	Case	Pulmonary embolism	Secondary bleeding	Liver section bile leakage	Lung infection	Complication rate
TAE	75	5 (6.67)	2 (2.67)	0 (0.00)	3 (4.00)	10 (13.33)
Combination	75	2 (2.67)	0 (0.00)	1 (1.33)	1 (1.33)	4 (5.33)
χ^2						2.836
P						0.092

still a good treatment, not only for surgical hemostasis but also for radical resection of the tumor. The clinical efficacy is obviously superior to that of conservative treatment or simple intervention treatment [15]. Combined with the above reports, this study suggests that partial hepatectomy for primary liver cancer rupture and bleeding after TAE can improve the hemostatic effect and lesion clearance rate of TAE treatment and improve the short-term efficacy of patients. At the same time, this study found that the HR levels of the two groups of patients after surgery were significantly decreased, and the levels of MAP and hemoglobin were significantly increased, and the combination group had lower HR levels and higher MAP and hemoglobin levels, which further confirmed that partial hepatectomy for

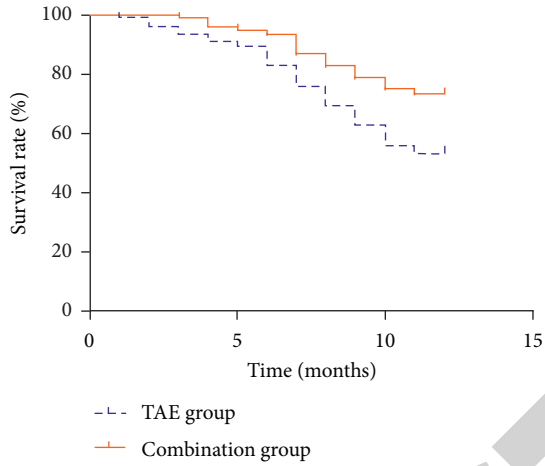

Figure 3: Comparison of 1-year overall survival rate between TAE group and combination group.

Table 5: Comparison of in-hospital mortality, 1-year survival rate, and recurrence rate between the two groups (n (%)).

Group	Case	1-year survival rate after surgery	1-year recurrence rate after surgery
TAE	75	40 (53.33)	30 (40.00)
Combination	75	55 (73.33)	13 (17.33)
χ^2		6.459	9.422
P		0.011	0.002

ruptured hemorrhage of primary liver cancer after TAE can improve the hemostatic effect.

Liver failure is one of the most serious complications after liver cancer resection, and its main clinical manifestations include obvious hypoalbuminemia and hyperbilirubinemia [16]. Hyperbilirubinemia is mainly due to the destruction and hemolysis of red blood cells caused by various reasons such as blood absorption in the interstitial space caused by surgery [17]. Hypoalbuminemia is mainly due to excessive intraoperative consumption and untimely nutritional supply, resulting in decreased albumin [16]. This study found that the serum AFP levels of the two groups of patients after surgery were significantly decreased, and the serum ALB and TBIL levels were significantly increased. It is suggested that partial hepatectomy for primary liver cancer rupture and hemorrhage after TAE can effectively protect the liver function of patients. The reason may be that TAE pretreatment can control the growth and rupture and hemorrhage of liver cancer, reduce the difficulty of partial hepatectomy, and thus reduce intraoperative liver damage. And partial hepatectomy did not increase the incidence of postoperative complications, suggesting that partial hepatectomy after TAE is safe for ruptured hemorrhage of primary liver cancer. This study found that the combination group had a lower 1-year recurrence rate and a higher survival rate. Previous studies [18] reported that the application of TAE in the treatment of hepatic hemangioma has the characteristics of less trauma and low risk but combined with liver resection can improve the treatment effect and also have a significant effect on improving the long-term survival rate of patients. Some studies [19, 20] found that for resectable ruptured hemorrhage of primary liver cancer, TAE combined with two-stage liver resection can significantly reduce perioperative complications, mortality, and improve patient survival. The results of this study combined with the above reports suggest that partial hepatectomy for ruptured hemorrhage of primary liver cancer after TAE can reduce the postoperative recurrence rate improve the prognosis and survival rate and has a good long-term effect.

In conclusion, partial hepatectomy after TAE in the treatment of ruptured hemorrhage of primary liver cancer can effectively improve the hemostatic effect, protect the liver function, improve the prognosis and survival rate, and reduce the postoperative recurrence rate. However, there were still some deficiencies in this study. For example, it was a single-center study with a small number of samples, and there may be some data biases. In the later stage, further multicenter and large-sample clinical trials are needed for in-depth research.

Data Availability

The data can be obtained from the author upon reasonable request.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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Retraction

Retracted: Correlation between Coagulation Fibrinolysis Function and Outcomes during Hospitalization in Patients with Severe Traumatic Hemorrhagic Shock

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] L. Zhang, M. Lin, X. Tang, and Y. Tang, "Correlation between Coagulation Fibrinolysis Function and Outcomes during Hospitalization in Patients with Severe Traumatic Hemorrhagic Shock," *Emergency Medicine International*, vol. 2022, Article ID 3775868, 5 pages, 2022.

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Research Article

Correlation between Coagulation Fibrinolysis Function and Outcomes during Hospitalization in Patients with Severe Traumatic Hemorrhagic Shock

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Objective. To analyze the correlation between coagulation fibrinolysis function and outcomes during hospitalization in patients with severe traumatic hemorrhagic shock. *Methods*. A retrospective collection was performed on the clinical data of 106 patients with severe traumatic shock admitted to the hospital between January 2020 and January 2022. According to the injury severity score (ISS), they were divided into the S1 group (ISS <25 points, $n = 70$) and the S2 group (ISS ≥25 points, $n = 36$). The prothrombin time (PT), fibrinogen (Fib), thrombin time (TT), and activated partial thromboplastin time (APTT) were detected by the coagulation assay. The aD-dimer (D-D) was detected by an enzyme-linked immunosorbent assay. Antithrombin activity (AT : A) and plasminogen activity (PLG : A) were detected by the chromogenic substrate method. The relationship between coagulation fibrinolysis indexes and injury severity was analyzed by Spearman's correlation analysis. The predictive value of coagulation fibrinolysis indexes for outcomes of patients with severe traumatic hemorrhagic shock was evaluated by receiver operating characteristic (ROC) curves. *Results*. The levels of PT, APTT, D-D, TT, AT : A and PLG : A in the S2 group were higher than those in S1 group, while the Fib level was lower than that in the S1 group ($P < 0.05$). A Spearman's analysis showed that PT, APTT, TT, D-D, AT : A, and PLG : A were positively correlated with injury severity ($P < 0.05$), while Fib was negatively correlated with it ($P < 0.05$). Among the 106 patients, there were 89 survived cases and 17 died cases. The levels of PT, APTT, D-D, AT : A and PLG : A in the death group were lower than those in the survival group, while the Fib level was higher than that in the survival group. The results of ROC curve analysis showed that serum PT, APTT, Fib, TT and D-D were of predictive value for outcomes ($AUC = 0.713$, $AUC = 0.683$, $AUC = 0.712$, $AUC = 0.761$, $AUC = 0.730$, $AUC = 0.765$, $AUC = 0.673$, $P < 0.05$), and cutoff values were 20.29 s, 34.79 s, 3.54 g/L, 20.97 s, 1.42 μg/L, 73.53% and 63.97%, respectively. *Conclusion*. There is coagulation and fibrinolysis dysfunction in patients with severe traumatic hemorrhagic shock, which is related to injury severity. The coagulation fibrinolysis indexes have a certain predictive value for outcomes of patients.

1. Introduction

Traumatic shock is a combination of factors such as severe violent blows on the body, major organ damage, and massive hemorrhage. The body's decompensation syndrome is formed.. Therefore, the etiology and pathology of traumatic shock are more complicated than simple hemorrhagic shock. Severe traumatic hemorrhagic shock occurs when the patient bleeds a lot, blood volume decreases, and local tissue necrosis occurs due to severe impact by external force in a short time [1]. The main clinical presentations are severe pain, shortness of breath, pale face, weakened jugular vein pulse, and confusion. Due to insufficient systemic tissue perfusion, metabolic disorders, impaired cell ischemia, hypoxia, and severe traumatic hemorrhagic shock, it is prone to cause damage to multiple organs [2, 3]. The condition of patients is complex and in danger, with many early complications and high mortality, which makes it a severe illness in the hospital. Effective treatment should be given to reduce the complications and improve the patient's prognosis. The pathophysiological process of traumatic ischemic shock is complex, and the coagulation chain reaction that can be

triggered by shock plays an important role in the disease [4]. Results of some studies have shown [5] that when the patient suffers severe liver damage, the incidence of consumptive coagulopathy will reach as high as 50%. However, the impact of the shock on the coagulation and fibrinolysis systems of patients with traumatic blood loss and the relationship between shock and patient outcomes remains controversial [6, 7]. The bodies of patients with shock are in a hypercoagulable state and are prone to suffering thrombosis as the high-intensity injury damages the repair function of the body seriously and the coagulation and fibrinolysis function are gradually disturbed [8]. If severe traumatic hemorrhagic shock onsets rapidly and the treatment is not timely, the risk of death will be greatly increased. This study analyzed the changes in coagulation and fibrinolysis in patients with severe traumatic shock and the association between the changes and the outcome in order to provide guidance for the clinical.

2. Clinical Data and Methods

2.1. General Information. The clinical data of 106 patients with severe trauma shock admitted to our hospital from January 2020 to January 2022 were retrospectively selected. Patients were divided into S1 group (ISS score <25, $n = 70$) and S2 group (ISS score ≥25, $n = 36$) based on the severity of trauma (ISS). Group S1 had 38 males and 32 females, aged 12–70 years, with an average age of 49.64 ± 9.78 years. Causes of trauma were traffic accident injury in 15 cases, fall injury in 22 cases, traffic accident injury in 16 cases, and knife stabbing injury in 17 cases; trauma site: brain injury in 12 cases, chest injury in 23 cases, and abdominal injury was the main injury in 17 cases and 18 cases were mainly spinal and limb injuries. In the S2 group, there were 20 males and 16 females, aged 15–70 years, with an average age of 51.21 ± 9.36 years. Causes of trauma: 9 cases of traffic accidents, 12 cases of falling from height, 7 cases of traffic accidents, and 8 cases of knife stabbing; trauma site: brain injury in 5 cases, chest injury in 14 cases, and abdominal injury in 14 cases out of which 9 cases were mainly sprains and 8 cases were mainly spinal and limb injuries. Inclusion criteria were meeting the diagnostic criteria for severe traumatic hemorrhagic shock [9]; ISS score ≥16 points on admission; survival time after rescue ≥24 hours. Exclusion criteria were patients with liver and kidney dysfunction; patients with mental disorders; and patients with missing clinical data. There was no significant difference in age, gender, trauma cause, and trauma site between the S1 and S2 groups ($P > 0.05$). This study has been approved by the Medical Ethics Committee of our hospital.

2.2. Detection of Serum Coagulation and Fibrinolysis Indexes. The next day, after the patients were enrolled, 5 mL of peripheral venous blood was collected in the fasting state, and the supernatant was collected after centrifugation (1200 g, 8 cm, 5 min). Prothrombin time (PT), fibrinogen (Fib), thrombin time (TT), and activated partial thromboplastin time (APTT) were detected by coagulation method. D-dimer (D-dimer, D-D) was detected by an enzyme-linked immunofluorescence assay. The instruments and related kits were purchased from Beijing Boaosen Biotechnology Co., Ltd. The antithrombin activity (AT : A) and plasminogen activity (PLG : A) were detected by the chromogenic substrate method. The kits were purchased from Wuhan Purity Biotechnology Co., Ltd., and the operations were carried out in strict accordance with the kit instructions.

2.3. Statistical Processing. The SPSS 22.0 software was used for statistical analysis. All experimental data conformed to normal distribution, and measurement data were presented as mean ± standard deviation ($\overline{X} \pm S$), and the two-sample independent t-test was used to compare the differences between groups. The enumeration data were expressed as [cases (%)], and the difference between the two groups was compared by the $\chi 2$ test. Spearman's correlation was used to analyze the relationship between the coagulation and fibrinolysis indexes and the severity of the injury. The receiver operator characteristic curve (ROC) was used to measure the predictive effect of coagulation and fibrinolysis indexes in patients with severe traumatic hemorrhagic shock. The test level was $\alpha = 0.05$, and $P < 0.05$ indicated that the data had a significant statistical difference.

3. Result

3.1. Comparison of Serum Coagulation and Fibrinolysis Indexes in Each Group. The levels of PT, APTT, D-D, TT, AT : A, and PLG : A in group S2 were higher than those in group S1, the level of Fib was lower than that in group S1, and the difference was statistically significant ($P < 0.05$), as shown in Table 1 and Figure 1.

3.2. Correlation Analysis between the Severity of Injury and Coagulation and Fibrinolysis Indexes in Patients. The result of Spearman analysis showed that PT, APTT, TT, D-D, AT : A, and PLG : A were positively correlated with injury severity ($P < 0.05$), and Fib was negatively correlated with injury severity ($P < 0.05$). As shown in Table 2 and Figure 2.

3.3. Comparison of Serum Coagulation and Fibrinolysis Indexes between Death Group and Survival Group. The patient's survival time within three months was recorded. Among the 106 patients, 89 survived and 17 died. The levels of PT, APTT, D-D, AT : A, and PLG : A in the death group were lower than those in the survival group, and the Fib level was higher than that in the survival group ($P < 0.05$). As shown in Table 3.

3.4. Predictive Value of Coagulation and Fibrinolysis Indexes on Patient Outcome. The ROC results show that serum PT, APTT, Fib, TT, D-D, AT : A and PLG : A could all predict the outcome of patients (AUC = 0.713, AUC = 0.683, AUC = 0.712, AUC = 0.761, AUC = 0.730, AUC = 0.765, AUC = 0.673, $P < 0.05$), At this time, the cutoff values

Table 1: Comparison of serum coagulation and fibrinolysis indexes in each group ($\overline{X} \pm S$).

Group	Number of cases	PT (s)	APTT (s)	Fib (g/L)	TT (s)	D-D (mg/L)	AT : A (%)	PLG : A (%)
Group S1	70	17.54 ± 1.82	29.81 ± 3.04	4.41 ± 0.57	17.25 ± 1.87	1.03 ± 0.12	76.13 ± 7.74	77.33 ± 7.82
Group S2	36	21.46 ± 2.33	35.72 ± 3.61	3.28 ± 0.39	23.86 ± 2.46	1.44 ± 0.15	72.58 ± 7.36	61.85 ± 6.32
t value		9.527	8.886	10.668	15.441	15.276	2.273	10.270
P value		<0.001	<0.001	<0.001	<0.001	<0.001	0.025	<0.001

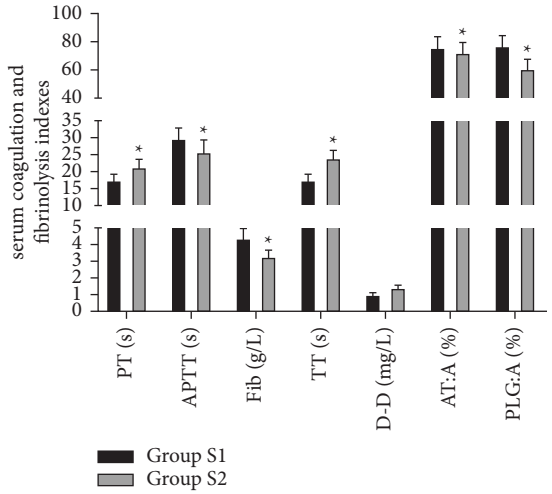

Figure 1: Comparison of serum coagulation and fibrinolysis indexes in each group. PT: prothrombin time, APTT: activated partial thromboplastin time, Fib: fibrinogen, TT: thrombin time, D-dimer, D-D: D-dimer, AT: A: antithrombin activity, and PLG : A: plasminogen activity; $^*P < 0.05$ compared with the S1 group.

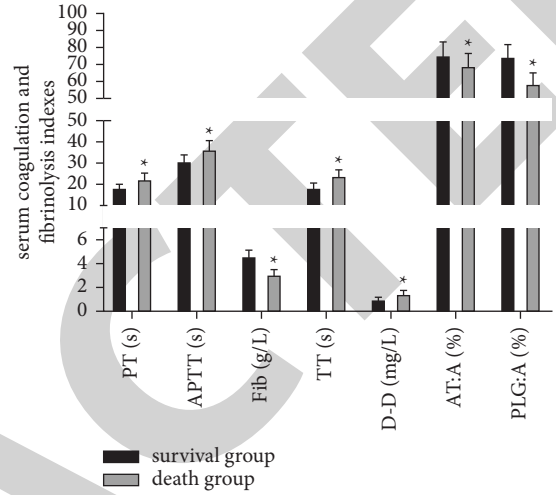

Figure 2: Comparison of serum coagulation and fibrinolysis indexes in each group. PT: prothrombin time, APTT: activated partial thromboplastin time, Fib: fibrinogen, TT: thrombin time, D-dimer, D-D: D-dimer, AT: A: antithrombin activity, and PLG : A: plasminogen activity; $^*P < 0.05$ compared with the survival group.

Table 2: Correlation analysis between the severity of injury and coagulation and fibrinolysis indexes in patients.

Indicator	Severity of trauma	
	r	P
PT	0.542	0.036
APTT	0.611	0.027
TT	0.654	0.041
Fib	−0.586	0.003
D-D	0.637	0.017
AT : A	0.589	0.042
PLG : A	0.609	0.038

were 20.29 s, 34.79 s, 3.54 g/L, 20.97 s, 1.42 μg/L, 73.53%, and 63.97%, respectively, as shown in Figure 3 and Table 4.

4. Discussion

The main pathophysiological change of traumatic hemorrhagic shock is the mismatch between blood volume and vascular volume, resulting in insufficient perfusion of peripheral tissues and inducing changes in microcirculation, abnormal oxygen metabolism, inflammatory response, coagulation disorders, and secondary damage to organs [10, 11]. The disease has the characteristics of a short-term onset and high mortality. Therefore, clinicians should take timely intervention measures to save the patient's life as much as possible.

The coagulation and fibrinolysis systems are in a state of dynamic equilibrium under physiological conditions. When the body is injured, the balance system is disrupted, and the coagulation and fibrinolysis systems are activated [12]. In this study, the levels of PT, APTT, D-D, TT, AT: A, and PLG: A in group S2 were higher than those in group S1, and the level of Fib was lower than that in group S1. D-D is a specific product after the degradation of cross-linked fibrin, which mainly reflects the function of fibrinolysis. The increase in its concentration indicates that the fibrinolytic system and the coagulation system are activated [13]. Fib is a protein with a coagulation function that is synthesized by the liver [14]. PT mainly reflects whether the extrinsic coagulation is normal or not and reflects the content of plasma factors II, V, VII, and X, and its prolongation is seen in congenital coagulation factor deficiency [15]. TT refers to the blood coagulation time after adding standardized prothrombin to plasma, which reflects the anticoagulant substances in the body, and its prolongation indicates hyperfibrinolysis [5]. During traumatic hemorrhagic shock, the coagulation and fibrinolysis systems, as the main systems involved in stress and hemostasis, are activated urgently and play an important role in the occurrence and development of shock. Its changes within a certain range have a positive effect on hemostasis and antishock [16]. However, if the factors that induce the coagulation and fibrinolysis system are excessive or continuously stimulated, it may increase the degree of shock. This study shows that the balance of coagulation and

Table 3: Serum coagulation and fibrinolysis indexes of death group and survival group ($\overline{X} \pm S$).

Group	Number of cases	PT (s)	APTT (s)	Fib (g/L)	TT (s)	D- (μg/L)	AT : A (%)	PLG : A (%)
Survival group	89	18.06 ± 1.96	30.86 ± 3.12	4.59 ± 0.51	18.63 ± 2.03	1.08 ± 0.12	75.89 ± 7.62	74.58 ± 7.68
Death group	17	22.85 ± 2.35	36.87 ± 3.74	3.20 ± 0.34	24.18 ± 2.62	1.59 ± 0.16	69.84 ± 7.14	58.64 ± 6.23
t value		8.927	7.045	10.767	9.837	15.174	3.028	8.056
P value		<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001

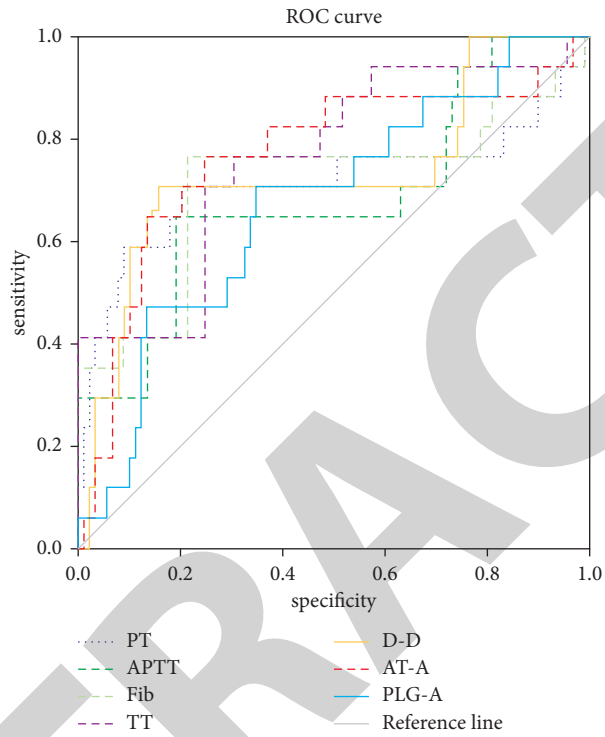

Figure 3: Predictive effect of coagulation and fibrinolysis indexes on patient outcomes.

Table 4: Predictive effect of coagulation and fibrinolysis indexes on patient outcome.

Indicator	AUC	Standard error	Sensitivity (%)	Specificity (%)	Cutoff value	95%CI	P
PT	0.713	0.094	70.59	79.78	20.29 (s)	0.617~0.797	<0.05
APTT	0.683	0.081	64.71	80.90	34.79 (s)	0.586~0.700	<0.05
Fib	0.712	0.088	76.47	78.65	3.54 (g/L)	0.616~0.796	<0.05
TT	0.761	0.069	76.47	69.66	20.97 (s)	0.669~0.839	<0.05
D-D	0.730	0.080	70.59	84.27	1.42 (μg/L)	0.635~0.811	<0.05
AT : A	0.765	0.074	76.47	75.28	73.53 (%)	0.672~0.842	<0.05
PLG : A	0.673	0.072	70.59	65.17	63.97 (%)	0.575~0.761	<0.05

fibrinolysis in patients with traumatic hemorrhagic modification is disrupted, and the dysfunction of coagulation and fibrinolysis becomes more serious with the aggravation of the disease. The results of Spearman's correlation analysis showed that PT, APTT, TT, D-D, AT: A, and PLG: A were positively correlated with injury severity, and Fib was negatively correlated with injury severity. Previous studies have shown [17] that the more severe the injury is in patients with traumatic hemorrhage, the more likely they are to have coagulation and fibrinolysis dysfunction, which coincides with the results of this study. The results indicate that the coagulation system is continuously activated in the acute stage of severe trauma, the patient's blood is in a state of hypercoagulation and high viscosity, and the risk of intravascular coagulation and thrombosis is greatly increased. Therefore, at this time, the blood volume of the patient should be replenished in a timely and effective manner, which can help the patient return to a normal physiological state and gradually seek medical treatment for the pathological process. At the same time, during the treatment process, attention should be paid to the coagulation and fibrinolysis function status of patients, and interventions such as early coagulation substrates should be given. At the same time, this study also found that among the 106 patients,

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Research Article

Observation on the Efficacy of *Ginkgo* Ketone Ester Drop Pill in Improving Hypertension Combined with Carotid Atherosclerotic Plaque

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Purpose. To observe and analyze the efficacy of *Ginkgo* ketone ester drop pill intervention in patients with hypertension combined with carotid atherosclerotic plaque. *Methods*. The subjects were 300 patients with hypertension complicated with carotid atherosclerotic plaque treated in our hospital from January 2019 to September 2021. The grouping was done by the random number table method and 300 patients were divided equally into 2 groups. One group was treated with Western medicine alone (clopidogrel sulfate tablets, phenyl amlodipine tablets, irbesartan tablets, and resorvastatin) as the Western medicine group (WM group, $n = 150$), and one group was added to this intervention with *Ginkgo* ketone ester drop pill as the Chinese medicine group (CM group, $n = 150$). The observation indexes were the improvement of blood pressure (systolic blood pressure (SBP) and diastolic blood pressure (DBP)), blood lipids (low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), triglyceride (TG), and total cholesterol (TC)), vascular endothelial function (nitric oxide (NO) and endothelin-1 (ET-1)), inflammatory factors (C-reactive protein (CRP) and interleukin-6 (IL-6)), plaque (intimal medial thickness (IMT) of carotid artery and plaque area), and efficacy after intervention and adverse effects during intervention in both groups. *Results*. After intervention, SBP, DBP, LDL-C, TG, and TC levels were lower and HDL-C levels were higher in both groups than before intervention in the same group, and both CM groups improved significantly compared with the WM group ($P < 0.05$). After intervention, NO levels were higher and ET-1 levels were lower in both groups than before the intervention in the same group, and both CM groups improved significantly compared with the WM group ($P < 0.05$). After intervention, CRP and IL-6 levels were lower in both groups than before intervention in the same group, and both CM groups improved significantly compared with the WM group ($P < 0.05$). After intervention, IMT and plaque area were lower in both groups than before intervention in the same group and both CM groups improved significantly compared with the WM group ($P < 0.05$). The total effective number of the CM group was better than the WM group ($P < 0.05$), and there was no significant difference in the adverse reactions number in both groups ($P > 0.05$). *Conclusions*. The treatment of hypertension combined with carotid atherosclerotic plaque with *Ginkgo* ketone ester drop pill helps to improve the blood pressure, blood lipid, and vascular endothelial function of patients and helps to inhibit the inflammation level and atherosclerotic plaque of patients, with significant efficacy and no significant adverse effects in patients, which is worthy of clinical promotion.

1. Introduction

Hypertension is a group of cardiovascular syndromes caused by a combination of genetic, environmental, and other factors in a continuous state of progression, of which primary hypertension is more common, accounting for about 90% of clinical cases [1]. The disease has an insidious onset and mild symptoms, but if blood pressure is chronically elevated, it can cause changes in the function and structure of the heart and blood vessels [2]. The latter is

mainly reflected in the long-term increase in blood pressure that increases the impact of blood on the arterial wall, which results in impaired intima and endothelial function, leading to the deposition of lipids and inflammatory factors such as interleukin (IL) in blood in the vessel wall, which eventually induces the formation of atherosclerosis (AS) and its atheromatous plaque, one of the main risk factors for the formation of ischemic cerebral infarction [3–5]. Conversely, the occurrence of AS causes a decrease in the diastolic function of the blood vessels, an increase in the sclerosis of the vessel walls, and a consequent increase in blood pressure [6]. The two are mutually beneficial, forming a vicious circle and increasing the risk of cardiovascular disease.

Preliminary pharmacological studies have shown that the combination of platelet aggregation inhibitors, calcium antagonists, angiotensin-converting enzyme inhibitors, and statins for the treatment of hypertension combined with carotid atherosclerosis has additive effects in regulating blood pressure and lipids and stabilizing atheromatous plaques [7–9]. In addition, as a classical therapeutic drug for cardiovascular and cerebrovascular diseases in Chinese medicine, *Ginkgo biloba* ketone ester also has a good regulatory effect on blood lipids and vascular endothelial cell function. However, there are no detailed clinical reports on whether the combination of the two can produce good synergistic effects and whether the adverse effects are superimposed. This study makes preliminary observation and analysis in order to provide more efficient treatment for this kind of patients. The report is as follows.

2. Materials and Methods

2.1. General Information. The subjects were 300 patients with hypertension complicated with carotid atherosclerotic plaque treated in our hospital from January 2019 to September 2021. The grouping was done by the random number table method and 300 patients were divided equally into 2 groups. One group was treated with Western medicine alone (clopidogrel sulfate tablets, phenyl amlodipine tablets, irbesartan tablets, and resorvastatin) as the Western medicine group (WM group, $n = 150$), and one group was added to this intervention with *Ginkgo* ketone ester drop pill as the Chinese medicine group (CM group, $n = 150$). The difference in general information in both groups was not statistically significant ($P > 0.05$) and was comparable. The details are given in Table 1.

2.2. Inclusion Criteria. The inclusion criteria were as follows: meet the CHEP (Canadian Hypertension Education Program) hypertension guidelines [10] for the diagnosis of hypertension: systolic blood pressure (SBP) ≥ 140 mm·Hg and/or diastolic blood pressure (DBP) ≥ 90 mm·Hg (1 mm·Hg = 0.133 kPa); meet the ACC (American College of Cardiology/AHA (American Heart Association) guidelines for secondary prevention of patients with coronary artery disease and other atherosclerotic vascular disease [11] for the diagnosis of carotid atherosclerosis: intimal medial thickness (IMT) of carotid arteries ≥1.3 mm suggesting plaque formation; age of onset 40–75 years; carotid color Doppler ultrasound showed atheromatous plaque at any of the carotid bifurcation, the distal bilateral common carotid arteries, or the beginning of the internal carotid artery; primary hypertension; and those who had signed written informed consent.

2.3. Exclusion Criteria. The exclusion criteria were as follows: secondary hypertension; persons with severe coagulation disorders, autoimmune diseases, hyperuricemia, diabetes mellitus, hyperlipidemia, and hepatic and renal insufficiency; persons with contraindications to the use of drugs in this study; persons with malignant tumors; persons with acute and chronic inflammation; pregnant and lactating women; persons with the history of stroke and serious heart disease; and persons with mental disorders that prevent them from communicating properly.

2.4. Medication Regimen. The WM group was intervened with Western medicine intervention alone: i.e., mild hypertension was treated with clopidogrel sulfate tablets (Sanofi (Hangzhou) Pharmaceutical Co., Ltd., National Drug Administration J20130083, 75 mg *x* 7 slices) 75 mg + phenyl amlodipine tablets (Guangdong Pidi Pharmaceutical Co., Ltd., National Drug Administration H20057316, 5 mg *x* 14 slices) 5 mg + resorvastatin (AstraZeneca Pharmaceutical Co., Ltd., National Drug Administration J20120006, 10 mg/slice) 10 mg, 1 time/day. Moderate hypertension was treated with irbesartan tablets (Yangtze River Pharmaceutical Group Beijing Haiyan Pharmaceutical Co., Ltd., National Drug Administration H20100164, 75 mg *x* 12 slices) 75 mg in addition to mild hypertension, 1 time/day. Severe hypertension was treated with irbesartan tablets 150 mg in addition to mild hypertension, 1 time/day.

The CM group was intervened with *Ginkgo* ketone ester drop pill in addition to the WM group, *Ginkgo* ketone ester drop pill (Shanxi Qianhui Pharmaceutical, National Drug Administration Z20050220, 120 pills/bottle), each time 5 pills, 3 times/day. 4 weeks as a course of treatment, both groups continued treatment for 3 courses.

2.5. Observation Index. Before and after intervention, 10 ml of fasting elbow venous blood was drawn from both groups in the early morning, centrifuged at 2 000 r/min for 30 min at high speed and low temperature, and serum was stored in a refrigerator at −20°C (Table 2).

(1) Blood pressure: before and after intervention, SBP and DBP of both groups were measured by the mercury sphygmomanometer, and the examination method was to measure once every 5 min interval and three times continuously, and the average value was taken as the final result.

(2) Blood lipids: before and after intervention, two groups of low-density lipoprotein cholesterol (LDL-C) and high-density lipoprotein cholesterol (HDL-C) were

Table 1: Comparison of general information for both groups.

Indicators	WM group ($n = 150$)	CM group ($n = 150$)	t/χ^2	P
Age (years old)	58.21 ± 7.09	58.91 ± 7.25	0.845	0.399
Height (cm)	166.89 ± 5.84	166.93 ± 5.46	0.061	0.951
Weight (case)	70.14 ± 6.48	69.25 ± 7.10	1.134	0.258
Course of hypertension (years)	5.71 ± 1.23	5.56 ± 1.26	1.043	0.298
Male (case)	89 (59.33)	94 (62.67)	0.350	0.554
Stroke history (case)	40 (26.67)	36 (24.00)	0.282	0.595

Table 2: Criteria for determining efficacy.

Criteria	Efficacy index	Symptoms and signs	Blood pressure
Ineffective	<30%	None improved	SBP and DBP are not decreasing and not trending downward
Effective	≥30%	All significantly better	SBP decreased <20 mm·Hg, DBP decreased <10 mm·Hg
Significantly effective	≥70%	All largely disappeared	SBP decreased ≥20 mm·Hg, DBP decreased ≥10 mm·Hg
Total effective number = significantly effective number + effective number			

Efficacy = (postintervention−preintervention)/preintervention score × 100%.

detected by the direct homogeneous method, and the kits were purchased from Changchun Huili Biotechnology Co. Ltd.; two groups of triacylglyceride (TG) were detected by the glycerol phosphate oxidase-peroxidase coupling method, and the kit was purchased from Zhejiang Taisite Biotechnology Co. Ltd.; two groups of total cholesterol (TC) were detected by high performance liquid chromatography, and the instrument was purchased from Shanghai Hegong Scientific Instrument Co. Ltd., and the instrument model was Vertex Sti P5000. Among them, LDL-C ≥ 3.64 mmol/L, TG > 1.70 mmol/L, and TC ≥ 5.72 mmol/L indicated an increase and HDL-C < 0.91 mmol/L indicated a decrease.

(3) Vascular endothelial function: before and after intervention, two groups of nitric oxide (NO) and endothelin-1 (ET-1) levels were detected by enzyme-linked immunosorbent assay (ELISA), and the kit was purchased from Tianjin Sairuida Bioengineering Co. Ltd.

(4) Inflammatory factors: before and after intervention, two groups of C-reactive protein (CRP) levels were detected by immune scattering turbidimetry, and the kit was purchased from Nanjing Jiancheng Bioengineering Institute; two groups of interleukin-6 (IL-6) levels were detected by ELISA, and the kit was purchased from Guangdong Hongye Antibody Technology Co. Ltd.

(5) Plaque condition: before and after intervention, the IMT and plaque area of both groups were detected by using the American HP-8500 color Doppler ultrasound diagnostic instrument. IMT measurement method: patients were placed in a supine position, the anterior part of the neck was exposed, and the IMT of the carotid bifurcation, the distal bilateral common carotid arteries, and the beginning of the internal carotid artery were detected at a probe frequency of 7.5 MHz on the near skin side. IMT <1.0 mm indicated normal, ≥1.0 mm indicated thickening, and ≥1.3 mm indicated plaque formation.

(6) Clinical efficacy: refer to the Guiding Principles for Clinical Research on New Chinese Medicines [12] to develop efficacy determination criteria for more details.

(7) Adverse effects: during intervention, the occurrence of dizziness, diarrhea, poor appetite and indigestion, and others were recorded in both groups.

2.6. Statistical Methods. Data were processed using the SPSS 22.0 software. The count data were expressed as (%) and the χ^2 test was taken. The measurement data were expressed as ($\overline{x} \pm s$), and the t-test was taken. Statistically significant differences were expressed as $P < 0.05$.

3. Results

3.1. Comparison of SBP and DBP Levels in Both Groups. After intervention, SBP and DBP levels were lower in both groups than before intervention in the same group, and both CM groups improved significantly ($P < 0.05$) than in the WM group (Figure 1).

3.2. Comparison of LDL-C, HDL-C, TG, and TC Levels in Both Groups. After intervention, LDL-C, TG, and TC levels were lower and HDL-C levels were higher in both groups than before intervention in the same group, and both CM groups improved significantly ($P < 0.05$) than the WM group (Figure 2).

3.3. Comparison of NO and ET-1 Levels in Both Groups. After intervention, NO levels were higher and ET-1 levels were lower in both groups than before intervention in the same group, and both CM groups improved significantly ($P < 0.05$) than the WM group (Figure 3).

3.4. Comparison of CRP and IL-6 Levels in Both Groups. After intervention, CRP and IL-6 levels were lower in both groups than before intervention in the same group, and both CM groups improved significantly ($P < 0.05$) than the WM group (Figure 4).

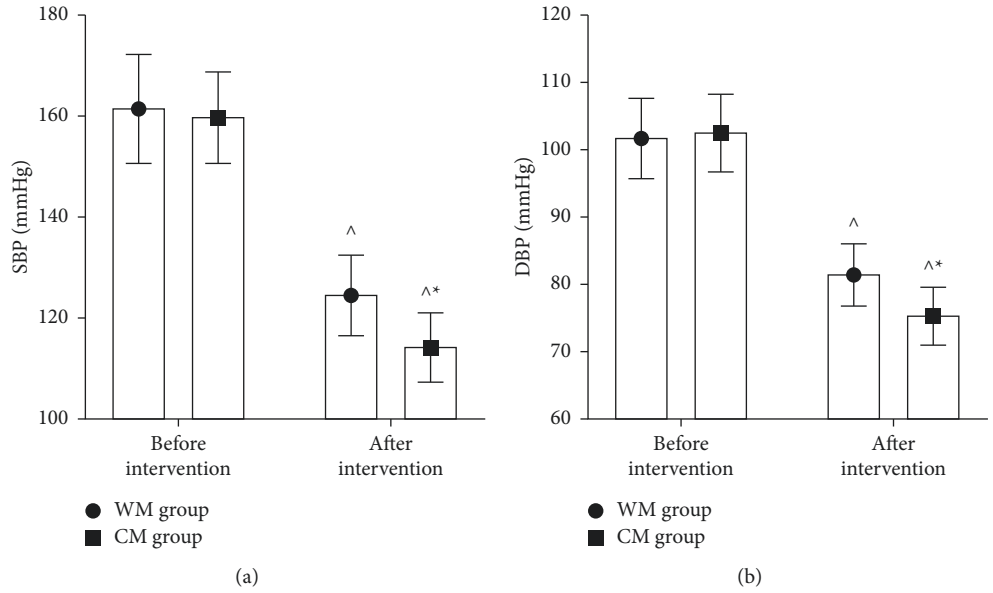

Figure 1: Comparison of SBP and DBP levels in both groups. (a) SBP level. (b) DBP levels. Compared with the same group before intervention, $^{\wedge}P < 0.05$; compared with the WM group after intervention, $^{*}P < 0.05$.

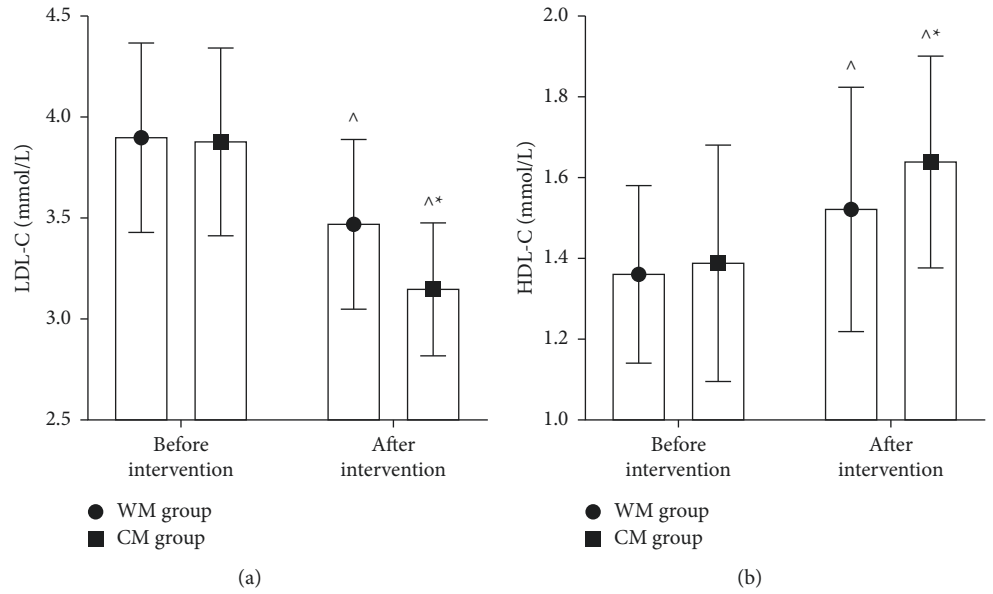

Figure 2: Continued.

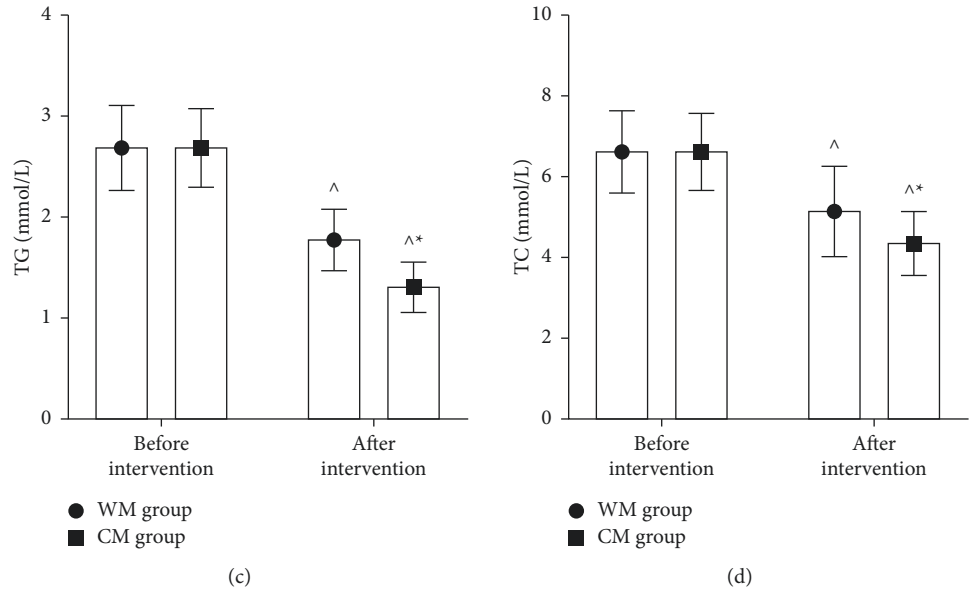

Figure 2: Comparison of LDL-C, HDL-C, TG, and TC levels in both groups. (a) LDL-C levels. (b) HDL-C levels. (c) TG level. (d) TC levels. Compared with the same group before intervention, $^{\wedge}P < 0.05$; compared with the WM group after intervention, $^{*}P < 0.05$.

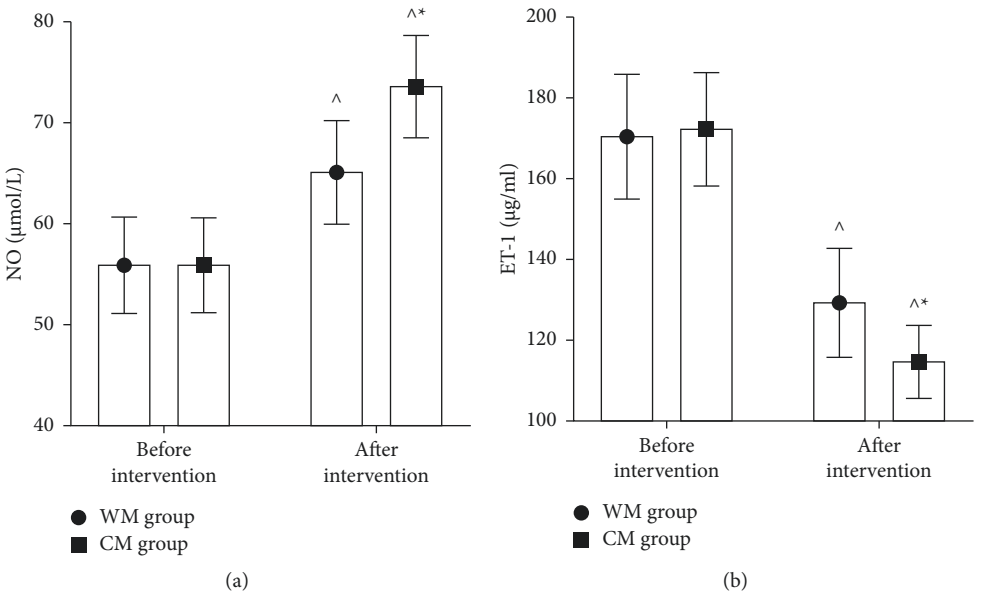

Figure 3: Comparison of NO and ET-1 levels in both groups. (a) NO levels. (b) ET-1 levels. Compared with the same group before intervention, $^{\wedge}P < 0.05$; compared with the WM group after intervention, $^{*}P < 0.05$.

3.5. Comparison of IMT and Plaque Area in Both Groups. After intervention, IMT and plaque area were lower in both groups than before intervention in the same group, and both CM groups improved significantly ($P < 0.05$) than the WM group (Figure 5).

3.6. Comparison of Clinical Efficacy and Adverse Effects in Two Groups. After intervention, the total effective number was better in the CM group than in the WM group ($P < 0.05$) (Figure 6). During intervention, there was no significant difference ($P > 0.05$) in adverse reactions number in both groups (Figure 7).

4. Discussion

Hypertension is a common clinical chronic disease, and the rise of peripheral blood pressure is its main characteristic, which is also the main cause of carotid atherosclerosis and its plaque formation. Patients may often see clinical manifestations such as dizziness, headache, palpitations, insomnia, blurred vision, temporal pulsation sensation, and in severe

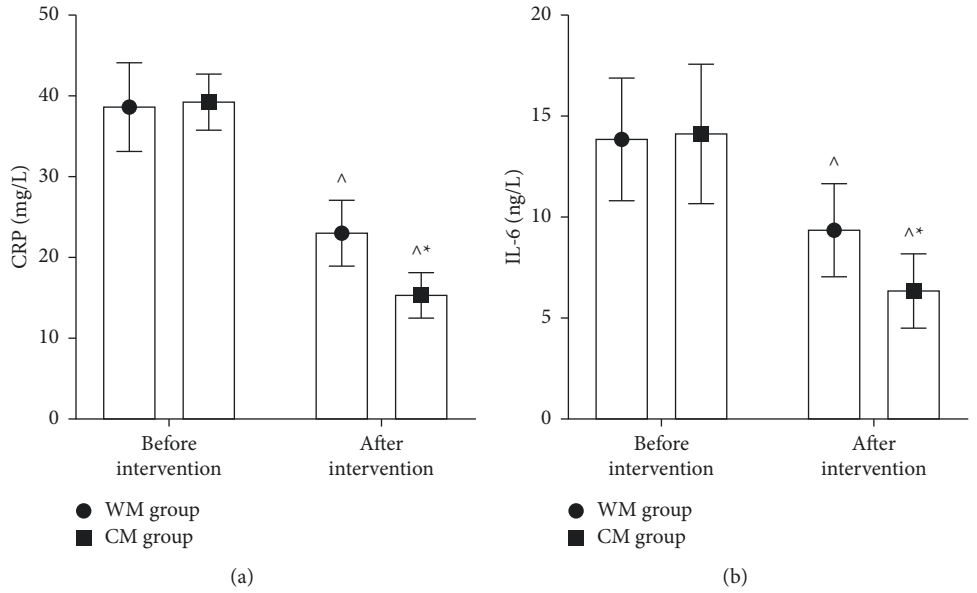

Figure 4: Comparison of CRP and IL-6 levels in both groups. (a) CRP levels. (b) IL-6 levels. Compared with the same group before intervention, $^{\wedge}P < 0.05$; compared with the WM group after intervention, $^{*}P < 0.05$.

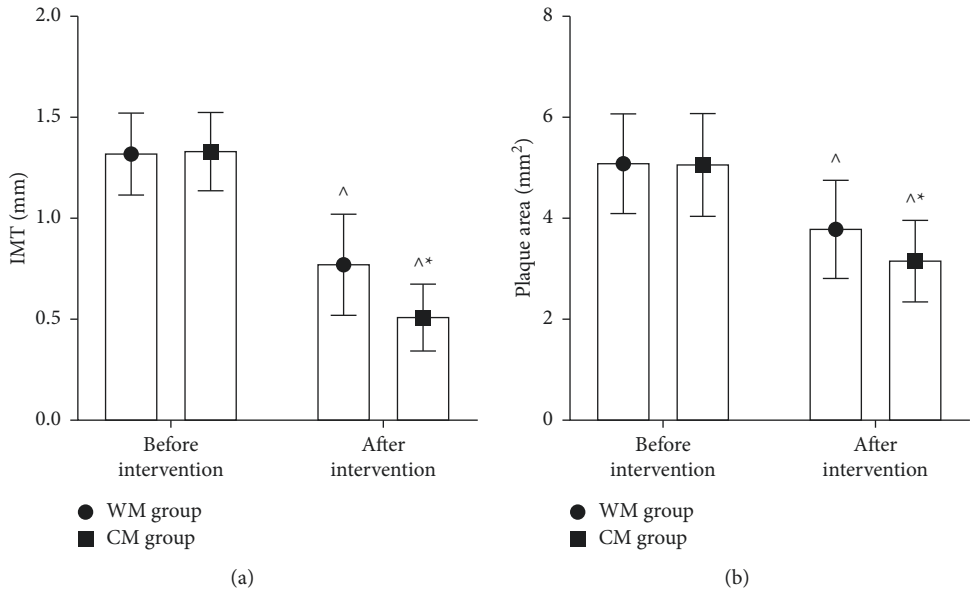

Figure 5: Comparison of IMT and plaque area in both groups. (a) IMT. (b) Plaque area. Compared with the same group before intervention, $^{\wedge}P < 0.05$; compared with the WM group after intervention, $^{*}P < 0.05$.

cases, cerebral infarction, resulting in hemiparesis and limited mobility of one limb [13–15]. Moreover, when hypertension and carotid atherosclerotic plaque coexist, patients have a higher risk of cardiovascular and cerebrovascular events, while the treatment methods of improving lipid metabolism disorder and vascular endothelial function and stabilizing the nature of atherosclerotic plaque may prevent the occurrence of cardiovascular and cerebrovascular diseases [16].

Hypertension patients' blood pressure increases, vascular endothelial function is damaged, the balance of vascular SBP and DBP is destroyed, and the permeability of endothelial cells is increased, resulting in the decrease of NO, the increase of ET-1, platelet aggregation, the production of inflammatory factors, and finally the generation of AS. Clopidogrel sulfate tablet is a platelet aggregation inhibitor, which can selectively inhibit the binding of platelet membrane adenosine diphosphate to platelet receptor to inhibit platelet aggregation caused by arterial intimal damage, so as to block microthrombotic formation and prevent AS [17]. Phenyl amlodipine tablet is a calcium antagonist antihypertensive drug, and irbesartan tablet is an angiotensin

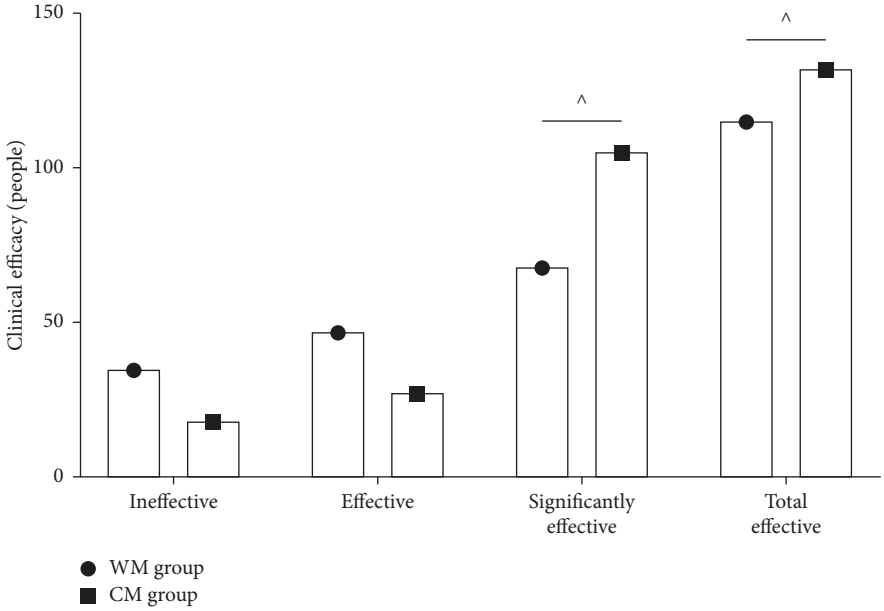

Figure 6: Comparison of clinical efficacy in two groups. Comparison between groups, $^{\wedge}P < 0.05$.

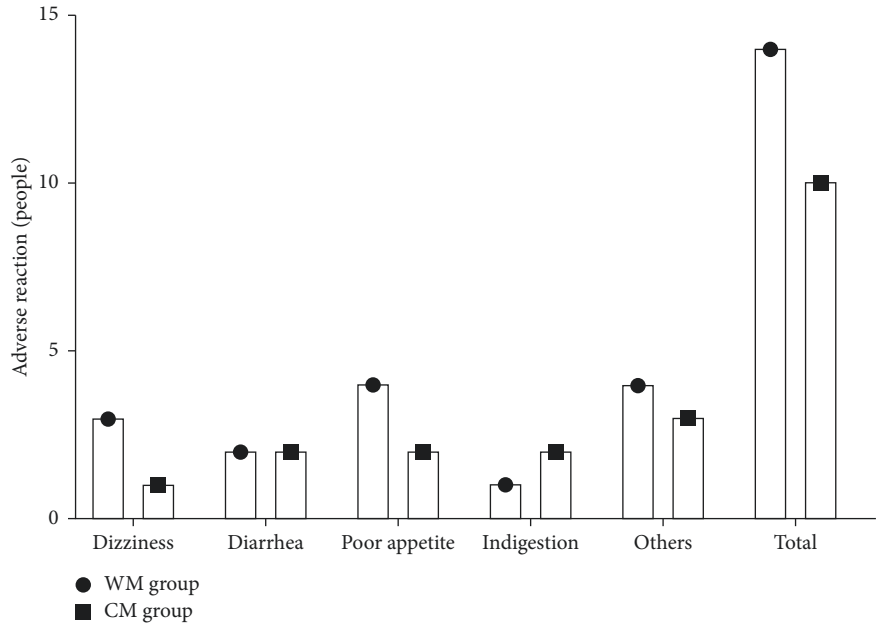

Figure 7: Comparison of adverse effects in two groups.

receptor blocker (ARB) antihypertensive drug. If necessary, the combined application of the two can improve the curative effect and reduce adverse reactions [18]. Rosuvastatin is a selective HMG CoA reductase inhibitor. Its main action site is the liver, the target organ for reducing cholesterol [19].

According to the theory of traditional Chinese medicine, hypertension complicated with carotid atherosclerotic plaque belongs to the categories of "headwind," "stroke," and "vertigo." The pathogenesis is the deficiency of fundamental and the excess of incidental, the deficiency of healthy Qi, and the excess of evil Qi, deficiency intermingled with excess. Deficiency lies in Yin deficiency of internal organs, excess lies in blood stasis and phlegm turbidity, and developing into paralysis obstruction. The treatment should adopt the method of promoting blood circulation, removing blood stasis, and dredging collaterals. This study observed and analyzed the effect of *Ginkgo* ketone ester drop pill on patients with hypertension complicated with carotid atherosclerotic plaque. The results show that after intervention, SBP, DBP, LDL-C, TG, TC, and ET-1 levels in both groups were lower and HDL-C and NO levels were higher than before intervention in the same group, and both CM groups

improved significantly ($P < 0.05$) than the WM group. It was suggested that the addition of *Ginkgo* ketone ester drop pill to conventional Western medicine treatment for hypertension combined with carotid atherosclerotic plaque could significantly regulate the patients' blood pressure and lipid levels and improve the endothelial function of blood vessels. *Ginkgo* ketone ester drop pill are an extract of *Ginkgo biloba*, which belongs to the fifth generation of *Ginkgo biloba* preparations. Its active ingredients are mainly *Ginkgo* flavonoids and ginkgolide, while the content of ginkgolic acid is low. In terms of the mechanism of action in modern medicine, it is directly absorbed into blood through oral mucosa, avoiding the first-pass effect of the drug, so it has the advantages of better efficacy in activating blood circulation and removing blood stasis, faster onset of action, and higher safety. It not only improves vascular permeability, dilates blood vessels, and increases cerebral blood flow, thereby lowering blood pressure, but also specifically antagonizes platelet-activating factor (PAF), protects the corresponding target organs, reduces blood viscosity, improves microvascular function, and plays an anti-AS role [20, 21]. In traditional Chinese medicine, *Ginkgo* is a good medicine for promoting blood circulation and removing blood stasis, which has the effects of promoting blood circulation and removing blood stasis, dredging veins, and relaxing collaterals. Previous studies have shown that the reason why *Ginkgo biloba* ketone ester dropping pills can effectively reduce cardiovascular and cerebrovascular events may also be related to its effect of inhibiting oxidative stress response and scavenging free radicals [22].

AS is mostly triggered initially by hyperlipidemia. Leukocytes adhere to the vessel lining and then move to the subendothelium to phagocytose liposomes, which eventually transform into foam cells and destroy the vascular endothelium on the basis of this chronic inflammatory pathological response and activate the platelet system, leading to luminal narrowing, obstruction, and plaque formation [23]. With the increasing volume of plaque, it causes vascular obstruction and blood circulation obstruction, resulting in serious cardiovascular and cerebrovascular diseases. CRP is an acute phase reactive inflammatory protein, and its expression level is positively correlated with plaque area [22]. IL-6 is a marker of progressive AS, which can induce or aggravate cardiovascular disease by promoting plaque growth and is an independent predictor of plaque progression [24]. The location of carotid artery is relatively shallow and easy to measure. Measuring IMT can reflect the situation of systemic AS and is an independent predictor of cardiovascular and cerebrovascular events [25]. In the results of this study, after intervention, CRP and IL-6 levels and IMT and plaque area were lower in both groups than before intervention in the same group, and both CM groups improved significantly ($P < 0.05$) than the WM group. It is suggested that the effective mechanism of *Ginkgo* ketone ester drop pill in the treatment of hypertension complicated with carotid atherosclerotic plaque may also be related to its inhibition of inflammatory response. The results also showed that the total effective number was better in the CM group than in the WM group ($P < 0.05$), and there was no significant difference ($P > 0.05$) in adverse reactions number in both groups. It shows that *Ginkgo* ketone ester drop pill is effective and safe in the treatment of hypertension complicated with carotid atherosclerotic plaque. Analyzing the reason, it may be because the toxic component of *Ginkgo biloba* ketone ester preparation is mainly ginkgolic acid, and the process of domestic *Ginkgo biloba* ketone ester has become mature, and the content of ginkgolic acid can be controlled below $5\,\mu g/g$, so its adverse reactions are less.

In short, the treatment of hypertension combined with carotid atherosclerotic plaque with *Ginkgo* ketone ester drop pill helps to improve the blood pressure, blood lipid, and vascular endothelial function of patients and helps to inhibit the inflammation level and atherosclerotic plaque of patients, with significant efficacy and no significant adverse effects in patients, which is worthy of clinical promotion. The shortcomings of this study include the short follow-up observation of patients and the relatively superficial studies related to adverse drug reactions; in the future, we will extend the follow-up period for further studies and pay attention to the observation of adverse drug reactions.

Data Availability

The datas used and analyzed during the current study are available from the corresponding author upon request.

Ethical Approval

This study was approved and agreed by the ethics committee of our hospital.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Research Article

Analysis of the Timing of Cervical Cerclage Treatment in Pregnant Women with Cervical Insufficiency and the Effect on Pregnancy Outcome

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Purpose. To analyze the effect of the choice of timing of cervical cerclage treatment on pregnancy outcome in pregnant women with cervical insufficiency (CI). *Methods*. The case data of 160 pregnant women admitted to our hospital for cervical cerclage due to CI from January 2020 to September 2021 were sampled. They were divided into the early group (14~18 weeks of pregnancy, $n = 86$), the middle group (19~27 weeks of pregnancy, $n = 74$) according to the different gestational periods of surgical treatment, and into the elective group (elective operation, $n = 71$) and the emergency group (emergency operation, $n = 89$) according to the different timings of surgical treatment. To compare the pregnancy outcomes of the four groups and the effects of different treatment timings on pregnant women and newborns. *Results*. After the operation, the intrauterine infection rate in the early group was lower (8.14% (7/86)) than that (71.62% (53/74)) in the middle group, and the intrauterine infection rate (18.31% (13/71)) in the elective group was lower (61.80% (55/89)) than that in the emergency group ($P < 0.05$). After the operation, the late abortion rate in the early group was 8.14% (7/86) lower than 63.51% (47/74) in the middle group, and the late abortion rate in the elective group was 15.49% (11/71) lower than 61.80% (55/89) in the emergency group ($P < 0.05$). After the operation, the full-term birth rate (82.56% (71/86)) in the early group was higher (21.62% (16/74)) than that in the middle group, and the full-term birth rate (73.24% (52/71)) of the elective group was higher (24.72% (22/89)) than that in the emergency group ($P < 0.05$). After the operation, there was no significant difference in the preterm birth rate between the early group and the middle group (8.14% *vs* 14.86%), and between the elective group and the emergency group (11.27% *vs* 12.36%) ($P > 0.05$). There was no significant difference in neonatal Apgar scores between the early group and the middle group (7.30 ± 0.98 *vs* 7.14 ± 0.91) scores, and between the selective group and the emergency group (7.15 ± 0.82 *vs* 7.07 ± 1.07) scores ($P > 0.05$). There was no significant difference in gestational week extension time between the early group and the middle group (6.52 ± 1.77 *vs* 6.99 ± 1.69) days and between the elective group and the emergency group (6.44 ± 1.37 *vs* 6.82 ± 1.70) days ($P > 0.05$). The length of hospital stay was (7.28 ± 1.39 *vs* 10.89 ± 2.65) days in the early group and the middle group, with the early group being shorter than the middle group ($P < 0.05$), and the length of hospital stay was (8.72 ± 1.23 *vs* 9.30 ± 1.39) days in the elective group and the emergency group, with the elective group being shorter than the emergency group ($P < 0.05$). *Conclusions*. The therapeutic effect and pregnancy outcome of cervical cerclage are affected by the timing of treatment. Among them, the effect of elective operation at 14~18 weeks of pregnancy is more ideal, which is worthy of clinical promotion.

1. Introduction

Cervical function is a physiological process that corresponds to the state of pregnancy. It is mainly manifested by the gradual softening of the cervix as the gestational weeks increase, the gradual shortening of the cervix as the fetus grows, and the gradual shortening and progressive dilatation of the cervix as contractions occur and intensify. The occurrence of cervical maturation processes that do not correspond to the current state of pregnancy, such as softening, shortening, or even dilatation of the cervix without a cause, can be considered the occurrence of cervical insufficiency (CI) [1]. Its

role as an important component of the preterm birth syndrome is one of the main causes of miscarriage and preterm fetal birth in mid-to-late pregnancy [2–4]. The onset of CI is usually earlier than 24 weeks of gestation. It is mainly associated with various congenital factors (e.g., Mullerian duct malformation, fetal exposure to ethylene estradiol, cervical collagen, and elastin deficiency, etc.), acquired factors (e.g., rapid cervical dilatation or cervical laceration during delivery, scraping, and postcervical conization) or underlying factors (e.g., subclinical infection and local inflammation) leading to cervical dysfunction, incomplete atresia or flaccidity of the internal opening, and the inability of the cervix to support the growing fetus and amniotic fluid [5–7]. Clinically, 15% of recurrent spontaneous abortions (RSAs) in mid-pregnancy are associated with CI [8]. Some data [9] show that CI accounts for about 10% of the causes of preterm delivery, and the rate of preterm delivery in CI patients is more than three times that of non-CI patients. For this reason, it is crucial to improve pregnancy outcomes for pregnant women with CI. Cervical cerclage is currently the most effective and most commonly used treatment for CI. The shape and function of the cervical internal orifice of pregnant women are restored to normal through surgery, so that the tension of the cervical canal of pregnant women is enhanced, which can effectively prevent the extension and cervical dilatation of the lower segment of the uterus due to gravity. Thereby, the load on the lower uterine segment of the pregnant woman is reduced, which facilitates the prolongation of the gestational week and the increase of the full-term birth rate [10]. However, there are no standard definitions for its current choice of timing for surgical treatment. The clinical data of 160 pregnant women with CI were sampled in this study, with the aim of analyzing the effect of the choice of timing of treatment with cervical cerclage on pregnancy outcome in pregnant women with CI. See below for coverage.

2. Materials and Methods

2.1. Patients and Groups $P > 0.05$. The case data of 160 pregnant women admitted to our hospital for cervical cerclage due to CI from January 2020 to September 2021 were sampled. They were divided into the early group (14~18 weeks of pregnancy, $n = 86$), the middle group (19~27 weeks of pregnancy, $n = 74$) according to the different gestational periods of surgical treatment, and into the elective group (elective operation, $n = 71$) and the emergency group (emergency operation, $n = 89$) according to the different timing of surgical treatment. In terms of age, pregnancy time, spontaneous abortion history, preterm birth history, and other general information, the early group *vs* the middle group, the elective group *vs* the emergency group, none of the differences were statistically significant ($P > 0.05$), and were comparable (Table 1).

2.2. Diagnosis and Inclusion Criteria. The diagnostic criteria for CI in accordance with the guidelines of the ACOG [11] and in the context of our national situation: ① medical history: history of ≥2 painless mid-to late-term pregnancies with abortion or preterm birth, or history of cervical injury (surgical treatment for cervical lesions, etc. or history of cervical lacerations, etc.); ② vaginal examination: painless softening, shortening, and even dilatation of the cervical canal; ③ transvaginal sonography (TVS) showed shortening of the cervical canal <2.5 cm, separation of the endocervix, or a wedge-shaped or funnel-like change in the endocervix; ④ pre-pregnancy gynecological examination showed that the internal mouth of the cervix can reach the uterine cavity through No. 8 Hegar dilator; ⑤ non-pregnant hysterosalpingogram and hysteroscopy reveal a tubular enlargement of the funnel area in the isthmus of the uterus. The diagnosis is confirmed by meeting the first and any of the other 4 criteria above. In addition, in the absence of a previous history of multiple spontaneous abortions, or a history of only one abortion, the diagnosis can also be confirmed by the presence of painless cervical shortening and dilatation, a definite cervical length <2.5 cm, a CI suspected by ultrasound (cervical length <2.5 cm, cervical width >3.2 cm, cervical internal diameter >0.5 cm), or a high degree of suspicion of CI on examination (No. 8 uterine dilator can pass through the internal opening of the cervix). The medical records of the patients were complete; all of them were treated with cervical cerclage; and all of them voluntarily participated in the operation and signed the informed consent.

2.3. Exclusion Criteria. Exclusion Criteria were as follows: complicated with severe organic or systemic lesions; complicated with liver and kidney dysfunction or important organ injury; patients with mental diseases; complicated with coagulation dysfunction; contraindications or refusal of cervical cerclage; patients with reproductive tract infection; those with miscarriage or preterm birth due to other factors such as endocrine, infection, genetics, etc.; combined with ruptured membranes, placenta abruption; or severe congenital abnormalities requiring termination of the pregnancy.

2.4. Surgical Method. All patients were treated with cervical cerclage, which was performed as follows.

Before operation: magnesium sulfate injection (National Drug Certification H13022000, specification: 10 ml: 2.5 g) should be given one day before the operation; the first loading dose was 5 g, diluted to 100 ml with 5% dextrose injection, and then given intravenously rapidly within 30 minutes; after that 1-2 g per hour intravenously for maintenance, the total amount of 24 hours should not exceed 30 g. Dydrogesterone tablets (Imported Drug Registration No. H20130110, specification: 10 mg/tablet) were taken orally to reduce uterine sensitivity, 10 mg/time, q8h (once every 8 hours). If preoperative dilatation of the uterine orifice has already occurred, absolute bed rest in the head-low-hip-high position is required to reduce cervical pressure.

During operation: after the subarachnoid anesthesia took effect, the bladder truncation position was placed, and the perineum of the pregnant woman was fully exposed. First, the vulva and vagina were routinely disinfected, then the vaginal

Table 1: Comparison of general information of pregnant women in each group.

Group	Age (years)	Pregnancy time (times)	Spontaneous abortion history (cases)			Preterm birth history (cases)
			Once	Twice	3 times	
Early group ($n = 86$)	30.78 ± 3.00	3.14 ± 0.38	46	29	11	6
Middle group ($n = 74$)	29.97 ± 2.23	3.12 ± 0.52	40	25	9	7
t/χ^2	1.619	0.280	0.005	0.001	0.014	0.328
P	0.107	0.780	0.943	0.993	0.905	0.567
Elective group ($n = 71$)	31.10 ± 2.17	3.11 ± 0.36	42	24	6	5
Emergency group ($n = 89$)	30.40 ± 2.39	3.15 ± 0.51	44	30	14	8
t/χ^2	1.659	0.579	1.500	0.001	1.914	1.330
P	0.099	0.564	0.221	0.990	0.167	0.249

vault and cervix were fully exposed using a cervical forceps. To prevent injury to the fetal membranes, the operation should be performed gently. A Mersilene cervical band was used to perform the ring ligation, and afterwards, a "U" suture was applied. In cases where the amniotic sac had bulged into the cervical canal, the procedure was performed in a head-low-hip-high position, and the bulging amniotic sac had to be retracted before the procedure.

After operation: pregnant women were asked to rest in bed in the head-low-hip-high position after the operation, use of antibiotics for 1-2 days to prevent infection and maintain a clean vulva and use of magnesium sulfate injection 1-2 g/h for 2 days and dydrogesterone tablets 10 mg q8h orally for a week. Ultrasound and vaginal discharge were reviewed 1 week after the operation to check for ischemic necrosis of the cervical tissue and detachment of the annuloplasty thread. If there was no infection and no unstoppable contractions, the surgical sutures were removed at 37 weeks of gestation to avoid cervical laceration during delivery.

2.5. Evaluation Indexes

(1) Comparison of pregnancy outcomes among the four groups of pregnant women: the evaluation indexes were intrauterine infection rate, late abortion rate, full-term birth rate, and preterm birth rate.

(2) Comparison of the effects of different treatment timing on pregnant women and newborns: the evaluation indexes were neonatal Apgar score, gestational week extension time, and length of hospital stay.

2.6. Statistical Methods. Data processing was performed using the SPSS 22.0 software. Count data were expressed as percentages (%) and subjected to the χ^2 test. The measurement data obeying normal distribution were expressed as mean ± standard deviation ($\overline{x} \pm s$) and subjected to t-test. The test level was $\alpha = 0.05$, and $P < 0.05$ was considered a statistically significant difference.

3. Results

3.1. The Intrauterine Infection Rate of Early Group vs Middle Group and Elective Group vs Emergency Group. After the operation, the intrauterine infection rate in the early group was 8.14% (7/86) lower than 71.62% (53/74) in the middle group, and the intrauterine infection rate in the elective group was 18.31% (13/71) lower than 61.80% (55/89) in the emergency group ($P < 0.05$). In Figure 1.

3.2. The Late Abortion Rate of Early Group vs Middle Group and Elective Group vs Emergency Group. After the operation, the late abortion rate in the early group was 8.14% (7/86) lower than 63.51% (47/74) in the middle group, and the late abortion rate in the elective group was 15.49% (11/71) lower than 61.80% (55/89) in the emergency group ($P < 0.05$) (Figure 2).

3.3. The Full-Term Birth Rate of Early Group vs Middle Group and Elective Group vs Emergency Group. After the operation, the full-term birth rate in the early group was 82.56% (71/86) higher than 21.62% (16/74) in the middle group, and the full-term birth rate of the elective group was 73.24% (52/71) higher than 24.72% (22/89) in the emergency group ($P < 0.05$). In Figure 3.

3.4. The Preterm Birth Rate of Early Group vs Middle Group and Elective Group vs Emergency Group. After the operation, there was no significant difference in the preterm birth rate between the early group and the middle group (8.14% *vs* 14.86%) scores, and between the elective group and the emergency group (11.27% vs 12.36%) scores ($P > 0.05$). In Figure 4.

3.5. The Neonatal Apgar Score of Early Group vs Middle Group and Elective Group vs Emergency Group. There was no significant difference in neonatal Apgar score between the early group and the middle group (7.30 ± 0.98 *vs* 7.14 ± 0.91) and between the elective group and the emergency group (7.15 ± 0.82 *vs* 7.07 ± 1.07) ($P > 0.05$) (Figure 5).

3.6. The Gestational Week Extension Time of Early Group vs Middle Group and Elective Group vs Emergency Group. There was no significant difference in gestational week extension time between the early group and the middle group (6.52 ± 1.77 *vs* 6.99 ± 1.69) days and between the elective group and the emergency group (6.44 ± 1.37 *vs* 6.82 ± 1.70) days ($P > 0.05$) (Figure 6).

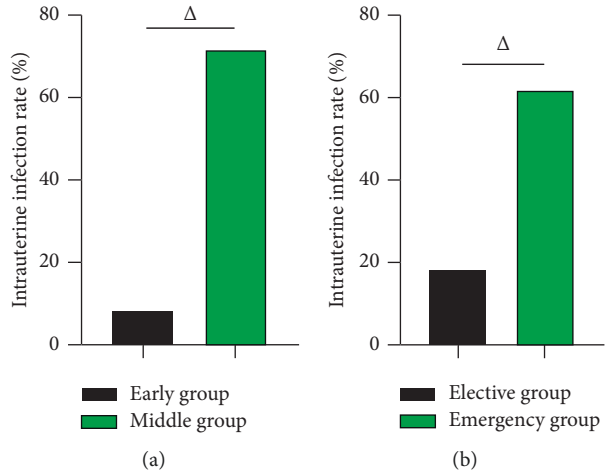

Figure 1: The intrauterine infection rate of early group vs middle group, elective group vs emergency group (%). (a) The intrauterine infection rate of early group vs middle group (%). (b) The intrauterine infection rate of elective group vs emergency group (%). △ was the comparison between groups, and the difference was statistically significant.

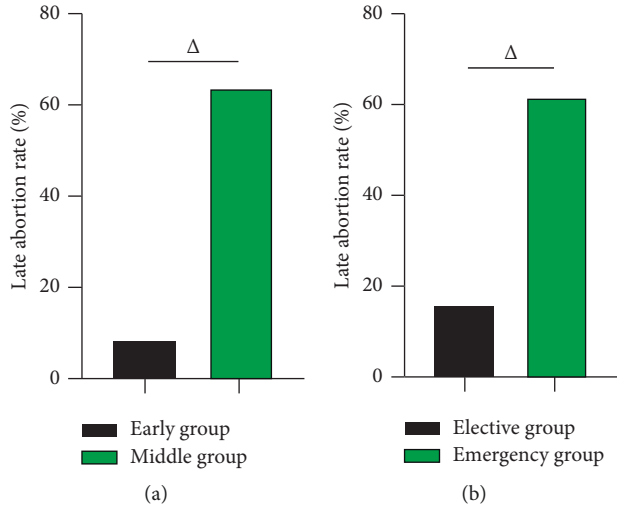

Figure 2: The late abortion rate of early group vs middle group, elective group vs emergency group (%). (a) The late abortion rate of early group vs middle group (%). (b) The late abortion rate of elective group vs emergency group (%). △ was the comparison between groups, and the difference was statistically significant.

3.7. The Length of Hospital Stay of Early Group vs Middle Group and Elective Group vs Emergency Group. The length of hospital stay was 7.28 ± 1.39 vs 10.89 ± 2.65 days in the early group and in the middle group, with the early group being shorter than the middle group ($P < 0.05$), and the length of hospital stay was 8.72 ± 1.23 vs 9.30 ± 1.39 days in the elective group and the emergency group, with the elective group being shorter than the emergency group ($P < 0.05$). In Figure 7.

4. Discussion

CI can often lead to abortion or preterm birth of pregnant women. In the early stages of the disease, the internal orifice of the cervix can be shortened or funnel-shaped. Once premature delivery occurs, the organs of the newborn are not yet mature, and the survival probability is greatly reduced. If the anatomical structure of the cervix can be restored, it is expected to prolong the gestational week to the best gestational age and finally improve the perinatal outcome. Cervical cerclage is a common treatment for CI, which does not require any incision of the tissue during the procedure and therefore causes minimal damage to the surrounding tissue [12]. The principle of action is to narrow the endocervix by encircling the entire cervix with sutures, thus trimming the structure of the endocervix and strengthening the cervical canal tension as much as possible, preventing the extension of the lower uterine segment and the dilatation of the cervical opening, and assisting the endocervix to bear the gravity of the fetus and fetal appendages in the second trimester [13,14]. But the different gestational weeks and treatment timing of

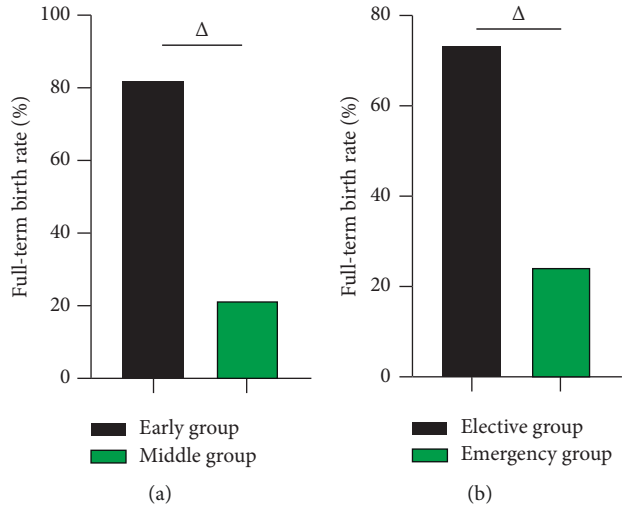

Figure 3: The full-term birth rate of early group vs middle group, elective group vs emergency group (%). (a) The full-term birth rate of early group vs middle group (%). (b) The full-term birth rate of elective group vs emergency group (%). △ was the comparison between groups, and the difference was statistically significant.

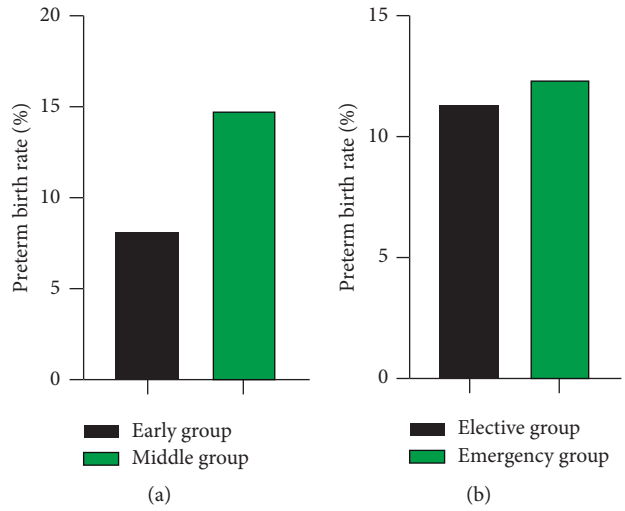

Figure 4: The preterm birth rate of early group vs middle group, elective group vs emergency group (%). (a) The preterm birth rate of early group vs middle group (%). (b) The preterm birth rate of elective group vs emergency group (%).

pregnant women will have different effects on the treatment effect.

It is generally accepted that if the gestational week is too early to exclude fetal abnormalities and because the placenta is not yet stable, surgery at this time can trigger abortion due to surgical stimulation [15]. If the gestational week is too late, the uterus is significantly enlarged, the uterine body rises into the abdominal cavity, and the cervix is elevated and shortened, which increases the risk of surgery and may cause premature rupture of membranes or contractions [16]. It has been reported [17] that the use of prophylactic cervical cerclage (i.e., treatment with cervical cerclage at 14 to 18 weeks of pregnancy) significantly improves the success rate of the procedure and can effectively reduce intraoperative bleeding and shorten the length of hospital stay. Using this as the cut-off value, the early group was drawn from 14 to 18 weeks of gestation, and the middle group was drawn from 19 to 27 weeks of gestation in this study.

The results showed that after the operation, the intrauterine infection rate and late abortion rate were lower in the early group than in the middle group, the full-term birth rate was higher in the early group than in the middle group, and the length of hospital stay was shorter in the early group than with the middle group ($P < 0.05$); after surgery, the intrauterine infection rate and late abortion rate were lower in the elective group than in the emergency group, the full-term birth rate was higher in the elective group than in the emergency group, and the length of hospital stay was shorter in the elective group than with the emergency group ($P < 0.05$). This suggests that elective cervical cerclage at 14 to 18 weeks of gestation in patients with CI will help reduce the rate of intrauterine infection and late miscarriage,

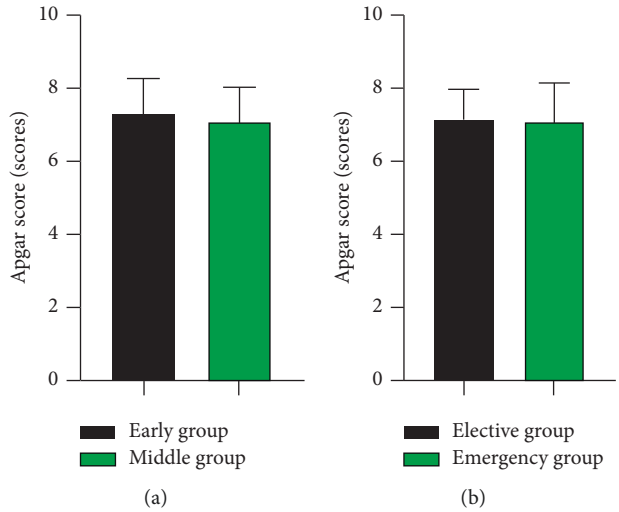

Figure 5: The neonatal Apgar score of early group vs middle group, elective group vs emergency group (scores). (a) The neonatal Apgar score of early group vs middle group (scores). (b) The neonatal Apgar score of elective group vs emergency group (scores).

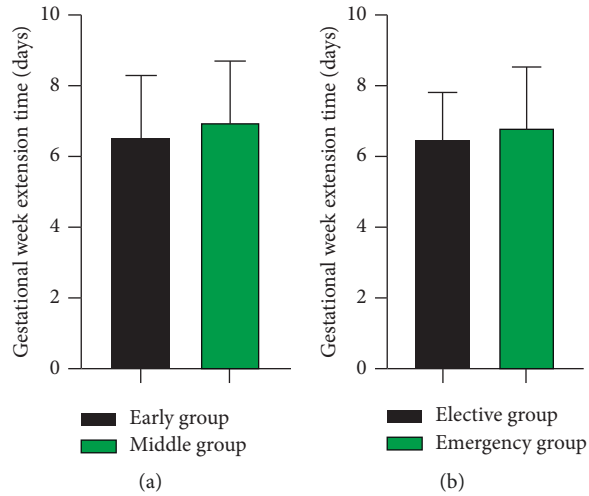

Figure 6: The gestational week extension time of early group vs middle group, elective group vs emergency group (days). (a) The gestational week extension time of early group vs middle group (days). (b) The gestational week extension time of elective group vs emergency group (days).

increase the rate of full-term productivity, and improve overall pregnancy outcome due to rapid postoperative recovery. Conversely, if the disease is diagnosed between 19 and 27 weeks of gestation, emergency surgery should be performed as soon as possible, with strict postoperative monitoring and control to prevent infection and ensure a good pregnancy outcome. The reason why there are more adverse pregnancy outcomes with emergency cervical cerclage at 19 to 27 weeks of gestation compared to elective cervical cerclage at 14 to 18 weeks of gestation may be due to the fact that as the gestational age increases, the pressure in the pregnant woman's uterus gradually decreases and the cervical opening gradually dilates. This may be due to the fact that as the gestational age increases, the pressure in the pregnant woman's uterus gradually decreases and the cervical opening gradually dilates. At this time, if the operation is performed too late or too urgently, it may be more difficult and less effective due to a series of complications such as dilatation of the cervical opening, bulging of the fetal sac, and shortening/disappearance of the cervical canal. For example, pregnant women may develop intrauterine fetal infections due to the reduced ability of the cervical mucus plug to block bacterial invasion [18]. The dilatation of the cervical opening and the bulging of the maternal amniotic sac out of the vagina, which requires repeated upward pushing and retraction of the bulging amniotic sac during surgery, may increase the risk of rupture of the fetal membranes and cause intrauterine infection [19]. Also, in patients with dilatation of the endocervix already occurring, the height of the ring ligation makes it difficult to reach the level of the endocervix, so it is not effective in maintaining the length of the cervix and the support it provides to the

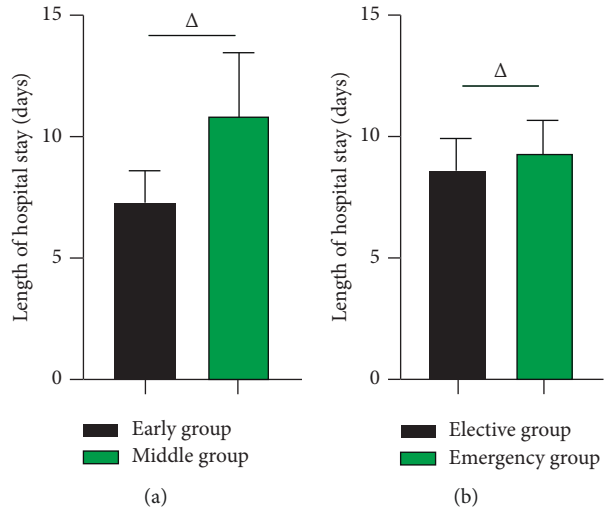

Figure 7: The length of hospital stay of early group vs middle group, elective group vs emergency group (days). (a) The length of hospital stay of early group vs middle group (days). (b) The length of hospital stay of elective group vs emergency group (days). △ was the comparison between groups, and the difference was statistically significant.

cervix, and after surgery, as the gestational week increases and the pregnant woman's uterus increases, it is highly likely that the pregnancy will have to be terminated due to the increased force of cervical dilatation, so the full-term productivity is low [20]. The above problems not only affect the surgical effect of patients but also lead to the corresponding extension of hospital stay, which is not conducive to the postoperative recovery of CI patients and the maintenance of good pregnancy outcomes.

The results of this study also showed that after operation, there was no statistical significance in the preterm birth rate, neonatal Apgar score, and gestational week prolongation time in the early group compared with the middle group, and in the elective group compared with the emergency group ($P > 0.05$). This may be because compared with other treatment schemes, cervical cerclage itself has the characteristics of short operation time, no trauma, simple operation, fast postoperative recovery, and good effect [21]. And whether it is 14 to 18 weeks of gestation or 19 to 27 weeks of gestation, whether it is an elective operation or an emergency operation, all four can eventually improve the cervical structure and physiological function of CI patients effectively, and together with the later treatment of antiinflammation and suppression of contractions, the patients can eventually prolong the pregnancy, even deliver successfully, etc. [22–24].

To summarize, the outcome of cervical cerclage in the treatment of pregnant women with CI in mid-pregnancy and pregnancy outcomes are influenced by the timing of treatment. Among them, elective surgical intervention at 14–18 weeks of gestation is more ideal, which can effectively prevent intrauterine infection and late abortion in pregnant women, and the patient recovers quickly after surgery and the hospital stay is greatly shortened, which is a reliable method to improve pregnancy outcome and quality of life in patients treated with cervical cerclage in CI and is worthy of clinical promotion. However, if the diagnosis of CI is not confirmed until 19~27 weeks of pregnancy, emergency surgical treatment should be taken immediately, and postoperative monitoring and infection control should be strictly carried out to ensure a good pregnancy outcome for pregnant women.

Data Availability

The data used or analyzed in the current study are available from the associated author.

Ethical Approval

This study was approved by the ethics committee of our hospital.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

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Research Article

Effectiveness of Noninvasive Positive Pressure Ventilation Combined with Enteral Nutrition in the Treatment of Patients with Combined Respiratory Failure after Lung Cancer Surgery and Its Effect on Blood Gas Indexes

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Purpose. To investigate the effect of noninvasive positive pressure ventilation (NIPPV) combined with enteral nutrition support in the treatment of patients with combined respiratory failure after lung cancer surgery and its effect on blood gas indexes. *Methods*. A total of 82 patients with combined respiratory failure after lung cancer surgery who were treated in our hospital from March 2016~September 2021 were selected as the research subjects, and according to the random number table method, they were equally divided into the parenteral nutrition group ($n = 41$) with NIPPV + parenteral nutrition support treatment and the enteral nutrition group ($n = 41$) with NIPPV + enteral nutrition support treatment. The curative effects of two groups after treatment were compared, and the pulmonary function indexes (maximum expiratory pressure (PEmax), maximum midexpiratory flow rate (MMF), and maximum ventilation volume (MVV)), blood gas indexes (blood oxygen partial pressure (PaO_2) and partial pressure of carbon dioxide ($PaCO_2$)), oxygen metabolism indicators [mixed venous oxygen tension (PvO_2) and central venous oxygen saturation ($ScvO_2$)], nutritional status indicators (hemoglobin (HGB), serum albumin (ALB), and total protein (TP)), and nutritional score before and after treatment in two groups were detected, and the 6-month follow-up of the two groups was recorded. *Results*. After treatment, the total effective rate of the enteral nutrition group 95.12% (39/41) was higher than that of the parenteral nutrition group 80.49% (33/41) ($P < 0.05$). At 3, 12, 24, and 48 hours after the operation, the levels of PEmax, MMF, and MVV in two groups were higher than those before treatment, and the enteral nutrition group was higher than the parenteral nutrition group at the same time point ($P < 0.05$). At 3, 12, 24, and 48 hours after the operation, the PaO_2 levels in two groups were higher than those before treatment, and the $PaCO_2$ levels were lower than those before treatment. The PaO_2 levels in the enteral nutrition group were higher than those in the parenteral nutrition group at the same time point, and the $PaCO_2$ levels were lower than those in the parenteral nutrition group at the same time point ($P < 0.05$). At 3, 12, 24, and 48 hours after the operation, the levels of PvO_2 and $ScvO_2$ in two groups were higher than those before treatment, and the enteral nutrition group was higher than the parenteral nutrition group at the same time point ($P < 0.05$). After treatment, the levels of HGB, ALB, and TP in two groups were higher than those before treatment, and the enteral nutrition group was higher than the parenteral nutrition group ($P < 0.05$). After treatment, the nutritional scores of the two groups were higher than those before treatment, and the enteral nutrition group was higher than the parenteral nutrition group ($P < 0.05$). At 6-month postoperative follow-up, the incidence of death in the enteral nutrition group 2.44% (1/41) was lower than that of the parenteral nutrition group 17.07% (7/41) ($P < 0.05$). *Conclusions*. The efficacy of NIPPV combined with enteral nutrition support in treating patients with combined respiratory failure after lung cancer surgery is remarkable. It can improve patients' pulmonary function and blood gas index, correct patients' hypoxia status and the patients' nutritional level was significantly improved, which helped to reduce the mortality rate and improve the prognosis.

1. Introduction

Combined with the 2020 "Global Cancer Statistical Report," in 2020, the number of cancer deaths in my country was about 3 million, of which nearly 715,000 were lung cancer, accounting for about 17.9% of the total number of new cancer cases in China, accounting for about 23.8% of cancer deaths, and its morbidity and mortality rank first among the new cases of malignant tumors [1]. In 2021, the number of new lung cancer cases in my country is about 783,700, and the number of deaths due to lung cancer was about 631,000. Its morbidity and mortality still rank first among malignant tumors [2]. Report [3] pointed out that lung cancer mortality associated with all risk factors increases with age, and with the intensification of population aging in my country, the proportion of lung cancer patients over 70 years old is increasing, so the treatment of lung cancer patients has attracted more and more attention. According to the recommendation of the National Comprehensive Cancer Network [4], surgery is the first choice for the treatment of early-stage lung cancer, especially for stage I-IIIA lung cancer. Clinically, more and more elderly lung cancer patients choose comprehensive treatment based on anatomical pneumonectomy. However, due to the poor physical fitness of elderly patients, they are often combined with chronic diseases of varying degrees, such as diabetes, asthma, chronic bronchitis, and emphysema, resulting in problems such as decreased cardiopulmonary function, poor stress and tolerance, and reduced resistance. For this reason, postoperative pulmonary complications (PPCs) occur more frequently, and respiratory failure is one of the most common PPCs in elderly lung cancer patients, which has a very poor prognosis and a high mortality rate. Therefore, targeted clinical preventive measures must be taken to reduce patient respiratory failure and improve prognostic survival. Ventilator-assisted ventilation as a form of positive pressure ventilation via nose and/or mask is now widely used in the treatment of various types of respiratory failure and has an overall efficiency rate of 51% to 91% [5]. But the effect of its use in patients with combined respiratory failure after lung cancer surgery has rarely been reported and is insufficient to form a valid argument.

In addition, since lung cancer is a malignant wasting disease, with the extension of the disease, the patient's body may have different degrees of nutritional disorders. This is coupled with the fact that the patient's body function decreases with age and lacks the ability to recover from the disease, which increases the occurrence of malnutrition, which is not only detrimental to the recovery of various physiological indicators and physical functions of the patient but also increases the incidence of complications and affects their prognosis. Some studies [6,7] have shown that enteral nutrition support can improve and maintain the immunity and metabolism of the organism effectively by providing nutritional substrates required for cellular metabolism, which therefore has the effect of enhancing the resistance of the organism and promoting disease recovery. This paper discusses the effect of noninvasive positive pressure ventilation (NIPPV) combined with enteral nutrition support in the treatment of patients with combined respiratory failure after lung cancer surgery and its effect on patients' blood gas indexes. Details are as follows.

2. Materials and Methods

2.1. General Information. From March 2016 to September 2021, 82 patients with combined respiratory failure after lung cancer surgery who were treated in our hospital were selected as the research subjects, including 52 males and 30 females, aged 60–80 years old, with an average age of 69.79 ± 3.18 years old. Inclusion criteria included the following: all patients had completed lung tumor resection and had complete postoperative pathology reports; clinical stage of lung cancer was stage I-III; diagnostic criteria for type I respiratory failure (blood oxygen partial pressure (PaO_2) < 60 mmHg and partial pressure of carbon dioxide ($PaCO_2$) was normal when the patient inhaled air at rest) and type II respiratory failure ($PaO_2 < 60$ mmHg and $PaCO_2 > 50$ mmHg when the patient inhaled air at rest) were met; expected postoperative survival time ≥6 months; postoperative hemodynamic stability; postoperative consciousness and consent to ventilator-assisted ventilation; ability to cough and cough up sputum and other airway protection; those with complete and compliant medical records; those who were informed and signed the consent form for this study. Exclusion criteria included the following: those with more airway secretions and sputum disturbance affecting ventilation; upper gastrointestinal bleeding and severe hypoxemia (PaO_2 <45 mmHg); postoperative confusion or mental illness; combined autoimmune disease; combined other organ or system failure; respiratory failure secondary to other organ or system failure; previous facial and neck trauma, burns, and surgical history. All patients were equally divided according to the random number table method into the parenteral nutrition group ($n = 41$) treated with NIPPV + parenteral nutritional support and the enteral nutrition group ($n = 41$) treated with NIPPV + enteral nutritional support. The general data of the two groups of patients are shown in Table 1, which were not statistically significant and were comparable ($P < 0.05$).

2.2. Methods. Both groups were routinely given intravenous pain pumps for continuous postoperative pain relief, antibiotics and expectorant cough suppressants, nebulized inhalation, back patting therapy, etc. Vital signs were closely monitored during the period.

2.2.1. Parenteral Nutrition Group Received NIPPV + Parenteral Nutrition Support Treatment. NIPPV operation: the patient was supine at 30–45°, and the VENTImotion 30 noninvasive ventilator (Weinmann, Germany) was used for treatment. The S-T breathing mode was adjusted according to the patient's specific conditions, and the ventilator

Table 1: Comparison of general data between two groups.

	Parenteral nutrition group ($n = 41$)	Enteral nutrition group ($n = 41$)	t/χ^2	P
Age (years old)	69.20 ± 3.20	70.39 ± 3.09	1.713	0.091
Male/Female (case)	25/16	27/14	0.210	0.647
Smoking history (n, %)	11 (26.83)	8 (19.51)	0.617	0.432
COPD history (n, %)	14 (34.14)	15 (36.59)	0.053	0.817
Lung cancer types (n, %)			0.878	0.831
Adenocarcinoma	16 (39.02)	20 (48.78)		
Squamous carcinoma	17 (41.46)	14 (34.14)		
Adenosquamous carcinoma	4 (9.76)	4 (9.76)		
Small cell carcinoma	4 (9.76)	3 (7.32)		

parameters were set to respiratory rate <30 breaths/min, respiratory tidal volume >7 ml/kg, PaO_2 at 60~90 mmHg, $PaCO_2$ at 40~50 mmHg (1 mmHg = 0.133 kPa), and oxygen concentration was set at 90%–95% oxygen saturation. The ventilator parameters were adjusted according to the changes in the condition to ensure stable breathing and smooth airway, avoid respiratory fatigue, and gradually extend the duration of offline when the patient is in remission. Parenteral nutrition support: the average daily basal energy expenditure (BEE) was estimated according to the Harris-Benedict formula, among them, male BEE = 66.5 + 13.7 × weight (kg) + 5.0 × height (cm)−6.8 × age (y), female BEE = 65.1 + 9.5 × weight (kg) + 1.8 × height (cm)−4.7 × age (y). On this basis, the correction factor was adjusted according to the patient's fever and respiratory failure. The average daily nitrogen intake was 0.15~0.2 g/kg, and the nutrition mixture was infused by deep venous drip for 2 weeks.

2.2.2. Enteral Nutrition Group Received NIPPV + Enteral Nutrition Support Treatment. The NIPPV operation was the same as that of the parenteral nutrition group. Enteral nutrition support: a nasogastric tube was placed and whole protein enteral nutrition was infused with an initial amount of 750 kcal/d at 38°C via a nutrition pump at a controlled rate of 70–150 ml/h. Calories were gradually increased to a predicted value, predicted value = BEE × 1. 1× activity coefficient × correction factor C (male/female: 1. 16/1. 19), held for 2 weeks.

2.3. Observation Indicators

2.3.1. Efficacy Assessment: The Total Effective Number Is the Sum of the Significantly Effective and Effective Numbers. Significantly effective: after treatment, PaO_2 increased by >5%, oxygen saturation by >90%, the heart rate and respiratory rate improved significantly. Effective: after treatment, the respiratory rate improved significantly, but PaO_2 and oxygen saturation did not. Ineffective: after treatment, PaO_2, oxygen saturation, and the respiratory rate did not change.

2.3.2. Pulmonary Function Indexes. The maximum expiratory pressure (PEmax), maximum midexpiratory flow rate (MMF), and maximum ventilation volume (MVV) were measured before and 3, 12, 24, and 48 h after treatment in both groups. The detection instrument was a CHEST-HI-701 type lung function tester (CHEST, Japan).

2.3.3. Blood Gas Indexes. PaO_2 and $PaCO_2$ were measured before and 3, 12, 24, and 48 h after treatment in both groups. The detection instrument was a Cobas b123 blood gas analyzer (Roche, Germany).

2.3.4. Oxygen Metabolism Indicators. The mixed venous oxygen tension (PvO_2) and central venous oxygen saturation ($ScvO_2$) were measured before and 3, 12, 24, and 48 h after treatment in both groups. The detection equipment was the same as the blood gas index.

2.3.5. Nutritional Status Indicators. Hemoglobin (HGB), serum albumin (ALB), and total protein (TP) were detected before and after treatment in both groups. The detection instrument was the Beckman Coulter AU5800 automatic biochemical analyzer (Beckman Coulter Trading (China) Co., Ltd.).

2.3.6. Nutritional Score. The Miniature Nutritional Assessment (MNA) method was implemented to assess the nutritional status of patients before and after the treatment, and the assessment items included 18 items such as overall assessment, dietary assessment, and anthropometric measurements, with a total score of 30. An MNA score of <17 indicated malnutrition, 17~ < 24 indicated potential malnutrition, and ≥24 indicated good nutrition.

2.3.7. Follow-up Situation. The two groups were followed up at 6 months after surgery for clinical symptoms (significant physical wasting, gastrointestinal bleeding, electrolyte disturbances, etc.) and death.

2.4. Statistical Methods. The SPSS 22.0 statistical software was used to process the data. Measurement data ($\overline{x} \pm s$) were compared between groups by the t-test, and enumeration data (%) were compared between groups by the χ^2 test. $P < 0.05$ means the difference is statistically significant.

3. Results

3.1. Comparison of Efficacy Assessment between Two Groups. As shown in Figure 1, after treatment, the total effective rate of the enteral nutrition group 95.12% (39/41) was higher than that of the parenteral nutrition group 80.49% (33/41) ($P < 0.05$).

3.2. Comparison of Pulmonary Function Indexes between Two Groups. As shown in Figure 2, at 3, 12, 24, and 48 hours after the operation, the levels of PEmax, MMF, and MVV in two groups were higher than those before treatment, and the enteral nutrition group was higher than the parenteral nutrition group at the same time point ($P < 0.05$).

3.3. Comparison of Blood Gas Indexes between Two Groups. As shown in Figure 3, at 3, 12, 24, and 48 hours after the operation, the PaO_2 levels in two groups were higher than those before treatment, and the $PaCO_2$ levels were lower than those before treatment. The PaO_2 levels in the enteral nutrition group were higher than those in the parenteral nutrition group at the same time point, and the $PaCO_2$ levels were lower than those in the parenteral nutrition group at the same time point ($P < 0.05$).

3.4. Comparison of Oxygen Metabolism Indexes between Two Groups. As shown in Figure 4, at 3, 12, 24, and 48 hours after the operation, the levels of PvO_2 and $ScvO_2$ in two groups were higher than those before treatment, and the enteral nutrition group was higher than the parenteral nutrition group at the same time point ($P < 0.05$).

3.5. Comparison of Nutritional Status between Two Groups. As shown in Figure 5, after treatment, the levels of HGB, ALB, and TP in two groups were higher than those before treatment, and the enteral nutrition group was higher than the parenteral nutrition group ($P < 0.05$).

3.6. Comparison of Nutritional Scores between Two Groups. As shown in Figure 6, after treatment, the nutritional scores of two groups were higher than those before treatment, and the enteral nutrition group was higher than the parenteral nutrition group ($P < 0.05$).

3.7. Comparison of Follow-Up Situations between Two Groups. As shown in Figure 7, at 6-month postoperative follow-up, the incidence of death in the enteral nutrition group 2.44% (1/41) was lower than that of the parenteral nutrition group 17.07% (7/41) ($P < 0.05$).

4. Discussion

In addition to pneumonia, atelectasis, acute exacerbation of interstitial pneumonia, acute lung injury, pulmonary embolism, multiple lung cancer, and other intrapulmonary factors, the causes of respiratory failure after lung cancer surgery also include extrapulmonary factors such as liver dysfunction, ischemic heart disease, and central nervous system disorders; patient factors such as preoperative hypoxemia, smoking index, body mass index, anesthesia time; and surgical factors such as anesthesia time, thoracotomy time, and operation time [8–11]. From the above, it can be seen that the lung function damage caused by whatever reason can be regarded as the initiating factor of postoperative respiratory failure, and conventional oxygen therapy, bronchodilators, and other respiratory medical treatments cannot effectively reverse the lung function damage. In addition, affected by the poor body status and immune function of lung cancer patients, the patients eventually develop respiratory failure. Based on the above, there is an urgent clinical need to strengthen the intervention of respiratory failure after lung cancer resection to help patients smoothly pass the postoperative dangerous period, reduce the mortality rate, and improve their prognosis.

The efficacy of NIPPV in the treatment of severe respiratory failure has been clinically recognized [12,13]. Its mechanism of action is mainly to re-expand atrophied alveoli through effective ventilation, to improve respiratory muscle function, and reduce oxygen consumption, thereby correcting hypercapnia. It also removes respiratory secretions, reduces airway obstruction, improves oxygenation function, overcomes endogenous positive endocardial respiratory pressure, and improves respiratory muscle fatigue, thus relieving the symptoms of respiratory failure; and reduces the magnitude of negative thoracic pressure fluctuations to stabilize patient hemodynamics [14]. At the same time, NIPPV increases lung compliance and lung volume, minimizes further deterioration, reduces the probability of tracheal intubation, and reduces organism traumatization [15]. However, in view of the fact that the NIPPV cannot be removed from the mask in the early stage and the symptoms of dry throat are prone to occur, the patient's eating status is affected. To make up for this deficiency, patients need to be given adequate nutritional support in clinical practice. In this study, we applied NIPPV combined with nutritional support therapy to patients with complicated respiratory failure after lung cancer surgery and compared the effectiveness of combined parenteral nutritional support or enteral nutritional support therapy on top of NIPPV and the effects on various indexes of patients.

In this result, the total effective rate of the enteral nutrition group was higher than that of the parenteral nutrition group at 3, 12, 24, and 48 hours after the operation. The levels of PEmax, MMF, MVV, PaO_2, PvO_2, and $ScvO_2$ in the two groups were higher than those before treatment, the $PaCO_2$ levels were lower than those before treatment, and the levels of the above indicators in the enteral nutrition group were significantly improved compared with those in the parenteral nutrition group. It is suggested that compared with NIPPV + parenteral nutrition support treatment, NIPPV + enteral nutrition support treatment has a significant effect and can more quickly improve the lung function and blood gas indicators and correct the hypoxic state of elderly patients with lung cancer

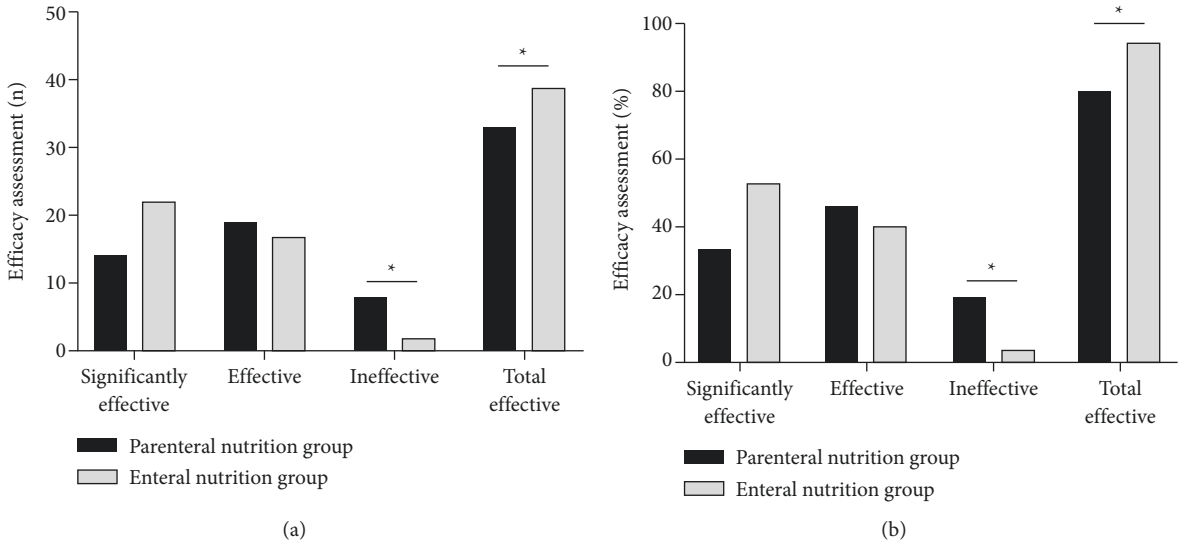

Figure 1: Comparison of efficacy assessment between the two groups. (a) Cases of efficacy assessments. (b) Percentage of efficacy assessments. *There was a statistical difference between two groups.

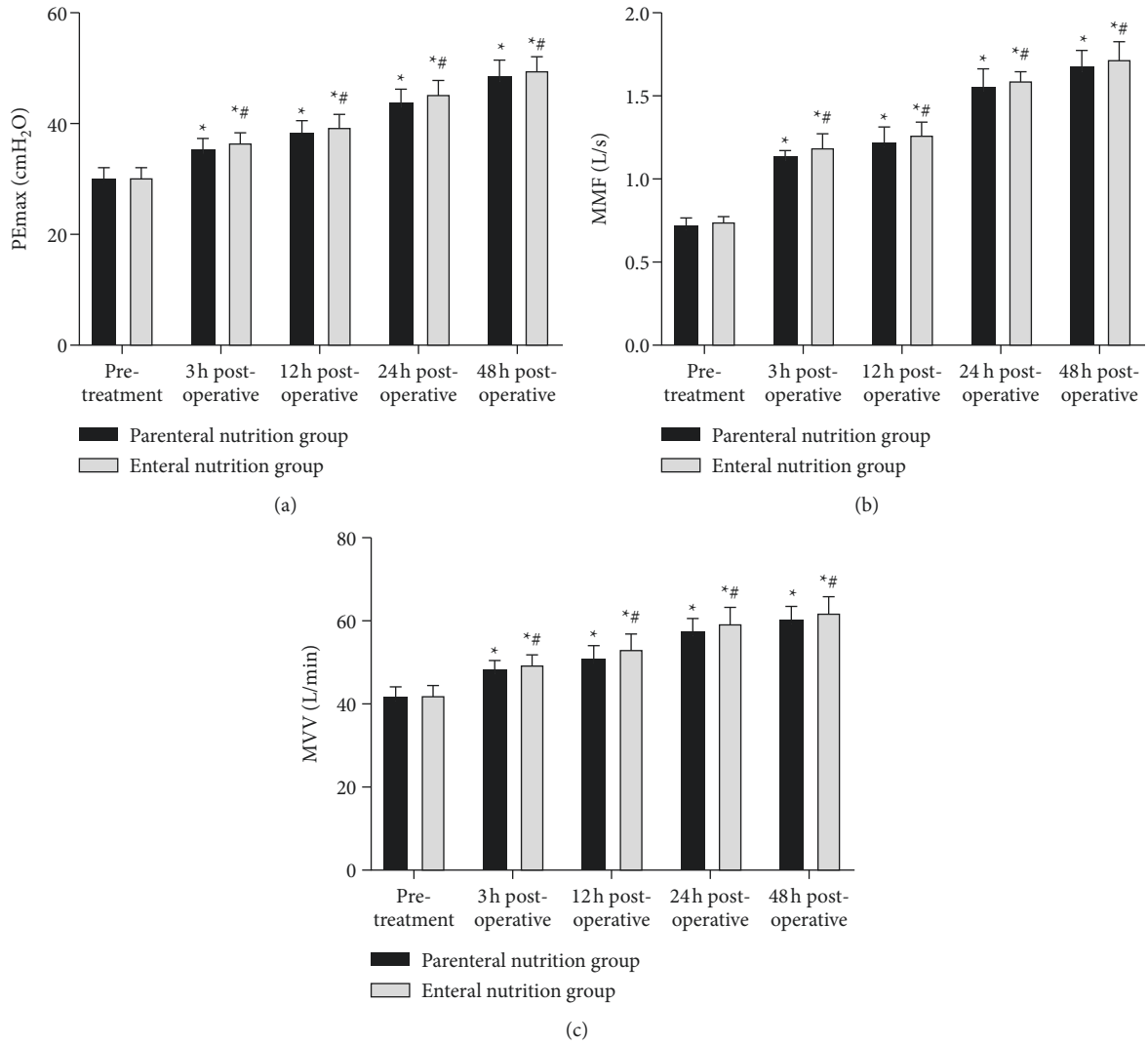

Figure 2: Comparison of pulmonary function indexes between two groups. (a) Pemax level. (b) MMF levels. (c) MVV levels. *Comparison with the same group before treatment, #comparison with the parenteral nutrition group at the same time point. There is a statistical difference.

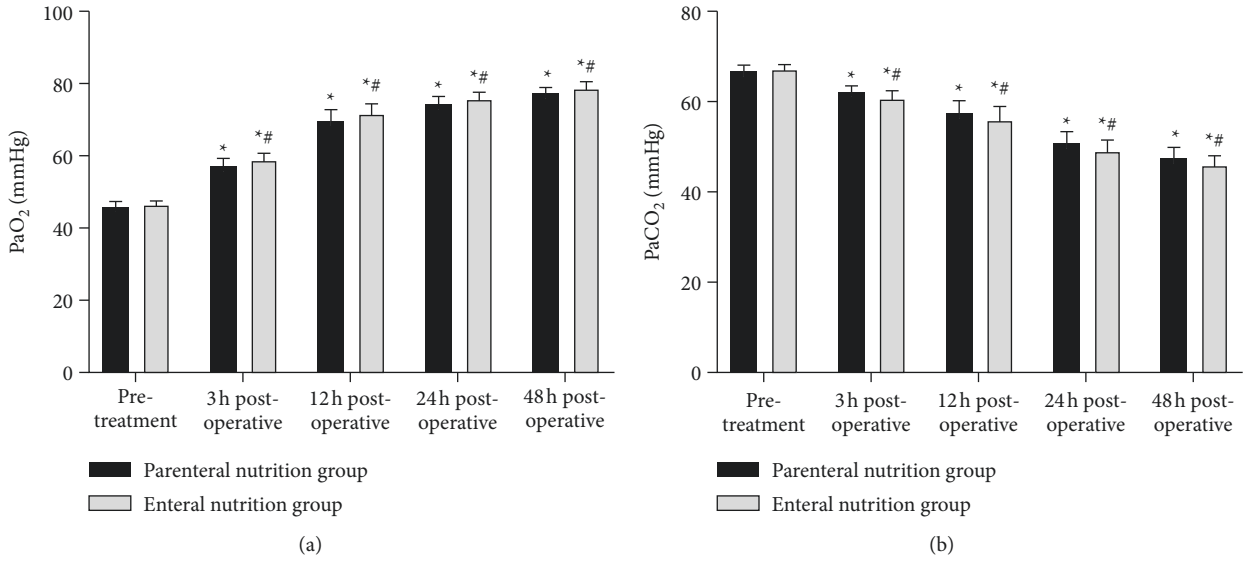

Figure 3: Comparison of blood gas indexes between two groups. (a) PaO_2 level. (b) $PaCO_2$ level. *Comparison with the same group before treatment, #comparison with the parenteral nutrition group at the same time point. There is a statistical difference.

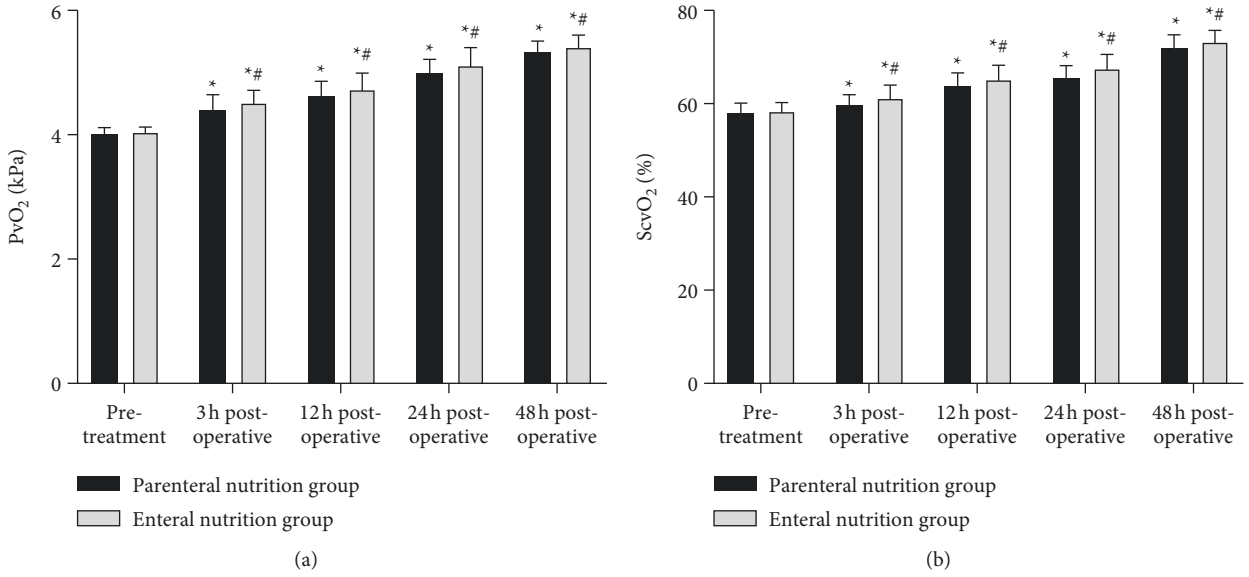

Figure 4: Comparison of oxygen metabolism indexes between two groups. (a) PvO_2. (b) $ScvO_2$. *Comparison with the same group before treatment, #comparison with the parenteral nutrition group at the same time point. There is a statistical difference.

after surgery complicated with respiratory failure, which can create favorable conditions for active postoperative treatment. The reason may be related to the following two aspects: ① NIPPV connects the patient to the ventilator through a nasal and/or mask connection to provide positive pressure ventilation, which can provide airway-assisted ventilation and increase lung volume, etc. This method of ventilation has led to significant improvements in ventilator-assisted ventilation technology, such as ventilation mode, human-machine synchronization, nasal and/or mask sealing, comfort, and dead space reduction [16,17]. As for patients with combined respiratory failure after lung cancer surgery, the application of NIPPV can increase ventilation, promote lung reopening, reduce lung function impairment, improve gas distribution in the lesion area, and thus increase effective alveolar ventilation, while NIPPV has the effect of correcting hypoxia and carbon dioxide retention by improving gas distribution and the ventilation to blood flow ratio [18]. ② The application of enteral nutritional support, which delivers nutritional preparations into the digestive system through a nasal cannula, is more in line with human physiology than parenteral nutrition. Nutrients stimulate gastrointestinal peristalsis. The application of enteral nutrition can avoid the atrophy of the gastrointestinal mucosa and at the same time ensure the balance of the gastrointestinal flora, it also reduces the incidence of intestinal infection [19]. Moreover, enteral nutrition can improve the abnormalities of gastrointestinal function caused by

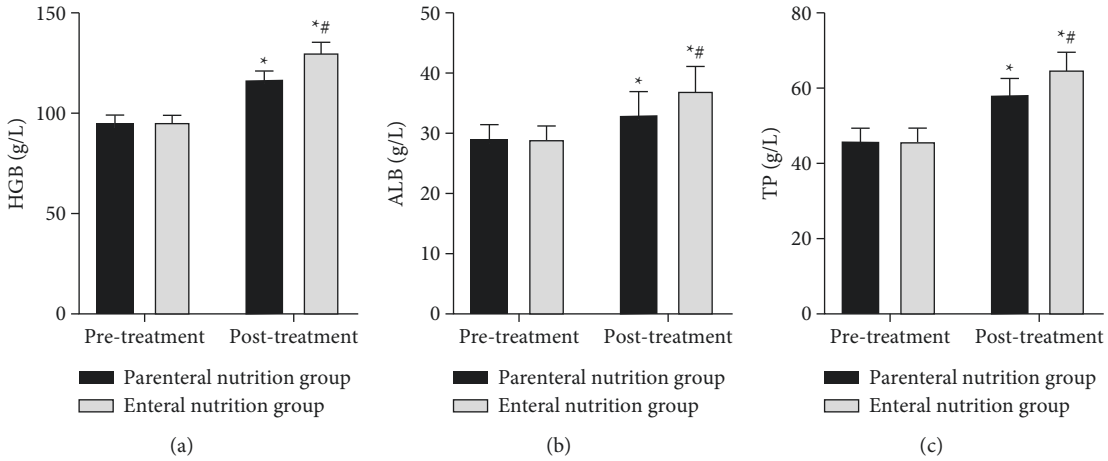

Figure 5: Comparison of nutritional status between two groups. (a) HGB level. (b) ALB level. (c) TP level. *Comparison with the same group before treatment, #comparison with the parenteral nutrition group at the same time point. There is a statistical difference.

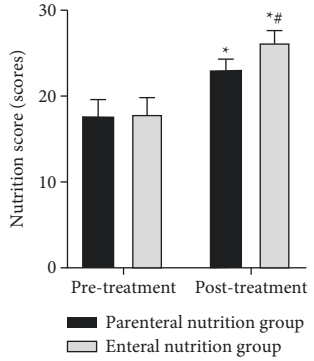

Figure 6: Comparison of nutritional scores between the two groups. *Comparison with the same group before treatment, #comparison with the parenteral nutrition group after treatment. There is a statistical difference.

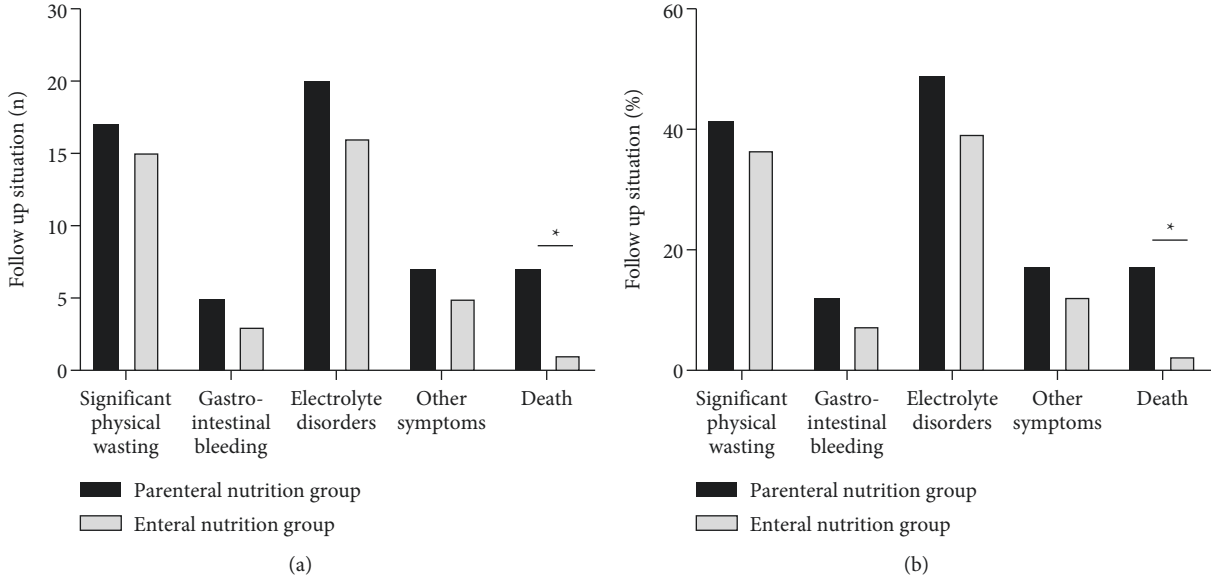

Figure 7: Comparison of follow-up situations between two groups. (a) Case of follow-up situation. (b) Percentage of follow-up situation. *There was a statistical difference between two groups.

hypoxia and hypercapnia, so it is beneficial to improve the absorption of nutrients in the body [20]. Additionally, enteral nutrition is convenient and inexpensive to administer, and for lung cancer patients, it can reduce their psychological guilt, resulting in higher patient acceptance and better compliance.

In the present results, after treatment, the HGB, ALB, TP levels and nutritional scores in two groups were higher than those before treatment, and the enteral nutrition group was higher than the parenteral nutrition group. At 6-month postoperative follow-up, the death rate occurred in the enteral nutrition group was lower than that in the parenteral nutrition group. This indicated that compared with NIPPV + parenteral nutrition support, NIPPV + enteral nutrition support was more helpful in improving the nutritional status and survival rate of elderly patients with combined respiratory failure after lung cancer surgery. The development of nutritional support therapy can improve and maintain the function and metabolism of the patient's cells and organisms, which has a positive significance for the recovery of the patient's physical function. And enteral nutrition is a new nutritional method, which is administered during surgery with tube placement, which not only has the advantage of being non-invasive, but also reduces complications such as hyperthermia, bleeding, and hemothorax; In addition, compared with intravenous nutrition supported by parenteral nutrition, the application of this therapy is mainly absorbed through the portal vein system, which can play the function of the body's organs to mediate normal nutrients to promote the recovery of gastrointestinal digestion and absorption capacity, and the patient's HGB, ALB, and TP levels rise, which not only has an important role in enhancing the immune function and nutritional status of patients with combined respiratory failure after lung cancer surgery but also leads to a reduction in the incidence of nosocomial infections such as pulmonary infections [21,22]. All of the above can create favorable conditions for the postoperative survival of patients, so the patients in the enteral nutrition group have a lower mortality rate, and the effect of improving respiratory failure is more significant and rapid.

In short, the efficacy of NIPPV combined with enteral nutrition support in treating patients with combined respiratory failure after lung cancer surgery is remarkable, which can improve patients' pulmonary function and blood gas index, correct patients' hypoxia status, and the patients' nutritional level was significantly improved, which helped to reduce the mortality rate and improve the prognosis.

Data Availability

The data that support the findings of this study are available from the associated author upon reasonable request.

Ethical Approval

The study was approved by the ethics committee of the Xiangyang Central Hospital, Affiliated Hospital of Hubei University of Arts and Science and Xiangyang No. 1 People' s Hospital, ubei University of Medicine.

Disclosure

Yongjun Zhang and Lanbo Liu Are the co-first authors.

Conflicts of Interest

The authors do not have any possible conflicts of interest.

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Research Article

A Systematic Review and Meta-Analysis Comparing the Safety and Efficacy of Spinal Anesthesia and Spinal Anesthesia Combined with Obturator Nerve Block in Transurethral Resection of Bladder Tumors

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Background. Transurethral resection of bladder tumors (TURBT) is the main surgical treatment for bladder cancer, but during TURBT, it is easy to stimulate the obturator nerve passing close to the lateral side of the bladder wall and induce involuntary contraction of the adductor muscle group of the thigh innervated by it, which will affect the surgical process and lead to adverse reactions. Obturator nerve block (ONB) helps to prevent the obturator nerve reflex. This study systematically evaluated and meta-analyzed the reports on the co-application of ONB and spinal anesthesia (SA) in TURBT in recent years to provide evidence for clinical diagnosis and treatment. *Methods*. The clinical randomized controlled literature studies of ONB combined with SA in TURBT published in PubMed, EMBASE, the Cochrane Library, CNKI (China National Knowledge Infrastructure), and Wanfang databases from January 2000 to December 2021 were searched. After screening the qualified literature studies, the literature quality was assessed by the Jadad scale. The incidence of obturator nerve reflex, the incidence of bladder perforation, length of hospital stay, and tumor recurrence rate were used as outcome indicators. The meta-analysis was performed with the *R* language toolkit. *Results*. A total of 444 articles were initially retrieved, and after the screening, a total of 8 articles were included in the selection, and a total of 635 patients with ureterovesical tumor resection were included. The meta-analysis showed that the use of SA + ONB anesthesia during TURBT was associated with a smaller incidence of bladder perforation ($RR = 0.24$, 95% CI (0.11, 0.53), $Z = -3.48$, $P = 0.0005$), a smaller incidence of obturator nerve reflex ($RR = 0.22$, 95% CI (0.13, 0.36), $Z = -6.11$, $P = 0.0001$), a significantly shorter length of hospital stay ($MD = -1.81$, 95% CI (−2.65, −0.97), $Z = -4.24$, $P = 0.0001$), and a significantly lower tumor recurrence rate ($RR = 0.46$, 95% CI (0.29, 0.73), $Z = -3.30$, $P = 0.001$) compared with SA alone. *Conclusion*. The application of SA combined with ONB in TURBT can effectively reduce the incidence of obturator nerve reflex, reduce the incidence of bladder perforation, shorten the hospital stay and reduce the tumor recurrence rate.

1. Introduction

Bladder cancer is a primary malignant tumor in the bladder mucosa and is one of the most common tumors of the human genitourinary system [1]. Its etiology is still not clear and may be related to genetic factors and environmental factors, and frequent urination, urgency, urinary pain, and dysuria are the main symptoms. Most patients can be seen with painless hematuria [2]. Bladder cancer mostly occurs in middle-aged and elderly people over 50 years old, and the incidence rate increases with age. The occurrence of bladder cancer is closely related to the three factors of diet, smoking, and drinking water. Therefore, the prevention of bladder cancer should also start from the source. For early noninvasive bladder cancer, transurethral resection of bladder tumors (TURBT) is the main surgical treatment [3].

However, during TURBT, the obturator nerve passing immediately lateral to the bladder wall is easily stimulated to induce involuntary contraction of the adductor muscle group of the thigh innervated, which will affect the surgical

process and may lead to the occurrence of adverse effects such as incomplete tumor resection, bladder perforation, or bleeding [4, 5]. The incidence of obturator nerve reflex in unipolar bladder tumors is as high as more than 55% [6]. General anesthesia is a traditional method to prevent obturator nerve reflex, but it is not suitable for elderly patients; epidural local anesthesia and spinal anesthesia are commonly used spinal anesthesia (SA) methods, which can inhibit the contraction of adductor muscle conducted by sensory fibers, but do not completely block obturator nerve reflex [7]. Obturator nerve block (ONB) is performed by an ultrasound-guided puncture to locate the obturator nerve and perform local anesthesia so as to reduce obturator nerve emission [8].

In the study by Krishan et al. [9], 8 articles were included for meta-analysis, but this study included a retrospective analysis, and the quality of evidence was low. Therefore, in our study, a meta-analysis was performed again by including randomized controlled trials to further clarify the effectiveness of ONB-assisted in TURBT in order to provide a reference for clinical practice.

2. Materials and Methods

2.1. Inclusion Criteria. ①Study types: all the included studies were randomized controlled trials (RCTs), and the languages of literature studies were Chinese and English. Given the rigor of the procedure, we excluded observational studies with two contrast cohorts; studies of review nature, conference proceedings, expert consensus, case series, and case studies would also be excluded; ②Study subjects: all patients underwent TURBT. Before the operation, all patients were diagnosed with bladder tumor by computed tomography, B ultrasound, or cystoscopy; the tumor was located in the lateral bladder wall. We did not limit the location of the tumor to unilateral or unilateral, but the tumor was located in the area innervated by the obturator nerve; experimental studies with animals were excluded. ③Intervention measures: all studies were carried out in a randomized controlled group. Spinal anesthesia was used before surgery in both groups. The unlimited anesthesia method was an arachnoid injection, epidural injection, or a combination of the two. In the experimental group, after the completion of spinal anesthesia, the obturator nerve block was performed, the inguinal approach or pubic approach was selected, needle puncture was performed with ultrasound imaging, and local anesthetic drugs were injected for obturator nerve block, or the obturator nerve was located using a nerve stimulator under ultrasound and the local anesthetic block was given. ④Outcome indicators: efficacy indicators. We used the incidence of cystocentesis and the incidence of obturator nerve reflex as short-term efficacy and safety indicators, and the length of hospital stay and tumor recurrence rate as long-term efficacy indicators.

2.2. Literature Search. ①Search strategy: a search strategy ("obturator nerve block"|"ONB") AND ("transurethral resection of bladder tumors"| TURBT). Perform a wide range of keyword search. ②Database: search PubMed, EMBASE, the Cochrane Library, CNKI (China National Knowledge Infrastructure), Wanfang database. ③Filter setting: we perform a computer search for the database with filter set in the search website, set the literature publication time (January 2000–December 2021), and the literature type (Only RCTs).

2.3. Selection of Literature Studies. After two researchers independently completed the search, the literature data were entered into EndNote X9 software for subsequent management. Duplicate files were removed by using the de-duplication function of the software. Two researchers performed manual de-duplication of the remaining literature studies again. If the first author, study site, intervention method, and number of groups were all the same, it could be considered that two literature studies were duplicated, and only one of them was retained. After de-duplication, two researchers read the title, abstract, and full text of the literature studies again, and excluded the unqualified literature studies. In case of any dispute in the process, a third person can intervene and coordinate after discussion.

2.4. Data Extraction and Conversion. After the screening of the literature studies, two researchers extracted the following data from the included literature studies: literature characteristics information (author, publication time, and study site), study object information (gender, age, and weight), intervention measure information (number of patients in groups, intervention method), and outcome information (outcome indicator). In order to facilitate subsequent meta-analysis, some data are converted, such as length of hospital stay, and some studies are converted to "*d*" in "*h*."

2.5. Risk Assessment of Literature Bias. The risk of bias of literature studies was evaluated by the Cochrane Handbook for Systematic Reviews of Intervention provided by the Cochrane Collaboration. The following 6 aspects of literature studies were evaluated: (1) randomization method; (2) blind method; (3) implementation of allocation concealment; (4) data integrity; (5) selective reporting bias; (6) other biases, which were evaluated as "low risk," "unclear," and "high risk." The Jadad score scale was used to assess the quality of the literature, with a maximum score of 5 and a score of more than 3 as excellent quality.

2.6. Statistical Methods. ①The R Version 4.1.2, released by the *R* foundation for statistical computing, was used for analysis; ②continuous indicators were reported using mean variance (MD) effect size and 95% CI, and discrete indicators (dichotomization) were reported using the risk ratio (*RR*) effect size and 95% CI, with $P < 0.05$ indicating statistical significance; ③each primary outcome indicator was analyzed; ④forest plot was used to display the effect size; ⑤I^2 analysis and Q were used to verify the heterogeneity of the literature, with $I^2 > 50\%$ or $P < 0.1$ indicating the presence of heterogeneity, random effect model was used, otherwise a

fixed effect was used. The Mantel-Haenszel model was used for OR effect size, and an inverse variance model was used for SMD effect size; ⑥if it is suggested that there is heterogeneity in the literature studies, investigate the source of heterogeneity and only make a descriptive analysis when it is impossible to judge the source of heterogeneity; Subgroup analysis was performed; ⑦sensitivity analysis was performed by eliminating the results from the literature one by one; and ⑧funnel plot was used to represent the publication bias.

3. Results

3.1. Literature Screening Process and Results. Literature selection flow chart is shown in Figure 1; 444 literature studies were initially searched. After screening, a total of 8 literature studies were included in the selection, including 635 patients who underwent urethrovesical tumor resection, including 6 English literature studies and 2 Chinese literature studies.

3.2. Basic Characteristics of Literature Studies. The basic characteristics and intervention measures, outcome indicators, and the Jadad score of the included articles are shown in Table 1, including 5 articles using the ONB inguinal approach, 3 articles using the pubic approach, 6 articles using ONB nerve electrical stimulation, and 2 articles using only ultrasound guidance.

3.3. Literature Bias Assessment. In this study, all the literature studies were RCT studies, which indicated the use of the randomization method, so there was no selection bias caused by the randomization method; however, the literature studies [14, 16, 17] did not indicate the allocation concealment, and the literature studies [16, 17] did not describe the blind method, which may cause the implementation bias. The literature studies [16, 17] also did not record the data dropout cases in detail, which may cause part of the attribution bias; there was no selective reporting or other bias, as shown in Table 2.

3.4. Meta-Analysis Results

3.4.1. Incidence of Bladder Perforation. All literature studies [10, 12, 14, 16, 17] reported an incidence of bladder perforation after SA + ONB and SA alone surgery, 238 patients were included in the SA + ONB group and 239 patients were included in the SA alone group, with no statistical heterogeneity in the literature studies ($I^2 = 0\%$, $P = 0.95$). Fixed effect model analysis was used, resulting in a pooled value ($RR = 0.24$, 95% CI (0.11, 0.53), that means the incidence of bladder perforation using SA + ONB during surgery was significantly less than that using SA alone ($Z = -3.48$, $P = 0.0005$). The patients were further divided into two subgroups according to the approach of ONB: the inguinal approach group and the pubic approach group. There was no statistical heterogeneity between the internal literature studies, as shown in Figure 2.

3.4.2. Incidence of Obturator Reflex. In the literature studies [10, 12, 14–16], the incidence of obturator reflex after SA + ONB and SA surgery was reported, 203 patients were included in the SA + ONB group and 206 patients were included in the SA alone group. There was no statistical heterogeneity in the literature studies ($I^2 = 0\%$, $P = 0.70$). The fixed effect model analysis was used to obtain the pooled value ($RR = 0.22$, 95% CI (0.13, 0.36), that means the incidence of obturator reflex using SA + ONB during surgery was significantly less than that using SA alone ($Z = -6.11$, $P < 0.0001$). The patients were further divided into two subgroups according to the approach of ONB: the inguinal approach group and the pubic approach group. There was no statistical heterogeneity between the internal literature studies, as shown in Figure 3.

3.4.3. Length of Hospital Stay (d). The literature studies [10, 16, 17] reported the length of hospital stay after SA + ONB and SA alone surgery, the unit is days (*d*), 156 patients were included in the SA + ONB group and 155 patients were included in the SA alone group, with statistical heterogeneity in the literature studies ($I^2 = 71\%$, $P = 0.03$). Random effects model analysis was used to obtain the pooled value ($MD = -1.81$, 95% CI (−2.65, −0.97), that means the length of hospital stay using SA + ONB during surgery was significantly less than that using SA ($Z = -4.24$, $P < 0.0001$), as shown in Figure 4.

3.4.4. The Tumor Recurrence Rate during Follow-Up Period. It has been reported in the literature studies [10, 11, 14, 17] in both SA + ONB and SA alone groups. 190 patients were included in the SA + ONB group and 195 patients were included in the SA alone group. There was no statistical heterogeneity in the literature studies ($I^2 = 0\%$, $P = 0.92$). The fixed effect model analysis was used to obtain the pooled value ($RR = 0.46$, 95% CI (0.29, 0.73), that means the tumor recurrence rate using SA + ONB during surgery was significantly less than that using SA alone ($Z = -3.30$, $P = 0.001$), as shown in Figure 5.

3.4.5. Heterogeneity Investigation and Sensitivity Analysis. In the meta-analysis of the incidence of bladder perforation and the incidence of obturator nerve reflex, there was no statistically significant heterogeneity in the literature studies. We tried to analyze the literature studies according to different surgical approaches, but there was still no statistically significant heterogeneity within the literature studies. We performed a sensitivity analysis using impact factors for the incidence of bladder perforation, and after sequentially excluding each study, the pooled effect size of the remaining studies did not change significantly, suggesting that the results were stable as shown in Figure 6.

3.4.6. Publication Bias Analysis. In the analysis of the incidence indicator of bladder perforation, all the 5 included literature studies were within the funnel, but the

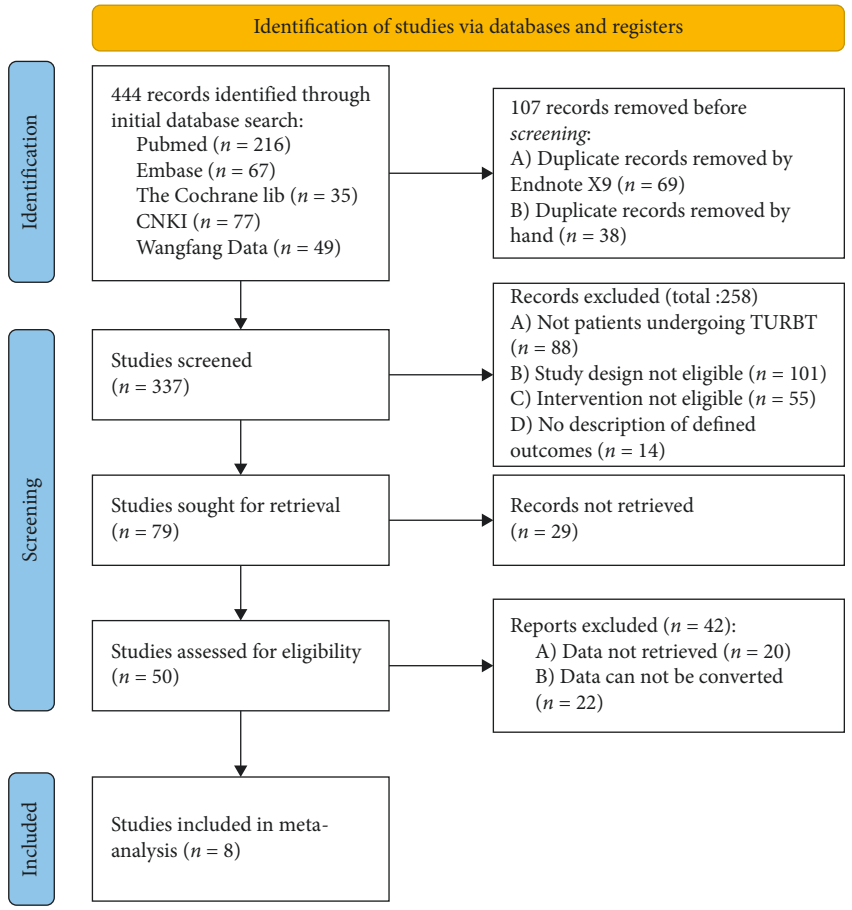

Figure 1: Literature selection flow chart.

Table 1: Basic characteristics, intervention measures, outcome indicators, and quality scores of the included literature.

Author	Year	Mean age (years)	Spinal anesthesia method	ONB anesthetic drugs and dose	Approach	Ultrasound guidance/nerve stimulator	Population (*E*/*C*)	Follow-up time (mo)	Outcome indicators	Jadad score
Doluoglu et al. [10]	2021	64.6 ± 11.7	Spinal block	1% lidocaine 10 mL	Inguen	Neurostimulation	61/62	32.3 ± 5.3	①②④⑤	4
Tekül et al. [11]	2014	65.8 ± 7.8	Spinal block	0.25% levobupivacaine 10 mL	The pubic tubercle	Neurostimulation	32/36	31.6 ± 5.9	⑤	4
Bolat et al. [12]	2015	67.7 ± 10.5	Spinal block	0.25% levobupivacaine 10 mL	The pubic tubercle	Neurostimulation	35/35	N/A	①②	4
Khorrami et al. [13]	2010	62 ± 11	Spinal block	1% lidocaine 10 mL	Inguen	Neurostimulation	30/30	N/A	⑦	4
Erbay et al. [14]	2017	69.2 (31–89)	Spinal block	1% lidocaine 10 mL	Inguen	Neurostimulation	47/49	36.3 ± 17.2	①②⑤⑥	3
Alavi et al. [15]	2017	67 (50–79)	Spinal block	1% lidocaine 10 mL	The pubic tubercle	Neurostimulation	15/15	N/A	②	4
Yu et al. [16]	2021	61.45 ± 10.36	Spinal epidural	0.5% lidocaine 10 mL	Inguen	Ultrasound guidance	45/45	N/A	①②③④	2
Wu et al. [17]	2016	62.9 (28–84)	Spinal epidural	1% lidocaine 10 mL	Inguen	Ultrasound guidance	50/48	20.71 ± 12.32	①③④⑤	2

E: intervention group, C: control group; N/A: not available; ONB: Obturator nerve block. Outcomes: ①incidence of bladder perforation; ②incidence of obturator reflex; ③indwelling time of urinary catheter; ④length of hospital stay; ⑤tumor recurrence rate during follow-up; ⑥survival rate.

Table 2: Risk of bias based on the cochrane handbook for evaluation of randomized interventions.

Study	Random sequence generation	Classification hiding	Blind method	Data integrity	Optional reporting	Other bias
Doluoglu et al. [10]	Low	Low	Low	Low	Low	Low
Tekül et al. [11]	Low	Low	Low	Low	Low	Low
Bolat et al. [12]	Low	Low	Low	Low	Low	Low
Khorrami et al. [13]	Low	Low	Low	Low	Low	Low
Erbay et al. [14]	Low	Unclear	Low	Low	Low	Low
Alavi et al. [15]	Low	Low	Low	Low	Low	Low
Yu et al. [16]	Low	Unclear	Unclear	Unclear	Low	Low
Wu et al. [17]	Low	Unclear	Unclear	Unclear	Low	Low

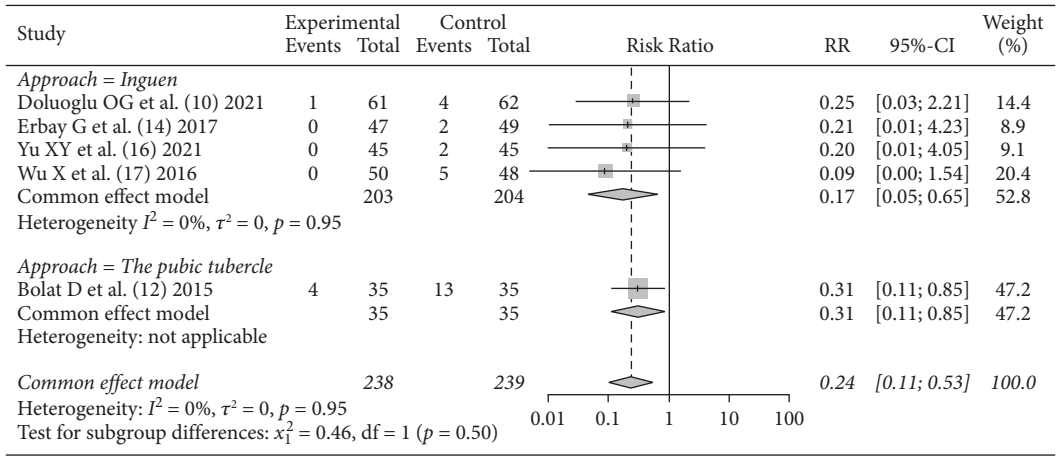

Figure 2: Comparison of the incidence of bladder perforation between SA + ONB and SA alone in TURBT.

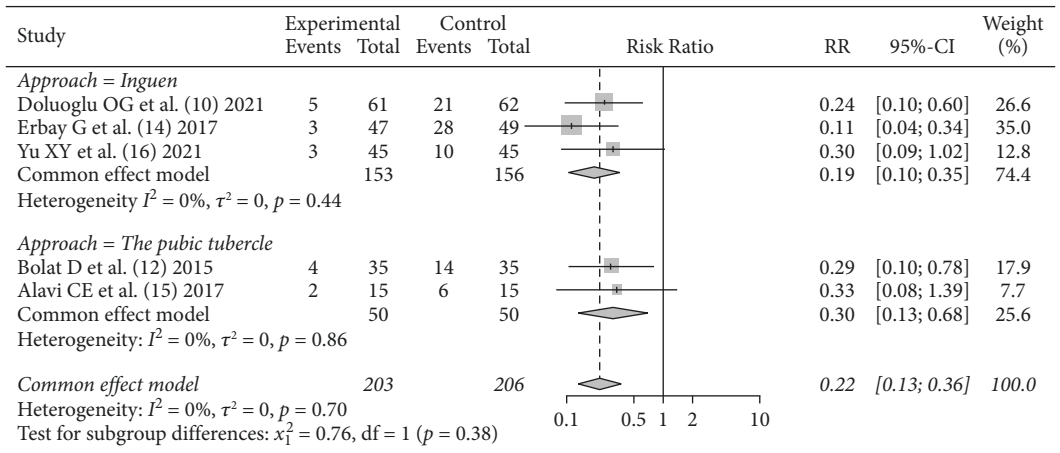

Figure 3: Comparison of the incidence of obturator nerve reflex between SA + ONB and SA alone in TURBT.

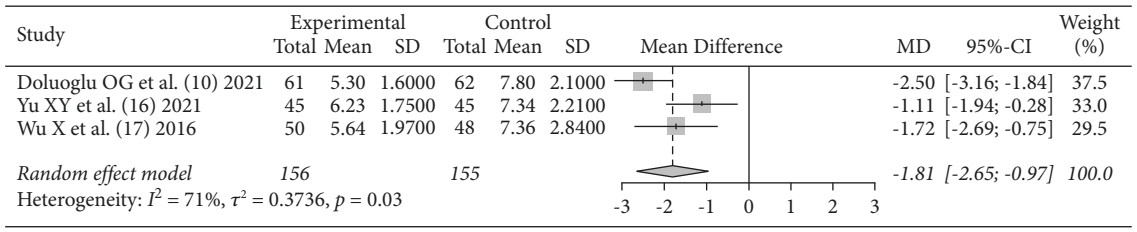

Figure 4: Comparison of hospital stay after TURBT between SA + ONB and SA alone.

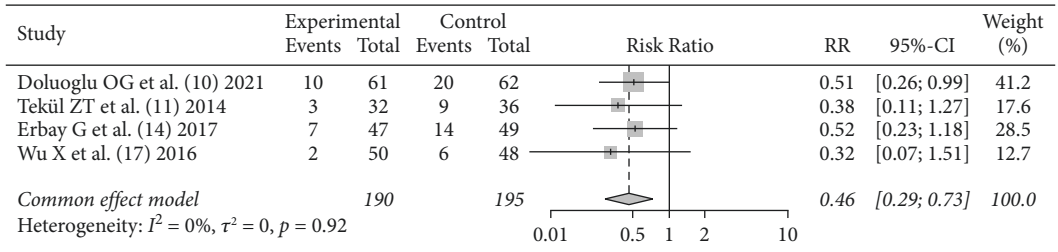

Figure 5: Comparison of tumor recurrence rate after TURBT between SA + ONB and SA alone.

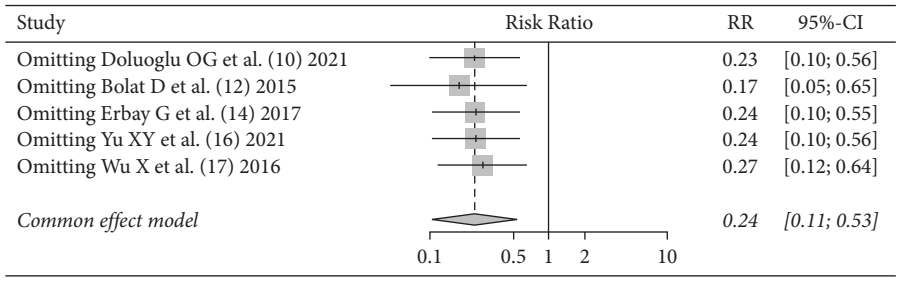

Figure 6: Sensitivity analysis of incidence indicators of bladder perforation.

left and right sides were not evenly distributed, suggesting that there was a small publication bias, as shown in Figure 7.

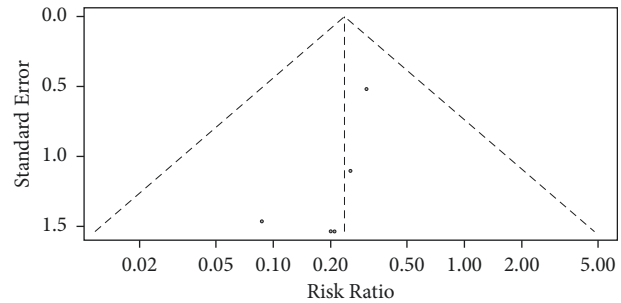

Figure 7: Funnel plot analysis of incidence indicators of bladder perforation.

4. Discussion

Anatomically, the obturator nerve arises from the anterior thigh of the anterior branch of *L2–L4* and enters the minor pelvis after the medial border of the psoas muscle comes out; it progresses along the lateral wall of the minor pelvis and protrudes from the obturator canal from the minor pelvis to the thigh, dividing the anterior and posterior branches, and enters the thigh adductor muscle group through the anterior and posterior adductor brevis muscles; during the course of the obturator nerve, it abuts the bladder neck, lateral bladder wall, and prostatic urethra [18]. Therefore, when TURBT is performed in patients with lateral bladder wall tumors, obturator nerve reflexes often occur due to induced current stimulating the adjacent obturator nerve, which causes involuntary spasms or even sudden and intense movement of the thigh adductor muscle, resulting in bladder perforation, massive hemorrhage, abdominal organ injury, and extravesical spread of the tumor [19]. In previous practice, general anesthesia was applied to control the obturator nerve reflex, but general anesthesia could not be applied to older patients. Therefore, spinal anesthesia has been more widely used in TURBT, but spinal anesthesia cannot completely prevent the obturator nerve reflex [20]. Muscle relaxants are another method to control the obturator nerve reflex, but the timing, dosing interval, and dose of muscle relaxant are not well controlled [21]. Obturator nerve block, which is found to help prevent obturator nerve reflex, has received increasing attention and become another option [22].

In this meta-analysis, a total of 8 controlled clinical studies published in recent years were retrieved, with 635 patients undergoing TURBT. The results showed that the use of SA combined with ONB anesthesia could effectively reduce the incidence of obturator nerve reflex, reduce the incidence of bladder perforation, shorten the length of hospital stay, and reduce the tumor recurrence rate, which revealed that SA combined with ONB had more advantages than SA anesthesia alone. Ultrasound-guided obturator nerve block can reduce intraoperative obturator nerve reflex, make the operation more calm and accurate, do not have to worry about obturator nerve reflex and reduce the extent and depth of resection and electrocautery, which is also conducive to reducing intraoperative blood loss, preventing the occurrence of bladder perforation, and also reducing the obstacles of electrocoagulation hemostasis, so that hemostasis is more sufficient, which helps to shorten the postoperative hospital stay of patients [23]. In addition, when bladder tumor resection is performed, because the surgeon is excessively worried about the occurrence of obturator nerve reflex, it may lead to incomplete tumor resection, which leads to tumor recurrence, while obturator nerve block can reduce tumor recurrence [24].

In the literature [16], the study compared the changes of serum TNF-α, IL-6, and IL-8 levels between the two groups after TURBT surgery, and the results showed that the serum TNF-α, IL-6, and IL-8 levels were increased in both groups after surgery, but the observation group was lower than the control group, which indicated that SA combined with ONB could reduce the trauma during surgery, reduce the inflammatory stress response, and facilitate postoperative recovery. However, because only serum inflammatory parameters have been reported in the literature [16], we did not conduct a pooled analysis of this indicator.

Although there was no heterogeneity in the literature studies in the analysis process, we still performed a subgroup analysis, and the transinguinal approach showed a significant difference from the transphobic approach. In obturator nerve block, the pubic puncture approach has disadvantages such as large needle insertion depth and a large dose of anesthetic drugs, on the contrary, the inguinal approach has advantages such as superficial needle insertion and mild puncture pain [25], therefore, the safety of the transinguinal approach is better, but the comparison of the two approaches still needs to be confirmed by more clinical controlled studies.

Among the 8 literature studies included in this study, 2 literature studies used ultrasound-guided nerve stimulation while the other 6 literature studies used nerve electrical stimulation. A meta-analysis study [26] concluded that both techniques were safe in the implementation of ONB. However, using nerve stimulation as an auxiliary means would be more accurate in the localization, faster in the onset of block, and higher in the success rate.

This study still has some limitations, which are reflected in: ①the number of included literature studies is small, the number of patients participating is still small, and there is a lack of multicenter, large-sample size randomized controlled trials; ②some literature studies do not describe the allocation concealment, do not describe the blind method, do not count the dropout cases, and there may be certain bias; and ③the effectiveness of ONB is affected by a variety of factors, such as puncture approach, ultrasound technology, the use of anesthetic drug dose, and the selection of current intensity, but there are too few included studies to compare a variety of groups.

5. Conclusion

In summary, the application of spinal anesthesia combined with obturator nerve block in TURBT surgery can effectively reduce the incidence of obturator nerve reflex, reduce the incidence of bladder perforation, shorten the hospital stay, and reduce the tumor recurrence rate, but more high-quality, multicenter, large-sample randomized controlled studies need to be included in clinical practice to provide stronger evidence.

Data Availability

The data can be obtained from the author upon reasonable request.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

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Retraction

Retracted: Improvement Effect of PERMA Model-Based Nursing Intervention plus Music Therapy on Patients with Acute Liver Failure Undergoing Plasma Exchange Therapy

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] J. Wang and W. Li, "Improvement Effect of PERMA Model-Based Nursing Intervention plus Music Therapy on Patients with Acute Liver Failure Undergoing Plasma Exchange Therapy," *Emergency Medicine International*, vol. 2022, Article ID 2485056, 8 pages, 2022.

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Research Article

Improvement Effect of PERMA Model-Based Nursing Intervention plus Music Therapy on Patients with Acute Liver Failure Undergoing Plasma Exchange Therapy

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Objective. To explore the improvement effect of PERMA model-based nursing intervention plus music therapy (MT) on patients with acute liver failure (AHF) undergoing plasma exchange therapy (PET). *Methods*. This research included 100 AHF patients treated with PET in our hospital, between January 2020 and December 2021, including 54 cases receiving PERMA model-based nursing intervention plus MT (observation group, OG) and 46 cases receiving routine nursing (control group, CG). Clinical efficacy and liver function (LF) were compared between the groups. Prenursing and postnursing psychology, treatment compliance, sleep, pain, and quality of life were assessed, and patient satisfaction was investigated at discharge. *Results*. The postnursing overall efficacy showed no evident difference between the groups ($P > 0.05$). The clinical efficacy was mainly markedly significant (50.00%) in OG and effective (43.48%) in CG. The overall response rate was not statistically different between groups ($\chi^2 = 1.392$, $P > 0.05$). OG presented better LF, treatment compliance, and sleep quality after nursing, with milder negative emotions and pain than CG ($P < 0.05$). A higher patient satisfaction rate was also determined in OG at discharge ($P < 0.05$). *Conclusions*. PERMA model-based nursing intervention plus MT can effectively improve the psychological state, treatment compliance, and quality of life of AHF patients with PET and reduce pain sensation, which has promising clinical application value in the future.

1. Introduction

Acute liver failure (AHF), as a critical manifestation of liver diseases, is mainly attributed to virus infection, poisoning, inherited metabolic disorders, and tissue ischemia-hypoxia injury, but the specific pathogenesis remains to be defined [1, 2]. AHF mostly occurs in middle-aged and elderly people, with a global incidence of about 2–5/10000 and an obvious upward trend in recent years [3]. It has an extremely high mortality rate, with approximately 50–60% of patients dying as a result of missing the best time for emergency treatment [4]. Therefore, clinical efforts have been devoted to exploring new diagnosis and treatment schemes for AHF to ensure the life safety of AHF patients, but no breakthrough has been made yet [5]. In addition, due to the characteristics of acute and fast onset, rapid progression, great changes, and poor prognosis of AHF patients generally show negative emotions such as anxiety and depression and low confidence in treatment, resulting in their resistance and suspicion towards medical staff [6]. Conventional nursing is usually centered on patients' symptoms, ignoring their psychological concerns, and nursing services under this model are limited to the hospital, lacking effective continuity and timeliness, which has a significant impact on the final treatment outcome and prognosis of patients [7]. Targeted and personalized nursing measures, on the other hand, are

shown to effectively improve the clinical effect of plasma exchange therapy (PET) in AHF patients [8]. However, due to the lack of authoritative clinical norms and guidelines, there is still considerable controversy on how to implement targeted nursing measures.

The PERMA model is a new nursing concept put forward by Martin Seligman, a famous psychologist. Its core lies in relieving patients' psychological state from five angles: positive motion, engagement, relationship, meaning, and accomplishment [9]. Music therapy is a systematic interventional process in which the therapist utilizes various forms of musical experience, and the therapeutic relationship is developed during the course of therapy as a therapeutic motivator to help the treated person achieve healthy goals. Today, the PERMA model-based nursing concept has been gradually popularized in clinical practice, and excellent results have been achieved in the treatment of lung cancer, posttraumatic stress disorder, and other diseases [10, 11]. But its application effect in AHF is still unclear. Since 2020, nursing services based on the PERMA model have been popularized in our hospital. Therefore, this study explores the impact of PERMA model-based nursing plus music therapy intervention on AHF patients undergoing PET, laying a foundation for subsequent nursing service research of AHF and providing new reference for future clinical treatment of AHF.

2. Data and Methods

2.1. Patient Data. A retrospective analysis was conducted on 100 AHF patients with PET in our hospital between January 2020 and December 2021. Of them, 54 cases receiving PERMA model-based psychological intervention plus music therapy (MT) were regarded as the observation group (OG) and the other 46 cases receiving routine nursing were set as the control group (CG).

2.2. Eligibility Criteria. The included patients (age >18) all met the diagnostic criteria of AHF [12] and the indications of PET, with PET in our hospital after admission, complete clinical data, and clear consciousness. Those meeting any of the following criteria were excluded: liver transplantation; AHF caused by drugs and alcohol; dysfunction and disorders of other organs, tumors, or chronic cardio-cerebrovascular diseases; pregnant or lactating patients; referrals; death during treatment.

3. Methods

3.1. Treatment Scheme. After admission, all patients received symptomatic treatments such as liver preservation, acid inhibition, blood ammonia lowering, and antiviral and antifibrosis therapy. Besides, PET was performed once daily (P2asauto-IQ plasma machine and OP-08W plasma separator) with a plasma exchange flow of 2500–3000 mL and a flow rate of 20–30 mL/min for 2-3 hours.

3.2. Routine Nursing. CG received routine nursing care, which included the following: the disinfection and isolation system was strictly implemented, and patients' illness, vital signs, and general conditions were closely observed to provide reliable information to doctors in a timely manner. Close attention was paid to the occurrence of coma, hematemesis, hematochezia, deepening jaundice, etc. In addition, patients were advised to eat more digestible foods such as high fiber, high protein, and high vitamins to keep stool unobstructed, and sodium intake and water were restricted. Furthermore, patients were given antiviral, liver-protecting, and enzyme-lowering drugs as prescribed by the doctor, as well as intravenous albumin supplementation, oral diuretics, and other drugs to relieve ascites. Adverse drug reactions were closely watched to prevent complications.

3.3. PERMA Model-Based Nursing Intervention. PERMA model is a new happiness model composed of five elements: positive emotions (P), engagement (E), positive relationships (m), meaning (m), and achievement (a). After routine care, PERMA model-based psychological intervention combined with MT was performed on patients in the OG group. (1) Nurses actively communicated with patients to understand their different psychological characteristics and encouraged and induced them to tell their confusion about diseases or psychological problems. Besides, patients were introduced to the disease-related knowledge, chemotherapy principles, etc., and successful cases were told to improve their enthusiasm for treatment. (2) The nursing staff communicated with each patient to understand whether there was an irrational belief, and if so, they asked the basis and reason for its occurrence, explained the irrationality of the occurrence, and guided the patient to establish a correct, positive, and rational belief. (3) The benefits of gratitude were explained to patients, who were encouraged to find the events that made them feel happy. Before going to bed every day, patients were guided to recall whether they met people who helped them during hospitalization and were encouraged to express their gratitude towards them. (4) The nursing staff also paid attention to cultivating patients' positive thinking and deepened their positive attitude towards treatment and life. Nurses encouraged patients to use positive language to adjust their emotions and praised and encouraged those with positive emotional performance. (5) Nurses organized and carried out suitable communication activities such as reading books and playing chess, in combination with the different interests of patients. (6) Patients were guided to communicate more with fellow patients and medical staff to cultivate good interpersonal relationships. (7) The nursing staff guided the patients to establish correct values of life, making them realize that each individual has independence and particularity and that they can realize the value of life without comparing with others and growing up in difficulties. In addition, patients were encouraged to do more of what they are good at, so that they can have a sense of accomplishment in life.

3.4. MT. Combining with references, the principle of pentatonic therapy and music tonality, we worked out music repertoire suitable for the treatment of renal function injury and established a music library, covering religious music, world famous music, Chinese classic folk music, etc. Then, each patient was equipped with an MP3 for single use and was assisted by the nursing staff to play and listen to the music from 19 : 00 to 20 : 00 every day, with the volume controlled at 30–40 decibels, 30 min each time, lasting for 4 weeks. Before MT, the nursing staff informed patients of the principle of MT, asked them about their music preferences, and played the music in a loop. When playing music, the ward was kept quiet and the light was dim. Patients were asked to close their eyes in a sleeping position and breathe slowly along with the rhythm of music, focusing their senses on hearing.

3.5. Liver Function (LF) Test. Before and after 4 weeks of treatment, 4 mL of fasting venous blood was collected from patients in the morning to detect liver function (alanine aminotransferase, ALT; aspartate aminotransferase, AST; total bilirubin, TBiL) and was used in conjunction with an automatic biochemical analyzer.

3.6. Evaluation Criteria. Clinical efficacy: markedly effective referred to basic disappearance of clinical symptoms and TBiL reduction by more than 50%. Effective was indicated if clinical symptoms were already improved and TBiL was reduced by 30–50%. Noncompliance with the above standards was considered ineffective. Overall response rate = (markedly effective + effective) cases/total cases × 100%. Patients' psychological states were assessed using the Self-Rating Anxiety/Depression Scale (SAS/SDS) [13]. Treatment compliance assessment was made with the Herth Hope Scale (HHS) [14] from three dimensions, attitude, action, and relationship, with a perfect score of 16 for each item and a total score of 48. Sleep quality and pain severity were evaluated by PSQI [15] and VAS [16], respectively. Quality of life (QOL) assessment used the EORTC QLQ-C30 [17], which included three domain scores (functional, symptom, and global health status scales) and a single item score. Scores on the scale were positively associated with the disease or state. When patients were discharged, an anonymous satisfaction survey was conducted, with 10 being very satisfied, 7–9 satisfied, 4–6 needing improvement, and 1–3 dissatisfied. Satisfaction rates (%) = (very satisfied + satisfied)/total × 100%.

3.7. Statistical Processing. Statistical analysis was made by SPSS23.0. A Chi-square test was used for intergroup comparisons of count data denoted by (%) or (n (%)). The independent sample t-test was used for intergroup comparisons of measurement data expressed by $(\bar{\chi} \pm s)$, and ANOVA and LSD post hoc test were used for multigroup comparisons. Differences were assumed significant when $P < 0.05$.

4. Results

4.1. Comparison of Clinical Baseline Data. In order to ensure the reliability of the experimental results, we compared the baseline data such as age, sex, and BMI and found no significant difference between groups ($P > 0.05$), indicating that the two cohorts were comparable, as shown in Table 1.

4.2. Comparison of Overall Efficacy. The postnursing overall efficacy showed no evident difference between groups ($P > 0.05$). The clinical efficacy was mainly markedly significant (50.00%) in OG and effective (43.48%) in CG, as shown in Table 2.

4.3. Comparison of LF. AST, ALT, and TBiL levels in the two groups had no significant difference before nursing intervention ($P > 0.05$) but decreased after nursing. Their postnursing levels were lower in OG than in CG ($P < 0.05$), indicating better LF in OG after nursing, as shown in Figure 1.

4.4. Comparison of Psychological States. SAS and SDS scores also presented no distinct differences between the groups before nursing intervention ($P < 0.05$), but after nursing, both scores decreased in OG while only SAS score decreased in CG ($P < 0.05$). The postnursing SAS and SDS scores were lower in OG than in CG ($P < 0.05$), suggesting a better psychological state in OG after nursing, as shown in Figure 2.

4.5. Comparison of Treatment Compliance. HHS evaluation results showed no difference between OG and CG before nursing intervention ($P > 0.05$). However, an increase in the score was observed in both cohorts after nursing ($P > 0.05$), and the scores of attitude, action, relationship, and the total score were higher in OG than in CG ($P < 0.05$). It shows that the patients in OG have higher treatment compliance, as shown in Figure 3.

4.6. Comparison of Sleep Quality and Pain Severity. PSQI and VAS scores differed insignificantly between OG and CG before nursing ($P < 0.05$). The two scores decreased after nursing and were lower in OG than in CG ($P < 0.05$). It can be seen that OG has better sleep quality and lighter pain sensation after nursing, as shown in Figure 4.

4.7. Comparison of QOL. The EORTC QLQ-C30 score was not evidently different between groups before nursing intervention ($P > 0.05$). The scores of functional scale and overall health status scale increased after nursing, and OG was higher than CG ($P < 0.05$); when the score of symptom scale and single item decreased, OG was lower than CG ($P < 0.05$), as shown in Figure 5.

Table 1: Comparison of clinical baseline data.

	Age	BMI	Gender Male/female	Smoking Yes/no	Drinking Yes/no	History of chronic liver disease Have/none	Disease stage Early/mid-term/late
OG ($n = 54$)	56.02 ± 5.76	21.82 ± 2.73	34/20	27/27	24/30	35/19	26/21/7
CG ($n = 46$)	54.98 ± 7.55	21.50 ± 3.04	30/16	25/21	19/27	28/18	23/17/6
t or χ^2	0.780	0.554	0.055	0.188	0.100	0.166	0.042
P	0.437	0.581	0.815	0.665	0.752	0.684	0.979

Table 2: Clinical efficacy of two groups of patients (n (%)).

	Markedly effective	Effective	Ineffective	Overall response rate (%)
OG ($n = 54$)	27 (50.00)	21 (38.89)	6 (11.11)	88.89
CG ($n = 46$)	17 (36.96)	20 (43.48)	9 (19.57)	80.43
χ^2	—	—	—	1.392
P	—	—	—	0.238

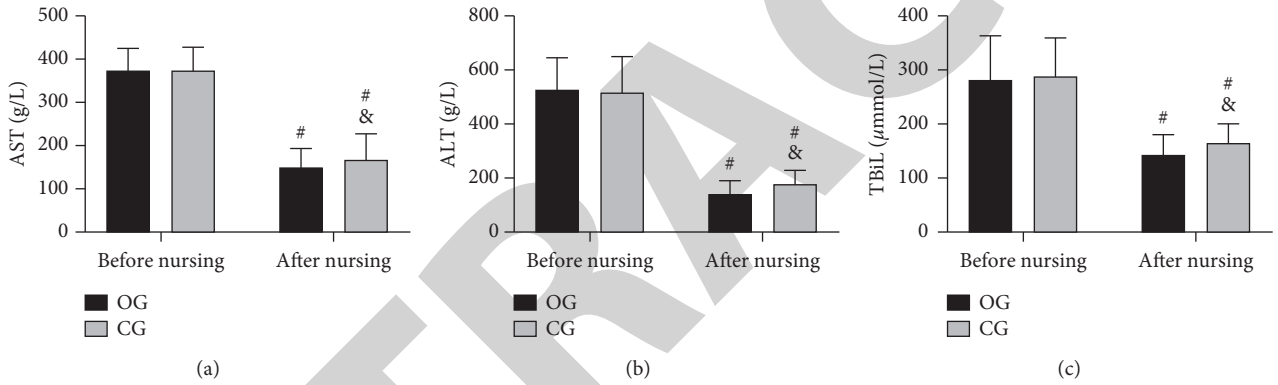

Figure 1: Comparison of liver function. (a) AST of the two groups before and after nursing. (b) ALT of the two groups before and after nursing. (c) TBiL of the two groups before and after nursing. Compared with before nursing, $^{\#}P < 0.05$. Compared with OG, $^{\&}P < 0.05$.

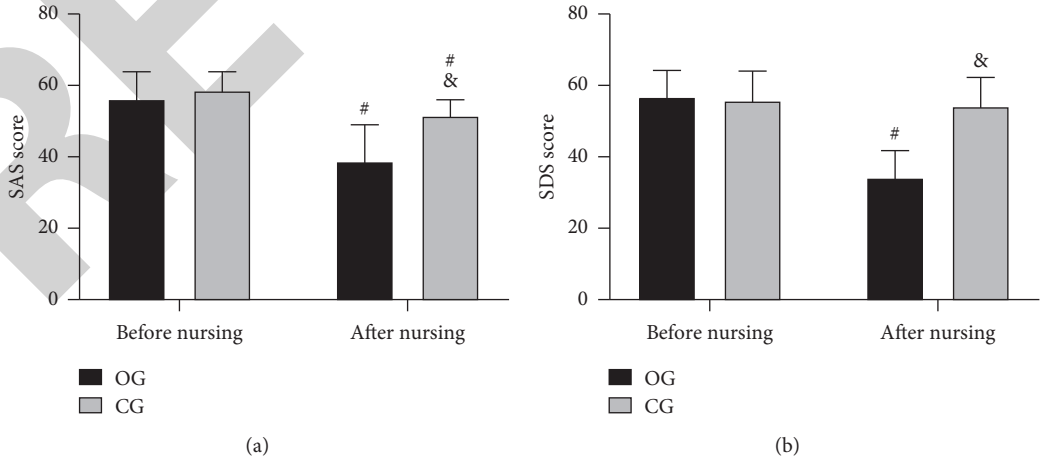

Figure 2: Comparison of mental states. (a) SAS scores of the two groups before and after nursing. (b) SDS scores of the two groups before and after nursing. Compared with before nursing, $^{\#}P < 0.05$. Compared with OG, $^{\&}P < 0.05$.

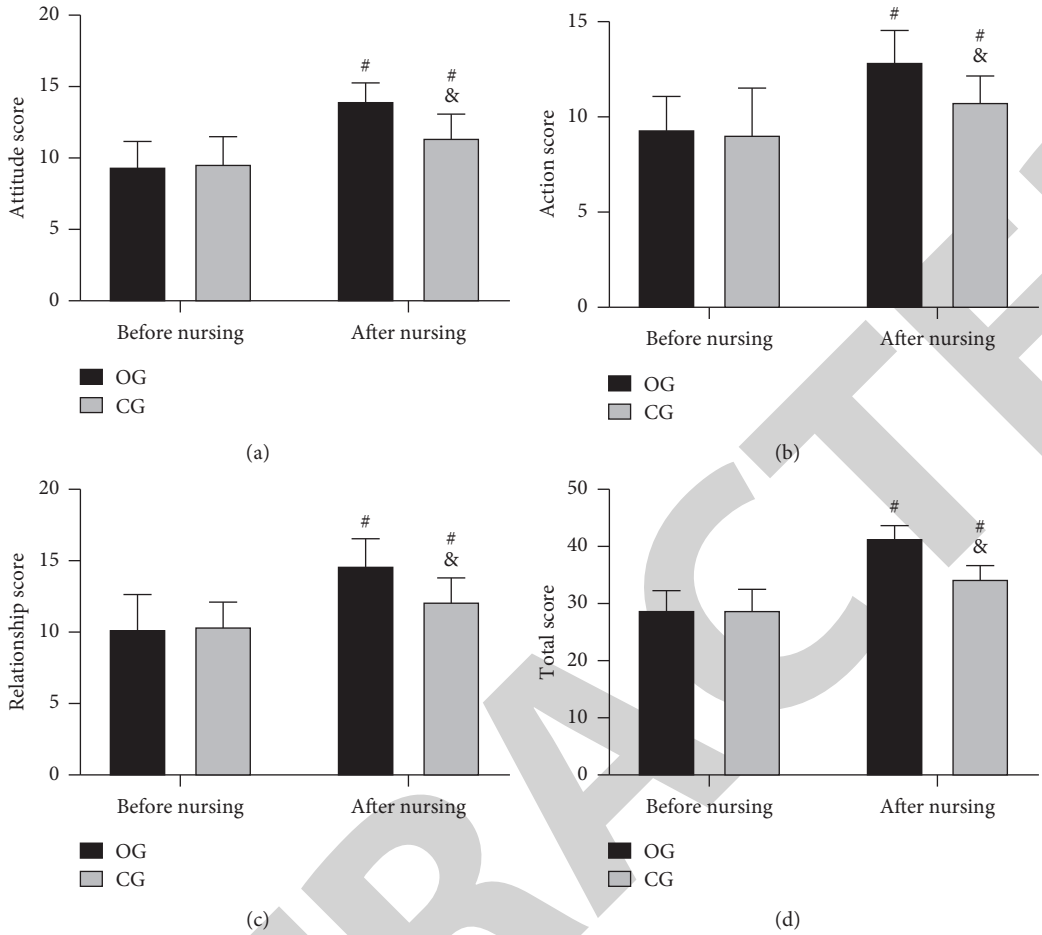

Figure 3: Comparison of treatment compliance. (a) Attitude score before and after nursing. (b) Action score before and after nursing. (c) Relationship score before and after nursing. (d) Total score before and after nursing. Compared with before nursing, $^{\#}P < 0.05$. Compared with OG, $^{\&}P < 0.05$.

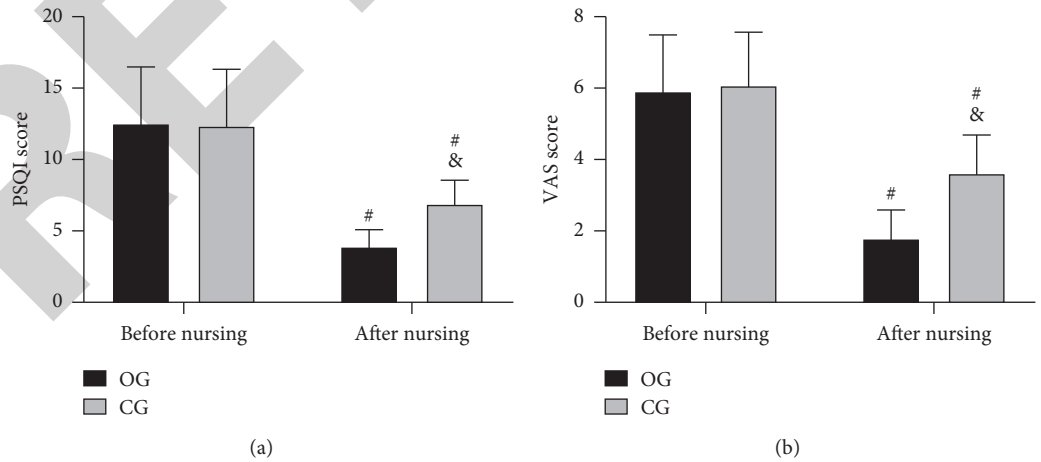

Figure 4: Comparison of sleep quality and pain severity. (a) PSQI scores of the two groups before and after nursing. (b) VAS scores of the two groups before and after nursing. Compared with before nursing, $^{\#}P < 0.05$. Compared with OG, $^{\&}P < 0.05$.

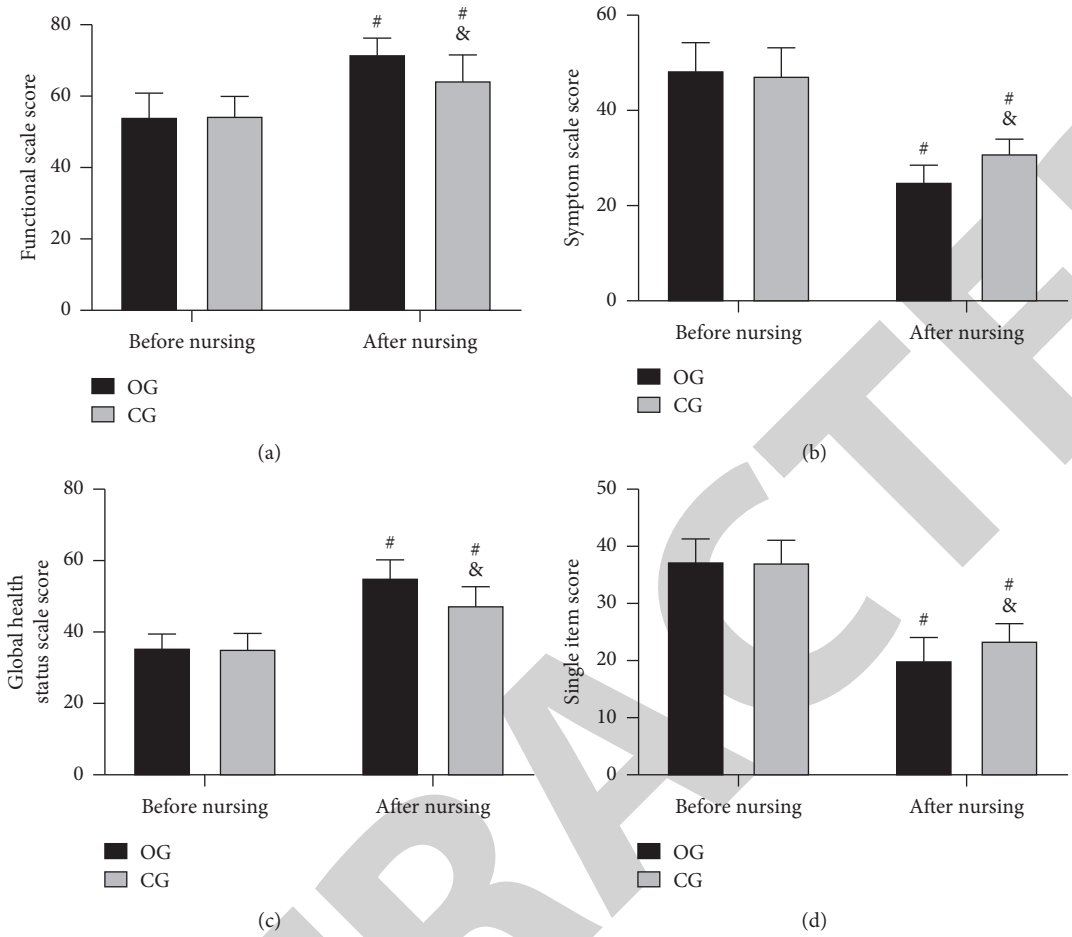

Figure 5: Comparison of quality of life. (a) Functional scale scores of the two groups before and after nursing. (b) Symptom scale scores of the two groups before and after nursing. (c) Global health status scale scores of the two groups before and after nursing. (d) Single item scores of the two groups before and after nursing. Compared with before nursing, $^{\#}P < 0.05$. Compared with OG, $^{\&}P < 0.05$.

4.8. Comparison of Treatment Satisfaction. The treatment satisfaction rates in OG and CG were 94.44% and 65.22%, respectively. The intergroup comparison revealed a higher treatment satisfaction rate in OG versus CG ($P < 0.05$), as shown in Table 3.

5. Discussion

Personalized nursing intervention has now achieved excellent application results in the treatment of various diseases [18], but at present, there is still a lack of reliable reference research on PRT for AHF patients. As a new concept of modern nursing service, PERMA-based nursing models have excellent effects in improving patients' psychological state, treatment compliance, doctor-patient relationship, and many other aspects [19]. However, MT, a modern nursing service model, is extremely suitable for patients with great pain in the treatment process [20]. Therefore, this study has huge reference significance for clinical practice by studying the application effect of PERMA model-based nursing intervention plus MT in AHF patients with PET.

We first made an intergroup comparison regarding the overall clinical efficacy and found no significant difference between groups. However, patients in OG were mainly markedly effective and effective in CG, which shows that PERMA model-based nursing plus MT can improve the therapeutic effect of PET to a certain extent. At the same time, it may also be the contingency caused by the small number of cases included in this study, for which we will incorporate more case data for confirmation, as soon as possible. The subsequent comparison of LF showed better LF improvement in OG, which verifies our point of view and shows that PERMA model-based nursing plus MT can improve patients' LF. In the intergroup comparisons of psychological states, treatment compliance, sleep quality, and pain severity, we found better scores in OG compared with those in CG, suggesting that PERMA model-based nursing plus MT has excellent potential application results in AHF patients with PET. We believe that the PERMA model takes the patients' perception of well-being as the core concept to provide them with more meaningful nursing programs, such as improving patients' positive cognition, correcting irrational beliefs, and cultivating gratitude during the treatment process, so that patients have a gratitude and positive attitude, treat diseases and treatment contents correctly, have confidence in overcoming diseases, and can

Table 3: Comparison of treatment satisfaction (n (%)).

	Very satisfied	Satisfied	Needing improvement	Dissatisfied	Satisfaction rates (%)
OG ($n = 54$)	34 (62.96)	17 (31.48)	3 (5.56)	0 (0.0)	94.44
CG ($n = 46$)	13 (28.26)	17 (36.96)	9 (19.57)	7 (15.22)	65.22
χ^2	—	—	—	—	13.790
P	—	—	—	—	<0.001

eliminate bad psychological emotions from multiple ways [21]. Secondly, combining patients' interests and hobbies to carry out activities can distract patients' attention, and cultivating interpersonal relationships can enhance their sense of social support, which is also extremely conducive to venting patients' bad emotions [22]. And in the implementation of PERMA model-based nursing, nursing staff can also have a deeper understanding of the psychological and emotional changes of patients, so as to provide better nursing services for patients.

MT is a common clinical intervention, which can effectively integrate the treatment experience of physics, music aesthetics, psychology, medicine, and other disciplines. Through psychological and physical effects, it directly affects the brainstem reticular structure, central hypothalamus, and limbic system, coordinates the left and right hemispheres of the brain, and stimulates the pituitary gland to produce endorphins, thus relieving pain and adverse emotions [23]. Through MT, individuals can achieve emotional, psychological, and physiological integration in the process of disease treatment and influence the physiological rhythm of the body via the unique frequency and physical characteristics of music through artistic appeal, so as to play a therapeutic role at spiritual and psychological levels [24]. Furthermore, previous studies have pointed out that music can reduce muscle tension, distract attention, influence the opening and closing state of gates, and regulate the transmission of noxious impulses through interactive inhibition of competitive stimuli, thus relieving pain [25]. Musical activities (including singing, musical instrument playing, and writing) are themselves a kind of social interaction activities, in which they learn and improve their interpersonal skills, language skills, correct social behavior, self-restraint in behavior, cooperation with others, and competence and improve self-confidence and self-evaluation. Music has a great influence on people's emotions. As far as common sense is concerned, when a person is in a good mood, he or she often sees the positive aspects of things, and when he or she is in a bad mood, he or she only sees the negative aspects of things. Music therapists make use of the huge influence of music on emotions and use music to change people's emotions and ultimately change people's cognition. Moreover, under the beautiful and relaxed melody of music, it is easier to guide patients into a relaxed and pleasant situation, divert their attention away from the disease, relieve tension, and assist doctors and patients to establish more effective communication, which is conducive to the smooth development of nursing work. This point of view can also be verified by the comparison of patients' QOL between the two groups, and the improvement of treatment satisfaction in OG once again demonstrates the application prospect of PERMA model-based nursing plus MT in future management of AHF patients with PET.

In the follow-up study, we need to include more research subjects, extend the research period to obtain more comprehensive experimental results, and launch a more in-depth analysis in terms of the application of PERMA model-based nursing intervention plus MT in AHF. Besides, we will compare PERMA model-based nursing intervention plus MT with other forms of personalized nursing services, so as to further validate its clinical efficacy.

6. Conclusion

PERMA model-based nursing plus MT can validly improve the psychological state, treatment compliance, and QOL of AHF patients with PET and reduce patients' pain sensation, which has high clinical application value in the future.

Data Availability

The data can be obtained from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Acknowledgments

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Retraction

Retracted: Clinical Characteristics of Metastatic Colorectal Cancer Combined with Gastrointestinal Perforation and Prognostic Value of Circulating Tumor DNA

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Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

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(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] H. Yang, D. Rong, and W. Yang, "Clinical Characteristics of Metastatic Colorectal Cancer Combined with Gastrointestinal Perforation and Prognostic Value of Circulating Tumor DNA," *Emergency Medicine International*, vol. 2022, Article ID 6989583, 5 pages, 2022.

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Research Article

Clinical Characteristics of Metastatic Colorectal Cancer Combined with Gastrointestinal Perforation and Prognostic Value of Circulating Tumor DNA

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Objective. To explore the clinical characteristics of metastatic colorectal cancer combined with gastrointestinal perforation and the prognostic value of circulating tumor DNA (ctDNA). *Methods*. A total of 97 patients with metastatic colorectal cancer and gastrointestinal perforation were enrolled as the research objects between February 2016 and January 2019. Their clinicopathological characteristics were statistically analyzed. Patients were divided into the death group ($n = 78$) and the survival group ($n = 19$) according to their survival status at 3 years after surgery. The ctDNA level between the two groups was compared. Also, its evaluation value on patient prognosis was analyzed. The survival time in patients with different levels of ctDNA was compared. *Results*. The clinical staging was stage T4 in patients with metastatic colorectal cancer combined with gastrointestinal perforation, including 70 cases (72.16%) aged ≥60 years and 27 cases (27.84%) <60 years. There were 61 males (62.89%) and 36 females (37.11%). There were 27 cases (27.84%) with primary site at left colon, 59 cases (60.82%) at right colon and 11 cases (11.34%) at rectum. There were 56 cases (57.73%) with number of metastatic organs ≥2 and 41 cases (42.27%) <2. There were 58 cases (59.79%) treated with VEGF inhibitor before perforation, 40 cases (41.24%) with lung metastasis, 72 cases (74.23%) with liver metastasis, 30 cases (30.93%) with pelvic metastasis, 24 cases (24.74%) with distant lymph node metastasis, 56 cases (57.73%) with obstruction, and 35 cases (36.08%) with diverticulum. According to survival status at 3 years after after surgery, patients were divided into the death group ($n = 78$) and the survival group ($n = 19$). The level of plasma ctDNA in the death group was higher than that in the survival group ($P < 0.05$). The area under curve (AUC) of ctDNA for predicting survival of patients was 0.806. According to ctDNA expression, patients were divided into the high expression group ($n = 57$) and the low expression group ($n = 40$). The survival rate in the high expression group was lower than that in the low expression group (7.02% (4/57) *vs* 36.38% (15/40)) ($P < 0.001$). The median survival time for the two groups was 18.20 and 28.10 months, respectively. *Conclusion*. Clinical characteristics of metastatic colorectal cancer combined with gastrointestinal perforation include elderly age, obstruction, and diverticulum. The expression of ctDNA has evaluation value for prognosis of patients.

1. Introduction

Metastatic colorectal cancer refers to the tumor cells of colorectal cancer invaded from the primary site to lymphatic vessels and blood vessels, or brought to other tissues and organs by other means, forming the same type of tumor as the primary site tumor [1]. Its prognosis is poor, and it is now believed that tumor invasion and metastasis are the main causes of death in patients with colorectal cancer. Metastatic colorectal cancer combined with gastrointestinal perforation is one of the common clinical emergency abdominal conditions associated with malignancy, which will increase the risk of colorectal peritoneal metastasis (CPM), and can rapidly develop into serious complications such as

peritonitis and infectious shock, increasing perioperative mortality. Therefore, metastatic colorectal cancer combined with gastrointestinal perforation should be treated clinically with aggressive surgical intervention, but the recurrence rate after surgery is still as high as 56.5% [2], and patients still need to continue adjuvant chemotherapy after surgery in order to reduce the risk of recurrence. Circulating tumor DNA (ctDNA) is a small fragment of gene released from solid lesions into the circulation system, mainly derived from tumor metabolism, and the genomic information carried by it is highly consistent with tumor tissue [3]. Relevant studies have pointed out that ctDNA detection can more accurately reflect the epigenetics of tumor-related genes, and then can be used to track the occurrence and development of tumors in the body [4]. At present, many clinical studies [5, 6] have shown that it can be used in the prognostic evaluation of various tumors. However, few studies have been reported on the prognostic evaluation value of ctDNA testing for metastatic colorectal cancer combined with gastrointestinal perforation. Therefore, this study aimed to explore the clinical features of metastatic colorectal cancer complicated with gastrointestinal perforation and the value of ctDNA in evaluating the prognosis of patients so as to provide a reference for the prognostic evaluation of the disease.

2. Materials and Methods

2.1. Clinical Data. 97 patients with metastatic colorectal cancer complicated with gastrointestinal perforation from February 2016 to January 2019 were selected as the research objects. Inclusion criteria are as follows: (1) meet the diagnostic criteria for metastatic colorectal cancer complicated with gastrointestinal perforation [7], and it is pathologically confirmed to be metastatic colorectal cancer; (2) age ≥ 18 years old; (3) normal organ function; (4) voluntary participation in this study after informed consent; (5) those without contraindications to chemotherapy. Exclusion criteria are as follows: (1) patients with neuroendocrine carcinoma and other special types of tumor diseases; (2) patients who died of nondisease causes; (3) patients with other primary malignant tumor diseases; (4) patients with gastrointestinal perforation caused by other reasons; (5) patients with severe blood diseases; (6) pregnant women; (7) those who could not complete the follow-up; (8) those with ineligible or uncollectable baseline plasma specimens.

3. Methods

Collection of clinical data: it used the hospital information system to query the clinical data of the patients, such as age, gender, primary site of the lesion, and treatment with VEGF inhibitor before perforation.

Detection of ctDNA level: 3 ml of fasting venous blood was taken from the patients 1 day before surgery. After anticoagulation treatment, centrifugation was performed at 2000 r/min for 10 min, and the upper plasma was separated, added the cell lysis solution and mixed well, separated the supernatant, added proteinase K, and let it stand at 56°C for 10 minutes after mixing. After the solution was clarified, added anhydrous ethanol and mixed well. After thorough washing, added rinsing solution, by centrifugal rinse twice, added eluate, used Tiangen Biochemical Blood Microgenomic DNA Extraction Kit to extract plasma ctDNA level, and applied Rado AQT90 FLEX fluorescence quantitative analyzer for detection.

Follow-up methods: outpatient follow-up or telephone follow-up was used to follow up the survival of patients. The follow-up time was 3 years after surgery, or until the time of death of the patients. The patients were divided into the death group and the survival group according to their 3-year survival.

3.1. Observation Indicators. The observation indicators are as follows: (1) statistics of its clinicopathological characteristics; (2) comparison of ctDNA levels in the death and survival group, and analysis of its evaluation value on patients' prognosis; (3) according to the level of ctDNA, the patients were divided into the high expression group and the low expression group, and the survival time between the two groups was compared, that is, the time from operation to death or the last follow-up time.

3.2. Statistical Processing. The SPSS22 software was used to process the data, the enumeration data were expressed with %, and the χ^2 test was used to compare differences between groups; the measurement data were expressed as $(x \pm s)$ after normality test, and t-test was used to compare differences between groups; the receiver operating characteristic curve (ROC) curve was used to analyze the prognostic value of ctDNA in patients with metastatic colorectal cancer and gastrointestinal perforation. The area under curve (AUC) greater than 0.7 indicated that the index had diagnostic value, and AUC greater than 0.8 indicated that its diagnostic value was high; GraphPad Prism 5 was used for survival curve analysis, using Log-rank χ^2 was used to compare the survival rates between the two groups. $P < 0.05$ meant the difference was statistically significant.

4. Results

4.1. Analysis of clinicopathological characteristics of patients with metastatic colorectal cancer and gastrointestinal perforation. The proportion of patients who were more than 60 years old, male, with primary site of the right colon high, is shown in Table 1.

4.2. Comparison of ctDNA Expression between the Death Group and the Survival Group. The patients were divided into the death group ($n = 78$) and the survival group ($n = 19$) according to their 3-year survival after operation. The plasma ctDNA level of the death group was (86.59 ± 10.07) ng/mL, which was higher than that of the survival group (78.07 ± 8.52) ng/mL ($P < 0.05$), is shown in Figure 1.

4.3. The Evaluation Value of ctDNA Expression in Prognosis. The AUC of ctDNA expression in predicting patient survival was 0.806, and the SE (95% CI) was 0.045 (0.718–0.894). The cutoff value was 79.58 ng/mL, as shown in Figure 2.

Table 1: Clinicopathological characteristics of patients with metastatic colorectal cancer complicated with gastrointestinal perforation.

Characteristics		Case (%)
Age (years)	≥60	70 (72.16)
	< 60	27 (27.84)
Primary tumor staging	T4a	55 (56.70)
	T4b	42 (43.30)
Gender	Male	61 (62.89)
	Female	36 (37.11)
Primary tumor site	Left colon	27 (27.84)
	Right colon	59 (60.82)
	Rectum	11 (11.34)
Number of metastatic organs	≥2	56 (57.73)
	<2	41 (42.27)
Whether the primary tumor was removed	Yes	38 (39.18)
	No	59 (60.82)
Treatment with a VEGF inhibitor prior to perforation	Yes	58 (59.79)
		39 (40.21)
Combined lung metastases	No	40 (41.24)
Combined liver metastases		72 (74.23)
Combined pelvic metastases		30 (30.93)
Distant lymph node metastasis		24 (24.74)
Combined obstruction		56 (57.73)
Combined diverticula		35 (36.08)

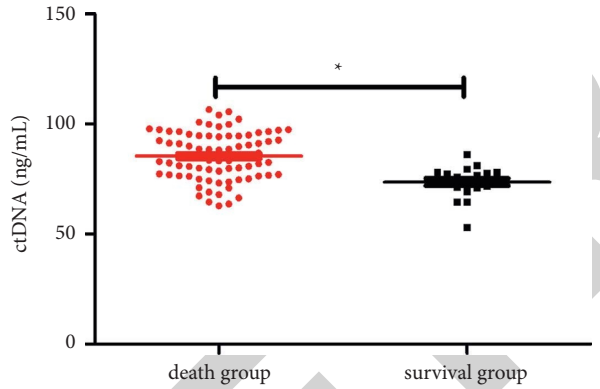

Figure 1: Comparison of ctDNA expression between the death group and the survival group. Two groups were compared, $^{*}P < 0.05$.

4.4. Comparison of Survival Time of Patients with Different ctDNA Expressions. According to ctDNA expression, patients were divided into the high expression group (≥79.58 ng/mL) and low expression group (<79.58 ng/mL). The survival rate of the high expression group was 7.02% (4/57), which was lower than 36.38% (15/40) of the low expression group (Log-rank $\chi^2 = 17.530$, $P < 0.001$). The median survival time of the two groups was 18.20 and 28.10 months, as shown in Figure 3.

5. Discussion

Colorectal cancer is a common malignant tumor of the digestive system. With the improvement of living conditions, the change of diet structure and the increase of daily pressure, the incidence of colorectal cancer in my country is increasing year by year, which seriously threatens the life and

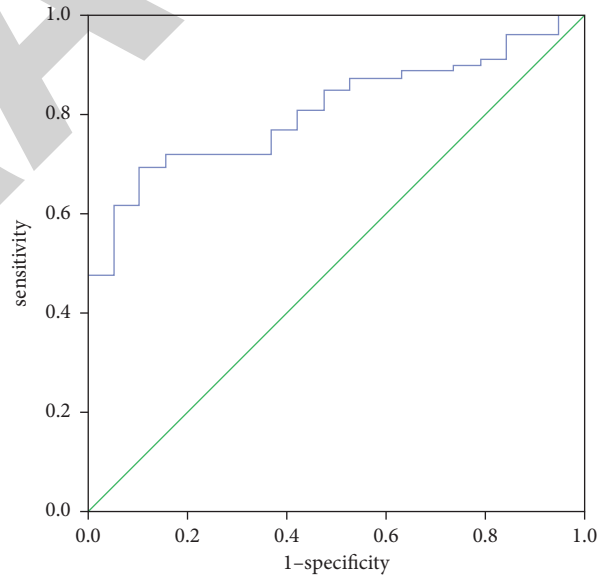

Figure 2: The evaluation value of ctDNA expression in prognosis.

health of patients. Clinical data show that metastatic colorectal cancer is one of the malignancies associated with spontaneous perforation, and the condition can deteriorate sharply with combined peptic perforation, and the mortality rate increases rapidly, which is one of the influential factors affecting poor prognosis, and the analysis of the clinical characteristics of patients with concomitant peptic perforation can help in early diagnosis [8]. Therefore, this study aimed to analyze the clinical characteristics of complicated digestive tract perforation. Relevant studies have pointed out that free or encapsulated gas can be seen in colorectal cancer combined with gastrointestinal perforation during CT scan

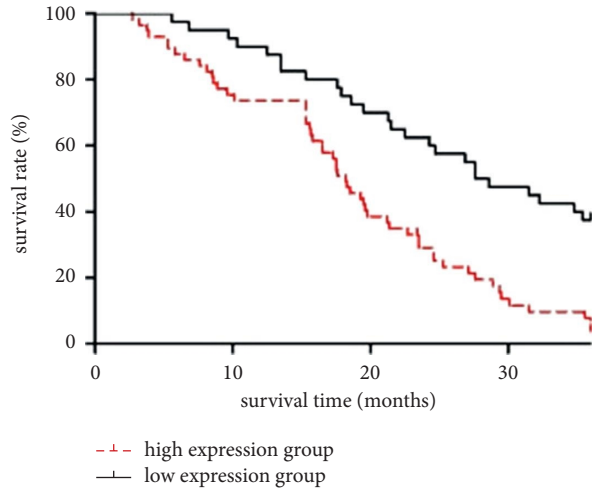

Figure 3: Survival curve analysis of patients with different ctDNA expression.

[9]. This study found that 36.08% of patients had diverticulosis, which was slightly higher than the 35.7% in the study carried out by Gao et al. [10], which may be related to the small number of patients included in the study. Metastatic tumors infiltrate the intestinal wall, leading to necrosis and ring control. The progression of the tumor leads to intestinal stenosis and obstruction, which leads to the expansion of the proximal intestinal lumen, and the increase of intestinal wall tension can cause the intestinal wall to rupture. Therefore, many patients have intestinal wall obstruction. The results of this study showed that 57.73% of patients with gastrointestinal perforation had intestinal wall obstruction. This study also found that the proportion of patients with liver metastasis was the highest. The reason is still unknown. The author believes that it may be related to the liver as the main distant metastasis of colorectal cancer. Relevant studies have pointed out that adverse reactions caused by antivascular drug therapy can lead to gastrointestinal perforation [11]. The results of this study showed that the proportion of patients treated with VEGF inhibitor before perforation was higher, further indicating that this regimen may increase the risk of gastrointestinal perforation.

ctDNA detection is an emerging technology. Compared with traditional tumor tissue biopsy, it has the advantages of simplicity, ease of operation, and high reproducibility, which can increase patient acceptance [12, 13]. Relevant reports pointed out that ctDNA carries certain oncogene information of patients; therefore, ctDNA detection can provide important clues for the early diagnosis and efficacy assessment of tumor patients [14, 15]. ctDNA is endogenous tumor DNA of the organism, that is, free outside the cells in peripheral blood. It comes from vigorously proliferating tumors or necrosis and apoptosis of tumor cells and carries tumor-specific gene changes [16, 17]. Studies have found that ctDNA levels are closely related to the relevant tumor burden. Clinically, it is generally believed that primary tumor, metastases, and circulating tumor cells are the main sources of ctDNA [18, 19]. Some studies have also found that the infiltration and metastasis of cancer cells can lead to an increase in the level of ctDNA in the body [20, 21], suggesting that it may be related to the prognosis of patients. The results of this study showed that the plasma ctDNA level of the death group was higher than that of the survival group, and the survival rate of the high (ctDNA) expression group was lower than that of the low expression group, indicating that the higher the plasma ctDNA level was, the higher the risk of poor prognosis would be. The results of this study showed that the AUC of ctDNA expression to predict patient survival was 0.806, indicating that ctDNA has predictive value for patient prognosis.

In conclusion, old age, combined obstruction, and diverticulum are the clinical features of metastatic colorectal cancer complicated with gastrointestinal perforation, and the expression of ctDNA has an evaluation value for the prognosis of patients. Since this study was a retrospective analysis and some patients had other underlying diseases, it might interfere with the results of ctDNA examination and affect the final conclusion. Therefore, a multicenter analysis is required in the later stage to verify the research results.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author.

Ethical Approval

This study was approved by the ethics committee of our hospital.

Conflicts of Interest

The authors declare no conflicts of interest, financial or otherwise.

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Retraction

Retracted: Analysis of the Clinical Value of MAGE-A9 Expressions in Cervical Cancer Tissues and PBMC

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] H. He, J. Mi, Y. Su et al., "Analysis of the Clinical Value of MAGE-A9 Expressions in Cervical Cancer Tissues and PBMC," *Emergency Medicine International*, vol. 2022, Article ID 1417752, 6 pages, 2022.

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Research Article

Analysis of the Clinical Value of MAGE-A9 Expressions in Cervical Cancer Tissues and PBMC

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Objective. The aim of this study is to explore the expressions and clinical significance of melanoma-associated antigen-A9 (MAGE-A9) in cervical cancer tissues and peripheral blood mononuclear cells (PBMC). *Methods*. 108 patients who were scheduled to undergo cervical conization or extensive hysterectomy between March 2019 and January 2021 due to cervical lesions were selected by convenient sampling. According to postoperative pathological results, the patients were divided into a cervical cancer group ($n = 64$) and cervical intraepithelial neoplasia (CIN) group ($n = 44$). The expression levels of MAGE-A9 mRNA in cervical lesion tissues and PBMC were detected by real-time fluorescence quantitative PCR, and the expression of MAGE-A9 protein in lesion tissues was detected by immunohistochemistry. The correlation between MAGE-A9 mRNA expressions in cancer tissues and PBMC and serum tumor markers in patients with cervical cancer and the relationship between MAGE-A9 protein expression in cancer tissues and clinicopathological characteristics were analyzed, and a receiver operating characteristic curve (ROC curve) was drawn to explore the diagnostic value of MAGE-A9 mRNA expressions in cancer tissues and PBMC on cervical cancer. *Results*. The expression levels of MAGE-A9 mRNA in cervical lesion tissues and PBMC in the cervical cancer group were significantly higher than those in the CIN group ($P < 0.05$), and the levels of serum SCC-Ag, CA-125, and CEA were significantly higher than those in the CIN group ($P < 0.05$). The positive rate of the MAGE-A9 protein expression in cervical lesion tissues in the cervical cancer group was significantly higher than that in the CIN group ($P < 0.05$). The expression levels of MAGE-A9 mRNA in cancer tissues and PBMC of patients with cervical cancer were positively correlated with serum SCC-Ag, CA-125, and CEA ($P < 0.05$). The positive rate of the MAGE-A9 protein expression in cervical cancer tissues was related to FIGO stage, tumor diameter, degree of differentiation, lymph node metastasis, and high-risk HPV infection ($P < 0.05$) and was not correlated with age and pathological type ($P > 0.05$). The areas under the ROC curves of MAGE-A9 mRNA in lesion tissue and MAGE-A9 mRNA in PBMC were 0.925 and 0.900 in the diagnosis of cervical cancer ($P < 0.05$). *Conclusion*. The expressions of MAGE-A9 in cancer tissues and PBMC of patients with cervical cancer are upregulated, which is related to the levels of serum tumor markers and the progression of disease. MAGE-A9 is expected to become an important marker for the diagnosis of early cervical cancer.

1. Introduction

Cervical cancer is a malignant tumor of the reproductive system that occurs in the cervical canal, uterus, and vagina. According to relevant data [1], there are 530,000 new cases of cervical cancer in the world each year, and about 250,000 deaths due to cervical cancer. Life health and quality of life are posed a serious threat and early diagnosis and treatment is the key to improving prognosis. More and more studies have pointed out [2, 3]. The formation and evolution of malignant tumors can be regulated by multiple genes, and exploring the expression of tumor-related antigens and specific antigens has important guiding value for the early diagnosis and treatment of malignant tumors. Melanoma-associated antigen (MAGE) is a group of tumor-specific antigens first discovered in melanoma. It is generally not expressed in normal mature tissues but can be highly expressed in various tumor tissues [4]. MAGE-A9 is one of the members of the MAGE gene subfamily A. It has been found that MAGE-A9 is highly expressed in various malignant tumor tissues such as hepatocellular carcinoma, breast cancer, and colorectal cancer [5, 6]. Reports of it in

cervical cancer are rare. This study aims to provide new ideas for early diagnosis and treatment of cervical cancer patients by exploring the expression of MAGE-A9 in cervical cancer tissues and peripheral blood mononuclear cells (PBMC) and its relationship with the clinic-pathological characteristics and prognosis of patients.

2. Materials and Methods

2.1. General Information. A total of 108 patients undergoing cervical conization or extensive hysterectomy due to cervical lesions who were admitted from March 2019 to January 2021 were selected by convenient sampling. Inclusion criteria were as follows: (1) Married women aged 22–65 years. (2) No radiotherapy, chemotherapy, or immunotherapy before surgery. (3) Postoperative pathologically confirmed cervical cancer or cervical intraepithelial neoplasia (cervical intraepithelial neoplasia), CIN). (4) Voluntarily accepted research, cooperates with inspection, and signs informed consent. Exclusion criteria were as follows: (1) Combined with primary tumors in other parts. (2) Combined with other serious underlying diseases such as immune system diseases and major organ insufficiency. (3) Those who cannot tolerate cervical surgery; history of chemotherapy, or surgery. (5) Mental and cognitive abnormalities. (6) Pregnant or lactating women. The 108 patients were divided into a cervical cancer group (64 cases) and CIN group (44 cases) according to postoperative pathological diagnosis. The age of the cervical cancer group was 36–65 years old, with an average of (52.05 ± 7.80) years old. The International Federation of Obstetrics and Gynecology (FIGO) staged [7] 43 cases of stage I, 21 cases of stage IIA; the CIN group aged 25 to 50 years, mean (33.91 ± 6.31) years old stages 15 cases of CIN stage II, 29 cases of stage III. This study complies with the ethical principles of medical research in the Declaration of Helsinki. There are no statistical differences in clinical baseline data between patients in the cervical cancer group and the cervical intraepithelial neoplasia (CIN) group.

2.2. Methods

2.2.1. MAGE-A9 mRNA Expression in Cervical Lesions and PBMC. The fresh postoperative cervical lesion tissue samples were collected with sterile EP tubes, placed in a liquid nitrogen tank, and stored at −80°C for future use; we take 0.1 g tissue specimens from EP tubes, grind them into powder repeatedly under liquid nitrogen, and extract total RNA from PBMCs by the TriZOL method. Reverse transcription kit instructions and kits were purchased from Beijing Soleibao Technology. The target gene was amplified using a Roche LightCycler 96 real-time PCR instrument. The primer sequences were synthesized by Shanghai Sangon Bioengineering Co., Ltd. The upstream and downstream primer sequences of MAGE-A9 gene were 5′-CACTGTATGTCATCTCTG-3′, 5′-ACTACTGTCATTCATTAACT-3′. Using U6 as the internal reference gene, the upstream and downstream primer sequences are 5′-CTCGCTTCGGCAGCACA-3′, 5′-AACGCTTCACGAATTTGCGT-3′. PCR reaction conditions: preheating at 95°C for 3 min, denaturation at 95°C for 30 s, annealing at 60°C for 30 s, extension at 70°C for 30 s, a total of 40 cycles, and a final extension at 72°C for 10 min. After the reaction product was electrophoresed on a 2% agarose gel, the optical density of each band was determined by the Gel-Doc XR automatic gel imaging system of Bio-Rad Company. The relative expression of the target gene was calculated using the $2^{-\triangle\triangle ct}$ method. 5 mL of fasting cubital venous blood was collected by an EDTA anticoagulation tube and centrifuged at 3000 r/min and 8 cm radius for 15 min to separate serum for use; a Percoll cell separation medium (Beijing Soleibao Technology Co., Ltd.) was used to separate PBMCs by density gradient centrifugation. The total RNA of PBMCs was extracted by the TriZOL method. -A9 mRNA detection was consistent.

2.2.2. MAGE-A9 Protein Expression in Cervical Lesions. The expression of MAGE-A9 protein in cervical lesions was detected by the immune-histochemical SP method. The lesion tissue was made into a paraffin block for use, and the paraffin was taken, including 4 μm serial sections, baked in an incubator at 60°C for 20 min, and then graded I (soaked for 10 min), grade II (soaked for 10 min), and grade III in xylene. (soaking for 5 min) dewaxing treatment; placed in gradient alcohol (soaked in anhydrous alcohol twice for 5 min, 95%, 90%, 80%, 70%, 50% alcohol for 5 min each) after dehydration treatment, soaked in flowing distilled water for 10 min, and then immersed in PBS solution. It is rinsed 2 times for 3 min each; placed in 3% H_2O_2 solution, incubated at room temperature for 10 min, and then rinsed with PBS twice, 3 min each. Using EDTA repair solution, it was repaired in a microwave oven on high heat for 15 min, cooled to room temperature naturally, and then rinsed with PBS solution 3 times for 5 min each; 1 drop of serum working solution was added dropwise to each section and placed at room temperature for 10 min. Each drop has a primary antibody working solution (mouse anti-human MAGE-A9 primary antibody from Novus, USA) and PBS instead of primary antibody was used as control and incubate it at 4°C; Secondary antibody anti-mouse antibody was incubated at room temperature for 15 min and rinsed 3 times with PBS for 5 min . Each section was dripped with a horseradish peroxidase marker, incubated at room temperature for 10 min, and washed with PBS three times, each for 5 min. Each section was dripped with freshly prepared DAB solution for color development, counterstained with hematoxylin, and then dehydrated with gradient alcohol in sequence. Xylene is then cleared 3 times for 10 min each. Slides are sealed with a neutral gum and read under a light microscope. 5 fields of view (≥100 cells) are randomly selected under a 400x microscope and counted by 2 experts with extensive diagnostic experience. Pathologists made independent judgments after double-blind reading of the films and reached a consensus through consultation when the results were inconsistent. MAGE-A9 protein is mainly stained in the cytoplasm. ①Staining intensity: no staining, light yellow, brownish yellow, and yellowish brown, respectively, scored 0, 1, 2, and 3 points. ②Proportion of positive cells: the proportion of positive cells is less than or

Table 1: Comparison of the MAGE-A9 mRNA expression and serum tumor markers between the two groups ($\overline{x} \pm s$).

Group	n	MAGE-A9 mRNA		Tumor markers in serum		
		Lesion tissue	PBMC	SCC-Ag (ng/mL)	CA-125 (U/mL)	CEA (ng/mL)
Cervical cancer group	64	1.321 ± 0.482	1.726 ± 0.513	3.96 ± 1.66	49.20 ± 15.01	13.71 ± 5.19
CIN group	44	0.601 ± 0.188	0.942 ± 0.321	0.70 ± 0.35	25.57 ± 8.16	3.09 ± 1.33
T		9.426	8.990	12.812	9.515	13.272
P		<0.001	<0.001	<0.001	<0.001	<0.001

$P < 0.001$ was regarded as a significance threshold.

equal to 5%, 6%~25%, 26%~50%, 51%~75%, and >75% were scored as 0, 1, 2, 3, and 4 points, respectively; the product of ① × ② product of 0~1 was considered negative (−), 2~4 points are weakly positive (+), 6 points or 8 points are positive (++), and 9 points or 12 points are strongly positive (+++), and the product of ① × ② in this study is ≥ 2 points were regarded as positive expression.

2.2.3. Serum Tumor Markers. 3 ml of fasting cubital venous blood samples was collected from patients in the morning before surgery, centrifuged at 3000 r/min and a radius of 8 cm for 15 min, and the supernatant was collected for use. The expression of serum squamous cell carcinoma-associated antigen (SCC-Ag), carbohydrate antigen 125 (CA-125), and carcino embryonic antigen (CEA) was detected by the Roche tumor marker kit level; the kit was purchased from Shanghai Yaji Biotechnology Co., Ltd., and the detection steps were operated according to the kit instructions. The normal reference value range of SCC-Ag is 0~1.5 ng/mL, CA-125 is 0~35 U/mL, and CEA is 0~5 ng/m.

2.3. Statistical Analysis. The date analysis was processed by SPSS 17.0 software, normal measurement data are listed as ($\overline{x} \pm s$), and independent sample t-test was performed; count data were expressed as (n (%)), and $\chi 2$ test was used, and grade data were subjected to two independent samples t-test; the Pearson correlation analysis was used for analysis; a receiver operator characteristic curve (ROC curve) was drawn to explore the diagnostic value; $P < 0.05$ was regarded as a significance threshold.

3. Result

3.1. Comparison of MAGE-A9 mRNA and Serum Tumor Marker Expressions between the Two Groups. The expression levels of MAGE-A9 mRNA in cervical lesion tissues and PBMC in the cervical cancer group were significantly higher than those in the CIN group ($P < 0.05$), and the levels of serum SCC-Ag, CA-125, and CEA were significantly higher than those in the CIN group ($P < 0.05$) as shown in Table 1.

3.2. Comparison of the MAGE-A9 Protein Expression between the Two Groups. There was a statistically significant difference in the expression of MAGE-A9 protein in cervical lesions between the two groups and the positive rate of MAGE-A9 protein in the cervical cancer group was significantly higher than that in the CIN group ($P < 0.05$) as shown in Table 2.

3.3. Correlation between the MAGE-A9 mRNA Expression and Serum Tumor Markers in Cervical Cancer. The results of the Pearson correlation analysis showed that MAGE-A9 mRNA expression levels in cancer tissues and PBMCs of patients with cervical cancer were positively correlated with serum SCC-Ag, CA-125, and CEA ($P < 0.05$) as shown in Table 3.

3.4. Relationship between the MAGE-A9 Protein Expression and Clinic-Pathological Features in Cervical Cancer Tissues. The positive rate of the MAGE-A9 protein expression in cervical cancer tissues was significantly higher in FIGO stage IIA than in stage I, tumor diameter ≥ 3 cm was significantly higher than that of <3 cm, poorly differentiated was significantly higher than well-differentiated, with lymph nodes. The patients with metastases were significantly higher than those without lymph node metastasis, and those with high-risk HPV infection were significantly higher than those without high-risk HPV infection, with statistical significance ($P < 0.05$). However, there was no significant difference in the positive expression of MAGE-A9 protein among different ages and pathological types ($P > 0.05$) as shown in Table 4.

3.5. The Value of the MAGE-A9 mRNA Expression in Cervical Cancer Tissues and PBMC in the Diagnosis of Cervical Cancer. Taking the diagnosis of cervical cancer as the state variable, and the expression levels of MAGE-A9 mRNA in the lesion tissue and MAGE-A9 mRNA in PBMC as the test variable, the ROC curve was drawn. The areas under the ROC curve were 0.925 and 0.900 ($P < 0.05$), respectively, and the optimal cutoff values were 0.900 and 1.055, respectively, as shown in Figure 1 and Table 5.

4. Discussion

Although the current HPV vaccine promotion, cervical cancer screening, and development of diagnosis and treatment technologies have brought the morbidity and mortality of cervical cancer under a certain control, it is still the malignant tumor with the highest morbidity and mortality in the female reproductive system [8]. At present, the etiology and pathogenesis of cervical cancer have not been fully elucidated. It is often considered the result of multifactor, multistep, and long-term effects. Infections such as HPV and

Table 2: Comparison of the MAGE-A9 protein expression between the two groups (n (%)).

Group	n	MAGE-A9				
		−	+	++	+++	Positive rate
Cervical cancer group	64	23 (35.94)	12 (18.75)	19 (29.69)	10 (15.62)	41 (64.06)
CIN group	44	34 (77.27)	7 (15.91)	3 (6.82)	0 (0.00)	10 (22.73)
Z/χ^2			4.64			17.875
P			<0.001			<0.001

$P < 0.001$ was regarded as a significance threshold.

Table 3: Correlation between the MAGE-A9 mRNA expression and serum tumor markers in cervical cancer.

Index	SCC-Ag		CA-125		CEA	
	r value	P value	r value	P value	r value	P value
MAGE-A9 mRNA in cancer tissue	0.644	<0.001	0.320	0.010	0.294	0.018
MAGE-A9 mRNA in PBMC	0.477	<0.001	0.386	0.002	0.270	0.031

Table 4: Relationship between the MAGE-A9 protein expression and clinic-pathological characteristics in cervical cancer tissues.

Indexes		Number of cases	Number of the positive cases	Positive rate (%)	χ^2	P
Year (old)	≤50	27	16	59.26	0.468	0.494
	>50	37	25	67.57		
FIGO phase	Phase I	43	23	53.49	6.365	0.012
	Phase IIA	21	18	85.71		
Pathological type of tumor	Squamous cell carcinoma	54	37	68.52	2.981	0.084
	Adenocarcinoma	10	4	40.00		
Diameter of tumor (cm)	<3	51	29	56.86	5.653	0.017
	≥3	13	12	92.31		
Degree of tumor differentiation	Highly differentiated	19	8	42.11	8.294	0.016
	Moderate differentiation	28	18	64.29		
	Poorly differentiated	17	15	88.24		
Lymph node metastasis	Yes	18	16	88.89	6.705	0.010
	No	46	25	54.35		
High-risk HPV infection	Yes	52	37	71.15	6.058	0.014
	No	12	4	33.33		

Human papillomavirus (HPV).

cytomegalovirus are the main microbial pathogenic factors. Family history, unclean sexual life, marriage and birth factors, malnutrition, smoking, etc., are common high-risk factors; in addition, genetic mutations, hormone changes, and other factors are also related to its occurrence and development [9]. Early diagnosis and treatment is key to improving cervical cancer prognosis, but in practice, most patients are already in advanced stages when they are discovered due to the lack of specific symptoms of early cervical cancer. Exploring sensitive biological markers related to the occurrence and development of cervical cancer can provide early clinical diagnosis and treatment. Therefore, related research has attracted much attention [10].

MAGE is a member of the cancer/testis antigen family. Since it was first isolated and cloned from melanoma in 1991, at least 13 subfamilies and 83 closely related gene members of the MAGE family have been found [11]. In general, MAGE is mainly manifested in the testicles and placenta, but it is widely and highly expressed in a variety of malignant tumors and has a certain correlation with tumorigenesis, development, drug resistance, and prognosis [12]. MAGE-A9 is one of the most studied members of the current MAGE family. It is located on the Xq28 chromosome. The full-length cDNA is 945 bp. The molecular weight of the encoded protein product is about 35 ku. Peptides are involved in tumor T cell immune responses, and MAGE-A family members have high homology, so MAGE-A9 is expected to be a potential target for tumor biological immunotherapy [13]. Studies have pointed out that the expression of MAGE-A9 protein in laryngeal squamous cell carcinoma is significantly increased, and it is related to the clinical stage and lymphatic metastasis of patients [14]. It is considered to be a prognostic indicator of laryngeal squamous cell carcinoma. It has been reported in the literature [15] that MAGE-A9 protein is highly expressed in human non-small-cell lung cancer cell lines, and downregulation of the MAGE-A9 expression by RNAi technology can reduce cell migration and invasion, so MAGE-A9 is closely related to non-small-cell lung cancer. It is related to the development process of lung cancer migration and invasion. At present, there are not

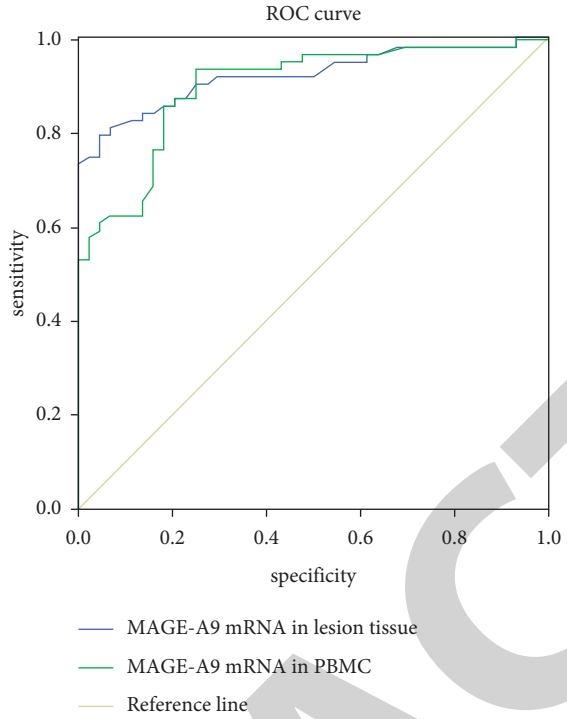

Figure 1: The ROC curve of MAGE-A9 mRNA in cervical cancer tissues and PBMC in the diagnosis of cervical cancer.

Table 5: The diagnostic value of MAGE-A9 mRNA in cervical cancer tissues and PBMC for cervical cancer.

Indexes	Area	Standard error	P	95% CI		Cutoff value	Sensitivity	Specificity
				Lower bound	Upper limit			
MAGE-A9 mRNA in lesion tissue	0.925	0.025	<0.001	0.875	0.974	0.900	0.797	0.955
MAGE-A9 mRNA in PBMC	0.900	0.029	<0.001	0.843	0.958	1.055	0.938	0.750

many reports on MAGE-A9 in the female reproductive system malignant tumors. Some researchers pointed out that the expression of MAGE-A9 protein in ovarian cancer tissues was significantly upregulated, which was significantly correlated with FIGO stage, histological grade, and tumor metastasis of ovarian cancer [16]. The MAGE-A9 expression is an independent factor affecting the prognosis of ovarian cancer patients. In addition, the overexpression of MAGE-A9 can enhance the malignant biological ability of ovarian cancer cell lines, and interference with its expression can inhibit the proliferation, migration, and invasion of ovarian cancer cells and improve the sensitivity of cisplatin chemotherapy. Therefore, the MAGE-A9 expression shows an application value in ovarian cancer prognosis prediction and targeted therapy. In this study, real-time fluorescence quantitative PCR was used to detect the expression of MAGE-A9 mRNA in cervical lesion tissues and PBMC of cervical cancer and CIN patients. The immunohistochemical SP method was used to detect the expression of MAGE-A9 protein in cervical lesions. It was found that the positive rate of the MAGE-A9 protein expression in the cervical cancer group was significantly higher than that in the CIN group. Therefore, it is speculated that the MAGE-A9 expression is upregulated in cervical cancer patients. Further analysis found that the positive rate of MAGE-A9 protein expression in cervical cancer tissues was related to FIGO stage, tumor diameter, degrees of differentiation, lymph node metastasis, and high-risk HPV infection. Therefore, it is speculated that MAGE-A9 is involved in the occurrence, invasion, and metastasis of cervical cancer. This is similar to some reports [17]. Studies have pointed out that MAGE-A9 may participate in the progression of malignant tumors by inhibiting the transcriptional activity of the tumor suppressor gene p53, interfering with its biological functions such as inhibiting malignant proliferation and promoting apoptosis [18].

However, the mechanism by which MAGE-A9 participates in the occurrence and development of cervical cancer is still unclear, and the relevant mechanism remains to be explored by more basic research. CEA is a broad-spectrum tumor marker that is useful for predicting recurrence and survival rates in many carcinomas, such as colon or gastric cancer. Moreover, when combined with carbohydrate antigen 19–9 (CA19-9), the level of CEA is closely correlated with the survival of patients with non-small-cell lung cancer. CA125 is considered a potential marker for ovarian cancer, and the combined detection of CA125 and human epididymis protein 4 (HE4) is effective for screening non-small-cell

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Retraction

Retracted: Effects of Self-Made Prescription Compound Rhodiola on the Ultrastructure of Podocytes in Rats with Type 2 Diabetic Nephropathy

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] S. Yuan, J. Liu, Z. Sun et al., "Effects of Self-Made Prescription Compound Rhodiola on the Ultrastructure of Podocytes in Rats with Type 2 Diabetic Nephropathy," *Emergency Medicine International*, vol. 2022, Article ID 3417557, 7 pages, 2022.

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Research Article

Effects of Self-Made Prescription Compound Rhodiola on the Ultrastructure of Podocytes in Rats with Type 2 Diabetic Nephropathy

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Background. We attempt to discuss the function of self-made prescription compound Rhodiola rosea on the kidneys of rats with type 2 diabetic nephropathy (DN), through studying the effects of self-made rescription compound Rhodiola rosea on the ultrastructure of podocytes in rats with DN. *Methods*. DN rat model was established by streptozotocin. The successfully modeled rats were divided into 4 groups, DN group, compound Rhodiola low-dose group, medium-dose group, and high-dose group. Compound Rhodiola low-dose group, medium-dose group, and high-dose group were administered for 8 weeks, and the DN group and the blank control group were administered with normal saline. The podocyte count, podocyte width, podocyte fusion rate, and average thickness of glomerular basement membrane were compared in each group, and the ultrastructural changes in podocytes were observed by transmission electron microscope. *Results*. Compared with the normal control group, the number of podocytes in the DN group remarkably reduced, but the width level of podocyte, the fusion rate of podocyte, and the average thickness of basilar membrane remarkably increased ($P < 0.05$). Compared with the DN group, the number of podocytes in the high-, medium-, and low-dose groups increased remarkably, but the width level of podocyte, the fusion rate of podocyte, and the average thickness of basilar membrane decreased remarkably ($P < 0.05$). Compared with the low-dose group, the number of podocytes in the high-dose group and the medium-dose group increased remarkably, but the width of podocyte, the fusion rate of podocyte, as well as the average thickness of basilar membrane remarkably reduced ($P < 0.05$). Various indicators of high- and medium-dose groups had no statistical difference ($P > 0.05$). *Conclusions*. Self-made prescription compound Rhodiola rosea can promote the recovery of podocyte in DN rat and protect their kidney.

1. Introduction

As technology advances, the global economy is in a stage of rapid development. The living standards of human beings are constantly improving, and the lifestyles are constantly changing. The threat of chronic diseases to human health is increasing day by day, and the incidence of diabetes mellitus (DM) is increasing rapidly in countries around the world. According to the International Diabetes Federation statistics, the number of people with DM in the world was about 366 million in 2011, and the number of people with DM is estimated to increase to 552 million by 2030 [1]. China has

witnessed one of the most dramatic rises in diabetes prevalence anywhere in the world, with 23.8 million DM patients, and it is expected to exceed 42.3 million in 2030 [2, 3]. Diabetic nephropathy (DN) is a common and frequent clinical complication of DM. Approximately 30% to 40% of individuals with diabetes mellitus develop DN. According to statistics, all-cause mortality in individuals with DN is approximately 30 times higher than that in diabetic patients without nephropathy [5]. DN has become the second leading cause of end-stage renal disease and one of the leading causes of death in diabetic patients [6]. The changes in the ultrastructure of renal podocytes and the changes in the expression of related molecules play an important role in diabetic nephropathy development [7]. Rhodiola rosea has anti-inflammatory, anticancer, antioxidation, and other pharmacological effects. However, whether Rhodiola rosea plays a beneficial role in diabetic nephropathy remains unclear [8]. This study aimed to discuss the effects of self-made prescription compound Rhodiola rosea on the kidney podocytes and their ultrastructure of DN rats through animal experiments and also their effects on the kidneys of DN rats.

2. Research Content and Methods

2.1. Materials and Reagents

2.1.1. Experimental Animals. 58-week-old SPF male Wistar rats (weight 200–220 g) were purchased from the Experimental Animal Center of Shandong University.

2.1.2. Experimental Reagents. Streptozotocin (STZ) and its solution preparation materials (citric acid, sodium citrate, distilled water) are produced by American Sigma Company. The urine microalbumin (mALB) assay kit is produced by Orion Diagnostica Oy, Finland, and purchased from Beijing Northern Institute of Biotechnology. The fixing reagent (3% glutaraldehyde, 1% osmic acid), dehydrating agent (50% ethanol, 70% ethanol, 90% ethanol, 90% acetone, 90% ethanol: 90% acetone = 1 : 1 mixture), embedding agent (Epon 812 epoxy resin embedding agent), and electronic staining agent (uranyl acetate, lead citrate) were prepared by the electron microscope room of Medical College of Shandong University. Light microscope staining solution (0.5% toluidine blue) is provided by the electron microscope room of Medical College of Shandong University.

2.1.3. Experimental Instruments. The biochemical analyzer was provided by the Second Affiliated Hospital of Shandong University of Traditional Chinese Medicine, and the model is Hitachi 7600 Series, the automatic biochemical analyzer (made in Japan). The transmission electron microscope was provided by the electron microscope room of Medical College of Shandong University, model: JME-d-1200EX (made in Japan), resolution: 0.1–10 nm, and acceleration voltage: 60–100 kV. The ultrathin slicer was provided by the electron microscope room of Medical College of Shandong University, and the model is Ultracut E, Cambridge, UK.

2.1.4. Experimental Prescription. Self-made prescription compound Rhodiola was purchased from the Affiliated Hospital of Shandong University of Traditional Chinese Medicine. Compound Rhodiola rosea is a powder made by drying Rhodiola rosea dry root and astragalus root as the main raw materials, soluble starch, corn starch, ethanol, and other auxiliary materials at 50°C.

2.1.5. High-Glucose and High-Lipid Fodder Formula. High-glucose and high-lipid fodder formula consists of 3% egg yolk, 18% lard, 20% sucrose, and 59% basic feed, processed by Shandong Lukang Pharmaceutical Co., Ltd. (SCXK Lu 20080002).

2.2. Experimental Steps

2.2.1. Feeding Period. Fifty rats were divided into the normal control group ($n = 5$) and the model experimental group ($n = 45$). The normal control group was fed with normal diet for 8 weeks, and the model experimental group was fed with high-glucose and high-lipid fodder for 8 weeks. All rats were housed at 55% ± 5% humidity and constant room temperature (22–24°C), under a controlled light cycle. All animals were free to drink water. The animal procedures were in accordance with the Experimental Animal Center of Shandong University.

2.2.2. Construction of Diabetic Nephropathy Rat Model. Model experimental group rats were fed for 8 weeks and had no eating and no drinking for 16 hours. After that, STZ (30 mg/kg) was rapidly injected in the left abdominal cavity. Normal control group was injected with the same volume of sodium citrate buffer. After 1 week of fasting for 12 hours, blood is fetched from rat tail vein to measure fasting blood glucose (FBG) and fasting insulin (FINS) and the insulin resistance index is calculated (HOMA-IR) (formula: HOMA-IR = (FBG (mmol/l) ∗ FINS (mu/l))/22.5). Criteria for successful modeling of diabetic nephropathy are as follows: FBG ≥ 7.0 mmL/L, HOMA-IR higher than the normal control group, and 12 h urinary microalbumin ≥30 mg/L. In this experiment, 43 rat DN models were successfully established.

2.2.3. Grouping and Treatment. Forty-three successful modeling DN rats were randomly divided into 4 groups: DN group ($n = 10$), compound Rhodiola low-dose ($n = 11$), medium-dose ($n = 11$), and high-dose ($n = 11$) groups. The normal control group and the DN group are perfused with 2 ml of normal saline every day. Compound Rhodiola of 3, 6, and 12 g/(kg·D) was dissolved in 2 ml normal saline and stirred evenly, and then, the rats in the low-, medium-, and high-dose groups were given intragastric administration for 4 weeks, respectively. During the whole experimental process, all groups were not given insulin and hypoglycemic drugs. After 4 weeks, only 35 rats were alive, DN group ($n = 9$), compound Rhodiola low-dose group ($n = 9$), medium-dose group ($n = 9$), and high-dose group ($n = 8$).

2.2.4. Collection of Kidney Specimens from Rats. After 4 weeks of treatment, the rats were anesthetized, and the kidneys of the rats in each group were removed. Kidneys were isolated, fixed within 1 min, and then quickly placed into a 9% saline rinse bottle to remove blood and mucus, and absorbent paper was used to absorb excess water. The renal cortex (the outermost layer of the upper pole of the kidney) was placed on ice, and the renal cortex was rinsed with 0.1% phosphate-buffered saline (PB). The tissue was cut into small pieces of about 1 mm × 1 mm × 1 mm, fixed in 3% glutaraldehyde fixative solution at low temperature (0–4°C) for 2 hours, and post-fixed with 1% osmic acid for 1 hour, and the tissues were dehydrated, infiltrated, embedded, aggregated, sectioned, and stained.

2.3. Observation Indicators. In this experiment, we observed the rat kidney tissue by transmission electron microscope, and the observation indicators were average thickness of podocyte fusion rate and glomerular basement membrane (GBM), average width of podocyte (FPW), and podocyte counting. Under the electron microscope ×5000 times, 3 glomeruli of each case were observed, and 10 visual fields randomly from each glomerulus are obtained, and the number of podocytes is calculated. Under the electron microscope ×10000 times, 20 podocytes were randomly selected from each case, the distance between the membranes on both sides of the podocyte between the two-hole membranes was measured, and the average value was taken. Under the electron microscope ×10000 times, with 2 μm as the unit, 20 measurement units were randomly selected for each case, the total length of basement membrane $Y = 40\ \mu$m, and then the total length of podocyte fusion on the basement membrane is measured, X is set, and finally X/Y is adopted, and we could obtain the fusion rate. Under the electron microscope ×10000 times, with 1 μm as the unit, 20 measurement units were randomly selected for each case, and 3 points were randomly found in each unit to measure the thickness of basement membrane at each point, then all the thicknesses are added and set as X, the number of measured points was set as Y, finally X/Y is adopted, and then we obtained the average thickness of each group of basement membranes.

2.4. Data Statistics. We analyzed all data by SPSS 18 0 software. We expressed all data obtained by mean ± standard deviation and compared the differences between both groups by t-test and the differences among multiple groups by analysis of variance. When $P < 0.05$, it possessed statistical significance.

3. Results

3.1. Comparison of Podocyte Count, the Width of Podocyte, the Fusion Rate of Podocyte, and the Thickness of GBM in Each Group of Rats. The results showed that in contrast to the normal control group, the number of podocytes in the DN group remarkably decreased, but the width level of podocyte, the fusion rate of podocyte, and the average thickness of basement membrane remarkably increased, and it possessed statistical significance ($P < 0.05$) (Tables 1 and 2).

Compared with the DN group, the number of podocytes in the high-, medium-, and low-dose groups increased remarkably, but the width of podocyte, the fusion rate of podocyte, and the average thickness of GBM remarkably decreased, with statistical significance ($P < 0.05$). Comparison among the high-, medium-, and low-dose groups: compared with the low-dose group, the number of podocytes in the high- and medium-dose groups was significantly increased, and the width of podocyte, the fusion rate of podocyte, and the average thickness of GBM were significantly decreased, and it possessed statistical significance ($P < 0.05$). Various indexes of the high- and medium-dose groups had no statistical difference ($P > 0.05$).

3.2. Comparison of Ultrastructural Images of Renal Podocytes. The results of the normal control group showed that the glomerular basement membrane was clear, the thickness was uniform, and there was no obvious thickening. The podocyte was clear and neatly arranged, with no fusion or reduction in the podocyte, and the width of podocyte was normal (Figure 1). On the contrary, the glomerular basement membrane of rats in the DN group remarkably thickened, and a double-track phenomenon appeared. The basement membrane had large dense deposits with different thicknesses, and the width of podocyte is irregularly arranged. The podocyte was obviously fused, and inflammatory cells appeared (Figure 2). In the low-dose group, the thickening of GBM, the width of podocyte, flattening, reduction, and irregular arrangement of rats had not remarkably reduced (Figure 3). In the medium-dose group, GBM was thickened, the width of podocyte was irregularly arranged, and the fusion rate of podocyte and other phenomena were significantly alleviated (Figure 4). The glomerular basement membrane of the rats in the high-dose group was thickened and irregularly arranged, and the phenomenon of flattening, fusion, and reduction in the podocyte was also significantly improved, and it had no obvious difference compared with the medium-dose group (Figure 5).

Compound Rhodiola rosea can increase the number of podocytes in type 2 diabetic nephropathy rats, reduce the width of podocyte, the fusion rate of podocyte, and the average thickness of GBM. The medium- and high-dose groups have a better therapeutic effect than the low-dose group, indicating that compound Rhodiola rosea can repair renal podocytes in DN rats.

4. Discussion

At present, the etiology and mechanism of DN are not completely clear, and its occurrence and development are the result of the combined effect of multiple factors. It is now believed that there is a certain correlation with many factors such as genetics, hemodynamic disorders, lipid metabolism disorders, stress response, and hypertension. Various comprehensive factors eventually lead to DN. Podocytes are

Table 1: Number of podocytes, the podocyte width, the podocyte fusion rate, and the average thickness of the GBM in the control group ($\overline{x} \pm s$).

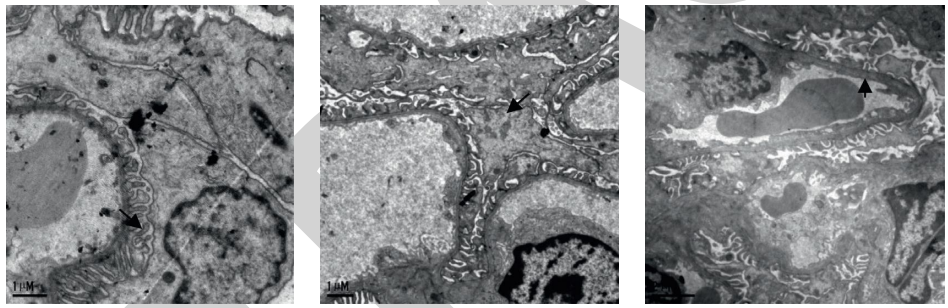
Group	Number of podocytes	Width of the podocyte (um)	Fusion rate of the podocyte (%)	Average thickness of GBM (um)
Normal control group	10.30 ± 0.36	0.263 ± 0.022	3.10 ± 1.01	0.23 ± 0.02
DN group	1.20 ± 0.51	0.855 ± 0.034	65.80 ± 3.30	0.78 ± 0.11
t	43.730	43.860	54.500	14.760
P	<0.001	<0.001	<0.001	<0.001

DN: diabetic nephropathy; GBM: glomerular basement membrane.

Table 2: Number of podocytes, the width of the podocyte, the fusion rate of the podocyte, and the thickness of the GBM between the models in each group ($\overline{x} \pm s$).

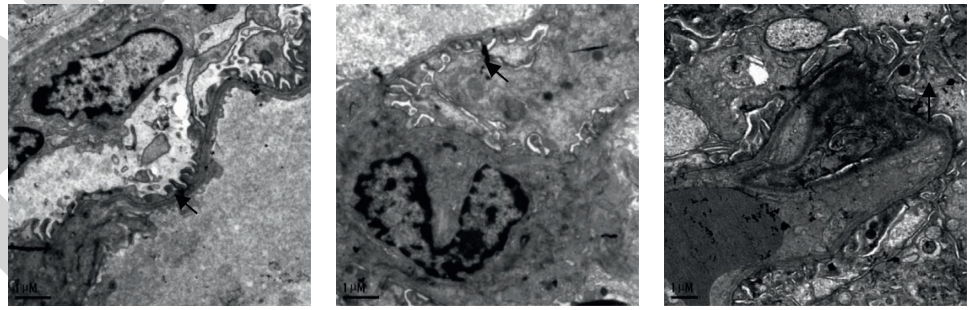
Group	Number of podocytes	Width of the podocyte (um)	Fusion rate of the podocyte (%)	Average thickness of GBM (um)
DN group	1.2 ± 0.51	0.855 ± 0.034	65.8 ± 3.3	0.78 ± 0.11
Low-dose group	4.0 ± 0.34*	0.391 ± 0.023*	56.25 ± 7.8*	0.51 ± 0.04*
Medium-dose group	9.3 ± 0.27*Δ	0.282 ± 0.021*Δ	21.21 ± 5.4*Δ	0.32 ± 0.12*Δ
High-dose group	8.2 ± 0.24*Δ	0.311 ± 0.032*Δ	29.32 ± 1.8*Δ	0.40 ± 0.22*Δ

DN: diabetic nephropathy; GBM: glomerular basement membrane. *$P < 0.05$, compared with the DN group; Δ$P > 0.05$, compared with the low-dose group.



(a) (b) (c)

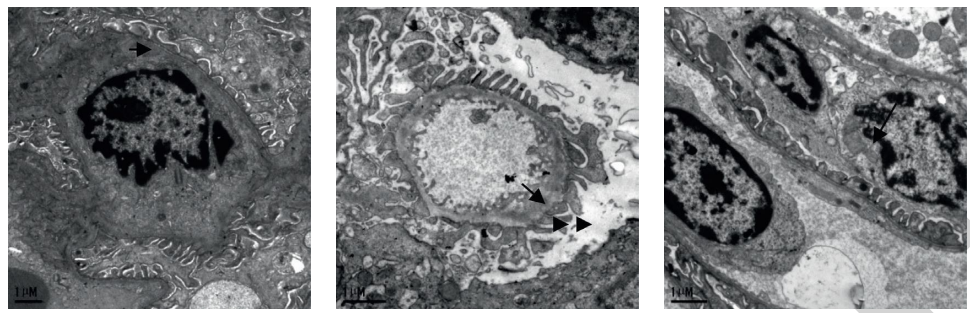
Figure 1: Normal control group. (a) Basement membrane is even and clear, podocyte in order and without fusion or decreasing. (b) Junction of three vascular cavities, podocyte without fusion or decreasing. (c) No basement membrane thickening.



(a) (b) (c)

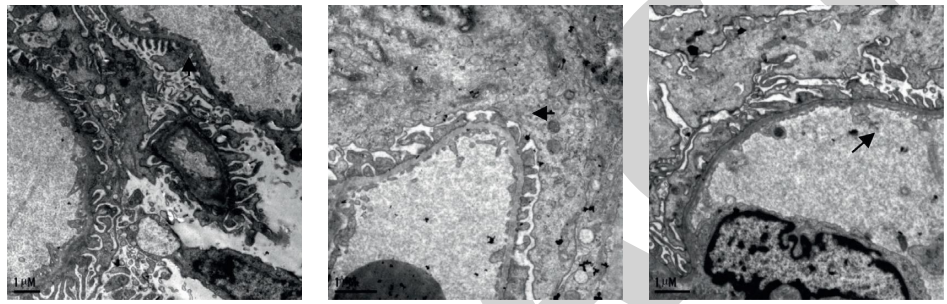
Figure 2: DN group. (a) Double-rail phenomenon appears in basement membrane, quantities of podocyte reduced and fused. (b) Podocyte flatted, fused, decreased, podocyte width enlarged, inflammatory cells of mesangial region appeared. (c) Basement membrane had plenty of dense deposits and it was vague and unclear, podocyte flatted, decreased, podocyte width enlarged.

the largest cells in the glomerulus, which are attached to the outside of the GBM, showing a multi-protrusion shape. The fissure between adjacent podocytes is covered by a thin film called the slit membrane. Podocytes and slit membranes are one of the important components of the glomerular filtration membrane. Studies have shown that podocyte injury plays a key role in the pathogenesis of DN [9, 10]. The number and density of podocytes in the early stage of DN



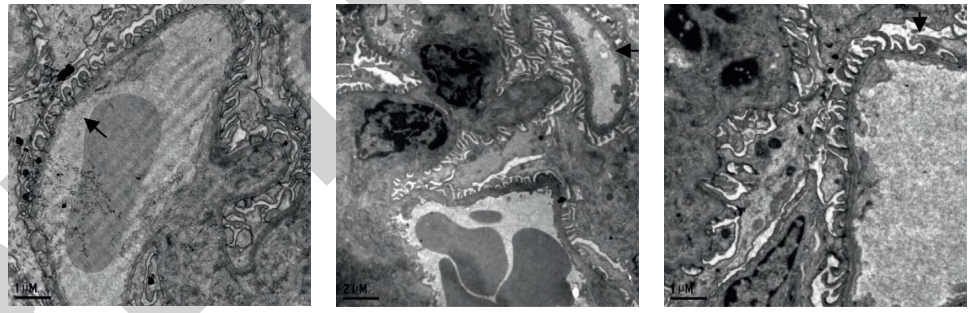
(a) (b) (c)

Figure 3: Low-dose group. (a) Podocyte fused obviously, podocyte flatted, decreased, podocyte width enlarged. (b) Flaky dense deposits, basement membrane thickened obviously. (c) Podocyte fused, flatted, decreased, podocyte width enlarged.



(a) (b) (c)

Figure 4: Medium-dose group. (a) No obvious podocyte fused or flatted or decreased. (b) No basement membrane thickening, uniform thick and thin. (c) Uniform basement membrane, no podocyte decreasing.



(a) (b) (c)

Figure 5: High-dose group. (a) No basement membrane thickening, uniform, no podocyte fused or decreased. (b) Basement membrane thickness was uniform and clear, podocyte in order, no fusion. (c) No podocyte flatting, decreasing, basement membrane was clearly visible.

have begun to decrease and worsen with the aggravation of the disease [11]. The density and total number of podocytes are reduced by apoptosis and shedding due to injury, and the residual podocyte widens and fuses, resulting in compensatory hypertrophy, leading to glomerular sclerosis and destruction of the glomerular filtration barrier [12]. Once podocytes are damaged and fall off, they lack the ability to regenerate [9]. Therefore, podocyte repair plays a crucial role in DN treatment.

Rhodiola is a very important natural wild plant in Tibetan medicine in my country, with unique biological effects. Modern research has shown that Rhodiola rosea not only has the functions of clearing the lungs and relieving cough, invigorating Qi, and promoting blood circulation, but also anti-hypoxia, antiaging, and antitumor [13–15]. In this experiment, we further studied its effect on renal podocytes and their ultrastructure in DN rats. The results showed that compared with the normal control group, the number of podocytes in the DN group was significantly less, and the width level of podocyte, the fusion rate of podocyte, and the average thickness of basement membrane were significantly higher, which was supported by the

ultrastructure of podocyte. Based on the above observations, the rat model was successfully replicated. Compared with the model of control group, the number of podocytes in the high-, medium-, and low-dose groups increased significantly, and the width of podocyte, the fusion rate of podocyte, and the average thickness of GBM decreased significantly, which was supported by the ultrastructure of podocytes, indicating that the podocytes of DN rats treated with self-made compound Rhodiola gradually repaired. Compared with the low-dose group, the high- and medium-dose groups had significantly more podocytes, and the width of podocyte, the fusion rate of podocyte, and average thickness of GBM were significantly lower, which was corroborated with the podocyte ultrastructure. The experiment proved that the effect of high- and medium-dose groups in promoting the ultrastructure of renal podocytes of DN rats to return to normal was better than that of the low-dose group. The self-made prescription compound Rhodiola rosea is mainly composed of Rhodiola rosea, Radix Astragali, and other traditional Chinese medicines for supplementing Qi and activating blood circulation. In this study, compound Rhodiola rosea was used to treat DN from the perspective of nourishing Qi and activating blood circulation. Rhodiola rosea extract can significantly improve the thickening of rat GBM and protect the kidneys of DM rats. Rhodiola rosea alleviated high-glucose-induced oxidative stress and extracellular matrix accumulation in rat glomerular mesangial cells by the TXNIP-NLRP3 inflammasome pathway [16]. Radix Astragali can improve podocyte adhesion function, reduce blood glucose and urinary protein, and further slow down the progression of DN [17]. Rhodiola rosea extract may have a protective effect on early nephropathy in diabetic rats [18].

5. Conclusion

To sum up, the changes in podocyte ultrastructure in normal rats, DN rats, and DN rats treated with Rhodiola rosea were observed under the electron microscope in this subject. From the pathological point of view, we explored the effect of compound Rhodiola rosea in repairing renal ultrastructure to protect the kidneys and explained the mechanism of the self-made prescription compound Rhodiola in the effective treatment of DN. It has important guiding significance for the clinical treatment of diabetic nephropathy and lays a certain experimental foundation for the development of Chinese medicine in treating DN. In addition, studying the target of compound Rhodiola in podocytes from molecular biology will also become the next research direction of our research group.

Data Availability

The data can be obtained from the author upon reasonable request.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

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Research Article

Application of Semistructured Interview Based on Doctor-Patient Perspective in Constructing a Palliative Care Regimen for Patients with Advanced Heart Failure

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Objective. The aim of this study is to explore the application of semistructured interview based on doctor-patient perspective in constructing a palliative care regimen for patients with advanced heart failure. *Methods*. 112 patients with advanced heart failure who were admitted to the hospital were selected between December 2019 and December 2020, and they were randomly divided into an interview group and a routine group, with 56 cases in each group. The routine group was given routine nursing for advanced heart failure while the interview group developed a palliative care regimen based on a semistructured interview from the doctor-patient perspective. The psychological states (Depression-Anxiety-Stress Scale (DASS-21)), symptoms (Memorial Symptom Assessment Scale-Heart Failure (MSAS-HF)), quality of life (Kansas City Cardiomyopathy Questionnaire (KCCQ)), and prognosis (readmission rate, mortality rate) were compared between the two groups before and after intervention. *Results*. Compared with before intervention, there were no significant differences in the scores of DASS-21, MSAS-HF, and KCCQ in the routine group after intervention ($P > 0.05$), and the scores of DASS-21 and MSAS-HF in the interview group were decreased while KCCQ scores were increased ($P < 0.05$). Scores of DASS-21 and MSAS-HF and readmission rate were lower while the KCCQ scores were higher in the interview group compared with those in the routine group ($P < 0.05$). There was no significant difference in the mortality rate between the two groups ($P > 0.05$). *Conclusion*. The application of a semistructured interview based on the doctor-patient perspective to construct the palliative care regimen for patients with advanced heart failure can eliminate the negative emotions, improve the psychological states, relieve the clinical symptoms, enhance the quality of life, and reduce the risk of readmission.

1. Introduction

Various cardiovascular diseases can eventually develop into heart failure, which is the end stage of various cardiovascular diseases that can lead to myocardial remodeling such as myocardial infarction [1]. Heart failure is a kind of noncurable disease, and the primary purpose of treatment and nursing is to control the progress of heart failure and relieve clinical symptoms. Statistics show that about 10% [2] of chronic heart failure patients in China have progressed to advanced heart failure and patients with advanced heart failure may have a progressive decline in cardiac functions, so they often have persistent heart failure symptoms and persistent physical symptoms can induce psychological symptoms such as anxiety and depression, so based on what patients need, they are often given palliative care, such as covering all aspects of physical symptom control, psychological intervention, etc. [3] However, how to fully grasp the needs of patients, build an effective palliative care plan, relieve the physical and psychological symptoms of patients, and improve their quality of life has become a nursing problem in treatment of patients with advanced heart failure. Semistructured interview means that only the basic structure and process of the interview are set, and the interview can be conducted in an easy and participatory way. It combines open exploration and field focus to deeply explore the inner

thoughts and needs of patients. There have been studies that have applied it to the control survey on risk factors of high-risk groups with cardiovascular diseases and achieved good results [4]. Based on the perspective of medical personnel and patients, more scientific and effective nursing plans can be formulated. Therefore, this study applied semistructured interviews from the perspectives of medical staff and patients in the formulation of a palliative care regimen for patients with advanced heart failure to observe the effect; the specific results were now reported in the following contents.

2. Materials and Methods

2.1. General Information. A total of 112 patients with advanced heart failure who were admitted to the hospital from December 2019 to December 2021 were selected and divided into an interview group ($n = 56$) and a routine group ($n = 56$) by the random number table method. Inclusion criteria were as follows: ① combined with the history and symptoms of patients' primary disease, those diagnosed as heart failure by echocardiography and other examinations [5]; ② those with advanced heart failure; ③ those who fully understood the content and purpose of the study, and voluntarily agreed to participate in the research. Exclusion criteria were as follows: ① those combined with serious diseases of other systems, such as decompensated liver cirrhosis; ② those with a history of psychological/neurological/psychiatric disease; ③ those with language/hearing impairment cannot be interviewed. Among them, there were 29 males and 27 females in the interview group; the age ranged from 41 to 82 years old, with an average of (61.89 ± 14.37) years old; the average monthly household income per capita was (5213.48 ± 2596.31) yuan; 25 of them had long-term (more than 10 years)) smoking history; 17 cases have hypertension, 30 cases have coronary heart disease, and the remaining 9 cases have other underlying diseases; 31 cases were educated by high school or below (including vocational junior/senior technical middle school), 25 cases have an educational background of under graduation or above (including junior college). There were 30 males and 26 females in the routine group; the age ranged from 40 to 83 years old, with an average of (62.59 ± 15.13) years; the average monthly household income per capita was (5396.72 ± 2608.33) yuan; 24 of them had long-term (more than 10 years) smoking history; 18 cases have hypertension, 31 cases have coronary heart disease, and the remaining 7 cases have other underlying diseases; 29 cases have accepted education level of high school and below (including vocational junior/senior technical middle school), and 27 cases have accepted undergraduate and above (including junior college) education. There was no significant difference in the clinical data between the two groups ($P > 0.05$).

2.2. Methods. The routine group was given routine care for heart failure, specifically giving medication and dietary guidance, orally explaining the precautions for advanced heart failure, and giving monthly follow-up calls after the patient was discharged to care about the patients' recent physical condition. The interview group constructed a palliative care regimen based on the semistructured interview from a doctor-patient perspective. Specifically, first, a semistructured interview based on the doctor-patient perspective. ①. A semistructured interview group was established, and the group members consisted of 2 attending physicians in the department of cardiology, a head nurse, 3 nurses in charge, and several nurses; a nurse was responsible for literature retrieval from the literature and previous cases with keywords such as "advanced heart failure," "patient needs," "semistructured interviews," and "palliative care." The group held a discussion meeting and based on the search results, an interview outline was drawn up. The interview outline includes a "patient perspective" (Based on patients' own experience, patients' feelings about the disease can be understood.), based on patients' energy, feelings, distress, and understanding of palliative care, and a hospital perspective: from the perspective of the hospital (Based on patients' views on the hospital and their needs, it can understand the current shortcomings of the hospital and the needs of the patients provided by the hospital, so as to formulate an optimization regimen), the patients' views on the treatment plan given by the medical staff at the current stage and the medical staff, their expectations for the medical staff, the demand for nursing care, and the most wanted help in the face of the current condition and symptoms. After the outline was drawn up, 2 patients were selected for preventive interviews, and the time and place were agreed upon with the patients. All members participating in the interviews learned the semistructured interview dialogue skills and procedures before the interviews began. Before the interview, the consent of the patients was obtained before the recording was made. A recording pen was used to record the whole process of the interview, and the nonverbal movements of the patients, such as tone particles, body movements, etc., were also recorded with pens, and the corresponding interview questions and answers of the patients' nonverbal movements were marked. After the prevention interview, the focus of the interview was adjusted accordingly, and a formal interview was conducted. After the interview, the recording file was processed, converted into a verbatim transcript, and the patients' nonverbal actions were marked in the corresponding position and saved as a word document. NVivo12 qualitative data analysis software was used for data analysis. A nurse in charge and a nurse jointly completed the coding of transcribed texts, and the grounded theory was used for analysis and 3-level coding. Specifically, the specific words and phenomena in the interview draft were extracted, decomposed into concepts and thoughts, and renamed, and then classified, by thinking about the relationship between the categories to summarize the core categories and keywords. Second, construction of palliative care regimen: according to the interview results, the optimization of the palliative care regimen was completed. Specifically, medication compliance: after conducting a grounded theoretical analysis of the interview and observing the responses of the respondents, it was found that when talking about the use of heart failure drugs, some patients have symptoms of guilt and distress, such as frowning,

erratic eyes, and restlessness. These patients reported that they failed to take heart failure drugs on time. In response to this, ① for patients who failed to take their medicines on time because of a complicated type of drugs and their own memory decline, the nurse in charge of the bed would remind and guide the patients to take medicines regularly every day by contacting their family members or themselves with WeChat after discharge; For patients who lacked self-management responsibility and stopped taking medication without authorization after symptoms were relieved, medical staff should provide health education in the form of video + explanation, one-to-one face-to-face guidance, etc., according to the cultural level of such patients, so as to help patients deeply understand the need for medication, regularly checked the patients' medication, managing and supervising the patients' heart failure medication after discharge. ②. Symptom management: when talking about heart failure feelings and physical symptoms, some patients have symptoms of anxiety and depression such as "downward corners of the mouth," "sighing," "frowning," "perspiration," and "drinking water frequently." These patients expressed symptoms of heart failure. The burden was significant and has seriously affected the daily life of patients. Aiming at this, ① for patients with sleep disorders, it should eliminate adverse stimuli in the environment, such as avoiding noisy sleeping environments to provide comfortable beds and ensure the temperature of sleeping patients. Providing patients with mindfulness meditation and attention transfer method to avoid focusing on their own physical conditions before going to bed to avoid insomnia. Establishing good sleep habits, turned off the lights before 10: 30 every day, and prepared to fall asleep. Before going to bed, patients could soak feet in warm water to relieve fatigue. ② For patients with dyspnea, we instructed them to carry out breathing training, blowing 5 balloons each time, 3 times a day, and daily practice breathing with the lips half closed. ③ For patients with limb edema, we instructed patients and their families to check their body weight and leg circumference every day and gave appropriate massage to promote limb circulation. Strenuous exercise should not be performed for patients with advanced heart failure. At this time, the patients' family should be instructed to assist the patients in exercising in bed, such as elevating the lower body. ④ For patients with symptoms of fatigue, we analyzed the cause of the patients' fatigue, and the intervention methods for sleep disorders were the same as above. For patients with psychological fatigue, we should analyze the reasons. Some patients showed depression when referring to the prognosis of the disease. Nurses should give them examples of cases of successful stabilization after intervention and treatment, through data analysis to show patients with advanced heart failure that through systematic intervention and treatment, the five-year survival rate was relatively high, helping patients to build treatment confidence and avoid excessive worry. For patients with malnutrition and fatigue, a nutritious recipe should be formulated. The recipe should meet the patients' personal preferences while meeting the dietary requirements of advanced heart failure. Excessive greasy food should be avoided and foods that are easy to eat and aid in digestion should be selected. ③ Continued nursing care: Some patients expressed concern and nervousness such as "sighing," "sorrowful face," "hands clenched," and so on about the post-discharge nursing care during the interview. In response to this, a WeChat public account was established, relevant knowledge should be published daily, and a WeChat group for patients with heart failure should be created. Patients and their families who have been admitted to our hospital should be included in the group, and the WeChat group was used to answer questions for patients and provide patients with professional, reliable sources of information. 4. Social support: Due to the limitation of daily activities, some patients said that their social relationships were difficult to be maintained, and the economic pressure brought by long-term treatment also made the patients feel guilty. In response to this, the exchange meeting for patients with advanced chronic heart failure was regularly held, and the hospital sent a special car to pick up the heart failure patients. At the meeting, patients exchanged their heart failure treatment experience, shared their distress, conveyed happiness, and encouraged patients' families to communicate more and care about patients' emotions.

2.3. Assessment Indicators. The assessment indicators were as follows: ① Mental state: The Depression-Anxiety-Stress Scale (DASS-21) was used for evaluation, which evaluated the patients' mental status from three dimensions: depression (7 items), anxiety (7 items), and stress (7 items). Each item was recorded as 0–3 points and its score was positively correlated with the negative degree of the patients' mental state [6].② Symptoms: Memorial Symptom Assessment Scale-Heart Failure (MSAS-HF) was used to assess the severity of the patients' symptoms. The scale evaluated the severity of the patients' symptoms from the patients' physical symptoms (21 items), psychological symptoms (6 items), and heart failure symptoms (5 items). Each item has a score of 1–4, and its score was positively correlated with the severity of the patients' symptoms [7]. ③ Quality of life: the Kansas City Cardiomyopathy Questionnaire (KCCQ) was used to assess the quality of life, which included physical limitations (5 items), symptoms (6 items), heart failure cognition (4 items), social dysfunction (5 items), and quality of life (3 items), from the 5 aspects to evaluate the quality of life of patients, and its score was positively correlated with the quality of life of patients [8]. The changes of DASS-21, MSAS-HF, and KCCQ scores in the two groups before and after intervention were compared, and the differences in the readmission rate and mortality between the two groups were compared.

2.4. Statistical Analysis. The data collected in this study were analyzed by using SPSS24.0. The measurement data were presented in the form of $(\overline{x} \pm s)$, and the comparison was performed by using t-test; the count data were presented in the form of (n (%)), and the chi-square test was used. When $P < 0.05$, the difference between groups was statistically significant.

Table 1: Comparison of the psychological status between the two groups before and after intervention ($\overline{x} \pm s$, points).

Group	N	Depression		Anxiety		Pressure	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Interview	56	13.24 ± 3.32	9.25 ± 2.27*	15.24 ± 3.71	12.95 ± 3.09*	16.24 ± 3.11	12.78 ± 4.07*
Routine	56	12.97 ± 3.19	12.05 ± 2.76	14.95 ± 3.62	14.51 ± 2.91	16.08 ± 3.25	15.39 ± 3.84
t	—	0.439	5.863	0.419	2.750	0.266	3.491
P	—	0.662	<0.001	0.676	0.007	0.791	0.001

Note. Compared with before intervention, * $P < 0.05$.

Table 2: Comparison of symptoms before and after intervention in the two groups ($\overline{x} \pm s$, points).

Group	n	Physical symptoms		Psychological symptoms		Heart failure symptoms	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Interview	56	59.87 ± 12.25	49.45 ± 10.37*	17.26 ± 4.91	13.17 ± 3.85*	14.52 ± 2.81	12.27 ± 2.94*
Routine	56	61.38 ± 11.96	57.46 ± 13.84	16.87 ± 4.55	15.92 ± 4.30	14.03 ± 2.69	13.64 ± 2.58
t		0.660	3.466	0.436	3.566	0.943	2.621
P		0.511	0.001	0.664	0.001	0.348	0.010

Note.Compared with before intervention, * $P < 0.05$.

3. Results

3.1. Comparison of the Psychological State. After 1 month of intervention, the scores of DASS-21 in the interview group were significantly decreased ($P < 0.05$), and the interview group was significantly lower than the routine group at the same time ($P < 0.05$) as shown in Table 1.

3.2. Symptom Comparison. After 1 month of intervention, the MSAS-HF scores of each dimension in the interview group were significantly decreased ($P < 0.05$), and the interview group was significantly lower than that in the routine group at the same time ($P < 0.05$) as shown in Table 2.

3.3. Comparison of the Quality of Life. After 1 month of intervention, the KCCQ scores in the interview group were significantly increased ($P < 0.05$), and the interview group was significantly higher than the routine group at the same time ($P < 0.05$) as shown in Table 3.

3.4. Comparison of the Prognosis between the Two Groups. Within 1 month of intervention, the rehospitalization rate in the interview group was significantly lower than that in the routine group ($P < 0.05$), and there was no significant difference in mortality between the two groups ($P > 0.05$) as shown in Table 4.

4. Discussion

Advanced heart failure can cause cardiac structural reconstruction and abnormal cardiac function due to long-term myocardial damage, so patients may have a variety of clinical symptoms. Previous studies have shown that more than half of heart failure patients can experience 15 symptoms such as sleep disturbance, depression, anxiety, and fatigue [2]. Recurring somatic symptoms, economic pressure brought by long-term treatment, and social and daily life barriers caused by somatic symptoms can all cause psychological burdens on patients, leading to the emergence of negative emotions such as anxiety and depression, and the dual psychological and physical pressures can seriously affect the quality of daily life of patients [9]. The results of this study showed that after intervention, the decrease rate of DASS-21, MSAS-HF and the increase rate of KCCQ in the interview group were significantly higher than those in the routine group. This indicates that semistructured interviews based on a doctor-patient perspective can alleviate the symptoms of patients with advanced heart failure and improve their psychological state and quality of life. The reasons are as follows. ① It showed that the semi-structured interview based on the perspective of doctors and patients was through semi-structured interviews on patients by setting the interview outline from the patients' own experience and disease cognition and patients' cognition, needs, and expectations toward the hospital in the early stage to fully understand the needs of patients so as to formulate targeted palliative care regimen based on the actual needs of patients [10]. ② Through semistructured interviews, it only draw up interview outlines by reviewing documents and medical records in the early stage, without strict requirements for interview procedures. The interview has a more relaxed atmosphere than structured interviews. The rhythm and sequence could be controlled by the interviewer, but it was more rigorous than unstructured interviews. It could set the general tone of the interview, prevent background deviation, guide patients to express their true thoughts, and record the results of the interview through text/recording. Quantitative analysis of interview results were done at a later stage to clarify patient needs, so as to provide patients with high-quality care and help patients with symptom management [11]. ③ Semi-structured interviews based on the doctor-patient perspective, through the interview results, a palliative care regimen in terms of individualized medication compliance, multi-symptom management, and continuous nursing was constructed. Therefore, a palliative care regimen was more targeted and could effectively control the clinical symptoms of patients. ④ A palliative care regimen based on

Table 3: Comparison of the quality of life before and after intervention between the two groups ($\overline{x} \pm s$, points).

Group	n	Physical limitation		Symptom		Heart failure cognition		Social dysfunction		Quality of life	
		Before intervention	After intervention	Before intervention	Before intervention	After intervention	Before intervention	After intervention	After intervention	Before intervention	After intervention
Interview	56	13.45 ± 2.81	15.43 ± 3.20*	14.86 ± 3.10	13.61 ± 3.30	17.54 ± 4.22*	8.41 ± 2.17	10.12 ± 3.04*	18.62 ± 4.88*	11.29 ± 2.53	14.89 ± 3.12*
Routine	56	12.96 ± 3.01	13.29 ± 3.12	15.42 ± 3.28	13.29 ± 3.25	13.48 ± 3.57	8.15 ± 2.09	8.61 ± 2.47	16.37 ± 3.59	10.87 ± 2.64	11.35 ± 2.78
t		0.890	3.583	0.929	0.517	5.497	0.646	2.885	2.779	0.943	6.339
P		0.375	0.001	0.355	0.606	<0.001	0.520	0.005	0.006	0.348	<0.001

Note. Compared with before intervention, * $P < 0.05$.

Table 4: Comparison of the prognosis of the two groups of patients (n (%)).

Group	n	Rehospitalization	Mortality
Interview	56	1 (1.79)	0 (0.00)
Routine	56	7 (12.50)	0 (0.00)
χ^2	—	4.486	0.000
P	—	0.028	1.000

semistructured interviews from a doctor-patient perspective could increase the enthusiasm of patients for treatment and help patients to establish social relationships through positive case support, data analysis, provide a platform for patients with advanced heart failure to chat, encourage patients' family members to accompany them to increase patients' enthusiasm for treatment, help patients to establish social relationships, and improve patients' social support to improve their psychological state and improve their quality of life.

Previous studies have shown that advanced heart failure is associated with higher rehospitalization and mortality due to its uncontrollable symptoms and persistent cardiac function decline [12]. The results of this study showed that the rehospitalization rate of the interview group was lower than that of the routine group and the difference was significant. The reason for this is that Zhao et al. [13] have shown that low medication compliance, poor diet control, and the lack of professional guidance and information sources after discharge lead to a decline in nursing quality are all risk factors for rehospitalization for advanced heart failure. The semistructured interview from the perspective of doctor and patient was through the results of the previous interview, in the construction of the follow-up palliative care regimen, corresponding nursing care was given according to the reasons for the patients' not taking medicines on time, and a diet plan was formulated for the patients. It provided continuous nursing care for discharged patients through WeChat groups and WeChat official accounts and provided patients with professional, reliable, and stable information sources outside the hospital, so as to ensure the quality of patient' care outside the hospital and reduce the incidence of readmission [14]. The results of this study also found that there were no deaths in the two groups during the intervention period, which may be related to the short follow-up time in this study.

However, this study still has the following two deficiencies: (1) the study sample size was small and (2) the follow-up time was short, and there were no deaths during the follow-up period. In the future, the sample size should be expanded and the follow-up time should be extended in further research.

In conclusion, a palliative care regimen based on semistructured interviews from a doctor-patient perspective can improve the psychological state of patients with advanced heart failure, control clinical symptoms, improve their quality of life, and prevent readmission.

Data Availability

The data can be obtained from the author upon reasonable request.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Retraction

Retracted: Clinicopathological Features of 166 Cases of Invasive Ductal Breast Carcinoma and Effect of Primary Tumor Location on Prognosis after Modified Radical Mastectomy

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] S. Chen, L. Yang, and Y. Li, "Clinicopathological Features of 166 Cases of Invasive Ductal Breast Carcinoma and Effect of Primary Tumor Location on Prognosis after Modified Radical Mastectomy," *Emergency Medicine International*, vol. 2022, Article ID 3158956, 6 pages, 2022.

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Research Article

Clinicopathological Features of 166 Cases of Invasive Ductal Breast Carcinoma and Effect of Primary Tumor Location on Prognosis after Modified Radical Mastectomy

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Objective. To investigate the clinicopathological features of 166 cases of invasive ductal carcinoma (IDC) of the breast and to analyze the effect of the location of the primary tumor on the prognosis of modified radical mastectomy. *Materials and Methods*. The clinical data of 166 patients with IDC who underwent modified radical mastectomy in our hospital from May 2015 to May 2017 were retrospectively analyzed. The clinicopathological features of IDC patients were recorded. Univariate analysis and the multivariate logistic regression model were used to analyze the relationship between the location of the primary tumor and the prognosis of IDC patients after modified radical surgery. The effect of primary tumor location on the prognosis of modified radical resection was used with Survival curve analysis. *Results*. Among the patients in the central region, 13.33% had tumors >5 cm in diameter, which was higher than those in the other four groups. Among the patients in the upper inner quadrant, 59.38% received hormone therapy after operation, which was higher than those in the other four groups ($P < 0.05$). There were no significant differences in age, menopause, histological grading, molecular typing, lymph node metastasis, vascular invasion, radiation therapy, and chemotherapy among different groups ($P > 0.05$). Univariate analysis showed that molecular typing, lymph node metastasis, vascular invasion, and location of the primary tumor were all related to the prognosis of IDC patients after modified radical surgery, and the differences were statistically significant ($P < 0.05$). Logistic regression analysis showed that molecular typing, lymph node metastasis, vascular invasion, and primary tumor location were all independent influencing factors for prognosis of IDC patients after modified radical surgery ($P < 0.05$). As of 31 May 2021, there were 11 patients with recurrence and metastasis and 20 patients with death. The median survival time in the outer upper quadrant group was 80 months, which was higher than that in the outer lower quadrant group by 72 months, the median survival time in the central region group by 71 months, the median survival time in the inner upper quadrant group by 67 months, and the median survival time in the inner lower quadrant group by 61 months. The log-rank test showed all $P < 0.001$. *Conclusion*. Patients with primary tumors located in the central area have larger tumor diameters. Patients located in the central area, upper inner quadrant, and lower inner quadrant are more likely to have lymphatic metastasis, have a more serious condition, and have a shorter prognosis survival time. Unluminal type, multiple lymph node metastases, vascular invasion, and the location of the primary tumor in the inner quadrant are all independent risk factors for prognosis in patients after modified radical surgery for IDC.

1. Introduction

Breast cancer is one of the most common malignancies in women. In recent years, its incidence has been increasing year by year in the global scope. Invasive ductal carcinoma (IDC) of the breast is the most common type of breast cancer and belongs to nonspecific invasive carcinoma of the breast. Clinically, patients often have breast lumps and nipple discharge [1, 2]. IDC often affects the physical and psychological health of women due to the younger onset group, the tendency of lymphatic metastasis and recurrence in advanced patients, and the influence on the appearance of

breasts after surgical resection [3, 4]. Therefore, early diagnosis and treatment of IDC are extremely important.

At present, the treatment methods for IDC mainly include radical surgery, modified radical surgery, and postoperative chemoradiotherapy [5, 6]. Among them, modified radical surgery is an effective method for the treatment of IDC. It can preserve the pectoralis minor and pectoralis major muscles of the affected side of the patient and minimize the damage to the shape of the breast. Compared with traditional surgery, modified radical surgery not only ensures the thoroughness of tumor resection but also satisfies the pursuit of beauty for female patients. It is the most commonly used surgical method in clinical practice at present. [7, 8]. With the nipple as the center, the breast can be divided into five positions, including four quadrants and a central area. The primary tumor is located in different locations, and the progression speed of the disease is also different. In this study, we retrospectively analyzed the follow-up data of 166 IDC patients within five years after modified radical surgery, summarized the clinicopathologic features of these patients, and analyzed the impact of the location of primary tumors on the prognosis of modified radical surgery. The specific report is as follows.

2. Information and Methods

2.1. General Information. A total of 166 IDC patients undergoing modified radical mastectomy in our hospital from May 2015 to May 2017 were retrospectively collected. Their age ranged from 25 to 75 years old, with an average of 50.79 ± 9.61 years old.

2.2. Inclusion Criteria. Inclusion criteria were as follows: (1) Meets breast cancer IDC diagnostic criteria; (2) the pathological diagnosis is unilateral IDC; (3) receiving modified radical mastectomy; (4) having complete clinical and pathological data and follow-up information.

2.3. Exclusion Criteria. Exclusion criteria were as follows: (1) Preoperative neoadjuvant chemotherapy; (2) distant metastasis has occurred at the time of initial treatment; (3) the location of the tumor is located in the boundary area of each quadrant; (4) multifocal breast cancer; (5) male breast cancer.

2.4. Primary Tumor Location. Tumor location was determined on the basis of a preoperative imaging report (color Doppler ultrasound, mammography, or MRI) closest to the date of surgery and intraoperative measurements. A horizontal and vertical line was drawn with the nipple as the center, which divided the breast into outer upper, outer lower, inner upper, and inner lower. The nipple and areola were the central area, 5 regions in total. The location of the primary tumor was divided into the outer upper quadrant, the outer lower quadrant, the inner upper quadrant, the inner lower quadrant, and the central region, which included the nipples and areola complex.

2.5. Postoperative Follow-Up. A follow-up was performed every 3 months for the 2-year postoperative period, semiannually from the 3rd year, and annually after the 5th year. The follow-up included breast tumor markers, breast ultrasound, mammography chest X-rays and abdominal ultrasound, and CT and whole-body bone scans when necessary. The follow-up deadline of all patients was May 31, 2021. If a patient had tumor recurrence, metastasis, or death, the follow-up would be deemed as terminated. The median follow-up time was 73 months. During the follow-up period, there were 11 patients with recurrence and metastasis and 20 patients with death. The clinical and pathological characteristics such as age, menopause or not, tumor diameter, histological grade, molecular classification, lymph node metastasis, vascular invasion, radiotherapy, chemotherapy, endocrine therapy, and the location of the primary tumor were recorded.

2.6. Statistical Processing. Data processing was performed using SPSS22.0 software. The enumeration data were expressed as %, and the comparison was performed using the $\chi 2$ test. The multivariate logistic regression model was used for multivariate analysis. Kaplan–Meier survival curve was used to analyze the relationship between the location of the primary tumor and the prognosis of modified radical mastectomy. The log-rank test was used for comparison. The test level was $\alpha = 0.05$, and $P < 0.05$ indicated that the difference was statistically significant.

3. Results

3.1. Clinical Pathological Features of IDC. Among the patients in the central region, 13.33% (2/15) had tumors >5 cm in diameter, which was higher than those in the other four groups. Among the patients in the upper inner quadrant, 59.38% (19/32) received hormone therapy postoperatively, which was higher than those in the other four groups ($P < 0.05$). There were no significant differences in age, menopause, histological grading, molecular classification, lymph node metastasis, vascular invasion, radiation therapy, and chemotherapy among different groups ($P > 0.05$) (see Table 1).

3.2. Univariate Analysis of Prognosis of IDC Patients after Modified Radical Mastectomy. Univariate analysis showed that molecular typing, lymph node metastasis, vascular invasion, and location of the primary tumor were all related to the prognosis of IDC patients after modified radical mastectomy, and the differences were statistically significant ($P < 0.05$) (see Table 2).

3.3. Multivariate Logistic Regression Analysis on Prognosis of IDC Patients after Modified Radical Mastectomy. Multivariate logistic regression analysis showed that molecular typing, lymph node metastasis, vascular invasion, and primary tumor location were all independent risk

Table 1: Clinical pathological features of IDC.

Clinical pathological features		Cases ($n = 166$)	Outer upper quadrant ($n = 94$)	Outer lower quadrant ($n = 17$)	Central area ($n = 15$)	Inner upper quadrant ($n = 32$)	Inner lower quadrant ($n = 8$)	χ^2 value	P
Age (years)	<35	8	5	1	0	2	0	0.194	0.986
	≥35 and <50	72	39	7	7	13	6		
	≥50	86	50	9	8	17	2		
Menopause	No	89	50	10	8	17	4	0.983	0.979
	Yes	77	44	7	7	15	4		
Tumor diameter (cm)	≤2	43	17	8	3	12	3	17.114	0.009
	>2且≤5	118	75	9	10	19	5		
	>5	5	2	0	2	1	0		
Histological grading	Type I	7	4	1	0	0	2	4.950	0.550
	Type II	95	58	7	9	18	3		
	Type III	64	32	9	6	14	3		
Molecular typing	Luminal A	24	13	3	3	4	1	2.103	0.607
	Luminal B	81	46	9	7	17	2		
	Triple negative	41	23	5	5	5	3		
	Her-2 (+)	20	12	0	0	6	2		
Lymph node metastasis	No	97	52	10	9	20	6	3.560	0.101
	1~3 nodes	41	23	3	5	8	2		
	≥4 nodes	28	19	4	1	4	0		
Vascular infiltration	No	162	93	16	14	31	8	2.679	0.444
	Yes	4	1	1	1	1	0		
Radiation therapy	No	111	61	12	10	21	7	0.213	0.975
	Yes	55	33	5	5	11	1		
Chemotherapy	No	26	14	4	2	6	0	0.515	0.798
	Yes	140	80	13	13	26	8		
Hormone therapy	No	76	38	8	11	13	6	8.771	0.032
	Yes	90	56	9	4	19	2		

factors for prognosis of IDC patients after modified radical mastectomy ($P < 0.05$) (see Tables 3 and 4).

3.4. The Prognostic Effect of Different Tumor Locations on IDC Patients after Modified Radical Surgery. As of 31 May 2021, there were 11 patients with recurrence and metastasis and 20 patients with death. The median survival time in the outer upper quadrant group was 80 months, which was higher than that in the outer lower quadrant group by 72 months, the median survival time in the central region group by 71 months, the median survival time in the inner upper quadrant group by 67 months, and the median survival time in the inner lower quadrant group by 61 months. The log-rank test showed all $P < 0.001$ (see Figure 1).

4. Discussion

Invasive breast cancer is a common type in breast cancer patients, and IDC is in the majority. IDC accounts for 70%–80% of invasive breast cancer, and patients are often accompanied by breast masses, pitting nipples, and other clinical manifestations [9, 10]. At present, the main examination methods of IDC include mammography, color Doppler ultrasound, CT, and MRI [11, 12]. The primary tumor is located in different locations and lymph node metastasis occurs at different rates. For early IDC patients with tumor diameter <3 cm and no axillary lymph node metastasis or only slight metastasis and no distant metastasis, the therapeutic effect is good, and more than 90% of patients can be cured for a long time [13, 14]. However, early IDC patients did not have typical clinical symptoms and signs, and it was difficult to detect them during normal times. The diagnosis needed to be made based on imaging and pathology examinations, which easily missed the optimal treatment period and posed a serious threat to women's health [15, 16]. Therefore, early diagnosis and treatment of IDC are very important.

Among the patients in the central region, 13.33% (2/15) had tumors >5 cm in diameter, which was higher than those in the other four groups. Among the patients in the upper inner quadrant, 59.38% (19/32) received endocrine therapy after operation, which was higher than that in the other four groups. There were no significant differences in age, menopause or not, histological grade, molecular classification, lymph node metastasis, vascular invasion, radiotherapy, and chemotherapy of patients among different groups. The reason for this was analyzed as the existence of a nipple-areolar complex in the central area made it difficult to detect the primary tumor, resulting in a larger tumor volume for the first detection. After the operation, the patient needs postoperative radiotherapy and chemotherapy to prevent further development of the disease [17]. Lymph node metastasis is more likely to occur in tumors in the upper inner

Table 2: Univariate analysis of prognosis of IDC patients after modified radical mastectomy (n, %).

Clinicopathologic features		Cases ($n = 166$)	5-year survival rate	χ^2 value	P value
Age (years)	<35	8	75.00% (6/8)	4.803	0.091
	≥35 and <50	72	83.33% (60/72)		
	≥50	86	93.02% (80/86)		
Menopause	No	89	87.64% (78/89)	0.018	0.895
	Yes	77	88.31% (68/77)		
Tumor diameter (cm)	≤2	43	93.02% (40/43)	1.596	0.450
	>2 and ≤5	118	86.44% (102/118)		
	>5	5	80.00% (4/5)		
Histological grading	Type I	7	100% (7/7)	0.792	0.782
	Type II	95	94.74% (90/95)		
	Type III	64	93.75% (60/64)		
Molecular typing	Luminal type	105	92.38% (97/105)	5.290	0.021
	Unluminal type	61	80.33% (49/61)		
Lymph node metastasis	No	97	93.81% (91/97)	8.556	0.000
	1~3 nodes	41	82.92% (34/41)		
	≥4 nodes	28	75.00% (21/28)		
Vascular infiltration	No	162	88.89% (144/162)	5.472	0.025
	Yes	4	50.00% (2/4)		
Radiation therapy	No	111	84.68% (94/111)	3.375	0.066
	Yes	55	94.55% (52/55)		
Chemotherapy	No	26	80.77% (21/26)	1.501	0.221
	Yes	140	89.29% (125/140)		
Hormone therapy	No	76	82.89% (63/76)	3.383	0.066
	Yes	90	92.22% (83/90)		
Primary tumor location	Outer upper quadrant	94	94.47% (89/94)	12.720	0.000
	Outer lower quadrant	17	88.24% (15/17)		
	Central area	15	80.00% (12/15)		
	Inner upper quadrant	32	78.13% (25/32)		
	Inner lower quadrant	8	62.50% (5/8)		

Table 3: Assignment for multivariate analysis of factors.

Influencing factors	Assignment
Molecular typing	Luminal type = "0"; unluminal type = "1"
Lymph node metastasis	No = "0", 1~3 nodes = "1", ≥4 nodes = "2"
Vascular infiltration	No = "0", yes = "1"
Primary tumor location	Outer upper quadrant = "0," outer lower quadrant = "1," central area = "2," inner upper quadrant = "3," inner lower quadrant = "4"

Table 4: Multivariate logistic regression analysis on prognosis of IDC patients after modified radical mastectomy.

Variable	B	Wald's	OR	95% CI	P
Molecular typing	0.699	3.028	1.115	1.142~1.825	0.044
Lymph node metastasis	0.758	2.226	1.652	1.315~1.998	0.032
Vascular infiltration	0.652	2.958	1.369	1.109~1.751	0.028
Primary tumor location	0.145	3.268	1.669	1.175~1.987	0.011

quadrant, and endocrine therapy can improve endocrine function of patients, thereby avoiding the growth and metastasis of cancer cells in patients [18, 19].

Our results show that un-luminal type, multiple lymph node metastases, vascular invasion, and the location of the primary tumor in the inner quadrant are all independent risk factors for the prognosis of IDC patients after modified radical surgery. The reason was analyzed as follows: IDC is a highly heterogeneous tumor, different molecular types of IDC have different biological characteristics, prognosis, and sensitivity to treatment, which affect the prognosis of patients after modified radical surgery [20, 21]. The more lymph node metastasis is, the more serious the vascular invasion, which often indicates the hematogenous metastasis and lymphatic metastasis of the tumor. Therefore, the more serious the disease is, which is not conducive to the prognosis of the patient [22]. Unluminal type includes Her-2 overexpression type and triple-negative breast cancer. Although these two types are sensitive to chemotherapy, they have been found in clinical practice to have a poorer prognosis than the luminal type, which has been widely recognized in clinical practice. Lymphatic metastasis is the most common metastasis mode of IDC. The prognosis of IDC patients with primary tumors located in the central area, upper inner quadrant, and lower inner quadrant is

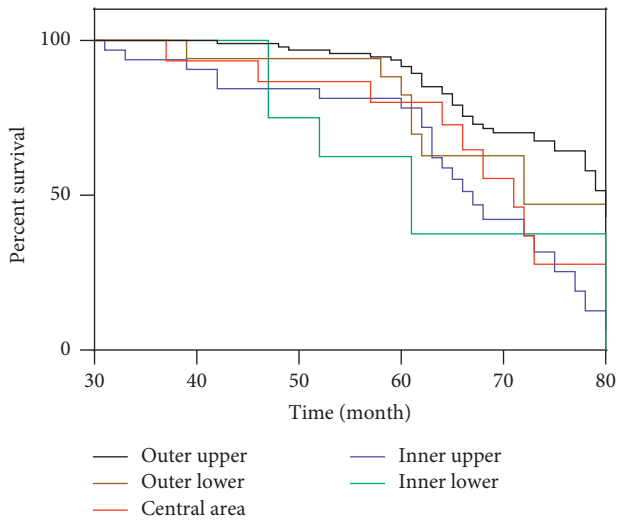

Figure 1: Prognostic survival curves of IDC patients with different tumor locations after modified radical mastectomy.

significantly worse than those of patients in the upper outer quadrant and lower outer quadrant. There are rich lymphatic vessels at the nipples in the central area, and the cancer cells located in the central area are easy to undergo lymphatic metastasis through the rich lymphatic vessels around, which are the independent risk factors for patients with IDC after modified radical surgery [23, 24]. The internal mammary gland is the second largest lymphatic metastasis pathway after the axillary lymph node. For IDC patients with primary tumors located in the upper inner quadrant, lower inner quadrant, and central region, the tumor was closer to the internal mammary gland lymphatic drainage pathway, and it was more prone to lymphatic metastasis, which was not conducive to the prognosis of patients [25]. In addition, internal mammary lymph nodes are characterized by deep anatomical location and small size, which are difficult to be detected clearly by mammography and color Doppler ultrasound, thus delaying the treatment time and unfavorable to the prognosis [26].

As of 31 May 2021, the median survival time in the outer upper quadrant group was 80 months, which was higher than that in the outer lower quadrant group by 72 months, the median survival time in the central region group by 71 months, the median survival time in the inner upper quadrant group by 67 months, and the median survival time in the inner lower quadrant group by 61 months. The reason was analyzed as follows: lymphatic metastasis is the most important mode of metastasis of IDC tumors. The closer the primary tumor is to the internal mammary lymphatic metastasis pathway, the more likely the cancer cells will develop lymphatic metastasis and the severer the disease will be, which will affect the prognosis of patients undergoing modified radical mastectomy [27]. As a result, the five-year survival rate of IDC patients will be reduced, and the five-year survival rate of patients with primary tumors located in the central area, the inner upper quadrant, and inner lower quadrant will be lower than that of patients located in the outer upper quadrant and outer lower quadrant. In addition, due to the excessive penetration of mammography to the nipple-areolar complex, tumors in the central region are often overlooked, requiring the combination of multiple imaging techniques [28]. The molybdenum target detection rate of breast cancer in the central region is low, and the tumor is detected in a late stage, which delays the treatment time and reduces the five-year survival rate of patients [29].

In conclusion, patients with primary tumors located in the central area have larger tumor diameters. Patients located in the central area, upper inner quadrant, and lower inner quadrant are more likely to have lymphatic metastasis, have a more serious condition, and have a shorter prognosis survival time. They are the independent risk factors for prognosis after modified radical surgery. A good understanding of IDC and timely diagnosis and treatment can effectively improve the prognosis and increase the five-year survival rate of patients.

Data Availability

The datasets used and/or analyzed in the current study are available from the corresponding author upon request.

Ethical Approval

The study was reviewed and approved by the hospital ethics committee.

Consent

All observed subjects and their families gave informed consent to the study.

Disclosure

Shiman Chen and Liang Yang are co-first authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

This study was supported by the Guiding Project of Science and Technology Research Plan of Hubei Provincial Department of Education.

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Retraction

Retracted: Study on the Current Status and Influencing Factors of Workplace Violence to Medical Staff in Intensive Care Units

Emergency Medicine International

Received 19 December 2023; Accepted 19 December 2023; Published 20 December 2023

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

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The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

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Research Article

Study on the Current Status and Influencing Factors of Workplace Violence to Medical Staff in Intensive Care Units

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Objective. To explore the current status and influencing factors of workplace violence to medical staff in intensive care unit (ICU). *Methods*. A total of 230 medical staff in the ICU of Hengyang city were enrolled as the research subjects between October 2021 and January 2022. The situations and characteristics of workplace violence were collected with questionnaires. The influencing factors of workplace violence were analyzed by univariate and multivariate logistic regression analyses. *Results*. The incidence of workplace violence to ICU medical staff was 40.43%. There were 18.70% of them threatened, 13.48% with verbal violence, 10.00% with physical violence, and 7.39% with sexual harassment. Of the 114 workplace violence incidents, there were 69 (59.65%) during the day, 101 (88.60%) only with medical staff on the spot, and 91 (79.82%) with male perpetrators (mainly on patients and their families). The main reasons for violence were verbal miscommunication (15.79%), too long waiting time for treatment (27.19%), and unsatisfactory treatment effect (38.60%). The main coping style of medical staff after suffering violence was patient explanation (64.04%). Multivariate regression analysis showed that working years ≤5 years (OR = 2.093, $P = 0.009$) and weekly working time >45 h (OR = 2.127, $P = 0.022$) were independent risk factors of workplace violence to ICU medical staff. *Conclusion*. The working years ≤5 years and weekly working time >45 h are high-risk factors of workplace violence to ICU medical staff. The hospital can prevent and control workplace violence based on the high-risk factors to reduce the incidence of workplace violence.

1. Introduction

Workplace violence refers to abuse, threats, humiliation, or attacks in the workplace, including verbal and physical violence. Research indicates that workplace violence is one of the major health risk factors for people working in the workplace and that such behaviors can lead to a variety of psychological and emotional conditions that affect job quality [1, 2]. Hospitals are places where workplace violence occurs frequently. According to relevant statistics, more than 50% of emergency nurses in the world have experienced workplace violence and most of the violence comes from patients [3, 4]. However, most medical staff adopt negative coping styles to deal with workplace violence, which has caused some harm to their professional attitude and mental health [5]. Studies by Yuan et al. pointed out that workplace violence has a serious adverse effect on the mental health of the medical staff, causing nurses to produce psychological stress reactions such as anger, depression, and anxiety [6]. In addition, the frequent occurrence of psychological violence can also produce qualitative changes, resulting in the decline of the overall job satisfaction rate of medical staff, resulting in the deterioration of hospital medical quality. Survey data showed that young nurses under 35 were more likely to experience workplace violence when working alone due to lack of experience [7, 8]. Most of the current research focuses on the emergency department, psychiatry, and other groups, and there are few research studies specifically on the workplace violence of intensive care unit (ICU) medical staff. The ICU is a high-risk area for workplace violence in hospitals because patients are critically ill, have a high mortality rate, and are prone to delirium; most of their

family members have anxiety, irritability, and other negative emotions, and the probability of workplace violence is also greatly increased [9]. This study analyzes the current situation and characteristics of workplace violence suffered by medical staff in intensive care units in order to provide a basis for guiding targeted prevention and control measures.

2. Materials and Methods

2.1. General Information. From October 2021 to January 2022, 230 medical staff in the ICU of Hengyang city were selected as the research subjects. All the enrolled personnel were 27 males and 203 females; their ages ranged from 22 to 45 years, with an average of (28.76 ± 4.83) years. In terms of education background, 36 research subjects graduated from junior colleges, 161 were undergraduates, 27 had a master's degree, and 6 were doctors. 122 subjects have primary titles, 82 subjects have intermediate titles, and 26 subjects have senior titles; 100 subjects have worked for more than 5 years, and 130 subjects have worked for ≤5 years; 114 subjects were unmarried, and 116 were married; 31 cases were the only child in their families, while 199 subjects were opposite; 171 cases had weekly working hours >45 h, and 59 cases had ≤45 h. This study complies with the requirements of the World Medical Association Declaration of Helsinki.

2.2. Inclusion Criteria. The inclusion criteria were as follows: ① regular employees working in the intensive care unit of our hospital; ② ICU medical staff who have access to patients; ③ those who gave informed consent and voluntary participation in the survey.

2.3. Exclusion Criteria. The exclusion criteria were as follows: ① interns in the ICU; ② those who are leaving the job for more than 3 months due to maternity leave and other reasons; ③ medical staff in the neonatal ICU; ④ those who have provided incomplete questionnaire data; ⑤ those who have worked in the ICU for less than 1 year.

2.4. Methods. All participants were surveyed using a questionnaire on workplace violence made by our hospital. The questionnaire included age, gender, education background, job title, length of service, marital status, if they were the only child in their families, and weekly working hours. The characteristics of workplace violence suffered by ICU medical staff were counted and recorded, including the time of occurrence, time being alone, gender of the perpetrator, age of the perpetrator, identity of the perpetrator, reasons for the violence, and ways of coping with the violence.

2.5. Observation Indicators. The observation indicators included the following: (1) statistical analysis of workplace violence suffered by ICU medical staff; (2) statistical analysis of the characteristics of workplace violence incidents suffered by ICU medical staff; (3) univariate analysis of the influencing factors of workplace violence among ICU medical staff; (4) multivariate analysis of independent influencing factors of workplace violence incidents suffered by ICU medical staff.

2.6. Statistical Processing. SPSS 18.0 was used to process data, count data were expressed as percentage (%), χ^2 test was conducted, and univariate and multivariate logistic regressions were used to analyze the influencing factors of workplace violence suffered by ICU medical staff. $P < 0.05$ shows that the difference is statistically significant.

3. Results

3.1. Workplace Violence Suffered by ICU Medical Staff. Among the 230 ICU medical staff, 93 (40.43%) staff suffered workplace violence, 18.70% staff suffered threats, 13.48% staff suffered verbal violence, 10.00% staff suffered physical violence, and 7.39% staff suffered sexual harassment. A total of 114 workplace violence incidents occurred, as shown in Table 1.

3.2. Characteristics of Workplace Violence Incidents Suffered by ICU Medical Staff. Among the 114 workplace violence incidents, 69 (59.65%) occurred during the day, 101 (88.60%) medical staff were present alone, and 91 (79.82%) perpetrators were male, and the perpetrators were mainly patients and their families. The main reasons for the violence were wrong verbal communication (15.79%), long time waiting for treatment (27.19%), and unsatisfactory treatment effect (38.60%). The main coping method of the medical staff after violence was patient explanation (64.04%), as shown in Table 2.

3.3. Univariate Analysis of the Influencing Factors of Workplace Violence That ICU Medical Staff Suffered. According to the workplace violence suffered by the ICU medical staff, they were divided into a violence group and a nonviolence group. There was a statistically significant difference between the two groups of medical staff in terms of working years and weekly working hours ($P < 0.05$). There was no statistically significant difference in gender, age, education background, job title, and marital status and if they were the only child in their families ($P > 0.05$), as shown in Table 3.

3.4. Multivariate Analysis of the Influencing Factors of Workplace Violence That ICU Medical Staff Suffered. Assigning scores to the variables with statistical significance in Table 3, violence group = 1, nonviolence group = 0; length of service > 5 years = 0, length of service ≤ 5 years = 1, weekly working hours >45 h = 1, and weekly working hours ≤ 45 h = 0 and using multivariate logistic analysis, working age ≤5 years (OR = 2.093, $P = 0.009$) and weekly working time >45 h (OR = 2.127, $P = 0.022$) were independent risk factors for ICU medical staff suffering workplace violence, as shown in Table 4.

Table 1: Workplace violence suffered by ICU medical staff.

Type of violence	Number of staff	Composition ratio (%)
Threat	43	18.70
Verbal violence	31	13.48
Physical violence	23	10.00
Sexual harassment	17	7.39
Total	93	40.43

Table 2: Characteristics of workplace violence incidents suffered by ICU medical staff.

Characteristics of workplace violence incidents		Case	Composition ratio (%)
Time of occurrence	Day shift	68	59.65
	Night shift	39	34.21
	After work	7	6.14
If they were present alone	Yes	101	88.60
	No	13	11.40
Gender of perpetrators	Male	91	79.82
	Female	23	20.18
Age of perpetrators	<18 years old	1	0.88
	18~40 years old	13	11.40
	41~60 years old	74	64.91
	>60 years old	26	22.81
	Patients	60	52.63
Identity of perpetrators	Family members of patients	49	42.98
	Other people	5	4.39
	High treatment costs	9	7.89
	Death of patients	12	10.53
Reason for workplace violence	Wrong verbal communication	18	15.79
	Long waiting time for treatment	31	27.19
	Unsatisfactory treatment effect	44	38.60
	Patient explanation	73	64.04
Coping method	Language warning	28	24.56
	Terminating treatment	2	1.75
	Calling the police/prosecuting	11	9.65

4. Discussion

Hospital workplace violence has become an important health problem that endangers the physical and mental health of medical staff worldwide [10]. According to the report of Indian Medical Association, 75% of doctors have experienced violence, while ICU accounts for nearly half of the total, and ICU medical staff face such incidents almost every day [11]. Therefore, how to optimize the diagnosis and treatment process, close the doctor-patient relationship, and then prevent the violence in the hospital workplace have become the key and difficult problem facing the hospital construction.

In this study, 40.43% of ICU medical staff suffered from workplace violence, which is similar to what Chu Haitao et al have found [12]. Among them, 18.70% had experienced threats, 13.48% had experienced verbal violence, 10.00% had experienced physical violence, and 7.39% had experienced sexual harassment, indicating that threats and verbal violence were the main types of workplace violence in the ICU. Patients and their family members used these irrational ways to protect their rights, which showed that the hospital's relevant management and national rights protection laws and regulations were weak. When medical staff are busy or exhausted and fail to meet the requirements of patients and their family members in time, patients and their families are prone to emotional agitation, which in turn leads to violent incidents. Therefore, violence in the ICU workplace mainly occurred during the daytime, which is the peak period for family visits of patients and the main time for medical staff to check the condition of patients. Previous research have shown that refusing the unreasonable demands of patients or their family members is the main reason why medical staff are subjected to violence in hospital workplaces, which is related to the imbalance between the supply and demand of medical services in the country [13]. 88.60% of the workplace violence occurred when medical staff were alone, prompting medical staff to be more vigilant and try to avoid ICU workplace violence caused by vulnerable situations such as being alone. Most of the perpetrators were middle-aged men. Because the men at this stage bear the dual pressures of work and life, they may be in adverse states such as anxiety and irritability for a long time and have poor tolerance for complicated medical procedures, long-time queuing examination, unsatisfactory treatment effect, etc. Therefore, such patients and their family members are more likely to be triggered by violence.

Table 3: Univariate analysis of the influencing factors of workplace violence that ICU medical staff suffered.

Item	n	Violence group ($n = 93$)		Nonviolence group ($n = 104$)		χ^2	P
		Case	Proportion	Case	Proportion		
Gender						1.483	0.223
Male	27	8	8.60	19	13.87		
Female	203	85	91.40	118	86.13		
Age (year)						1.309	0.253
>30	60	28	30.11	32	23.36		
≤30	170	65	69.89	105	76.64		
Education background						0.070	0.792
Junior college and undergraduate	161	66	70.97	95	69.34		
Master's degree and above	69	27	29.03	42	30.66		
Job title						0.976	0.323
Primary	122	53	56.99	69	50.36		
Intermediate and senior	108	40	43.01	68	49.64		
Length of service						6.539	0.011
>5	100	31	33.33	69	50.36		
≤5	130	62	66.67	68	49.64		
Marital status						0.262	0.609
Unmarried	114	48	51.61	66	48.18		
Married	116	45	48.39	71	51.82		
If they were the only child in their families						0.941	0.332
Yes	31	15	16.13	16	11.68		
No	199	78	83.87	121	88.32		
Weekly working hours (h)						5.842	0.016
>45	171	77	82.80	94	68.61		
≤45	59	16	17.20	43	31.39		

Table 4: Multivariate analysis of the influencing factors of workplace violence that ICU medical staff suffered.

Indicator	β	SE	Wald χ^2	OR	95% CI	P
Length of service (≤5 years vs >5 years)	0.738	0.282	6.839	2.093	1.203~3.639	0.009
Weekly working hours (>45 h vs ≤45 h)	0.755	0.331	5.214	2.127	1.113~4.066	0.022

Wang et al. found that positive coping and negative coping had a great impact on the psychological stress level of Chinese medical staff and played a mediating role in stress perception and psychological distress [14]. Through a survey of Chinese nurses, Ding et al. found that negative coping played a mediating role between self-efficacy and emotional exhaustion and had a negative effect on the degree of emotional exhaustion of Chinese medical staff [15]. In this study, the main coping method of medical staff after being subjected to violence was patient explanation. The main reason is that this method can help hospitals establish a safe and orderly working environment. But the downside is that it will put enormous pressure on medical staff. Under the influence of the violence of patients and their family members, the ICU medical staff are prone to anxiety, depression, and other negative psychology and may even develop posttraumatic stress disorder without timely intervention. However, only 9.65% of medical staff chose to report to the police/public prosecution, indicating that the hospital's alarm channel was not smooth and the hospital needed to strengthen the violence prevention equipment, such as monitors and alarms, and should also add relevant departments to solve violent incidents to facilitate medical staff to seek help and resolve contradictions.

Medical staff with short working experience are inexperienced, they have less participation in hospital-related safety training, and they have insufficient understanding of the regulations for preventing workplace violence. In addition, frequent medical troubles and tense doctor-patient relationship in recent years have led to a significant increase in the risk of hospital violence among medical staff. In this case, the medical staff do not have enough time to form a good doctor-patient relationship with patients, and communication between the two parties is difficult, which increases the probability of workplace violence in the ICU. The study by Liu Yuan et al. found that job burnout was one of the factors that caused the tension between doctors and patients [16]. So our study showed that working age ≤5 years and weekly working hours >45 h were independent risk factors for ICU medical staff in experiencing workplace violence. In addition, the medical staff have been in a tense environment between doctors and patients for a long time, and they are more vigilant for medical patients, which greatly reduces the contact and communication between doctors and patients and further increases the risk of hospital violence [17].

To sum up, length of service ≤5 years and weekly working hours >45 hours are high-risk factors for the

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Retraction

Retracted: Effects of Mind Mapping Combined with Microvideo Explanation on Disease Perception Control and Nursing Cooperation during Membrane Induction Therapy in Patients with Infectious Nonunion after Tibial Trauma

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] R. Xiong, N. Wang, and J. He, "Effects of Mind Mapping Combined with Microvideo Explanation on Disease Perception Control and Nursing Cooperation during Membrane Induction Therapy in Patients with Infectious Nonunion after Tibial Trauma," *Emergency Medicine International*, vol. 2022, Article ID 4439595, 6 pages, 2022.

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Research Article

Effects of Mind Mapping Combined with Microvideo Explanation on Disease Perception Control and Nursing Cooperation during Membrane Induction Therapy in Patients with Infectious Nonunion after Tibial Trauma

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Objective. To study the effects of mind mapping combined with microvideo explanation on disease perception control and nursing cooperation during membrane induction therapy in patients with infectious nonunion after tibial trauma. *Methods*. 30 patients with infectious nonunion after tibial trauma treated in the hospital between March 2018 and March 2022 were selected as the research subjects, and the patients were divided into a control group ($n = 15$) and an observation group ($n = 15$) by the random number table method. During membrane induction therapy, the control group adopted a routine nursing method while the observation group was given a nursing method of mind mapping combined with microvideo explanation. The disease perception control, nursing cooperation, and self-care ability of the two groups of patients were compared. *Results*. After nursing, the scores of aspects of "life impact (3.87 ± 0.92)," "duration (3.20 ± 1.01)," and "emotions (3.93 ± 0.59)" of the Brief Illness Perception Questionnaire (B-IPQ) in the observation group were lower than those in the control group (5.27 ± 0.88, 4.67 ± 1.05, and 4.93 ± 0.80, respectively) ($P < 0.05$) while the scores of "self-control (6.80 ± 1.21)" and "disease awareness (7.27 ± 0.70)" were higher than those in the control group (5.00 ± 1.07 and 5.93 ± 0.70, respectively) ($P < 0.05$). There was no significant difference in the total compliance rate between the two groups ($P > 0.05$). After nursing, the scores of dimensions and the total score of the Exercise of Self-Care Agency Scale (ESCA) were increased in the two groups, and the scores were higher in the observation group than those in the control group ($P < 0.05$). *Conclusion*. Mind mapping combined with microvideo explanation can improve the disease perception control during membrane induction therapy in patients with infectious nonunion after tibial trauma, improve the self-care ability, and facilitate the smooth progress of treatment.

1. Introduction

Infectious nonunion and bone defect are serious complications of trauma orthopedics, which are common after tibial fracture. Patients are often accompanied by local pain, joint dysfunction, deformity, and other uncomfortable symptoms, which seriously affect the daily life of patients [1, 2]. Membrane induction therapy is currently a commonly used surgical method for the treatment of infectious nonunion in clinical practice. This surgical method requires local infection control first, and then reconstruction of the bone defect [3]; the surgical methods are complex and the treatment cycle is long, and the pathogenesis and treatment process of the disease are complex. Patients often fear because of their lack of understanding of the disease, which in turn affects medical compliance behavior and disease prognosis [4]. Previous studies have pointed out that active, scientific, and effective health education methods can improve patients' cognition of diseases, improve patients' disease perception and treatment compliance, and are conducive to disease recovery [5]. However, conventional nursing and health education methods are abstract and difficult to understand. Patients lack understanding of professional vocabulary, and there are still problems of poor

communication and inadequate propaganda and education, therefore, the implementation effect needs to be improved. Mind mapping is a technique to visualize abstract things and knowledge, making medical content more straightforward, vivid, and concise, with a clear structure and prominent focus, which is convenient for medical staff, patients, and family members to learn and master [6]. In addition, in recent years, with the development of mobile Internet technology and new media, there are various forms of health knowledge dissemination by means of WeChat, Weibo, and other social platforms using microvideos, short videos, etc. [7, 8]. Compared with the traditional text and picture description, this method is more intuitive and less limited by the cultural level of viewers. As a new educational model, microvideo health education has been applied in clinical nursing work. Therefore, this study explored the effects of mind mapping combined with microvideo explanation on disease perception control and nursing cooperation during membrane induction therapy in patients with infectious nonunion after tibial trauma, aiming to provide a simpler and easier method for clinical trauma orthopaedic education, to improve patient awareness, and the results were now reported as follows.

2. Materials and Methods

2.1. General Information. A total of 30 patients with infectious nonunion after tibial trauma who were treated in our hospital from March 2018 to March 2022 were selected as the research subjects, and the patients were divided into a control group ($n = 15$) and an observation group ($n = 15$) by the random number table method. Among them, there were 10 males and 5 females in the control group; the age ranged from 41 to 54 years, with an average of 46.53 ± 4.22 years; in terms of their educational background, 2 cases have educational background of primary schools, 6 cases have been educated in junior high schools, and 7 cases have been educated in high schools and above. The observation group included 9 males and 6 females, aged 43–58 years, with an average age of 48.80 ± 4.39 years; their educational background covered 3 cases who have been educated in primary schools, 6 cases in junior high schools, and 6 cases in high schools and above. There was no significant difference in the comparison of general data between the two groups ($P > 0.05$), and the groups were comparable.

Inclusion criteria were as follows: (1) all patients who met the diagnostic criteria for infectious nonunion after tibial trauma [9] and were undergoing membrane induction therapy; (2) all who had unilateral limb damage; (3) patients aged ≥18 years; and (4) all patients who have been educated in primary schools or above and were able to understand the scales and questionnaires involved in this research. Exclusion criteria were as follows: (1) patients with mental, communication, comprehension, and hearing impairments; (2) patients who had refused more than 2 times of nursing operations; and (3) patients with major diseases such as malignant tumors and liver and kidney failure.

2.2. Methods. Control group: conventional nursing methods were adopted, and the main purpose was to enable patients to master disease knowledge, functional exercise methods to relieve pain, and relieve fear and anxiety: (1) General nursing: ① preoperative guidance: explained membrane induction therapy to patients before surgery; (2) postoperative care: (A) raised the affected limb after operation, promoted venous return, and reduced limb swelling; (B) evaluated patient's pain and diverted patients' attention by chatting with the patients or asking them to listen to music. Patients with severe pain should use analgesics as prescribed by the doctor; (C) observed the bleeding, swelling, and blood circulation of the affected limb at the wound site every day and changed the gauze in time when there was a lot of bleeding and exudate at the wound site. (2) Health education: ① Functional exercise: (A) massaged the limbs every day to promote blood circulation and stability recovery, prevented the formation of deep vein thrombosis in the lower extremities, and reduced edema; (B) ankle joint movement: straightened the ankle joint distally for 3-4 s, then dorsiflexed it distally for 3-4 s, straightened and dorsiflexed it once, and repeated the training about 100 times a day; (C) quadriceps contraction training: kept the lower limbs still and contracted the quadriceps for about 10 s or relaxed after feeling tired. Repeated this 10–20 times each time, and trained 3 to 4 times a day, paid attention to the gradual progress of the training process, as long as patients could tolerate it. ②Dietary care: instructed patients to eat a high-protein, high-nutrition, and high-vitamin diet to supplement their daily energy needs, eat more fresh fruits and vegetables, avoid spicy and greasy foods, and drink more water to prevent the risk of blood clots from increasing blood viscosity. ③ Psychological care: patients often have anxiety and fear because they were worried about the prognosis of the disease and functional recovery. Before the operation, patients should be introduced to the environment, members of the surgical team, related disease knowledge, and previous successful cases, so as to comfort the patients, relieve their tension, encourage them to enhance their confidence in treatment; guided their family members to participate in patients' functional rehabilitation after surgery, encouraged and accompanied patients to improve patients' compliance, and enabled them to actively participate in the treatment process.

Observation group: the nursing method using mind mapping combined with microvideo explanation: (1) Established a nursing team: members included 1 chief physician, 1 head nurse, several nurses, 1 rehabilitation therapist, and 1 video technician, and all personnel entered the research group after passing the training. (2) Preparation of mind maps: nurses assessed patients' awareness of the disease and their rehabilitation needs, combined with current nursing deficiencies, on the basis of collecting and reviewing relevant literature, consulted relevant experts, the head nurse and chief physician jointly conducted compilation of mind maps, listened to the relevant suggestions of front-line staff, used relevant software to formulate reasonable and appropriate mind maps, and distributed them to staff and patients so that

they could master and learn, as shown in Figure 1. (3) Microvideo production: on the basis of understanding the psychological and physiological needs of patients, nurses consulted literature, collected data, and combined past work experience to conduct targeted video shooting and video production around the possible nursing problems of patients during the perioperative period. Video production was completed under the guidance of video technicians; the content included disease knowledge introduction, preoperative guidance, surgical precautions and key points, postoperative functional exercise methods, and discharge guidance (postoperative rehabilitation functional exercise methods were provided by rehabilitation therapists; they were based on the actual situation of the department and patients with infectious nonunion after tibial trauma nonunion of membrane induction therapy to select the methods for functional exercise); the total duration of each video should not exceed 5 minutes, to ensure that it should be easy to understand, interesting, and scientific; During the treatment of patients, provide guidance through the WeChat group or organize patients to watch, gradually learn perioperative knowledge, and set up medical staff in the group to answer patients' questions for 24 hours.

2.3. Observation Indicators. (1) Illness perception control: assessed before and after nursing care by using The Brief Illness Perception Questionnaire (B-IPQ) [10], which was developed by Broadbent and included life impact, duration, self-control, treatment control, symptom, attention, disease understanding, emotion, and other items; the first 8 items were scored by a 0–10 scale, items 3, 4, and 7 were scored in reverse, and item 9 is an open-ended question (patients listed three important causes of the disease, which was not mandatory for patients), with a total score of 0 to 80; the higher the score was, the more negative perception the patient has towards the disease. (2) Nursing cooperation: a questionnaire designed by the hospital was used to evaluate patients' compliance, which was divided into three levels: compliance, basic compliance, and noncompliance. The total compliance rate was the sum of the compliance rate and the basic compliance rate. (3) Self-care ability: before and after nursing intervention, the Exercise of Self-Care Agency Scale (ESCA) [11] was used for evaluation, which included self-concept (9 items), self-responsibility (8 items), self-care skill (12 items), and health knowledge level (14 items); in these 4 dimensions with a total of 43 items, each item adopted the Likert 5-level scoring method, ranging from "very similar to me" to "not at all similar to me" with a score of 0~4, the total score is 172 points, and the higher the score, the stronger the patients' self-care ability.

2.4. Data Analysis. SPSS 21.0 software was used for statistical analysis. The count data (%) of normal distribution were tested by the $\chi 2$ test, and the measurement data ($\overline{x} \pm s$) were analyzed by the t test. $P < 0.05$ was considered to be statistically significant.

3. Results

3.1. Comparison of Disease Perception Control. Before nursing, there was no significant difference in the scores of B-IPQ items between the two groups ($P > 0.05$); after nursing, the scores of "life impact," "duration," and "emotions" in the observation group were lower than those in the control group ($P < 0.05$), and the scores of "self-control" and "disease awareness" were higher than those of the control group ($P < 0.05$), as shown in Table 1.

3.2. Comparison of Nursing Cooperation. The compliance rate of the observation group was 100.00%, and the compliance rate of the control group was 93.33%. There was no significant difference in the total compliance rate between the two groups ($P > 0.05$), as shown in Table 2.

3.3. Comparison of Self-Care Ability. Before nursing, there was no significant difference in scores of the ESCA dimension between the two groups ($P > 0.05$); after nursing, scores of the ESCA dimension and total scores in the two groups were increased, and scores of the observation group were higher than those of the control group ($P < 0.05$), as shown in Table 3.

4. Discussion

At present, the main surgical method for patients with infectious nonunion after tibial trauma is membrane induction therapy, which follows the principle of staged treatment, that is, the infection is controlled first and then the nonunion of the bone defect is treated, so the treatment cycle is long. When the wound is infected, the clinical symptoms of the patients are more serious, which can easily lead to fear and anxiety of patients [12]. Therefore, it is necessary to pay attention to the psychological needs of patients to improve their compliance with treatment and improve the prognosis. Mind mapping used to be one of the tools to improve learning efficiency, and it has the advantages of being intuitive and simple; microvideos are a means of displaying health education knowledge through a video, which is convenient for patients to understand and remember. Mind mapping and microvideos used in nursing teaching, clinical nursing management, health education, and other fields have achieved certain results, which are conducive to the development of clinical nursing [7, 13].

Results of this study showed that after nursing, scores of the observation group were lower than the scores of the control group in terms of "life impact," "duration," and "emotion" ($P < 0.05$), and scores of the observation group were higher than scores of the control group in terms of "self-control" and "disease awareness" ($P < 0.05$), which indicated that the use of mind mapping combined with microvideo explanations could improve disease perception control during membrane induction therapy in patients with infectious nonunion after tibial trauma, and improve their awareness of the disease. Nonunion is a serious complication after tibial trauma. Patients' wounds remain unhealed for a

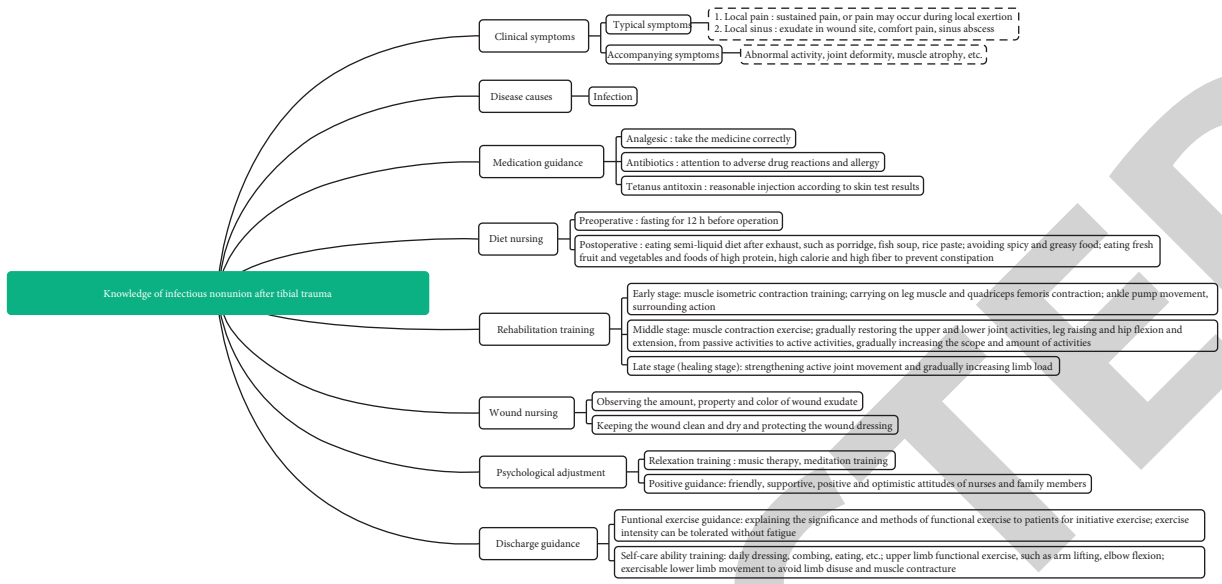

Figure 1: Schematic diagram of mind mapping of infectious nonunion after tibial trauma

Table 1: Comparison of B-IPQ scores between the two groups of patients ($\overline{x} \pm s$, points).

Group	n	Life impact		Duration		Self-control	
		Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing
Observation	15	8.07 ± 1.62	3.87 ± 0.92	7.60 ± 1.40	3.20 ± 1.01	4.80 ± 1.32	6.80 ± 1.21
Control	15	7.33 ± 1.80	5.27 ± 0.88	8.27 ± 1.22	4.67 ± 1.05	4.73 ± 1.44	5.00 ± 1.07
t		1.172	4.261	1.387	3.898	0.132	4.323
P		0.251	< 0.001	0.176	0.001	0.896	< 0.001
Group	n	Treatment control		Symptoms		Attention	
		Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing
Observation	15	7.20 ± 1.08	7.87 ± 1.41	7.07 ± 1.10	5.93 ± 01.22	7.00 ± 0.76	7.40 ± 0.83
Control	15	6.87 ± 1.13	7.40 ± 1.24	7.27 ± 0.96	5.80 ± 1.01	7.20 ± 1.52	7.20 ± 0.94
t		0.827	0.963	0.530	0.325	0.456	0.618
P		0.415	0.344	0.600	0.748	0.652	0.542
Group	n	Disease awareness		Emotion		Total points	
		Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing
Observation	15	4.07 ± 1.49	7.27 ± 0.70	7.33 ± 0.90	3.93 ± 0.59	52.13 ± 8.94	21.60 ± 2.69
Control	15	4.33 ± 0.82	5.93 ± 0.70	7.07 ± 1.22	4.93 ± 0.80	51.47 ± 12.48	26.00 ± 5.03
t		0.609	5.189	0.680	3.892	0.168	2.987
P		0.547	< 0.001	0.502	0.001	0.868	0.006

Table 2: Comparison of nursing cooperation between the two groups of patients (n (%)).

Group	n	Compliance	Basic compliance	Noncompliance	Overall compliance rate
Observation	15	12 (80.00)	3 (20.00)	0 (0.00)	15 (100.00)
Control	15	4 (26.67)	10 (66.67)	1 (6.67)	14 (93.33)
χ^2					1.034
P					0.309

long time, and the prolonged course of the disease will affect patients' confidence in recovery. In addition to the inability to heal the wound, patients with infected nonunion may also experience symptoms such as fever, pain in the affected limb, and bone defect, which increases the burden on the patient. Patients often have negative psychology due to fear of the prognosis of the disease (such as amputation, and disability), which may lead to a sense of powerlessness, unable to control the progress of the disease, and then reduce compliance and willingness to cooperate. Mind mapping in this study can simplify, concretize, and make complex pathological knowledge three-dimensional, so that patients and their families can better understand the treatment plan and improve their cognition of the disease to achieve the purpose

Table 3: Comparison of ESCA scores between the two groups of patients ($\overline{x} \pm s$, points).

Group	n	Self-concept (0~36 points)		Self-responsibility (0~32 points)		Self-care skill (0~48 points)	
		Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing
Observation	15	18.87 ± 3.62	28.47 ± 3.94	20.07 ± 2.99	27.20 ± 4.96	18.53 ± 4.67	37.47 ± 5.83
Control	15	18.47 ± 3.66	23.67 ± 4.22	17.80 ± 5.54	22..00 ± 3.19	19.40 ± 6.12	28.67 ± 5.04
t		0.301	3.219	1.394	3.284	0.436	4.242
P		0.766	0.003	0.174	0.003	0.666	< 0.001
Group	n	Health knowledge level (0~56 points)		Total score (0~172 points)			
		Before nursing	After nursing	Before nursing	After nursing		
Observation	15	28.87 ± 3.64	44.87 ± 4.87	96.40 ± 17.56	121.47 ± 10.41		
Control	15	27.73 ± 4.08	38.87 ± 4.22	100.87 ± 13.74	105.40 ± 8.63		
t		0.803	3.606	0.776	4.600		
P		0.429	0.001	0.444	< 0.001		

of disease perception control and help patients overcome their previous ignorance and fear of the disease, and change their distrust of medical staff [14]. At the same time, combined with microvideo explanations, patients can learn about the causes of infectious nonunion, rehabilitation programs, functional exercise methods, dietary guidance, etc. Because microvideos are more intuitive than pictures and text, they are more conducive to patients' learning and memory. Therefore, the scores of "life impact," "self-control," and "disease awareness" in the observation group were better than those in the control group. Since the conventional treatment used in the control group also had a certain clinical effect on the patients, the patients' compliance with the nursing intervention did not change much.

This study also found that after nursing, scores of the ESCA dimension and total scores in the observation group were higher than those in the control group ($P < 0.05$), which indicated that mind mapping combined with microvideo could improve patients' self-care ability and benefit disease recovery. Mind mapping incorporates pathological knowledge involved in patients' perioperative period, improves patients' cognitive level with targeted nursing methods, guides patients to strengthen self-management, and keeps patients vigilant in medication, diet, rehabilitation exercise, psychological adjustment, etc., thereby improving self-care ability [15]. However, the control group lacked specific and visual guidance, and self-control in medication, rehabilitation, functional exercise, etc. would be slightly weaker; hence, the ESCA score of the patients in the observation group was not as good as that of the patients in the observation group. In addition, the content of health education for infectious nonunion is numerous and complicated. Patients are in pain and have limited activities. They cannot master correct self-care methods in a short time. Microvideos convey complex functional exercises, rehabilitation physiotherapy in an intuitive form, and patients can deepen their impression through repeated viewing. Even after discharge, patients and their families can still conduct self-health education and guidance through microvideos [16], so the patients' self-care ability is higher.

In conclusion, mind mapping combined with microvideos can improve disease perception control of patients with infectious nonunion after tibial trauma during membrane induction therapy and improve patients' nursing cooperation and self-care ability, which is conducive to disease recovery.

Data Availability

The data can be obtained from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

Acknowledgments

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Retraction

Retracted: Application of Chain Nursing Process in the Nursing of Elderly Inpatients with Implantable Venous Infusion Port

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] J. Hu, L. Zhou, and J. Ding, "Application of Chain Nursing Process in the Nursing of Elderly Inpatients with Implantable Venous Infusion Port," *Emergency Medicine International*, vol. 2022, Article ID 5496533, 5 pages, 2022.

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Research Article

Application of Chain Nursing Process in the Nursing of Elderly Inpatients with Implantable Venous Infusion Port

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Objective. To explore the application effects of chain nursing process in the nursing of elderly inpatients with implantable venous infusion port. *Methods*. 81 elderly inpatients who were treated with implantable venous infusion port in the hospital were selected between February 2018 and December 2021, and they were divided into the routine group (given routine nursing of implantable venous infusion port, $n = 40$) and the study group (given chain nursing process intervention on the basis of the routine group, $n = 41$) according to the random number table method. The patients in both groups were intervened for 1 month. The catheter-related indicators and incidence rates of adverse events (drug extravasation, local hematoma, infusion port blockage, catheter-related infection) were compared between the two groups of patients. Generalized Anxiety Disorder 7-item scale (GAD-7) and Athens Insomnia Scale (AIS) were used to compare the psychological states of the two groups before and after intervention, and Newcastle Satisfaction with Nursing Scale (NSNS) was adopted to compare the nursing satisfaction of patients before and after intervention. *Results*. After intervention, the catheter maintenance operation time in the study group was shorter than that in the routine group ($P < 0.05$), and there were no significant differences in the accidental extubation rate and re-intubation rate between the two groups ($P > 0.05$). The incidence rate of adverse reactions of 2.44% in the study group was lower than 15.00% in the routine group ($P < 0.05$). After intervention, the scores of GAD-7 and AIS in the two groups were reduced compared with those before intervention, and the above scores in the study group were lower than those in the routine group ($P < 0.05$). Before intervention, there were no significant differences in the NSNS scores between the two groups ($P > 0.05$). After intervention, the NSNS scores in the study group were higher than those in the routine group ($P < 0.05$). *Conclusion*. Chain nursing process can help to enhance the maintenance quality of implantable venous infusion port, reduce the incidence of adverse events, relieve the tension and anxiety, and improve the satisfaction of patients with nursing.

1. Introduction

Implantable venous infusion port is an infusion device that can be placed subcutaneously and indwelled for a long time. [1, 2]. Compared with peripheral venous catheterization and indwelling needle intravenous infusion, the incidence of local redness, drug extravasation and other adverse reactions is reduced, and the safety is high, and there is less damage to the lining of patients' blood vessels [3, 4].And has that advantage of convenient operation, reduced puncture frequency, convenient maintenance and the like. Therefore, for patients who need long-term infusion and infusion of chemotherapy drugs, the implantable venous port is an ideal infusion method. However, problems such as phlebitis and hematoma will also exist in the long-term use of intravenous infusion port, which will affect the treatment effect of patients. In addition, intravenous infusion port is relatively expensive compared with other intravenous infusion devices, and patients are often anxious because of worry about the infusion port being blocked [5]. Therefore, the standardized maintenance of implanted venous infusion port is of great significance to improve the treatment effect of patients and their negative emotions. The routine care of implanted venous infusion port includes daily maintenance,

health education, etc., which can prolong the use time of the infusion port to a certain extent, but the situation of tube blockage and drug solution extravasation still occurs, therefore, it is particularly important to take standardized, scientific and process-based nursing. Chain nursing process is based on chain nursing management model, which optimizes nursing operation process and conducts nursing operations in a scientific and standardized manner, thereby improving the quality of nursing. The existing research has confirmed the application value of chain nursing process in the critical patients, but few studies have reported its application effect in the maintenance of infusion port. This study adopted a chain nursing process to care for patients with implantable venous infusion port, aiming to improve the quality of nursing. The study was reported as follows.

2. Materials and Methods

2.1. General Information. A total of 81 elderly inpatients treated with implantable venous infusion port in our hospital from February 2018 to December 2021 were selected. Inclusion criteria: ① All received intravenous infusion therapy with implantable infusion port; ② All needed long-term or repeated intravenous infusion of drugs; ③ All signed informed consent notice; ④ Patients over 60 years old. Exclusion criteria: ① Abnormal coagulation function; ② Blood infectious diseases; ③ Combined mental disorders or depression; ④ Patients who lost follow-up during the intervention.

According to the random number table method, they were divided into a routine group and a study group. There were 40 patients in the routine group, including 19 males and 21 females; the age ranged from 60 to 71 years, with an average age of (65.13 ± 2.48) years; the time of infusion port placement were 2 to 13 months, with an average of (8.07 ± 2.15) months. There were 41 patients in the study group, including 18 males and 22 females, aged 61–72 years, with an average age of (65.83 ± 2.71) years; the time of infusion port placement: 2–15 months, with an average of (8.84 ± 2.62) months. There was no significant difference between the two groups in the above general data ($P > 0.05$).

3. Methods

The routine group received routine care of implantable venous infusion port. Before infusion, observed the puncture pointsof patients and observe whether there is blood oozing, swelling and liquid oozing, whether the fixation is firm, whether the peripheral skin is clean and dry and whether the patients have no subjective discomfort. At the same time, to the patient to do a good job of explanation, patients with cooperation. In the implementation of infusion operations strictly aseptic operation principle, in accordance with the infusion of implantable venous port operation process. The conventional disinfection radius was greater than 10~12 cm, and at the same time disinfected the operator's left thumb, index finger and middle finger. Arched the infusion port for vertical puncture, and withdrew after confirming that the needle was located in the infusion port, used the normal saline pulse to flush the tube and connected the infusion pipeline. When using multiple drugs, flushed the tube before and after each drug solution infusion. After the infusion was completed, the tube was flushed. The patients were instructed to place the limb on the side of the intravenous infusion port to avoid pressure or weight bearing, psychological care was given to the patients, and the precautions and nursing points were explained to the patients to relieve the patients' psychological burden.

The study group received chain nursing process intervention on the basis of the routine group (1) Set up chain nursing process group of implantable venous transfusion port, and in the implantable venous infusion port chain nursing process group, the group should include a peripheral venous catheter specialist nurse for infusion port maintenance, who was responsible for explaining the application and maintenance of implantable venous infusion port to general nurses. The head nurse organized the medical staff in the department to learn chain process nursing knowledge, and select an experienced clinician to explain the general principles and precautions of infusion port to the group members, as well as symptomatic treatment towards tube blockage, bleeding, infection, etc. (2) Specific implementation: ① The specialist nurse collected the basic information of the patients, including the time and material of infusion port, the patients' medication status, personal cultural level, understanding and cooperation ability, to establish regular maintenance files. ② Organized the nurses of the department to learn the professional knowledge of implantable venous infusion port together, including the basic process of puncture, daily aseptic operation process, application process and maintenance operation, and learn through video display and operation demonstration. All nurses would accept the operation standard assessment after the completion of the study. ③ Chain process care was performed in strict accordance with the routine steps of hand washing, packaging, specification of sterile areas, proper placement of objects, proper disinfection, and drying. Carefully evaluated the skin condition around the infusion port bag before operation. Washed hands and wore a mask. Opened the sterile field according to the principle of sterility, arranged the items used in the sterile area reasonably. First, used ethanol to disinfect around the injection seat according to the clockwise, anti-clockwise and clockwise directions, disinfected at least 3 times and the disinfection area met the requirements; wore gloves according to the aseptic principle. After connecting the positive pressure connector and the non-damaged needle, performed pre-flushing and exhausting. After vertical puncture and withdrawal, the normal saline was pre-flushed, and the extension tube was clamped to separate the syringe. After the puncture maintenance, followed the steps for fixed maintenance. After the wings were attached to the gauze, a 3M transparent applicator was used for tension-free fixation. The gauze wrapped the positive pressure joint and the tape was attached to the skin. Recorded the person who was responsible for maintenance and the time for it. ④ After each use of the infusion port, recorded it on the individual file. After maintenance, wrote down the maintenance time, whether there was any

adverse event such as blockage, bleeding, etc., the patients' individual feeling and the next maintenance time, signed and implemented the responsibility system management. ⑤ The head nurse checked the patients' individual nursing files and maintenance records every week, strictly assessed the nurses' operating procedures, and conducted separate training and intensive training for the nurses who lacked knowledge. Organized emergency drills for adverse events in the infusion port, and trained nurses for emergency treatment towards infusion port thrombosis blocked, strictly managed and standardized the operation process and maintenance steps.

3.1. Observation Indicators

(1) Catheter-related indicators: The operation time of catheter maintenance, the number of cases of accidental extubation and the number of cases of reintubation were recorded and compared between the two groups before the intervention and 1 month after the intervention. Amog them, accidental extubation refers to the accidental dropping of the intubation tube or the patient's extubation without the consent of the medical staff, which also includes the extubation caused by improper operation of the medical staff.

(2) The occurrence of adverse events, the occurrence of drug solution extravasation, local hematoma, infusion port blockage and catheter-related infection were compared between the two groups. Overall incidence = number of patients with adverse events/total number of cases × 100%.

(3) Mental state: Before and after the intervention, the patients were assessed according to the Generalized Anxiety Disorder (GAD-7) [6] and Athens insomnia scale (AIS) [7]. GAD-7 Includes 7 descriptions related to tension, anxiety, and irritability, namely "nervous, anxious, or anxious," "unable to stop or control worrying," "worrying too much about everything," "difficult to relax," "uneasy and difficult to sit still," "easy to be irritable and annoyed," "feel that something bad happened," each description is scored as 0–3 points according to "not at all" ~ "almost every day," the higher the score is, the more severe anxiety the patients have. AIS includes 8 sleep-related descriptions. Each description is scored from 0 to 3 points according to "no problem" ~ "severe delay or completely so," with a total score of 0 to 24 points. The higher the score is, the more serious the sleep disorder is.

(4) Nursing satisfaction: Before the intervention and 1 month after the intervention, the patients' satisfaction was evaluated according to Newcastle satisfaction with nursing scales (NSNS) [8]. NSNS includes 19 questions related to nursing service and attitude, which can be summarized as nurses' operating norms, service attitude, and professionalism. Every aspect is scored as 1 to 5 points based on "very dissatisfied" to "very satisfied," and the total score of the three aspects is 20 points and 45 points respectively. The total score of the scale is 1–95 points. The higher the total score is, the higher the patients' satisfaction will be.

3.2. Statistical Methods. SPSS 19.0 statistical tool was used to compare and analyze the data. The normally distributed measurement data was analyzed by the independent sample t test, the count data was expressed by %, and χ^2 test was performed. The grade data was analyzed by Mann-whitney u test. $P < 0.05$ was considered to be that the difference is statistically significant.

4. Results

4.1. Catheter Maintenance-Related Indicators of the Two Groups. Before the intervention, there was no significant difference in the catheter maintenance operation time between the two groups ($P > 0.05$). After the intervention, the catheter maintenance operation time in the study group was shorter than that in the routine group ($P < 0.05$). There was no significant difference ($P > 0.05$), as shown in Table 1.

4.2. Comparison of the Incidence of Adverse Events between the Two Groups. The incidence of adverse reactions in the study group was 2.44%, which was lower than 15.00% in the routine group, and the difference was statistically significant ($P < 0.05$), as shown in Table 2.

4.3. Comparison of GAD-7 and AIS Scores between the Two Groups. Before the intervention, there was no significant difference in GAD-7 and AIS scores between the two groups ($P > 0.05$). After the intervention, the GAD-7 and AIS scores in the two groups were lower than those before the intervention, and the above scores in the study group were lower than those in the routine group ($P < 0.05$), as shown in Table 3.

4.4. Comparison of NSNS Scores between the Two Groups. Before the intervention (abbreviated as "before" in the table below), there was no significant difference in the NSNS score between the two groups ($P > 0.05$). After the intervention (abbreviated as "after" in the table below), the NSNS score in the study group was higher than that in the routine group ($P < 0.05$), as shown in Table 4.

5. Discussion

Under normal circumstances, elderly patients have many diseases and complicated conditions, with poor peripheral vascular elasticity and large brittleness, which are difficult to puncture. As an intravenous infusion device that can be indwelled in the body of a patient for a long time, the implantable infusion port can reduce the pain of repeated puncture in patients with long-term infusion, reduce the damage to blood vessels and tissues caused by multiple

Table 1: Catheter maintenance-related indicators of the two groups [$\overline{x} \pm s$; n(%)].

Group	n	Catheter maintenance operation time (min)		Accidental extubation rate	Reintubation rate
		Before intervention	After intervention		
Study group	41	12.23 ± 1.11	8.05 ± 0.76*	1 (2.44)	0 (0.00)
Routine group	40	12.19 ± 1.05	10.54 ± 0.94*	3 (7.50)	1 (2.50)
t/χ^2		0.167	13.125	1.105	1.0378
P		0.868	<0.001	0.293	0.308

Note: Compared to before intervention, * $P < 0.05$.

Table 2: Comparison of the incidence of adverse events between the two groups [n (%)].

Group	n	Extravasation	Local hematoma	Infusion port blockage	Catheter-related infection	Total incidence
Study group	41	0 (0.00)	0 (0.00)	1 (2.44)	0 (0.00)	1 (2.44)
Routine group	40	1 (2.50)	2 (5.00)	1 (2.50)	2 (5.00)	6 (15.00)
χ^2						4.046
P						0.044

Table 3: Comparison of GAD-7 and AIS scores between the two groups ($\overline{x} \pm s$, points).

Group	n	GAD-7		AIS	
		Before intervention	After intervention	Before intervention	After intervention
Study group	41	17.23 ± 2.32	10.51 ± 1.64*	18.12 ± 2.86	11.59 ± 1.04*
Routine group	40	17.19 ± 2.26	13.87 ± 1.99*	18.08 ± 2.74	14.02 ± 1.62*
t		0.079	8.302	0.064	8.286
P		0.938	<0.001	0.949	<0.001

Note: Compared to before intervention, * $P < 0.05$.

Table 4: Comparison of NSNS scores between the two groups ($\overline{x} \pm s$, points).

Group	n	Operating specifications		Service attitude		Professional level		Total score	
		Before	After	Before	After	Before	After	Before	After
Study group	41	13.41 ± 3.02	17.69 ± 1.15*	42.69 ± 1.28	43.58 ± 1.33	20.08 ± 1.24	27.68 ± 1.65*	76.18 ± 1.91	88.95 ± 2.41*
Routine group	40	13.44 ± 3.11	15.38 ± 1.09*	42.71 ± 1.29	43.19 ± 1.31	20.12 ± 1.22	24.83 ± 1.47*	76.27 ± 1.95	83.41 ± 2.09*
t		0.044	9.274	0.070	1.329	0.146	8.201	0.210	11.041
P		0.965	<0.001	0.944	0.188	0.884	<0.001	0.834	<0.001

Note: Compared to before intervention, * $P < 0.05$.

punctures, and reduce nutritional support drugs and chemotherapy. [9, 10]. However, the ability of peripheral vascular resistance to chemical and mechanical damage in elderly patients is decreased, which is prone to phlebitis. And due to the high cost of implanted venous infusion ports, once there is a risk of complications due to improper care, it will lead to extubation or catheter adverse events, which will cause additional economic burden to patients and increase the risk of nurse-patient conflict, which is not conducive to the improvement of patient satisfaction and quality of care [11]. Therefore, taking scientific and standardized implantable venous infusion port nursing can improve the clinical treatment effect and promote the recovery of patients. Routine nursing focuses on the maintenance during and after use, but lacks the overall nursing process of the system. While chain process nursing focuses on optimization process, clarifies the operating procedures and steps, emphasizes the standardized implementation of the nursing process, which will help to improve the quality of care and promote the nursing management of implantable venous infusion port.

The study carried out by Guo [12] showed that the use of chain process management can effectively reduce the contrast medium extravasation rate and severity in CT enhancement, which is similar to the results of this study. After the intervention of chain process nursing in this study, the data further showed that the catheter maintenance operation time of the patients in the study group was shorter than that of the routine group, and the incidence of adverse events was lower than that of the routine group ($P < 0.05$), which indicating that the use of chain process nursing could improve the work efficiency of nurses and reduce the incidence of adverse events. The reason may be that through the establishment of a chain process nursing group, specialist nurses would provide explanations and training, and clinicians would explain and analyze common adverse events in the infusion port, which would help to improve nurses and patients' understanding of infusion port. Process nursing training and operation skills assessment could help nurses improve their operational ability. At the patient level, due to their increased understanding of infusion port knowledge, they could actively improve their awareness of cooperation and assist nurses in completing catheter-related operations. Therefore, the time for catheter maintenance in the study group after intervention was shortened. Extravasation of drug solution, local swelling or catheter blockage

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Retraction

Retracted: Serum IMA and LP-PLA2 Levels in Patients with Coronary Heart Disease and Their Correlation with the Degree of Myocardial Ischaemia and Their Diagnostic Value

Emergency Medicine International

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In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] L. Zhang, Z. Li, and N. Li, "Serum IMA and LP-PLA2 Levels in Patients with Coronary Heart Disease and Their Correlation with the Degree of Myocardial Ischaemia and Their Diagnostic Value," *Emergency Medicine International*, vol. 2022, Article ID 1698315, 9 pages, 2022.

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Research Article

Serum IMA and LP-PLA2 Levels in Patients with Coronary Heart Disease and Their Correlation with the Degree of Myocardial Ischaemia and Their Diagnostic Value

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Purpose. To measure serum levels of ischaemia-modified albumin (IMA) and lipoprotein-associated phospholipase A2 (LP-PLA2) in patients with coronary heart disease (CHD) and to analyse their correlation with the degree of myocardial ischaemia and their diagnostic value. *Methods*. A sample of 150 patients diagnosed with CHD by coronary angiography in our hospital from March 2019 to September 2021 was taken as the CHD group. The patients were divided into acute myocardial infarction (AMI) group ($n = 52$), unstable angina pectoris (UAP) group ($n = 54$), and stable angina pectoris (SAP) group ($n = 44$) according to the degree of myocardial ischaemia, and then 50 healthy physical examination patients were selected as the health group during the same period. Serum C-reactive protein (CRP), interleukin-6 (IL-6), IMA, and LP-PLA2 levels were measured in each group separately. Multiple ordered logistic regression was used to analyse the factors influencing the degree of myocardial ischaemia in patients with CHD. Pearson correlation was used to analyse the correlation between serum IMA, LP-PLA2 levels and serum CRP, IL-6 levels in CHD patients. The diagnostic value of IMA alone, LP-PLA2 alone, and in combination for CHD was analysed using receiver operating characteristic (ROC) curves. *Results*. In terms of serum CRP, IL-6, IMA, and LP-PLA2 levels, the CHD group was higher than the health group, the AMI and UAP groups were higher than the SAP and health groups, and the AMI group was higher than the UAP group ($P < 0.05$). Multiple ordered logistic regression analysis showed that serum CRP, IL-6, IMA, and LP-PLA2 levels were all independent influences on the degree of myocardial ischaemia in patients with CHD ($P < 0.05$). Pearson correlation analysis showed a positive correlation between serum IMA, LP-PLA2 levels and serum CRP, IL-6 levels in CHD patients ($P < 0.001$). The area under curve (AUC) for serum IMA levels to predict myocardial ischaemia in patients with CHD was 0.754 (95% CI: 0.684–0.825), with a sensitivity of 61.3% and specificity of 84.0% when the best cut-off value was 0.453; the AUC for serum LP-PLA2 levels to predict myocardial ischaemia in patients with CHD was 0.747 (95% CI: 0.681–0.813), with a sensitivity of 62.0% and specificity of 82.0% when the optimal cut-off value was 0.440; and the AUC of IMA + LP-PLA2 for predicting myocardial ischaemia in patients with CHD was 0.892 (95% CI: 0.847–0.938), with a sensitivity of 86.7% and specificity of 80.0% when the optimal cut-off value was 0.667. The specificity was 80.0%. *Conclusions*. Serum IMA and LP-PLA2 levels are elevated in patients with CHD. Serum IMA and LP-PLA2 levels are closely related to the degree of myocardial ischaemia and its inflammatory level, and the combination of IMA + LP-PLA2 can improve the diagnosis efficacy of myocardial ischaemia in CHD patients.

1. Introduction

According to the World Health Organization (WHO) 2018 report, in 2016, approximately 17.9 million people died from cardiovascular diseases worldwide, accounting for 31.4% of global deaths and 44.0% of deaths from chronic noncommunicable diseases (NCDs) [1]. Coronary heart disease (CHD) is a common type of clinical cardiovascular disease, and its morbidity and mortality rates are increasing significantly and tend to be lower in age [2]. It is a heart condition that occurs when there is atherosclerosis of the coronary arteries, the blood vessels that supply the heart muscle, and the lumen is narrowed by more than 50%. The disease can cause incomplete or complete coronary artery obstruction, which in turn triggers temporary or permanent myocardial ischaemia and hypoxia and usually includes clinical pathologies such as stable angina pectoris (SAP) and unstable angina pectoris (UAP) and acute myocardial infarction (AMI) [3]. Unfortunately, the clinical manifestations of early myocardial ischaemia are often vague, diverse, and not easily identifiable. Coupled with the fact that existing myocardial biochemical markers (e.g., creatine kinase isoenzymes, myoglobin, and cardiac troponin) can only be detected after irreversible cell damage and disruption of cell membrane integrity, and that the levels of these markers are not elevated in the blood during short-term and reversible ischaemic episodes, it is of great importance to find an early biochemical diagnostic index of myocardial ischaemia that is cost-effective, rapid, and accurate [4–6].

Ischaemia-modified albumin (IMA) is formed by the modification of alanine, aspartate, histidine, and tonine in the amino terminus of the body's blood albumin under myocardial hypoxia and ischaemia, and it is a sensitive indicator of myocardial ischaemia but cannot distinguish myocardial infarction from myocardial ischaemia [7]. Lipoprotein-associated phospholipase A2 (LP-PLA2) is a phospholipase secreted by inflammatory cells that catalyses the hydrolysis of various oxidised phospholipids and inflammatory factors and is involved in the production of lipid-like proinflammatory substances that have various atherogenic effects [8]. A large number of studies [9, 10] have found that IMA and LP-PLA2 are involved in the development and progression of cardiovascular disease and that their serum change levels are closely related to the inflammatory response and tissue metabolism of patients. However, the clinical application value of the combination of the two in the detection of patients with CHD is yet to be further validated. In this paper, we measured serum IMA and LP-PLA2 levels in CHD patients and analysed their correlation with the degree of myocardial ischaemia and their diagnostic value. The report can be found below.

2. Materials and Methods

2.1. General Information. A sample of 150 patients diagnosed with CHD by coronary angiography in our hospital from March 2019 to September 2021 was taken as the CHD group. The patients were divided into the AMI group ($n = 52$), the UAP group ($n = 54$), and the SAP group ($n = 44$) according to the degree of myocardial ischaemia. Inclusion criteria: ① all met the American College of Cardiology (ACC)/American Heart Association (AHA) diagnostic criteria [11–13]; ② all with definite vascular lesions confirmed by coronary angiography; and ③ those with complete medical history. Exclusion criteria: ① combined with stroke and other cerebrovascular pathologies; ② combined with congenital heart disease, severe arrhythmia, or other cardiac diseases; ③ combined with peripheral vascular diseases; ④ combined with acute and chronic infectious diseases; ⑤ postcoronary artery bypass grafting or coronary artery stenting; ⑥ combined with autoimmune diseases, malignant tumours, or haematological diseases; ⑦ combined with severe liver and kidney insufficiency; or ⑧ incomplete medical records. And then 50 healthy physical examination patients were selected as the health group during the same period.

2.2. Research Methods

2.2.1. Clinical Data Collection. All patients in the CHD group underwent coronary angiography, and the Gensini score was calculated to assess the degree of stenosis and the location of the lesion in the coronary arteries; general medical history (gender, age, body mass index (BMI), smoking history, hypertension, diabetes, stroke history, etc.) and laboratory tests (high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), total cholesterol (TC), triglyceride (TG), fasting blood glucose (FBG), C-reactive protein (CRP), interleukin-6 (IL-6), IMA, LP-PLA2, etc.).

2.2.2. Specimen Collection and Processing. Patients in the CHD group had elbow venous blood collected immediately after admission (FBG was tested using fasting venous blood specimens collected in the early morning of the day after admission), while patients in the health group had fasting elbow venous blood collected in the early morning in accordance with WS/T 225-2016 "Collection and Handling of Blood Specimens for Clinical Chemistry Tests". 4 ml was collected in a yellow cap vacuum blood tube and centrifuged within 1 h (1000 g, 5 min), and the serum was divided into 2 parts. 1 part was used to measure HDL-C, LDL-C, TC, TG, FBG, CRP, and IL-6 levels within 5 h. The other part was stored in a refrigerator at −80°C for centralised measurement of IMA and LP-PLA2 levels.

2.2.3. Testing Instruments, Methods, and Kits. The testing instrument was the AU5800 fully automatic biochemical analyser (Beckman Coulter, USA). HDL-C and LDL-C (direct method) kits were purchased from Changchun Huili Biotechnology Co. Ltd.; TC, TG, CRP, IL-6, and LP-PLA2 (enzyme linked immunoassay) kits were purchased from Shanghai Ulva Biotechnology Co. Ltd.; the FBG (oxidase method) kit was purchased from Sichuan Mike

Biotechnology Co. Ltd.; and the IMA (albumin cobalt binding method) kit was purchased from Beijing Jiuqiang Biotechnology Co. Ltd.

2.3. Statistical Methods. Data were processed using SPSS 22.0 software. Categorical variables were expressed as n (%), and a χ^2 test was applied. Measures obeying normal distribution were expressed as mean ± standard deviation ($\overline{x} \pm s$), and one-way ANOVA was used for multiple group comparisons, and the t-test was used for two-way comparisons. Multiple ordered logistic regression was used to analyse the factors influencing the degree of myocardial ischaemia in CHD patients. Pearson correlation was used to analyse the correlation between serum IMA, LP-PLA2 levels and serum CRP, IL-6 levels in CHD patients. The predictive value of serum LP-PLA2 and IMA levels for the development of myocardial ischaemia in patients with CHD was analysed using receiver operating characteristic (ROC) curves. The test level was $\alpha = 0.05$, and $P < 0.05$ was considered a statistically significant difference.

3. Results

3.1. Comparison of General Information between the CHD Group and the Health Group. There was no statistical difference between the CHD group and the health group in terms of gender and age ($P > 0.05$). There was a statistical difference between the CHD group and the health group in terms of smoking history, hypertension, diabetes, stroke history, and HDL-C, BMI, LDL-C, TC, TG, and FBG levels ($P < 0.05$) (Table 1).

3.2. Comparison of Serum CRP, IL-6, IMA, and LP-PLA2 Levels between the Observation and Health Groups. The serum CRP, IL-6, IMA, and LP-PLA2 levels were higher in the CHD group than in the health group ($P < 0.05$) (Figures 1–4).

3.3. Comparison of Serum CRP, IL-6, IMA, and LP-PLA2 Levels between the Groups. The serum levels of CRP, IL-6, IMA, and LP-PLA2 were higher in the AMI and UAP groups than in the SAP and health groups, as well as in the AMI group than in the UAP group ($P < 0.05$). (Figures 5–8).

3.4. Multivariate Ordered Logistic Regression Analysis of Factors Influencing the Degree of Myocardial Ischaemia in Patients with CHD. Serum CRP, IL-6, IMA, and LP-PLA2 levels were used as independent variables, and the degree of myocardial ischaemia was used as the dependent variable in a multivariate ordered logistic regression analysis. The results showed that serum CRP, IL-6, IMA, and LP-PLA2 levels were all independent influences on the degree of myocardial ischaemia in patients with CHD ($P < 0.05$) (Tables 2 and 3).

3.5. Correlation of Serum IMA, LP-PLA2 Levels with Serum CRP, and IL-6 Levels in Patients with CHD. Pearson correlation analysis showed that serum IMA levels in CHD patients were positively correlated with CRP ($r = 0.751$) and IL-6 ($r = 0.772$) levels ($P < 0.001$) and that serum LP-PLA2 levels were positively correlated with CRP ($r = 0.790$) and IL-6 ($r = 0.814$) levels ($P < 0.001$) (Table 4).

3.6. Predictive Value of Serum IMA and LP-PLA2 Levels for the Development of Myocardial Ischaemia in Patients with CHD. The area under curve (AUC) for serum IMA levels to predict myocardial ischaemia in patients with CHD was 0.754 (95% CI: 0.684–0.825), with a sensitivity of 61.3% and specificity of 84.0% when the best cut-off value was 0.453; the AUC for serum LP-PLA2 levels to predict myocardial ischaemia in patients with CHD was 0.747 (95% CI: 0.681–0.813), with a sensitivity of 62.0% and specificity of 82.0% when the optimal cut-off value was 0.440; and the AUC of IMA + LP-PLA2 for predicting myocardial ischaemia in patients with CHD was 0.892 (95% CI: 0.847–0.938), with a sensitivity of 86.7% and specificity of 80.0% when the optimal cut-off value was 0.667. The specificity was 80.0% (Table 5, Figure 9).

4. Discussion

Myocardial ischaemia is a pathological state in which the heart has reduced blood perfusion, reduced oxygen supply, and abnormal myocardial energy metabolism that do not support the normal work of the heart. Data [14] show that coronary artery disease is the most common cause of myocardial ischaemia, which usually includes SAP, UAP, AMI, and other disease types and is part of a continuous disease spectrum. Clinical practice [15] has shown that when the disease is in the UAP stage, myocardial cells have not yet developed ischaemic necrosis and that timely detection and effective treatment during this period can minimise myocardial cell damage and improve the patient's prognosis. This shows that myocardial ischaemia, if rapidly corrected, has a low impact on the long-term prognosis; otherwise, death may result from eventual myocardial infarction, fatal arrhythmias, or pump failure.

It is well known that inflammatory responses are present throughout the development and progression of coronary artery disease. CRP and IL-6 are the most common inflammatory factors. The former is a sensitive indicator of tissue damage and inflammatory response in the body; and the latter activates monocytes and promotes their adhesion and chemotaxis to vascular smooth muscle, prompting it to proliferate and migrate, and it also induces macrophages to migrate towards plaques, participating in their formation and accelerating their rupture [16, 17]. In addition, IMA is an albumin produced as a result of local structural changes in the flow of human serum albumin through ischaemic tissues. IMA has been clinically found to be involved in the process of myocardial injury, but the mechanism of action has not been fully defined. It is now generally accepted that it is closely related to various phenomena, such as activation of inflammatory responses, free radical damage, acidosis, and disruption of calcium pumps, and that IMA can be dramatically increased when the body is ischaemic and hypoxic [17]. LP-PLA2 is a specific vascular inflammatory mediator

Table 1: Comparison of general information between the CHD group and the health group.

Indicators	CHD group ($n = 150$)	Health group ($n = 50$)	χ^2/t	P
Male/female (cases)	79/71	30/20	0.813	0.367
Smoking history (case)	82	14	10.684	0.001
Hypertension (case)	91	0	55.658	<0.001
Diabetes (case)	51	0	22.819	<0.001
Stroke history (case)	22	0	8.240	0.004
Age (years)	60.09 ± 6.82	58.40 ± 7.40	0.1485	0.139
BMI (kg/m^2)	25.44 ± 2.27	22.45 ± 2.14	8.179	<0.001
HDL-C (mmol/L)	1.04 ± 0.24	1.34 ± 0.26	7.495	<0.001
LDL-C (mmol/L)	2.64 ± 1.01	2.20 ± 0.58	2.92	0.004
TC (mmol/L)	4.70 ± 1.10	4.26 ± 0.90	2.556	0.011
TG (mmol/L)	1.52 ± 0.47	1.26 ± 0.37	3.559	0.001
FBG (mmol/L)	6.79 ± 1.57	5.76 ± 0.43	4.575	<0.001

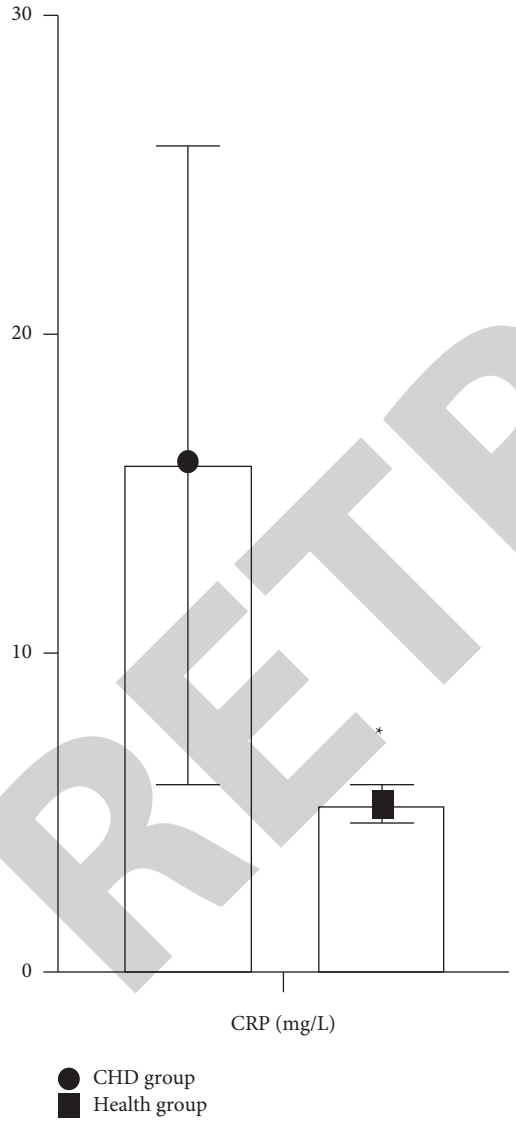

Figure 1: Serum CRP level (mg/L).

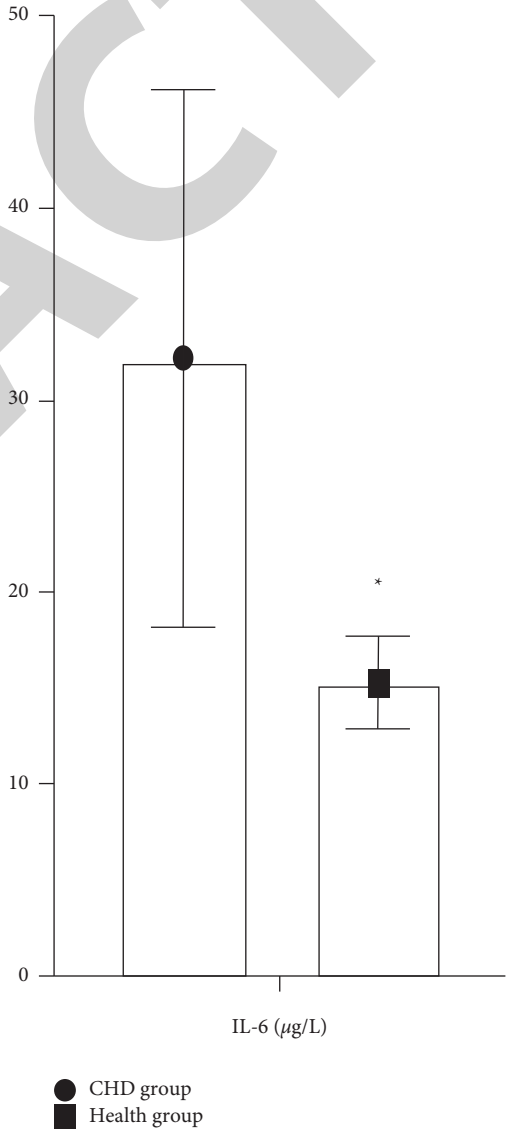

Figure 2: Serum IL-6 level (μg/L).

produced mainly by lymphocytes and macrophages. Studies [18] suggest that elevated levels may mediate an enzymatic response to inflammatory factors that contribute to the rupture and dislodgement of atheromatous plaques, which in turn can lead to myocardial infarction and aggravate the progression of the disease. In this result, in terms of serum

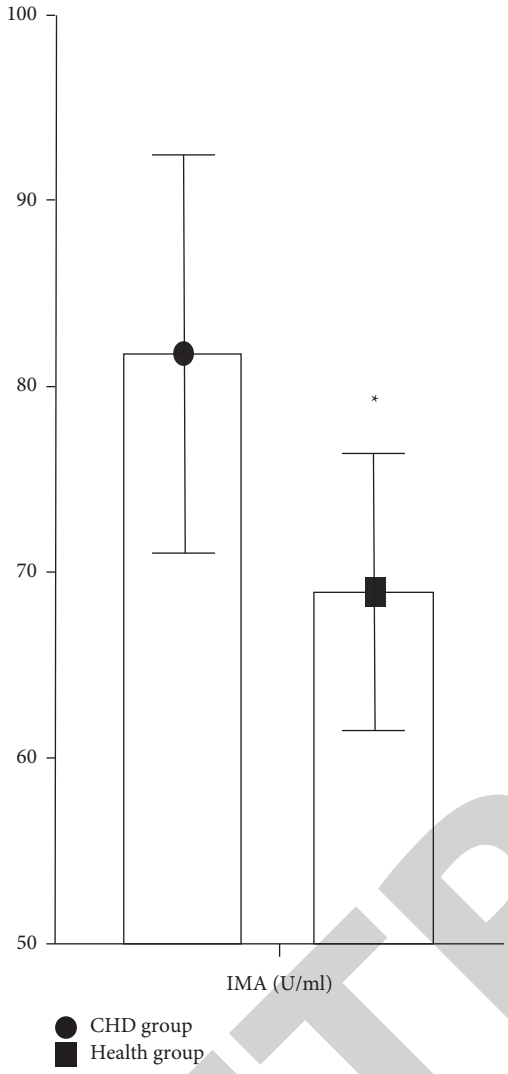

Figure 3: Serum IMA level (U/ml). Note: * is $P < 0.05$ compared with the CHD group.

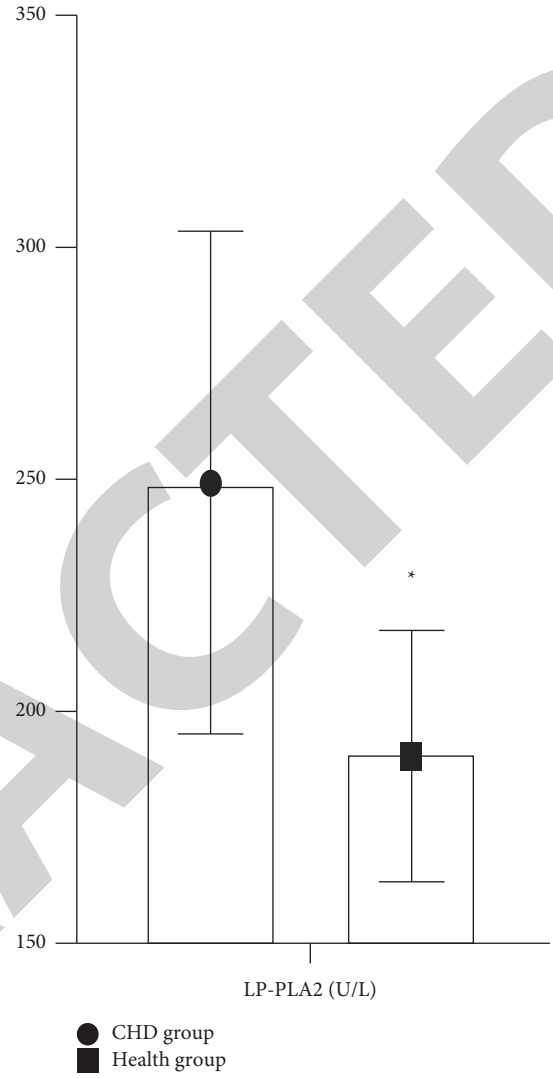

Figure 4: Serum LP-PLA2 level (U/L). Note: * is $P < 0.05$ compared with the CHD group.

CRP, IL-6, IMA, and LP-PLA2 levels, the CHD group was higher than the health group, the AMI and UAP groups were higher than the SAP and health groups, and the AMI group was higher than the UAP group ($P < 0.05$). Further multivariate ordered logistic regression analysis showed that serum CRP, IL-6, IMA, and LP-PLA2 levels were all independent influences on the degree of myocardial ischaemia in patients with CHD ($P < 0.05$). This suggests that serum levels of CRP, IL-6, IMA, and LP-PLA2 are elevated in patients with CHD and that their levels tend to be highly expressed as the patients' myocardial ischaemia increases. In the results, Pearson correlation analysis showed a positive correlation between serum IMA, LP-PLA2 levels and CRP, IL-6 levels in CHD patients ($P < 0.001$). It was suggested that serum IMA and LP-PLA2 levels in CHD patients were positively correlated with the degree of myocardial ischaemia and serum inflammation levels of the patients. The reason for this is that LP-PLA2, through its hydrolysis products, can upregulate the expression of endothelial cell adhesion molecules to induce inflammatory factor activation, which in turn activates more monocytes/macrophages into the plaque and also induces matrix metalloproteinases to be secreted by the atherosclerotic plaque, leading to degradation of the plaque fibrous cap and glial matrix, resulting in plaque detachment and vascular blockage, further aggravating ischaemia and hypoxia symptoms. This leads to a rapid increase in serum IMA levels, and inflammatory cells in the atherosclerotic plaque can then produce more LP-PLA2, thus creating a vicious cycle that leads to a self-reinforcing inflammatory response and accelerates arterial vascular disease [19].

Abnormal expression of serum IMA and LP-PLA2 levels in patients with CHD has been reported [20]. Therefore, monitoring changes in CHD during its onset and progression may be a key breakthrough for early detection of myocardial ischaemia and improving the prognosis of CHD patients. The concentration of IMA in peripheral blood rises rapidly 5–10 minutes after myocardial ischaemia and continues to rise during the ischaemic process. Elevated serum levels of IMA can be detected earlier than other markers of myocardial injury

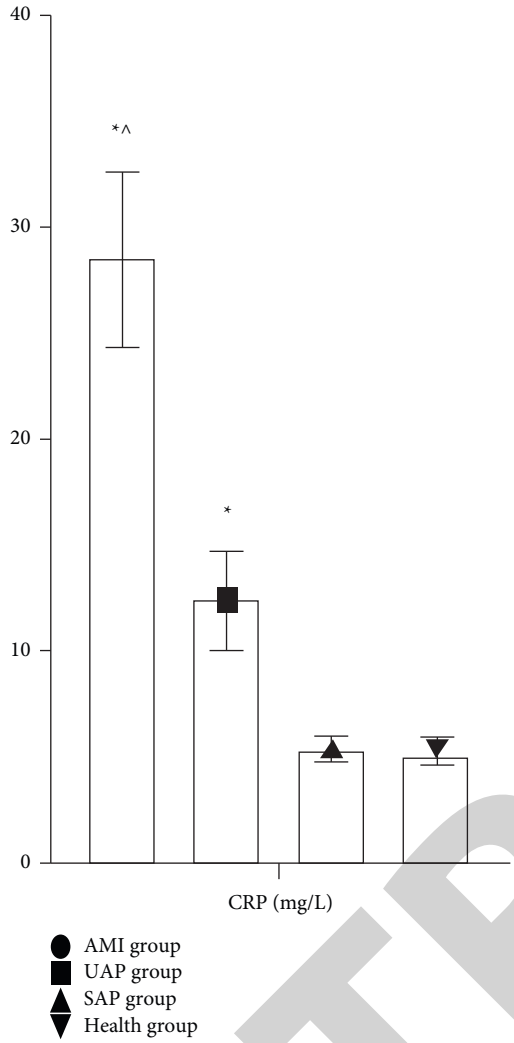

Figure 5: Serum CRP level (mg/L).

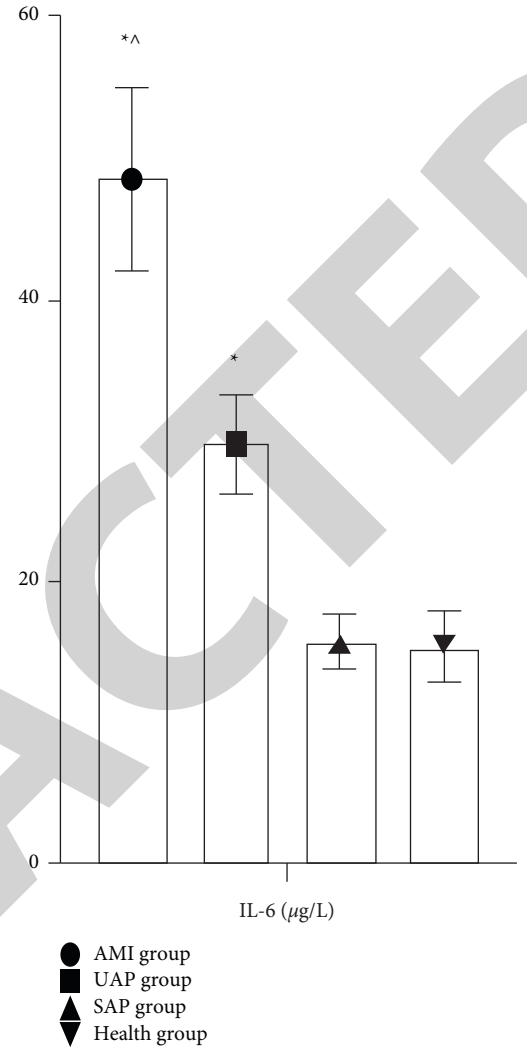

Figure 6: Serum IL-6 level (μg/L).

such as creatine kinase isoenzymes, so the diagnosis of myocardial ischaemia can be made in time before myocardial necrosis by measuring serum IMA levels [21]. Besides, 70% of Lp-PLA2 hydrolysed and oxidatively modified low-density lipoprotein (ox-LDL) particles produce metabolites such as haemolytic lecithin and oxidised free fatty acids, which cause endothelial dysfunction, necrosis, and apoptosis through an inflammatory chain reaction, leading to atherosclerosis progression and plaque instability [22]. Mechanistically, elevated Lp-PLA2 levels could also be used as an early biochemical predictor of the degree of myocardial ischaemia. In this result, the AUC for IMA and LP-PLA2 to predict myocardial ischaemia in CHD patients was 0.754 and 0.747, respectively; and the AUC for IMA + LP-PLA2 combination to predict myocardial ischaemia in CHD patients was 0.892. It is suggested that the diagnostic value of the IMA + LP-PLA2 test in predicting myocardial ischaemia in CHD patients is higher than that of the single test. The clinical assessment of patients' conditions can be based on the results of the two tests, and corresponding therapeutic measures can be taken to improve patients' prognosis and quality of life.

Serum IMA and LP-PLA2 levels are elevated in patients with CHD. Serum IMA and LP-PLA2 levels are closely related to the degree of myocardial ischaemia and its inflammatory level, and the combination of IMA + LP-PLA2 can improve the diagnosis efficacy of myocardial ischaemia in CHD patients.

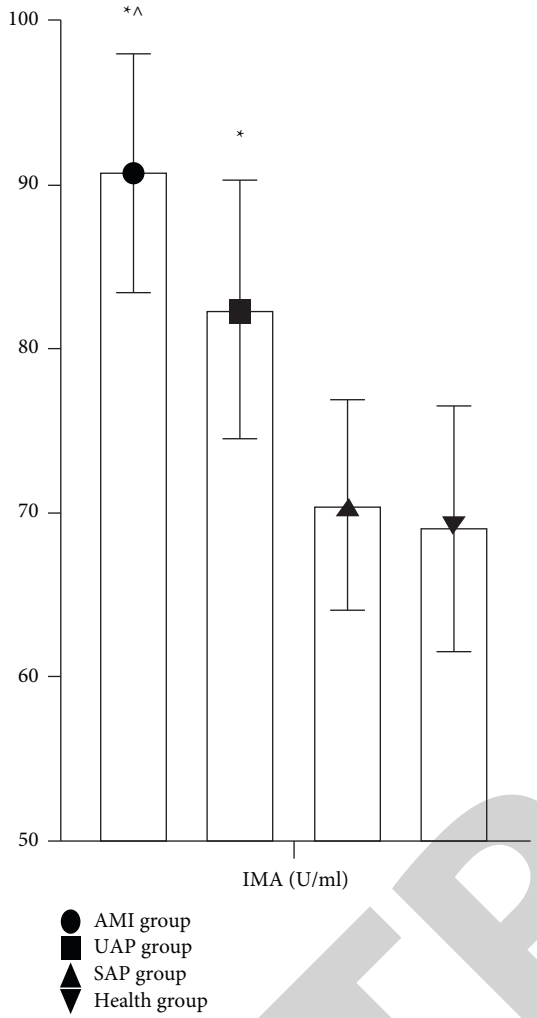

Figure 7: Serum IMA level (U/ml). Note: * is $P < 0.05$ compared with SAP group and health group, and^is $P < 0.05$ compared with UAP group.

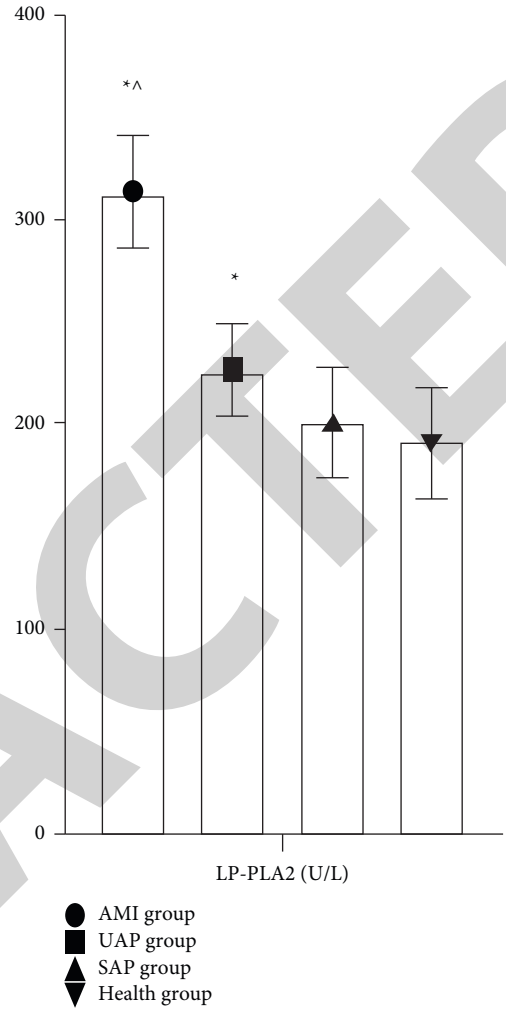

Figure 8: Serum LP-PLA2 level (U/L). Note: * is $P < 0.05$ compared with SAP group and health group, and ^ is $P < 0.05$ compared with UAP group.

Table 2: Variable assignment table.

Variables	Assignment
CRP	Continuous variable
IL-6	Continuous variable
IMA	Continuous variable
LP-PLA2	Continuous variable
Myocardial ischaemia degree	SAP = 1, UAP = 2, AMI = 3

Table 3: Multivariate ordered logistic regression analysis of factors influencing the degree of myocardial ischaemia in patients with CHD.

Variables	β	SE	Wald	OR (95% CI)	P
CRP	1.425	0.457	4.167	4.158 (1.698, 10.183)	0.041
IL-6	0.973	0.414	5.335	2.646 (1.175, 5.956)	0.021
IMA	0.954	0.212	5.617	2.596 (1.713, 3.933)	0.018
LP-PLA2	0.762	0.214	5.717	2.143 (1.409, 3.259)	0.017

Table 4: Correlation of serum IMA, LP-PLA2 levels with serum CRP, IL-6 levels in patients with CHD.

Indicators	CRP		IL-6	
	r	*P*	*r*	*P*
IMA	0.751	<0.001	0.772	<0.001
LP-PLA2	0.790	<0.001	0.814	<0.001

Table 5: Predictive value of serum IMA and LP-PLA2 levels for the development of myocardial ischaemia in patients with CHD.

Indicators	AUC	Approaching 95% confidence interval		Optimal cut-off value	Sensitivity %	Specificity %
		Lower limit	Upper limit			
IMA	0.754	0.684	0.825	0.453	61.3	84.0
LP-PLA2	0.747	0.681	0.813	0.440	62.0	82.0
IMA + LP-PLA2	0.892	0.847	0.938	0.667	86.7	80.0

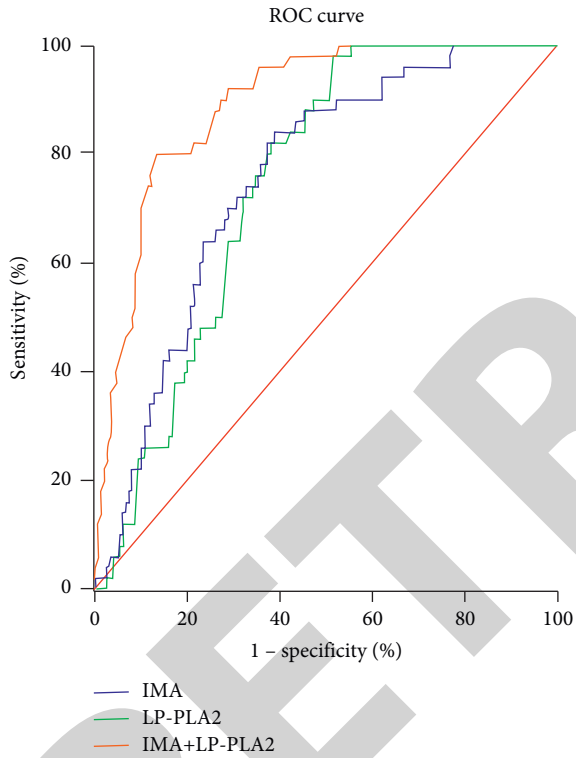

Figure 9: ROC curves of serum LP-PLA2 and IMA levels predicting myocardial ischaemia in patients with CHD.

Data Availability

All data in the submitted article used or analysed can be obtained from the respective authors.

Ethical Approval

This study was approved and agreed by the Ethics Committee of our hospital.

Disclosure

Likui Zhang and Zipeng Li are the co-first authors.

Conflicts of Interest

All authors have no financial or other conflicts of interest.

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Retraction

Retracted: Analysis of the Effect of Rational Emotional Intervention Combined with Hierarchical Management Mode on Improving the Psychological Stress of Emergency Nurses and Trainee Nurses

Emergency Medicine International

Received 19 December 2023; Accepted 19 December 2023; Published 20 December 2023

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] S. Liu, X. Li, X. Yin, and L. Wang, "Analysis of the Effect of Rational Emotional Intervention Combined with Hierarchical Management Mode on Improving the Psychological Stress of Emergency Nurses and Trainee Nurses," *Emergency Medicine International*, vol. 2022, Article ID 2038018, 8 pages, 2022.

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Research Article

Analysis of the Effect of Rational Emotional Intervention Combined with Hierarchical Management Mode on Improving the Psychological Stress of Emergency Nurses and Trainee Nurses

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Purpose. To explore the effect of rational emotional intervention combined with hierarchical management mode on improving the psychological stress of emergency nurses and trainee nurses. *Methods*. 50 emergency nurses who worked or practiced in our hospital from June 2019 to May 2021 were selected as the research object. From June 2019 to May 2020, our hospital adopted the traditional management mode. From June 2020 to May 2021, our hospital adopted the rational emotional intervention combined with hierarchical management mode. The psychological state, work stress, stress response, job burnout, and sleep quality of emergency nurses were compared before and after intervention. *Results*. Compared with before intervention, the scores of self-rating anxiety scale and self-rating depression scale, the work stress scores, the Maslach burnout inventory score, the Pittsburgh sleep quality index score of emergency nurses decreased after intervention ($P < 0.05$). Compared with before intervention, the stress coping scores of emergency nurses increased after intervention ($P < 0.05$). *Conclusion*. The rational emotional intervention combined with hierarchical management mode can improve the psychological pressure of emergency nurses and trainee nurses, reduce job burnout, improve stress coping ability, and improve sleep quality.

1. Introduction

The emergency department is the department for receiving patients with acute and critical diseases and sudden diseases. Most of the patients have serious diseases, rapid development, many emergencies, short rescue time, and large patient turnover [1]. Therefore, emergency nurses are overloaded with work for a long time, with great mental pressure, serious job burnout, and poor sleep quality, thus affecting the quality of nursing. For trainee nurses, it can lead to lower job expectancy [2]. When the nursing work is not divided according to the nurses' personal ability and the nurse feels unable to be competent for the job, the nurses often have anxiety and depression, and work in a negative state, and the physiological and psychological pressure cannot be effectively regulated, resulting in the increase of the probability of nursing error events [3]. At the same time, emergency department trainee nurses are the backup force of clinical nursing services. After trainee nurses entering clinical practice, the external environment, interpersonal relationships, and learning methods will change, coupled with the pressure brought by the nursing profession itself, which will have a certain impact on the study, physiological and psychological activities of trainee nurses. Therefore, how to reduce the work pressure or study pressure of emergency nurses and trainee nurses is one of the key topics studied of nursing management. Rational emotional intervention is an intervention method that replaces irrational thinking mode with rational thinking mode. Its core value is rational manipulation of irrationality so as to help people change their bad cognition and reduce or even eliminate negative emotions caused by induced events [4, 5]. Hierarchical management mode is to accurately identify the development level of the management object, and then design the

corresponding level management method by identifying the development level of the object. This method can realize effective management at all levels and improve nurses' enthusiasm for nursing work through reasonable arrangement of their work and responsibilities [6, 7]. The purpose of this study is to observe the application effect of rational emotional intervention combined with hierarchical management mode in emergency nurses and trainee nurses.

2. Materials and Methods

2.1. Research Object. 50 emergency nurses who worked or practiced in our hospital from June 2019 to May 2021 were selected as the research object. Among them, there were 46 females and 4 males. The average age was (25.75±2.64) years. Education level: 10 cases were secondary vocational nursing students, 3 cases were junior college nursing students, 5 cases were undergraduate nursing students, 9 cases were junior college, 22 cases were undergraduate, and 1 case was master. Professional title: 13 cases were trainee nurses, 25 cases were nurses, 5 cases were nurse practitioner, 4 cases were nurse-in-charge, 2 cases were cochief superintendent nurse, and 1 case was chief superintendent nurse. Inclusion criteria: emergency nurses who worked in the emergency department of our hospital and have been engaged in emergency nursing >1 year. During the study period, the emergency nurses who worked in our hospital for internship, advanced study, or rotation. Volunteer to participate in this research. Exclusion criteria: nurses who have been absent or absent for a long time during the study period; trainee nurses who were transferred to other departments during the study period; nurses with a history of mental illness; nurses who have experienced severe stress reactions before this study; nurses with severe organic diseases themselves.

2.2. Research Methods. From June 2019 to May 2020, our hospital adopted the traditional management mode. Emergency nurses regularly receive theoretical knowledge, carry out practical skills training, and implement routine management methods such as reward and punishment management and system management. Trainee nurses were taught by a senior teacher under the "one-to-one" teaching model. In addition, emergency nurses needed to give psychological lectures, emotional counseling, and other routine psychological care.

From June 2020 to May 2021, our hospital adopted the rational emotional intervention combined with hierarchical management mode.

(i) Rational emotional intervention: once a week, each time for 1 h. Psychological diagnosis stage: in a quiet environment, fully communicate with emergency nurses to understand the reasons for their nervousness, anxiety, and stress. To observe the emotional manifestations of emergency nurses and find out the reasons for their poor psychological state. It was especially necessary to pay attention to the psychological pressure of trainee nurses, communicate with trainee nurses regularly, understand the problems existing in the practice, and provide clinical guidance to trainee nurses in a targeted manner. Comprehension stage: the corresponding events were analyzed according to the known reasons, and representative emotional events were collected. Point out the reasonable and unreasonable place of the nurse when facing the event, and guide the nurse to be aware of these unreasonable thoughts in time. Emergency department nurses were instructed to control their own pressure, to eliminate absolutism and excessive disaster thinking, and to change the nurses' own thinking. When emergency department nurses faced with the failure of rescue events, nurses should control their mentality, avoid panic, self-blame, and other emotions. Make nurses realize that inducing events will not directly lead to bad psychology and stress but subjective consciousness. Only by changing irrational beliefs can we alleviate the existing symptoms. For trainee nurses, it is necessary to carry out the training of positive response to pressure regularly so that trainee nurses can correctly understand and deal with setbacks, and timely through the correct way to relieve negative emotions. Revision stage: emergency nurses were encouraged to debate their irrational beliefs and explore emotions and thoughts that were inconsistent with positive results. Emergency nurses were instructed to establish reasonable beliefs and face adverse events from a positive perspective so as to change their own emotions and behaviors. Reeducation stage: consolidate the effect of the previous stage of treatment and help emergency nurses to reestablish new coping styles in cognitive style, thinking process, emotional and behavioral performance, etc. Instruct emergency nurses to use what they have learned to deal with problems in their future work and life. At the same time, instruct trainee nurses to correctly understand the difference between work problems and textbook knowledge, and make up for the lack of textbooks in the emotional management of emergency department work.

(ii) Hierarchical management mode: the level of each layer was set up according to the factors such as nurses' working time, professional level, professional title, and education level in the emergency department, the research objects are divided into head nurses, senior responsible nurses, junior responsible nurses, auxiliary nurses, and trainee nurses. Evaluate the emergency nurses in many aspects, arrange their work according to their individual personalities and specialties, and optimize the combination of nurses. For nurses with bad psychological pressure, decompression should be given and division of labor should be adjusted. Hierarchical training: pay attention to strengthening the training of basic knowledge and professional skills. The training object is mainly auxiliary nurses and trainee nurses, the training content is related nursing knowledge of

Table 1: Specific responsibilities of nurses at all levels.

Hierarchy	Professional title	Levels	Specific work content
Trainee nurses	Nursing students	Level 1	Early-practice: under the guidance of level 2 nurses, the students will initially master the nursing procedures, strengthen the basic nursing operations, and apply them to practical nursing, so as to meet the patients' basic life nursing Mid-practice: under the guidance of level 3 nurses, the students will be able to independently complete the work of an assistant nurse, master common nursing skills, and strengthen the skills of specialist operation, disease observation, writing nursing records, handover, and nurse-patient communication and so on Late-practice: under the guidance of level 4 nurses, the students will be able to skillfully apply nursing procedures, strengthen comprehensive nursing level, and continuously improve the overall ability of nursing work and the ability to complete it independently
Auxiliary nurses	Nurse	Level 2	Under the guidance of level 3 nurses, be responsible for assisting the responsible nurses to implement basic specialist care and life care for patients; observe the patient's vital signs and report any abnormal situation to the doctor in time; participate in the formulation of nursing plan, implement targeted nursing for patients, and strengthen communication with patients
Junior responsible nurses	Nurse practitioner and above	Level 3	Under the guidance of level 4 nurses, responsible for the clinical nursing and treatment of patients from admission to discharge; check the patient's medical records, and assist doctors in ward management; responsible for the teaching work of some level 1 nurses; carry out health education and discharge guidance for patients and their families
Senior responsible nurses	Nurse-in-charge and above	Level 4	Under the guidance of level 5 nurses, organize ward rounds and training of junior nurses; responsible for communication and coordination, organizing and completing the rescue work for patients; organize the training of nurses in emergency department, and adjust the psychological pressure of nurses
Head nurses	Cochief superintendent nurse, chief superintendent nurse	Level 5	Responsible for overall scheduling and supervision, guiding the work of junior nurses, and solving the problems existing in junior nurses; manage resources and prepare rescue items; research new nursing technology, participate in nursing academic conferences, etc

emergency nursing, and the main responsible persons are head nurses and responsible nurses; train organizational ability and conduct hierarchical training. The head nurse is responsible for training the responsible nurse, and the responsible nurse is responsible for training the assistant nurse. Hierarchical management: the work content of grade 1–5 emergency nurses was reasonably arranged according to the actual situation. In the past, problems existing in nursing operation of nurses of different levels were found in time, and problems were reported layer by layer, and then the problems were dealt with. Trainee nurses carry out hierarchical and staged practice, and independently complete different stages of work under the guidance of nurses at all levels. See Table 1 for the specific responsibilities of nurses at all levels.

2.3. Observation Index. All questionnaires were conducted by secret ballot. Before and after the intervention, 50 questionnaires were distributed and 50 questionnaires were collected, with an effective recovery rate of 100%.

(i) Self-rating anxiety scale (SAS) and self-rating depression scale (SDS) were used to evaluate psychological state. There were 20 items in SAS, and the 4-level scoring method was adopted, with the demarcation value of 50 points. There were 20 items in SDS, with a 4-level scoring method was adopted, with the demarcation value of 53 points. The higher the score, the worse the psychological state. The Cronbach's α coefficient of SAS was 0.834. The Cronbach's α coefficient of SDS was 0.819.

(ii) The nurses' work stress scale was used to evaluate the work stress including 5 dimensions, nursing profession and work, time allocation and workload, working environment and equipment, patient nursing, management, and interpersonal. The 4-level scoring method was adopted. The higher the score, the greater the pressure in this dimension. The Cronbach's α coefficient of the scale was 0.757.

(iii) The coping style questionnaire was used to evaluate the stress coping situation including 6 dimensions, solve the problem, self-blame, ask for help, fantasize, retreat, and rationalize. The higher the score,

the better the coping style of this dimension. The Cronbach's α coefficient of the questionnaire was 0.720.

(iv) Maslach Burnout Inventory (MBI) was used to evaluate job burnout including 22 items, with a total score of 132 points by using the 7-level scoring method. The higher the score, the stronger the job burnout. The Cronbach's α coefficient of MBI was 0.783.

(v) Pittsburgh Sleep Quality Index (PSQI) was used to evaluate sleep quality including 19 self-evaluation items and 5 other evaluation items, with a total score of 21 points by using the 4-level scoring method. The higher the score, the worse the sleep quality. The Cronbach's α coefficient of PSQI was 0.806.

2.4. Statistical Methods. The SPSS 22.0 software (Armonk, NY; IBM Corp) was used for analysis. The measurement data were expressed as mean ± standard deviation, and t-test was used to analyze the comparison. $P < 0.05$ was statistically significant.

3. Results

3.1. Comparison of Psychological State before and after Intervention. Compared with before intervention, the scores of SAS and SDS of emergency nurses decreased after intervention ($P < 0.05$), as shown in Figure 1.

Compared with before intervention, the work stress scores of emergency nurses decreased after intervention ($P < 0.05$) as shown in Figure 2.

Compared with before intervention, the stress coping scores of emergency nurses increased after intervention ($P < 0.05$) as shown in Figure 3.

Compared with before intervention, the MBI score of emergency nurses decreased after intervention ($P < 0.05$) as shown in Figure 4.

Compared with before intervention, the PSQI score of emergency nurses decreased after intervention ($P < 0.05$) as shown in Figure 5.

4. Discussion

The emergency department has many emergencies accidents and complicated work. Compared with other departments, the nurse-patient relationship is more tense, and medical disputes are more likely to occur. In the heavy and tense working environment, emergency nurses suffer from great psychological pressure, which comes from high work intensity, no guidance to solve problems, poor professional identity, and so on. In particular, the trainee nurses who have just entered the hospital environment are relatively young, and most of them are not strong in self-psychological regulation, and have insufficient understanding of nursing practice, which will affect the mental health of the trainee nurses [8, 9]. In the traditional nursing management, the responsibilities and obligations of nursing posts is not clear, the nursing management efficiency is low, the psychological

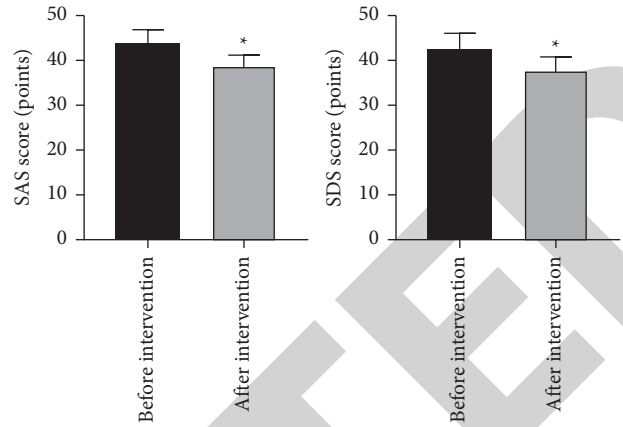

Figure 1: Comparison of psychological state before and after intervention compared with before intervention, $^*P < 0.05$. Comparison of work stress before and after intervention.

feelings of nurses are ignored, and the division of labor among nurses is only based on the professional level and professional title of nurses. It is easy to cause the negative emotions of emergency nurses, seriously affecting the sleep quality of nurses, and then affecting the clinical outcome of patients [10].

Reasonable emotional intervention method believes that inducing events will not directly lead to bad psychology and stress, but subjective consciousness. Only by changing irrational beliefs can people relieve and remove their emotional troubles and form positive behavioral responses and emotional changes [11, 12]. Ghawadra et al. showed that reasonable emotional intervention measures can improve people's cognition of events, abandon previous unreasonable ideas, establish a new mode of thinking, and guide them to consider the occurrence and development of events with reasonable thinking, which is conducive to promoting people's mental health [13]. Based on scientific management and behavior management, hierarchical management mode implements hierarchical responsibility system, which can rationally allocate human resources and reduce unnecessary waste of nursing resources [14, 15]. Kawaguchi et al. believed that through hierarchical management, clarifying the job responsibilities of nurses at all levels, and through measures such as layer by layer supervision and guidance, it can give staff at all levels of work autonomy and enthusiasm, and reduce the pressure at work [16].

In this study, the application of rational emotional intervention combined with hierarchical management mode can reduce SAS, SDS, job stress, MBI, and PSQI scores of emergency nurses, and improve their stress coping scores. We believe that the results show that this intervention program can improve the psychological stress of emergency nurses and trainee nurses, reduce job burnout, improve stress coping ability, and improve sleep quality. The reason may be rational emotional intervention guides emergency nurses through 4 stages of psychological diagnosis, comprehension, revision, and reeducation, find out the specific reasons for their poor psychological state, positively guide their thinking consciousness, and help

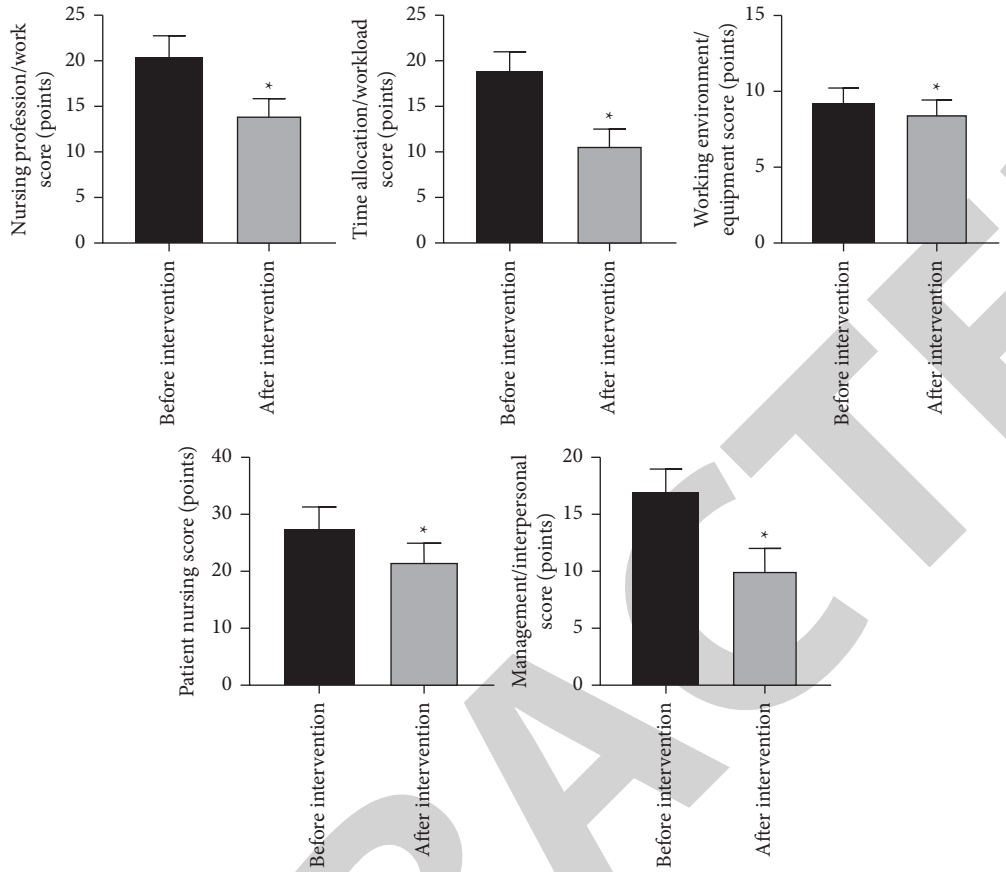

Figure 2: Comparison of work stress before and after intervention compared with before intervention, $^{*}P < 0.05$. Comparison of stress response before and after intervention.

emergency nurses reshape the correct way of thinking [17]. Also, it can change nurses' cognition of adverse events so that they can face the pressure correctly. This method encourages emergency nurses to debate with their irrational beliefs, adopt positive coping styles to eliminate absolute views and ideas, and take practical actions to control their emotions reasonably so as to finally reduce the harm caused by psychological stress and improve their sleep level [18, 19]. In addition, after the hierarchical management of emergency nurses, we carry out targeted training according to different levels of nurses so that the human resources can be optimally allocated and the nursing quality can be improved [20]. Reasonable distribution of nursing responsibilities can promote the mutual help of nurses at different levels in the group and can reduce the intensity of nursing work, which has a positive effect on reducing the psychological pressure of emergency nurses and improving the quality of sleep [21]. Through the step-by-step supervision of the emergency department, the superior nurses can effectively understand the working level of the junior nurses, timely find and guide the problems and mistakes encountered in the nursing operation, eliminate the doubts of the nurses in the work, is conducive to reduce the pressure of the junior nurses due to the lack of emergency nursing ability, and enhance the ability to cope with pressure [22]. In the implementation of the hierarchical management mode, junior nurses can play an assisting role in the rescue work so that senior nurses can keep their mental focus during the rescue [23]. At the same time, this model can prevent senior nurses from engaging in simple work, make nurses at all levels undertake different nursing tasks, and promote emergency nurses to concentrate on nursing work, thus effectively reduce the job burnout of nurses [24]. We combine rational emotional intervention with hierarchical management mode in emergency nurses, which can learn from each other's strengths and complement each other's weaknesses. The two intervention methods play a synergistic role, resulting in a more significant improvement of the psychological stress of emergency nurses and trainee nurses.

It is worth noting that for trainee nurses, traditional management methods can only train nurses at a single level, and tend to ignore the psychological pressure of nurses, and lack all-round practice teaching. Rational emotional intervention can enable trainee nurses to study and work in a healthy physical and mental state under moderate stress, and enhance trainee nurses' sense of professional achievement through regular training on occupational stress management and active response to stress. At the same time, this method can help interns in clinical practice as soon as possible to eliminate tension and anxiety so that the trainee nurses can keep a positive

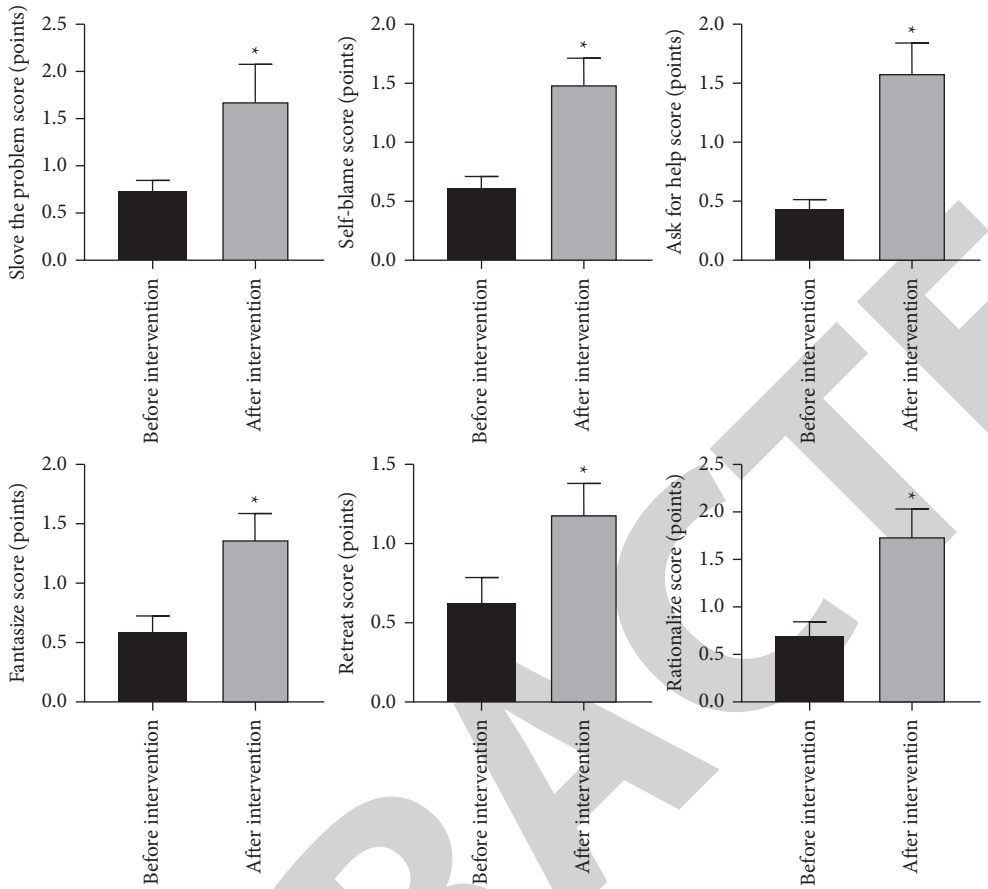

Figure 3: Comparison of stress response before and after intervention compared with before intervention, $^*P < 0.05$. Comparison of job burnout before and after intervention.

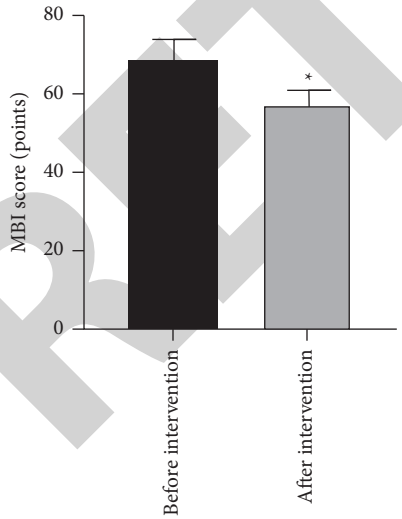

Figure 4: Comparison of job burnout before and after intervention compared with before intervention, $^*P < 0.05$. Comparison of sleep quality before and after intervention.

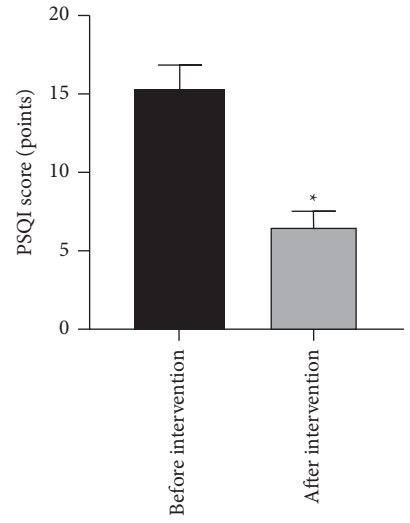

Figure 5: Comparison of sleep quality before and after intervention compared with before intervention, $^*P < 0.05$.

attitude and look at the nursing work with a happy mood. After implementing hierarchical practice for trainee nurses, by adjusting the work intensity from light to heavy according to the nurse's ability, the nursing ability can be cultivated step by step, and the enthusiasm of the nurses to work can be improved comprehensively, and the work pressure can be reduced. The hierarchical management mode can fully explore the potential of

trainee nurses, reduce the job burnout of trainee nurses, enhance career aspirations, so as to lay a solid foundation for becoming a qualified nurse in the future.

5. Conclusion

To sum up, rational emotional intervention combined with hierarchical management mode can improve the psychological pressure of emergency nurses and trainee nurses, reduce job burnout, improve stress coping ability, and improve sleep quality. The research time of this study is short, and it remains to be further observed the long-term application effect of rational emotional intervention combined with hierarchical management mode in emergency nurses.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author.

Disclosure

Shirui Liu and Xiangsu Li are co-first authors.

Conflicts of Interest

The authors declare no conflicts of interest, financial or otherwise.

Acknowledgments

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Retraction

Retracted: Detection and Significance of Cell-Free DNA Mutation in Pleural Effusion in Patients with Advanced NSCLC

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

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Research Article

Detection and Significance of Cell-Free DNA Mutation in Pleural Effusion in Patients with Advanced NSCLC

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Objective. To detect EGFR/KRAS genes in pleural effusion cell-free DNA in patients with advanced non-small-cell lung cancer (NSCLC) and to explore the clinical significance of EGFR/KRAS mutation status in pleural effusion. *Methods*. A retrospective collection was performed on the specimens of pleural effusion and matched tissues from 50 patients with advanced NSCLC admitted to the hospital between January 2019 and January 2021. DNA mutation status of EGFR/KRAS in different specimens was detected and compared by pyrosequencing. The clinicopathological data and follow-up data of survival were collected. The relationship between DNA mutation and clinicopathological characteristics and prognosis was analyzed. *Results*. In the 50 pleural effusion specimens, there were 22 cases (44.00%) with EGFR mutations (19/21 exon mutations), including 12 cases with EGFR19 deletion mutation and 10 cases with EGFR21 exon L858R mutation. There were 6 cases (12.00%) with KRAS mutations (single-base substitution mutations), including 4 cases with 12-codon mutation and 2 cases with 13-codon mutation. In the 50 tissue specimens, there were 24 cases (48.00%) with EGFR mutations and 4 cases (8.00%) with KRAS mutations. There was no significant difference between pleural effusion specimens and tissue specimens, with good consistency ($kappa = 0.920–0.779$, $P > 0.05$). EGFR mutation in pleural effusion was related to smoking history, types of pathological tissues, and lymph node metastasis ($P < 0.05$). The incidence of EGFR mutation was higher in nonsmokers, patients with lung adenocarcinoma, and patients with lymph node metastasis. The carcinoembryonic antigen (CEA) in patients with EGFR mutation was higher than that with wild-type EGFR, while the level of cytokeratin 19 fragment (Cy21-1) was lower than that with wild-type EGFR ($P < 0.05$). The 1-year overall survival rate in the EGFR mutation group was significantly higher than that in the EGFR wild group (68.18% vs. 42.86%) (HR = 0.419, 95% CI = 0.178–0.989, and $P < 0.001$). *Conclusion*. For the detection of EGFR gene mutation, the results of the pleural effusion specimens and the tumor pathological tissue specimens were well consistent and the detection of pleural effusion could be used as an alternative method when tissue specimens cannot be obtained. EGFR gene mutations are present in majority in patients with advanced NSCLC. The incidence of EGFR mutation is higher in nonsmokers, patients with lung adenocarcinoma, those with lymph node metastasis, those with high-expression CEA, and those with low-expression Cy21-1. The prognosis is better in patients with EGFR mutation.

1. Introduction

Lung cancer is one of the most common malignant tumors in the department of oncology, and non-small-cell lung cancer (NSCLC) is the most common, originating from the bronchial mucosa and glands and is related to smoking, adverse environmental exposure, and other factors [1]. The clinical manifestations are cough, hemoptysis, chest pain, etc. The early manifestations are not obvious or even without discomfort. With the development of the disease, the symptoms gradually appear, so the clinical diagnosis is mainly in the middle and late stages, and the survival rate is low [2]. With the development of molecular biology, molecular targeted therapy has gradually become one of the important means for the treatment of patients with advanced NSCLC. A large number of studies have confirmed that [3, 4] epidermal growth factor receptor tyrosine kinase inhibitors (EGFR tyrosine kinase inhibitors, EGFR-TKIs) are effective molecular-targeted therapy drugs for

patients with advanced NSCLC and they have been widely used in clinical practice. EGFR/KRAS gene mutation is the main factor affecting its curative effect [5]. EGFR/KRAS DNA mutation is an effective indicator to evaluate whether EGFR genes are resistant to EGFR-TKIs. Therefore, EGFR/KRAS DNA mutation testing is especially important for patients with advanced NSCLC treated with EGFR-TKIs. The detection of pathological tissue specimens is the gold standard for detecting EGFR/KRAS DNA mutations. However, due to the difficulty in obtaining pathological tissue from patients with advanced NSCLC, although blood genetic testing has become a biological alternative detection material, there are still influencing factors, which may cause errors. Pleural effusion is a common complication of lung cancer patients and close to the lung. At the same time, the patients' pleural effusion is easy and safe to obtain. It is feasible to determine the EGFR mutation in patients by detecting it. However, the research reports on this method are relatively few, and the accuracy is questionable. Based on this, in this study, we retrospectively analyzed the advanced NSCLC patients treated with EGFR-TKIs in our hospital and observed the consistency between the detection of cell-free DNA in pleural effusion and the detection of DNA in pathological tissue so as to provide clinical reference.

2. Materials and Methods

2.1. General Information. After review and approval by the ethics committee of our hospital, pleural effusion specimens and matched tissue specimens from 50 patients with advanced NSCLC admitted to our hospital from January 2019 to January 2021 were retrospectively selected. The patients included 32 males and 18 females, aged 57–68 years, with an average age of (60.36 ± 3.80) years. Inclusion criteria were as follows: ① all patients met the diagnostic criteria [6] of advanced NSCLC and were confirmed by pathological tests; ② all patients had combined pleural effusion; ③ all patients have received EGFR-TKI treatment; ④ enough samples of pleural effusion and tumor tissue can be provided. Exclusion criteria were as follows: ① patients with other malignant tumors; ② patients with incomplete medical case data.

2.2. Collection of Clinically Relevant Data. A self-made information questionnaire was used to sort out the clinically relevant data (gender, age, pathological type, smoking history, tumor stage, and lymph node metastasis) as well as serum tumor marker levels on admission, including carcinoembryonic antigen (CEA), neuron-specific dilute alcoholase (NSE), and cytokeratin 19 fragment (Cy21-1), of the enrolled patients by referring to medical records.

2.3. Cell-Free DNA Detection. Main reagents and instruments: the pleural effusion cell-free DNA extraction kit was purchased from Shanghai Laifeng Biotechnology Co., Ltd.; the tissue DNA extraction kit was purchased from Ai Meijie Technology Co., Ltd.; pyrophosphate EGFR and KRAS sequencing kits were purchased from Shanghai Genomics Co., Ltd.; the pyrosequencer was purchased from Shanghai Aiyan Biotechnology Co., Ltd. (Qianjie PyroMark Q24).

DNA extraction: we used a DNA extraction kit to extract DNA from the specimen according to the kit instructions, tested the DNA concentration, adjusted the DNA level to 5.0 ng/μL, and stored the sample at −80°C for further investigation.

Pyrosequencing detection: 40 μL of the PCR product was added to a mixture of 2 μL beads and 40 μL binding buffer, and it was shaken and mixed at room temperature for 10 min (400 r) and placed on a 96-well plate. The corresponding EGFR and KRAS sequencing primers and the 38 μL buffer were added to the corresponding wells of the sequencing plate, and they were shaken to mix again. The pyrosequencer with negative pressure was turned on, and the needle aspirator was quickly inserted into the hole, which was taken out for 10 s, immersed in alcohol (70%) for 5 s and then immersed again in 0.8% sodium hydroxide solution for 5 s. Finally, it was immersed in an annealing buffer for 10 s. We turned off the negative pressure suction and aligned the needle aspirator into the corresponding reaction well of the sequencing plate; the sample was shaken slightly and we emptied the last well before each well. The sequencing plate was placed in a warm bath at 80 degrees for 2 minutes and then allowed to stand at room temperature for 10 minutes. The sequencing program was set up, and the corresponding volumes of enzymes, substrates, and dNTPs to the reagent chamber of the pyrosequencer were added according to the system calculation to perform corresponding DNA sequencing.

2.4. Observation Indicators. The mutation status of EGFR/KRAS gene in different specimen sources was compared, the clinicopathological data of patients with or without gene mutation were compared, and the relationship between DNA mutation and clinicopathological characteristics was analyzed.

2.5. Follow-Up. The follow-up time ranged from the date of discharge to the last follow-up or time of death. The follow-up methods included outpatient, reexamination, and telephone and letter follow-up. The last follow-up time was February 2022.

2.6. Statistical Processing. SPSS 21.0 statistical software was used for data processing. Measurement data with normal distribution and homogeneous variance were expressed as $(\overline{x} + s)$, and using the t-test, count data were expressed as rate and the χ^2 test was used. The Kaplan–Meier method was used for survival analysis, and the log-rank χ^2 test was used as well. $P < 0.05$ indicated that there was statistical significance.

3. Results

3.1. EGFR/KRAS Gene Mutation Results. Among the 50 pleural effusion specimens, 22 cases (44.00%) were found to have EGFR mutations, all of which were 19/21 exon mutations, including 12 cases of EGFR19 deletion mutation and

10 cases of EGFR21 exon L858R mutation. There were 6 cases (12.00%) of KRAS mutations, all of which were single-base substitution mutations, including 4 cases with 12-codon mutation and 2 cases with 13-codon mutation. Among the 50 pathological tissue specimens, 24 cases (48.00%) of EGFR mutations were detected and 4 cases (8.00%) of KRAS mutations were detected. There was no significant difference compared with pleural effusion, and the two were in good agreement (kappa value = 0.920, 0.779, and $P > 0.05$), as shown in Table 1.

3.2. Relationship between the EGFR Gene Status and Clinicopathological Characteristics of Patients. EGFR mutation in pleural effusion was related to smoking history, pathological tissue type, and lymph node metastasis ($P < 0.05$). Nonsmokers, lung adenocarcinoma patients, and patients with lymph node metastasis were more likely to have EGFR mutation, as shown in Table 2.

3.3. Relationship between the EGFR Gene Status and Serum Tumor Marker Levels of Patients. The CEA of the EGFR mutant was higher than that of EGFR wild-type, and the level of Cy21-1 was lower than that of EGFR wild-type ($P < 0.05$). There was no significant difference in NSE levels between the two groups ($P > 0.05$), as shown in Figures 1–3.

3.4. Relationship between the EGFR Gene Mutation Status and Patient Prognosis. The 1-year overall survival rate of the EGFR wild group was 42.86%, which was significantly lower than that of the EGFR mutation group, which was 68.18% (HR = 0.419, 95% CI = 0.178–0.989, and $P < 0.001$), as shown in Figure 4.

4. Discussion

Lung cancer is one of the most common malignant tumors in the clinic. NSCLC is the most common one, and its morbidity and mortality are the first in the country, which poses a great threat to people's life and health. Because there are no obvious characteristics in the early clinical stage, the clinical diagnosis is mainly in the middle and late stages. Consistent with the treatment methods for other malignant tumors, early tumor resection is the main means to improve its prognosis. Therefore, for advanced NSCLC patients, maintenance chemoradiotherapy is mainly used, which can effectively relieve the clinical symptoms of patients and improve the quality of life of patients. However, there are still some patients with poor efficacy of radiotherapy and chemotherapy. With the development of molecular targeted therapy, it has been widely used in clinical practice. EGFR-TKI has been clinically approved as a targeted therapy for patients who have failed platinum-based chemotherapy. The EGFR/KRAS gene status is an important observation point in the treatment process [7, 8]. Therefore, in this study, the pleural effusion of patients with advanced NSCLC was used as a carrier to detect cell-free DNA and compare it with the DNA detection of the corresponding pathological tissue. Some scholars have proposed that different detection methods have different results in DNA detection. At present, there are many methods for DNA sequencing and they have their own advantages. In this study, the most traditional pyrophosphate gene sequencing method was adopted, which has the advantages of high sensitivity to small fragment mutation detection, large load, and convenient operation [8]. The DNA test results of pathological tissue showed that 24 of the 50 patients had EGFR DNA mutation, with a mutation rate of 48.00%, and 4 patients had KRAS DNA mutation, with a mutation rate of 8.00%, of which EGFR was mainly mutated in exon 19/21, KRAS mutations were mainly 12/13-codon mutations, and the detection rate was similar to previous studies [9, 10]. In the cell-free DNA detection of pleural effusion specimens, it was shown that 22 cases had EGFR DNA mutation and the mutation rate was 44.00% and 6 cases had KRAS DNA mutation and the mutation rate was 12.00%, which was in good agreement with the pathological tissue. Song et al. [11] also mentioned that the consistency of DNA detection between pleural effusion and pathological tissue was good, suggesting that clinicians could obtain pleural effusion for alternative detection when tissue samples cannot be obtained.

Analysis of its different pathological characteristics showed that the EGFR mutation rate was higher in patients with no smoking history, adenocarcinoma, and lymph node metastasis. It may be due to the fact that the lung sensitivity of nonsmoking patients is higher than that of smoking patients and the degree of vascular activation is higher than that of nonsmoking patients. Smokers have a higher EGFR mutation rate and are more prone to lymph node metastasis than nonsmoking patients. Previous studies have also shown [12–14] that EGFR mutation is also correlated with age and gender, which was not found in this study, and the reason may be related to differences in the selection of sample sites. Serum tumor markers have certain clinical value in the assessment of tumor occurrence and progression. Yuan et al. [15] showed that patients with high levels of CEA are more likely to have EGFR mutations. This study also showed that people with EGFR mutations have higher levels of CEA, which may be related to the activation of EGFR mutations and downstream signals that can mediate the increase in CEA levels. However, some studies [16–18] found that patients with low CEA levels are more prone to EGFR mutation. The results of this paper are contrary to this, which may be related to the difference in sample selection and detection methods. The main impact mechanism still needs to be further explored. Cy21-1 is the most valuable serum tumor marker for NSCLC. Under normal circumstances, it is at a low level in peripheral blood and lymph nodes. When epithelial tissue becomes cancerous, Cy21-1 is released in large quantities and is highly expressed in peripheral blood. The therapeutic efficacy of patients also has a good evaluation value [19, 20]. Jiao et al. [21] mentioned that Cy21-1 and EGFR mutations can be used as predictive indicators for the efficacy of EGFR-TKI in advanced NSCLC. This study showed that the level of Cy21-1 in EGFR mutants was lower, which may be related to its therapeutic efficacy. EGFR mutants are more sensitive to the efficacy of EGFR-TKIs.

Table 1: EGFR/KRAS gene mutation results ($n = 50\%$).

Group	EGFR		Total EGFR mutation rate (%)	KRAS		Total KRAS mutation rate (%)
	EGFR19	EGFR21		12 codon	13 codon	
Pleural effusion	12 (24.00)	10 (20.00)	22 (44.00)	4 (8.00)	2 (4.00)	6 (12.00)
Pathological tissue	12 (24.00)	12 (24.00)	24 (48.00)	3 (6.00)	1 (2.00)	4 (8.00)
Kappa			0.920			0.779
P			0.688			0.505

Table 2: Relationship between the EGFR gene status and clinicopathological characteristics of patients.

Item	EGFR mutation ($n = 22$)	EGFR wild ($n = 28$)	$t/\chi^2/P$
Age, years ($\overline{x} + s$)	59.55 ± 3.02	61.00 ± 4.21	1.362/0.178
Gender			3.342/0.068
Male	11 (50.00)	21 (75.00)	
Female	11 (50.00)	7 (25.00)	
Smoking history			7.782/0.005
Yes	7 (31.82)	20 (71.43)	
No	15 (68.18)	8 (28.57)	
Pathological type			5.009/0.025
Adenocarcinoma	19 (86.36)	16 (57.14)	
Nonadenocarcinoma	3 (13.64)	12 (42.86)	
Tumor stage			0.216/0.642
Stage IIIB	8 (36.36)	12 (42.86)	
Stage IV	14 (63.64)	16 (57.14)	
Lymph node metastasis			3.848/0.049
Yes	14 (63.64)	10 (35.71)	
No	8 (36.36)	18 (64.29)	

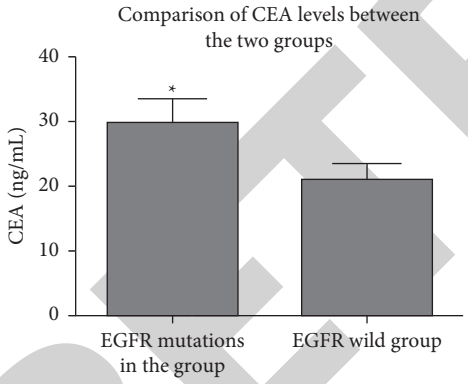

Figure 1: Comparison of CEA levels in two groups.

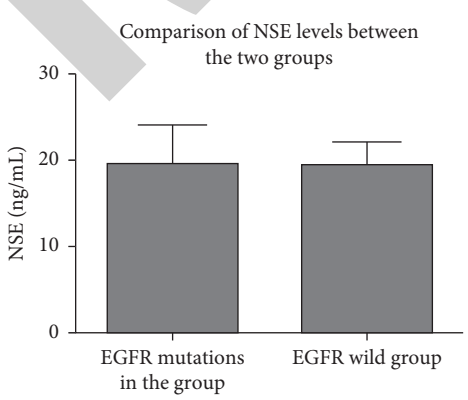

Figure 2: Comparison of NSE levels of two groups.

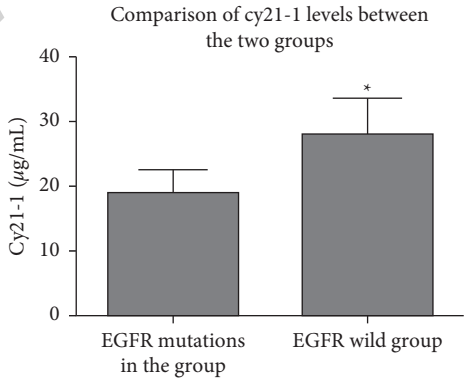

Figure 3: Comparison of Cy21-1 levels of two groups. *Note.* * $P < 0.05$.

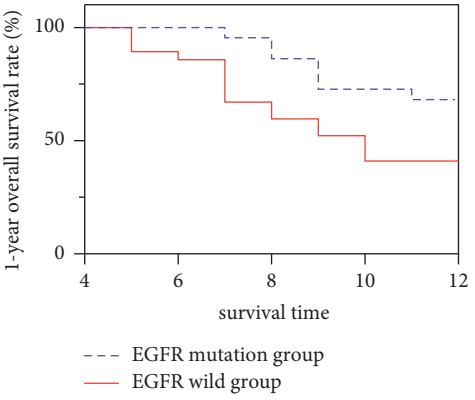

Figure 4: Survival curve associated with EGFR gene mutation.

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Retraction

Retracted: Curative Effect of Prebiotics/Probiotics-Assisted Ketogenic Diet on Children with Refractory Epilepsy

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] L. Su, S. Li, and B. Sun, "Curative Effect of Prebiotics/Probiotics-Assisted Ketogenic Diet on Children with Refractory Epilepsy," *Emergency Medicine International*, vol. 2022, Article ID 1076053, 6 pages, 2022.

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Research Article

Curative Effect of Prebiotics/Probiotics-Assisted Ketogenic Diet on Children with Refractory Epilepsy

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Objective. The aim is to study the curative effect of prebiotics/probiotics-assisted ketogenic diet (KD) on children with refractory epilepsy. *Methods*. A retrospective analysis was performed on the clinical data of 80 children with refractory epilepsy treated in the hospital between December 2018 and December 2020. According to different treatment methods, they were divided into the KD group (36 cases, KD) and combination group (44 cases, prebiotics/probiotics assisted KD). All were followed up for 1 year. The curative effect, electroencephalogram findings, levels of neurotransmitters, quality of life scores, cognitive function (verbal intelligence quotient (VIQ), performance intelligence quotient (PIQ)), and incidence of adverse reactions were compared between the two groups. *Results*. At the last follow-up, the effective rate of the combination group was higher than that of the KD group (95.45% *vs* 80.56%) ($P < 0.05$). After 1 year of treatment, video electroencephalogram findings in both groups were improved, and the response rate of the combination group was higher than that of the KD group (97.73% *vs* 83.33%) ($P < 0.05$). After 1 year of treatment, levels of VIQ and PIQ in both groups were increased, which were higher in the combination group than the KD group ($P < 0.05$). After 1 year of treatment, the level of 5-hydroxytryptamine (5-HT) in both groups was increased, which was higher in the combination group than the KD group ($P < 0.05$). After 1 year of treatment, quality of life scores in both groups were increased, which was higher in the combination group than the KD group ($P < 0.05$). The incidence of adverse reactions in the combination group was lower than that in the KD group (13.64% *vs* 36.11%) ($P < 0.05$). *Conclusion*. The curative effect of prebiotics/probiotics-assisted KD is better on children with refractory epilepsy, which can effectively improve electroencephalogram and quality of life, increase neurotransmitters and cognitive levels, with good safety.

1. Introduction

As a relatively common neurological disease, epilepsy refers to brain dysfunction caused by excessive discharge, leading to repeated and transient central nervous system dysfunction [1]. Refractory epilepsy is a kind of epilepsy that has not achieved persistent seizure-free after the correct application of two tolerable antiepileptic drugs [2]. Data show that 20% of children with epilepsy may eventually have refractory epilepsy [3]. Long-term seizures of epilepsy may not only lead to persistent neuropsychiatric disorders, affect the cognitive function of children, but also adversely affect the growth and development of children [4]. The current clinical treatment methods mainly rely on oral antiepileptic drugs, vagus nerve stimulation, and so on. Ketogenic diet (hereinafter referred to as KD) is an important dietary therapy for the treatment of refractory epilepsy, which is economical, practical, and effective [5]. However, the composition of the intestinal flora of children with KD treatment will change, and the diversity and richness of species will be reduced. And recent studies have shown that intestinal flora can also regulate brain function, and the imbalance of intestinal flora may be related to the development and aggravation of epilepsy [6]. There is still a need to explore and develop new adjuvant therapies to improve the intestinal flora and enhance the efficacy of KD. Prebiotics/probiotic preparations are widely used microbial preparations, which can improve the disorder of intestinal flora. Probiotics have been well

used in children with constipation in the past [7], but there are few reports in the field of refractory epilepsy at present, and its selection of indications, patient age, intervention timing, and even specific implementation plan need to be standardized. To this end, this study retrospectively analyzed the clinical data of 80 children with epilepsy and studied the effect of prebiotic/probiotic preparations assisted by KD in the treatment of children with refractory epilepsy.

2. Materials and Methods

2.1. Clinical Data. The clinical data of 80 children with epilepsy who were treated in our hospital from December 2018 to December 2020 were retrospectively analyzed. According to the treatment methods, they were divided into the KD group and combination group. There were 36 cases in the KD group, 22 males and 14 females. The average age was (5.31 ± 1.39) years, and the course of disease was (17.50 ± 3.72) months; there were 44 cases in the combination group, 28 males and 16 females, the average age was (5.57 ± 1.19) years, and the course of disease was (17.59 ± 4.80) months. There was no significant difference in general data between the two groups ($P > 0.05$).

2.2. Inclusion Criteria. (1) All met the clinical definition of refractory epilepsy [8], that was, those who were ineffective after 1-2 years of treatment with two drugs alone or in combination; (2) those who were unwilling or unable to accept surgical treatment due to various factors; (3) age <9 years old; (4) the liver and kidney functions were normal before treatment; and (5) digestive and other systemic diseases and metabolic diseases were excluded before enrollment.

2.3. Exclusion Criteria. (1) Those who have history of KD treatment or KD contraindications; (2) intolerance to the preparations in this study; (3) children with progressive intracranial space occupying lesions; (4) fat and ketone body metabolism diseases; (5) serious autoimmune diseases; (6) active infectious diseases; and (7) those who lost follow-up during follow-up.

2.4. Research Methods. Both groups of children underwent routine examinations, including electroencephalogram, blood, urine, and electrocardiogram, etc., and received conventional antiepileptic treatment at the same time. Levetiracetam, lamotrigine, topiramate, clonazepam, and other drugs were used according to the specific conditions of the children. KD group: fasting when starting the KD supplementation program after enrollment, and gradually increased the ketogenic ratio (fat: carbohydrate: protein) from 1 : 1 : 1 to 2 : 1 : 1, 4 : 1 : 1, according to the age, condition, and physical condition of the children, of which protein intake was required to meet the minimum daily intake; KD therapy gave 1/3 of the total calories on the 1st day, 2/3 on the 2nd day, and a full diet on the 3rd day. Younger children could drink ketogenic milk or customize the meal plan according to KD therapy. Combination group: In addition to the KD group, the treatment was supplemented by the prebiotic/probiotic preparation, *Bacillus subtilis* granules (produced by Beijing Hanmi Pharmaceutical Co. Ltd. State Drug Administration S20020037), KD therapy gave 1/3 of the total calories on the 1st day, 2/3 on the 2nd day, and the full diet on the 3rd day. The children in the two groups were hospitalized for observation for 2 weeks, and the nurses monitored the blood glucose, blood ketone levels and the number of epileptic seizures every 8 hours after enrollment. During hospitalization, nurses instructed the parents to record the children's diet, seizures, and other logs. After discharge, they were followed up by telephone and WeChat every week for 1 year. They were followed up in outpatient clinics once a month three months before discharge, and once in six months thereafter.

2.5. Observation Index. (1) EEG: Japan photoelectric digital electroencephalograph EEG-9200k (Shanghai Jumu Medical Instrument Co. Ltd.) was used to detect the changes, control of epileptiform discharges in children after 6 months and 1 year of treatment, respectively [9]. Epileptiform discharges disappeared: significantly improved: epileptiform discharges decreased by ≥50%; improved: epileptiform discharge decreased <50%; no effect: increased epileptiform discharge or no change in EEG. (2) Cognitive function: Wechsler's Children's Intelligence Test [10] was used to test the children's verbal intelligence quotient (VIQ) and performance intelligence quotient (PIQ) before treatment and at 1 year of treatment. The VIQ score and PIQ score were 0–159 points, the higher the score was, the stronger the cognitive function of the children would be. (3) Neurotransmitter: the levels of 5-hydroxytryptamine (5-HT) in children were detected by the double antibody Sandwich method (the kit was purchased from Hangzhou Gelangrui Biotechnology Co. Ltd.) before treatment and 1 year after treatment. (4) Quality of life: the quality of life of children with epilepsy was evaluated by the foreign quality of life scale for children with epilepsy [11] before treatment, 6 months after treatment, and 1 year after treatment. The score ranges from 0 to 100. The higher the score was, the better the quality of life would be. (5) Adverse reactions: record the adverse reactions of the children during the treatment process, such as diarrhea, constipation, drowsiness, etc.

2.6. Clinical Efficacy. At the last follow-up, the curative effect was evaluated according to the relevant literature [12]. Markedly effective: the number of seizures after treatment was reduced by 75%–90%; effective: the number of seizures after treatment was reduced by 74%–50%; ineffective: the number of seizures reduced after treatment was less than 50%.

2.7. Statistical Methods. The data of this study were analyzed by IBM SPSS Statistics 24.0 software. The normally distributed measurement data were expressed as $(\overline{x} \pm s)$, and an independent t test was used; the count data usage rate was

expressed by (%), χ^2 test was used; $P < 0.05$ was considered as that there was a statistically significant difference.

3. Results

3.1. Comparison of Clinical Efficacy between the Two Groups of Children. At the last follow-up, the effective rate of the combination group was 95.45%, which was higher than that of the KD group, 80.56% ($P < 0.05$), as shown in Figure 1.

3.2. Comparison of EEG Improvement between the Two Groups of Children. After 6 months of treatment, there was no significant difference in the video EEG performance between the two groups ($P > 0.05$). After 1 year of treatment, the video EEG performance of the two groups was improved, and the effective rate of the combination group was 97.73%, which was higher than that of the KD group (83.33%) ($P < 0.05$), as shown in Figure 2.

3.3. Comparison of VIQ and PIQ Levels between the Two Groups of Children before and after Treatment. Before treatment, there was no significant difference in the levels of VIQ and PIQ between the two groups ($P > 0.05$); after 1 year of treatment, the levels of VIQ and PIQ in the two groups were increased, and the levels of VIQ and PIQ in the combination group were higher than those in the KD group ($P < 0.05$), as shown in Figures 3 and 4.

3.4. Comparison of 5-HT Levels between the Two Groups of Children before and after Treatment. There was no significant difference in 5-HT levels between the two groups before treatment ($P > 0.05$); after 1 year of treatment, 5-HT levels in both groups increased, and the 5-HT levels in the combination group were higher than those in the KD group ($P < 0.05$), as shown in Figure 5.

3.5. Comparison of Quality of Life Scores between the Two Groups of Children. Comparing the quality of life scores of children of the two groups before treatment and after 6 months of treatment, there was no significant difference ($P > 0.05$). After 1 year of treatment, the quality of life scores of both groups increased, and the quality of life scores of the combination group were higher than those of the KD group ($P < 0.05$), as shown in Figure 6.

3.6. Comparison of Adverse Reactions between the Two Groups of Children. The incidence of adverse reactions in the combination group was 18.19%, which was lower than 44.44% in the KD group ($P < 0.05$), as shown in Figure 7.

4. Discussion

Studies have shown that [13], patients with refractory epilepsy continue to take antiepileptic drug treatment, which cannot reduce the number of seizures, but will increase adverse drug reactions. Therefore, other clinical programs are often used to treat refractory epilepsy, such as

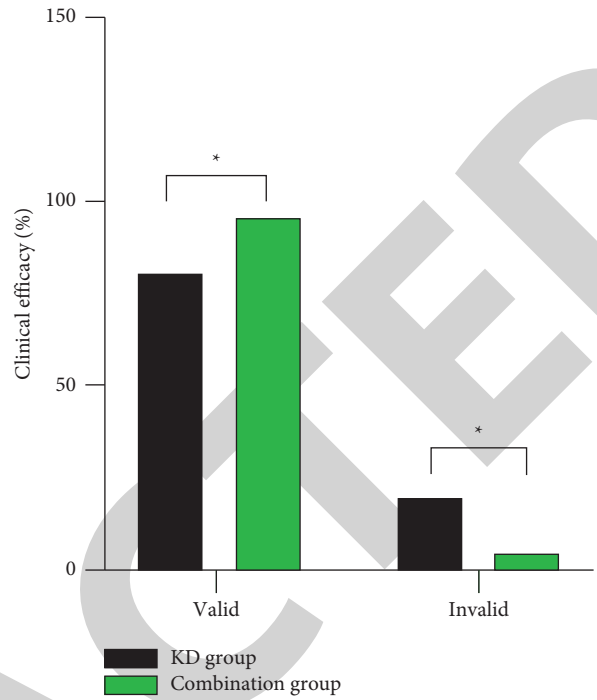
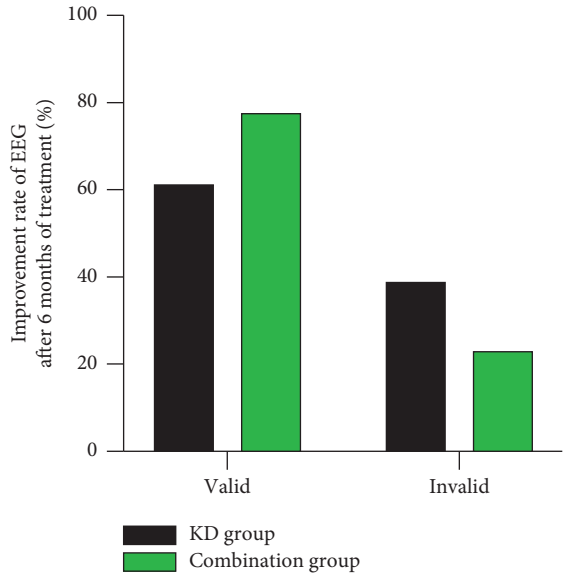


Figure 1: Clinical efficacy between the two groups of children. *Difference between group comparisons, $P < 0.05$.

neuromodulation electrical stimulation, surgery, and KD therapy. Compared with the former, KD therapy is painless and noninvasive, and the curative effect is more accurate. The specific mechanism is not conclusive; the more accepted view is that the efficacy of KD is the synthesis of various beneficial mechanisms [14]. Prebiotics are organic substances that can selectively promote intestinal metabolism and improve the health of the host, while probiotics can better improve the microecological balance of the human body. Prebiotics/probiotics preparations have been used to treat functional constipation and improve intestinal flora. Combined with KD therapy for the adjuvant treatment of epilepsy, it is still a relatively new research, and it is also the innovation of this research.

In recent years, domestic reports have shown that [15], KD therapy in children with refractory epilepsy has a higher efficacy than children who did not receive KD intervention. Similarly, this study showed that the effective rate of the combination group at the last follow-up was 95.45%, which was higher than that of the KD group, suggesting that prebiotic/probiotic preparations assisted KD in the treatment of children with refractory epilepsy has a better effect. The mechanism of action is hypothesized to be that the ketone bodies formed from the lipolysis of KD therapy provide an energy source for the brain, increase the level of inhibitory neuropeptides, and regulate the levels of aminobutyric acid and glutamate in the brain, which are related to anticonvulsant and antiepileptic effects. In addition, prebiotic/probiotic preparations can regulate brain blood sugar levels, change glucose metabolism, and inhibit systemic inflammation. Foreign studies have also confirmed



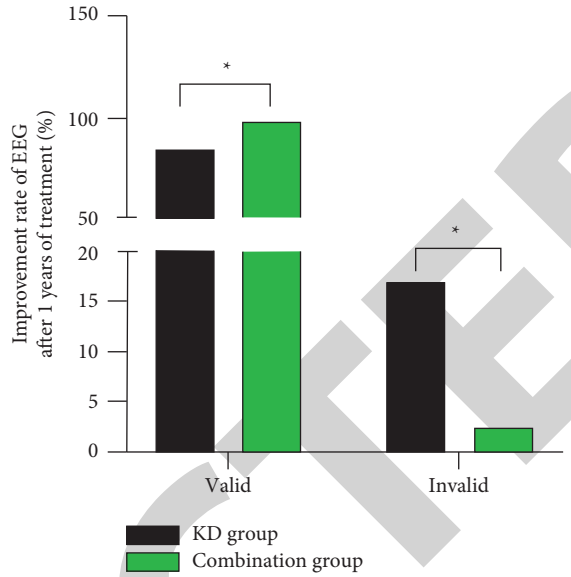


Figure 2: EEG improvement between the two groups of children. *Difference between group comparisons, $P < 0.05$.

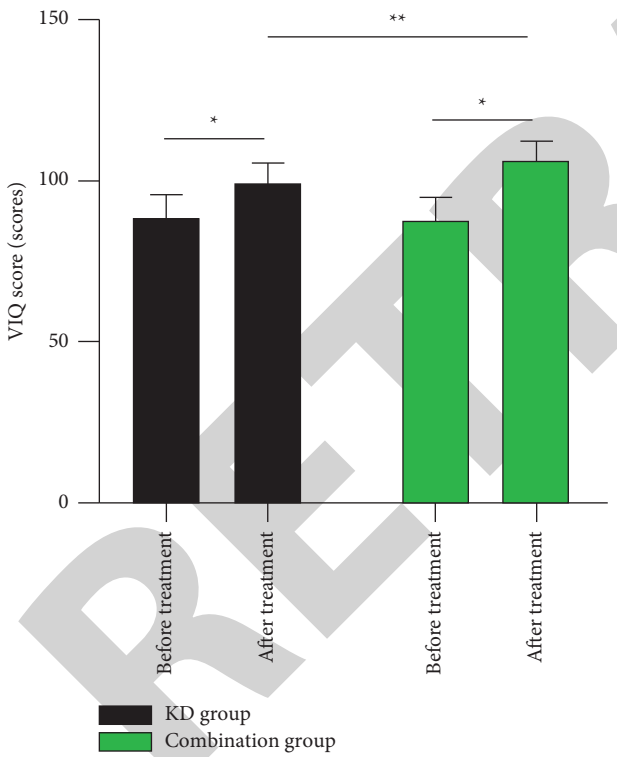


Figure 3: VIQ score between the two groups of children before and after treatment. *Comparison between the same group before and after treatment, $P < 0.05$; **comparison between groups after treatment, $P < 0.05$.

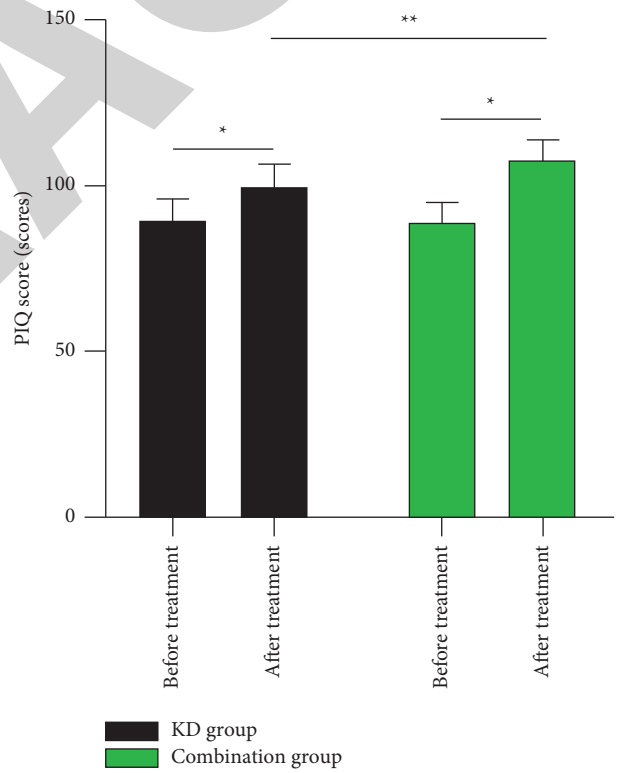


Figure 4: PIQ score between the two groups of children before and after treatment. *Comparison between the same group before and after treatment, $P < 0.05$; **comparison between groups after treatment, $P < 0.05$.

this effect [16]. The combination of the two can achieve a better antiepileptic effect.

EEG is the most intuitive indicator for evaluating the brain function of children with epilepsy, and the type of epileptic seizures can be judged by monitoring the abnormal discharge of children. Foreign studies [17] have shown that the early changes in EEG of patients after KD therapy may be a predictor of patient efficacy. The results of this study showed that after 1 year of treatment, the improvement of EEG in the combination group was better than that in the KD group, and there was no significant difference in the improvement of EEG between the two groups after half a

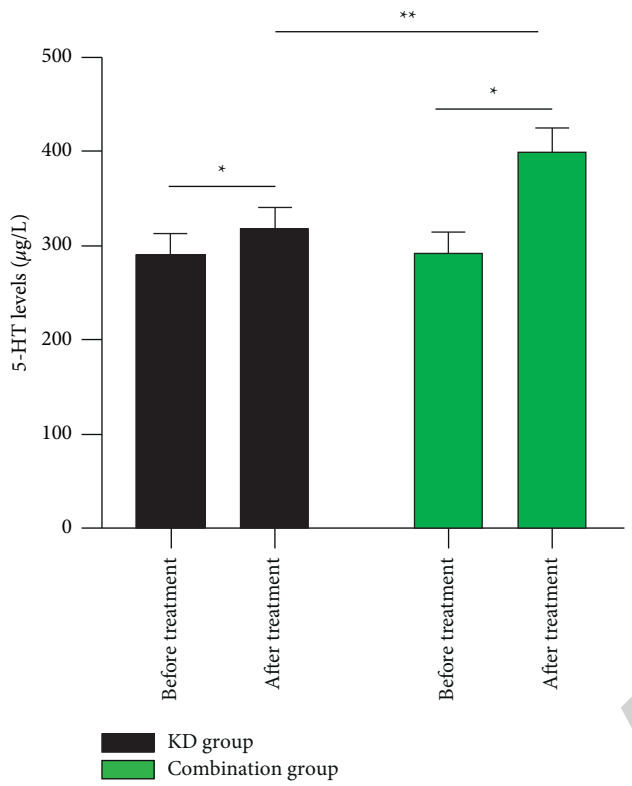


Figure 5: 5-HT levels between the two groups of children before and after treatment. *Comparison between the same group before and after treatment, $P < 0.05$; **comparison between groups after treatment, $P < 0.05$.

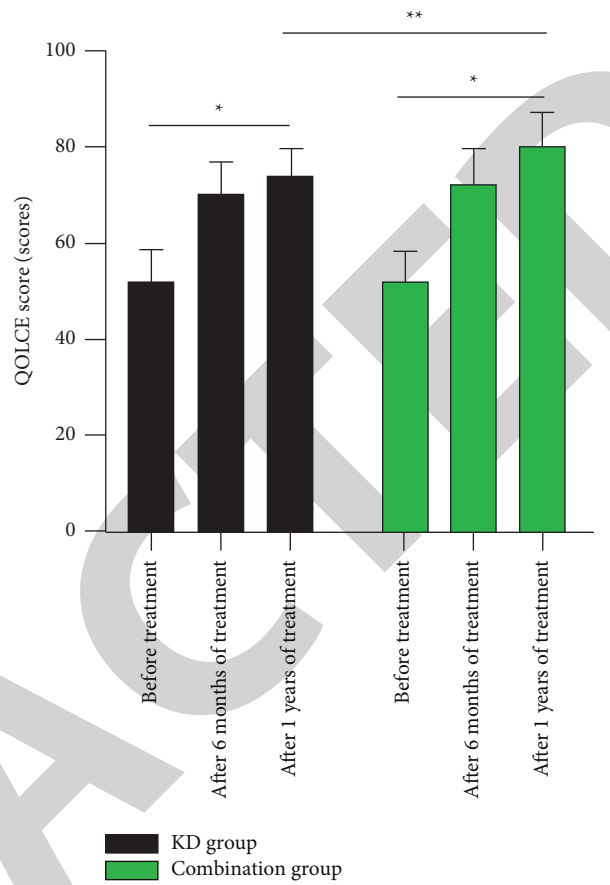


Figure 6: Quality of life scores between the two groups of children. *Comparison between the same group before treatment and after 1 year of treatment, $P < 0.05$; **comparison between groups after 1 year of treatment, $P < 0.05$.

year of treatment. It is suggested that the two programs have the same effect on EEG improvement in the short term, while the long-term effect of the combination group is better. Moreover, the results showed that the level of 5-HT in the combination group was also higher than that in the KD group, indicating that prebiotic/probiotic preparations assisted by KD treatment can improve the level of neurotransmitters. Analyzing this result, it may be that some neurotransmitters in the organism are produced by the intestinal flora, and the probiotic preparation alters the level of 5-HT by regulating the balance of intestinal flora to protect neurons, thus realizing the regulation of the brain-gut axis pathway and effectively improving the epileptic condition of the children. On the other hand, the levels of VIQ and PIQ in the combined group were significantly higher than those in the KD group, suggesting that prebiotic/probiotic preparations assisted by KD in the treatment of children with refractory epilepsy can effectively improve the cognitive level of children. In addition, the quality of life of children with epilepsy covers physical, emotional, social, and behavioral aspects. This study also showed that the quality of life score of the combination group was higher than that of the KD group, indicating that prebiotic/probiotic preparations assisted KD in the treatment of children with refractory epilepsy can improve the quality of life of children. Finally, this study found that the incidence of adverse reactions in the combination group was lower than that in the KD group. Previous studies have suggested that [18] KD therapy changes the eating habits of children, so the adverse reactions cannot be avoided; while prebiotic/probiotic preparations can promote intestinal peristalsis by regulating the secretion of 5-HT [19, 20], thereby improving intestinal motility, and the adverse reactions such as constipation and diarrhea in children can be effectively relieved. Nonetheless, because KD therapy is a highly restrictive dietary therapy and relies on the support of hospitals, families, and society, there is no unified conclusion on whether adverse reactions and death are directly related to KD therapy. At present, close follow-up and monitoring are still needed to avoid adverse reactions.

In conclusion, prebiotic/probiotic preparations assisted KD in the treatment of children with refractory epilepsy have better efficacy, which can improve children's EEG and quality of life, improve neurotransmitters and cognitive levels, reduce adverse reactions, and can be used as an effective regimen for treatment of refractory epilepsy. However, the research study is a retrospective analysis, the sample size is insufficient, and there may be a bias in the selection of children. In the future, attention should be paid to such problems, and a large number of clinical trials

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Retraction

Retracted: Clinical Factors of Blood Transfusion-Related Acute Lung Injury and Changes in Levels of Treg-Related Cytokines

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] L. Sun and Y. Liu, "Clinical Factors of Blood Transfusion-Related Acute Lung Injury and Changes in Levels of Treg-Related Cytokines," *Emergency Medicine International*, vol. 2022, Article ID 7344375, 6 pages, 2022.

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Research Article

Clinical Factors of Blood Transfusion-Related Acute Lung Injury and Changes in Levels of Treg-Related Cytokines

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Objective. Analysis of clinical factors and changes in regulatory T cell (Treg)-related cytokine levels in transfusion-associated acute lung injury (TRALI). *Methods*. 62 patients who underwent blood transfusion and developed TRALI (TRALI group) in our hospital between January 2018 and December 2021 and 58 patients who did not develop TRALI (non-TRALI group) from blood transfusion were selected to collect clinical data from patients and construct a logistic regression model to analyze clinical risk factors for TRALI. Based on the prognosis of TRALI patients, they were divided into survival group (50 cases) and death group (12 cases), and serum CD4 + CD25 + Treg and Treg-related cytokines (interleukin 10 (IL-10), transforming growth factor-β (TGF-β)) levels were compared between the two groups, and the correlation between CD4 + CD25 + Treg and IL-10 and TGF-β was analyzed by Pearson. *Results*. The differences in smoking history, human leukocyte antigen (HLA) antibody II, pretransfusion shock, and CD4 + CD25 + Treg between the TRALI group and non-TRALI group were statistically significant ($P < 0.05$). Logistic regression analysis showed that HLA antibody II and increased CD4 + CD25 + Treg were independent risk factors of TRALI ($P < 0.05$). The levels of CD4 + CD25 + Treg, IL-10, and TGF-β in the death group were significantly higher than those in the survival group ($P < 0.05$). CD4 + CD25 + Treg was positively correlated with levels of IL-10 and TGF-β ($P < 0.05$). *Conclusion*. Elevated HLA antibody II and CD4 + CD25 + Treg are the main clinical risk factors for TRALI, and CD4 + CD25 + Treg may be involved in immunosuppression by increasing the expression levels of IL-10 and TGF-β. Early clinical monitoring of changes in Treg-related cytokine levels can provide some guidance for prognostic assessment of TRALI patients.

1. Introduction

Transfusion-related acute lung injury (TRALI) is an acute lung injury that occurs during or within 6 h after the completion of a transfusion and is characterized by hypoxemia, noncardiogenic pulmonary edema, and sudden onset of respiratory distress, with a poor prognosis. Studies have shown that TRALI has the highest mortality rate among transfusion reactions; however, the specific pathophysiological mechanisms are not fully understood and the diagnosis and treatment are challenging [1, 2]. At present, epidemiological data on TRALI are mainly obtained through active reporting by medical institutions, and fewer clinical case reports and basic studies are available, probably due to the lack of awareness of this adverse reaction among frontline clinical physicians and unstandardized diagnostic criteria, resulting in a relatively excessive rate of clinical misdiagnosis or underdiagnosis [3, 4]. TRALI is fast-onset, difficult to identify, and some patients are at a higher risk of developing TRALI, and it has been previously reported that critical patients are at a higher risk of developing TRALI, so timely detection and effective management in the clinic is important to improve their prognosis, and understanding the factors affecting TRALI can provide important guidance for its clinical management [5, 6].

At present, the specific pathogenesis of TRALI has not been fully clarified in clinical practice, and previous studies have pointed to the presence of immunosuppression in the

early stages of TRALI development [7]. Regulatory T cells (Treg) belong to a subset of T cells that perform regulatory functions, and one of the better understood natural Treg is CD4 + CD25 + Treg. Relevant studies have shown that CD4 + CD25 + Treg can negatively regulate immunity through its related cytokines, effectively inhibit T cells, which are the main cells that maintain peripheral immune tolerance [8]. At this stage, domestic research on TRALI is mainly in the form of a review, and there are few reports on the influencing factors of TRALI and Treg cytokines. Based on this, this paper analyzed the clinical factors of TRALI and the changes of Treg-related cytokine levels, hoping to provide guidance for clinical practice.

2. Materials and Methods

2.1. General Information. 62 patients who underwent blood transfusion and developed TRALI (TRALI group) in our hospital between January 2018 and December 2021 and 58 patients who did not develop TRALI (non-TRALI group) from blood transfusion were selected. The inclusion criteria are as follows: (1) TRALI patients met the relevant diagnostic criteria for TRALI [9]; (2) first diagnosis; (3) no recent history of immunosuppressive therapy; (4) complete clinical data; (5) symptoms occurred during the transfusion of blood or (and) blood products, or within 6 h after the transfusion of blood and/or blood products. The exclusion criteria are as follows: (1) combined trauma, rheumatoid arthritis, diabetes, central nervous system disease or infection, etc.; (2) cardiogenic pulmonary edema and sepsis caused by transfusion of contaminated blood products, etc.; (3) cancer patients; (4) lung injury caused by other reasons; (5) respiratory insufficiency was present before the transfusion.

2.2. Methods. The clinical data of patients were collected, including gender, age, body mass index (BMI), smoking history, surgical history, perioperative blood transfusion volume, total infusion volume, human leukocyte antigen (HLA) antibody I, and HLA antibody II, whether they were in shock before transfusion, whether they were treated with mechanical ventilation, and whether they had combined liver disease.

Peripheral venous blood samples were drawn from patients, and 50 μL of peripheral blood mononuclear cells (PBMCs) were separated according to Ficoll density gradient centrifugation. 10% fetal bovine serum (50 mL of control) was added to resuspend the cells, and a flow cytometer (model: BD FACSCalibur) was taken for the CD4 + CD25 + Treg assay. Another PBMC suspension was taken, the supernatant was separated by centrifugation for 10 min (controlled at 1500 r/min), and then the levels of interleukin 10 (IL-10) and transforming growth factor-β (TGF-β) were measured by the enzyme-linked immunosorbent assay. The relevant test kits were purchased from Shuangyin Biotechnology Co.

The prognosis of TRALI patients during hospitalization was recorded and divided into the survival group and death group.

2.3. Statistical Processing. The SPSS 20.0 software was used for data analysis, the count data were expressed as "n and (%)," and the χ^2 test was used; the measurement data that obeyed normal distribution were expressed as ($\overline{x} \pm s$), and the independent samples t-test was used between groups; logistic regression analysis was used for clinical factor analysis of TRALI; Pearson analysis was used for correlation analysis. $P < 0.05$ was considered statistically significant.

3. Results

3.1. Comparison of Clinical Data between TRALI Group and Non-TRALI Group. There was no statistical significance between the TRALI group and non-TRALI group in terms of their gender, age, BMI, surgical history, perioperative blood transfusion volume, total infusion volume, HLA antibody I, mechanical ventilation, combined liver disease, IL-10, and the levels of TGF-β ($P > 0.05$); the comparison was statistically significant in the following aspects: the smoking history, HLA antibody II, pretransfusion shock, CD4 + CD25 + Treg between the two groups ($P < 0.05$), as shown in Table 1.

3.2. Logistic Regression Analysis of Influencing Factors of TRALI. The independent variables were the indicators with statistical significance in the above analysis, and the specific assignments were shown in Table 2. Logistic regression analysis showed that elevated HLA antibody II and CD4 + CD25 + Treg were independent clinical risk factors for TRALI ($P < 0.05$), as shown in Tables 2 and 3.

3.3. Comparison of the Levels of CD4 + CD25 + Treg, IL-10, and TGF-β between Survival Group and Death Group. The levels of CD4 + CD25 + Treg, IL-10, and TGF-β in the death group were significantly higher than those in the survival group ($P < 0.05$), as shown in Table 4 and Figures 1~ and 3.

3.4. Correlation Analysis. CD4 + CD25 + Treg in TRALI patients was positively correlated with the levels of IL-10 and TGF-β ($r = 0.647$, 0.574, both $P < 0.001$), as shown in Figures 4 and 5.

4. Discussion

Previous studies have shown that smoking history and pretransfusion shock can increase the risk of TRALI [10]. This study showed that the proportion of patients with smoking history and pretransfusion shock in the TRALI group was significantly higher than that in the non-TRALI group, indicating that smoking history and pretransfusion shock may affect the production of TRALI. Cigarettes contain a large amount of oxidant substances and smoking can affect the oxidative antioxidant balance in the lung. Glutathione (GSH) is the main antioxidant in the lung and plays an important defense role in the corresponding oxidant-mediated inflammatory response and lung injury, and smoking can inhibit GSH [11, 12]. Sympathetic excitation of

Table 1: Comparison of clinical data between TRALI group and non-TRALI group (n (%), $\overline{x} \pm s$).

Clinical data	TRALI group ($n = 62$)	Non-TRALI group ($n = 58$)	χ^2 or t	P value
Gender			0.595	0.441
Male	32 (51.61)	34 (58.62)		
Female	30 (48.39)	24 (41.38)		
Age (years)	49.56 ± 7.94	49.71 ± 7.90	0.587	0.558
BMI (kg/m^2)	23.82 ± 2.15	23.52 ± 2.47	0.711	0.479
Smoking history			12.035	0.001
Yes	33 (53.23)	13 (22.41)		
No	29 (46.77)	45 (77.59)		
Surgical history			0.155	0.694
Yes	53 (85.48)	51 (87.93)		
No	9 (14.52)	7 (12.07)		
Perioperative blood transfusion volume (mL)	3747.24 ± 521.12	3590.63 ± 515.22	1.654	0.101
Total infusion volume (mL)	4222.49 ± 637.59	4228.76 ± 598.01	0.055	0.956
HLA antibody I			0.028	0.868
Yes	7 (11.29)	6 (10.34)		
No	55 (88.71)	52 (89.66)		
HLA antibody II			11.749	0.001
Yes	16 (25.81)	2 (3.45)		
No	46 (74.19)	56 (96.55)		
Pretransfusion shock			16.421	< 0.001
Yes	40 (64.52)	16 (27.59)		
No	22 (35.48)	42 (72.41)		
Mechanical ventilation			2.724	0.099
Yes	35 (56.45)	24 (41.38)		
No	27 (43.55)	34 (58.62)		
Combined liver disease			1.230	0.268
Yes	33 (53.23)	25 (43.10)		
No	29 (46.77)	33 (56.90)		
CD4 + CD25 + Treg (%)	38.39 ± 4.62	26.40 ± 5.37	13.137	< 0.001
IL-10 (ng/L)	35.79 ± 5.65	34.84 ± 5.85	0.905	0.367
TGF-β (μg/L)	49.62 ± 8.19	48.93 ± 7.78	0.472	0.638

Table 2: Variable assignment.

Variable	Assignment
Y : TRALI	0 : non-TRALI 1 : TRALI
X1 : smoking history	0 : no 1 : yes
X2 : HLA antibody II	0 : no 1 : yes
X3 : pretransfusion shock	0 : no 1 : yes
X4 : CD4 + CD25 + Treg	Enter the value directly

Table 3: Logistic regression analysis.

Factor	β	SE	Wald value	OR value	95% CI	P value
Smoking history	−0.664	1.753	0.144	0.515	0.017 ~ 15.989	0.705
HLA antibody II	4.729	1.694	7.788	113.182	4.091 ~ 3131.414	0.005
Pretransfusion shock	0.907	1.650	0.302	2.477	0.098 ~ 62.866	0.582
CD4 + CD25 + Treg	0.574	0.114	25.274	1.775	1.420 ~ 2.220	< 0.001
Constant	−19.586	3.901	25.207	< 0.001	—	< 0.001

the body after hemorrhagic shock promotes the secretion of catecholamines, leukotrienes, angiotensin, and endothelin by the renin-angiotensin system (RAS), while the coagulation-fibrinolytic system is also activated, all of which promote pulmonary vasoconstriction, causing a decrease in pulmonary blood flow and affecting capillary permeability, leading to ischemia-reperfusion injury in the lungs [13, 14]. However, this study found that smoking history and

Table 4: Comparison of the levels of CD4 + CD25 + Treg, IL-10, and TGF-β between survival group and death group ($\overline{x} \pm s$).

Group	CD4 + CD25 + Treg (%)	IL-10 (ng/L)	TGF-β (μg/L)
Survival group ($n = 50$)	37.76 ± 4.55	34.92 ± 5.05	48.09 ± 7.20
Death group ($n = 12$)	41.00 ± 4.14	39.39 ± 6.75	56.01 ± 9.27
t	2.251	2.574	3.233
P value	0.028	0.013	0.002

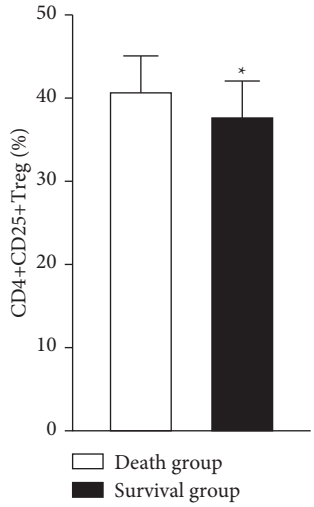

Figure 1: Distribution of CD4 + CD25 + Treg in survival group and death group.

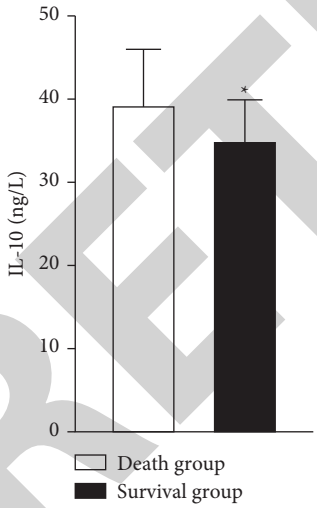

Figure 2: Distribution of IL-10 in survival group and death group.

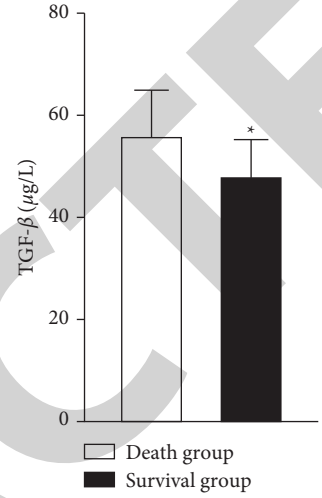

Figure 3: Distribution of TGF-β in survival group and death group.

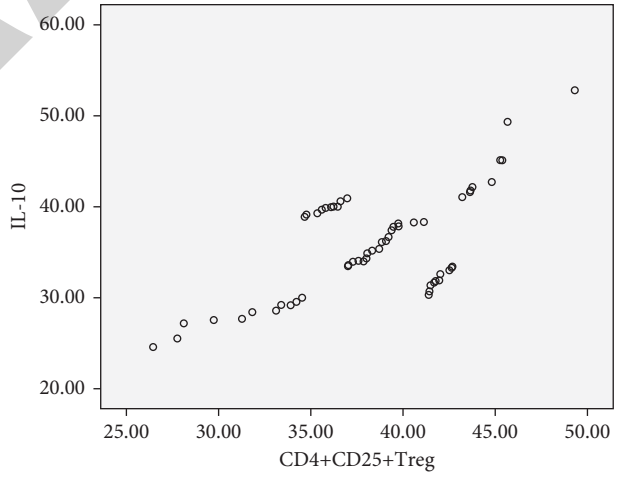

Figure 4: Relationship between CD4 + CD25 + Treg and IL-10.

pretransfusion shock were not independent risk factors for TRALI, which may be related to the small sample size of this study, which may have a certain impact on the stability of the logistic model, and it is easier to obtain negative results.

During blood transfusion therapy, the perfusion products contain anti-leukocyte antibodies derived from the blood donor, which are associated with TRALI, such as anti-neutrophil antibodies with related homologs, anti-leukocyte antibodies type 1 as well as type 2, but not all antibodies are associated with an increased incidence of TRALI [15]. This study found that HLA antibody II was an independent clinical risk factor for TRALI. Reasons for this may be that HLA antibodies can bind to antigens distributed on the surface of neutrophils (NEUT), which allows a significant activation of NEUT and damage to endothelial cells of lung tissue, thus increasing the risk of TRALI. Previous studies have shown that within the blood donor population, HLA antibodies are present in about 10% of pregnant women, with a 3- to 4-fold increase in this percentage in those with at least three pregnancies [16]. Therefore, strict differentiation of donor blood is recommended, and TRALI mediated by

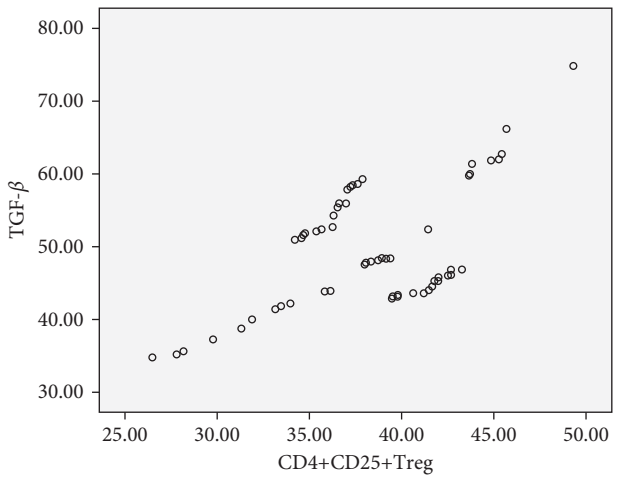

Figure 5: Relationship between CD4 + CD25 + Treg and TGF-β.

plasma products can be avoided by excluding pregnant women. CD4 + CD25 + Treg can play a dedicated immunosuppressive role by expressing the production of CD4+ and CD25+ and promoting the formation of transcription factor Foxp3 to play an immunosuppressive function, participating in the drift of T cells to helper T cells 2 (Th2), and effectively regulating Th1/Th2 balance state and induce immune tolerance [17, 18]. After multivariate analysis, this study showed that the increased level of CD4 + CD25 + Treg was a clinical risk factor for TRALI. According to the "double-whammy theory," the human body will experience an excessive inflammatory response when stimulated by events such as severe trauma, traumatic surgery, and massive blood loss, resulting in the activation of NEUT and the accumulation of NEUT in the lungs through the pulmonary circulatory system [19, 20]. When a large number of blood transfusions are given, the platelet fragments, related denatured protein molecules, and leukocytes as well as allogeneic immune components in blood products are more likely to react with immune components in the human circulatory system, increasing CD4 + CD25 + Treg and enhancing NEUT chemotaxis, making the pulmonary microcirculation disorder more serious, thus damaging alveolar epithelial cells and endothelial cells [21].

It has been reported [22] that Treg-related cytokines (IL-10 and TGF-β) show abnormal changes when the immune function of the body is disturbed. In this study, the levels of CD4 + CD25 + Treg, IL-10, and TGF-β in the death group were significantly higher than those in the survival group, indicating that patients with increased CD4 + CD25 + Treg and high expression of IL-10 and TGF-β had a higher prognosis. Correlation analysis showed that CD4 + CD25 + Treg was positively correlated with the levels of IL-10 and TGF-β, and CD4 + CD25 + Treg may affect the prognosis of TRALI patients by increasing the expression levels of IL-10 and TGF-β, which may be a new target for immune blockade in the body. The results suggest that CD4 + CD25 + Treg may be a new target for immune blockade and provide a basis for clinical efficacy and prognosis assessment of TRALI.

To sum up, the clinical risk factors of TRALI mainly include HLA antibody II, high CD4 + CD25 + Treg, etc. CD4 + CD25 + Treg may affect the prognosis of TRALI patients by upregulating the expression of IL-10 and TGF-β, and early monitoring of them is beneficial to the prognosis assessment of patients with TRALI.

Data Availability

The data used and analyzed during the current study are available from the corresponding author.

Ethical Approval

The study was approved by the ethics committee.

Consent

All patients signed informed consent.

Conflicts of Interest

The authors declare no conflicts of interest, financial or otherwise.

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Research Article

Summary and Analysis of Relevant Evidence for Nondrug Nursing Programs in Neonatal Operational Pain Management

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Purpose. To summarize the relevant evidence for nondrug nursing programs in neonatal operational pain management. *Methods*. Computer search for the literature on neonatal procedural pain from 2015 to 2020 in Up To Date, JBI, NICE, SIGN, RNAO, NGC, PubMed, Cochrane Library, CNKI, and Wanfang database was conducted. All literature works that may meet the inclusion criteria were independently evaluated by two researchers to determine the quality grade of the articles. *Results*. Finally, 9 literature works were extracted, including 4 guidelines, 3 systematic reviews, and 2 evidence summaries. The relevant contents of the literature were extracted and summarized, and 20 pieces of the best evidence were obtained. *Conclusion*. Breast feeding, sweetener, Kangaroo mother care, sensory stimulation, nonnutritive sucking, and other nondrug nursing programs can reduce the neonatal operational pain, which has guiding significance in neonatal operational pain management.

1. Introduction

Since the development of the neonatal pain conduction pathway is not perfect and the inhibition of pain is also lacking, the neonate often produces relatively strong pain response [1]. The pain tolerance of a neonate is lower than that of children of other ages, and the pain threshold level is 50% –70% of that of adults [2]. Studies have shown that compared with adults, the pain perceived by neonates is more severe and lasting [3]. After birth, neonates will experience operational pain in different ways, such as hepatitis B vaccine injection, vitamin injection, fundus screening, and heel blood collection. In addition, NICU children will also face other painful operations such as tracheal intubation, central venous puncture, and lumbar puncture [4, 5]. Repeated painful operations are associated with programmed changes in the hypothalamic-pituitary-adrenal axis (HPA). Cruz's team conducted an epidemiological survey of NICU neonates, and the results showed that the operational pain was 7.5–17.3 times per day for each neonate within 14 days before birth [6]. Pain may cause unstable physiological outcomes in the newborn, such as increased heart rate, shortness of breath, changes in intracranial blood volume, and abnormal changes in blood pressure. Repeated painful operations will lead to stress reaction of neonates, and severe cases will be detrimental to the development of neonates. After experiencing long-term operational pain, neonates may suffer from sleep disorders, difficulty in feeding, loss of appetite, and other problems, and at the same time, they may have long-term effects such as changes in nerve development, decreased cognitive ability of behavior, decreased perception ability, depression, and anxiety [7, 8]. In recent years, more attention has been paid to the pain of neonates. Although the medical staff's awareness of pain has been improved, nurses seldom take measures to relieve the pain of neonates in the actual treatment and nursing process. Roofthooft's team found that only about 36.6% of patients will be treated with analgesia for operational pain in clinic [9]. For neonatal operational pain, a nondrug nursing program is a safe and effective intervention measure, which can appropriately reduce the use of drug intervention and reduce the harm of drugs to neonates. The purpose of this study is to summarize the relevant evidence for nondrug nursing programs in neonatal operational pain

management, so as to provide reference for guiding the management of neonatal operational pain.

2. Materials and Methods

2.1. Identify Evidence-Based Problems. According to PIPOST tools, clinical problems are transformed into evidence-based problems: ① P (population): neonates whose birth age is ≤28 days; ② I (intervention): intervention measures to relieve pain; ③ P (professional): pediatric nurses, physicians, and family members of neonates; ④ O (outcome): O_1 (heart rate, pulse, oxygen saturation, etc.) and O_2 (duration of painful face, duration of crying, etc.); ⑤ S (setting): pediatric ward; ⑥T (type of evidence): guideline, systematic reviews, and evidence summary.

2.2. Evidence Retrieval Strategy. With "procedural pain, pain, analgesia, non-drug analgesia, neonate, neonatology department" as the English keywords, the retrieved databases include the following: Up To Date, JBI Evidence-Based Health Care Center database, National Institute for Clinical Excellence (NICE), Scottish Interhospital Guide Network (SIGN), Registered Nurses' Association of Ontario (RNAO), National Guideline Clearinghouse (NGC), PubMed, Cochrane Library, CNKI, and Wanfang database. The retrieval period was from 2015 to 2020.

2.3. Literature Inclusion Criteria and Exclusion Criteria. Inclusion criteria are as follows: the research object includes clinical guidelines, evidence summary, and systematic reviews of neonates with operational pain. Exclusion criteria are as follows: Studies that involve nondrug nursing programs but do not indicate specific interventions, summary, abstract, draft, interpretation of evidence, research proposal, research with no clear conclusion, and duplicate evidence.

2.4. Literature Quality Evaluation Standard. ① Appraisal of Guidelines Research and Evaluation in Europe II (AGREE II) was used to evaluate the clinical guideline [10]. The evaluation tool includes 6 areas: scope and purpose, participants, rigor of formulation, clarity, applicability, and editorial independence. It includes 23 items, with a score of 1 to 7 points. The higher the score, the higher the degree of agreement. The standardized score of each field was calculated. The recommendation grades are divided into Grade A (directly recommended), Grade B (recommended after modification), and Grade C (not recommended).

② Assessment of multiple systematic reviews (AMSTAR) was used to evaluate the systematic reviews [11]. It includes 11 items. The items are scored by yes: 1 points; unclear or not mentioned: 0.5 points; and no: 0 points. The highest score is 11 points. The overall quality evaluation is divided into high quality, medium quality, and low quality. 0–4 points are low quality, 5–8 points are medium quality, and 9–11 points are high quality.

③ All the literature potentially meeting the inclusion criteria was independently evaluated by 2 researchers trained through a national evidence-based nursing curriculum to determine the quality grade of the articles. For literature works that are difficult to reach consensus, the third researcher trained through a national evidence-based nursing curriculum will participate in the discussion to reach consensus. The inclusion principle of literature evidence included the following: evidence-based evidence, high-quality evidence, and newly published evidence should be given priority.

④ The JBI evidence recommendation level system was used for evidence summary [12]. The level of evidence is divided into 1–5 levels. The higher the level, the lower the grade of evidence. The FAME structure based on JBI determines the division of evidence: Grade A (strong recommendation) and Grade B (weak recommendation).

3. Results

3.1. Retrieval of Results. A total of 402 literature works were obtained in the initial examination. After reading the title, abstract, and full text, the unqualified literature works were eliminated. Finally, 9 literature works were extracted, including 4 guidelines, 3 systematic reviews, and 2 evidence summaries. The basic characteristics of the included literature works are shown in Table 1.

3.2. Quality Evaluation of Guidelines. The total quality scores of the 4 guidelines are ≥5 points, so it is recommended to use these 4 guidelines as shown in Table 2.

3.3. Quality Evaluation of Systematic Reviews. The problems of the 3 systematic reviews are as follows: the grey literature is not considered in the inclusion criteria, and the possibility of publication bias has not been fully assessed. The 3 systematic reviews are all of high quality, can clearly put forward relevant evidence-based questions, and are scientific and authentic as shown in Table 3.

3.4. Evidence Description and Summary. In the process of evidence summary, the 2 evidence summaries included in this study both adopt the original evidence level and recommendation level. The relevant contents of the literature were extracted and summarized, and 20 pieces of the best evidence were obtained. The summary of evidence is shown in Table 4.

4. Discussion

4.1. Breast Feeding. Breast feeding can be divided into direct breast feeding and indirect breast feeding. The method can promote the mother-infant contact, it can provide physical and psychological comfort for neonates, and it does not increase any medical cost. Ponce-Garcia's team believed that breast feeding can reduce the probability of sleep and breathing disorder in children and significantly shorten the duration of crying in children [22]. Peng's team found that compared with NNS, breast feeding had a better analgesic effect after heel-sticking operation for premature infants

Table 1: Basic characteristics of the included literature works.

Included literature	Research contents	Source of evidence	Nature of evidence	Year of publication
Taddio et al. [13]	Reduce pain during vaccination	NGC	Guideline	2015
Lago et al. [14]	Nondrug analgesic intervention of common acupuncture in neonates	PubMed	Guideline	2017
Lim et al. [15]	Prevention and management of neonatal operational pain	PubMed	Guideline	2017
ENA Clinical Practice Guideline Committee et al. [16]	Acupuncture or slight manipulation pain intervention for pediatric patients	PubMed	Guideline	2019
Harrison et al. [17]	A sweetener is used for acupuncture pain of children aged 0–16 years	Cochrane Library	Systematic review	2015
Stevens et al. [18]	Application of sucrose in neonatal operational pain	Cochrane Library	Systematic review	2016
Johnston et al. [19]	Kangaroo mother care (KMC) for neonatal operational pain	Cochrane Library	Systematic review	2017
JBI [20]	Breast feeding can relieve neonatal operational pain	JBI	Evidence summary	2019
JBI [21]	KMC is used for low birth weight infants	JBI	Evidence summary	2020

Table 2: Quality evaluation of the guideline.

Included literature	Total quality score	Recommended grade
Taddio et al. [13]	6 points	Grade A
Lago et al. [14]	5.5 points	Grade A
Lim et al. [15]	5.5 points	Grade A
ENA Clinical Practice Guideline Committee et al. [16]	5 points	Grade B

Table 3: Quality evaluation of systematic reviews.

AMSTAR	Harrison et al. [17]	Stevens et al. [18]	Johnston et al. [19]
Whether to formulate the preliminary design plan?	1 point	1 point	1 point
Whether the research selection and data selection are repeatable?	1 point	1 point	1 point
Whether to carry out a comprehensive retrieval strategy?	1 point	1 point	1 point
Whether the grey literature is considered in the inclusion criteria?	0 points	0 points	0 points
Whether to describe the characteristics of the included study?	1 point	1 point	1 point
Whether to provide a list of the included and excluded literature?	1 point	1 point	1 point
Whether to evaluate the scientificity of the included study?	1 point	1 point	1 point
Whether the scientificity of the included study was properly applied in the derivation of the conclusions?	1 point	1 point	1 point
Whether the methods used to synthesize the results were appropriate?	1 point	1 point	1 point
Whether to fully assess the possibility of publication bias?	0 points	1 point	1 point
Whether to indicate a conflict of interest?	1 point	1 point	1 point
Total points	9 points	10 points	10 points

[23]. Evidence 4 shows that the sweetener of breast feeding is lactose secreted by the mother. Although lactose does not have the analgesic effect of glucose and sucrose, breast feeding can relieve pain through taste, skin contact, and other ways.

4.2. Sweetener. Sweetener has become a commonly used analgesic measure for neonates, and its possible mechanism is that it stimulates an oral sense of taste, stimulates oral tactile receptors, and triggers the release of endogenous opioids. The opioid receptor is a part of the endorphin system, and activating the receptor can reduce the pain sensation of the HPA axis of neonates [24]. Generally speaking, sweeteners relieve pain through the taste at the tip of the tongue. Therefore, taking sweeteners through the gastric tube has no analgesic effect, and they need to be taken orally to relieve pain [25]. Uzelli's team studied premature infants who needed intramuscular injection and found that oral glucose had a positive effect on reducing the pain score, reducing crying time, and improving physiological indicators. At the same time, they believe that giving premature infants the lowest dose of glucose can also relieve pain to some extent [26]. Vezyroglou's team believed that although the sweetener has a good analgesic effect, no serious adverse events have occurred. However, the long-term effects of

Table 4: Evidence description and summary.

Intervention measure	Evidence content	Level of evidence	Recommended level
Breast feeding	(1) For neonates, providing breast milk through the nipple or syringe is as effective as using glucose and sucrose [14, 15, 20]	Level 1	Grade A
	(2) For neonates, the smell of breast milk has an analgesic effect [13, 14]	Level 1	Grade B
	(3) Breast feeding should be the first choice for neonatal single operational pain, followed by glucose, sucrose, and other substitutes [20]	Level 1	Grade A
	(4) In full-term neonates, breast feeding has a lower pain response compared with posture, shaking, and mother holding [15]	Level 1	Grade A
Sweetener	(5) The sweetener of breast feeding is lactose secreted by the mother, which is different from glucose and sucrose [16]	Level 1	Grade A
	(6) For neonates, the recommended dose of sucrose for analgesia is 12–120 mg [18]	Level 1	Grade A
	(7) It is recommended that sucrose be taken orally at least 2 min before painful operation [18]	Level 1	Grade A
	(8) Glucose in 20%–30% solution can replace sucrose for analgesic treatment [14]	Level 1	Grade A
	(9) Sweeteners are suitable for infants <3 months [16]	Level 1	Grade A
	(10) Sucrose is advised to be used with caution in preterm infants <32 weeks of pregnancy, unstable condition, and mechanically ventilated neonates [18]	Level 1	Grade A
KMC	(11) KMC can relieve the pain of premature and full-term infants to a certain extent [15]	Level 1	Grade A
	(12) KMC can be performed for neonates who are accustomed to nonbreast feeding [13]	Level 1	Grade A
	(13) Low-birth-weight infants should implement KMC as soon as possible and as long as possible after birth [21]	Level 5	Grade B
	(14) In neonatal KMC, there is no difference in the analgesic effect between mothers and others [19]	Level 1	Grade A
	(15) For neonates, KMC should choose a comfortable position and should be combined with slapping or shaking actions after vaccination [13]	Level 1	Grade A
Sensory stimulation	(16) When all sensory stimulation are used, the analgesic effect is better than that of single oral sucrose [15]	Level 1	Grade A
	(17) The upper limb massage can relieve the pain of neonates [16]	Level 1	Grade A
	(18) During the heel blood collection of premature infants, the pain can be alleviated by playing the same music that the mother heard during pregnancy [15]	Level 2	Grade B
	(19) During neonatal vaccination, the analgesic effect of taste stimulation combined with visual stimulation is better [13]	Level 1	Grade A
Nonnutritive sucking (NNS)	(20) Sweeteners and NNS play a synergistic role in neonatal analgesia [18]	Level 1	Grade A

sweeteners on development and neurological function are still unknown, and the dosage, concentration, and the use time of sweeteners require attention [27].

4.3. KMC. KMC refers to the nursing method of placing the newborn's whole body naked on the mother's chest for maximum skin-to-skin contact [28]. KMC relies on various forms of stimulation, such as tactile sensation, warm sensation, and hearing, to activate the neurochemical system, so as to maintain the body temperature of neonates and provide neonates with sufficient warmth and security [29]. At the same time, this nursing method can effectively control the programmed change of the HPA axis by regulating the pressure-regulating system involved in the painful experience, thus effectively blocking the pain sensation of neonates [30]. According to the research of Montealegre-Pomar's team, compared to usual care, KMC can reduce the mortality of premature infants, prevent apnea, and reduce the operational pain score [31]. Pandita's team implemented KMC when the baby was vaccinated and found that the crying time of the baby was obviously reduced and the pain score was reduced [32]. Taddio's team observed 736 neonates, and they finally came to the conclusion that KMC is beneficial to relieve acute pain during operation and KMC can be used when neonates are vaccinated [33]. In addition, clinically, some mothers are in a high-risk state, so they cannot perform KMC on neonates in person. In this case, fathers or other postpartum mothers can perform KMC on the newborns. Evidence 14 proves that there is no difference in the analgesic effect between alternate KMC and KMC. Research by Murmu's team also confirmed this conclusion [34]. It is worth noting that evidence 13 holds that KMC should be implemented as soon as possible and as long as possible for low-birth-weight infants. However, this study is an expert consensus, the level of evidence is low, and more research is needed to confirm it. In clinical practice, the use time of KMC should be determined according to the specific

conditions of neonates, disease characteristics, clinical environment, and other factors.

4.4. Sensory Stimulation. Sensory stimulation is the primary way of nondrug intervention for neonatal pain. Individualized dependence on sensory intervention can control the programmed change of the HPA axis to a certain extent. Sensory stimulation mainly include touch (stroking the face and back of neonates), taste (giving the neonatal breast milk or sweetener), hearing (talking to the neonates and playing the mother's heartbeat recording), and vision (looking at the neonates) [35]. Qiu's team found that after the intervention of touch and music for premature infants, the pain of premature infants was alleviated, and the main mechanism was that the concentration of β-endorphin in the pituitary gland increased significantly [36]. Massage for neonates can reduce the levels of cortisol and norepinephrine in the serum to relieve pain and promote the physique and growth and development of neonates; especially, the upper limb massage has a better analgesic effect [37]. van der Heijden's team proposed that music therapy can stimulate the auditory receptors of premature infants and transmit music stimulation to the pituitary gland, thereby promoting the release of endorphins, catecholamines, and other substances from the pituitary gland, thus alleviating the pain [38]. Kurdahi's team believed that playing music that mothers hear during pregnancy for neonates can relieve pain [39]. Evidence 18 of this study also reflects this view, but the analgesic effect of this method is still unclear. In the implementation of music therapy, the selected music should be comfortable and slow, the melody should be harmonious, and stimulating and loud music should be avoided. White noise is a relatively new method to relieve pain, which can simulate the sound environment in the mother's body and make the neonates have the feeling in the mother's womb again, which has a positive effect on calming the mood of the neonates [40].

4.5. NNS. NNS is a method of increasing the sucking action of a neonate by gently placing a pacifier into the mouth of neonates. During the NNS intervention, no breast milk or formula was inhaled [41]. Carbajal's team research showed that NNS has a good analgesic effect, which may be due to the increase in endogenous endorphins [42]. Gao's team pointed out that NNS stimulated the release of 5-HT in the mouth, which relieved some pain, but when the neonate was in severe pain, it often opened its mouth to cry and could not suck. In this case, the appeasement of NNS was ineffective [43]. Pillai's team believed that the quality of evidence for analgesia of NNS in premature infants is low, and the analgesic effect needs to be further explored [44].

5. Conclusion

To sum up, breast feeding, sweetener, KMC, sensory stimulation, NNS, and other nondrug nursing programs can reduce the operational pain of neonates, which is characterized by low-risk, simple, and easy implementation. Most of the evidence in this study is Grade A recommendation, which has guiding significance in neonatal operational pain management. In clinical work, it is necessary to increase the attention of nurses to neonatal procedural pain and to adopt a variety of methods to implement comprehensive pain nursing interventions for neonates. In addition, in the process of using evidence, medical staff should fully consider the own situation of neonates, department environment, and other factors, and they should use high-quality evidence-based evidence to improve clinical practice.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author.

Conflicts of Interest

The authors declare no conflicts of interest.

Authors' Contributions

Zhuo Yang and Yinan Fu are co-first authors.

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Retraction

Retracted: Effect of MED-TLIF Combined with Percutaneous Pedicle Screw Fixation on Function and Spinal Pelvic Parameters in Patients with Lumbar Spondylolisthesis

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] H. Lv, H. Bi, J. Wei, and B. Xia, "Effect of MED-TLIF Combined with Percutaneous Pedicle Screw Fixation on Function and Spinal Pelvic Parameters in Patients with Lumbar Spondylolisthesis," *Emergency Medicine International*, vol. 2022, Article ID 2577920, 8 pages, 2022.

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Research Article

Effect of MED-TLIF Combined with Percutaneous Pedicle Screw Fixation on Function and Spinal Pelvic Parameters in Patients with Lumbar Spondylolisthesis

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Background. Lumbar spondylolisthesis is a common clinical spinal lesion. The upper vertebral body of the patient is displaced relative to the lower vertebral body, causing spinal instability and nerve compression. The clinical manifestations are low back and leg pain, abnormal lower limb sensation, and intermittent rupture. In severe cases, cauda equina syndrome and paraplegia may occur. Minimally invasive spinal surgery has developed rapidly in recent years and become the preferred treatment for lumbar spondylolisthesis. *Objective*. The aim of this study is to investigate the clinical effect of minimally invasive transforaminal lumbar interbody fusion (MIS-TLIF) combined with percutaneous pedicle screw fixation in the treatment of lumbar spondylolisthesis under microscope. *Methods*. The clinical and surgical data of 106 patients with lumbar spondylolisthesis treated in our hospital were selected and divided into research group (56 cases) according to surgical methods (MIS-TLIF combined with percutaneous pedicle screw fixation). The other 50 patients were treated with traditional open percutaneous intervertebral foramen fusion (control group). The surgical trauma-related indicators, visual analog pain scale (VAS) scores before and after surgery, modified Japanese Orthopedic Association low back pain score (JOA), bone graft fusion effect, spinal pelvic parameters, and surgical complications of the two groups were statistically analyzed in detail. *Results*. The incision length, intraoperative blood loss, operation time, and hospitalization time in the research group were lower than those in the control group, and the differences were statistically significant ($P < 0.05$). There was no significant difference in the VAS score and JOA score between the two groups before operation ($P > 0.05$). The VAS score and JOA score of the research group were lower than those of the control group on the first day after operation ($P < 0.05$). There was no significant difference in the VAS score and JOA score between the two groups at 1 month and 3 months after operation ($P > 0.05$). Six months, 12 months, and 18 months after operation, the bone graft fusion rates in the research group were 42.86%, 73.21%, and 94.64%, respectively, and those in the control group were 40.00%, 68.00%, and 92.00%, respectively, with no significant difference ($P > 0.05$). There was no significant difference in PI, PT, SS, LL, TK, LSJA, and SVA between the two groups before and 6 months after operation ($P > 0.05$). At 6 months after operation, the PT and TK values of the two groups were higher than those before operation ($P < 0.05$), and the SS, LL, LSJA, and SVA values of the two groups were lower than those before operation ($P < 0.05$). The complication rate of the research group was 3.57%, which was lower than 18.00% of the control group, and the difference was statistically significant ($P < 0.05$). *Conclusion*. MIS-TLIF combined with percutaneous pedicle screw fixation in the treatment of lumbar spondylolisthesis has the same effect as traditional open surgery and has the same correction effect for spinal pelvic parameters, but it has the advantages of less trauma and fewer complications.

1. Introduction

Clinically, patients with mild lumbar spondylolisthesis can be treated with analgesic drugs, physical therapy, epidural injection, and other conservative treatment methods. However, for patients with moderate to severe lumbar spondylolisthesis, surgical treatment is needed [1]. The traditional open percutaneous intervertebral foramen fusion can fully relieve the pressure and pain, but its incision is large and the range of paravertebral tissue stripping is large, which

has a negative impact on postoperative functional recovery [2]. Minimally invasive transforaminal lumbar interbody fusion (MIS-TLIF) can complete the decompression and fusion of lumbar spondylolisthesis with the assistance of the disc mirror system. Compared with traditional open percutaneous intervertebral fusion, MIS-TLIF has the advantages of minimally invasive, but its decompression and fusion effect does not have advantages [3]. Therefore, MIS-TLIF is often used in combination with pedicle screw fixation. The traditional open pedicle screw fixation through the median approach requires extensive stripping and stretching of the paravertebral muscles for a long time, which may easily lead to neurovascular damage, massive bleeding, muscle necrosis and fibrosis, low back pain, and muscle atrophy [4, 5]. Percutaneous pedicle screw fixation is used to treat thoracolumbar fractures, which can effectively avoid tissue and muscle damage, shorten hospital stay, and reduce intraoperative blood loss. Compared with traditional open surgery, percutaneous pedicle screw internal fixation causes fewer complications and is more conducive to rapid postoperative recovery of patients [6–8]. Therefore, in order to find a better treatment plan and improve the therapeutic effect of patients with lumbar spondylolisthesis, this study used MID-TLIF combined with percutaneous pedicle screw fixation for the treatment of lumbar spondylolisthesis, and observed its clinical effect and its influence on the spinal and pelvic parameters of patients. The report is as follows.

2. Materials and Methods

2.1. Information. A total of 106 patients with lumbar spondylolisthesis in our hospital from May 2016 to August 2019 were selected for clinical retrospective analysis. The patients met the following inclusion criteria: (1) The main clinical manifestations of the patients before operation are low back pain, swelling and numbness of the lower limbs, and the patients are accompanied by severe intermittent claudication, which requires surgical treatment. (2) Patients ranged in age from 35 to 75 years. (3) Minimally invasive surgery and traditional open surgery were performed by the same group of medical staff in our hospital. (4) The degree of lumbar spondylolisthesis according to the Meyerding classification: I~II° [1]. (5) Single-segment lumbar spondylolisthesis. (6) Patients and their families have been informed of the risks associated with surgery before surgery. (7) The programme meets the basic requirements of the Medical Ethics Committee. Exclusion criteria were as follows: (1) nonsteroidal anti-inflammatory drugs were taken in recent 2 weeks. (2) Patients with cerebrovascular diseases (cerebral hemorrhage, cerebral infarction, etc.). (3) Acute abdomen such as upper gastrointestinal ulcer, bleeding, gastrointestinal obstruction, and perforation. (4) Acute myocardial infarction, congestive heart failure. (5) with spinal tumors and *tuberculosis*. (6) Severe osteoporosis, scoliosis, and extremely narrow intervertebral space.

2.2. Surgical Method. MIS-TLIF combined with percutaneous pedicle screw fixation was used in the research group. The operator was used the C-arm machine to locate and make a transverse incision of about 2 cm at the location to separate the fascia and establish a working channel. Half of the lateral articular process bone was removed and the nucleus pulposus was resected under a microscope. The residual nucleus pulposus and cartilage plate were removed with a scraper. The prepared bone fragments were pushed into the anterior and bilateral intervertebral spaces to expand the intervertebral space. The PEEK anatomical cage was selected and fitted tightly in the middle or slightly anterior of the intervertebral space. Clean, place hemostatic gauze, and exit the working channel. The universal cannulated screw was placed in the same incision, and after the pedicle screw was inserted, the pre-bent rod was placed in the universal groove of the pedicle screw for locking and reduction. The contralateral pedicle screw rod was installed in the same way. The nut was tightened after conforming to the observed position of the C-arm machine. After the local drainage tube was placed, a needle incision was made to complete the operation.

The control group was treated with traditional open percutaneous intervertebral foramen fusion. A 10 cm incision was made in the posterior midline of the patient's lumbar spine, which was cut layer by layer to the deep fascia, and blunt dissection was performed to expose the lower lamina of the upper vertebral body, the upper lamina of the lower vertebral body, and the facet joints. The screw was placed at the vertical intersection of the horizontal line of the center of the lumbar transverse process and the lateral border of the superior articular process. Pedicle screws were placed after confirmation by X-ray. The articular process and part of the lamina on the affected side were excised, the nucleus pulposus was removed, the bone graft surface was cleaned, and the fracture particles were filled. A pre-curved titanium rod was mounted on the end of the pedicle screw and fixed. The surgical site was rinsed, a drainage tube was placed, and the incision was gradually closed, covered with a sterile dressing.

To prevent infection, patients in both groups were treated with antibiotics within 48 hours after surgery, and the duration of treatment was 24–48 hours. Glycerol fructose and dexamethasone were given to reduce nerve root edema, and nutritional nerve support treatment was given. The drainage tube was removed 2–4 days after operation. To guide patients with lumbar back muscle function exercise, severe activity was avoided.

2.3. Observation Indicators and Detection Methods. (1) Surgical trauma-related indicators in the two groups: incision length, intraoperative blood loss, operation time, and hospital stay. (2) Comparison of visual analog scale (VAS) scores before surgery, 1 day, 1 month, and 3 months after surgery [9]. The VAS scale is a subjective pain perception scale with a maximum score of 10 and a minimum of 0. The higher the VAS score, the more severe the patient's pain. (3) Modified Japanese Orthopedic Association low back pain score (JOA score) [10]. The highest JOA target function score is 29 points and the lowest is 0 points. The lower the patient's JOA score, the more severe the dysfunction. (4)

Table 1: Comparison of general data of the two groups of patients.

Normal information	Research group (n = 56)	Control group (n = 50)	$t/\chi 2$	P
Age (years)	55.10 ± 8.40	53.80 ± 7.00	0.860	0.392
BMI (kg/m^2)	24.30 ± 2.60	24.00 ± 2.80	0.572	0.569
SBP (mmHg)	125.10 ± 8.40	123.70 ± 7.50	0.901	0.370
DBP (mmHg)	74.10 ± 6.80	76.00 ± 8.00	−1.321	0.189
Sex (%)			0.519	0.471
Male	32 (57.14)	32 (64.00)		
Female	24 (42.86)	18 (36.00)		
Meyerding type (%)			1.531	0.216
I	11 (19.64)	15 (30.00)		
II	45 (80.36)	35 (70.00)		
Diseased lumbar spine (%)			2.024	0.363
L3	18 (32.14)	11 (22.00)		
L4	24 (42.86)	28 (56.00)		
L5	14 (25.00)	11 (22.00)		
Diabetes (%)			1.917	0.916
Yes	11 (19.64)	5 (10.00)		
No	45 (80.36)	45 (90.00)		
Coronary heart disease (%)			1.554	0.212
Yes	4 (7.14)	1 (2.00)		
No	52 (92.86)	49 (98.00)		

Bone graft fusion rate: the number of successful fusions/total number of people. (5) Spine and pelvis parameters before and after surgery in the two groups: pelvic incidence angle (PI), pelvic tilt (PT), sacral tilt (SS), lumbar lordosis (LL), thoracic kyphosis (TK), lumbosacral angle Joint angle (LSJA), and sagittal balance (SVA).

The parameters of spine and pelvis were detected by X-ray film before operation and 6 months after operation. The patients were taken from a standing position, and the knee joint and hip joint were stretched. The full-length and lateral X-ray films of spine were taken. PI: the angle between the vertical dividing line of S1 endplate and the connecting line from the midpoint of S1 upper endplate to the midpoint of hip joint. PT: the angle between the midpoint of the upper endplate to the midpoint of the hip joint and the horizontal vertical line. SS : S1 endplate tangent and horizontal angle. LL : Angle between upper endplate tangent of L1 and lower endplate tangent of L5. TK : Angle between upper endplate tangent of T4 and lower endplate tangent of T12. LSJA: the angle between the upper endplate tangent of L5 and the posterior cortical tangent of S1, and the angle between the lower endplate tangent of L5 and the upper endplate tangent of S1. SVA : Horizontal distance between C7 plumb line and posterior superior sacral angle. All patients were performed by the same group of radiologists under the same X-ray machine.

2.4. Statistical Processing. SPSS 21.0 was used for data processing software. The measurement indexes such as VAS score and JOA score in this study were tested by normal distribution, which were in line with approximate normal distribution or normal distribution, and expressed as $(\mathrm{x}(\_) \pm s)$. The t-test was used for comparative analysis between groups. χ^2 test was used for analysis and comparison of enumeration data. Test level $\alpha = 0.05$, and $P < 0.05$ means the difference is statistically significant.

3. Results

3.1. Comparison of General Data between the Two Groups of Patients. The age, gender, blood pressure, spinal segment distribution, and other basic data of the research group and the control group were statistically analyzed, and the differences between the two groups were not statistically significant ($P > 0.05$), see Table 1 for details. Table 1 Comparison of general data of two groups of patients.

3.2. Comparison of Surgical Trauma Indexes between the Two Groups. The incision length, intraoperative blood loss, operation time, and hospitalization time in the research group were lower than those in the control group, and the differences were statistically significant ($P < 0.05$), see Table 2 and Figure 1 for details. Table 2 Comparison of surgical trauma indexes between the two groups $(\mathrm{x}(\_) \pm s)$. Figure 1 Comparison of surgical trauma indexes between the two groups. (A) Surgical incision length, (B) Intraoperative blood loss. (C) Operation time. (D) Hospital stay.

3.3. Comparison of the VAS Score and JOA Score between the Two Groups. There was no significant difference in the VAS score and JOA score between the two groups before operation ($P > 0.05$). The VAS score and JOA score of the research group were lower than those of the control group on the first day after operation ($P < 0.05$). There was no significant difference in the VAS score and JOA score between the two groups at 1 month and 3 months after surgery ($P > 0.05$), see Table 3 and Figure 2 for details. Table 3 Comparison of VAS score and JOA score between the two groups $(\mathrm{x}(\_) \pm s)$. Figure 2 Comparison of VAS score and JOA score between the two groups: (A)VAS Score, (B) JOA Scores.

Table 2: Comparison of surgical trauma indexes between the two groups.

Group	n	Surgical incision length (cm)	Intraoperative blood loss (mL)	Operation time (min)	Hospital stay (d)
Research group	56	0.76 ± 0.23	41.80 ± 8.20	87.50 ± 9.60	7.20 ± 1.80
Control group	50	3.87 ± 0.81	98.60 ± 15.70	91.80 ± 8.80	10.60 ± 2.10
T		−27.530	−23.702	−2.394	−8.975
P		0.001	0.001	0.018	0.001

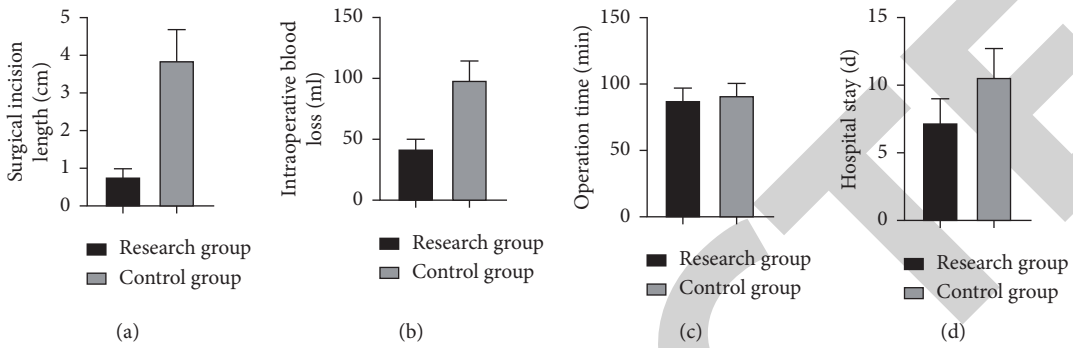


Figure 1: Comparison of surgical trauma indexes between the two groups. (a) Surgical incision length. (b) Intraoperative blood loss. (c) Operation time. (d) Hospital stay.

Table 3: Comparison of the VAS score and JOA score between the two groups ($x(\_) \pm s$).

Index	Group	Preoperative	1 day after operation	1 month after operation	3 months after operation
VAS scores	Research group ($n = 56$)	6.49 ± 1.30	$3.72 \pm 0.95^*$	$1.88 \pm 0.81^*$	$1.96 \pm 0.77^*$
	Control group ($n = 50$)	6.74 ± 1.38	$5.10 \pm 1.30^*$	$2.03 \pm 0.86^*$	$2.12 \pm 0.85^*$
	T	−0.960	−6.285	−0.924	−1.017
	P	0.339	0.001	0.357	0.312
JOA scores	Research group ($n = 56$)	19.63 ± 2.84	$11.30 \pm 2.51^*$	$5.29 \pm 1.60^*$	$5.50 \pm 1.82^*$
	Control group ($n = 50$)	19.11 ± 3.03	$15.28 \pm 2.84^*$	$5.81 \pm 1.76^*$	$5.84 \pm 1.67^*$
	T	0.912	−7.660	−1.593	−0.998
	P	0.364	0.001	0.114	0.321

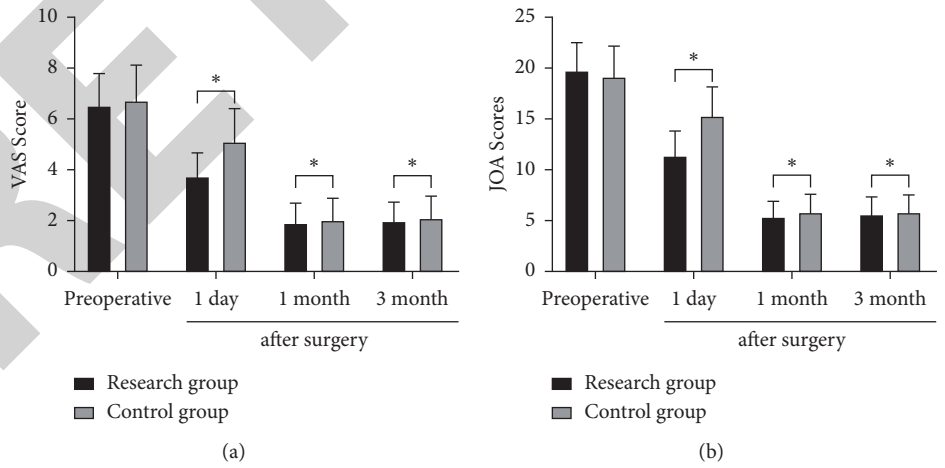


Figure 2: Comparison of the VAS score and JOA score between the two groups. (a) VAS Score. (b) JOA Scores.

3.4. Comparison of the Bone Graft Fusion Rate between the Two Groups. Six months, 12 months, and 18 months after operation, the bone graft fusion rates in the research group were 42.86%, 73.21%, and 94.64%, respectively, and those in the control group were 40.00%, 68.00%, and 92.00%, respectively, with no significant difference ($P > 0.05$). See Table 4 for details. Table 4 Comparison of bone graft fusion rate between the two groups (n (%)).

Table 4: Comparison of the bone graft fusion rate between the two groups (n (%)).

Group	n	6 months	12 months	18 months
Research group	56	24 (42.86)	41 (73.21)	53 (94.64)
Control group	50	20 (40.00)	34 (68.00)	46 (92.00)
χ^2		0.089	0.347	0.299
P		0.766	0.556	0.584

Table 5: Comparison of spine and pelvic parameters between the two groups ($x(\_) \pm s$).

Pelvic parameters	Preoperative				6 months after surgery			
	Research group ($n = 56$)	Control group ($n = 50$)	t	P	Research group ($n = 56$)	Control group ($n = 50$)	t	P
PI (°)	61.83 ± 7.30	62.53 ± 8.41	−0.459	0.647	60.90 ± 8.58	61.73 ± 9.00	−0.486	0.628
PT (°)	36.40 ± 4.11	37.18 ± 4.78	−0.903	0.368	42.74 ± 4.42*	41.58 ± 4.84*	1.290	0.200
SS (°)	39.57 ± 3.61	38.83 ± 4.73	0.911	0.364	32.40 ± 3.75*	34.02 ± 5.17*	−1.860	0.066
LL (°)	51.85 ± 4.29	50.76 ± 5.50	1.144	0.255	40.76 ± 3.85*	42.38 ± 4.92*	−1.898	0.060
TK (°)	30.64 ± 2.18	31.51 ± 3.46	−1.566	0.120	37.28 ± 3.32*	36.49 ± 3.63*	1.170	0.245
LSJA (°)	6.11 ± 1.74	6.50 ± 2.00	−1.074	0.285	−3.86 ± 1.10*	-4.15 ± 1.43*	−1.177	0.242
SVA (mm)	78.54 ± 8.40	76.75 ± 8.77	1.073	0.286	51.54 ± 6.63*	53.00 ± 8.25*	−1.009	0.315

Compared with this group before surgery * $P < 0.05$.

Table 6: Comparison of surgical complications between the two groups.

Group	n	Incision infection	Lung infection	Loose internal fixation	Spinal cord injury	Complication rate (%)
Research group	56	0	2	0	0	2 (3.57)
Control group	50	2	4	1	2	9 (18.00)
χ^2						5.913
P						0.015

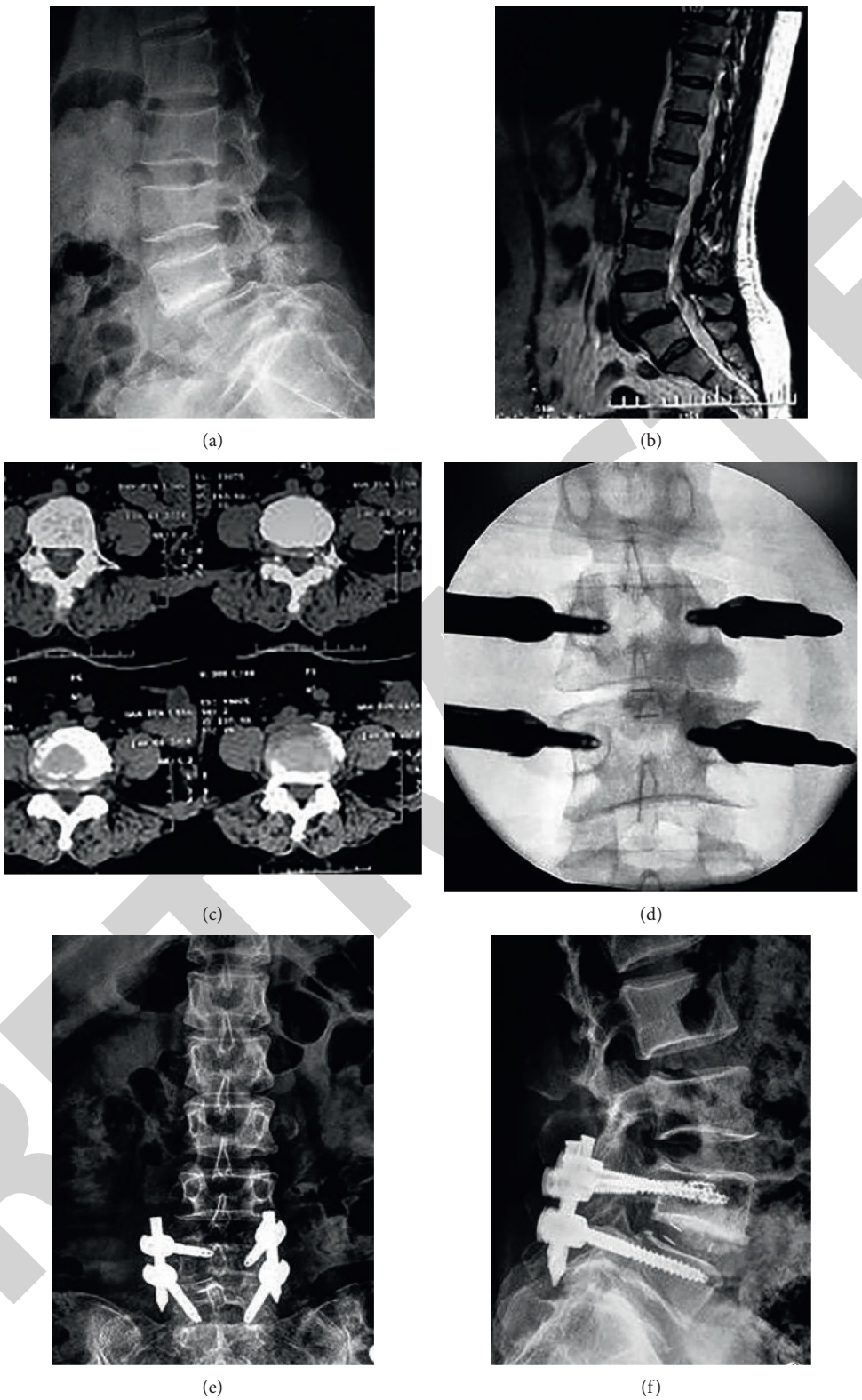
3.5. Comparison of Spine and Pelvic Parameters between the Two Groups. There was no significant difference in PI, PT, SS, LL, TK, LSJA, and SVA between the two groups before and 6 months after operation ($P > 0.05$). At 6 months after operation, the PT and TK values of the two groups were higher than those before operation ($P < 0.05$), and the SS, LL, LSJA, and SVA values of the two groups were lower than those before operation ($P < 0.05$), see Table 5 for details. Table 5 Comparison of spinal pelvic parameters between the two groups ($x(\_) \pm s$).

3.6. Comparison of Surgical Complications between the Two Groups. The complication rate of the research group was 3.57%, which was lower than 18.00% of the control group, and the difference was statistically significant ($P < 0.05$). See Table 6 for details. Table 6 Comparison of surgical complications between two groups.

3.7. Typical Case Data. In Figure 3, A is a 56-year-old female patient with lumbar spondylolisthesis had lumbar pain and intermittent claudication. A, B, and C for preoperative X-ray, MRI, CT data, patients were diagnosed as L4 lumbar spondylolisthesis II°. D is the data of percutaneous pedicle screw surgery in the operation, and E and F are the results of review 1 week after the operation. It can be seen that the patient's lumbar spondylolisthesis is effectively corrected and the internal fixation is stable (see Figure 3).

4. Discussion

Surgical treatment of lumbar spondylolisthesis is aimed at spinal canal decompression, spondylolisthesis reduction, bone graft fusion and fixation to restore the normal sagittal sequence of lumbosacral region, and improve spinal balance and stability. In traditional open percutaneous intervertebral foramen fusion, paravertebral muscles and surrounding soft tissues need to be peeled off. Postoperative complications such as paravertebral muscle fiber scarification, fat liquefaction, and extradural scar can easily occur, resulting in low back pain. Procrastination can evolve into chronic low back pain [11]. The development of microendoscopic technology has greatly reduced the surgical trauma. MIS-TLIF can not only obtain sufficient decompression but also retain more stable structures and reduce the range of stripping paravertebral muscles. Since the surgical channel does not pass through the spinal canal, it has low risk of injury to the spinal environment, dural sac and nerve root, and has the advantages of small trauma, less bleeding and fewer complications [12]. MIS-TLIF combined with percutaneous pedicle screw fixation is completed once, which can simultaneously deal with spinal stenosis, interbody fusion, and fixation [3]. MED combined with percutaneous pedicle screw MIS-TLIF and traditional open TLIF can achieve good clinical results in the treatment of single-segment lumbar spondylolisthesis. The former has more advantages in intraoperative blood loss, postoperative drainage, shortening hospitalization time, and improving early postoperative low back pain [13].



(a) (b) (c) (d) (e) (f)

Figure 3: (a) 56-year-old female patient with lumbar spondylolisthesis. The clinical signs are mainly lumbar pain and intermittent claudication. (a, b) and (c) are the X-ray, MRI, and CT data of the patient before the operation. The patient is diagnosed as L4 spondylolisthesis II. (d) is the data of the patient's percutaneous pedicle screw surgery during the operation. (e and f) are the results of the patient's 1 week postoperative review. It can be seen that the patient's lumbar spondylolisthesis has been effectively corrected and the internal fixation is stable.

In this study, it was found that compared with the traditional open percutaneous intervertebral foramen fusion treatment, the incision length, intraoperative blood loss, operation time, and hospitalization time of MIS-TLIF combined with percutaneous pedicle screw fixation treatment were lower, and the complication rate was also lower, suggesting that MIS-TLIF combined with percutaneous pedicle screw fixation in the treatment of lumbar spondylolisthesis had minimally invasive advantages such as small trauma, less complications, and rapid recovery, which was basically consistent with the existing research conclusions. This is due to the application of the MED endoscopic channel layer by layer expansion to the lesion target decompression, do not need to expose too much tissue, complete intervertebral fusion in small space, less damage to the surrounding tissue. Pedicle screw placement only need 2 cm small incision, avoid extensive stripping of paravertebral muscles, no damage to facet joints, joint capsule, resulting in significantly reduced trauma, more conducive to the rehabilitation of patients [14, 15].

The pain and activity disorders of patients with lumbar spondylolisthesis were related to the severity of the disease before operation and to the surgical trauma after operation. In this study, the VAS score was used to evaluate the degree of pain in patients. The JOA score was used to evaluate the degree of lumbar dysfunction in patients. It was found that MIS-TLIF combined with percutaneous pedicle screw fixation in the treatment of lumbar spondylolisthesis can reduce the degree of pain and activity disorder on the first day after operation. The degree of pain and activity disorder at 1 month and 3 months after operation and the bone graft fusion rate at 6 months, 12 months, and 18 months after operation were similar between the two groups. It is suggested that MIS-TLIF combined with percutaneous pedicle screw fixation in the treatment of lumbar spondylolisthesis has the same long-term effect as traditional open surgery. MIS-TLIF combined with percutaneous pedicle screw fixation can reduce the pain and movement disorder of patients earlier, and the early curative effect is better.

Spinal pelvic parameters are important parameters for evaluating lumbar diseases. The PI value is relatively stable after skeletal system development and is not related to posture and position. It is often used as an index to evaluate sacral-pelvic balance in clinic. The PI value of patients with lumbar spondylolisthesis was higher. PT, SS will change with posture changes, commonly used to evaluate the spatial location of the pelvis. The greater the LL/TK ratio, the more serious spinal instability. If LSJA is too large or too small, it can affect the mechanical balance of lumbosacral region. LSJA in normal population is negative, and LSJA in patients with lumbar spondylolisthesis becomes positive. SVA reflects the equilibrium state of sagittal plane [16–18]. In this study, the abovementioned indicators were detected, and it was found that the PT and TK values of the two groups at 6 months after operation were higher than those before operation. The SS, LL, LSJA, and SVA values were lower than those before operation, and there was no statistical difference between the two groups. The results suggest that MIS-TLIF combined with percutaneous pedicle screw fixation in the treatment of lumbar spondylolisthesis has the same correction effect as traditional open surgery for spinal pelvic parameters.

In summary, MIS-TLIF combined with percutaneous pedicle screw fixation in the treatment of lumbar spondylolisthesis has the same effect as traditional open surgery and has the same correction effect for spinal pelvic parameters, but has the advantages of less trauma and fewer complications.

Data Availability

The datasets used in this study are available from the corresponding author upon reasonable request.

Ethical Approval

This study was approved by the Ethics committee of Baoji Hospital of Traditional Chinese Medicine.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Retraction

Retracted: Study on the Relationship between Different Body Mass Indexes and Puncture Pain and Image Quality in Patients Undergoing Coronary Angiography with Intravenous Indwelling Needle

Emergency Medicine International

Received 23 January 2024; Accepted 23 January 2024; Published 24 January 2024

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] J. Ding and X. Chen, "Study on the Relationship between Different Body Mass Indexes and Puncture Pain and Image Quality in Patients Undergoing Coronary Angiography with Intravenous Indwelling Needle," *Emergency Medicine International*, vol. 2022, Article ID 4105875, 6 pages, 2022.

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Research Article

Study on the Relationship between Different Body Mass Indexes and Puncture Pain and Image Quality in Patients Undergoing Coronary Angiography with Intravenous Indwelling Needle

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Objective. To investigate the effect of different body mass indexes (BMIs) on patients' puncture pain, puncture success rate, and image quality in coronary angiography (CAG) performed with an intravenous indwelling needle, and to provide a basis for selecting the appropriate intravenous indwelling needle for CAG in patients with different BMIs in an outpatient clinic. *Method*. In this study, 300 patients undergoing CTA at the department of radiology in the First Affiliated Hospital of Wenzhou Medical University from January to May 2021 were divided into group 1 (BMI $1 \leq 18.5$), group 2 ($18.5 < \text{BMI} \leq 24$), and group 3 (BMI > 24) according to their BMI, with 100 cases in each group, and a 20 G intravenous indwelling needle was used in each group. The age, sex, height, and weight of each patient were recorded, and the primary puncture success rate, contrast leakage rate, injection success rate, pain perception, and subjective ratings of image quality and objective indicators were compared in patients with different BMI values. *Results*. There was no statistically significant difference between the age, gender, and heart rate of the patients in the three groups ($P > 0.05$). There was no statistically significant difference between the primary puncture success rate, injection success rate, and contrast leakage rate of the three groups of patients ($P > 0.05$). The pain scores of group 3 during contrast injection were significantly higher than those of the remaining two groups ($P < 0.05$), while the differences between the pain scores of group 2 and group 1 during contrast injection were not statistically significant ($P > 0.05$); the comparison of the pain scores of the three groups during puncture and during retention was not statistically significant ($P > 0.05$). The differences between the subjective ratings of image quality and the objective indicators of the three groups were not statistically significant ($P > 0.05$). *Conclusion*. The 20 G indwelling needle can basically meet the coronary angiography examination of patients with different body mass indexes, but patients with a BMI greater than 24 are recommended to use a larger diameter indwelling needle to reduce contrast leakage as well as to reduce patient pain and improve patient comfort.

1. Introduction

The incidence of coronary artery disease (CAD) is gradually on the rise as people's lifestyles change, making its early diagnosis and risk stratification increasingly important [1]. Currently, several tests including ECG, myocardial stress test, and CT angiography are helpful in the diagnosis of CAD [2]. Among them, CT angiography (CTA) has been increasingly used for the examination and diagnosis of the cardiovascular system due to its convenience and minimally invasive nature [3]. In CT scanning, when the density between the diseased tissue and normal tissue is relatively uniform, the contrast of the image formed after scanning is low, so that the diseased tissue is difficult to detect. There are many factors that influence the success or failure of coronary CTA examinations and the quality of imaging and analyzing the various influencing factors can help to provide a better development and application of this technique. Some studies

[4, 5] have found that obesity is an independent and important risk factor for CAD and that weight is the most important influencing factor among patient factors affecting cardiac enhancement scans. The use of CT-enhanced scans can clearly distinguish the difference in uptake between diseased and normal tissues, and the successful completion of this method is closely related to the selection of different types of intravenous indwelling needles. In addition, the choice of indwelling needle type, although seemingly trivial, is related to the quality of coronary CTA image imaging and is therefore an issue that should not be ignored [6]. In order to obtain better enhancement, CTA imaging contrast injection is a high-dose, high-pressure, high-rate regimental injection, and the selection of the appropriate indwelling needle type is extremely important.

Therefore, this study was conducted to investigate the effects of using a 20 G intravenous indwelling needle on coronary CTA image quality and patient comfort in patients with different body mass indexes (BMIs), in order to provide references and suggestions for the selection of indwelling needle type for coronary CTA examination and better implementation of the coronary CTA technique.

2. Information and Methods

2.1. General Data. 300 patients, aged 30–60 years, who underwent CTA in the outpatient clinic of the First Hospital of Wenzhou Medical University from October 2020 to May 2021 were selected, and their height and weight were recorded and BMI was calculated: BMI = weight (kg)/height (m^2). The patients were divided into group 1 (BMI 1 ≤ 18.5), group 2 (18.5 < BMI ≤ 24), and group 3 (BMI > 24) according to BMI, with 100 cases in each group.

2.2. Consumables and Instruments. All the intravenous indwelling needles in this study were selected from the 20 G indwelling needles produced by Becton, Dickinson and Company in the United States. Philips 64-row spiral CT and Oulich high-pressure contrast injector pipeline system were used, and the contrast agent was 32% iontophoresis. The injection flow rate was 3–5 ml/s, and contrast agent injection dose was 1.4 ml/kg.

2.3. Method. According to the procedure of indwelling needle operation, a thick, straight, and flexible median elbow vein was selected, a tourniquet was tied about 5 cm above the puncture point after determining the puncture point, the skin was routinely disinfected twice with a disinfection range of >5 cm in diameter, and the needle was held with the skin at 15° to 30° into the needle. After seeing the blood return, lower the needle angle, continue to enter the needle 0.1–0.2 cm, then withdraw the needle core, and then send the outer casing into the vessel all in parallel, and again confirm the good blood return after fixing the indwelling needle with a disposable transparent dressing. Saline was finally aspirated with a 5 cm empty needle for intravenous push to prevent syringe reflux blockage.

After the patient entered the CT scan room, he or she was instructed to position himself or herself correctly, and the high-pressure syringe was mounted on the high-pressure syringe pump to draw the required amount of contrast medium. The catheter was connected and drained of air, the high-pressure syringe pump was placed in the appropriate position on the scan bed, and the heparin cap was removed and screwed to the catheter connector for backup. At the end of the leveling, the puncture site should be reconfirmed to be free of swelling before signaling the physician to activate the syringe pump switch. If swelling is found to be oozing, the injection should be stopped immediately and treated accordingly. If there was no swelling, the patient continued to be closely observed through the glass window for any adverse reactions until the end of the time-lapse scan. The needle was generally not usually removed urgently after the examination, but the intravenous needle was kept in place for 15 min so that this intravenous access could be used for rapid resuscitation in case of an allergic reaction.

2.4. Evaluation Methodology

2.4.1. Successful Puncture. When puncture was performed, successful puncture was defined as the return of blood after venipuncture, smooth placement of the hose, and no swelling and nodules when saline was pushed. If there was no blood return, there was difficulty in sending the hose forward, or swelling and nodules would occur when saline was pushed in, and the patient complained of pain, the puncture failed.

(1) Successful Injection. When the contrast agent was pushed, the contrast agent was successfully injected into the patient with no swelling and oozing in and around the puncture site and no pain in the patient.

(2) Contrast Agent Extravasation. If the patient complains of obvious pain during injection and swelling at and around the puncture site, the contrast agent should be extravasated and the needle should be withdrawn immediately and treated accordingly.

2.4.2. Image Quality Evaluation. The subjective rating was based on the American Heart Association coronary artery modified segmentation method with high quality: no artifacts and clear vessel boundaries. Good: mild artifacts or noise, which basically do not affect the evaluation. Barely diagnostic: severe motion artifacts or noise, but still able to evaluate the vascular lumen. Unable to evaluate or failed: severe artifacts or severe calcification were present, and the lumen could not be evaluated.

(1) Objective Evaluation. In cross section, CT values of aortic internal diameter (AO), proximal left anterior descending branch (LADp), distal left anterior descending branch (LADd), proximal right coronary artery (RCAp), distal right coronary artery (RCAd), proximal left circumflex branch (LCXp), and distal left circumflex branch (LCXd) were

recorded in both groups, and the mean values were calculated and compared.

2.4.3. Pain Scoring. The pain numerical scoring method was used to indicate the degree of pain by using the numerical formula 0–10 instead of words, and a straight line was divided into 10 equal segments to assess the degree of pain in the order of 0–10 points. The assessment was performed at the time of indwelling needle puncture and during indwelling and contrast injection, respectively.

2.5. Statistical Treatment. SPSS 19.0 statistical software was used for statistical processing, and Prism 8.0 was used for the production of statistical graphs. The measurement data were expressed as the mean ± standard deviation ($\overline{x} \pm s$), t/F test was used for comparison between groups, χ^2 test was used for counting data, and $P < 0.05$ was considered statistically significant.

3. Results

3.1. Comparison of General Information of Patients in the Three Groups. There was no statistically significant difference between the three groups of patients in terms of age, gender, heart rate, clinical symptoms, and past medical history ($P > 0.05$) (Table 1).

3.2. Primary Puncture Success Rate, Injection Success Rate, and Contrast Leakage Rate in the Three Groups of Patients. There was no statistically significant difference between the primary puncture success rate, injection success rate, and contrast leakage rate in the three groups ($P > 0.05$) (Table 2).

3.3. Comparison of Pain Scores during Intravenous Needle Puncture, Retention, and Contrast Injection in the Three Groups. The differences in pain scores during intravenous needle puncture and retention were not statistically significant among the three groups ($P > 0.05$); during contrast injection, the pain scores in group 3 were significantly higher than those in groups 1 and 2 ($P < 0.05$), and the differences between groups 1 and 2 were not statistically significant ($P > 0.05$) (Figures 1(a)~1(c)).

3.4. Comparison of Subjective Ratings of Image Quality among the Three Groups of Patients. There was no statistically significant difference in the comparison of the percentage of patients in the three groups with postexamination image quality ratings of good quality, good, barely diagnostic, and unable to assess/fail ($P > 0.05$) (Table 3).

3.5. Comparison of Objective Indicators of Image Quality among the Three Groups of Patients. There was no statistically significant difference ($P > 0.05$) in the comparison of CT values at the locations of AO (A), LADp (B), LADd (C), RCAp (D), RCAd (E), LCXp (F), and LCXd (G) among the three groups of patients (Figures 2(a)~2(g)).

4. Discussion

CAD is among the most common types of cardiovascular diseases, and risk factors for CAD include hypertension, smoking, diabetes, physical inactivity, obesity, high blood cholesterol, depression, and alcohol overdose, and the underlying pathogenesis is due to cardiac atherosclerosis, which reduces blood flow as well as oxygen transfer to the myocardium [7, 8]. Epidemiological studies [9, 10] have shown that the number of overweight and obese people is increasing worldwide. The results of a cohort study [11] showed that an increase of 1 kg/m^2 in BMI of study subjects stratified by BMI resulted in a 5–7% increase in the incidence of CAD and that obesity was an independent and important risk factor for CAD. CTA is a computed tomography technique that visualizes arterial and venous vessels throughout the body. This technique mainly involves the injection of contrast into the peripheral venous vessels, and when the contrast reaches the peak of filling in the peripheral vessels, a spiral CT is used to rapidly collect cross-sectional images to obtain validated raw images, and finally, the raw images are processed by computer to become three-dimensional images of the vessels [12, 13].

CTA has been widely used in the examination and diagnosis of coronary arteries. Coronary CTA requires a faster flow rate and a higher concentration of injectable contrast medium. The conventional scalp needle is a steel needle with a thick and sharp tip and a large bevel, which increases the chance of puncturing the vessel wall if the needle is too deep during the injection of the contrast agent, and if the needle is too shallow, it is easier to puncture the vessel wall due to the movement of the needle tip, in addition to the movement of the patient's body [14]. This can lead to leakage of the contrast agent. Since contrast agent is a hypertonic solvent, when the concentration is high, it is irritating to blood vessels and can easily cause damage to blood vessel walls and leakage, and extravasation of contrast agents can lead to tissue congestion and edema. Compared with ordinary steel needles, the IV indwelling catheter material is softer and less likely to pierce the vessel, which facilitates the smooth passage of the contrast medium and can reduce its extravasation to a certain extent [15]. Clinical studies [16] found that in coronary CTA examination, the injection flow rate of the injected contrast agent usually requires 5 mL/s. The relatively thin wall and large lumen of the intravenous indwelling needle significantly reduce the injection resistance during the injection process, ensuring the maximum injection flow rate making the contrast between the vessel and the surrounding tissue obvious and the vessel more visible and clear, thus improving the quality and effect of the scan image.

Although intravenous indwelling needles meet the needs of coronary CTA, the choice of different types of intravenous indwelling needles can have an impact on the outcomes of coronary angiography. A related study [17] found that the use of different types of indwelling needles for puncture resulted in different chances of contrast leakage and varying examination success and image quality. The study in [18] compared the effects of different types of indwelling needles

Table 1: Comparison of age, sex, and heart rate among the three groups of patients (n, %; ($\overline{x} \pm s$)).

Information	Group 1 ($n = 100$)	Group 2 ($n = 100$)	Group 3 ($n = 100$)	F/χ^2 value	P value
Sex (male)	50 (50.00)	51 (51.00)	55 (55.00)	0.561	0.755
Age (years)	48.44 ± 7.43	49.44 ± 6.88	49.02 ± 7.86	0.460	0.632
Heart rate (beats/min)	62.40 ± 9.30	64.32 ± 9.50	64.50 ± 9.42	1.531	0.218
Clinical symptoms					
Chest pain	7 (7.00)	5 (5.00)	9 (9.00)	1.229	0.541
Chest tightness	8 (8.00)	9 (9.00)	6 (6.00)	0.659	0.719
Precordial discomfort	4 (4.00)	2 (2.00)	3 (3.00)	0.687	0.709
Effort angina	3 (3.00)	2 (2.00)	2 (2.00)	0.293	0.864
Past medical history					
Myocardial infarction	2 (2.00)	1 (1.00)	1 (1.00)	0.507	0.776
Hypertension	10 (10.00)	12 (12.00)	14 (14.00)	0.758	0.685
Diabetes mellitus	7 (7.00)	5 (5.00)	8 (8.00)	0.750	0.687

Table 2: Comparison of primary puncture success rate, injection success rate, and contrast leakage rate among the three groups of patients (n, %).

Group	Number of cases	Primary puncture success	Injection success	Contrast leakage
Group 1	100	95 (95.00)	98 (98.00)	1 (1.00)
Group 2	100	96 (96.00)	99 (99.00)	0 (0.00)
Group 3	100	92 (92.00)	98 (98.00)	3 (3.00)
F/χ^2 value	—	1.621	0.407	3.547
P value	—	0.445	0.816	0.170

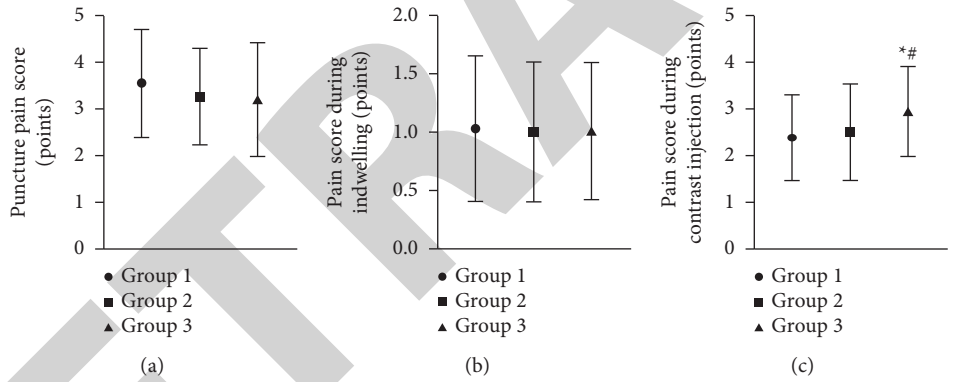

Figure 1: Comparison of pain scores among the three groups of patients ($n = 100$, $\overline{x} \pm s$, $\overline{x}$). Note: *group 1 compared with group 3, $P < 0.05$; #group 2 compared with group 1, $P < 0.05$. (a) The comparison of pain scores during puncture in the three groups; (b) the comparison of pain scores during retention in the three groups; (c) the comparison of pain scores during contrast injection in the three groups.

Table 3: Comparison of subjective ratings of image quality among the three groups of patients (n, %).

Group	Number of cases	Good quality	Good	Barely diagnostic	Unable to assess/fail
Group 1	100	52, (52.00)	41, (41.00)	6, (6.00)	1, (1.00)
Group 2	100	60, (60.00)	34, (34.00)	6, (6.00)	0, (0.00)
Group 3	100	48, (48.00)	42, (42.00)	8, (8.00)	2, (2.00)
F/χ^2 value	—	3.000	1.597	0.429	2.020
P value	—	0.223	0.450	0.807	0.364

in coronary vessels and found that the 18 G indwelling needle significantly improved the success rate of coronary angiography and reduced contrast leakage compared to the 24 G indwelling needle. However, the size of the indwelling needle is too small for contrast injection and CT examination, and the size of the indwelling needle is too large for the nurses to operate and increase the fear and pain of the patients, so it is important to choose the right size of the indwelling needle. One study [19] showed that among the patient factors affecting liver enhancement scans, weight is the most important one, as the high blood volume in obese patients leads to a more pronounced dilution of the contrast agent circulating in the body. Therefore, under the condition of fixing the total amount of contrast agent and injection rate, more contrast agent needs to be injected for high BMI to meet the clinical diagnostic requirements. However, BMI

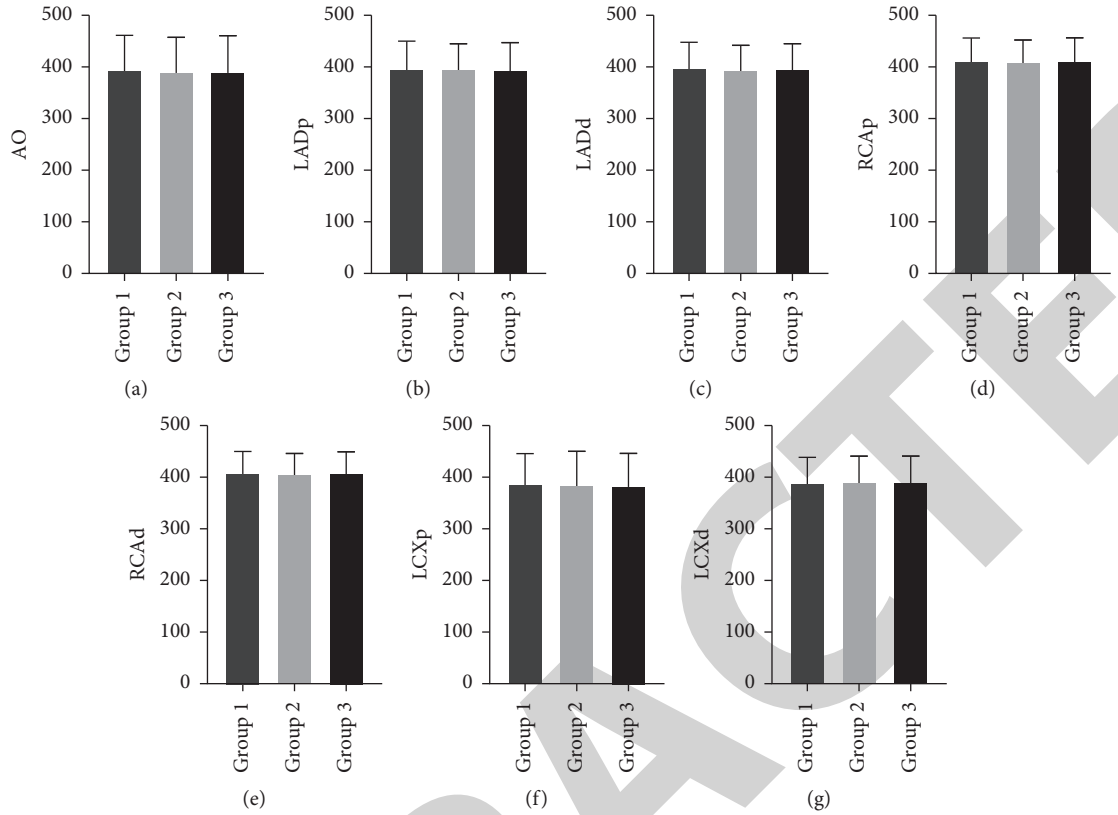

Figure 2: Comparison of objective indicators of image quality among the three groups of patients ($n = 100$, $\overline{x} \pm s$, $\overline{x}$). (a~g) Comparison between the three groups of AO (a), LADp (b), LADd (c), RCAp (d), RCAd (e), LCXp (f), and LCXd (g), respectively.

mainly reflects the fatness and body size characteristics of the patient, and an increase in weight is not linearly related to an increase in the contrast dose. To overcome the drawbacks of determining the contrast dose based solely on body weight, many studies have proposed to compare the amount of contrast agent used with net body weight and body surface area [20].

Therefore, in this paper, we used different BMI values of patients for group experiments and found that a 20 G indwelling needle can meet the examination needs of most patients, and the success rate of nurse operation is high and patient comfort is good. However, patients with higher BMI (especially >27) have increased contrast leakage and pain scores, and a larger size indwelling needle is recommended. In conclusion, there are many factors affecting the success of coronary CTA examination, including imaging quality and patient comfort, and the analysis of the various influencing factors can help to better develop and apply this technology. Therefore, choosing the appropriate needle placement type according to the patient's BMI size is beneficial to the contrast flow rate and group injection effect, which is important for improving the imaging quality of coronary CTA and patient comfort during the examination, and is worthy of clinical promotion.

Data Availability

Data for this experiment are available upon reasonable request to the authors.

Ethical Approval

Ethical approval has been granted.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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Retraction

Retracted: Clinical Comparative Study of Intravitreal Injection of Triamcinolone Acetonide and Aflibercept in the Treatment of Diabetic Retinopathy Cystoid Macular Edema

Emergency Medicine International

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Research Article

Clinical Comparative Study of Intravitreal Injection of Triamcinolone Acetonide and Aflibercept in the Treatment of Diabetic Retinopathy Cystoid Macular Edema

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Objective To compare the curative effect of intravitreal injection of triamcinolone acetonide and aflibercept on diabetic retinopathy (DR) cystoid macular edema. *Methods* A total of 102 patients with DR cystoid macular edema admitted to the hospital were enrolled between July 2018 and July 2021. According to random number table method, they were divided into the control group (intravitreal injection of triamcinolone acetonide) and the observation group (intravitreal injection of aflibercept), 51 cases in each group. All were followed up for half a year. The clinical curative effect, visual acuity, central subfield macular thickness (CSMT), macular volume, scores of quality of life, and levels of cytokines in aqueous humor (vascular endothelial growth factor (VEGF), monocyte chemoattractant protein-1 (MCP-1), human angiopoietin-like protein 4 (ANGPTL4)] at different time points (before and at 6 months after surgery) were compared between the two groups. The times of drugs injection and occurrence of adverse reactions in both groups were statistically analyzed. *Results* The total effective rate in observation group was higher than that in the control group (96.08% *vs* 82.35%) ($P < 0.05$). After 6 months of treatment, visual acuity was improved, and CSMT and macular volume were decreased in both groups. Also, the above changes were more significant in the observation group than those in the control group ($P < 0.05$). After 6 months of treatment, levels of cytokines in aqueous humor were decreased in both groups. The levels of VEGF, MCP-1, and ANGPTL4 in observation group were lower than those in the control group ($P < 0.05$). After 6 months of treatment, quality of life scores in observation group were higher than those in the control group ($P < 0.05$). In the follow-up period, average times of drugs injection in the observation group were more than those in the control group, and the incidence of adverse reactions was lower than that in control group (5.88% *vs* 21.57%) ($P < 0.05$). *Conclusion* The curative effect of intravitreal injection of both triamcinolone acetonide and aflibercept is good on DR cystoid macular edema. The curative effect of aflibercept is better, which can improve visual acuity and quality of life, and regulate cytokines in aqueous humor, with high safety. However, aflibercept has a high price, and further research is needed to determine whether its price can be matched with clinical benefits. In clinic, medication plan should be selected according to the actual situation.

1. Introduction

As a more serious ophthalmic complication of diabetes, diabetic retinopathy (DR) not only causes vision loss but even leads to blindness [1]. Cystoid macular edema is the leading cause of vision loss in DR patients [2]. With the increase of diabetic patients, the incidence of cystoid macular edema is also increased. In the past, the treatment of cystoid macular edema was laser grid photocoagulation or conservative drug treatment. However, the limitation of photocoagulation was to delay the progression of the disease, but it could not effectively improve vision. Therefore, it is imperative to explore new treatment methods for DR. There are foreign reports that vascular endothelial growth factor (VEGF) plays a key role in the pathogenesis of macular edema [3], it can stimulate the formation of new blood vessels and is expressed in the vitreous nucleus preretinal new blood vessels. Triamcinolone acetonide is a type of glucocorticoid, and aflibercept is an anti-VEGF drug that has been put into clinical use in recent years. The former has long-lasting effect and low price but leads to many complications [4]; the latter has good effect and less side effects,

but it is expensive [5]. At present, the relevant reports on the treatment of DR cystic macular edema by these two methods are immature. In order to observe the exact curative effect, this study compared the effect of intravitreal injection of triamcinolone acetonide and aflibercept in the treatment of DR cystic macular edema.

2. Materials and Methods

2.1. Clinical Data. 102 patients with DR cystic macular edema received in our hospital from July 2018 to July 2021 were selected and randomly divided into the control group and the observation group with 51 cases each group by the digital table method. The observation group included 31 males and 20 females, 53.82 ± 8.08 years old, and their duration of diabetes mellitus was 2.76 ± 0.95 years. The control group included 29 males and 22 females, 54.49 ± 9.17 years old, and their duration of diabetes mellitus was 2.86 ± 0.89 years. We compared the general data between the two groups, and the difference was not statistically significant ($P > 0.05$). This study complied with the relevant principles of the Declaration of Helsinki. The inclusion criteria are as follows: (1) meet the latest clinical diagnostic criteria for diabetes [6]; DR was diagnosed by fundus fluorescein angiography (FFA) and optical coherence tomography (OCT) and accompanied by cystic macular edema (cystic macular edema criteria [7]: foveal 500 mm retinal thickening, flattening, or hard exudation); (2) unilateral disease; (3) the family members of the patients were informed about the research and signed the consent form. The exclusion criteria are as follows: (1) other ocular diseases such as glaucoma and retinal detachment; (2) malignant tumors; (3) pregnancy or pregnant women; (4) have a history of eye surgery; (5) allergic to the study drug; (6) unable to cooperate with the examination or reexamination; (7) withdrawal from the treatment halfway.

2.2. Methods. The control group was treated with triamcinolone acetonide (1 ml/40 mg, Kunming Jida Pharmaceutical, National Medicine Permission Number H53021604), and the observation group was treated with aflibercept (1 ml/40 mg, Bayer, Germany, S20180010). Levofloxacin eye drops (5 ml/24.4 mg, Japan Santen Pharmaceutical Co., Ltd., National Medicine Permission Number J20150106) were used 3 days before operation, 4 times a day, washed the lacrimal duct half an hour before the operation, instilled eye drops, and in sterile operating room for operation, the patients were placed in a supine position to soothe the patients' emotions. After topical anesthesia, the eyes were sterilized, needled at the 4 mm pars plana of the corneal limbus, and 0.05 mL of aflibercept or triamcinolone acetonide was extracted to confirm that the needle was inserted into the vitreous cavity. Then, injected slowly, applied antibiotics to the conjunctival sac after withdrawing the needle, bandaged the eyes, and used eye drops for 1 week. All patients were followed up once a month after operation. According to the patient's condition, whether to supplement injection was decided. The follow-up lasted for six months.

2.3. Observation Indicators. (1) The two groups of patients underwent OCT examination 6 months before and after treatment, using frequency domain OCT (CirrusOCT, 6.0) produced by CarlZeiss Company, and 5-line high-definition scanning of the macular area. The visual acuity level, central subfield macular thickness (CSMT), and macular volume of the groups of patients before and after surgery were measured. (2) The anterior chamber of the corneal limbus of the patients was punctured 6 months before and after treatment, extracted 0.1 ml of aqueous humor, stored it at a low temperature immediately after collection, sent it for inspection, and used an immunoassay plate (Bole, USA), referring to the previous literature [8] to detect the level of VEGF and the mass concentration of monocyte chemoattractant protein-1 (MCP-1) and angiopoietin-like protein 4 (ANGPTL4). (3) The retinopathy quality of life scale [9] was used to evaluate the two groups of patients, which were divided into visual function, physical function, social activity, mental and psychological function, etc. The score was 0–200. The higher the score is, the better the quality of life will be. (4) During the follow-up, FFA was performed every time the patients were reexamined to check the occurrence of complications such as elevated intraocular pressure, cataract, and endophthalmitis.

2.4. Clinical Efficacy. The relevant literature [10] was referred to evaluate the efficacy of the two methods. Effectual: the symptoms of fundus oozing were significantly improved, and the visual acuity level improved by more than 2 lines on the visual chart; effective: the symptoms of fundus oozing were improved, and the visual acuity level improved 1–2 lines of improvement; invalid: there was no improvement or even worsening of fundus oozing symptoms, and no improvement in visual acuity.

2.5. Statistical Methods. The IBM SPSS Statistics 24.0 software was used to process the data in this study. The age, course of disease, visual acuity, CSMT and macular volume, aqueous cytokine levels, and quality of life scores of the two groups of patients were expressed as $(x \pm s)$. The t-test was used for comparison between groups; the clinical efficacy and adverse reactions of patients were expressed as rate (%); χ^2 test was used between groups; and $P > 0.05$ was considered statistically significant.

3. Results

3.1. Comparison of Clinical Efficacy between the Two Groups. The results showed that the total effective rate of the observation group was 96.08%, which was higher than 82.35% of the control group ($P > 0.05$), as shown in Figure 1.

3.2. Comparison of Visual Acuity Levels between Two Groups of Patients at Different Times. The results showed that there was no significant difference in visual acuity level, CSMT value, and macular volume between the two groups before treatment ($P > 0.05$); after 6 months of treatment, the visual

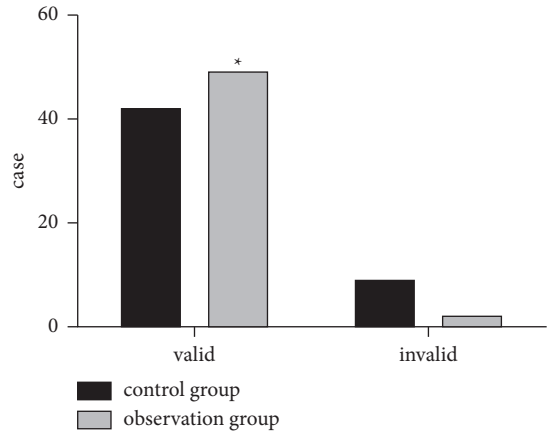

Figure 1: Clinical efficacy of the two groups of patients. Compared with the control group, $^{*}P > 0.05$.

acuity level in both groups increased, CSMT value and macular volume decreased, and the changes in the observation group were more obvious ($P > 0.05$), as shown in Figures 2 3 and 4.

3.3. Comparison of VEGF, MCP-1, and ANGPTL4 Levels between the Two Groups of Patients. The results showed that there was no significant difference in the levels of VEGF, MCP-1, and ANGPTL4 between the two groups before treatment ($P < 0.05$). After 6 months of treatment, the levels of cytokines in the aqueous humor of the two groups were decreased, among which VEGF, MCP-1, and ANGPTL4 in the observation group were lower than those in the control group ($P < 0.05$), as shown in Figures 5, 6, and 7.

3.4. Comparison of Quality of Life Scores between the Two Groups of Patients. The results showed that there was no significant difference in the quality of life scores between the two groups before treatment ($P < 0.05$). After 6 months of treatment, the visual function, physical function, social activity, and mental and psychological quality of life scores of the observation group were higher than those of the control group ($P < 0.05$), as shown in Figures 8, 9, 10, and 11.

3.5. Comparison of Treatment-Related Indicators between the Two Groups of Patients. The results showed that in the follow-up period, the average number of injections in the observation group was more than that in the control group, and the incidence of adverse reactions was 5.88%, which was lower than 21.57% in the control group ($P < 0.05$), as shown in Figures 12 and 13.

4. Discussion

Macular cystic edema is the main cause of visual impairment of DR patients. After retinopathy in DR patients, ischemia and hypoxia occur, vascular permeability is enhanced, and the retinal barrier is damaged [11], which can easily lead to hard infiltration in the macular region of

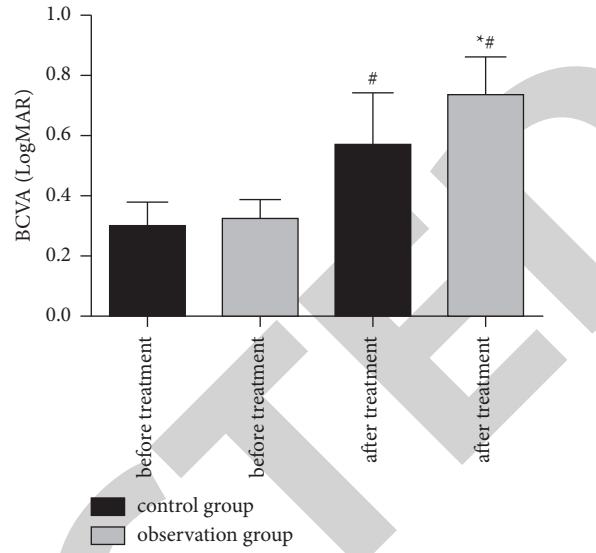

Figure 2: Visual acuity levels of two groups of patients at different times. Compared with the same group before treatment, $^{\#}P < 0.05$; compared with the control group, $^{*}P < 0.05$.

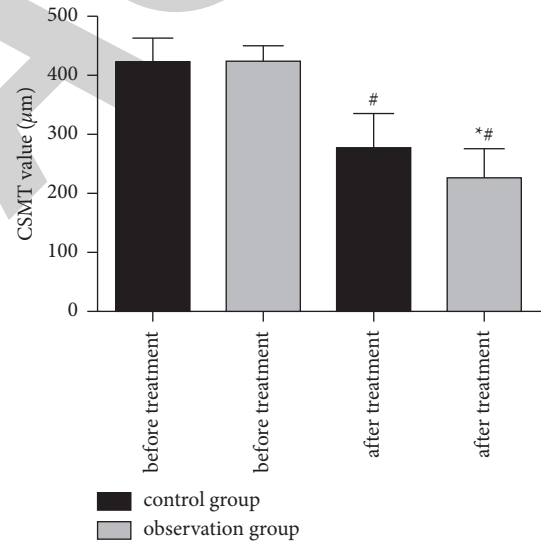

Figure 3: CSMT values of two groups of patients at different times. Compared with the same group before treatment, $^{\#}P < 0.05$; compared with the control group, $^{*}P < 0.05$.

patients and edema occurs. Clinical treatment options include photocoagulation and intravitreal injection of drugs. The former may cause complications such as vision loss or visual field defect, while the latter injection of drugs such as glucocorticoid triamcinolone acetonide has certain curative effects, but it also has many adverse reactions. Aflibercept has been used well in recent years, and comparative studies with ranibizumab are more common [12, 13], while the comparative analysis of efficacy with triamcinolone acetonide is immature. Based on this background, the purpose of this study was to compare and analyze the efficacy of the two in the treatment of cystic macular edema, in order to contribute reasonable suggestions for the clinical treatment of DR patients.

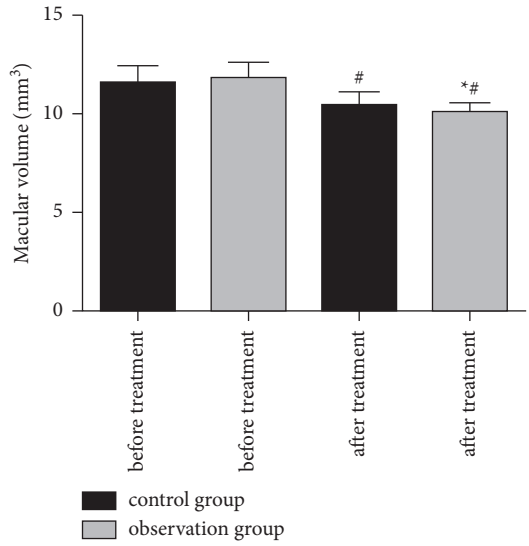

Figure 4: Macular volumes of two groups of patients at different times. Compared with the same group before treatment, $^{\#}P < 0.05$; compared with the control group, $^{*}P < 0.05$.

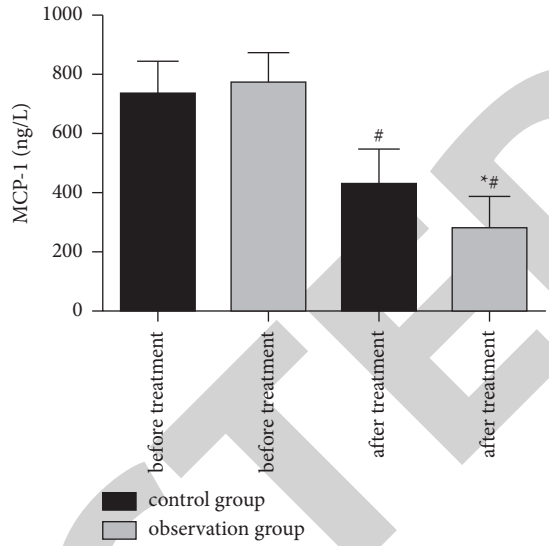

Figure 6: MCP-1 levels of two groups of patients at different times. Compared with the same group before treatment, $^{\#}P < 0.05$; compared with the control group, $^{*}P < 0.05$.

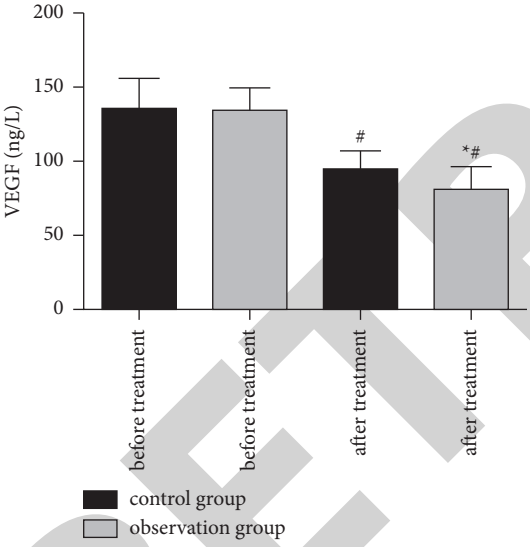

Figure 5: VEGF levels of two groups of patients at different times. Compared with the same group before treatment, $^{\#}P < 0.05$; compared with the control group, $^{*}P < 0.05$.

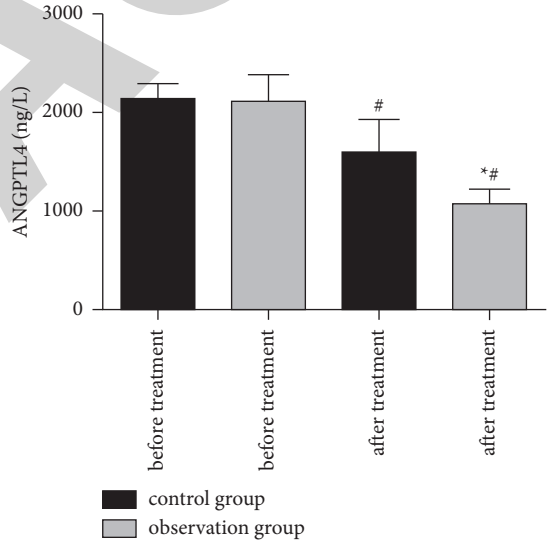

Figure 7: ANGPTL4 levels of two groups of patients at different times. Compared with the same group before treatment, $^{\#}P < 0.05$; compared with the control group, $^{*}P < 0.05$.

An earlier foreign report indicated that [14] aflibercept, ranibizumab, or triamcinolone acetonide could effectively improve macular edema, while the intensity of the flare in the anterior part of patients eyes were only reduced when triamcinolone acetonide was treated. The results of this study showed that the effective rate of the observation group was higher than that of the control group, suggesting that the efficacy of intravitreal injection of aflibercept in the treatment of DR cystoid macular edema was significantly better than that of triamcinolone acetonide injection. Studies [15] have suggested that the efficacy of afenib in the treatment of DR is superior to that of ranibizumab, and the current comparative study with triamcinolone acetonide is rare, which needs to be confirmed by subsequent large sample size.

In addition, the results of this study found that the visual acuity level of the observation group was higher than that of the control group at 6 months after treatment, and the CSMT value and macular volume of the observation group were lower than those of the control group. This result indicates that intravitreal injection of aflibercept in the treatment of DR cystoid macular edema can effectively improve the visual acuity of patients, reduce macular volume and improve CSMT value. Glassman et al. [16] reported a similar view.

MCP-1 is a member of the chemokine CC family. As a proinflammatory factor, it can cause chemotaxis and activate monocytes and T lymphocytes. It has also been reported to be an effective indicator to reflect retinal

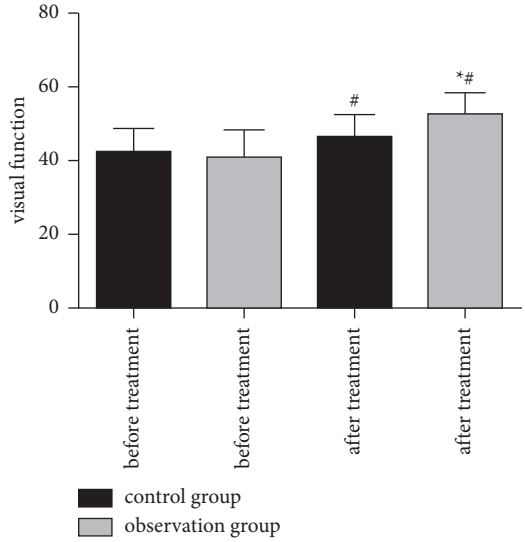

Figure 8: Visual function scores of the two groups of patients at different times. Compared with the same group before treatment, $^{\#*}P < 0.05$; compared with the control group, $^{*}P < 0.05$.

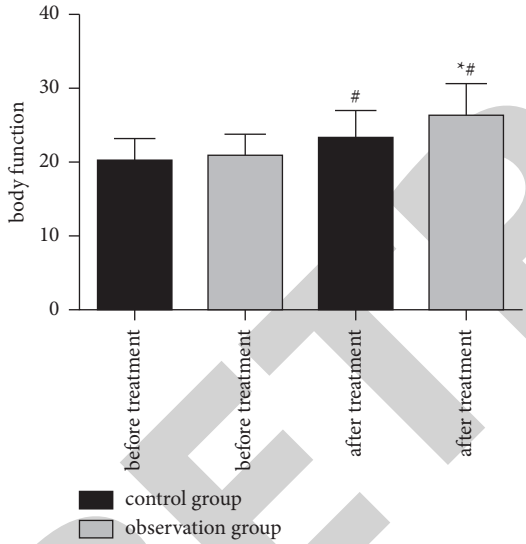

Figure 9: Physical function scores of two groups of patients at different times. Compared with the same group before treatment, $^{\#*}P < 0.05$; compared with the control group, $^{*}P < 0.05$.

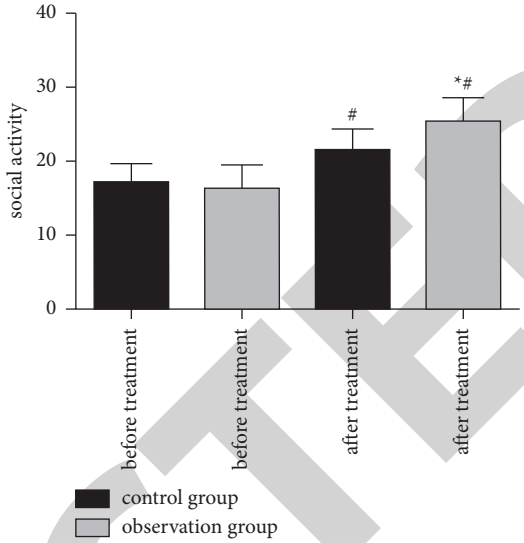

Figure 10: The social activity scores of the two groups of patients at different times.Note: Compared with the same group before treatment, $^{\#*}P < 0.05$; compared with the control group, $^{*}P < 0.05$.

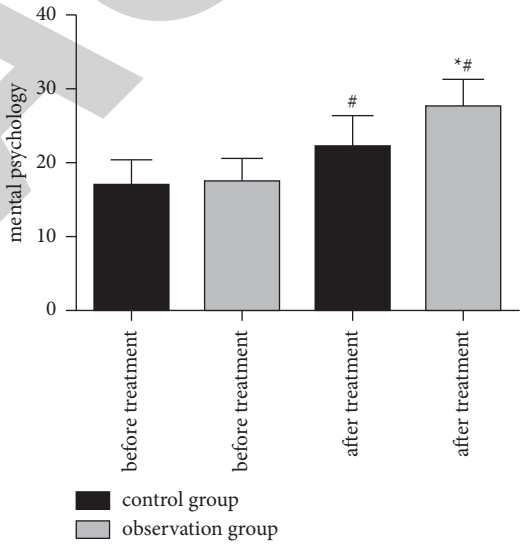

Figure 11: The mental and psychological scores of the two groups of patients at different times.Note: Compared with the same group before treatment, $^{\#*}P < 0.05$; compared with the control group, $^{*}P < 0.05$.

inflammatory responses [17]. ANGPTL is cDNA amplified and cloned by foreign scientists in 1999. ANGPTL4 is mainly expressed in the liver and plays a key role in inflammation, angiogenesis, and tumors. Recent studies have shown that ANGPTL4 is a therapeutic target for retinopathy of DR patients [18]. At the same time, this study also found that the levels of VEGF, MCP-1, and ANGPTL4 in the two groups decreased after treatment, and the levels of VEGF, MCP-1, and ANGPTL4 in the observation group were lower than those in the control group, suggesting that intravitreal injection of aflibercept in the treatment of DR with macular edema can improve the cytokine levels in the aqueous humor. Recent foreign reports [19] also support this view. The reason may be that aflibercept contains an important domain of VEGF, which can bind to the receptor of the latter and block the downstream signaling pathway, thereby inhibiting VEGF-mediated chemotaxis of inflammatory cells and reducing the levels of VEGF, MCP-1, and ANGPTL4. In addition, the results of the study found that the quality of life scores in the observation group were significantly improved compared with those in the control group, reflecting that intravitreal injection of aflibercept played a role in better improvement of the quality of life of patients with DR and macular edema.

Finally, this study found that the incidence of adverse reactions in the observation group was lower than that in the control group, suggesting that intravitreal injection of

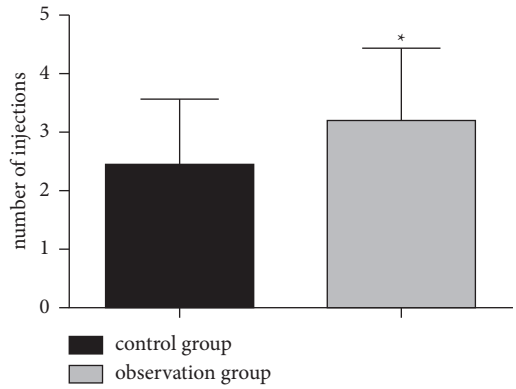

Figure 12: The average number of drug injections of the two groups of patients. Compared with the control group, $^*P < 0.05$.

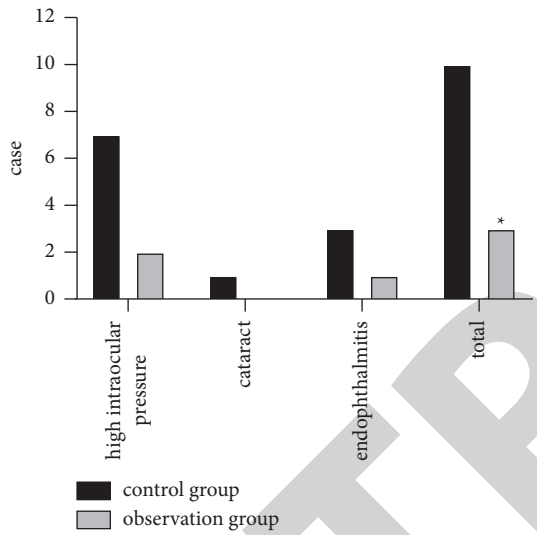

Figure 13: The occurrence of adverse reactions of the two groups of patients. Compared with the control group, $^*P < 0.05$.

aflibercept in the treatment of DR cystoid macular edema is safe, which is consistent with what Monés et al. [20] has proposed. However, the average number of injections in the observation group was higher than that in the control group. In recent years, a meta-analysis of pharmacoeconomics has shown [21] that the cost of aflibercept is significantly higher than that of ranibizumab and laser photocoagulation. Considered in connection with the conclusions of this study, multiple injections may bring a certain degree of medical burden to patients.

In conclusion, intravitreal injection of aflibercept and the treatment of cystoid macular edema in DR have definite curative effects and can improve visual acuity and quality of life, with good safety. However, because of the high price of aflibercept, multiple injections are often required to ensure the therapeutic effect, which will significantly increase the economic burden of patients. Whether the additional cost of this scheme is matched with the therapeutic benefit brought by this scheme still needs further investigation. In clinical use, treatment options should be selected according to the actual situation.

Data Availability

The data presented in the study are included in the article. Further inquiries can be directed to the corresponding author.

Ethical Approval

This study was approved by the ethics committee of our hospital (EC2018014).

Consent

All subjects gave informed consent and signed the informed consent form.

Conflicts of Interest

The authors declare that they do not have any commercial or associative interests that represent any conflicts of interest in connection with the work submitted.

Acknowledgments

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Research Article

Effect of Programmed Nursing Plan Based on Thinking Map Guidance Mode on Hemodynamics and Intestinal Function Recovery of Patients Undergoing Endoscopic Retrograde Cholangiopancreatography

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ERCP is an effective method for the diagnosis and treatment of pancreatic and biliary diseases. With the improvement of endoscopes by researchers and the intubation and angiography technologies of medical workers, the role of ERCP in the diagnosis and treatment of pancreatic and biliary diseases has become increasingly important. Although ERCP is a minimally invasive diagnostic technique, it still falls into the category of surgery, and thus the physical and psychological dysfunction of patients undergoing ERCP caused by various factors such as surgery cannot be ignored. This study explored the effects of the procedural nursing plan based on the thinking map guidance mode on hemodynamics and intestinal function recovery of ERCP patients. The results showed that this plan could reduce the effects of ERCP on hemodynamics of patients, promote intestinal function recovery, relieve their bad psychology, reduce postoperative complications, and help to improve patients' satisfaction with the nursing work, and it was worthy of promotion.

1. Introduction

Endoscopic retrograde cholangiopancreatography (ERCP) is a technique for X-ray cholangiopancreatography performed under the direct view of duodenoscopy by injecting human contrast agent through the duodenal papilla [1]. As a noninvasive examination and nonsurgical treatment, it is currently one of the important means for diagnosis and treatment of pancreatic and biliary diseases [2]. However, due to the lack of cognition about ERCP, patients generally present with negative emotions such as anxiety and tension, which will lead to hemodynamic changes and have a direct impact on the diagnosis and treatment of ERCP [3]. At the same time, under the influence of repeated intubation guidance, duodenal papilla sphincter dysfunction, angiography, and anesthesia and sedation drugs, most patients after ERCP have intestinal dysfunction, which affects the postoperative recovery [4]. The previous practice of ERCP has revealed that scientific and effective nursing intervention for patients is the key to ensure the safe and smooth implementation of ERCP.

Procedural nursing refers to a series of purposeful and planned nursing measures aiming at promoting the rapid recovery of patients, which can comprehensively and dynamically feedback the improvement of patients' function [5]. It has been used in the clinical care of patients with malignant tumor during the perioperative period, acute glomerulonephritis, coronary heart disease intervention, and other patients, and has received good feedback, but few studies have reported its application value in ERCP [6]. A thinking map belongs to a divergent visual thinking tool, which shows the boring relationship between different levels of topics with mutual membership and related hierarchy, and can provide users with clear path guidance and

information support [7]. To improve hemodynamics and intestinal function of patients undergoing ERCP, a procedural nursing plan based on thinking map guidance mode was used in ERCP in this study, which is now reported as follows.

2. Materials and Methods

2.1. General Information. 96 patients who received ERCP in our hospital from June 2019 to June 2021 were selected as research objects, which were divided into study group and control group according to the difference in nursing methods, with 48 patients in each group. This study has been approved by the medical ethics committee of the hospital, with the informed consent of patients or their families.

2.2. Inclusion Criteria. (1) Patients with clear indications of ERCP and undergoing ERCP [8]. (2) No history of mental illness. (3) Age ≥18 years.

2.3. Exclusion Criteria. (1) Patients with severe cardiopulmonary renal insufficiency. (2) Patients with autoimmune diseases. (3) Patients with systemic infectious diseases. (4) Patients with cognitive abnormalities. (5) Pregnant and lactating women.

3. Method

Patients in the control group received routine care. Before operation, the ERCP health education manual should be issued, and at the same time, patients should be given health education and routine psychological care. Before the examination, the routine blood test, urine amylase, and liver function of the patient were tested in accordance with the doctor's advice, and iodine allergy test and antibiotic allergy test were conducted, with antibiotics input intravenously. The contrast agent was prepared. The patient was instructed not to eat or drink for 6 h before the examination.

Patients in the study group were given routine nursing care in addition to that in the control group, and procedural nursing care based on thinking map guidance mode was also given.

(1) An ERCP nursing group was formed and all members were organized to learn relevant knowledge such as ERCP, thinking map, and procedural nursing theory. With "ERCP care" as the central keyword, three Level 1 branches including preoperative nursing, intraoperative nursing, and postoperative nursing were diverged outward, into 11 Level 2 branches and eight Level 3 branches. A hierarchical structured thinking map for procedural care of patients undergoing ERCP was developed, as shown in Figure 1.

(2) The nursing plan was orderly implemented according to the thinking map. (1) Preoperative care: to improve the preoperative preparation. At the same time, the patient data were analyzed, and preoperative health education and psychological care were targeted. Among them, health education was conducted in the form of multimedia education, in which patients were introduced to basic disease knowledge and ERCP knowledge, and informed to follow medical drugs, prevention of complications, follow-up examination, and other precautions. Psychological nursing takes psychological counseling, relaxation training, and social support as the main methods to relieve preoperative tension and anxiety of patients. (2) Intraoperative nursing: nursing staff should actively follow up the operating steps of the surgeons, strengthen cooperation with the surgeons, assist the surgeons to smoothly carry out the procedures of various operations, and speed up the process of surgery. During the operation, the monitoring of patients' basic vital signs such as pulse, consciousness, blood pressure, and oxyhemoglobin saturation was strengthened, and if any abnormality was found, the physician was informed immediately for treatment to prevent the occurrence of operation accidents. At the same time, after the contrast catheter was prepared, the intubation procedure was strictly followed, and the care for intubation was enhanced with professional skills. (3) Postoperative care: the patient's vital signs were closely monitored. We observed the symptoms such as abdominal pain, abdominal distension, and nausea and vomiting as well as yellow staining of the skin in our patient, and the traits, color, and volume of stool. If any abnormality occurred, we immediately informed the doctor to handle it. Always be alert to the occurrence of adverse events. Postoperative patients were assisted to carry out rehabilitation exercise as soon as possible to promote the recovery of gastrointestinal function. According to the needs of rehabilitation, the excessive care of patients from fasting to a low-fat liquid diet and then to a normal diet was strengthened to ensure nutritional support for patients. Psychological nursing was inserted in the process of nursing, in the same way as before the operation. Meanwhile, family members are required to provide emotional support, medication supervision, healthy life guidance, and complication prevention to ERCP patients.

3.1. Observation Indicators

(1) The peripheral blood was collected at the time of admission (T0), before surgery (T1), at the end of the surgery (T2), and when awoke after surgery (T3). Three mL of blood was collected and centrifuged (1500r/min, 15 min) for separation and submission for examination. Mean arterial pressure (MAP) and heart rate (HR) were detected by chemical contrast staining.

(2) The bowel sounds recovery time, postoperative anal exhaust recovery time, and postoperative first defecation time were compared between the two groups.

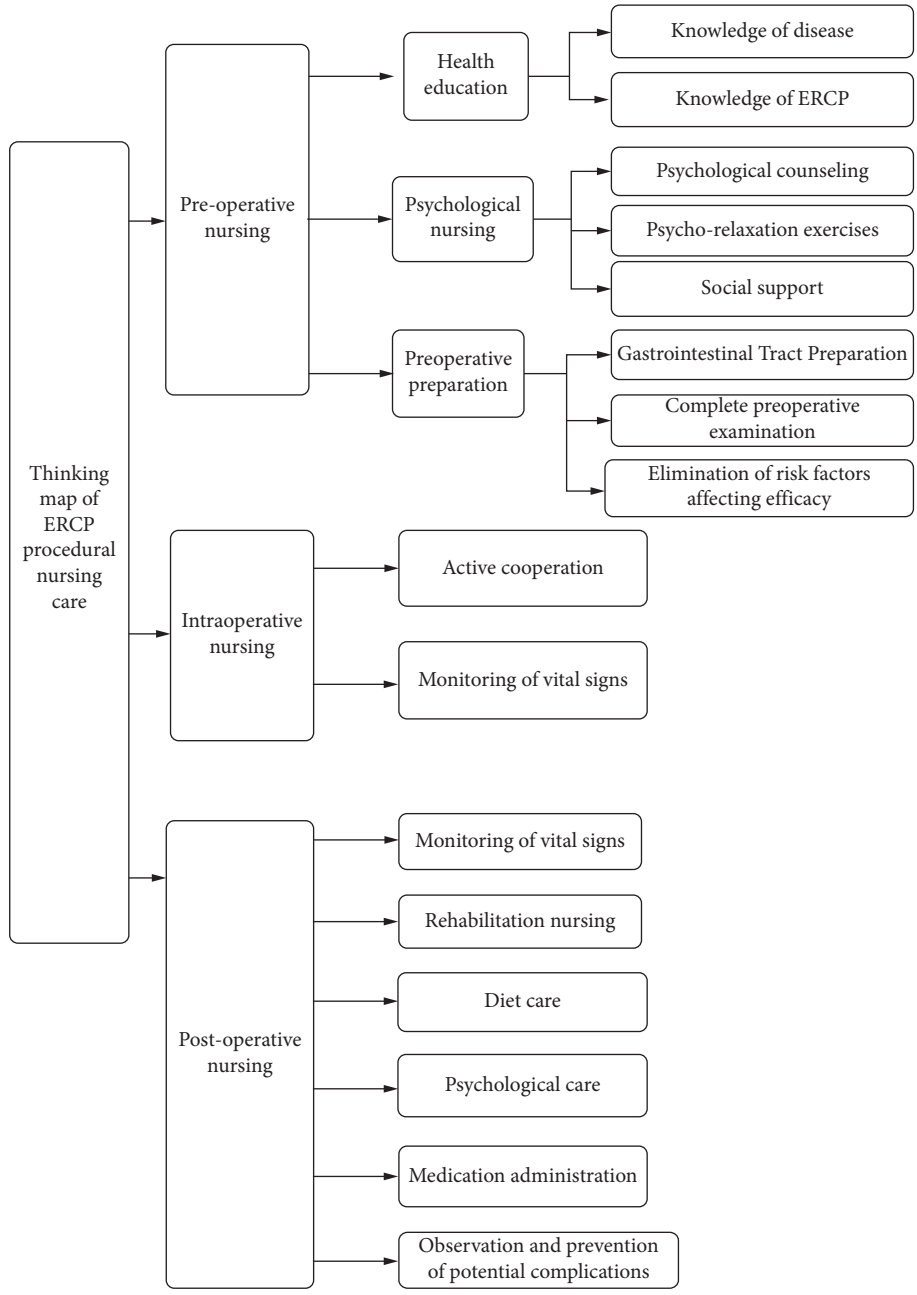

Figure 1: Thinking map of procedural nursing care for patients with ERCP.

(3) The self-rating anxiety scale (SAS) [9] and self-rating depression scale (SDS) [10] were used to assess the negative emotions of patients at the time of admission, before and after operation. The two tables contained 20 items, with each item scoring 1–4 points. The higher the score, the stronger the anxiety and depression were.

(4) Comparison of the average hospitalization days, average medical cost, and satisfaction with nursing between the two groups was performed. Nursing satisfaction was recorded with the self-made nursing satisfaction questionnaire in our hospital. The full score of the scale was 100, with 90–100 being very satisfactory, 70–89 being satisfactory, 50–69 being general satisfactory, and <50 being unsatisfactory.

(5) The incidences of hyperamylasemia, acute pancreatitis, acute cholangitis, diarrhea, and gastrointestinal hemorrhage in the two groups were counted.

3.2. Statistical Methods. All data were processed with the SPSS 22.0 statistical software, and GraphPad Prism 8 was used to make statistical graphs. The measurement data are expressed as mean ± standard deviation ($\overline{x} \pm s$), independent sample t-test is used for comparison between groups, count data are expressed as (n (%)), and the chi-square (χ^2) test is performed. The difference is statistically significant when $P < 0.05$.

4. Results

4.1. Baseline Data. There was no significant difference in general data between the two groups, which was comparable ($P > 0.05$, Table 1).

4.2. Comparison of Hemodynamic Change between the Two Groups. Group ($F_{group} = 36.43$, 31.7103, $P_{group} = 0.000$) and time ($F_{time} = 632.438$, 20.628, $P_{time} = 0.000$) have an influence on MAP and HR, but there is no interaction between them ($F_{group \times time} = 1.563$, 2.715, $P_{group \times time} = 0.199$, 0.103, Table 2).

4.3. Comparison of Intestinal Function Recovery between the Two Groups. The bowel sounds recovery time, postoperative anal exhaust recovery time, and postoperative first defecation time were shorter in the study group than those in the control group ($t = 12.687$, 9.608, 5.004, $P < 0.05$, Figure. 2).

4.4. Comparison of Changes in SAS and SDS Scores between the Two Groups. Group ($F_{group} = 12.223$, 15.041, $P_{group} = 0.001$) and time ($F_{time} = 264.825$, 112.502, P_{time} =) had an interaction on SAS and SDS scores ($F_{group \times time} = 7.837$, 5.668, $P_{group \times time} = 0.006$, 0.019, Table 3).

4.5. Comparison of the Average Hospitalization Days, Average Medical Cost, and Satisfaction with Nursing. Patients in the study group had shorter hospitalization days, less medical cost, and higher satisfaction scores than those in the control group ($P < 0.05$, Table 4).

4.6. Comparison of Complications between the Two Groups. The complication rate in the study group was lower than that in the control group ($P < 0.05$, Table 5).

5. Discussion

ERCP is an operationally challenging technique. Factors such as the patient's tolerance, the underlying condition, the anatomical structure, and the operator's empirical techniques all influence the successful and safe conduct of the procedure [11]. Therefore, it is very important to apply effective nursing methods to alleviate the stress response of ERCP patients.

The procedural nursing model is a new nursing model advocated in the field of clinical nursing at present, which was first proposed by Lott et al. [12]. Different from the traditional conventional care model, this model emphasizes that the surgical care process is divided into preoperative, intraoperative and postoperative parts, and each part is programmed to enhance the cooperation of nursing staff with the patients, families, and medical staff and improve the systematic and scientific nature of nursing [13]. Based on the research on previous literature, we found that the key point of procedural nursing was the nursing process, which could improve the effectiveness of nursing measures on the basis of formulating a scientific and effective nursing plan according to the priorities of clinical nursing work [14]. Thinking map is an effective graphical thinking tool to express divergent thinking [15]. It adopts the chart frame structure and compiles the complex and professional contents into a structure map with a high degree of organizational logic relationship [16]. The application of different lines to identify different hierarchical organizational structures can visually and clearly display the subordinate relationship among the theme of each hierarchy, which not only can ensure the identification and extraction of key information but also can avoid the omission of branch structure information. In clinical nursing, the hierarchical structure of "point with surface" in the thinking map was used to simplify information and highlight the focus of nursing work [17]. At the same time, the nursing measures were combined into a visual semantic network based on the internal correlation using tools such as words and images, to achieve the change from linear language logical thinking to space graphics with a clear hierarchical structure, which could make up for the deficiencies of language thinking, deepen the understanding of nursing staff, and improve work efficiency [18].

Since the gastrointestinal tract is distributed with rich autonomic nerve fibers, stimulation of the gastrointestinal tract by ERCP surgery will cause psychological and physiological stress responses of patients as well as hemodynamic abnormalities [19]. In addition, patients lack sufficient cognition and understanding of ERCP, and ERCP operation in a awake state easily aggravates emotional changes in patients [20]. Repeated measures in this study showed that group and time had effects on MAP, HR, and SAS and SDS scores, indicating that a procedural nursing plan based on thinking map guidance model could reduce the hemodynamic effects of ERCP on patients and alleviate their adverse psychology. Intestinal dysfunction after ERCP has also become a major clinical concern. At present, it is considered that the intestinal dysfunction caused by ERCP is related to the following factors: (1) Repeated intubation leads to papilledema and decreases in bile and pancreatic juice discharge [21]. (2) Dysfunction of duodenal papilla sphincter causes obstructed discharge of pancreatic fluid and bile as well as bile reflux. (3) Hemorrhage occurs after duodenal papilla incision [22]. (4) Influence of contrast examination and anesthetic sedative drugs. In this study, on the premise of assessing the patients' nursing needs, a scientific diet nursing plan was formulated according to the needs of postoperative gastrointestinal functional recovery, and on this basis, targeted, systematic, and effective nursing measures were implemented. The results showed that the bowel sounds recovery time, postoperative anal exhaust recovery time, and postoperative first defecation time were shorter in the study group than in the control group ($P < 0.05$). In addition, the incidence of complications in the study group was lower than that in the control group ($P < 0.05$). The reason was that in the nursing work of patients in the research group, through analyzing the patient's situation with the physicians, the nurses actively improved the preoperative preparation and effective nursing for complications, which not only improved the quality of

Table 1: Comparison of general data of patients between the two groups.

Group	n	Gender (n)		Age (years old)	Course of disease (months)	Type of disease (n)		Degree of education (n)		
		Male	Female			Biliary tract diseases	Pancreatic diseases	Junior high school or below	Senior high school or technical secondary school	College and above
Study group	48	26	22	46.25 ± 3.46	14.28 ± 3.17	29	19	12	16	20
Control group	48	25	23	46.59 ± 3.15	14.19 ± 3.52	30	18	14	15	19
χ^2/t	—	0.042		0.503	0.132	0.044		0.212		
P value	—	0.838		0.616	0.896	0.834		0.900		

Table 2: Comparison of hemodynamic changes between two groups ($\overline{x} \pm s$).

Group	n	MAP (mmHg)				HR (beats/min)			
		T0	T1	T2	T3	T0	T1	T2	T3
Study group	48	129.16 ± 5.83	104.31 ± 7.12	113.14 ± 4.20	95.11 ± 4.29	94.34 ± 8.35	80.96 ± 8.12	94.13 ± 4.25	82.83 ± 5.28
Control group	48	129.75 ± 5.64	106.26 ± 6.57	119.33 ± 5.29	99.48 ± 5.52	94.64 ± 8.71	86.65 ± 7.53	98.22 ± 3.24	87.17 ± 4.09

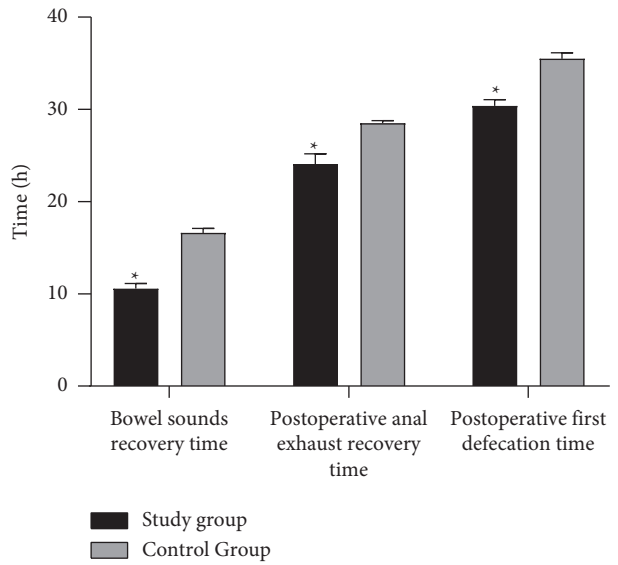

Figure 2: Histogram of comparison of intestinal function recovery between the two groups. Compared with the control group, $^*P < 0.05$.

Table 3: Comparison of changes in SAS and SDS scores between the two groups ($\overline{x} \pm s$, score).

Group	n	SAS			SDS		
		On admission	Preoperatively	Postoperative	On admission	Preoperatively	Postoperative
Study group	48	50.39 ± 8.17	41.09 ± 5.13	32.26 ± 5.28	51.26 ± 7.52	43.33 ± 6.22	38.39 ± 5.84
Control group	48	50.46 ± 8.28	44.34 ± 6.10	36.19 ± 5.84	51.36 ± 7.57	48.34 ± 5.69	43.21 ± 5.78

Table 4: Comparison of the average hospitalization days, average medical cost, and satisfaction with nursing ($\overline{x} \pm s$).

Group	n	Average hospitalization days (d)	Average medical cost (million yuan)	Satisfaction with nursing (score)
Study group	48	7.22 ± 1.19	1.32 ± 0.16	94.28 ± 4.26
Control group	48	12.52 ± 2.63	1.79 ± 0.25	88.71 ± 5.93
t	—	12.720	10.971	5.258
P value	—	< 0.001	< 0.001	< 0.001

Table 5: Comparison of complications between the two groups (n (%)).

Group	n	Hyperamylasemia	Acute pancreatitis	Acute cholangitis	Diarrhea	Gastrointestinal hemorrhage	Total incidence
Study group	48	1 (2.08)	0 (0.00)	0 (0.00)	1 (2.08)	1 (2.08)	3 (6.25)
Control group	48	4 (8.33)	1 (2.08)	1 (2.08)	2 (4.17)	2 (4.17)	10 (20.83)
χ^2	—						4.360
P value	—						0.037

surgery but also reduced the occurrence of complications [23].

In summary, the procedural nursing plan based on the thinking map guidance mode can reduce the hemodynamic effects of ERCP on patients, promote the recovery of intestinal function, alleviate their adverse psychology, reduce postoperative complications, help improve patients' satisfaction with the nursing work, and is worthy of promotion.

Data Availability

For this test, relevant data are available upon reasonable request.

Conflicts of Interest

All authors declare that there are no relevant conflicts of interest.

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Retraction

Retracted: Early Postoperative Pain Control and Inflammation for Total Knee Arthroplasty: A Retrospective Comparison of Continuous Adductor Canal Block versus Single-Shot Adductor Canal Block Combined with Patient-Controlled Intravenous Analgesia

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] X. Yang, J. Dong, W. Xiong, and F. Huang, "Early Postoperative Pain Control and Inflammation for Total Knee Arthroplasty: A Retrospective Comparison of Continuous Adductor Canal Block versus Single-Shot Adductor Canal Block Combined with Patient-Controlled Intravenous Analgesia," *Emergency Medicine International*, vol. 2022, Article ID 1351480, 10 pages, 2022.

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Research Article

Early Postoperative Pain Control and Inflammation for Total Knee Arthroplasty: A Retrospective Comparison of Continuous Adductor Canal Block versus Single-Shot Adductor Canal Block Combined with Patient-Controlled Intravenous Analgesia

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Objective. The aim of this study was to compare pain control and inflammation among patients who received a continuous adductor canal block (CACB) versus single-shot adductor canal block (SACB) combined with patient-controlled intravenous analgesia (PCIA) for total knee arthroplasty (TKA) analgesia in the first two days after surgery. *Design*. Matched cohort retrospective study. *Setting*. University hospital. *Patients*. One hundred fifty-six patient charts were included in this study: 78 patients with CACB in Group A and 78 patients with SACB combined with PCIA in Group B. Patients were matched according to age, body mass index, and American Society of Anesthesiologists class. *Measurements*. The primary outcome of the study was Visual Analogue Scale (VAS) pain scores before operation (Pre) and at postoperative 6 (POH6), 12 (POH12), 24 (POH24), 30 (POH30), 36 (POH36), and 48 hours (POH48). Secondary outcomes included patient-controlled bolus, time of first postoperative ambulation, range of knee flexion and extension, inflammation cytokines on Pre and POH48, percentage of remedial analgesics treatment, incidence of adverse events and complications, hospital stay and cost, and Numerical Rating Scale (NRS) satisfaction scores at discharge. *Main Results*. Mean VAS scores at rest and with motion were lower in Group B than in Group A on all postoperative hours. At POH30, compared with Group A (1.1 ± 0.6), mean VAS scores at rest in Group B (0.9 ± 0.4) were lower ($P = 0.048$), and compared with Group A (2.6 ± 0.7), mean VAS scores with motion in Group B (2.2 ± 0.8) were lower ($P = 0.001$). The number of patient-controlled bolus was 4.3 ± 1.6 (95% CI 3.9–4.6) in Group A and 3.1 ± 1.3 (95% CI 2.8–3.4) in Group B, respectively ($P < 0.001$). Patients in Group B displayed better functional recovery and inflammation results at POH48 than Group A with respect to range of knee flexion and extension ($117.8 \pm 10.9^{\circ}$ vs. $125.2 \pm 9.4^{\circ}$, $P < 0.001$) and inflammation cytokines, including erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), and interleukin-6 (IL-6) ((43.8 ± 16.1) vs. (36.8 ± 13.2), $P = 0.003$; (34.9 ± 9.4 mg/L) vs. (29.6 ± 10.6 mg/L), $P = 0.001$; (21.3 ± 8.7 pg/ml) vs. (14.0 ± 7.0 pg/ml), $P < 0.001$)). *Conclusion*. SACB combined with PCIA in the first two days of patients undergoing TKA has better analgesic and beneficial effects on functional recovery and inflammation.

1. Introduction

Total knee arthroplasty (TKA) is currently an advanced and effective method for the treatment of knee osteoarthritis. In the early stage after TKA, patients suffered from moderate to severe pain [1, 2] and obvious inflammation, which was manifested by the obvious increase in inflammatory cytokines such as interleukin-6 (IL-6), C-reactive protein (CRP), and erythrocyte sedimentation rate (ESR) [3, 4]. However, persistent postoperative pain and inflammation impair patients from achieving the desired knee joint function recovery after TKA [5].

Many modalities, such as adjuvant analgesic agents, patient-controlled intravenous analgesia (PCIA), epidural analgesia [6], periarticular infiltration, and peripheral nerve block [7–10], are used for pain relief after TKA. There is a

growing consensus now that adductor canal block (ACB) was an effective method for analgesia management after TKA [9–13], which could reduce opioid dosage [12] and was conducive to knee joint function rehabilitation [10, 13]. Canbek et al. had reported that CACB provided a better analgesia compared to a single-shot adductor canal block (SACB) after TKA [14–16]. The nonsteroidal anti-inflammatory drugs (NSAIDs) not only relieved pain but also inhibited inflammation. Zhuang et al. had found that IL-6, ESR, and CRP levels were reduced in the parecoxib/celecoxib group after TKA [17].

Data related to orthopedic patients have been recorded since enhanced rehabilitation after surgery (ERAS) was performed in our hospital in April 2016. From February 2019 to June 2020, the ERAS team in our orthopedics department implemented CACB to control pain for TKA patients. Nevertheless, perioperative analgesia for TKA patients should not only relieve pain but also pay attention to the occurrence of inflammation. Due to the analgesic and anti-inflammatory effects of NSIADs in PCIA, our team adjusted the analgesic regimen to SACB combined with PCIA from July 2020 to May 2021. However, we still have no idea about whether there was a difference in the postoperative analgesia and inflammation between CACB and SACB combined with PCIA after TKA. The objective of this work was to compare two different analgesic protocols applied to patients who underwent unilateral primary total knee arthroplasty and analyze the quality of pain control, inflammation, hospital stay, and cost, in order to enhance recovery after surgery.

2. Materials and Methods

Institutional review board approval was obtained for this research. As this trial was retrospective in nature, neither written informed consent nor clinical trial registration were required.

A total of 300 patient charts were screened for review from February 2019 to May 2021, and we retrospectively analyzed the anesthesia record list, hospital chart, and the iPainfree system, which was the pain management information system used for recording the patient-controlled analgesia (PCA) follow-up data. Patients who met the following criteria were excluded: (1) long-term abuse of opioids; (2) preexisting neuropathy in the ipsilateral lower extremity; (3) incomplete documentation for any of the primary or secondary outcome variables; (4) received bilateral TKA and/or other procedures; (5) transferred to the rehabilitation department to continue rehabilitation treatment without discharge; (6) accompanied by coagulation abnormalities or severe central nervous system diseases. Qualifying patients were matched according to age (18–90 years old), body mass index (BMI) (18–35 kg/m^2), and American Society of Anesthesiologists (ASA) class (grade II-III). After this screening process, we recruited 156 patients who underwent a primary, selective, and unilateral TKA for knee osteoarthritis with general anesthesia by five orthopedic surgeons and two anesthesiologists in this study. 78 patients had CACB in Group A, and 78 patients had SACB combined with PCIA in Group B.

2.1. Outcome Measures. The following demographic and perioperative data were collected: gender, age, height, weight, BMI, ASA class, medical history, operation procedure, operation time, anesthesia method and content, intraoperative medication, anesthesia time, postoperative analgesia protocol, time of extubation, and length of stay in the postanesthesia care unit (PACU).

The primary outcomes of the study were Visual Analogue Scale (VAS) pain scores before operation (Pre) and at postoperative 6 hours (POH6), 12 hours (POH12), 24 hours (POH24), 30 hours (POH30), 36 hours (POH36), and 48 hours (POH48) at rest and motion. Nerve block catheters and PCIA were discontinued at POH48.

Secondary outcomes were time of first postoperative ambulation; range of knee flexion and extension; inflammation cytokines at Pre and POH48, including erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), and interleukin-6 (IL-6); incidence of adverse events (including patient-controlled bolus, dizziness, nausea and vomiting, and remedial analgesics treatment) and complications (including pulmonary infection, cardiovascular events, deep vein thrombosis, incisional infection, and unplanned second surgery); postoperative hospital stay, total hospital stay, total hospital cost, and patient self-reported satisfaction score at discharge. Numerical Rating Scale (NRS) was scored with range 0–10, 0 = not at all satisfied and 10 = very satisfied.

2.2. Intraoperative Course. Patients took celecoxib 200 mg orally daily for advanced analgesia and, if there were no contraindications, had low-molecular-weight heparin anticoagulation after admission. Before surgery, patients abstained from food for 8 h and drinking for 2 h but drank the nutrition solution prepared by the nutrition department on the day of surgery.

Patients were routinely monitored for electrocardiogram, blood pressure, pulse oxygen saturation, respiratory rate, and temperature during the perioperative period. After general anesthesia induction, endotracheal intubation and mechanical ventilation were performed. Anesthesia was maintained with sevoflurane inhalation and intravenous infusion of propofol and remifentanil, and vecuronium was added intermittently as needed. Intravenous injection of dexamethasone (10 mg) and tropisetron (2 mg) was performed to prevent postoperative nausea and vomiting. Five different surgeons performed the procedures, and then, two different senior anesthetists performed adductor canal block on all patients immediately with the technique described by Jenstrup et al. [18]. After that, patients were transferred to PACU, the tracheal tube was removed when they reached the extubation indications, and then they were transferred to the ward.

Postoperative management measures included using parecoxib 40 mg daily for analgesia. Omeprazole for acid inhibition and gastric protection was used without contraindications. Low-molecular-weight heparin was used for preventing deep vein thrombosis. Cefuroxime was used for preventing infection and monitoring inflammation cytokines. Patients were encouraged to gradually resume their

diet and lower limb activities 2 hours after surgery. Rehabilitation physicians guided rehabilitation training at POH6 and encouraged patients to get out of bed as soon as possible.

2.3. Postoperative Analgesia Course

2.3.1. Group A. At the end of the operation, an adductor canal block was performed via guidance of ultrasound, injecting 20 ml 0.2% ropivacaine, and inserting a catheter, which was then properly fixed and connected to the electronic patient-controlled analgesic pump. Analgesic pump drugs in the CACB group were prepared with 300 ml of 0.17% ropivacaine. Analgesic pump parameters included load dose 5 ml; basal infusion rate 5 ml/h; patient-controlled bolus dose 5 ml; and security lock duration 45 minutes.

2.3.2. Group B. Single-shot adductor canal block was performed under ultrasound guidance after surgery, injected with 20 ml 0.2% ropivacaine without catheterization, and then intravenous infusion of the PCIA was started. Analgesic pump drugs in PCIA were prepared with tramadol 800 mg combined with flurbiprofen axetil 100 mg and saline mixed into 80 ml. Analgesic pump parameters included load dose 5 ml; basal infusion rate 1 ml/h; patient-controlled bolus dose 2 ml; security lock duration 15 minutes.

Based on a load dose, the PCA pump started to work continuously at the end of the operation. The department of anesthesiology had special personnel for following up the patients who use PCA at 6 h, 12 h, 24 h, 30 h, 36 h, and 48 h after surgery. They completed the follow-up records through the iPainfree pain management information system. They collected and recorded the hemodynamic parameters, patient self-reported pain scores (Visual Analogue Scale, VAS), and the adverse events including time of patient-controlled bolus, dosage of PCA, remedial analgesics treatment, dizziness, nausea and vomiting, sedation score, pruritus, urinary retention, sensory disorder, dyskinesia, and local puncture anomaly. The specific method of VAS score is as follows: a 10 cm line segment was drawn on a paper. The left end of the line segment is 0 points, indicating no pain, and the right end is 10 points, indicating severe pain (the pain degree increases gradually from left to right). Patients in the calm state was marked according to the self-marking line segment, indicating the degree of pain. If VAS scores ≥4, patients in both groups were treated with remedial analgesia: paracetamol and tramadol and/or celecoxib and/or gabapentin.

2.4. Statistics. Statistical analysis was conducted using SPSS 26.0 (International Business Machines Corporation, USA) software. Conformity of the data to normal distribution was tested with the Kolmogorov–Smirnov test. Data are shown as mean ± standard deviation, or number (percentage). To determine statistical significance, the ANOVA test was used for testing VAS pain score, ESR, CRP, IL-6, patient-controlled bolus, the range of knee flexion and extension, postoperative hospital stay, and NRS satisfaction score. Pearson's chi square test was used for gender, ASA class, surgery side, and the incidence of adverse events and complications. $P < 0.05$ was considered as statistically significant.

3. Results

Between the CACB and SACB combined with the PCIA group, there was no significant difference in the demographic and perioperative data (Table 1; $P > 0.05$). As expected with our matching process, the percentage of the surgeons who performed surgery and the anesthetists who performed adductor canal block were no different. No neuropathic complications occurred in either group.

3.1. Pain Control. As shown in Figures 1 and 2, mean VAS scores at rest (1.1 ± 0.7 Group A vs. 1.0 ± 0.5 Group B, $P = 0.288$) and with motion (2.8 ± 0.8 Group A vs. 2.6 ± 0.8 Group B, $P = 0.273$) before operation were comparable. However, compared with Group A, the mean VAS scores at rest and with motion were lower in Group B at all postoperative hours. Compared with Group A, the mean VAS scores at rest (1.1 ± 0.6 vs. 0.9 ± 0.4, $P = 0.048$) and with motion (2.6 ± 0.7 vs. 2.2 ± 0.8, $P = 0.001$) in Group B were lower at POH30. The mean VAS scores at rest and with motion at POH6 and POH12 were lower than those before operation in both the groups ($P < 0.012$). The mean VAS scores at rest and with motion at POH12, POH24, POH30, POH36, and POH48 were higher than those at POH6 in both the groups ($P < 0.015$). The mean VAS scores at rest and with motion at POH24 and POH30 were higher than those at POH12 in both the groups ($P < 0.04$). The mean VAS scores with motion at POH36 were lower than those at POH30 in both the groups ($P < 0.013$).

The number of patient-controlled boluses was 4.3 ± 1.6 (95% CI 3.9–4.6) in Group A vs. 3.1 ± 1.3 (95% CI 2.8–3.4) in Group B, respectively ($P < 0.01$). There was no statistical difference between 9 patients (11.5%) in Group A and 5 patients (6.4%) in Group B using remedial analgesia ($P = 0.402$).

3.2. Functional Recovery. As shown in Figure 3, the range of knee flexion and extension before operation (99.9 ± 12.4° in Group A vs. 101.8 ± 10.9° in Group B, $P = 0.323$) was comparable. Compared with Group A, the range of knee flexion and extension at POH48 in Group B was higher, and the difference was statistically significant (117.8 ± 10.9° vs. 125.2 ± 9.4°, $P < 0.001$). Time of postoperative first ambulation was not statistically different (20.8 ± 4.1 h in Group A vs. 20.3 ± 3.9 h in Group B, $P = 0.448$).

3.3. Inflammation Cytokines. As shown in Figures 4–6, mean ESR, CRP, and IL-6 were lower before operation as compared to POH48 ($P < 0.001$). Compared with Group A, mean ESR, CRP, and IL-6 in Group B at POH48 were lower and the difference were statistically significant ((43.8 ± 16.1) vs. (36.8 ± 13.2), $P = 0.003$; (34.9 ± 9.4 mg/L) vs. (29.6 ± 10.6 mg/L), $P = 0.001$; (21.3 ± 8.7 pg/ml) vs. (14.0 ± 7.0 pg/ml), $P < 0.001$)).

Table 1: Demographic and perioperative data.

Characteristic	Group A	Group B	P value
Number of patients	78	78	—
Gender (male/female)	17 (22%)/61 (78%)	19 (24%)/59 (76%)	0.850
Age (years)	69.4 ± 7.2	66.9 ± 8.7	0.052
Height (cm)	157.8 ± 6.3	156.9 ± 6.7	0.374
Weight (kg)	62.1 ± 9.9	62.4 ± 8.9	0.806
BMI (kg/m^2)	24.9 ± 3.6	25.4 ± 3.4	0.401
ASA class (II/III)	26 (33%)/52 (67%)	27 (35%)/51 (65%)	1
Surgery side (left/right)	40 (51%)/38 (49%)	41 (53%)/37 (47%)	1
Length of surgery (min)	77.4 ± 20.5	77.7 ± 15.3	0.923
Length of anesthesia (min)	113.1 ± 28.3	111.6 ± 18.8	0.702
Length of extubation (min)	19.9 ± 9.0	18.8 ± 7.7	0.429
Length of stay in PACU (min)	75.6 ± 14.9	71.5 ± 16.5	0.111
Surgeon (%) (A/B/C/D/E)	15.4/11.5/11.5/35.9/25.6	16.7/6.4/12.8/37.2/26.9	0.865
Anesthetist (A/B)	26 (33%)/52 (67%)	39 (50%)/39 (50%)	0.051

Note. Values are presented as mean ± SD or number (percentage). BMI = body mass index; PCIA = patient-controlled intravenous analgesia; ASA = American society of anesthesiologists; PACU = postanesthesia care unit.

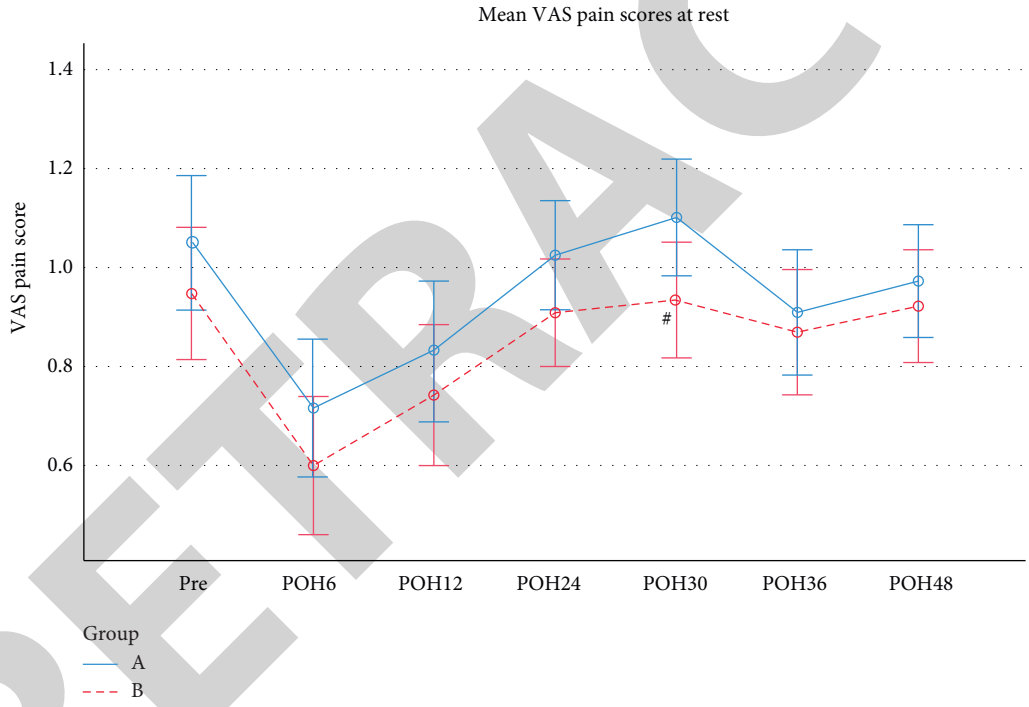

Figure 1: Mean Visual Analogue Scale (VAS) pain scores at rest before operation (Pre) and at postoperative hours (POH), $^{\#}P < 0.05$.

3.4. Economic Benefit. As shown in Tables 2 and 3, there was no significant difference in total hospital stay, incidence of dizziness, nausea and vomiting, pulmonary infection, and deep vein thrombosis between the two groups. Postoperative hospital stay was different between the two groups ($P < 0.001$), estimated about 1.1 day less following the use of SACB combined with PCIA. The total hospital cost was different between the two groups ($P = 0.001$), estimated about 4032 RMB less following the use of SACB combined with PCIA. Compared with Group A, NRS satisfaction scores in Group B were higher at discharge and the difference was statistically significant (9.5 ± 0.3 vs. 9.7 ± 0.2, $P < 0.001$). Complications of cardiovascular events, incisional infection, and unplanned second surgery did not occur in either group.

4. Discussion

In this study, we found that the combination of SACB and PCIA was more effective than CACB alone in the management of early postoperative pain after TKA. VAS scores at rest in almost all postoperative hours and VAS scores with motion at all postoperative hours in both the groups were significantly lower than preoperation VAS scores, which indicated that both CACB and SACB combined with PCIA could effectively control the postoperative pain after TKA. Remarkably, the CACB group seemed to be the least beneficial modality of the two, which had the higher rest and motion VAS scores in all postoperative hours and needed more supplemental patient-controlled bolus and remedial

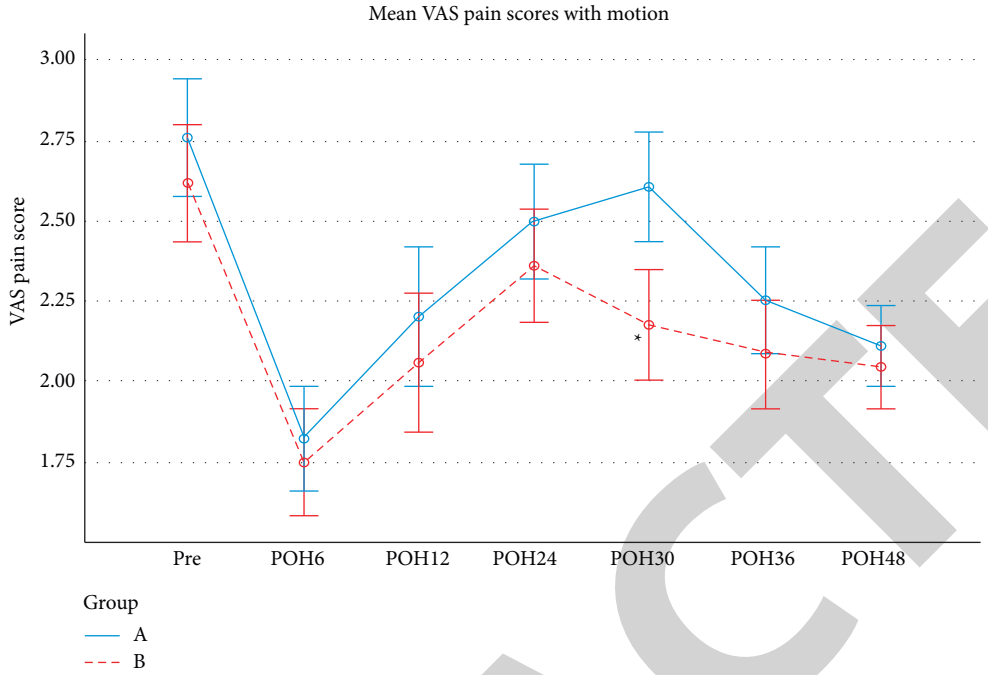

Figure 2: Mean Visual Analogue Scale (VAS) pain scores with motion before operation (Pre) and at postoperative hours (POH), $^{*}P < 0.001$.

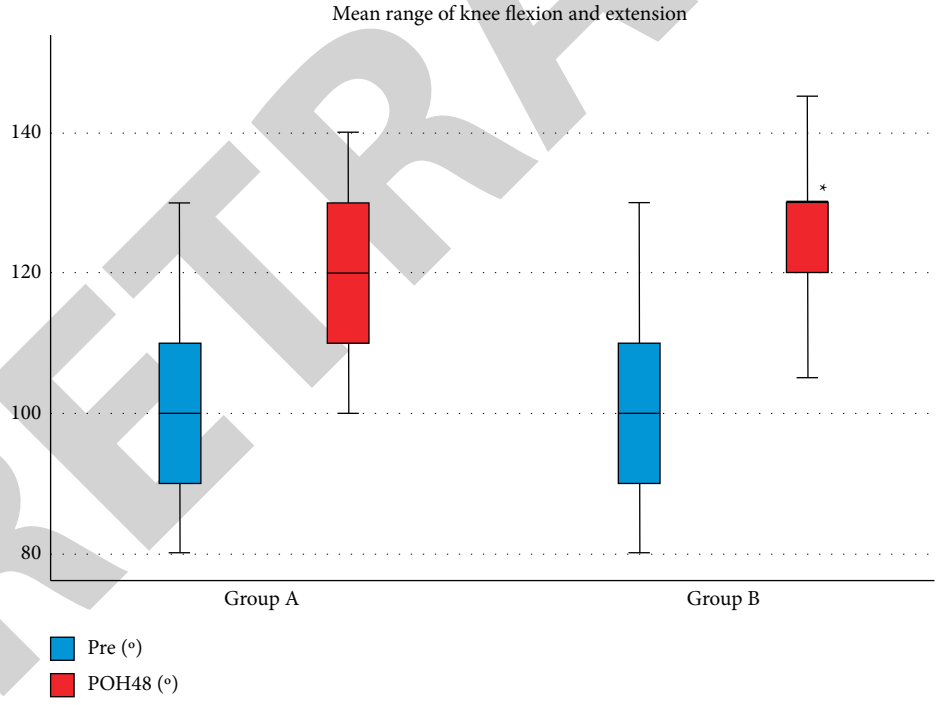

Figure 3: Mean range of knee flexion and extension before operation (Pre) and at postoperative hours (POH48), $^{*}P < 0.001$.

analgesics treatment. There was a strong trend toward superiority of the SACB combined with PCIA group over CACB at POH30. The time of first postoperative ambulation was 15–30 hours after surgery in 90% patients in both the groups, and the VAS scores were significantly higher at POH24 and POH30 compared with POH6. It was not hard to see that the trend of VAS scores was likely related to postoperative rehabilitation training and movement [19, 20] in both groups. Like any continuous blockade technique, we ascribed CACB fared so poorly in this trial to secondary block failure [21, 22] or catheter displacement [23].

Severe pain was present after TKA [1, 2, 19] and lasted for 2-3 days after surgery [24]. A multimodal pain management protocol [9, 12, 13, 25, 26] after TKA has been shown to decrease narcotic usage [21], improve pain score/satisfaction, and facilitate joint early function rehabilitation

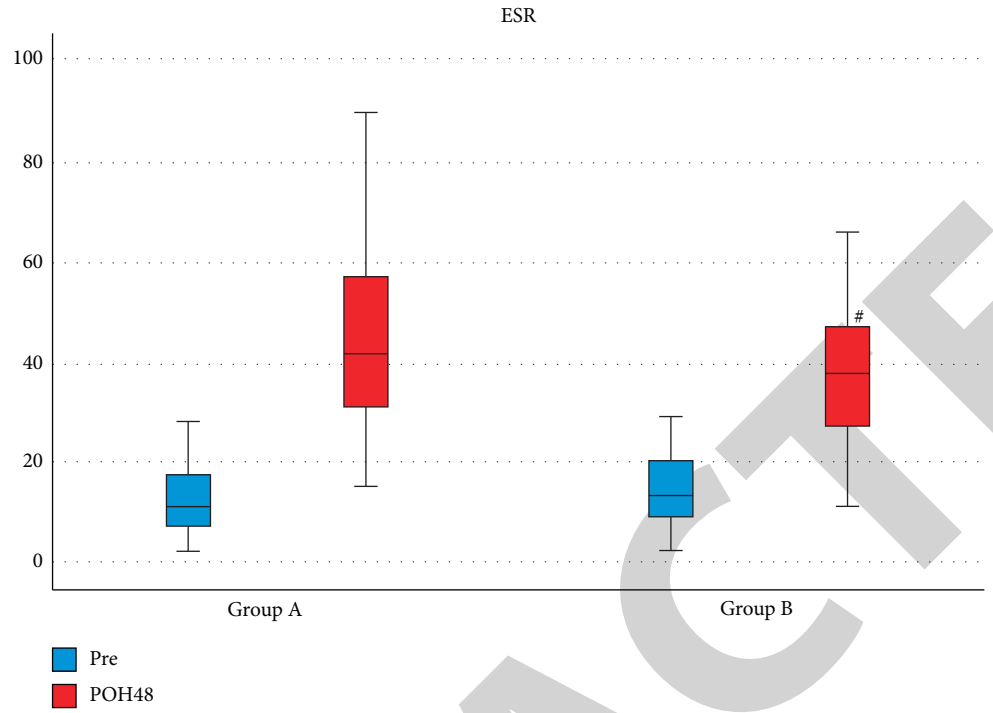

Figure 4: Mean erythrocyte sedimentation rate (ESR) before operation (Pre) and postoperative 48 hours (POH48), $^{\#}P < 0.05$.

Table 2: Secondary outcomes.

Characteristic	Group A ($n = 78$)	Group B ($n = 78$)	P value
Postoperative first ambulation time (h)	20.8 ± 4.1	20.3 ± 3.9	0.448
Patient-controlled bolus (times)	4.3 ± 1.6	3.1 ± 1.3	≤0.001*
Postoperative hospital stay (d)	5.8 ± 1.6	4.7 ± 1.5	≤0.001*
Total hospital stay (d)	10.4 ± 2.6	9.6 ± 2.8	0.058
Total hospital cost (RMB)	60496.1 ± 8481.4	56464.9 ± 6045.7	0.001#
NRS satisfaction scores at discharge	9.46 ± 0.27	9.66 ± 0.17	≤0.001*

Note. Values are presented as mean ± SD. PCA = patient-controlled analgesia; NRS = Numerical Rating Scale.* $P < 0.001$; # $P < 0.05$.

Table 3: Incidence of adverse events and complications.

Characteristic	Group A ($n = 78$)	Group B ($n = 78$)	P value
Remedial analgesics treatment (n, %)	9 (11.5%)	5 (6.4%)	0.402
Dizziness, nausea and vomit (n, %)	4 (5.1%)	5 (6.4%)	1
Pulmonary infection (n, %)	2 (2.6%)	0	0.497
Cardiovascular events (n, %)	0	0	1
Deep vein thrombosis (n, %)	2 (2.6%)	1 (1.3%)	1
Incisional infection (n, %)	0	0	1
Unplanned second surgery (n, %)	0	0	1

[6, 24] over traditional patient-controlled intravenous analgesia (PCIA) alone [12, 27]. Canbek et al. showed that pain control following TKA was found to be superior in the patients given CACB compared with SACB, with better ambulation and functional recovery, and that SACB alone was not recommended to be used as an analgesia method [14]. According to the previous studies, the ERAS team in our orthopedics department implemented CACB or SACB combined with PCIA for TKA postoperative analgesia. To our knowledge, this was the first study to investigate pain control in patients received SACB when used in combination with PCIA in the first two days after TKA. All the adductor canal blocks in this study were performed by two experienced anesthetists with ultrasound visualization of both the catheter tip and local anesthetic spread during the initial bolus. In addition, multimodal analgesic treatment for all patients in our study started from admission, and systematic pain management was carried out throughout the perioperative period.

As we all know, the concentration and dose of local anesthetics have a great influence on the effect and duration of nerve block and that increasing the concentration and

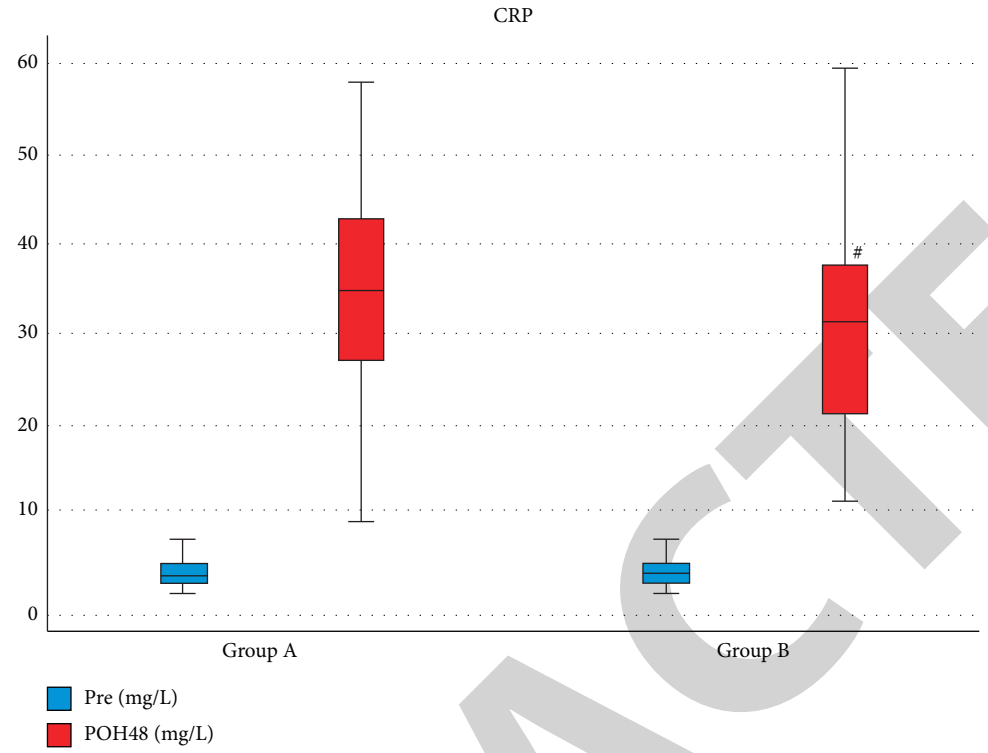

Figure 5: Mean C-reactive protein (CRP) before operation (Pre) and postoperative 48 hours (POH48), $^{\#}P < 0.05$.

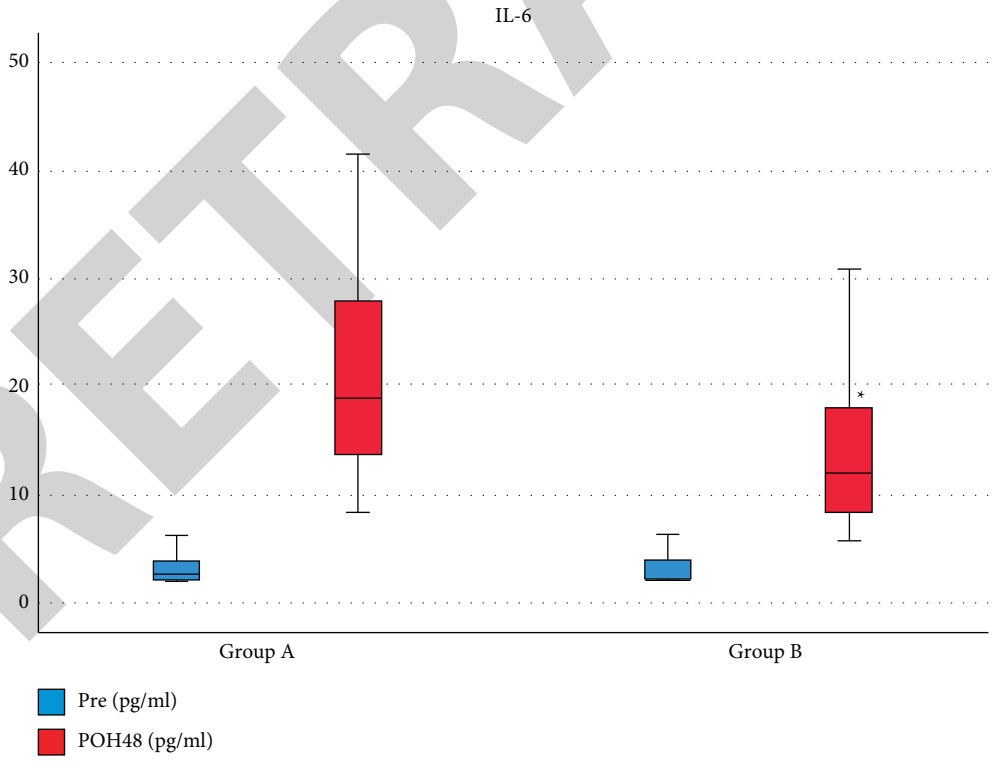

Figure 6: Mean interleukin-6 (IL-6) before operation (Pre) and postoperative 48 hours (POH48), $^{*}P < 0.001$.

dose of local anesthetics carries the risk of causing systemic toxicity. The concentration of ropivacaine used for adductor canal block has been reported to vary widely from 0.1% to 0.75% [20, 28, 29], and the dosage of ropivacaine also varies widely from 5 ml to 40 ml [10, 15, 30, 31]. Wang et al. had found that EV50 of 0.5% ropivacaine for ACB was 10.79 ml (95% CI 10.10–11.52 ml) [32]. Christiansen et al. had found that no effect of increasing the volume of ropivacaine 0.2%

from 5 to 30 ml on sensory sciatic nerve block duration [33]. It was not hard to see that the use of 20 ml 0.2% ropivacaine for ACB in this study was effective and safe for postoperative analgesia in TKA patients. For continuous adductor canal block, most literature studies had reported the use of ropivacaine at a concentration of 0.2% and an infusion rate of 8 ml/h [34–36]. Veal et al. had described continuous 0.2% ropivacaine infusion at 8 ml/h in a patient who likely had delayed quadriceps weakness within the adductor canal [35]. Neal et al. had presented 3 cases of probable local anesthetic-induced myotoxicity involving CACB with 1.5% lidocaine or 1.5% mepivacaine bolus followed by an infusion of 0.2% ropivacaine [36]. The adductor canal block protected the quadriceps strength by the occurrence of an almost pure sensory nerve block [13, 28]. Zhang et al. had also found that CACB with 0.2% ropivacaine 5 ml/h could effectively be used for analgesia after TKA [37]. Therefore, we performed CACB with 20 ml 0.2% ropivacaine bolus followed by infusion of 0.17% ropivacaine 5 ml/h, which had lower concentration and volume than previous studies [34–36], and had the advantage of high security for postoperative analgesia, and the patients can get out of bed as early as possible.

Surgery and anesthesia could lead to a strong stress response and a significant increase of inflammatory cytokines in patients, which are related to postoperative pain, anxiety, fear, and so on. ESR was a nonspecific inflammatory index, while CRP was a sensitive index for monitoring tissue damage and inflammatory response in clinical practice at present, which was also an important evaluation index in the process of postoperative recovery [38]. IL-6 was a major proinflammatory factor, and its expression level was closely related to the degree of tissue injury caused by surgery [39]. The adjuvant analgesic agents, including celecoxib, parecoxib, and flurbiprofen axetil, which were all some of the nonsteroidal anti-inflammatory drugs (NSAIDs), were a part of multimodal analgesic treatment for all patients in our study carried out throughout the perioperative period. Klifto et al. had reported that NSAIDs (parecoxib and celecoxib) have been shown to decrease inflammation, pain, and fever [40]. Hu et al. had found that flurbiprofen 100 mg could effectively suppress the elevation of serum interleukin-6 concentration after radical excision of breast cancer [41]. Yang et al. had also reported that adductor canal block combined with cyclooxygenase 2 (COX-2) selective inhibitors (parecoxib and celecoxib) could inhibit the inflammatory response after TKA [42]. As shown in our research, the inflammatory cytokines (ESR, CRP and IL-6) at POH48 in the SACB combined with the PCIA group were lower, which is probably related to the use of celecoxib, parecoxib, and flurbiprofen axetil in PCIA.

In our research, compared with CACB, SACB combined with PCIA provided a larger range of flexion and extension motion of the knee and therefore had achieved better postoperative joint function rehabilitation [15], which remarkably explained the reason for the superiority of the analgesia strategy of SACB combined with PCIA after TKA.

This research also revealed that the analgesia strategy of SACB combined with PCIA had the advantage of the lower postoperative hospital stay and total hospital cost and the higher NRS satisfaction scores at discharge, which was more globally economical than CACB in TKA. All patients in this study have used intravenous dexamethasone 10 mg and tropisetron 2 mg to prevent postoperative nausea and vomiting (PONV). Therefore, the incidence of PONV in SACB combined with the PCIA group (6.4%) was lower and without difference to that in the CACB group (5.1%).

In addition, the total incidence of the complications such as pulmonary infection, cardiovascular events, deep vein thrombosis, incisional infection, and unplanned second surgery in the SACB combined with PCIA group was 1.3%, which was lower than that in the CACB group (5.1%), indicating high safety.

Several limitations to this study should be considered. As a retrospective study, this study has certain biases, a small number of cases, and a short observation time window, which still needs to be confirmed by future studies, such as expanding the sample size, extending the observation time, and carrying out prospective randomized controlled studies.

5. Conclusion

In conclusion, ultrasound-guided single-shot adductor canal block combined with patient-controlled intravenous analgesia appeared to provide better analgesia when compared to continuous adductor canal block in the first two days after total knee arthroplasty. It was beneficial for patients in a globally economical manner, inhibited inflammation, and did not increase the incidence of adverse events and complications and thus achieved the purpose of enhanced recovery after surgery.

Data Availability

The data used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethical Approval

This study was approved by the Ethics committee of The First Affiliated Hospital of Chongqing Medical University (2019004).

Conflicts of Interest

The authors declare there are no conflicts of interest.

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Retraction

Retracted: Effect of miR-144-3p-Targeted Regulation of PTEN on Proliferation, Apoptosis, and Osteogenic Differentiation of Bone Marrow Mesenchymal Stem Cells under Stretch

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] S. Ling, X. Luo, B. Lv et al., "Effect of miR-144-3p-Targeted Regulation of PTEN on Proliferation, Apoptosis, and Osteogenic Differentiation of Bone Marrow Mesenchymal Stem Cells under Stretch," *Emergency Medicine International*, vol. 2022, Article ID 5707504, 10 pages, 2022.

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Research Article

Effect of miR-144-3p-Targeted Regulation of PTEN on Proliferation, Apoptosis, and Osteogenic Differentiation of Bone Marrow Mesenchymal Stem Cells under Stretch

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Objective. To investigate the effects of miR-144-3p-targeted regulation of phosphatase and tensin homolog deleted on chromosome ten (PTEN) gene on proliferation, apoptosis, and osteogenic differentiation of bone marrow mesenchymal stem cells (BMSCs) under retraction force. *Methods*. The BMSCs of rats were randomly divided into the tension MSC group with detrusor stimulation and the MSC group without detrusor stimulation, after which osteogenic differentiation of BMSCs was induced in both groups. Alkaline phosphatase (ALP) staining and alizarin red staining were used to detect the osteogenic differentiation ability of the two groups of cells. Real-time quantitative reverse transcription PCR (qRT-PCR) was used to detect the expression of miR-144-3p and PTEN in the two groups of cells after osteogenic differentiation. Bioinformatics website and dual luciferase reporter were used to detect the relationship between miR-144-3p and PTEN. The tension MSC group was used as a control group, and miR-144-3p mimics (miR-144-3p mimic group), mimic controls (mimic-NC group), PTEN interferers (si-PTEN group), and interference controls (si-NC group) were transfected into BMSCs. The BMSCs were then continuously stimulated for 24 h using a Flexercell in vitro cellular mechanics loading device, applying a draft force at a frequency of 1 Hz and a deformation rate of 18%. The cell proliferation was detected by Cell Counting Kit-8 (CCK-8) colorimetric assay; the expression levels of cyclin, cyclin-dependent kinases (CDK), BCL2-associated X (BAX), B-cell lymphoma-2 (BCL-2), and other cell cycle and apoptosis related proteins were detected by western blot (WB); and the osteogenic differentiation ability of MSC cells was detected by ALP staining and alizarin red staining. *Results*. Compared with the MSC group, the level of miR-144-3p was significantly lower and the level of PTEN was significantly higher in the tension MSC group. ALP staining showed normal activity in the MSC group and decreased ALP activity in the tension MSC group compared to the MSC group. Alizarin red staining in the MSC group showed scattered calcium nodule formation, and alizarin red staining showed red nodules with a more uniform color distribution. Compared to the MSC group, the tension MSC group showed fewer, smaller, and lighter staining mineralized nodules. Compared with the tension group and mimic-NC group (si-NC group), the proliferation rate of cells in the miR-144-3p mimic group (si-PTEN group) was significantly higher; the expression levels of PTEN and BAX were significantly lower; and the expression levels of cyclin, CDK, and BCL-2 protein were significantly higher. ALP staining results revealed that the miR-144-3p mimic group (si-PTEN group) showed significantly higher osteogenic differentiation ability and ALP activity of MSC than the tension group and mimic-NC group (si-NC group). *Conclusion*. miR-144-3p may inhibit apoptosis and promote proliferation and osteogenic differentiation of BMSCs under tension by targeting and regulating PTEN.

1. Preface

Osteoporosis (OP) is a complex group of systemic diseases of the skeleton, manifested microscopically by loss of bone mineral composition and bone matrix, reduced bone strength, and susceptibility to fracture [1, 2]. Fragility fractures are a serious complication of OP and are likely to occur in important functional areas such as the spine, hip, proximal humerus, and distal radius, resulting in a high rate of disability and even mortality, causing great harm and burden to families and society [3, 4]. Due to the limitations of current medical theory and technology, osteoporosis treatment is not ideal, treatment cycles are long, and there is no fundamental solution to this challenge. The causes of OP are complex and include declining oestrogen levels, natural aging and overuse of glucocorticoid drugs, all of which contribute to the development of osteoporosis [5–7]. Although the pathogenesis of osteoporosis varies, it is mainly characterized by a disruption in the balance of bone reconstruction with reduced bone formation and increased bone resorption. Therefore, promoting bone formation and inhibiting bone resorption to replace lost bone tissue are the key to treating osteoporosis. Bone marrow mesenchymal stem cells (BMSCs) are the main source of osteoblasts, and their reduced osteogenic differentiation and increased lipogenic differentiation are one of the major causes of osteoporosis [8, 9]. BMSCs are the only way to renew bone tissue in the body, so regulating the osteogenic differentiation of BMSCs will help in the treatment of OP.

Many studies [10, 11] have shown that mechanical stress plays a key role in regulating bone remodeling and bone homeostasis through mechanical signal transduction pathways. The stress-strain effect first causes changes in the cytoskeletal structure of the cell and subsequently activates a variety of cell biological processes within the osteoblast, such as cell metabolism, gene activation, and secretion of cytokines. The differentiation of BMSCs is under genetic regulation and is also influenced by environmental factors. A large number of scholars [12, 13] have conducted a variety of in vivo and in vitro mechanical stress stimulation experiments on mesenchymal stem cells and found that various biological characteristics of mesenchymal stem cells have changed under mechanical action. miRNAs are endogenous noncoding RNAs that regulate the expression of target genes mainly at the transcriptional or posttranscriptional level and play important roles in a variety of life events. Recent studies have shown that miRNAs are involved in the regulation of MSC proliferation, lipogenesis, and osteogenic differentiation or apoptosis and play an important role in the fate determination of MSCs [14, 15]. It has been reported [16] that miR-144-3p may be involved in the regulation of osteogenic differentiation and proliferation process of mouse MSCs. However, the mechanism of miR-144-3p action on osteogenic differentiation, especially in the molecular regulation of the effect of tension on osteogenic differentiation, is unclear and still needs further study. Phosphatase and tensin homolog deleted on chromosome ten (PTEN) is a popular oncogene that has been studied in recent years and has a close relationship with tumorigenesis. Recent studies have found that it also plays an important regulatory role in the osteogenic differentiation of MSCs [17, 18]. This study focuses on the role of miR-144-3p in MSC proliferation, apoptosis, and osteogenic differentiation under tension and its possible mechanisms.

2. Materials and Methods

2.1. Experimental Materials

2.1.1. Main Reagents. The following reagents were used: Modified Eagle Medium (MEM), whole medium (HyClone, USA); double antibodies mono-anti-penicillin mix, fetal bovine serum (FBS) (Gibco, USA), 0.25% trypsin–0.02% EDTA solution (Invitrogen, USA); bone induction medium, PBS buffer, alizarin red (Sigma, USA); miR-144-3p mimic and miR-144-3p mimic-NC, si-PTEN, and si-NC (Guangzhou RiboBio Co., Ltd. China); bicinchoninic acid (BCA) protein quantification kit, western blot primary antibody dilution, ALP staining kit, western and IP cell lysis solution (Shanghai Beyotime Company, China); sodium dodecyl sulfate, glycine (Solarbio); anti-GAPDH (Affinity Biotech); anti-PTEN, anti-cyclin, anti-CDK, anti-BAX, anti-BCL-2 (Santa Cruz), PVDF membrane, BSA solution, Trizol extraction kit (Takara, Dalian); and transfection kit (Invitrogen, USA).

2.1.2. Main Instruments. The following instruments were used: HERAcell CO2 thermostatic cell incubator (Heraeus, Germany); orthomorphic microscope, fluorescent inverted microscope (Nikon Corporation); real-time quantitative PCR amplification instrument (Roche, Switzerland); western blot electrophoresis kit (Beijing Liuyi Instrument Plant, China); desktop high speed freezing centrifuge (Thermo Inc.); and Flexercell in vitro cell mechanics loading device (Flexcell, Inc., USA).

2.1.3. Cell Lines. Rat BMSCs were purchased from the Shanghai Cell Bank, Chinese Academy of Sciences, China. After digestion in a constant temperature shaker at 37°C and 200 r/min for 1 h, the precipitate was filtered through a 70 μm cell strainer, collected after centrifugation, and resuspended using α-MEM containing 20% FBS and 1% double antibody. The suspensions were transferred to 60 mm cell culture dishes and incubated at 37°C in a 5% CO2 cell culture chamber. The 3rd to 6th generation passaged cells were taken for subsequent experiments.

2.2. Experimental Methods

2.2.1. Cell Grouping and Transfection. miR-144-3p mimics (miR-144-3p mimic group), negative controls (mimic-NC group), PTEN interferers (si-PTEN group), and interfering controls (si-NC group) were transfected with BMSCs, and a separate MSC group (without detrusor stimulation) and a detrusor MSC group (tension group) were set up. The miR-144-3p mimics, negative control, PTEN small interfering RNA, and interfering tension MSC were transfected into the

BMSC lines according to the instructions of the transfection kit. The cells were transfected using liposomes when the cell fusion reached 70%–80%, and after 6 h, they were switched to osteogenic induction medium for further culture for subsequent assay experiments.

2.2.2. Application of Tensile Force to Cells. BMSCs from each group were digested with 0.25% trypsin solution and inoculated with 6 flexible wells of silica gel force plates at $l \times 10^5\ cm^{-2}$. After the above operation, the cells were incubated for 48 h. When 80% to 90% of the cells fused, a tensile force was applied at a frequency of 1 Hz and a deformation rate of 18% for 24 h using a Flexercell in vitro cell mechanics loading device.

2.2.3. Alkaline Phosphatase (ALP) Staining. After each group of cells was inoculated in 12-well plates at 5 × 104/well, the osteogenic induction solution was continued for 3 d. (1) The medium was carefully aspirated with a gun tip; PBS was gently added to each well using a barrel, washed twice; and then PBS was carefully aspirated. (2) The cells were fixed with 4% paraformaldehyde and washed twice with PBS after 15 min. (3) 1.5 mL of prepared ALP staining solution was added to each well. (4) The cells were left for 30 min at room temperature and protected from light to allow sufficient staining. (5) After 30 min, the staining solution was removed, and the cells were washed twice with PBS (pH 4.2) and air-dried. (5) They were observed under the microscope and photographed.

2.2.4. Alizarin Red Staining. BMSCs were inoculated in 24-well plates at a density of about 30%, walled and treated with the corresponding factors, and incubated for 18 or 21 days before alizarin red staining. (1) The medium was carefully aspirated with a gun tip; PBS was gently added to each well using a barrel, washed twice; and then PBS was carefully aspirated. (2) 0.5% glutaraldehyde (0.2 ml/well) was added, and after 10 min, the staining solution was washed twice with PBS (pH 4.2). (3) 0.4% alizarin red staining solution (0.2 ml/well) was added, carefully aspirated after 20 min, put into water, and gently washed and dried. (4) Cells were scanned and photographed.

2.2.5. Real-Time Quantitative Reverse Transcription PCR (qRT-PCR) Analysis. Total RNA was extracted by Trizol method and reverse-transcribed to complementary DNA (cDNA), and RT-PCR was performed on the machine according to the reagent instructions. The internal reference was glyceraldehyde phosphate dehydrogenase (GAPDH), every 3 replicate wells were used as one sample to derive the Ct value of each group, and the relative expression of mRNA in each group was calculated by the $2^{(-\triangle\triangle Ct)}$ method. The primer sequences are shown in Table 1.

2.2.6. Cell Counting Kit-8 (CCK-8) Colorimetric Method. After the end of the enrichment, incubation of each group of cells was continued for 48 h. (1) 10 μL CCK-8 solution was added, and the cells were incubated for 1 h. (2) After the end of the incubation, absorbance values were measured using an enzyme marker.

Table 1: Main target gene sequences.

Gene		Primer sequences
miR-144-3p	Upstream	5′-CTCTATCCAAAACAGGCCGC-3′
	Downstream	5′-T T TACATCCCCAAGGCCCAT-3′
PTEN	Upstream	5'--TCAGACTTTTGTAATTTGTGTATG-3′
	Downstream	5′-ACAGGCTCCCAGACATGACA-3′
GAPDH	Upstream	5′-CAGCGACACCCACTCCTC-3′
	Downstream	5′-TGAGGATCCACCACCCTGT-3′

2.2.7. Western Blot (WB) Method. The transfected cells in each group were collected, and an appropriate amount of RIPA lysis buffer was used to extract the total protein in the cells. After quantification by BCA method, the sample volume was calculated, electrophoresed, transferred to a membrane, and then blocked in 5% nonfat milk powder solution for 2 h at room temperature. The membrane was washed with PBS-T, and the primary antibody (1 : 500) was added and stored in a refrigerator at 4°C overnight. After washing the membrane, secondary antibody (1 : 5000) was added, and cells were incubated at room temperature for 2 h. After adding developer solution and avoiding light development, the bands were analyzed by Image J software with GAPDH as internal reference after exposure.

2.2.8. Dual Luciferase Reporter Gene Assay. The 3′ UTR of PTEN containing miR-365-3p binding site was amplified by PCR technique, and the 3′ UTR wild-type luciferase vector of PTEN (WT-PTEN) and mutant luciferase vector (MUT-PTEN) were constructed. The log phase chondrocytes were inoculated in 6-well plates at 5.0×10^5 cells/well and incubated for 24 h. The medium was discarded and co-transfected with Lipofectamine™ 2000 kit with WT-PTEN and miR-144-3p mimic, WT-PTEN and mimic-NC, MUT-PTEN and miR-144-3p mimic, WT-PTEN and mimic-NC. After 12 h of transfection, the cells were replaced with fresh medium and incubated for another 24 h. The cells were collected and lysed, the lysate was centrifuged at 3,500 r/min for 5 min, and the supernatant was used to detect luciferase activity

3. Statistical Analysis

Three independent replicate experiments were performed for each group to obtain results. qRT-PCR results were plotted using GraphPad Prism 8 software, WB results were processed using ImageJ software, and statistical analysis was performed using SPSS22 software. The results were analyzed by independent sample *t*-test or nonparametric test according to the chi-square of the results, and the differences were statistically significant at $p < 0.05$

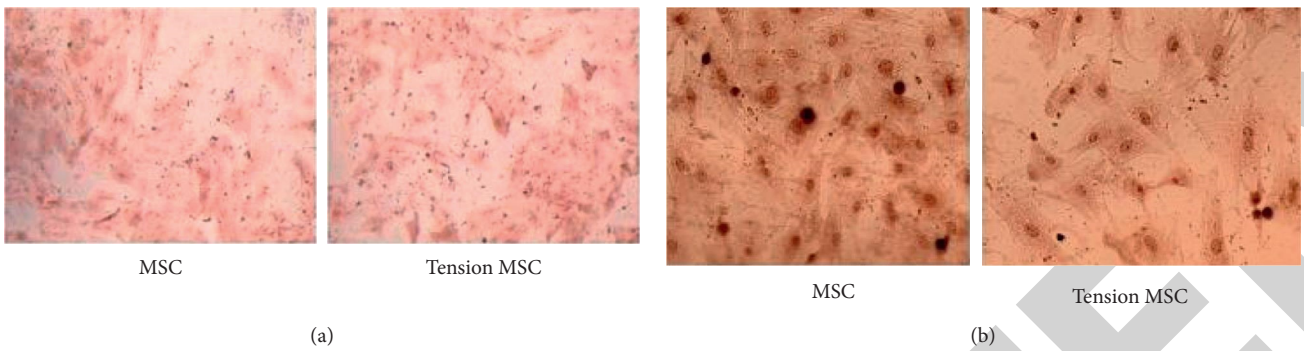

Figure 1: Figure (a) shows the staining expression of ALP in the two groups of MSCs. Figure (b) shows the alizarin red staining of two groups of MSCs.

4. Result

4.1. Comparison of the Bone Differentiation Capacity of the MSC and Tension MSC Groups. Osteogenic induction culture was followed by ALP staining with alizarin red staining. The ALP staining results (Figures 1(a)) showed significantly lower expression in the tension MSC group compared to the MSC group, suggesting that the loaded detrusor inhibited the ability of MSC cells to differentiate towards mature osteoblasts. The alizarin red staining results (Figures 1(b)) showed scattered calcium nodule formation in the MSC group, with alizarin red staining in the form of red nodules with a more uniform color distribution and fewer, smaller, and lighter staining mineralized nodules in the tension MSC group compared to the MSC group. This suggests that BMSCs have the potential for osteogenic differentiation and that pathological distraction inhibits their ability to do so (Figure 1).

4.2. Changes in miR-144-3p and PTEN Expression during Osteogenic Differentiation. qRT-PCR was used to detect the expression levels of miR-144-3p (Figure 2(a)) and PTEN mRNA (Figure 2(b)) in the tension MSC group and the MSC group. The assay showed markedly lower expression of miR-144-3p and markedly higher mRNA expression of PTEN in cells of the tension MSC group than those in the MSC group ($p < 0.05$) (Figure 2).

4.3. There Is a Targeting Relationship between miR-144-3p and PTEN. Bioinformatics sites were used for predicting target genes for mature miR-144-3p sequences, and the results suggested the presence of binding sites for miR-144-3p to PTEN (Figure 3(a)). To further confirm the direct binding action of miR-144-3p to PTEN, PTEN wild-type and mutant fluorescent reporter vectors were constructed, and MSC cells were transfected. Dual luciferase reporter gene assays further confirmed PTEN as a direct target of miR-144-3p (Figure 3(b)). In addition, WB analysis showed that the mixture of miR-144-3p overexpression group had clearly lower concentration of PTEN protein compared to the other two groups (Figure 3(c)) (Figure 3).

4.4. Expression of miR-144-3p and PTEN in BMSCs under Posttransfection Drafting Force. The expression of miR-144-3p, PTEN mRNA, and protein in each group of BMSCs under posttransfection traction was detected by qRT-PCR assay and WB method. Analysis showed that miR-144-3p overexpression group had substantially higher miR-144-3p content compared to the other two groups, while PTEN mRNA and protein content were substantially lower ($p < 0.05$) (Figures 4(a)–4(c)). Compared with the tension MSC and si-NC group, the si-PTEN group had substantially greater concentrations of miR-144-3p and substantially less mRNA and protein content of PTEN ($p < 0.05$) (Figures 4(c) and 4(d)) (Figure 4).

4.5. Effect of Upregulation of miR-144-3p on BMSCs Proliferation, Cycling, Apoptosis, and Osteogenic Differentiation under Tension. The exposure of cyclin, CDK, BCL-2, BAX, and other cycle and apoptosis related proteins in BMSCs under traction after overexpression of miR-144-3p and the value-added rate of BMSCs was measured by WB and CCK-8 assays, respectively. The analysis showed that the level of cyclin, CDK, and BCL-2 protein production was much higher in the miR-144-3p mimic group compared to the other two groups, while the level of BAX protein production was slightly lower ($p < 0.05$). Osteogenic induction culture was followed by ALP staining with alizarin red staining, and the results showed that the ALP activity was obviously more in the miR-144-3p mimic group compared to the other two groups. In addition, the alizarin staining showed scattered calcium nodule formation in the form of red nodules, with darker cells and more uniform color distribution (Figures 5(a)a–d5(a), 5(d)).

4. 6. Effect of PTEN Inhibition on BMSCs Proliferation, Cycling, Apoptosis, and Osteogenic Differentiation.

The exposure of cyclin, CDK, BCL-2, BAX, and other cycle and apoptosis related proteins in BMSCs under traction after inhibition of PTEN and the value-added rate of BMSCs was measured by WB and CCK-8 assays, respectively. The analysis showed that the level of cyclin, CDK, and BCL-2 protein production was much higher in the si-PTEN group compared to the other two groups, while the level of BAX protein production was slightly lower ($p < 0.05$). Osteogenic induction culture was followed by ALP staining with alizarin red staining, and the results showed that the ALP activity was obviously more in the si-PTEN group

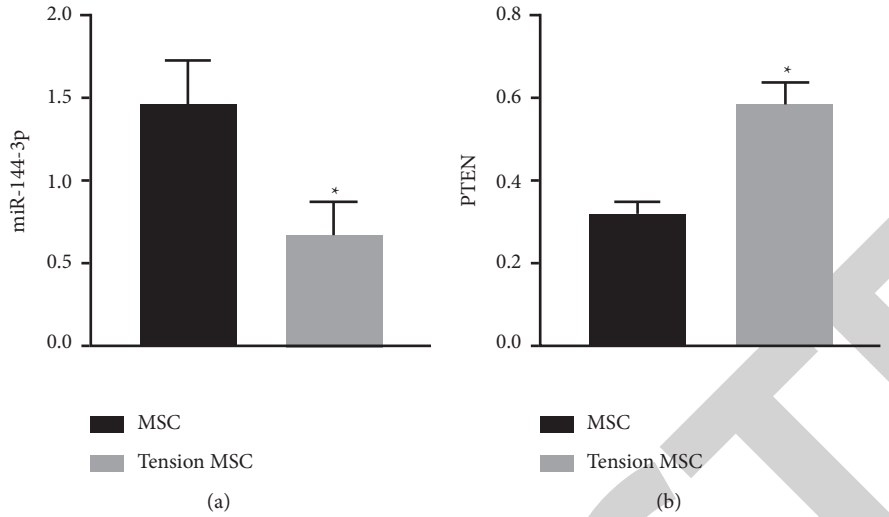

Figure 2: Changes in miR-144-3p and PTEN expression during osteogenic differentiation (Mean ± SD, $n = 1$). (a) The change of miR-144-3p expression during osteogenic differentiation. (b) The change of PTEN mRNA expression during osteogenic differentiation. * indicates $p < 0.05$ compared with MSC group.

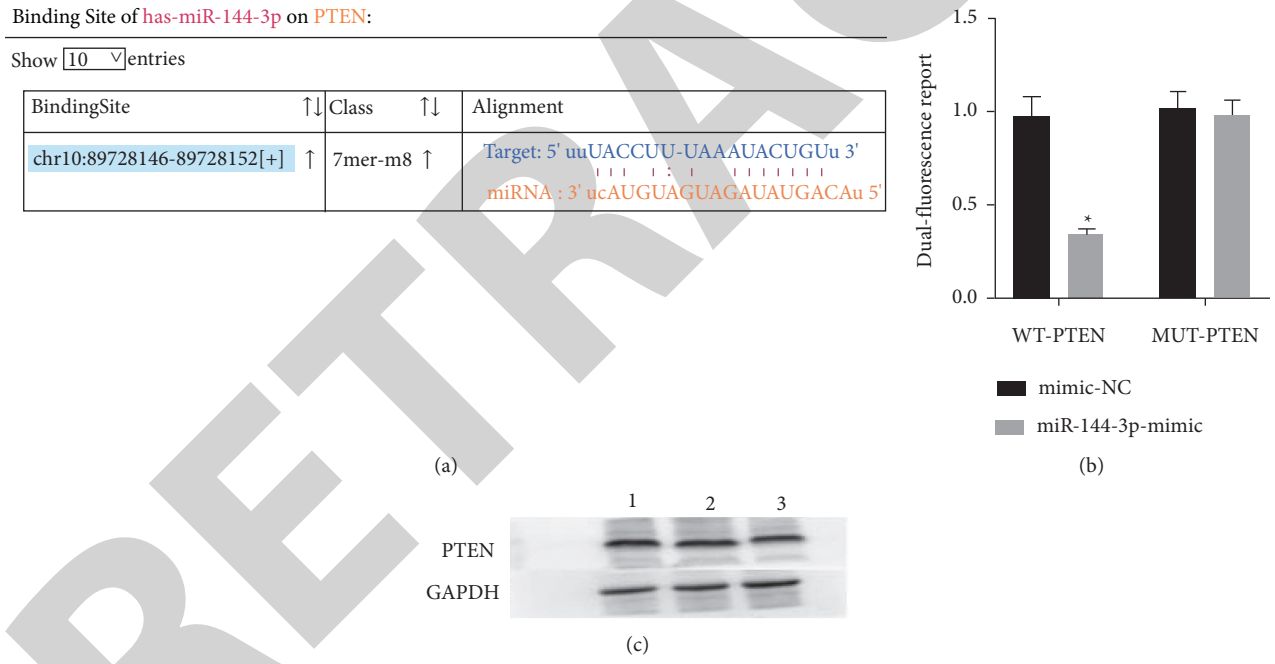

Figure 3: Targeting relationship between miR-144-3p and PTEN (Mean ± SD, $n = 10$). (a) The bioinformatics website predicting the target gene of miR-144-3p sequence. (b) The dual luciferase reporter gene assay confirming PTEN as a direct target of miR-144-3p. (c) The effect of overexpression of miR-144-3p on the protein expression level of PTEN; in (c) 1 indicates the control group, 2 indicates the mimic-NC group, and 3 indicates the miR-144-3p mimic group. * indicates $p < 0.05$ compared with the mimic-NC group.

compared to the other two groups. In addition, the alizarin red staining showed scattered calcium nodule formation in the form of red nodules, with darker cells and more uniform color distribution (Figures 6(a)~6(d)).

5. Discussion

The microstructure of bone consists of mineralized extracellular matrix and bone remodeling units, including osteocytes, osteoblasts, and osteoclasts [19]. The osteoblasts differentiate to form new bone, and the osteoclasts digest and resorb old bone, keeping the normal adult bone metabolism in a dynamic equilibrium, which, once disrupted, is prone to insufficient bone formation or excessive bone resorption, resulting in reduced bone mass and osteoporosis [20,21]. In the present experiment, we found that PTEN expression levels were increased in the tension MSC group by applying pathological traction stimulation to

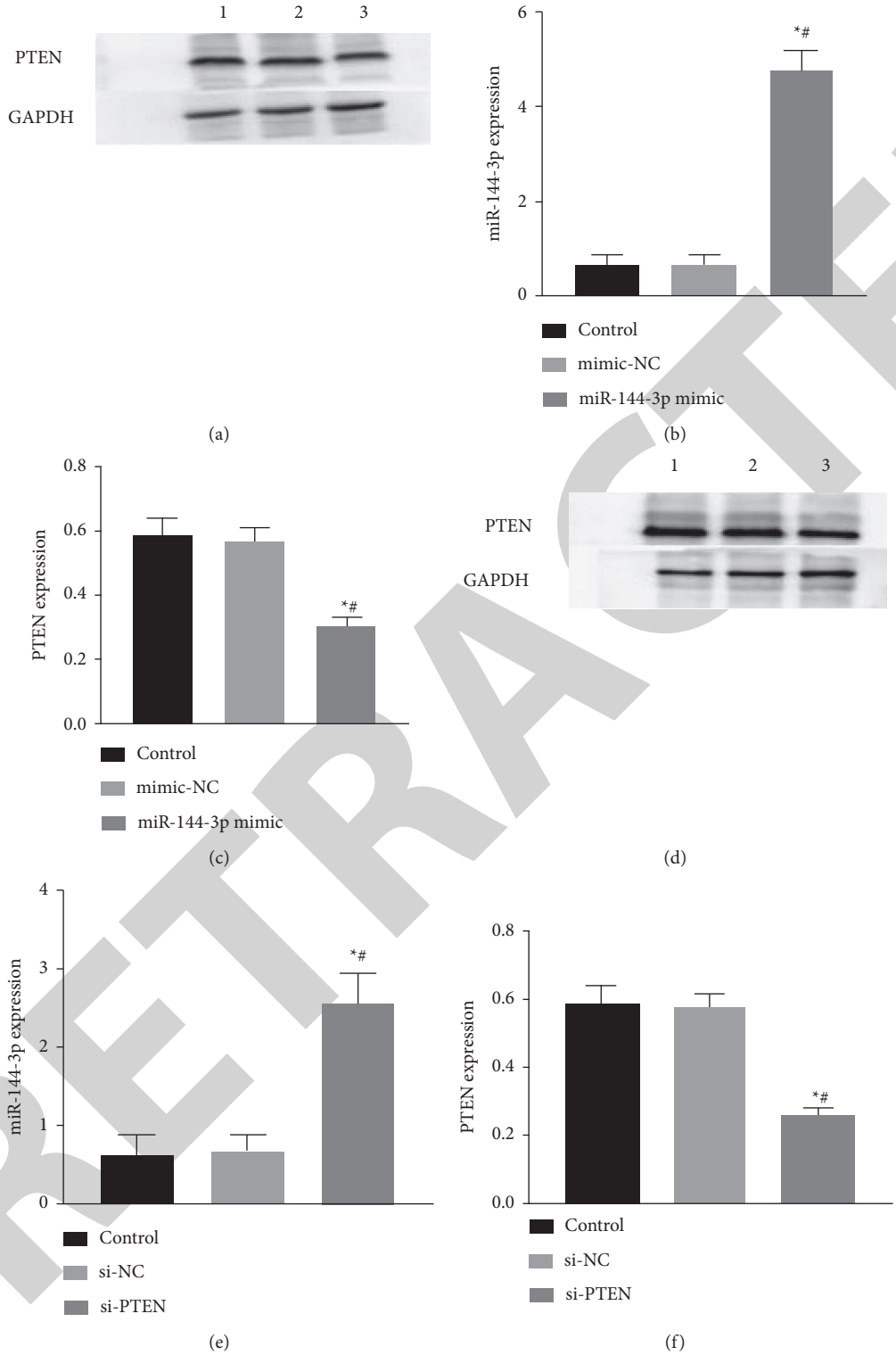

Figure 4: Expression of miR-144-3p and PTEN in BMSCs under posttransfection drafting force (Mean ± SD, $n = 10$). (a–c) The effects of miR-144-3p overexpression on PTEN protein, miR-144-3p, and PTEN mRNA expression levels, respectively, where 1 in Figure A is the control group, 2 is the mimic-NC group, and 3 is the miR-144-3p mimic group. (e–f) The effects of PTEN inhibition on PTEN protein, miR-144-3p, and PTEN mRNA expression levels, respectively. In (d), 1 represents the control group, 2 represents the si-NC group, and 3 represents the si-PTEN group. * indicates $p < 0.05$ compared with the control group; # indicates $p < 0.05$ compared with the si-NC group.

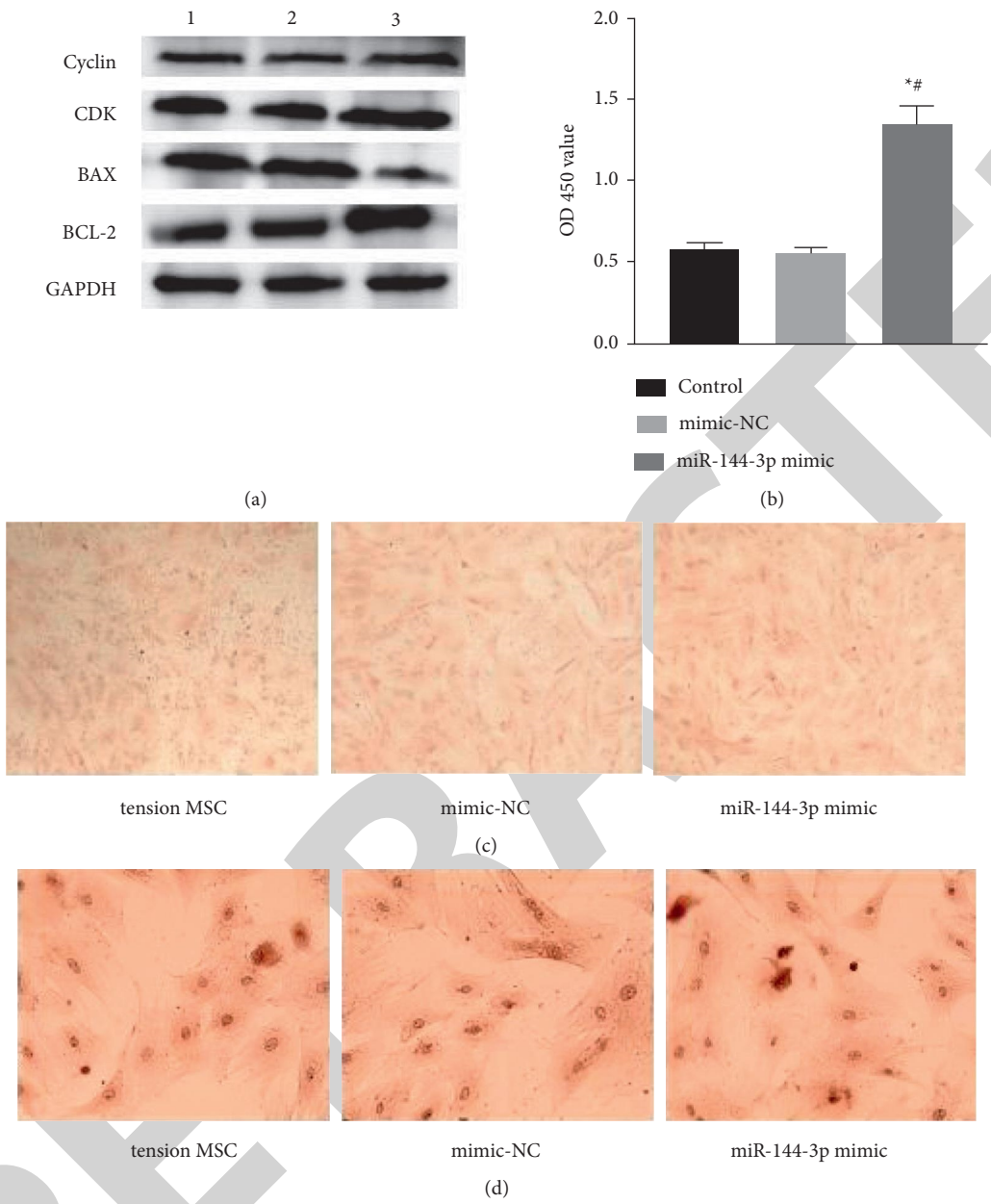

Figure 5: Effect of up-regulation of miR-144-3p on BMSCs proliferation, cycling, apoptosis and osteogenic differentiation under tension (Mean ± SD, $n = 10$) Figure (a) shows the effect of miR-144-3p overexpression on the expression levels of cyclin, CDK, BCL-2, and BAX proteins. Figure (b) shows the effect of overexpression of miR-144-3p on the proliferation of MSCs under retraction force. Figure (c) shows the staining expression of ALP in MSCs under traction after overexpression of miR-144-3p. Figure (d) shows the staining of alizarin in MSCs under tension after overexpression of miR-144-3p. In Figure A, 1 indicate control group, 2 indicates mimic-NC group, and 3 indicates miR-144-3p mimic group. * indicates comparison with control group, $p < 0.05$; # indicates comparison with mimic-NC group, $p < 0.05$.

BMSCs and that PTEN overexpression significantly impaired the mineralization capacity and ALP activity of BMSCs. Software prediction and dual luciferase reporter gene detection revealed that miR-144-3p was capable of target-binding PTEN gene sequences. In addition, this study found that the expression level of miR-144-3p was significantly decreased and PTEN expression level was significantly increased in the cells of the MSC group under tension. Overexpression of miR-144-3p or inhibition of PTEN expression could inhibit apoptosis, promote BMSC proliferation, and enhance BMSC mineralization capacity and ALP activity, which could reverse the inhibitory effect of PTEN on osteogenic differentiation of BMSCs under tension.

MiRNA is a small noncoding RNA of approximately 19–25 nucleotides in length and is highly conserved. It is involved in the early development and growth, proliferation, differentiation, division, and apoptosis of cells in various organisms; is involved in the regulation of important genes, humoral regulation, tissue reconstruction, endocrine

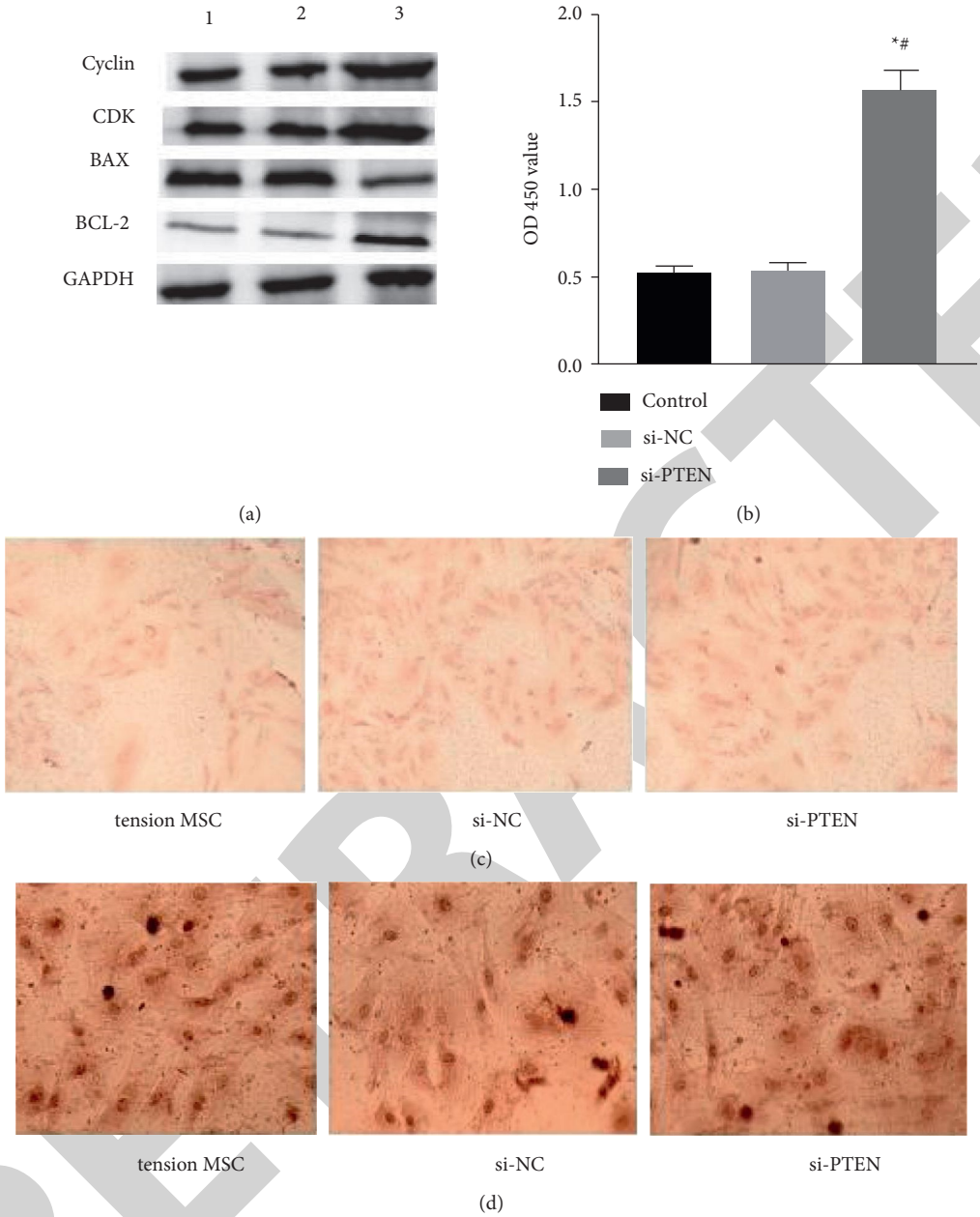

Figure 6: Effect of PTEN inhibition on BMSCs proliferation, cycling, apoptosis and osteogenic differentiation (Mean ± SD, $n = 10$)Figure (a) shows the effect of inhibiting PTEN expression on the expression levels of cyclin, CDK, BCL-2, and BAX proteins. Figure (b) shows the effect of inhibiting PTEN expression on the proliferation of MSCs under traction force. Figure (c) shows the staining expression of ALP in MSCs under traction force after over inhibition of PTEN expression. Figure (d) shows the staining of alizarin in MSCs under traction force after inhibition of PTEN expression. In Figure A, 1 indicates control group, 2 indicates si-NC group, and 3 indicates si-PTEN group. * indicates comparison with control group, $p < 0.05$; # indicates comparison with si-NC group, $p < 0.05$.

regulation; and has important implications for the onset, development, and regression of disease [22–24]. MiRNAs have been extensively studied in osteoblast and osteoclast growth and differentiation. For example, Zeng et al. [25] found that during osteogenic differentiation of MC3T3 cells, miR-29b could promote osteogenesis by acting on the target genes HDAC4, TGF-β3, and ACVR2A, which inhibit osteogenesis, and blocking their expression through degradation. He et al. [26] found that miR-20b promoted osteogenic differentiation by binding to its target gene PPARγ and reducing PPARγ expression, thereby increasing the transcription of the core osteogenic transcription factor Runx2. In this study, we found that the expression of miR-144-3p and its osteogenic differentiation ability were significantly decreased in cells from the tension MSC group compared to the MSC group. To clarify the effect of miR-144-3p on the proliferation, apoptosis, and osteogenic differentiation ability of rat BMSCs under distraction force, we

transfected miR-144-3p mimics into cells to alter the expression level of miR-144-3p in the cells and then applied distraction force to each group of cells. After upregulating the expression of miR-144-3p and loading with pathological distraction force, ALP activity, calcification ability, cyclin, CDK, and BCL-2 protein expression levels were enhanced in the miR-144-3p mimic group, and BAX protein expression level was decreased. This suggests that miR-144-3p plays a regulatory role in the proliferation, apoptosis, and osteogenic differentiation of rat BMSCs under distraction force.

PTEN is an oncogene with phosphatase activity that has been identified and is also closely related to the differentiation of MSC, especially in terms of osteogenesis, providing new ideas for the treatment of OP, fracture healing, osteosclerosis, and other bone-related diseases [27–29]. It was shown that miR-19b could enhance the osteogenic differentiation of BMSCs by regulating PTEN-mediated AKT/GSK3β pathway expression; miR-140-3p could regulate the growth and differentiation of osteoblasts and osteoclasts by targeting PTEN and activating the PTEN/PI3K/AKT signaling pathway [30,31]. This study confirmed PTEN as a direct target of miR-144-3p by bioinformatics prediction display and dual luciferase reporter gene assay. Inhibition of PTEN expression increased ALP activity and cyclin, CDK, and BCL-2 protein expression levels in BMSCs; decreased BAX protein expression levels; and enhanced cellular calcification. However, the overexpression of miR-144-3p reduced the mRNA and protein expression levels of PTEN and also reversed the inhibitory effect of PTEN on osteogenic differentiation. It is evident that PTEN is also essential in the proliferation, apoptosis, and osteogenic differentiation of BMSCs. miR-144-3p may regulate osteogenic differentiation of BMSCs under tension by targeting PTEN.

In summary, overexpression of miR-144-3p inhibited the apoptosis of BMSCs under pathological tension and promoted their proliferation and osteogenic differentiation, and its mechanism of action may be related to the targeted inhibition of PTEN. miR-144-3p/PTEN may provide a potential target for the prevention and treatment of osteoporosis.

Data Availability

The data can be obtained from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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Retraction

Retracted: Observation on the Efficacy of Moxibustion Combined with Ear Acupoint Pressing Beans in Treating Patients with Phlegm Stasis Syndrome Vertigo

Emergency Medicine International

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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Research Article

Observation on the Efficacy of Moxibustion Combined with Ear Acupoint Pressing Beans in Treating Patients with Phlegm Stasis Syndrome Vertigo

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Objective. The aim of this study is to investigate the efficacy of moxibustion combined with an ear acupoint pressing bean in the treatment of patients with phlegm stasis syndrome vertigo. *Methods*. 60 patients with vertigo identified as phlegm stasis syndrome who were hospitalized in our department from May 2020 to May 2021 were selected and divided into a control group and a treatment group of 30 cases each according to the random number method. The control group was treated with conventional treatment and care, and the treatment group was treated with moxibustion combined with ear acupressing beans on top of the conventional group. The treatment effects, the dizziness disorder inventory (DHI), Pittsburgh sleep quality index (PSQI), Hamilton anxiety score (HAMA), TCM symptom score, and blood flow parameters (left vertebral artery flow velocity (LVA), right vertebral artery flow velocity (RVA), and basilar artery flow velocity (BA)) of the two groups were compared with each other during and after the treatment. *Results*. After implementation, the treatment efficiency of the treatment group was higher than that of the control group, and the treatment group had lower PSQI, HAMA, and DHI scores as well as TCM symptom scores such as vertigo, head heavy as a wrap, chest tightness, and nausea and vomiting than the control group ($P < 0.05$). In addition, LVA, RVA, and BA were all higher in the treatment group than in the control group after treatment ($P < 0.05$). *Conclusion*. Moxibustion combined with ear acupoint pressing bean treatment can clearly improve patients' sleep quality, psychological state, relieve patients' various symptoms caused by vertigo, improve blood flow parameters, and have better efficacy in the treatment of phlegm stasis syndrome vertigo.

1. Background

Vertigo is a clinical symptom of many diseases in modern medicine and is a group of very common syndromes that can be caused by eye, proprioceptive or vestibular system diseases, cardiovascular diseases, cerebrovascular diseases, anemia, poisoning, endocrine diseases, and psychological diseases. [1]. Patients with vertigo as the main manifestation, also with nausea and vomiting, with or without tinnitus, troubled by the symptoms of the disease, patients may also appear with anxiety and other adverse psychological, such serious cases can affect the quality of life of patients and bring different degrees of impact on the patient's family. [2, 3]. Current data show that the onset of vertigo has a tendency to become progressively younger, which poses a new challenge to society's medical care and makes the search for better treatment inevitable [4].

The current principles of treatment for vertigo are blood pressure control, vasodilatation, improvement of cerebral blood circulation, and acute countermeasures, but the exact efficacy has not been confirmed and there are some side effects [5, 6]. Traditional Chinese medicine (TCM) is very

different from modern medicine in the treatment of vertigo; it is not limited to the localization of the disease but emphasizes the overall concept, the identification, and treatment to improve the patient's symptoms. According to the different pathogenesis of each patient to identify and treat and strive to treat both the symptoms and the root cause, a large number of clinical practice have confirmed that traditional medicine has significant efficacy and strong safety for this disease [7, 8]. Through reviewing the literature [4, 6], we generally conclude that in treating patients with vertigo obstructed by phlegm and turbidity, we often emphasize the use of the method of warming and toning. Some studies point out that phlegm and turbidity are mainly formed due to the deficiency of yang in the spleen and stomach and the malfunction of healthy transportation, and the pathogenesis of this type of vertigo is the deficiency of yang and yin, and the original deficiency and the symptoms are real, while phlegm and beverages are yin evils, which condense when they get cold and dissolve when they get warm. Moxibustion [9] and ear acupressing bean therapy [10] are the treasures of Chinese medicine, and research on moxibustion and ear acupressing bean therapy for vertigo has been in constant development in recent years. Studies [11, 12] have shown that stimulating the corresponding response points and acupuncture points in the auricle can help regulate the qi and blood of the internal organs, balance yin and yang, unblock the meridians, and tonify the kidneys and strengthen the spleen, thus achieving a calming and tranquilizing effect and stopping dizziness. In addition, the warmth of the moxibustion fire can be used to stimulate the body, eliminating stagnation, raising the Yang and Qi, and warming the meridians and invigorating the blood, thus promoting the glory of Qi and blood and nourishing the brain, which can effectively suppress vertigo. Since May 2020, our department has applied moxa moxibustion at Baihui and Fenglong acupoints combined with auricular pressure bean therapy to treat phlegm stasis syndrome vertigo and achieved better clinical results, which are reported as follows.

2. Information and Methods

2.1. General Information. 60 patients with phlegm stasis syndrome vertigo who were hospitalized in our department from May 2020 to May 2021 were selected. Patients who met the inclusion criteria were divided into treatment and control groups according to the order of hospitalization visits using the random number table method, with 30 cases in each group. The differences in gender, age, disease duration, co-morbidities, history of alcohol consumption, and smoking history between the two groups were statistically not significant ($P > 0.05$) and were comparable (Table 1).

2.2. Diagnostic Criteria. Diagnostic criteria in Western medicine were as follows [13]: met the relevant diagnostic criteria of the Diagnosis and Treatment of Vertigo and may have clinical symptoms such as headache, tinnitus, nausea, vomiting, and unsteadiness in standing to varying degrees.

Diagnostic criteria in Chinese medicine developed through a review of the literature [14] were as follows: (1) Primary symptoms: heavy head and dizziness, like sitting in a boat, and spinning vision. (2) Secondary symptoms: chest fullness and desire for nausea, vomiting of phlegm, tinnitus and a feeling of stuffiness, and swelling in the ears. (3) Signs: pale and fat tongue, tooth marks, white and greasy coating, and slippery pulse. The diagnosis could be made when the main symptoms were fully present and the number of secondary symptoms were ≥2.

2.3. Inclusion Criteria for Cases. (1) Those who met the Western medical diagnostic criteria for vertigo; (2) those who met the Chinese medical diagnostic and classification criteria for vertigo; (3) those who were 18–78 years old; and (4) those who signed the informed consent form and were willing to cooperate with all examinations.

2.4. Exclusion Criteria. (1) those with serious organ and hematological disorders; (2) those with psychiatric disorders who were unable to cooperate with the treatment; (3) those who had withdrawn from the treatment; (4) those allergic to auricular paste, alcohol, and moxibustion; (5) those with local skin breakdown; (6) those with a previous severe anxiety disorder; (7) those with a severe disease and frequent episodes of vertigo (>5 times/day); and (8) women during pregnancy or breastfeeding.

2.5. Treatment. Control group: Patients with other underlying diseases should be given betahistine hydrochloride injection 5 ml (Shijiazhuang Four Pharmaceuticals Co. Ltd., National medicine permission number H20058320) + 9% sodium chloride injection 250 ml (Sichuan Keren Pharmaceutical Co. Ltd., National medicine permission number H20056626) intravenous drip once a day on the basis of standard treatment. Environmental care: kept the ward quiet, softly lit, and adjusted to the appropriate temperature and humidity. Psychological care: instructed patients to keep their emotions happy, communicate more with patients in the same ward, encourage each other, and increase their confidence in fighting the disease, and at the same time, popularized the patients' knowledge of care related to vertigo. Dietary guidance: Patients should be instructed to eat more light and damp products, such as winter melon, corn, and radish. Preventive care: safety measures such as protective barriers should be done in advance and antislip signs should be placed in the corridors.

Treatment group: Moxa moxibustion at Baihui and Fenglong acupoints combined with ear acupressing beans was used on the basis of conventional treatment and care.

Ear acupuncture point pressure bean operation steps: the ear points of Shen Men, Heart, Neier, Frontal, Occipital, Subcortical, Lung, and Kidney were selected. The patient was asked to sit upright and the operator used a probe stick to press on the corresponding points in the ear to find the corresponding points required for the intervention. After finding the points, the auricle was routinely disinfected with 75% alcohol

Table 1: Comparison of general information between the two groups at admission [($\overline{x} \pm s$); n, %].

Items		Control group ($n = 30$)	Treatment group ($n = 30$)	t or χ^2 value	P value
Gender	Male	9 (30.00)	10 (33.33)	0.077	0.781
	Female	21 (70.00)	20 (46.67)		
Age (years)		59.13 ± 8.89	59.23 ± 9.70	0.042	0.967
Duration of disease (months)		8.14 ± 3.25	7.87 ± 3.06	0.331	0.742
Comorbid disease	Hypertension	16 (53.33)	13 (43.33)	0.601	0.438
	Diabetes mellitus	9 (30.00)	8 (26.67)	0.082	0.774
	Hyperlipidemia	13 (43.33)	15 (50.00)	0.268	0.605
	Coronary heart disease	8 (26.67)	10 (33.33)	0.318	0.573
Alcohol consumption	Yes	18 (60.00)	14 (46.67)	1.071	0.301
	No	12 (40.00)	16 (53.33)		
Smoking	Yes	13 (43.33)	16 (53.33)	0.601	0.438
	No	17 (56.67)	14 (46.67)		

and left to dry, the operator fixed the patient's auricle with one hand and used a clip with the other hand to apply pressure to the auricular acupressure points. Both auricular points needed to be pressed with beans. After applying pressure, the points were massaged with the finger-to-finger kneading method of the index finger and thumb, with an appropriate amount of force, as strong as the patient could tolerate. Patients were instructed to press the ear seeds 7–8 times by themselves on weekdays for 3–5 min/time, to the extent that the patient felt heat, swelling, and slight pain. The ear seeds were replaced every 3 days for 2 weeks as a course of treatment, with timely subsidies in between if they fall out.

Moxa stick moxibustion treatment operation specific method: the patients were instructed to take a supine position and identify the Baihui and Fenglong acupuncture points for marking the fixed points and the moxa strips are fine moxa leaves (Hunan Ranrun Tang Chinese Medicine Co., Ltd.), provided by the Chinese Medicine Department of the First Affiliated Hospital of Hunan University of Traditional Chinese Medicine. Moxibustion boxes were made of a special box-shaped wooden moxibustion tool, containing moxa strips fixed in one area for moxibustion, with a piece of iron window screen underneath the box, about 3–4 cm from the bottom edge, and a cover that could be removed at any time, with a single hole made in the cover for the size of the moxa strips to be placed. When applying moxibustion, the moxa strips were lit and placed in the holes on the lid of the moxibustion box, about 4 cm from the bottom, placing the box on top of the area to be moxibutated, adjusting the distance between the moxa strips and the skin during the treatment depending on the temperature. Moxibustion was administered once a day, 40 minutes each time, and 2 weeks was a course of treatment. After treatment, patients were instructed to keep warm, take shelter from the wind, and avoid bathing within 6 hours.

2.6. Observation Indicators. Clinical efficacy criteria [15]were as follows: Based on the change of points before and after treatment of the primary and secondary symptoms of TCM, the efficacy index N was calculated as follows with reference to the nimodipine method. Efficacy index N = (pre-treatment-post-treatment-score)/pre-treatment score × 100%. Cure: vertigo and complicating symptoms and signs disappeared, $N \geq 90\%$, and all indicators of blood flow parameters were basically normal; Effective: vertigo disappeared, most of the complicating symptoms and signs were reduced, $30\% \leq N \leq 89\%$, and the results of all indicators of blood flow parameters were improved.; Ineffective: no significant improvement or worsening of vertigo and complicating symptoms and signs, $N \leq 29\%$, no improvement in blood flow parameters. Total effective rate = cure rate + effective rate.

Dizziness impairment inventory (DHI) score: The DHI scale consists of three areas, functional (F), emotional (E), and physical (P). There were 10, 8, and 7 items respectively, totaling 25 items, and the abovementioned questions were answered with "yes", "sometimes", and "no" and recorded with 4, 2, and 0 points. The more severely vertigo affects the patient, the higher the score, and conversely, the less severely vertigo affects the patient, the lower the score.

Hamilton anxiety scores (HAMA) were used to assess patients' psychological status before and after treatment, with greater than 29 for severe anxiety, greater than 21 for significant anxiety, greater than 14 for definitely anxious, greater than 7 for possibly anxious, and less than 7 for no anxiety. The Pittsburgh sleep quality index (PSQI) scores were used to assess the sleep quality of patients before and after treatment. The scale consisted of 19 self-rated and 5 other-rated entries, of which the 19th self-rated entry and the 5 other-rated entries were not involved in scoring. 18 self-rated entries make up a total of 7 components, each of which was scored on a scale of 0~3. The cumulative score of each component was the total PSQI score, which ranged from 0 to 2l, with higher scores indicated poorer sleep quality.

Chinese medicine symptom score: Symptoms such as vertigo, head heavy as if swathed, chest tightness, nausea, and vomiting are given a score of 0, 2, 4, and 6 respectively on a scale from none to severe.

Flow parameters: The left vertebral artery flow velocity (LVA), the right vertebral artery flow velocity (RVA), and the basilar artery flow velocity (BA) were measured via the occipital window using a TD detector model MIL-X2 (DWL, Germany).

2.7. Statistical Methods. SPSS22.0 statistical software was used, and the measurement data were expressed as mean ± standard deviation ($\overline{x} \pm s$), paired t-test or rate was used

for intragroup comparison, nonparametric test was used for intergroup comparison, and χ^2 test or rank data were used for comparison of count data, all of which were considered statistically significant at $P < 0.05$.

3. Results

3.1. Comparison of Patient Outcomes between the 2 Groups. The classification was based on the efficacy assessment criteria. In the control group, the healing, effective, and ineffective rates were 33.30% (10 cases), 40.00% (12 cases), and 26.70% (8 cases), respectively, and in the treatment group, the healing, effective, and ineffective rates were 76.70% (23 cases), 20.00% (6 cases), and 3.30% (1 case), respectively. The total effective rate in the treatment group (96.70%) was higher than that in the control group (73.30%), and the difference was statistically significant ($P < 0.05$), see Figures 1(a) and 1(b).

3.2. Comparison of Anxiety and Sleep Quality between the 2 Groups of Patients at T1 and T2. The differences in HAMA scores and PSQI scores between the control group and the treatment group before treatment (T1) were not statistically significant ($P > 0.05$). After 1 course of treatment (T2), the HAMA scores and PSQI scores of both the control group and the treatment group improved compared to those of T1, with the treatment group showing a better improvement ($P < 0.05$). See Figures 2(a) and 2(b).

3.3. Comparison of DHI Scores at T1 and T2 between the 2 Groups of Patients. There was no statistically significant difference between the control and treatment groups in the functional, emotional, and somatic scores on the DHI scale at T1 ($P > 0.05$). At T2, there was an improvement in the functional, emotional, and physical scores on the DHI scale between the control and treatment groups compared to T1, with the treatment group showing a more favorable improvement ($P < 0.05$). See Figures 3(a)–3(c)

3.4. Chinese Medicine Evidence Score at T1 and T2 between the 2 Groups of Patients. The difference between the control group and the treatment group was not statistically significant ($P > 0.05$) in the scores of vertigo, head heaviness, chest tightness, and nausea and vomiting at T1. At T2, the scores of vertigo, head heavy as if swathed, chest tightness, and nausea and vomiting in the control group and the treatment group improved compared to those of T1, with the treatment group showing better improvement ($P < 0.05$). See Figures 4(a)–4(d)

3.5. Blood Flow Parameters at T1 and T2 between the 2 Groups of Patients. There was no significant difference in the levels of LVA, RVA, BA, and other blood flow parameters between the control group and the treatment group at T1 ($P > 0.05$). At T2, the levels of LVA, RVA, BA, and other blood flow parameters in the control group and the treatment group were improved compared with T1, and the improvement in the treatment group was better ($P < 0.05$). See Figures 5(a)–5(c).

4. Discussion

Vertigo has been developed and discussed in the Chinese medicine for more than 2000 years, and it is believed that wind, fire, phlegm, and deficiency are the main pathological factors of vertigo, which are related to the three organs of liver, spleen, and kidney [16]. In Zhang Zhong Jing's "Treatise on Febrile Diseases," phlegm is considered to be the core cause of vertigo, and Zhu Danxi in "Danxi Xinfa" also proposed that phlegm is the main cause of vertigo, putting forward the theory that "dizziness must be caused by phlegm." In addition, the modern population's poor diet and excessive consumption of sweet and sour foods cause the spleen and stomach to mismanage transportation and produce dampness and phlegm, which obscures the clear yang and leads to dizziness [17]. Therefore, the present study proposes to use the phlegm-disturbance type as the main type of evidence to be observed in the test with strong practical significance. Before treatment in the clinical study, the PSQI, DHI, HAMA score, TCM symptom score, and blood flow parameters of the two groups were statistically analyzed, and the differences were not statistically significant ($P > 0.05$), suggesting comparability. After 1 course of treatment in both groups, the total effective rate, post-treatment PSQI, DHI, HAMA score, TCM symptom score, and improvement of blood flow parameters were better in the treatment group than in the control group ($P < 0.05$). It showed that auricular point pressure bean combined with moxibustion exerted the effect of auricular point and moxibustion to improve patients' blood circulation, sleep quality, anxiety level, vertigo level, and its accompanying symptoms with unique therapeutic effects.

Mugwort is warm, aromatic, and good for the twelve meridians. When burned, its heat is mild and can penetrate the skin and reach the deeper part of the body and does not disappear after a long time, so it can warm phlegm, warm the meridians, and dispel wind and cold [18]. In the Introduction to Medicine, it is clearly stated that "for all illnesses where medicine fails, or where needles fail, moxibustion is necessary." Moxibustion regulates the state of the body in both directions through acupuncture points, which not only opens up the ligaments but also regulates the body's qi flow, allowing it to flow smoothly. In this study, moxibustion was applied to the Baihui and bilateral Fenglong points. The moxa points are widely connected to all the meridians of the body, and as the heat of moxa penetrates into the points, its yang-heat nature not only warms the meridians and removes the yin-cold phlegm and dampness in the body but also accelerates the flow of qi and blood throughout the body; moxibustion reaches all the meridians with one point, which can effectively improve the patient's dizziness, nausea and vomiting, spinning vision, and other discomfort symptoms [19, 20]. Moxa moxibustion at the Baihui point also enables patients to balance yin and yang,

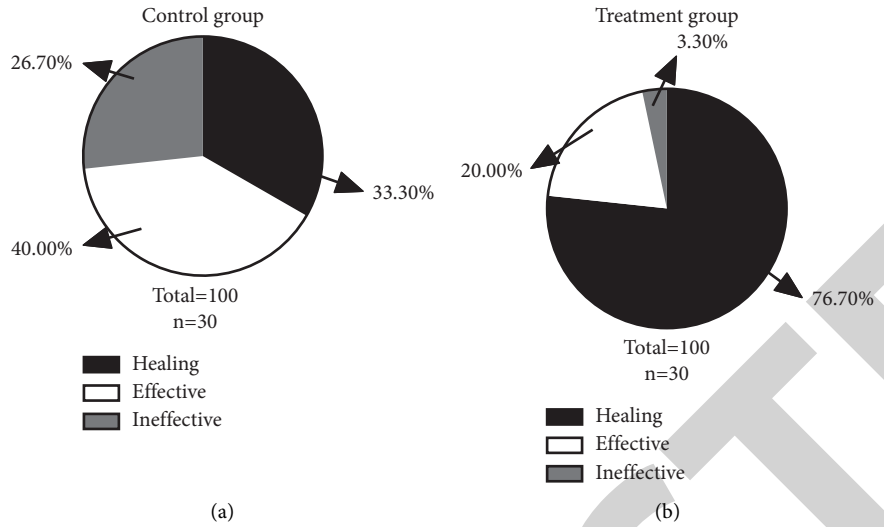

Figure 1: (a) efficacy of the control group and (b) efficacy of the treatment group.

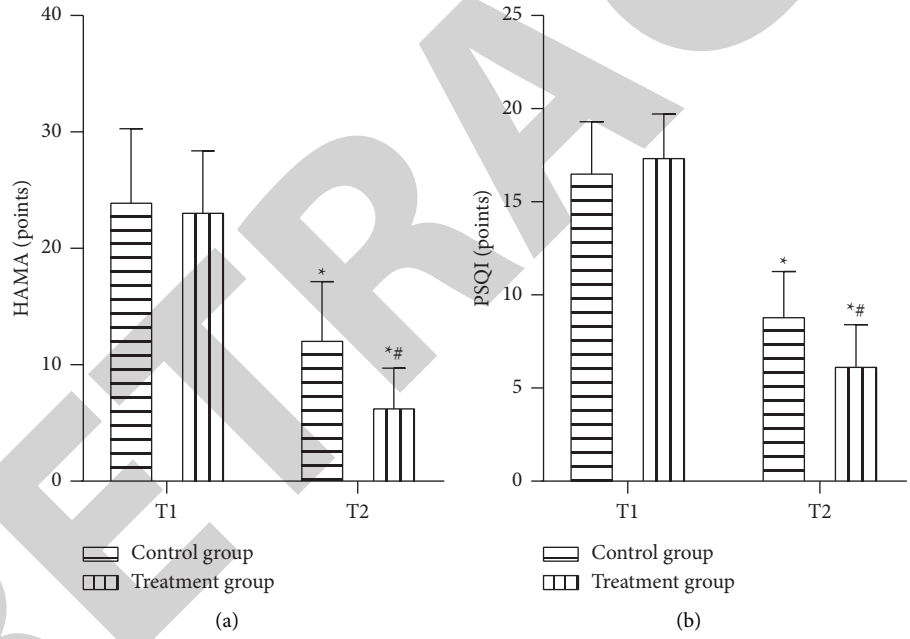

Figure 2: (a) HAMA score and (b) PSQI score. *indicates a significant difference ($P < 0.05$) between each group compared with the same group at T1. # indicates a significant difference ($P < 0.05$) between the 2 groups at T2.

calm the mind and spirit, combat anxiety, and improve sleep quality [21]. Fenglong [22] is a stomach meridian point that connects the two meridians of the spleen and stomach and has the function of strengthening the spleen and stomach, removing dampness and dispelling phlegm, and is one of the main points in the clinical treatment of dizziness caused by phlegm blockage. Moxa moxibustion at the Fenglong point of Baihui can therefore relieve the symptoms of dizziness caused by phlegm and dampness, improve anxiety and enhance the quality of sleep.

The ear is a microcosm of the human body, where the 12 meridians of qi and blood converge, and there is a correspondence between the auricular points and the positions of the muscles and internal organs [23]. When a disease occurs in the body, the auricle will show the corresponding reaction points, and when we press on these reaction points, we will be able to regulate the body through nerve reflexes and treat the disease [24]. In auricular acupuncture, by stimulating the Shen Men, Nei er, heart, forehead, occipital, subcortex, and lung acupoints, it can play a role in harmonizing the functions of qi and blood and the internal organs, thus relieving symptoms such as dizziness and vomiting and improving the patient's anxiety; while the matching acupuncture points selected from the

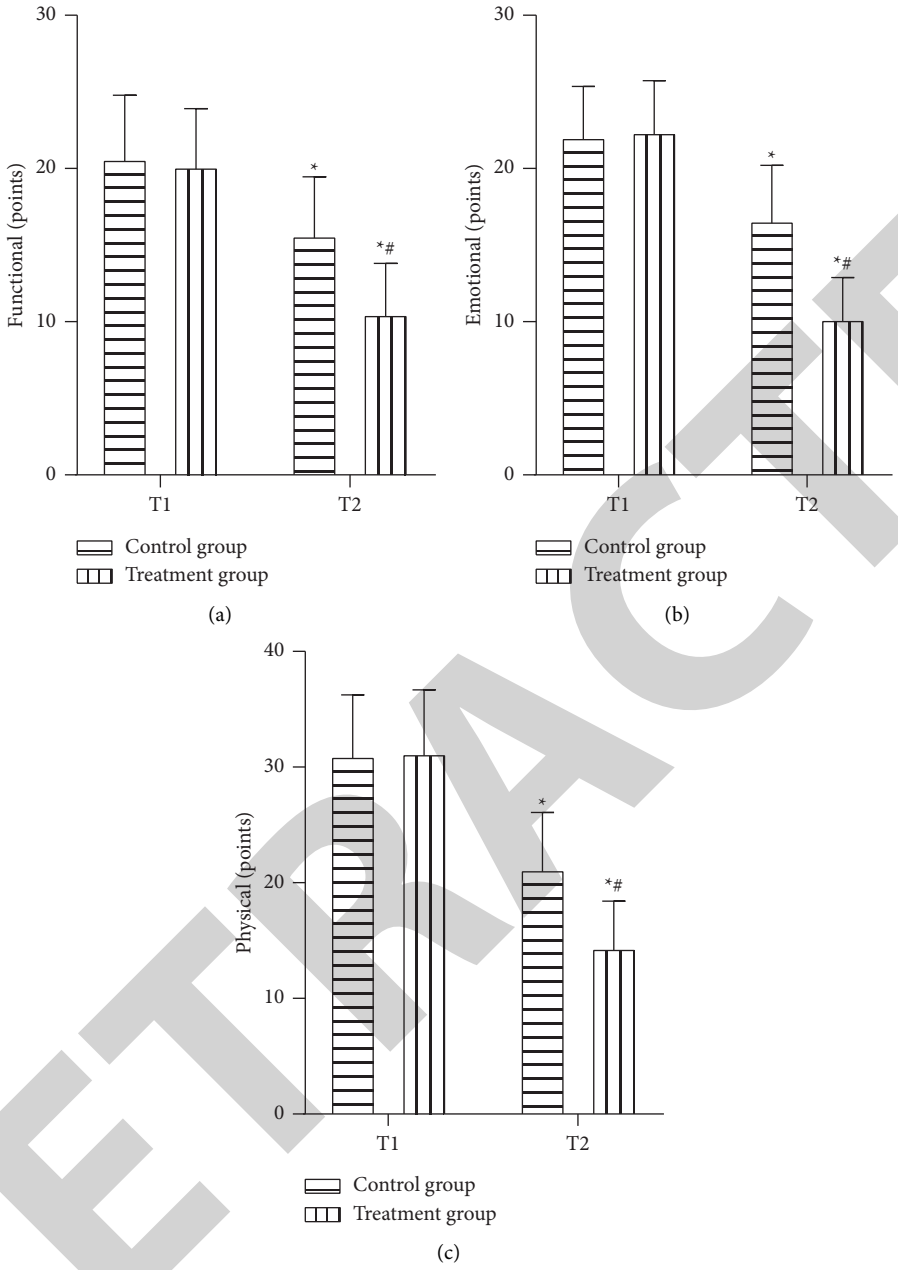

Figure 3: (a) functional scores, (b) affective scores, and (c) physical scores. *indicates a significant difference ($P < 0.05$) between each group compared with the same group at T1. # indicates significant difference ($P < 0.05$) between the 2 groups at T2.

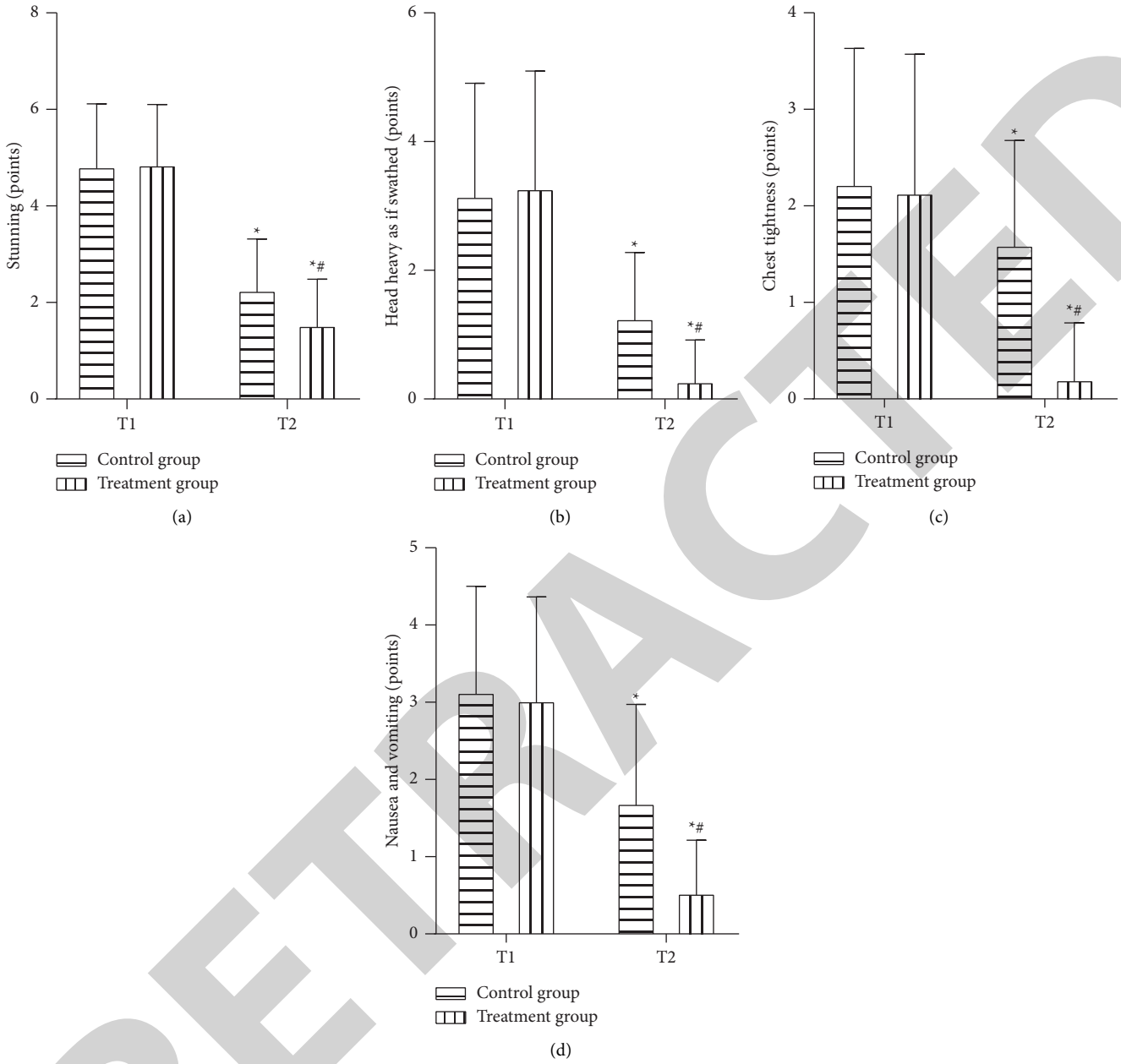

Figure 4: (a) vertigo score, (b) head heavy as if swathed score, (c) chest tightness score, and (d) nausea and vomiting score. *indicates a significant difference between each group compared with the same group at T1 ($P < 0.05$). #indicates significant difference ($P < 0.05$) between the 2 groups at T2.

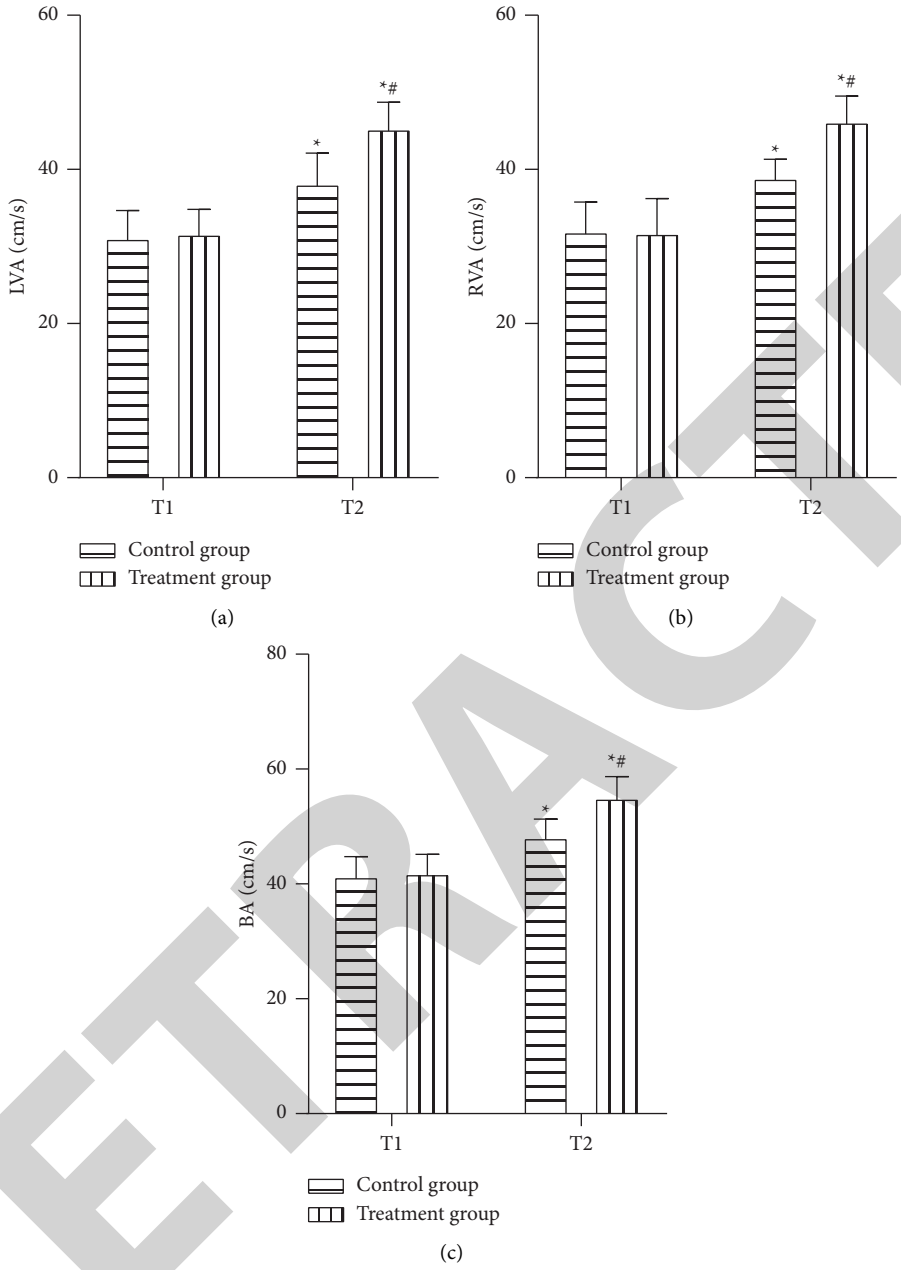

Figure 5: (a) LVA, (b) RVA, and (c) BA. *indicates a significant difference ($P < 0.05$) between each group compared with the same group at T1. # indicates significant difference ($P < 0.05$) between the 2 groups at T2.

spleen and kidney acupuncture points have the effect of relieving tension in the cerebral cortex and regulating the spleen, as well as having the effect of calming the mind, clearing the heart fire, and improving sleep [25].

In conclusion, moxibustion combined with ear acupoint pressing bean treatment can clearly improve patients' sleep quality, psychological state, relieve patients' various symptoms caused by vertigo, improve blood flow parameters, and have better efficacy in the treatment of phlegm stasis syndrome vertigo.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Ethical Approval

The trial was approved by the Ethics Committee of The First Hospital of Hunan University of Chinese Medicine (2019010).