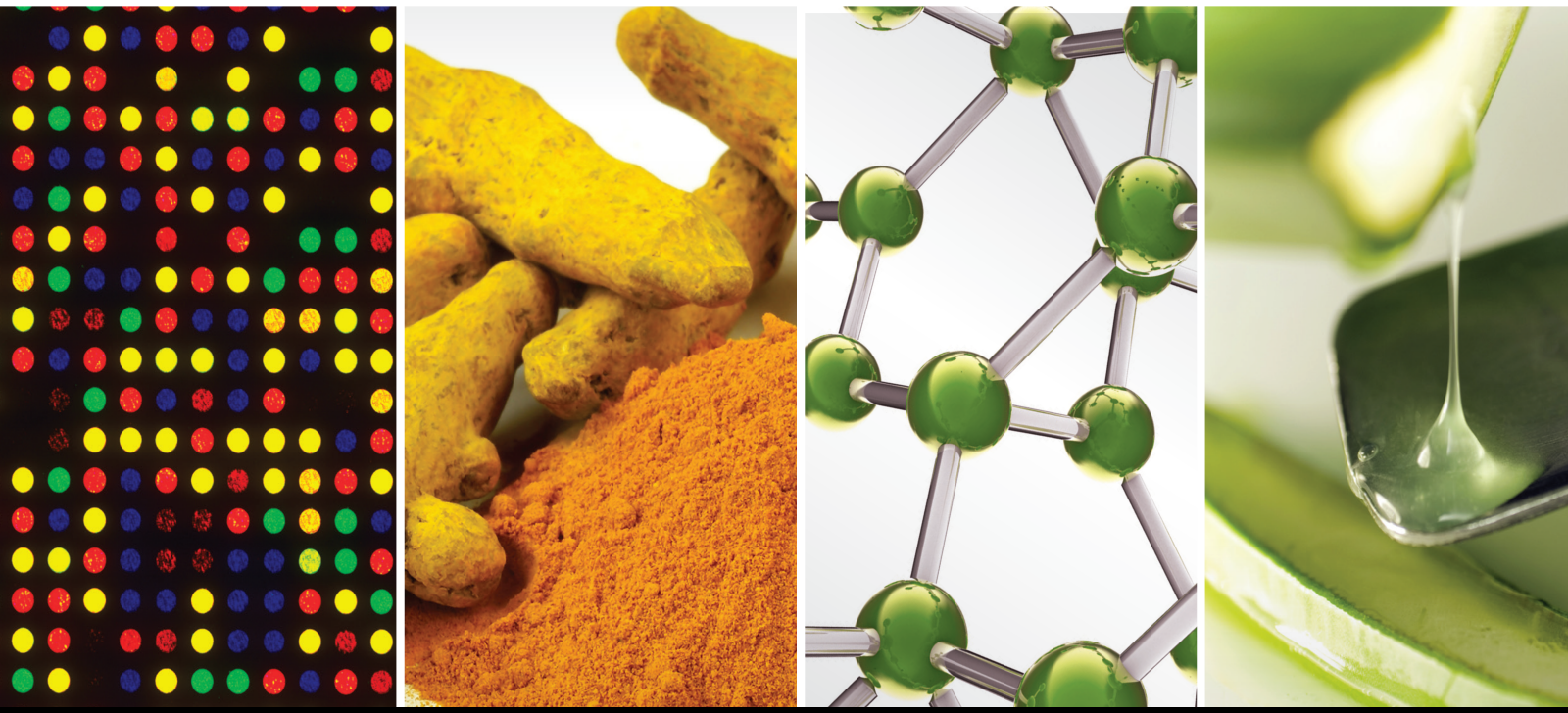
Evidence-Based Complementary and Alternative Medicine

Effect and Molecular Mechanism of Complementary and Alternative Medicine on Novel Type Post-Translational Modification and Epigenetic Regulation in Cancers

Lead Guest Editor: Guang Yang
Guest Editors: Tian-jiao Wang, Qing Zhang, and Xiaotong Yang



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Chief Editor

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Contents

Retracted: The Potential Mechanism of HDAC1-Catalyzed Histone Crotonylation of Caspase-1 in Nonsmall Cell Lung Cancer
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9863682, Volume 2023 (2023)

Retracted: Effects of Apatinib Mesylate Monotherapy on the Incidence of Adverse Reactions and Immune Function in Patients with Breast Cancer after Radical Mastectomy
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9861238, Volume 2023 (2023)

Retracted: Observation on the Effect of High-Quality Nursing Intervention plus Health Education in Chemotherapy for Non-Small Cell Lung Cancer and Its Influence on the Physical and Mental Health of Patients
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9858953, Volume 2023 (2023)

Retracted: Effect of Shenqi Fuzheng Injection on Leukopenia and T-cell Subsets in Patients with Non-small Cell Lung Cancer Undergoing Radiotherapy
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9857310, Volume 2023 (2023)

Retracted: The Effective Components, Core Targets, and Key Pathways of Ginseng against Alzheimer's Disease
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9857193, Volume 2023 (2023)

Retracted: Application Effect and Prognosis of High-Quality Nursing in the Whole Process of Nursing in Lung Cancer Surgery
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9853212, Volume 2023 (2023)

Retracted: Effects of Laparoscopic Hyperthermic Perfusion Therapy Combined with Adjuvant Treatment of Compound Yew Capsule on Ovarian Blood Flow Parameters and Immune Function in Patients with Ovarian Cancer
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9853120, Volume 2023 (2023)

Retracted: Effects of Staged Nursing Care on Neuroendoscopic Transsphenoidal Pituitary Adenoma Resection and Postoperative Complications
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9758185, Volume 2023 (2023)

Retracted: Comparative Analysis of the Anesthesia Effect of Cisatracurium Besylate and Mivacurium Chloride Otolaryngology Surgery
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9756209, Volume 2023 (2023)

Contents

Retracted: External Application of Traditional Chinese Medicine in the Prevention and Treatment of Nausea and Vomiting Caused by Chemotherapy of Non-Small-Cell Lung Cancer: A RCT Study
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9810509, Volume 2023 (2023)

Retracted: Efficacy of Laparoscopic Radical Resection Combined with Neoadjuvant Chemotherapy and Its Impact on Long-Term Prognosis of Patients with Colorectal Cancer
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9806219, Volume 2023 (2023)

Retracted: Feasibility and Application of Cluster Nursing to the Care of Patients with Acute Oncology
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9804840, Volume 2023 (2023)

Retracted: Impact of Systematic Holistic Nursing Combined with Narrative Nursing Intervention for Patients with Advanced Gastric Cancer on Complications and Negative Emotions
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9796824, Volume 2023 (2023)

Retracted: Clinical Effect and Postoperative Pain of Laparo-Thoracoscopic Esophagectomy in Patients with Esophageal Cancer
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9790841, Volume 2023 (2023)

Retracted: Effect of Comprehensive Nursing Approach in Perioperative Stage of Patients with Hepatocellular Carcinoma Interventional Therapy
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9789353, Volume 2023 (2023)

Retracted: Imaging Diagnosis of Primary Solitary Bone Neoplasts and Its Comparison with Tumor-like Lesions
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9783979, Volume 2023 (2023)

Retracted: Analysis of the Effect of Laparoscopic Cholecystectomy for Acute Cholecystitis after Percutaneous Transhepatic Gallbladder Puncture and Drainage
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9768169, Volume 2023 (2023)

Retracted: Simvastatin in the Treatment of Colorectal Cancer: A Review
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9767203, Volume 2023 (2023)

Contents

Retracted: The Effectiveness and Safety of Ropivacaine and Medium-Dose Dexmedetomidine in Cesarean Section
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9823465, Volume 2023 (2023)

Retracted: Effect of Entresto on Clinical Symptoms, Ventricular Remodeling, Rehabilitation, and Hospitalization Rate in Patients with Both Acute Myocardial Infarction and Acute Heart Failure
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9823069, Volume 2023 (2023)

Retracted: Efficacy of Risperidone Orally Disintegrating Tablets Combined with Oxazepam in the Treatment of Schizophrenia
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9821717, Volume 2023 (2023)

Retracted: Effect of Enalapril Combined with Bisoprolol on Cardiac Function and Inflammatory Indexes in Patients with Acute Myocardial Infarction
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9818292, Volume 2023 (2023)

Retracted: Efficacy of Fluticasone and Salmeterol Dry Powder in Treating Patients with Bronchial Asthma and Its Effect on Inflammatory Factors and Pulmonary Function
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9808196, Volume 2023 (2023)

Retracted: The Correlation between Serum Sclerostin Level and Arterial Stiffness in Peritoneal Dialysis Patients
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9807476, Volume 2023 (2023)

Retracted: High-Quality Nursing Combined with the Whole-Course Responsibility Nursing Intervention Reduces the Incidence of Complications in Severe Aneurysmal Subarachnoid Hemorrhage
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9807202, Volume 2023 (2023)

Retracted: Comparative Analysis of Clinical Effects of Insulin Aspart Combined with Acarbose and Metformin in the Treatment of Diabetes Mellitus
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9805178, Volume 2023 (2023)

Retracted: Effects of Personalized Nursing plus Dietary Nursing Management on LP-PLA2, Hcy Levels, and Quality of Life in Elderly Patients with Acute Coronary Syndrome
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9804216, Volume 2023 (2023)

Contents

Retracted: Changes of Serum D-Dimer, NT-proBNP, and Troponin I Levels in Patients with Acute Aortic Dissection and the Clinical Significance
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9868031, Volume 2023 (2023)

Retracted: Influence of Self-Practice Oriented Teaching plus Psychological Intervention on Blood Glucose Level and Psychological State in Patients with Type 2 Diabetes Mellitus on Insulin Therapy
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9867917, Volume 2023 (2023)

Retracted: Vitamin AD Drops are More Effective than Intramuscular Injection of Thymosin in Reducing the Rate of Growth Retardation in Children
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9865428, Volume 2023 (2023)

Retracted: Acute Thrombolytic Therapy Combined with the Green Channel Can Reduce the Thrombolytic Time and Improve Neurological Function in Acute Stroke Patients
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9865427, Volume 2023 (2023)

Retracted: Ultrasound Comparative Analysis of Coronary Arteries before and after Immune Blocking Therapy with Gamma Globulin in Children with Kawasaki Disease
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9865416, Volume 2023 (2023)

Retracted: Clinical Efficacy and Safety of Ibuprofen plus Traction, Reposition, and Hip Spica Cast in the Treatment of Developmental Dysplasia of the Hip
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9865379, Volume 2023 (2023)

Retracted: Application Effect and Accuracy Analysis of Electrochemiluminescence Immunoassay and Enzyme-Linked Immunosorbent Assay in the Serological Test of Hepatitis B Virus
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9861567, Volume 2023 (2023)

Retracted: Correlation of Serum Chemokine (C-C Motif) Ligand 21 and Heat Shock Protein 90 with Preeclampsia
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9861439, Volume 2023 (2023)

Retracted: The Application of Dopamine Combined with Intravenous Furosemide Infusion Therapy Has an Apparent Clinical Effect in Treating Patients with Heart Failure
Evidence-Based Complementary and Alternative Medicine
Retraction (1 page), Article ID 9854218, Volume 2023 (2023)

Contents

Contents

[Retracted] Vitamin AD Drops are More Effective than Intramuscular Injection of Thymosin in Reducing the Rate of Growth Retardation in Children
Min Luo and Hui Zhang
Research Article (6 pages), Article ID 7799111, Volume 2022 (2022)

[Retracted] Efficacy of Fluticasone and Salmeterol Dry Powder in Treating Patients with Bronchial Asthma and Its Effect on Inflammatory Factors and Pulmonary Function
Xiaodan Zhang, Min Liu, and Yuhong Mao
Research Article (6 pages), Article ID 8555417, Volume 2022 (2022)

[Retracted] The Efficacy of Calcium Carbonate-Vitamin D3 in Pregnant Women for the Prevention of Hypertensive Disorders in Pregnancy
Zhen Chen and Jing Chen
Research Article (6 pages), Article ID 7971976, Volume 2022 (2022)

[Retracted] Efficacy of Risperidone Orally Disintegrating Tablets Combined with Oxazepam in the Treatment of Schizophrenia
Liang Fang, Ying Xu, Xuefei Tong, Xue Wu, and Xiaomeng Zhou
Research Article (5 pages), Article ID 2344946, Volume 2022 (2022)

[Retracted] The Correlation and Copathogenesis of Coronary Aortic Sandwich and Renal Cysts
Huawei Zhang, Liang Gong, Zhinan Wu, and Xuefen Luo
Research Article (5 pages), Article ID 5483155, Volume 2022 (2022)

[Retracted] Review on Comfort Nursing Interventions for Patients Undergoing Neurosurgery and General Surgery
Limin Wu, Yingfa Chen, Jin Zhang, and Honglan Yu
Research Article (6 pages), Article ID 6735054, Volume 2022 (2022)

[Retracted] The Correlation between Serum Sclerostin Level and Arterial Stiffness in Peritoneal Dialysis Patients
Fang Liu, Hongbin Ma, Yongfeng Ma, Wei Zhou, Chenlu Wang, and Yongli Xiong
Research Article (6 pages), Article ID 4247782, Volume 2022 (2022)

[Retracted] Effects of Apatinib Mesylate Monotherapy on the Incidence of Adverse Reactions and Immune Function in Patients with Breast Cancer after Radical Mastectomy
Sen Lin and Meichun Zang
Research Article (6 pages), Article ID 4022282, Volume 2022 (2022)

[Retracted] Efficacy of Laparoscopic Radical Resection Combined with Neoadjuvant Chemotherapy and Its Impact on Long-Term Prognosis of Patients with Colorectal Cancer
Liang Huang, Xijuan Xu, Jinfan Shao, Weiwen Hong, and Wenfeng Yu
Research Article (7 pages), Article ID 4774531, Volume 2022 (2022)

Contents

[Retracted] Effectiveness of Comprehensive Nursing in Hemodialysis of Patients with Chronic Renal Failure and the Impact on Their Quality of Life
Quan Wen, Shuang Yao, and Bingnan Yao
Research Article (6 pages), Article ID 1399650, Volume 2022 (2022)

[Retracted] Effect of Comprehensive Nursing Approach in Perioperative Stage of Patients with Hepatocellular Carcinoma Interventional Therapy
Yuan Yuan, Yiwan Li, Guoxia Yang, Li Zhang, and Jin Ye
Research Article (8 pages), Article ID 6862463, Volume 2022 (2022)

[Retracted] External Application of Traditional Chinese Medicine in the Prevention and Treatment of Nausea and Vomiting Caused by Chemotherapy of Non-Small-Cell Lung Cancer: A RCT Study
Song-Jing Zhou, Lin Tang, Yong-Jun Fu, Chang-Qing Yang, and Jia Shi
Research Article (6 pages), Article ID 6992673, Volume 2022 (2022)

[Retracted] Ultrasound Comparative Analysis of Coronary Arteries before and after Immune Blocking Therapy with Gamma Globulin in Children with Kawasaki Disease
Yi Yu, Jinhua Hu, Qun Xia, Juxia Huang, Yangmei Cheng, Fangling Wu, Yujing Liu, Jun Wang, and Qiong Zhang
Research Article (6 pages), Article ID 2900378, Volume 2022 (2022)

[Retracted] Application Effect and Accuracy Analysis of Electrochemiluminescence Immunoassay and Enzyme-Linked Immunosorbent Assay in the Serological Test of Hepatitis B Virus
Yifei Lian, Hongran Fu, Xiaoyi Xu, and Chuanyu Ju
Research Article (7 pages), Article ID 9371497, Volume 2022 (2022)

[Retracted] Research Progress on the Mechanism of Right Heart-Related Pulmonary Edema
Yiran Li, Xiaoqiang Wang, Ruiqing Zong, Feixiang Wu, and Hai Lin
Review Article (10 pages), Article ID 8947780, Volume 2022 (2022)

[Retracted] Correlation of Serum Chemokine (C-C Motif) Ligand 21 and Heat Shock Protein 90 with Preeclampsia
Weina Yang, Xuemei Yang, Su'e Zhang, Limei Zhang, Wenze Wang, and Li Wang
Research Article (5 pages), Article ID 2156424, Volume 2022 (2022)

[Retracted] Value of 3D Printed PLGA Scaffolds for Cartilage Defects in Terms of Repair
Longkun Fan, Wei Teng, Jinqiu He, Dongni Wang, Chunhui Liu, Yujia Zhao, and Limin Zhang
Research Article (6 pages), Article ID 3561430, Volume 2022 (2022)

[Retracted] Effect of Calcium Carbonate Preparation on Malnutrition in Preschool Children
Fang Zhang and Ping Guo
Research Article (5 pages), Article ID 4025972, Volume 2022 (2022)

Contents

Contents

[Retracted] Clinical Efficacy of Laparoscopic Billroth II Subtotal Gastrectomy Plus Lienal Polypeptide Injection for Gastric Cancer
Wei Yan, Siqi Yan, and Wu He
Research Article (6 pages), Article ID 5162225, Volume 2022 (2022)

[Retracted] The Effectiveness and Safety of Ropivacaine and Medium-Dose Dexmedetomidine in Cesarean Section
Bin-Bin Huang and Shi-Kun Niu
Research Article (7 pages), Article ID 4447484, Volume 2022 (2022)

Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9865738, 1 page
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Retraction

Retracted: Tea Drinking and the Risk of Carcinoma of the Urinary Bladder: A Meta-Analysis

Evidence-Based Complementary and Alternative Medicine

Received 12 December 2023; Accepted 12 December 2023; Published 13 December 2023

This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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] Q. Xia, J. Li, Y. Shen, and D. Zhang, "Tea Drinking and the Risk of Carcinoma of the Urinary Bladder: A Meta-Analysis," *Evidence-Based Complementary and Alternative Medicine*, vol. 2023, Article ID 2891120, 6 pages, 2023.

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Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9852465, 1 page
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Retraction

Retracted: Adverse Pregnancy Outcomes Associated with Endometriosis and Its Influencing Factors

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References

[1] L. Xie, Y. Qi, H. Li, and L. Chen, "Adverse Pregnancy Outcomes Associated with Endometriosis and Its Influencing Factors," *Evidence-Based Complementary and Alternative Medicine*, vol. 2023, Article ID 7486220, 6 pages, 2023.

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Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9846190, 1 page
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Retracted: Clinical Promotion of Comfort Nursing Combined with Comprehensive Nursing in the Treatment of Severe Stroke Patients with Diabetes in ICU

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[1] H. Zhang, H. Chu, X. Qian, Y. Zhang, and Q. Wang, "Clinical Promotion of Comfort Nursing Combined with Comprehensive Nursing in the Treatment of Severe Stroke Patients with Diabetes in ICU," *Evidence-Based Complementary and Alternative Medicine*, vol. 2023, Article ID 1593651, 8 pages, 2023.

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Volume 2023, Article ID 9824296, 1 page
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Retraction

Retracted: Clinical Efficacy and Safety of Tumor Cytoreductive Surgery plus Hyperthermic Intraperitoneal Chemotherapy for Ovarian Cancer

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[1] H. Yu, C. Xu, and Q. Li, "Clinical Efficacy and Safety of Tumor Cytoreductive Surgery plus Hyperthermic Intraperitoneal Chemotherapy for Ovarian Cancer," *Evidence-Based Complementary and Alternative Medicine*, vol. 2023, Article ID 6412679, 8 pages, 2023.

Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9806363, 1 page
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Retraction

Retracted: Analysis of the Influencing Factors of Sentinel Lymph Node Metastasis in Breast Cancer

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References

[1] W. Lyu, Y. Guo, H. Peng, N. Xie, and H. Gao, "Analysis of the Influencing Factors of Sentinel Lymph Node Metastasis in Breast Cancer," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 5775971, 6 pages, 2022.

Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9898304, 1 page
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Retracted: Expression of Serum Omentin, CTRP9, and Vaspin in Patients with Polycystic Ovary Syndrome

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References

[1] Y. Wang, N. Liu, J. Lu et al., "Expression of Serum Omentin, CTRP9, and Vaspin in Patients with Polycystic Ovary Syndrome," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 1862404, 6 pages, 2022.

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Volume 2023, Article ID 9894125, 1 page
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Retraction

Retracted: Correlation between the Expression of VEGF and Ki67 and Lymph Node Metastasis in Non-small-Cell Lung Cancer: A Systematic Review and Meta-Analysis

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References

[1] D. Wei, Y. Xin, Y. Rong, and Y. Hao, "Correlation between the Expression of VEGF and Ki67 and Lymph Node Metastasis in Non-small-Cell Lung Cancer: A Systematic Review and Meta-Analysis," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 9693746, 8 pages, 2022.

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Volume 2023, Article ID 9873412, 1 page
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References

[1] C. Jiang, J. Liao, F. Yang, T. Jiang, D. Zhang, and Y. Xin, "The Potential Mechanism of HDAC1-Catalyzed Histone Crotonylation of Caspase-1 in Nonsmall Cell Lung Cancer," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 5049116, 8 pages, 2022.

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Volume 2023, Article ID 9861238, 1 page
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Retraction

Retracted: Effects of Apatinib Mesylate Monotherapy on the Incidence of Adverse Reactions and Immune Function in Patients with Breast Cancer after Radical Mastectomy

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References

[1] S. Lin and M. Zang, "Effects of Apatinib Mesylate Monotherapy on the Incidence of Adverse Reactions and Immune Function in Patients with Breast Cancer after Radical Mastectomy," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 4022282, 6 pages, 2022.

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Volume 2023, Article ID 9858953, 1 page
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Retraction

Retracted: Observation on the Effect of High-Quality Nursing Intervention plus Health Education in Chemotherapy for Non-Small Cell Lung Cancer and Its Influence on the Physical and Mental Health of Patients

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Volume 2023, Article ID 9857310, 1 page
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Retraction

Retracted: Effect of Shenqi Fuzheng Injection on Leukopenia and T-cell Subsets in Patients with Non-small Cell Lung Cancer Undergoing Radiotherapy

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Retraction

Retracted: The Effective Components, Core Targets, and Key Pathways of Ginseng against Alzheimer's Disease

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References

[1] Y. Wang and X. Liu, "The Effective Components, Core Targets, and Key Pathways of Ginseng against Alzheimer's Disease," *Evidence-Based Complementary and Alternative Medicine*, vol. 2023, Article ID 9935942, 12 pages, 2023.

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Retraction

Retracted: Application Effect and Prognosis of High-Quality Nursing in the Whole Process of Nursing in Lung Cancer Surgery

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References

[1] L. Mei, Y. Xu, Q. Shi, and C. Wu, "Application Effect and Prognosis of High-Quality Nursing in the Whole Process of Nursing in Lung Cancer Surgery," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 9491559, 6 pages, 2022.

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Evidence-Based Complementary and Alternative Medicine
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Retraction

Retracted: Effects of Laparoscopic Hyperthermic Perfusion Therapy Combined with Adjuvant Treatment of Compound Yew Capsule on Ovarian Blood Flow Parameters and Immune Function in Patients with Ovarian Cancer

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Volume 2023, Article ID 9758185, 1 page
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Retraction

Retracted: Effects of Staged Nursing Care on Neuroendoscopic Transsphenoidal Pituitary Adenoma Resection and Postoperative Complications

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References

[1] Y. Fei, J. Zhang, and Y. Gu, "Effects of Staged Nursing Care on Neuroendoscopic Transsphenoidal Pituitary Adenoma Resection and Postoperative Complications," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2171529, 7 pages, 2022.

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Retraction

Retracted: Comparative Analysis of the Anesthesia Effect of Cisatracurium Besylate and Mivacurium Chloride Otolaryngology Surgery

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Retraction

Retracted: Efficacy of Neoadjuvant Chemotherapy plus Limb-Sparing Surgery for Osteosarcoma and Its Impact on Long-Term Quality of Life

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Evidence-Based Complementary and Alternative Medicine
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Retraction

Retracted: Clinical Efficacy of Levothyroxine Sodium plus I 131 in the Treatment of Patients with Thyroidectomy and Its Effect on the Levels of Thyroglobulin and Thyrotropin

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Retraction

Retracted: Effects of Self-Care plus Forecasting Nursing on the Treatment Outcomes and Emotions in Patients with Nasopharyngeal Carcinoma after Radiotherapy

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Retraction

Retracted: Analysis of the Effect of Fast Recovery Surgery Concept on Perioperative Nursing Care of Patients with Radical Resection of Cervical Cancer and Its Influence on Psychological Status

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Retraction

Retracted: Analysis of the Clinical Effect of Visual Electrophysiological Examination Combined with Targeted Health Education Nursing in Children

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Hindawi
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Retraction

Retracted: Effect of Perioperative Comprehensive Nursing Intervention on Transcatheter Arterial Chemoembolization in Patients with Primary Hepatic Carcinoma

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Retraction

Retracted: Incentive Nursing can Effectively Improve the ESCA Level of Patients with Endometrial Cancer after Laparoscopic Hysterectomy

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Retraction

Retracted: Effect of Intensive Psychological Care on Patients with Benign Breast Lumps after Mammotome-Assisted Tumor Resection

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Retraction

Retracted: Apatinib plus Radiotherapy on the Expression of CEA and VEGF in Advanced Oligometastatic Non-Small-Cell Lung Cancer

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Retraction

Retracted: External Application of Traditional Chinese Medicine in the Prevention and Treatment of Nausea and Vomiting Caused by Chemotherapy of Non-Small-Cell Lung Cancer: A RCT Study

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Retraction

Retracted: Efficacy of Laparoscopic Radical Resection Combined with Neoadjuvant Chemotherapy and Its Impact on Long-Term Prognosis of Patients with Colorectal Cancer

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Retraction

Retracted: Feasibility and Application of Cluster Nursing to the Care of Patients with Acute Oncology

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Hindawi
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Retraction

Retracted: Impact of Systematic Holistic Nursing Combined with Narrative Nursing Intervention for Patients with Advanced Gastric Cancer on Complications and Negative Emotions

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[1] H. Lu, L. Zhu, and C. Tan, "Impact of Systematic Holistic Nursing Combined with Narrative Nursing Intervention for Patients with Advanced Gastric Cancer on Complications and Negative Emotions," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 9148843, 7 pages, 2022.

Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9790841, 1 page
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Retraction

Retracted: Clinical Effect and Postoperative Pain of Laparo-Thoracoscopic Esophagectomy in Patients with Esophageal Cancer

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References

[1] Y. Yu and Y. Han, "Clinical Effect and Postoperative Pain of Laparo-Thoracoscopic Esophagectomy in Patients with Esophageal Cancer," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 4507696, 7 pages, 2022.

Hindawi
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Retraction

Retracted: Effect of Comprehensive Nursing Approach in Perioperative Stage of Patients with Hepatocellular Carcinoma Interventional Therapy

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Retraction

Retracted: Imaging Diagnosis of Primary Solitary Bone Neoplasts and Its Comparison with Tumor-like Lesions

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Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9768169, 1 page
https://doi.org/10.1155/2023/9768169

Retraction

Retracted: Analysis of the Effect of Laparoscopic Cholecystectomy for Acute Cholecystitis after Percutaneous Transhepatic Gallbladder Puncture and Drainage

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Retraction

Retracted: Simvastatin in the Treatment of Colorectal Cancer: A Review

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[1] H. Zang, W. Yang, and X. Tian, "Simvastatin in the Treatment of Colorectal Cancer: A Review," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 3827933, 6 pages, 2022.

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Volume 2023, Article ID 9762879, 1 page
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Retraction

Retracted: Analysis of Risk Factors and Protective Strategies for Tube Blockage in Patients with Drug-Induced Liver Failure Based on Artificial Liver Therapy

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Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9853121, 1 page
https://doi.org/10.1155/2023/9853121

Retraction

Retracted: Analysis of the Application Value of Different Esophagography Techniques in the Diagnosis of H-Type Tracheoesophageal Fistula in Neonates

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Retraction

Retracted: Review on Comfort Nursing Interventions for Patients Undergoing Neurosurgery and General Surgery

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Retraction

Retracted: Value of 3D Printed PLGA Scaffolds for Cartilage Defects in Terms of Repair

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Hindawi
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Retraction

Retracted: The Efficacy of Mannitol Combined with 6-Aminocaproic Acid in the Treatment of Patients with Cerebral Hemorrhage and Its Impact on Immune Function

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Retraction

Retracted: Progress of Research on the Application of Triple Antibiotic Paste and Hydrogel Scaffold Materials in Endodontic Revascularization: A Systematic Review

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Evidence-Based Complementary and Alternative Medicine
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Retraction

Retracted: Diagnostic Effectiveness of Dual Source Dual Energy Computed Tomography for Benign and Malignant Thyroid Nodules

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Retraction

Retracted: Efficacy of Donepezil Hydrochloride plus Olanzapine for Senile Dementia and Its Effect on the Recovery of Cognitive Function

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Hindawi
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Retraction

Retracted: Effectiveness of Comprehensive Nursing in Hemodialysis of Patients with Chronic Renal Failure and the Impact on Their Quality of Life

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Retraction

Retracted: The Effectiveness and Safety of Ropivacaine and Medium-Dose Dexmedetomidine in Cesarean Section

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Retraction

Retracted: Effect of Entresto on Clinical Symptoms, Ventricular Remodeling, Rehabilitation, and Hospitalization Rate in Patients with Both Acute Myocardial Infarction and Acute Heart Failure

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Retraction

Retracted: Efficacy of Risperidone Orally Disintegrating Tablets Combined with Oxazepam in the Treatment of Schizophrenia

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Retraction

Retracted: Effect of Enalapril Combined with Bisoprolol on Cardiac Function and Inflammatory Indexes in Patients with Acute Myocardial Infarction

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References

[1] K. Huang, Y. Zhang, F. Yang, X. Luo, W. Long, and X. Hou, "Effect of Enalapril Combined with Bisoprolol on Cardiac Function and Inflammatory Indexes in Patients with Acute Myocardial Infarction," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 6062450, 7 pages, 2022.

Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9808196, 1 page
https://doi.org/10.1155/2023/9808196

Retraction

Retracted: Efficacy of Fluticasone and Salmeterol Dry Powder in Treating Patients with Bronchial Asthma and Its Effect on Inflammatory Factors and Pulmonary Function

Evidence-Based Complementary and Alternative Medicine

Received 20 June 2023; Accepted 20 June 2023; Published 21 June 2023

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[1] X. Zhang, M. Liu, and Y. Mao, "Efficacy of Fluticasone and Salmeterol Dry Powder in Treating Patients with Bronchial Asthma and Its Effect on Inflammatory Factors and Pulmonary Function," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 8555417, 6 pages, 2022.

Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9807476, 1 page
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Retraction

Retracted: The Correlation between Serum Sclerostin Level and Arterial Stiffness in Peritoneal Dialysis Patients

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[1] F. Liu, H. Ma, Y. Ma, W. Zhou, C. Wang, and Y. Xiong, "The Correlation between Serum Sclerostin Level and Arterial Stiffness in Peritoneal Dialysis Patients," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 4247782, 6 pages, 2022.

Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9807202, 1 page
https://doi.org/10.1155/2023/9807202

Retraction

Retracted: High-Quality Nursing Combined with the Whole-Course Responsibility Nursing Intervention Reduces the Incidence of Complications in Severe Aneurysmal Subarachnoid Hemorrhage

Evidence-Based Complementary and Alternative Medicine

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Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9805178, 1 page
https://doi.org/10.1155/2023/9805178

Retraction

Retracted: Comparative Analysis of Clinical Effects of Insulin Aspart Combined with Acarbose and Metformin in the Treatment of Diabetes Mellitus

Evidence-Based Complementary and Alternative Medicine

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Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9804216, 1 page
https://doi.org/10.1155/2023/9804216

Retraction

Retracted: Effects of Personalized Nursing plus Dietary Nursing Management on LP-PLA2, Hcy Levels, and Quality of Life in Elderly Patients with Acute Coronary Syndrome

Evidence-Based Complementary and Alternative Medicine

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Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9787206, 1 page
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Retraction

Retracted: Study on the Mechanism of circRNA Regulating the miRNA Level in Nephrotic Syndrome

Evidence-Based Complementary and Alternative Medicine

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Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9782416, 1 page
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Retraction

Retracted: Effect of Cryotherapy plus Flurbiprofen Axetil for Pain Management in Children Undergoing Tonsillectomy

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Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9757512, 1 page
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Retraction

Retracted: A Study of Heat Shock Protein 90 and Serum CCL21 Expression in Pregnant Women with Preeclampsia

Evidence-Based Complementary and Alternative Medicine

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Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9757249, 1 page
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Retraction

Retracted: Research Progress on the Mechanism of Right Heart-Related Pulmonary Edema

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References

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Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9756870, 1 page
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Retraction

Retracted: The Efficacy of Calcium Carbonate-Vitamin D3 in Pregnant Women for the Prevention of Hypertensive Disorders in Pregnancy

Evidence-Based Complementary and Alternative Medicine

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References

[1] Z. Chen and J. Chen, "The Efficacy of Calcium Carbonate-Vitamin D3 in Pregnant Women for the Prevention of Hypertensive Disorders in Pregnancy," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 7971976, 6 pages, 2022.

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Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9753706, 1 page
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Retraction

Retracted: The Correlation and Copathogenesis of Coronary Aortic Sandwich and Renal Cysts

Evidence-Based Complementary and Alternative Medicine

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Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9898367, 1 page
https://doi.org/10.1155/2023/9898367

Retraction

Retracted: The Clinical Effects of Metronidazole Vaginal Effervescent Tablets Combined with Kushen Suppository in the Treatment of Trichomonas Vaginitis

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Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9898067, 1 page
https://doi.org/10.1155/2023/9898067

Retraction

Retracted: κ-Opioid Receptor Agonist U50448H Protects Against Acute Lung Injury in Rats with Cardiopulmonary Bypass via the CAP-NLRP3 Signaling Pathway

Evidence-Based Complementary and Alternative Medicine

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Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9876128, 1 page
https://doi.org/10.1155/2023/9876128

Retraction

Retracted: Efficacy of Ambroxol Hydrochloride Combined with Amoxicillin Potassium Clavulanate Combination on Children with Bronchopneumonia and Its Impact on the Level of Inflammatory Factors

Evidence-Based Complementary and Alternative Medicine

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Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9870249, 1 page
https://doi.org/10.1155/2023/9870249

Retraction

Retracted: Effects of Collagen Antibacterial Functional Dressing plus Continuous Nursing on Lower Extremity Skin Injury Caused by Norepinephrine in Patients with Septic Shock

Evidence-Based Complementary and Alternative Medicine

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Volume 2023, Article ID 9868031, 1 page
https://doi.org/10.1155/2023/9868031

Retraction

Retracted: Changes of Serum D-Dimer, NT-proBNP, and Troponin I Levels in Patients with Acute Aortic Dissection and the Clinical Significance

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References

[1] Z. Xu, M. Wei, X. Guo et al., "Changes of Serum D-Dimer, NT-proBNP, and Troponin I Levels in Patients with Acute Aortic Dissection and the Clinical Significance," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 8309505, 5 pages, 2022.

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Evidence-Based Complementary and Alternative Medicine
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Retraction

Retracted: Influence of Self-Practice Oriented Teaching plus Psychological Intervention on Blood Glucose Level and Psychological State in Patients with Type 2 Diabetes Mellitus on Insulin Therapy

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Retraction

Retracted: Vitamin AD Drops are More Effective than Intramuscular Injection of Thymosin in Reducing the Rate of Growth Retardation in Children

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[1] M. Luo and H. Zhang, "Vitamin AD Drops are More Effective than Intramuscular Injection of Thymosin in Reducing the Rate of Growth Retardation in Children," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 7799111, 6 pages, 2022.

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Volume 2023, Article ID 9865427, 1 page
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Retraction

Retracted: Acute Thrombolytic Therapy Combined with the Green Channel Can Reduce the Thrombolytic Time and Improve Neurological Function in Acute Stroke Patients

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References

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https://doi.org/10.1155/2023/9865416

Retraction

Retracted: Ultrasound Comparative Analysis of Coronary Arteries before and after Immune Blocking Therapy with Gamma Globulin in Children with Kawasaki Disease

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References

[1] Y. Yu, J. Hu, Q. Xia et al., "Ultrasound Comparative Analysis of Coronary Arteries before and after Immune Blocking Therapy with Gamma Globulin in Children with Kawasaki Disease," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2900378, 6 pages, 2022.

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https://doi.org/10.1155/2023/9865379

Retraction

Retracted: Clinical Efficacy and Safety of Ibuprofen plus Traction, Reposition, and Hip Spica Cast in the Treatment of Developmental Dysplasia of the Hip

Evidence-Based Complementary and Alternative Medicine

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Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9861567, 1 page
https://doi.org/10.1155/2023/9861567

Retraction

Retracted: Application Effect and Accuracy Analysis of Electrochemiluminescence Immunoassay and Enzyme-Linked Immunosorbent Assay in the Serological Test of Hepatitis B Virus

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References

[1] Y. Lian, H. Fu, X. Xu, and C. Ju, "Application Effect and Accuracy Analysis of Electrochemiluminescence Immunoassay and Enzyme-Linked Immunosorbent Assay in the Serological Test of Hepatitis B Virus," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 9371497, 7 pages, 2022.

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Retraction

Retracted: Correlation of Serum Chemokine (C-C Motif) Ligand 21 and Heat Shock Protein 90 with Preeclampsia

Evidence-Based Complementary and Alternative Medicine

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References

[1] W. Yang, X. Yang, S. Zhang, L. Zhang, W. Wang, and L. Wang, "Correlation of Serum Chemokine (C-C Motif) Ligand 21 and Heat Shock Protein 90 with Preeclampsia," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2156424, 5 pages, 2022.

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Volume 2023, Article ID 9854218, 1 page
https://doi.org/10.1155/2023/9854218

Retraction

Retracted: The Application of Dopamine Combined with Intravenous Furosemide Infusion Therapy Has an Apparent Clinical Effect in Treating Patients with Heart Failure

Evidence-Based Complementary and Alternative Medicine

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References

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Retraction

Retracted: Effect of Calcium Carbonate Preparation on Malnutrition in Preschool Children

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References

[1] F. Zhang and P. Guo, "Effect of Calcium Carbonate Preparation on Malnutrition in Preschool Children," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 4025972, 5 pages, 2022.

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Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9846071, 1 page
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Retraction

Retracted: Correlation between Cardiac Ultrasound-Related Indicators and Cardiac Function in Patients with Coronary Heart Disease and Heart Failure

Evidence-Based Complementary and Alternative Medicine

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Retraction

Retracted: A Study of the Relationship between Blood Glucose and Serum Insulin in Acute Cerebrovascular Disease

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References

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Volume 2023, Article ID 9837915, 1 page
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Retraction

Retracted: Clinical Effect of Standardized Dietary Avoidance Therapy on Children with Milk Protein Allergy and Its Effect on Intestinal Flora

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References

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Retraction

Retracted: Adverse Pregnancy Outcomes Associated with Endometriosis and Its Influencing Factors

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References

[1] L. Xie, Y. Qi, H. Li, and L. Chen, "Adverse Pregnancy Outcomes Associated with Endometriosis and Its Influencing Factors," *Evidence-Based Complementary and Alternative Medicine*, vol. 2023, Article ID 7486220, 6 pages, 2023.

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Research Article

Adverse Pregnancy Outcomes Associated with Endometriosis and Its Influencing Factors

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Aim. To investigate the adverse pregnancy outcomes associated with endometriosis and its influencing factors. *Methods*. A total of 188 endometriosis patients who gave birth at our hospital between June 2018 and January 2021 were screened for eligibility and included in the research group, while a control group of 188 nonendometriosis women who delivered at our hospital during the same period were also included as healthy controls. Pregnancy outcomes were the key outcome measure, and the relationship between endometriosis and unfavorable pregnancy outcomes, as well as the influencing factors, were explored. *Results*. There was no significant difference in the risk of adverse pregnancy events such as miscarriage, ectopic pregnancy, termination of pregnancy, and fetal death between the two groups ($P > 0.05$). The differences in hypertensive disorder in pregnancy, gestational diabetes, placental abruption, fetal growth restriction, and luteal support between the two groups also failed to reach the statistical standard ($P > 0.05$). The two groups significantly differed in terms of cesarean delivery, preterm delivery, and placenta previa (1.92 (95% CI 1.33–2.85), 2.43 (95% CI 1.05–5.58), and 4.51 (95% CI 1.23–16.50)) ($P < 0.05$). *Conclusion*. Endometriosis is an influential factor in adverse pregnancy outcomes and results in a high risk of preterm delivery, placenta previa, and cesarean delivery in patients. Mutual interactions exist among adverse pregnancy outcomes and thus require appropriate management.

1. Introduction

Endometriosis [1] refers to the presence of endometrial tissue (glandular and mesenchymal) in the uterine cavity outside of the overlying endometrium and uterus, with recurrent bleeding and subsequent pain. It causes infertility and growth of nodules. Endometriosis has a high prevalence among women of childbearing age, and the lesion recedes after menopause. The disease is aggressive, recurrent, and sex hormone-dependent [2, 3]. Previous studies have shown that endometriosis increased the risk of several adverse pregnancy outcomes, such as preterm delivery, placenta previa, stillbirth, placental abruption, postpartum hemorrhage, and gestational diabetes [3, 4]. Moreover, Broi et al. [5] and Vercellini et al. [6] have reported an increased risk of hypertensive disorders during pregnancy. The size and depth of the peritoneal and ovarian lesions, the degree and extent of adhesion of the ovaries and fallopian tubes, and the magnitude of closure of the rectum and uterine pits are used for endometriosis classification. The most well-accepted notion of its pathophysiology is endometrial implantation [4].

Pelvic pain is observed in 70–80% of the patients, including menstrual pain, chronic pelvic pain, painful intercourse, and anal cramps, infertility is found in 40%–50%, and 17–44% develop a pelvic mass (endometriotic cyst). It affects all pelvic tissues and organs, most notably the ovaries, uterine and rectal recesses, and uterosacral ligaments [5]. Periodic bleeding from the ectopic foci stimulates inflammatory reactions in the surrounding tissues, leading to adhesions in the pelvic cavity, which in severe cases compromises the peristalsis of the fallopian tubes or even leads to tubal obstruction. The preferred treatment option for endometriosis combined with infertility is laparoscopic surgery, which allows the diagnosis of the disease, removal of the lesion, and breakdown of adhesions, so as to improve the

conception rate. However, the postoperative fertility rate remains unsatisfactory. In traditional Chinese medicine (TCM), the main pathogenesis of endometriosis is the stasis of blood blocking the ramus and the uterus. Endometriosis develops due to congenital deficiency of kidney essence, liver qi stagnation, and cold clotting of blood in the meridians. The patient's congenital deficiency of kidney essence, loss of both yin and yang, and inappropriate storage and drainage of the uterus result in stasis of the blood in the uterus. The patient's negative emotions, stagnant liver qi, and insufficient kidney yang lead to impaired warmth and aggravate the stasis of menstrual blood. Clinical treatments include surgery, medication, interventional therapy, herbal medicine, and adjuvant therapy (e.g., assisted reproductive technology treatment), so as to eliminate the lesions, reduce pain, ameliorate fertility, and avoid recurrence [6, 7].

Related research suggests a strong correlation between rectovaginal endometriosis and placenta previa [8]. Endometriosis may result in an increased risk of pregnancy complications [9], such as placenta previa, preterm delivery, hypertensive disorders of pregnancy, small gestational age, placental abruption, and postpartum hemorrhage. It is also considered to be associated with menstrual blood reflux [10]. Endometriosis is suggested to cause local immune and inflammatory responses via the production of cytokines, immune factors, and prostaglandins, resulting in a significant elevation of interleukin 1 and angiogenic factors in the peritoneal cavity, facilitating the adhesion of ectopic endometrial cells to the peritoneum, angiogenesis, and proliferation of ectopic endometrial lesions [11]. The significant elevation of cyclooxygenase 2, prostaglandin E and cytokines due to persistent immune, and inflammatory responses in the peritoneal cavity of patients with endometriosis may give rise to myometrial contraction and premature cervical maturation during pregnancy [12]. These aggravated inflammatory responses and growth factors on the uterine meconium and trophectoderm may also trigger adverse pregnancy outcomes.

However, the contributory factors of endometriosis on perinatal outcomes are still poorly understood [13]. To this end, this study was undertaken to investigate the adverse pregnancy outcomes associated with endometriosis and its influencing factors, so as to provide relevant references for subsequent clinical treatment.

2. Materials and Methods

2.1. Participants. A total of 188 endometriosis patients who delivered at our hospital between June 2018 and January 2021 were screened for eligibility and included in the research group, whereas a control group of 188 nonendometriosis women who delivered at our hospital during the same period was included. The patients in the study group had endometriosis before pregnancy or ovarian endometriosis in early pregnancy, and they were treated accordingly.

The original sample size calculation estimated that 90 patients in each group would be needed to detect a 3-point difference between groups in a 2-sided significance test with a power of 0.8 and an alpha error level of 0.05.

Undersigned informed consent was obtained from the eligible patients prior to enrollment. The study protocol was approved by the Hospital Ethics Committee, and all processes complied with the Declaration of Helsinki ethical guidelines for clinical research.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria. (1) Patients in the study group are those with pelvic endometriosis confirmed by histological examination [14]; (2) participants in the control group are those without confirmed endometriosis or any related ultrasound signs; (3) age ≤38 years, follicle-stimulating hormone <10 U/L, and endometrial thickness >8 mm on the day of progesterone conversion; (4) the patients were diagnosed with stage II EMT by laparoscopic surgery; and (5) prior to FET, vaginal ultrasound and hysteroscopy were performed without uterine malformations, endometrial polyps, and uterine adhesions.

2.2.2. Exclusion Criteria. (1) Patients with combined malignancy; (2) with combined malignancy with multiple or multifetal pregnancies; (3) with autoimmune system diseases; (4) with adenomyosis; (5) with hydrosalpinx and without proximal tubal ligation or tubectomy; (6) with moderate to severe uterine adhesions and uterine malformations; (7) with comorbid medical conditions such as abnormal thyroid function, diabetes mellitus, and autoimmune system diseases; and (8) with hypercoagulated blood.

2.3. Outcome Measures. Outcome measures include gestational age, mode of delivery, luteal support, and adverse pregnancy outcomes (preterm delivery, hypertensive disorders in pregnancy, gestational diabetes mellitus, placenta previa, placental abruption, and fetal growth restriction).

2.4. Definition

2.4.1. Preterm Delivery. Delivery was performed before 37 weeks of gestation.

2.4.2. Hypertensive Disorder in Pregnancy. It includes gestational hypertension and preeclampsia. Gestational hypertension refers to an increase in blood pressure of ≥140/90 mmHg after 20 weeks of gestation in a woman with previously normal blood pressure. Preeclampsia is gestational hypertension with proteinuria (≥300 mg/24 h).

2.4.3. Gestational Diabetes. Gestational diabetes is diagnosed when any of the three values is met at 24–26 weeks of pregnancy, namely, fasting blood glucose ≥5.1 mmol/L, ≥10 mmol/L one hour after drinking sugar water, or ≥8.5 mmol/L two hours after drinking sugar water.

2.4.4. Anterior Placenta. The placental tissue reaches or extends to the inside of the cervix [15].

2.4.5. Placental Abruption. Bleeding at the meconium-placenta interface results in partial or complete detachment of the placenta before delivery.

2.4.6. Fetal Growth Restriction. Fetal birth weight is lower than two standard deviations from the mean weight for the same gestational age or less than the 10th percentile of the normal weight for the same age.

2.5. Statistical Analysis. Logistic regression was used to analyze the adverse pregnancy outcomes and influencing factors associated with endometriosis, and SPSS 22.0 software was used to process the data and statistical analyses. The measurement data were expressed as (mean ± standard deviation) and analyzed by the independent sample t-test. Count data were expressed as number of cases (%) and analyzed by the chi-square test. $P < 0.05$ suggested that the difference was statistically significant.

3. Results

3.1. Patient Characteristics. There were 188 patients in the study group, aged 25–38 (30.96 ± 3.32) years, with a gravidity of 1–3 (1.56 ± 0.23). There were 25 cases with a BMI <18.5, 128 cases with a BMI of 18.5–23.9, and 35 cases with a BMI >24. There were 188 participants in the control group, aged 23–38 (30.23 ± 2.98) years, with a gravidity of 1–3 (1.41 ± 0.35). There were 26 cases with a BMI <18.5, 125 cases with a BMI of 18.5–23.9, and 37 cases with a BMI >24. The patient characteristics of the two groups were comparable ($P > 0.05$). (Table 1).

3.2. Pregnancy Outcome

3.2.1. Maternal Pregnancy Outcome. There was no statistically significant difference in the risk of miscarriage, ectopic pregnancy, pregnancy termination, or fetal mortality between the two groups ($P > 0.05$). (Table 2).

3.2.2. Adverse Pregnancy Outcomes. The differences between the two groups in hypertensive disorder in pregnancy, gestational diabetes, placental abruption, fetal growth restriction, and luteal support did not meet the statistical standard ($P > 0.05$), but the differences in cesarean delivery, preterm delivery, and placenta previa were statistically significant (1.92 (95% CI 1.33–2.85), 2.43 (95% CI 1.05–5.58), and 4.51 (95% CI 1.23–16.50)) ($P < 0.05$). (Table 3).

4. Discussion

Endometriosis is the presence of the endometrial tissue (glandular and mesenchymal) in the uterine cavity outside the overlying endometrium and uterus [15]. The diagnosis of endometriosis requires the laparoscopic examination of visible pelvic lesions and biopsies of the lesions [16]. The increased use of human-assisted reproductive technologies has significantly boosted pregnancy success rates in patients with endometriosis, and there is also an escalating incidence of adverse pregnancy outcomes due to adverse reactions caused by endometriosis [17]. Endometriosis may lead to pregnancy failure or complications in late pregnancy. The local immune and inflammatory response to endometriosis significantly increases the levels of intraperitoneal IL-1β and angiogenic factors, which favor ectopic endometrial cell adhesion, proliferation, and angiogenesis. Thus, the local immunological and inflammatory response to endometriosis has a long-term impact on pregnancy and progesterone resistance, irregular uterine contractions, and thickening of the uterine junctional zone all threaten embryo implantation. The relationship between endometriosis and poor pregnancy outcomes, however, remains uncertain. Previous research has implicated endometriosis with the development of unfavorable pregnancy outcomes [18].

Previous studies suggest that chronic inflammation, uterine hormone-resistant endometrium, and the vascularized environment are associated with complications during pregnancy. In addition, abnormalities in the endometrium and the junctional zone at the molecular and functional levels lead to impaired endometrial growth, maturation and ecdysis, endometrial tolerance, defective spiral artery remodeling, and deep placental defects [19]. Preeclampsia is characterized by abnormal vascular remodeling, which is linked to a variety of pregnancy problems, including premature birth and fetal development limitation. As a result, it is theorized that placental anomalies are associated with an increased risk of placental problems and that endometriosis initiates a persistent pelvic inflammatory process. The increased number of prostaglandins and cytokines in endometriosis patients' peritoneal fluid increases myometrial contraction and cervical maturation, resulting in premature birth [22, 23]. In addition, alterations in the frequency and amplitude of uterine contractions in women with endometriosis cause dysfunction of the uterine tissues, which contributes to the increased risk of placenta previa. Due to extensive pelvic adhesions, placenta previa may also hinder placental migration from the intrauterine aperture. The higher incidence of placenta previa in endometriosis patients treated surgically before pregnancy is attributed to severe endometriosis or a high incidence of recurrence. The association between preconception surgery for endometriosis and the risk of placenta previa has been marginally explored [24, 25].

Surgery is currently the main treatment modality for endometriosis-related infertility, and laparoscopic surgery can increase the pregnancy rate to 46.09%. Laparoscopic surgery is currently the gold standard for the diagnosis and treatment of endometriosis, with minimal gas trauma and short healing time, during which the ectopic foci visible to the naked eye can be removed and the mutual adhesions between tissues can be separated, so as to restore the anatomical structure of the pelvis. One of the causes of infertility in patients is the altered pelvic microenvironment, and intraoperative saline irrigation of the pelvis to improve its microenvironment is the major merit of laparoscopic surgery. However, laparoscopic surgery is insufficient for the removal of microscopic lesions and atypical ectopic lesions,

Table 1: Patient characteristics ($\overline{x} \pm s$).

Groups	n	Ages (years)		Gravidity		BMI (kg/m^2)		
		Scope	Average	Scope	Average	<18.5	18.5–23.9	>24
Study group	188	25–38	30.96 ± 3.32	1–3	1.56 ± 0.23	25	128	35
Control group	188	23–38	30.23 ± 2.98	1–3	1.41 ± 0.35	26	125	37
t value	—	—		—		—	—	—
P value	—	—		—		—	—	—

Table 2: Maternal pregnancy outcomes in both groups.

	Study group ($n = 188$)	Control group ($n = 188$)	OR (95% CI)	P value
Abortion	25	26	0.93 (0.58–1.44)	0.715
Ectopic pregnancy	1	2	0.69 (0.15–3.08)	0.651
Termination of pregnancy	1	1	0.68 (0.19–2.53)	0.541
Fetal death	2	1	6.32 (0.65–59.98)	0.121
Successful delivery	159	158	1.13 (0.73–1.74)	0.523

Table 3: Adverse pregnancy outcomes.

	Study group ($n = 188$)	Control group ($n = 188$)	OR (95% CI)	P value
Cesarean delivery	132	82	1.92 (1.33–2.85)	<0.001
Premature birth	18	5	2.43 (1.05–5.58)	0.029
Hypertensive disorder in pregnancy	10	11	0.77 (0.32–2.01)	0.611
Gestational diabetes	7	8	0.81 (0.41–1.99)	0.581
Anterior placenta	12	2	4.51 (1.23–16.50)	0.021
Premature abruption of the placenta	1	2	0.97 (0.70–1.33)	0.428
Fetal growth restriction	3	2	1.53 (0.21–9.98)	0.614
Luteal support	27	24	1.28 (0.72–2.24)	0.411

so postoperative adjuvant medication is required. TCM classifies endometriosis as "infertility" and "menstrual disorders" according to its symptoms. According to the ancient medical books of TCM, if the pain occurs before menstruation, it is a factual pain and the pain will be relieved if the menstrual blood is discharged on time. If the pain occurs after menstruation and the pain persists after the discharge of menstrual blood, it is deficient pain. Diagnosis of the specific disease requires the clinical assessment of the patient's clinical symptoms.

The results of this study showed that there was no significant difference in the risk of events such as miscarriage, ectopic pregnancy, termination of pregnancy, and fetal death between the two groups, and the differences in hypertensive disorder in pregnancy, gestational diabetes, placental abruption, fetal growth restriction, and luteal support between the two groups also failed to meet the statistical standard ($P > 0.05$), while the incidence of cesarean delivery, preterm delivery, and placenta previa differed significantly between the two groups (1.92 (95% CI 1.33–2.85), 2.43 (95% CI 1.05–5.58), and 4.51 (95% CI 1.23–16.50)), which may be attributed to the imbalance of progesterone receptor subtype ratios in patients with endometriosis, causing progesterone resistance [24] and abnormal autoimmune response, inducing an increase in abdominal macrophages and the secretion of a large number of cytokines [25], such as prostaglandin F2α. Prostaglandin F2α levels are significantly elevated in the peritoneal fluid of patients with endometriosis relative to normal women, and prostaglandin F2α binds to the receptor and activates nucleic acid endonucleases that break DNA, leading to decreased blastocyst formation and quality. Multiple factors interact with each other to disturb the normal implantation and development of the embryo, thus causing stillbirth [26]. Long-term inflammatory stimulation in patients with endometriosis interferes with the normal contraction frequency and amplitude of the uterus, and endometriosis causes pelvic adhesions, leading to placenta previa [27]. Endometriosis pelvic adhesions reduce the amplitude of contraction of the myometrium, compromise postpartum uterine contraction, and increase the risk of postpartum hemorrhage [28]. Endometrial structural and functional changes, progesterone resistance, local estrogen and oxidative stress responses, and variations in inflammatory mediators and apoptotic markers all raise the risk of early placental abruption [29]. Patients herein were diagnosed histologically with endometriosis, which reduced the risk of misclassification.

Swedish national research encompassing over 1.4 million singleton births found that women with endometriosis had a greater risk of preterm delivery, preeclampsia, placental problems, and cesarean delivery, but no link between endometriosis and fetal growth limitation was found. According to an Italian study, women with endometriosis are twice as likely to have a preterm delivery. The current study's findings are consistent with the prior research that revealed a link between endometriosis and placenta previa [30]. However, it is worth noting that the interaction

between adverse pregnancy outcomes, such as placenta previa, and hypertensive disorders in pregnancy increases the risk of cesarean delivery and fetal growth restriction and may compromise the accuracy of the association between endometriosis and adverse pregnancy outcomes [31]. Furthermore, there are differences in the statistical methods used in different studies and the sample size, which also affect the research conclusion.

The present study is a single-center retrospective study, lacking a multicenter large sample control, and there are limitations in the representation of the association between endometriosis and pregnancy outcome, and further prospective multicenter cohort studies are needed to investigate the impact of endometriosis on maternal and infant outcomes. This study lacks analyses of the long-term effects on neonates. In future studies, the long-term follow-up of neonates is needed to more comprehensively describe the effects of endometriosis on neonatal outcomes. The present study lacks the study of the molecular mechanisms associated with endometriosis and adverse pregnancy outcomes, and the interaction mechanisms between the two will be further elucidated at the molecular level.

5. Conclusion

Endometriosis is an influential factor in adverse pregnancy outcomes and results in a high risk of preterm delivery, placenta previa, and cesarean delivery in patients. Mutual interactions exist among adverse pregnancy outcomes and thus require vigilance and appropriate management.

Data Availability

No data were used to support this study.

Conflicts of Interest

All authors declare that they have no conflicts of interest.

Authors' Contributions

Li Xie drafted and revised the manuscript. Yuanjie Qi, Hua Li, and Li Chen conceived and designed this article and were in charge of syntax modification and revision of the manuscript. All the authors have read and agreed to the final version of the manuscript. The authors Li Xie and Yuanjie Qi were contributed equally to this work.

References

[1] C. Mehedintu, M. N. Plotogea, S. Ionescu, and M. Antonovici, "Endometriosis still a challenge," *Journal Medical Life*, vol. 7, no. 3, pp. 349–357, 2014.

[2] A. Czyzyk, A. Podfigurna, A. Szeliga, and B. Meczekalski, "Update on endometriosis pathogenesis," *Minerva Ginecologica*, vol. 69, no. 5, pp. 447–461, 2017.

[3] R. O. Burney and L. C. Giudice, "Pathogenesis and pathophysiology of endometriosis," *Fertility and Sterility*, vol. 98, no. 3, pp. 511–519, 2012.

[4] T. falcone and R. Flyckt, "Clinical management of endometriosis," *Obstetrics and Gynecology*, vol. 131, no. 3, pp. 557–571, 2018.

[5] M. G. D. Broi, R. A. Ferriani, and P. A. Navarro, "Ethiopathogenic mechanisms of endometriosis-related infertility," *JBRA Assisted Reproduction*, vol. 23, no. 3, pp. 273–280, 2019.

[6] P. Vercellini, P. Viganò, E. Somigliana, and L. Fedele, "Endometriosis: pathogenesis and treatment," *Nature Reviews Endocrinology*, vol. 10, no. 5, pp. 261–275, 2014.

[7] H. S. Taylor, A. M. Kotlyar, and V. A. Flores, "Endometriosis is a chronic systemic disease: clinical challenges and novel innovations," *The Lancet*, vol. 397, no. 10276, pp. 839–852, 2021.

[8] J. qin, X. Liu, X. Sheng, H. Wang, and S. Gao, "Assisted reproductive technology and the risk of pregnancy-related complications and adverse pregnancy outcomes in singleton pregnancies: a meta-analysis of cohort studies," *Fertility and Sterility*, vol. 105, no. 1, pp. 73–85, 2016.

[9] Y. Nagase, S. Matsuzaki, Y. Ueda et al., "Association between endometriosis and delivery outcomes: a systematic review and meta-analysis," *Biomedicines*, vol. 10, no. 2, p. 478, 2022.

[10] W.-L. Liang, J.-Y. Wu, and J. Li, "Meta-analysis of endometriosis and adverse pregnancy outcomes," *Chinese Journal of Modern Medicine*, vol. 32, no. 6, pp. 24–31, 2022.

[11] Q. Qin and Y. Xu, "Research progress of endometriosis and obstetric complications," *Modern advances in obstetrics and gynecology*, vol. 30, no. 7, pp. 552-553, 2021.

[12] H. Li, "Effect of fertility index and T lymphocyte subsets on the prognosis of patients with endometriosis combined with infertility after laparoscopic surgery," *Chinese Journal of Reproductive Health*, vol. 32, no. 3, pp. 238–242, 2021.

[13] S. Matsuzaki, Y. Nagase, Y. Ueda et al., "The association of endometriosis with placenta previa and postpartum hemorrhage: a systematic review and meta-analysis," *American Journal of Obstetrics & Gynecology MFM*, vol. 3, no. 5, Article ID 100417, 2021.

[14] E. Rola, "Endometriosis: advances and controversies in classification, pathogenesis, diagnosis, and treatment," *F1000Research*, vol. 8, 2019.

[15] L. Wen-Liang, *META Analysis of Pregnancy Outcomes in Pregnant Women with endometriosis*, Guizhou Medical University, Guiyang, China, 2021.

[16] Y. Xia and Y. J. Deng, "Research progress on endometriosis and late adverse pregnancy outcomes," *International Journal of Obstetrics and Gynecology*, vol. 48, no. 1, pp. 15–20, 2021.

[17] F. Sorrentino, M. De Padova, M. Falagario et al., "Endometriosis and adverse pregnancy outcome," *Minerva obstetrics and gynecology*, vol. 74, no. 1, pp. 31–44, 2022.

[18] K. Mekaru, H. Masamoto, H. Sugiyama et al., "Endometriosis and pregnancy outcome: are pregnancies complicated by endometriosis a high-risk group?" *European Journal of Obstetrics & Gynecology and Reproductive Biology*, vol. 172, pp. 36–39, 2014.

[19] P. R. Koninckx, A. Ussia, L. Adamyan et al., "The epidemiology of endometriosis is poorly known as the pathophysiology and diagnosis are unclear," *Best Practice & Research Clinical Obstetrics & Gynaecology*, vol. 71, pp. 14–26, 2021.

[20] H. Kobayashi, N. Kawahara, K. Ogawa, and C. Yoshimoto, "A relationship between endometriosis and obstetric complications," *Reproduction Science*, vol. 27, no. 3, pp. 771–778, 2020.

[21] S. Lalani, A. J. Choudhry, B. Firth et al., "Endometriosis and adverse maternal, fetal and neonatal outcomes, a systematic review and meta-analysis," *Human Reproduction*, vol. 33, no. 10, pp. 1854–1865, 2018.

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Retraction

Retracted: Application of Amiodarone and Cedilan in the Treatment of Patients with Arrhythmia after Esophageal and Lung Cancer

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Ge, "Application of Amiodarone and Cedilan in the Treatment of Patients with Arrhythmia after Esophageal and Lung Cancer," *Evidence-Based Complementary and Alternative Medicine*, vol. 2023, Article ID 8026918, 9 pages, 2023.

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Research Article

Application of Amiodarone and Cedilan in the Treatment of Patients with Arrhythmia after Esophageal and Lung Cancer

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Objective. To explore the effect of amiodarone and cedilan in the treatment of patients with arrhythmia after esophageal and lung cancer. *Methods*. The data of 60 patients with postoperative complications of arrhythmias after esophageal and lung cancer from January 2018 to July 2021 were retrospectively analyzed and divided into an observation group ($n = 30$) and control group ($n = 30$) according to the random number grouping principle. The former group was treated with amiodarone, and the latter group received cedilan. *Results*. The effective rate of treatment was significantly higher in the observation group than the control group ($P < 0.05$). The observation group had the drug onset time obviously shorter than the control group ($P < 0.001$). The average ventricular rate after treatment in the observation group was remarkably lower than the control group ($P < 0.001$). The observation group exhibited obviously better cardiac function after treatment as compared to the control group ($P < 0.05$). The incidence of adverse reactions in the observation group was notably lower than the control group ($P < 0.05$). Moreover, the observation group had less stress after treatment than the control group ($P < 0.001$). The blood pressure level of the observation group after treatment was significantly better than the control group ($P < 0.05$). *Conclusion*. Amiodarone can relieve stress in patients with arrhythmia following esophageal and lung cancer surgery, stabilize blood pressure, and mitigate arrhythmia symptoms. Our findings are worthy of promotion and application in clinic.

1. Introduction

Lung cancer, as a highly prevalent malignant tumor whose etiology has not been completely clarified, presents with complex clinical manifestations. In the early stage, patients do not experience any discomfort or the symptoms and signs lack specificity, and most patients are diagnosed with advanced disease, with a high clinical prevalence and death rate. Esophageal cancer is a malignant tumor of the digestive tract, which may occur in all segments of the esophageal mucosa, with a higher incidence in male than in female [1]. At this stage, surgery is an effective treatment for esophageal cancer, but radical surgery for esophageal cancer is complicated and time-consuming, which will cause greater trauma to patients and yield a higher chance of postoperative complications. Esophageal and lung cancer generally require surgical treatment, and anesthesia, hypoxic acidosis, sudden blood pressure fluctuations, traction trauma, and stress response during thoracotomy are all major causes of postoperative complications [1, 2]. Early patients are prone to arrhythmias that persist for a long time and remain complicated to remedy [3], and later, they may suffer from decreased circulatory function and cardiac arrest [4, 5], which can seriously affect the postoperative recovery process. According to the World Health Organization (WHO), the probability of postoperative arrhythmia is approximately 0.8% to 54.2% after lung cancer [6], while the probability of postoperative arrhythmia is 2.6% to 29.8% after esophageal cancer [7]. Furthermore, in certain preoperative patients with circulatory system illnesses, cardiopulmonary performance diminishes dramatically, and the incidence of arrhythmia increases significantly. As a result, failure to intervene on time may result in death [8].

At present, the drugs used to treat arrhythmia are mainly sodium channel blockers, β-adrenergic receptor blockers, calcium channel blockers, and repolarization process

extension drugs [9]. Cedilan is a popular digitalis medicine that helps relieve arrhythmia symptoms in patients; however, it might produce gastrointestinal problems, and patients are at risk of digitalis poisoning [10]. Some studies have found that amiodarone can reduce the average ventricular rate of patients with arrhythmia more quickly than cedilan and relieve their stress state [11, 12]. Taken together, the reason behind a fairly favorable therapeutic effect of amiodarone is that it has no inhibitory effect on the patient's left ventricular function and is beneficial in protecting the patient's cardiac function.

A review of previous literature reveals no studies on the use of amiodarone and sildiran in patients with postoperative arrhythmias in esophageal and lung cancer. In recent years, with the widespread application of Chinese medicine in the treatment of this disease, it has been found that Chinese medicine has obvious advantages in long-term medication and control of clinical symptoms, featuring individualized treatment, diverse formulae, and significant efficacy, and the combination with western medicine can greatly improve the therapeutic effect. Chinese medicine adopts a holistic concept and treats the disease with evidence. It is believed that the overall pathological changes of the disease are based on the deficiency of the heart and the deficiency of the qi, and the cause of the disease is related to the deficiency of the heart and qi. Nourishing the heart, benefiting qi, and opening up the blood vessels are the main treatment principles. As a result, we aimed to investigate the effect of combining the two on patients with arrhythmia following esophageal cancer and lung cancer surgery. We evaluated the drug by observing routine indicators of arrhythmia.

Furthermore, we investigated the efficacy of amiodarone and cedilan in the therapy of arrhythmias in patients with esophageal and lung cancer. According to the findings of this study, the most common adverse effects of the two groups of patients were dizziness, weariness, and gastrointestinal symptoms. The observation group had obviously lower adverse reaction rate than the control group, suggesting that such a combination can be used in middle-aged and elderly patients with lung and esophageal cancer. Following are the main contributions:

(i) To explore the effect of amiodarone and cedilan in the treatment of patients

(ii) To explore the effect of combination of the two on patients with arrhythmia after operation of esophageal and lung cancer

(iii) To compare the treatment effect, average ventricular rate, onset time, cardiac function, and incidence of adverse reactions, stress indicators, blood pressure levels between the two groups

The rest of the paper was organized as follows: in section 2, we offer an overview of the materials and methods. Section 3 is about the datasets and evaluation metrics. Moreover, the experimental details were also presented. In Section 4, results are discussed. Finally, the conclusion is presented in Section 5.

2. Materials and Methods

2.1. Research Design. This study, a controlled study, was conducted in our hospital from January 2018 to July 2021, which was intended to explore the application effects of amiodarone and cedilan in the treatment of patients with postoperative arrhythmia after esophageal cancer and lung cancer.

The randomization was carried out using an online web-based randomization tool (https://www.randomizer.org/). The original sample size calculation estimated that 30 patients in each group would be needed to detect a 3-point difference between groups in a 2-sided significance test with a power of 0.8 and an alpha error level of 0.05.

Informed consent was obtained from patients and signed prior to enrollment in this study. The study protocol was approved by the hospital ethics committee. Ethics number: SD-SD20180102. All processes were in accordance with the Declaration of Helsinki.

2.2. Recruitment of Research Objects. The data of patients with postoperative complications of arrhythmias after esophageal and lung cancer in our hospital from January 2018 to July 2021 were retrospectively analyzed, and patients were included according to the following criteria. (1) The patient was diagnosed as esophagus cancer/lung cancer by imaging and pathological examinations [13, 14] and given surgical treatment, and arrhythmia of more than 3 minutes consistently occurs within 7 days after operation (the arrhythmia is diagnosed based on the 6th edition *Diagnostics* [15] of People's Medical Publishing House); (2) the patient was treated in this hospital for the whole course, and there was no death, transfer to the hospital or stopping treatment; (3) the clinical data of the patient was completed. Similarly, patients were excluded according to the following criteria: (1) patients who were unable to communicate with them due to hearing, language impairment, mental illness, or unconsciousness; (2) patients who withdrew from treatment, died, had treatment plans changed, or lost to follow-up; (3) the same type of arrhythmia existed before treatment, which is not clear that it is caused by surgery or postoperative factors; and (4) patients complicated with other serious organic diseases.

2.3. Procedures. A total of 60 patients were included in the present study, and they were randomly divided into the observation ($n = 30$) and the control ($n = 30$). On the same day, the patients agreed to participate in the study, and the study team collected social demographic statistics. According to the analyses, no statistically significant difference was noted in the general data of the two groups ($P > 0.05$), see details in Table 1.

2.4. Moral Considerations. This study was compiled in accordance with the principles of the Declaration of Helsinki [16] and was approved by the ethical committee of the hospital. The patients were recruited, to whom the research

Table 1: Intergroup comparison of general data.

Group	Observation group ($n = 30$)	Control group ($n = 30$)	X^2/t	P
Gender			0.617	0.432
Male	16	19		
Female	14	11		
Age (year old)				
Age range	43–77	42–77		
Mean age	63.50 ± 6.88	63.60 ± 9.66	0.046	0.963
Mean weight (kg)	56.21 ± 2.15	56.23 ± 2.66	0.032	0.975
BMI (kg/m^2)	23.45 ± 3.15	23.50 ± 3.20	0.061	0.952
Type of disease			0.272	0.602
Esophageal cancer	12	14		
Lung cancer	18	16		
Marital status			0.111	0.739
Married	25	24		
Single	5	6		
Medical expenses payment method				
Medical insurance	15	14	0.067	0.796
Commercial insurance	10	10	0.000	1.000
Others	5	6	0.111	0.739
Place of residence			0.067	0.795
Township	14	13		
Countryside	16	17		
Monthly income (yuan)			0.067	0.796
≥4000	15	14		
<4000	15	16		
Living habits				
History of smoking	12	13	0.069	0.793
Drinking history	14	12	0.272	0.602
Education level			0.069	0.793
High school and below	18	17		
University and above	12	13		

team explained the objective, significance, content, and confidentiality of the study they enrolled in, and the informed consent form was obtained subsequently.

2.5. Withdrawal Criteria. In cases where the research team judged it inappropriate to continue the experiment, their case records were retained but data analysis was not performed if the following conditions occurred: (i) adverse events or severe adverse events; (ii) illnesses deterioration during the experiment.; (iii) severe complications; (iv) unwilling to continue the clinical trial and requests to withdraw from the clinical trial.

2.6. Methods. The observation group was treated with the amiodarone (Shan Dongfangming Pharmaceutical Group Co., Ltd., Zhunzi H20044923). 150 mg amiodarone was added to 10 mL of 5% glucose solution for intravenous injection. If the initial loading dose is not obvious, an additional dose of 150 mg was added within 15 minutes, followed by continuous intravenous infusion at 0.5–1 mg/min, with a total dose of ≤1.2 g in 24 hours.

The control group was treated with the cedilan. If the patient had not used digitalis in the past 7 days, then 0.4 mg cedilan (Shanghai Zhaohui Pharmaceutical Co., Ltd., SFDA approval no. H31021178) was added to 20 mL of 5% glucose solution for intravenous injection, 0.4 mg was added for those who were ineffective within 30 minutes, and 0.2 mg for those who were still ineffective, and the total dose was 1 mg. If the patient had used digitalis within the past 7 days, 0.2 mg cedilan was given as an intravenous bolus, 0.2 mg was added for those who were ineffective within 30 minutes, and 0.2 mg was added for those who were still ineffective, and the total dose was 0.6 mg.

Electrocardiograms and blood pressure were monitored continuously in both groups before and after dosing. If patients converted to sinus rhythm or had a heart rate decrease to 70 beats per minute during intravenous administration, the drug was discontinued. In addition, blood pressure was immediately measured, and a 12-lead ECG was recorded.

The two groups were treated with Yangxin Yiqi Tongmai decoction: 15 g Radix Astragali, 12 g *Codonopsis pilosula*, 9 g *Panax quinquefolius*, 9 g Radix Pseudostellariae, 15 g Radix Rehmanniae, 12 g Radix Ophiopogonis, 9 g *Schisandra chinensis*, 12 g Radix Glycyrrhizae, 15 g *Salvia miltiorrhiza*, 15 g Szechuan Lovage Rhizome, 15 g *Achyranthes bidentata*, 15 g Radix *Achyranthes bidentata*, 9 g Ramulus Cinnamomi, 5 g Aconite, 9 g dried ginger, 12 g Semen Ziziphi Spinosae, and 15 g Platycladi Seed. The above medicine was decocted in water, one dose daily, taken in morning and evening, for a total of 1 month.

2.7. Observation Criteria

(1) *General data*: the general information sheet is self-made and includes the frequency of hospitalization, name, gender, age, weight, BMI, marital status, education level, place of residence, income level, medical payment method, lifestyle habits, and type of disease.

(2) *Clinical symptoms*: patients were considered significantly effective if their clinical symptoms largely disappeared and converted to sinus rhythm, or if the ventricular rate decreased to 100 beats/min within 15 minutes of dosing. Similarly, patients were considered effective if their symptoms improved and converted to sinus rhythm within 15–30 minutes of dosing, or if their ventricular rate decreased ≥20% from baseline values. In addition, patients were considered ineffective if their symptoms did not improve after 30 minutes of dosing and did not meet the criteria for apparent effectiveness.

(3) *Average ventricular rate and onset time*: the average ventricular rate and onset time of the drugs in the two groups were recorded.

(4) *Cardiac function*: at pre- and post-treatment, patients were placed in the supine position, and apical four-chamber color Doppler ultrasonography (GE Medical Voluson P6, National Instruments No. 20152062178) was performed to examine left ventricular end-diastolic diameter (LVEDD), left ventricular ejection fraction (LVEF), and cardiac output per beat (SV).

(5) *The incidence of adverse reactions*: adverse reactions ranged from dizziness, fatigue, gastrointestinal reactions, elevated creatinine, and elevated blood phosphorus. The number of patients with adverse reactions was counted.

(6) *Stress indicators*: after treatment, 5 ml of fasting peripheral venous blood was collected from the patient in the morning and centrifuged at 3000 r/min for 15 min, and then the serum was isolated. The enzyme-linked immunosorbent assay (Beijing Kewei Clinical Diagnostic Reagent Co., Ltd., Enzyme Combined immunosorbent kit, S20060028) was used to measure blood sugar level and insulin level.

(7) *Blood pressure level*: patients were required to sit in meditation for 10 minutes before and after the treatment to ensure that they did not smoke or consume caffeine before the blood pressure test. Measurements were performed using a standard mercury column sphygmomanometer (Jiangsu Yuyue Medical Equipment Co., Ltd., Su Yi No.: 20152070945). Measurements were taken with the patient in a sitting position, with both legs naturally flat. The lower edge of the cuff was approximately 2 cm from the anterior midline of the elbow. The balloon tube was facing the brachial pulse. The blood pressure in the patient's upper arm was recorded, and the mean value was recorded.

2.8. Statistical Analysis. The data analysis was conducted using SPSS 20.0, and GraphPad Prism 7 (GraphPad Software, San Diego, USA) was utilized for graphics plotting. The results included counting data and measurement data, which were analyzed by X^2 and the *t*-test, respectively. $P < 0.05$ indicates statistically significant difference.

3. Results

3.1. Intergroup Comparison of the General Data. In terms of general data, no statistical difference was observed between the two groups ($P > 0.05$). See Table 1.

3.2. InterGroup Comparison of Treatment Effects. The observation group had a much higher effective rate of treatment than the control group ($P < 0.05$). See Figure 1.

3.3. InterGroup Comparison of Average Ventricular Rate and Onset Time. After treatment, the observation group exhibited medication onset time and average ventricular rate obviously lower than the control group ($P < 0.001$). See Figures 2 and 3.

3.4. InterGroup Comparison of Heart Function. The observation group exhibited obviously improved cardiac function after treatment when compared to the control group ($P < 0.05$). See Table 2.

3.5. InterGroup Comparison of the Incidence of Adverse Reactions. The incidence of adverse responses was considerably lower in the observation group than the control group, with statistically significant difference ($P < 0.05$, Table 3).

3.6. InterGroup Comparison of Stress Indicators. The stress indicators were noticeably better in the observation group after the treatment than the control group ($P < 0.001$) for the whole process, as shown in Figure 4.

3.7. InterGroup Comparison of Blood Pressure Levels. Following treatment, the observation group had blood pressure level significantly lower than the control group ($P < 0.05$). See Table 4.

4. Discussion

Arrhythmias are defined as changes in the formation of cardiac impulses and abnormalities in the conduction of heart rate and rhythm. The main mechanisms underlying them are abnormal autonomic, reentrant, and triggered activity [17, 18], and patients with severe arrhythmias usually experience rapid onset, and their hemodynamic indices are already markedly altered, in which they face a serious risk of death. In etiological terms, arrhythmias is mainly classified into hereditary arrhythmias and acquired arrhythmias. Hereditary arrhythmias is mostly caused by

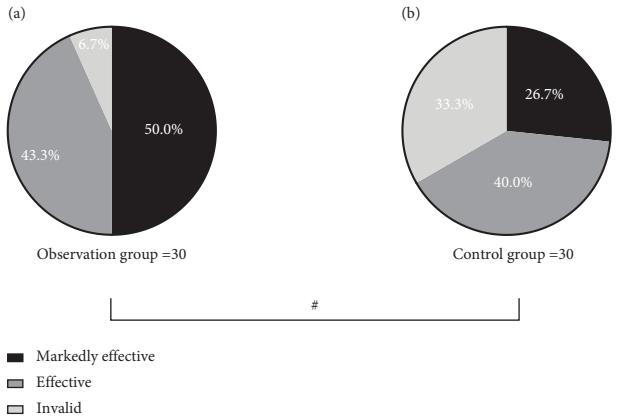

Figure 1: Intergroup comparison of treatment effects (n(%)). Note: see Figures 1(a) and 1(b) for the observation group and the control group, respectively. The black area in the figure refers to markedly effective, the dark gray area means effective, and the light gray area indicates ineffective. # means $P < 0.05$. In the observation group, 15 (50.0%), 13 (43.3%), and 2 (6.7%) patients were markedly effective, effective, and ineffective after the treatment, and in the control group, 8 (26.7%), 12 (40.0%), and 10 (33.3%) patients were remarkably effective, effective, and ineffective after treatment, respectively.

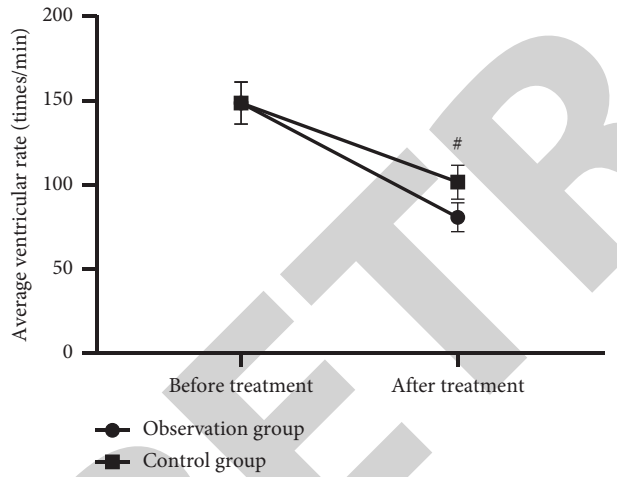

Figure 2: Intergroup comparison of average ventricular rate before and after treatment ($\overline{x} \pm s$, times/min). Note: the horizontal axis in Figure 2 is from left to right before and after treatment, and the vertical axis is the average ventricular rate (times/min). The dotted line in the figure refers to the observation group and the square line the control group. # indicates $P < 0.001$. There was no significant difference in the average ventricular rate before treatment between the observation group and the control group (148.65 ± 12.65 vs 148.54 ± 12.45 and $P > 0.05$). The average ventricular rate after treatment was notably lower in the observation group than the control group (80.65 ± 8.65 vs 101.54 ± 10.11 and $P < 0.001$).

mutations in gene channels, while acquired arrhythmias can originate from various organic heart diseases [19, 20]. The incidence of arrhythmias would be elevated in patients subjected to anesthesia, hypothermia, and thoracotomy.

The esophagus is the narrowest part of the digestive tract, and its physiological anatomical location is closely

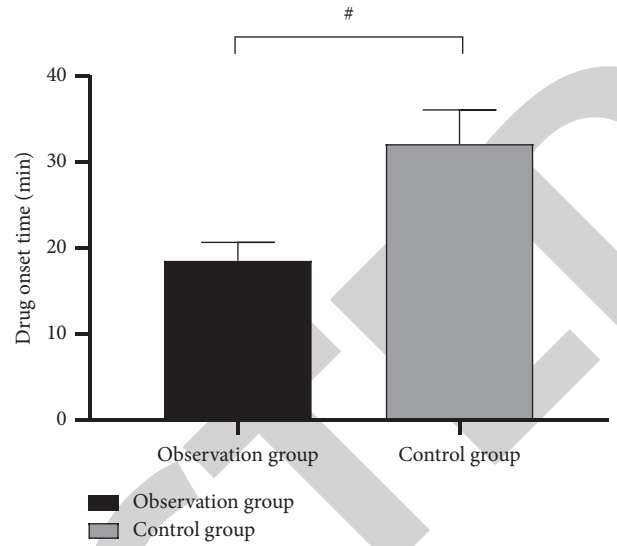

Figure 3: Intergroup comparison of drug onset time ($\overline{x} \pm s$ min). Note: in Figure 3, the horizontal axis is the observation group and the control group from left to right, and the vertical axis is the drug onset time (min). # indicates $P < 0.001$. The drug onset time was obviously lower in the observation group as compared to the control group (18.54 ± 2.15 vs 32.14 ± 3.98 and $P < 0.001$).

intertwined with the respiratory tract. Esophageal cancer is a highly prevalent clinical malignant tumor of the digestive tract. Surgery is an effective method to treat esophageal cancer at this stage, but the postoperative complications are prone to endanger patients' life. Lung cancer is also prone to some postoperative complications, such as respiratory failure, as well [21, 22]. Surgery is currently the primary modality for treating patients with esophageal and lung cancers. Surgical trauma triggers a stress response that raises the patient's renin-angiotensin levels and fluctuates his or her blood pressure considerably. Intraoperative traction will also increase sympathetic nerves tension and aggravate coronary spasm, so patients with esophageal and lung cancer are more likely to have arrhythmia after surgery [23], which is not conducive to their perioperative recovery. In order to improve the symptoms of arrhythmia patients, sodium channel blockers, calcium channel blockers, and other drugs are often used clinically.

In Chinese medicine, the clinical symptoms of patients with arrhythmia are classified as "chest paralysis" and "palpitation." The main cause of the disease is weakness, lack of innate endowment, or excessive thinking, or invasion of external evil, depletion of heart qi, deficiency of heart qi, the heart's main blood vessels and the function of hiding the spirit, blocking the qi, inducing chest tightness and shortness of breath, and spontaneous sweating. The disease is induced by the deficiency of Qi and blood over time, and the deficiency of blood does not nourish the heart. Yangxin Yiqi Tongmai decoction is based on the addition and subtraction of the clinical symptoms of patients on the basis of pulse-activating decoction and grilled Glycyrrhiza decoction and Cassia Twig and Dragon Bone Combination. The monarch medicines in the prescription are *Panax quinquefolium* and

Table 2: Intergroup comparison of cardiac function indexes ($\overline{x} \pm s$).

	Observation group		Control group		t	P
LVEDD (mm)	Pretreatment	65.47 ± 5.98	Pretreatment	65.40 ± 5.48	0.047	0.963
	Post-treatment	50.12 ± 5.10	Post-treatment	56.98 ± 5.45	5.034	<0.001
	T	10.697	t	5.967		
	P	<0.001	P	<0.001		
LVEF (%)	Pretreatment	45.68 ± 6.98	Pretreatment	45.47 ± 6.51	0.121	0.905
	Post-treatment	62.45 ± 5.98	Post-treatment	55.65 ± 5.68	4.516	<0.001
	t	9.993	t	6.454		
	P	<0.001	P	<0.001		
SV (L/min)	Pretreatment	3.25 ± 0.65	Pretreatment	3.28 ± 0.57	0.190	0.850
	Post-treatment	4.98 ± 0.87	Post-treatment	4.25 ± 0.88	3.231	0.002
	T	8.725	t	5.067		
	P	<0.001	P	<0.001		

Table 3: Intergroup comparison of the incidence of adverse reactions (n (%)).

Group	Dizziness and fatigue	Gastrointestinal reaction	Increased creatinine	Increased blood phosphorus	Total incidence
Observation group	1 (3.3)	1 (3.3)	0 (0.0)	0 (0.0)	2 (6.7)
Control group	2 (6.7)	4 (13.3)	2 (6.7)	2 (6.7)	10 (33.3)
X^2	0.351	1.964	2.069	2.069	6.667
P	0.554	0.161	0.150	0.150	0.010

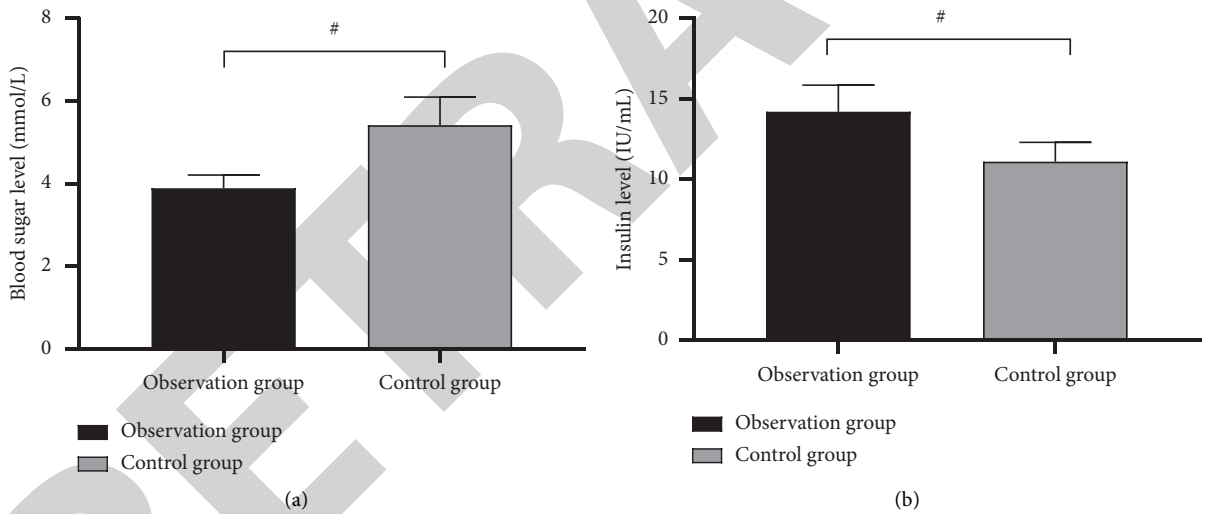

Figure 4: Intergroup comparison of stress indicators ($\overline{x} \pm s$). Note: the horizontal axes of Figures 4(a) and 4(b) are pretreatment and post-treatment, respectively, from left to right. The black area in the figure means the observation group, and the gray area indicates the control group. # indicates $P < 0.001$. See Figure (a) for the blood glucose level. The blood glucose level was significantly lower in the observation group after treatment than the control group (3.89 ± 0.32 vs 5.42 ± 0.68, $P < 0.001$). Figure (b) indicates the insulin level. After treatment, the insulin level was significantly higher in the observation group than the control group (14.20 ± 1.65 vs 11.10 ± 1.20, $P < 0.001$).

Salvia miltiorrhiza. *Panax quinquefolium* tonifies Qi and nourishes Blood, while *Salvia miltiorrhiza* invigorates blood to regulate menstruation, dispel blood stasis, and relieve pain. The combination of the two drugs is effective in tonifying Qi and nourishing blood, invigorating blood, and dispelling blood stasis. Semen Ziziphi Spinosae, Radix Puerariae, Taxillus chinensis Danser, Rhizoma Nardostachyos, and Coptidis Rhizoma are used together to calm the mind and tranquilize the spirit, raise and lower the qi in a measured manner, and nourish the essence and blood [24]. Many clinical studies have demonstrated that herbal medicines combined with western medicines can better relieve the symptoms of patients with cardiac arrhythmias.

Cedilan is a commonly used digitalis drug in clinical practice, which can reduce the heart rate and strengthen the myocardial contractile function of patients, which is of high value in paroxysmal supraventricular tachycardia. However, cedilan, similar to other digitalis drugs, can easily cause gastrointestinal reactions. Some patients also suffer from neurological complaints, such as dizziness, insomnia, and

Table 4: Intergroup comparison of blood pressure levels ($\overline{x} \pm s$ and mmHg).

	Observation group		Control group		t	P
Systolic blood pressure	Pretreatment	156.65 ± 15.32	Pretreatment	156.78 ± 15.24	0.033	0.974
	Post-treatment	143.98 ± 12.68	Post-treatment	150.74 ± 12.68	2.065	0.043
	t	3.490	t	1.669		
	P	0.001	P	0.101		
Diastolic blood pressure	Pretreatment	90.26 ± 8.12	Pretreatment	90.20 ± 8.10	0.029	0.977
	Post-treatment	80.45 ± 5.98	Post-treatment	88.65 ± 7.98	4.504	<0.001
	t	5.328	t	0.747		
	P	<0.001	P	0.458		

depression. In severe cases, digitalis toxicity may even aggravate cardiac arrhythmias. Therefore, it should be used with caution. In a study by Fonseca L scholars et al., the onset of action of sildiran for arrhythmias in heart failure was significantly longer than that of amiodarone treatment [25]. This study also investigated and concluded the same result, indicating that amiodarone has a faster effect then the cedilan, and the patient's average ventricular rate decreased more significantly [26, 27].

At present, the latest version of the arrhythmia treatment guidelines has recommended amiodarone as the first-line treatment for electric shock to reverse arrhythmia [28]. The drug is a beta-adrenergic receptor blocker, which can prolong the action potential of myocardial tissue and reduce re-entrant excitation. It can avoid rapid sodium influx in atrial and myocardial conduction, which can effectively control hemodynamic changes and reduce blood pressure fluctuations in patients. Therefore, the stress indicators and blood pressure levels of the observation group after the treatment are remarkably better than those of the control group. Taken together, amiodarone can inhibit factors that predispose to arrhythmias. In addition, amiodarone exhibited no inhibitory effect on left ventricular function and can be used to alleviate arrhythmic patients with severe left ventricular insufficiency [29]. For some patients with preoperative circulatory and respiratory dysfunction, amiodarone can also improve its cardiopulmonary function. It has been found that the heart function indexes of the observation group after treatment were considerably better than those of the control group, indicating that the effect of amiodarone was superior to that of the cedilan [30]. The analysis of the results revealed that amiodarone is a class III antiarrhythmic drug with the presence of mild noncompetitive alpha and beta-adrenergic receptor blockers. Its ability to prolong the action potential and effective inactivity of myocardial tissues at various sites can eliminate fold excitation. It reduces conduction velocity by inhibiting Na+ inward flow in atrial and myocardial conduction fibers. It does not adversely affect the resting membrane potential and action potential height and inhibits the antegrade conduction of the atrioventricular bypass more than the retrograde. Prolongation of the Q-T interval and T-wave changes may occur on the ECG due to excessive prolongation of repolarization. With amiodarone, its ability to effectively inhibit adrenergic receptors allows for a decrease in sympathetic activity, which in turn improves arrhythmic conditions [31, 32].

Chen et al. showed that amiodarone exerted little effect on arrhythmias, intraventricular conduction, either by increasing the pacing threshold. In addition, the drug is metabolized mainly by the hepatic cytochrome P450 system with little renal clearance, and thus it does not increase the renal burden of patients [33]. A large number of studies have confirmed that amiodarone bears a higher safety and a lower probability of adverse reactions [34]. This study found that the adverse reactions of the two groups of patients were mostly dizziness and fatigue and gastrointestinal reactions. The observation group had significantly lower adverse reactions rate than the control group, suggesting that it can be used in middle-aged and elderly patients with lung and esophageal cancer whose body function and immune abilities are gradually declining, and it is beneficial to reduce the body burden of patients [35]. The reason may be that amiodarone is a class III antiarrhythmic drug with both mild class I and class IV antiarrhythmic properties and is a broad-spectrum antiarrhythmic drug. After oral administration, 62.1% binds to albumin in plasma, and 33.5% may bind to β-lipoprotein, so its oral effect is slow. The bioavailability of amiodarone is on average around 50%. Not only can amiodarone treat arrhythmias in the elderly but long-term use of amiodarone in small doses can also serve the purpose of controlling arrhythmias and consolidating the therapeutic effect. The patients had arrhythmic manifestations effectively controlled, and myocardial oxygen consumption was significantly reduced, and therefore, myocardial cell function was significantly restored, and cardiac function was obviously enhanced [36, 37].

This trial is instructive, but the following problems remain: small sample size, short observation period, and no long-term follow-up. Despite some drawbacks, the method can be applied to treat patients with cerebral aneurysms in various medical institutions. It is expected that in the future, a large number of investigators and patients will cooperate and conduct clinical studies together with larger samples to provide more clinical evidence for the study and application of this method.

5. Conclusions

In this study, we explored the effect of amiodarone and cedilan in the treatment of patients with arrhythmia after esophageal and lung cancer. It has been observed that amiodarone can alleviate the stress state of patients with arrhythmia after esophageal and lung cancer surgery,

stabilize the blood pressure indicators, and improve arrhythmia symptoms. Our findings are worthy of promotion and application in clinical practice.

Data Availability

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

Consent

All authors have read and approved this manuscript to be considered for publication.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

Hongjin Ge drafted and revised the manuscript. Hongjin Ge conceived and designed this article, in charge of syntax modification and revise of the manuscript. All the authors have read and agreed to the final version manuscript.

References

[1] X. M. Tang, X. L. Lin, and S. L. Shao, "Application value of dynamic electrocardiogram in the diagnosis of esophageal cancer patients after intensity modulated radiation therapy," *China Modern Medicine*, 2019.

[2] J. F. Borkenhagen, C. R. Bergom, C. T. Rapp, S. J. Klawikowski, L. E. Rein, and E. M. Gore, "Dosimetric predictors of cardiotoxicity in thoracic radiotherapy for lung cancer," *Clinical Lung Cancer*, vol. 20, no. 6, pp. 435–441, 2019.

[3] J. Gooszen, L. Goense, S. S. Gisbertz, J. P. Ruurda, R. van Hillegersberg, and M. I. van Berge Henegouwe, "Intrathoracic versus cervical anastomosis and predictors of anastomotic leakage after oesophagectomy for cancer," *The British Journal of Surgery*, vol. 105, no. 5, pp. 552–560, 2018.

[4] S. Ozawa, K. Koyanagi, Y. Ninomiya, K. Yatabe, and T. Higuchi, "Postoperative complications of minimally invasive esophagectomy for esophageal cancer," *Annals of Gastroenterological Surgery*, vol. 4, no. 2, pp. 126–134, 2020.

[5] K. Yoshie, M. Yamasaki, M. Yokoyama et al., "Prognostic benefits of prior amiodarone or β-blocker use before the onset of ventricular arrhythmia with hemodynamic collapse," *Heart and Vessels*, vol. 36, no. 9, pp. 1430–1437, 2021.

[6] Y. Hikasa, S. Suzuki, Y. Mihara et al., "Intraoperative fluid therapy and postoperative complications during minimally invasive esophagectomy for esophageal cancer: a single-center retrospective study," *Journal of Anesthesia*, vol. 34, no. 3, pp. 404–412, 2020.

[7] S. I. Panpan, G. Ning, and L. U. Chen, "Effect of thoracoscopic surgery on IgA IgG IgM and quality of life in patients with early and middle thoracic esophageal cancer," *Hebei Medicine*, 2019.

[8] M. Gatti, E. Raschi, E. Poluzzi et al., "The complex management of atrial fibrillation and cancer in the COVID-19 era: drug interactions, thromboembolic risk, and proarrhythmia," *Current Heart Failure Reports*, vol. 17, no. 6, pp. 365–383, 2020.

[9] N. M. Akhtar, D. Chen, Y. Zhao et al., "Postoperative short-term outcomes of minimally invasive versus open esophagectomy for patients with esophageal cancer: an updated systematic review and meta-analysis," *Thoracic Cancer*, vol. 11, no. 6, pp. 1465–1475, 2020.

[10] H. Ojiri, "Diagnostic imaging of the esophageal cancer," *Esophageal Squamous Cell Carcinoma*, Springer, Singapore, pp. 35–61, 2020.

[11] Z. Song, L. I. Dezhu, and X. Yang, "Effect of amiodarone combined with cedilanid on the treatment of patients with chronic cardiac insufficiency and paroxysmal atrial fibrillation," *Internal Medicine*, 2018.

[12] B. Schurink, E. Mazza, J. P. Ruurda, T. A. P. Roeling, R. L. A. W. Bleys, and R. van Hillegersberg, "Metastatic incidence of (PET)CT positive lung hilar and retroperitoneal lymph nodes in esophageal cancer patients," *Surgical Oncology*, vol. 33, pp. 170–176, 2020.

[13] B. J. Zhang, H. T. Tian, H. O. Li, and J. Meng, "The effects of one-lung ventilation mode on lung function in elderly patients undergoing esophageal cancer surgery," *Medicine*, vol. 97, no. 1, Article ID e9500, 2018.

[14] S. Wei, S. Li, H. Dong, W. Xiao, M. Li, and H. Chu, "Effects of lung protective ventilation on the cognitive function level of patients with esophageal cancer," *Iranian Journal of Public Health*, vol. 48, no. 2, pp. 256–261, 2019.

[15] L. Tullie, A. Kelay, G. S. Bethell, C. Major, and N. J. Hall, "Barrett's oesophagus and oesophageal cancer following oesophageal atresia repair: a systematic review," *BJS Open*, vol. 5, no. 4, Article ID zrab069, 2021.

[16] A. Jiang, L. Gong, H. Ding, and M. Wang, "Cancer mortality and long-term environmental exposure of cadmium in contaminated community based on a third retrospective cause of death investigation of residents living in the Guangdong province from 2004 to 2005," *Biological Trace Element Research*, vol. 199, no. 12, pp. 4504–4515, 2021.

[17] A. D. Spence, J. Busby, P. Murchie et al., "Medications that relax the lower oesophageal sphincter and risk of oesophageal cancer: an analysis of two independent population-based databases," *International Journal of Cancer*, vol. 143, no. 1, pp. 22–31, 2018.

[18] M. S. Noori, E. S. Streator, G. E. Carlson, D. S. Drozek, M. M. Burdick, and D. J. Goetz, "An adhesion based approach for the detection of esophageal cancer," *Integrative Biology*, vol. 10, no. 12, pp. 747–757, 2018.

[19] P. Mahawongkajit, "Introducer percutaneous endoscopic gastrostomy in palliative care of patients with esophageal cancer," *Palliative Care*, Intechopen, London, UK, 2021.

[20] K. Dino, Y. Michael Borbély, B. Dislich et al., "Favourable long-term survival of patients with esophageal cancer treated with extended transhiatal esophagectomy combined with en bloc lymphadenectomy: results from a retrospective observational cohort study," *BMC Surgery*, vol. 20, no. 1, p. 197, 2020.

[21] S. D. Clark, D. S. Reuland, A. T. Brenner, and M. P. Pignone, "What is the effect of a decision aid on knowledge, values and preferences for lung cancer screening? an online pre-post study," *BMJ Open*, vol. 11, no. 7, Article ID e045160, 2021.

[22] J. O. Lando, M. M. Mwachiro, R. K. Parker et al., "Prevalence of esophageal squamous dysplasia in relatives of patients with esophageal cancer in Southwestern Kenya," *Cancer Epidemiology*, vol. 78, Article ID 102141, 2022.

[23] H. Kitagawa, T. Namikawa, J. Iwabu, K. Fujisawa, M. Kobayashi, and K. Hanazaki, "Outcomes of abdominal esophageal cancer patients who were treated with

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Evidence-Based Complementary and Alternative Medicine
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Retraction

Retracted: Apatinib plus Radiotherapy on the Expression of CEA and VEGF in Advanced Oligometastatic Non-Small-Cell Lung Cancer

Evidence-Based Complementary and Alternative Medicine

Received 5 December 2023; Accepted 5 December 2023; Published 6 December 2023

This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Zhu, Z. Lin, and C. Wu, "Apatinib plus Radiotherapy on the Expression of CEA and VEGF in Advanced Oligometastatic Non-Small-Cell Lung Cancer," *Evidence-Based Complementary and Alternative Medicine*, vol. 2023, Article ID 4242346, 6 pages, 2023.

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Research Article

Apatinib plus Radiotherapy on the Expression of CEA and VEGF in Advanced Oligometastatic Non-Small-Cell Lung Cancer

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Objective. The purpose of this study was to evaluate the clinical efficacy of apatinib plus concurrent radiotherapy on carcinoma embryonic antigen (CEA) and vascular endothelial growth factor (VEGF) expression in patients with non-small-cell lung cancer (NSCLC) with oligometastases. *Methods*. This is a prospective randomized controlled trial. Sixty-four patients with oligometastatic NSCLC who were treated in the Central South University Xiangya School of Medicine Affiliated Haikou Hospital from January 2017 to January 2019 were randomly assigned into the control group and the study group, with 32 cases in each group. The control group was treated with stereotactic body radiotherapy (SBRT), and the study group was treated with apatinib. *Results*. The overall response rate (ORR) of the study group was significantly higher than that of the control group. The carcinoma embryonic antigen (CEA) and the vascular endothelial growth factor (VEGF) in the two groups were significantly decreased, with lower results in the study group compared to the control group. The 12-month and 24-month overall survival (OS) of the study group were significantly higher than those of the control group. There was no significant difference in progression-free survival (PFS) between the two groups. The median OS in the control group was 20.0 months, and the study group had not yet reached the median OS; the OS in the study group was significantly higher than that in the control group. There was no significant difference in adverse reactions between the two groups. *Conclusion*. For patients with oligometastatic lung cancer, apatinib combined with chemotherapy can significantly improve clinical efficacy, reduce tumor marker expression, and extend overall survival with good safety profiles.

1. Introduction

Non-small-cell lung cancer (NSCLC) is an aggressive tumor that recurs or progresses after standard chemoradiotherapy in most patients [1]. Targeted therapy is one of the mainstays for NSCLC, and it mainly includes antiangiogenesis drugs, drugs targeting epidermal growth factor receptor (EGFR) mutations, drugs targeting anaplastic lymphoma kinase gene alterations, and drugs targeting reactive oxygen species-1 gene alterations, which play a key role in improving the quality of life of patients and prolonging the progression-free survival (PFS) and overall survival (OS) [2, 3]. Oligometastasis of NSCLC is defined as solitary metastasis in distant metastatic organs, as well as the early stage when tumor invasion is relatively mild and is a transitional stage between localized primary tumors and extensive metastases [4,5]. It includes multiple metastases in a single organ or multiple metastases in multiple organs, with the number of metastases normally less than five [6].

Most solid tumors are highly dependent on angiogenesis to secure nutrients and oxygen supply to support their growth, and antiangiogenic therapy, therefore, is widely used in various solid tumors [7]. The vascular endothelial growth factor (VEGF) is a key signaling pathway in vascular endothelial cells, and studies have shown that inhibiting the VEGF by targeting angiogenesis is an effective approach to

lung cancer treatment [8]. Apatinib is a novel vascular endothelial growth factor receptor (VEGFR) tyrosine kinase inhibitor (TKI), and the combination with chemotherapy significantly prolongs the PFS and the OS of patients compared with patients receiving chemotherapy alone as evidenced by previous studies [9]. Studies have confirmed a close correlation between the VEGF and lymph node metastasis in NSCLC, and lymph node metastasis is the primary route of lung cancer metastasis. As such, it is speculated that VEGF receptor inhibitors play an important role in improving the prognosis of patients with oligometastatic lung cancer [10]. However, there is a paucity of studies reporting the application effect of apatinib in patients with oligometastatic lung cancer. Accordingly, this paper intends to explore the efficacy and the potential mechanism of apatinib combined with radiotherapy on advanced oligometastatic NSCLC.

2. Materials and Methods

2.1. Research Design. This study was a prospective parallel randomized controlled trial. A total of 64 oligometastatic NSCLC patients treated in the Central South University Xiangya School of Medicine Affiliated Haikou Hospital from January 2017 to January 2019 were randomly allocated into the control group and the research group (1 : 1) via the parallel randomized controlled trial method. In this study, data collectors and data analysts were blinded to study design and assignments. This study was approved by the Ethics Committee of the Central South University Xiangya School of Medicine Affiliated Haikou Hospital, No.11-298751, and all procedures were followed by the ethical guidelines speculated in the Declaration of Helsinki [11]. All subjects in this study provided the consent form after being informed of the content before enrollment.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria. The following patients were included in the study: (1) age 18–80 years old, with no gender restriction; (2) underwent primary tumor resection of NSCLC; (3) oligometastases confirmed by CT, brain MR, bone ECT, or PETCT;(4) the number of metastases less than or equal to 5 and less than or equal to 2 organs involved; (5) the Eastern Cooperative Oncology Group (ECOG) [12] score of 0 or 1; (6) an expected survival period ≥3 months; (7) did not receive any treatment before and did not meet the indications for surgical treatment.

2.2.2. Exclusion Criteria. The following patients were excluded from the study: (1) combined with other malignant tumors; (2) severe or uncontrollable systemic diseases, such as hypertension, cardiac ischemia and infarction, ventricular arrhythmia, and cardiac insufficiency; (3) malignant pleural effusion and no significant relief after treatment; (4) cognitive dysfunction, poor compliance, and unable to adhere to treatment and follow-up; (5) unclear previous treatment history.

2.3. Treatment Methods

2.3.1. Control Group. The control group was treated with stereotactic body radiation therapy (SBRT) under CT stereotaxic. (1) Focus location: the patient is placed in bed (supine or prone position) to maintain steady breathing. The treatment position was fixed, a positioning ruler was placed in the target area, the abdomen was fixed, and the scan was started from the entrance of the thoracic cage and ended at the costophrenic angle. Enhanced scanning was carried out according to the scanning situation, 4 marked points around the lesion were selected, and the coordinate values were recorded. (2) Delineation of the target area: the scanned image was imported into the treatment workstation, the target area was delineated and compared with the mediastinum, the target area was expanded by 8 mm to obtain the clinical target area (according to age, disease condition, and the degree of tumor spread), the target points were determined, and the dose was calculated. (3) Radiation therapy is given according to the principle of radiobiology. For tumor diameters less than 3 cm, 70%–80% of the isodose curve can cover the target area, at a single peripheral dose of 7–9 Gy, 5–6 times, with a total dose of 36–42 Gy, once every other day; for the tumor diameter of 3–5 cm, 60%–70% of the isodose curve can cover the target area, at a single peripheral dose of 5-8 Gy, 5–8 times, with a total dose of 40 Gy, once every other day; for the tumor diameter>5 cm, 50%–60% isodose curve can cover the target area, at a single peripheral dose of 4–6 Gy, 7–10 times, with a total dose of 40–42 Gy, once every other day.

2.3.2. Study Group. The study group was treated with SBRT combined with apatinib. Apatinib mesylate (specification: 0.25 g·tablet/1, manufacturer: Jiangsu Hansoh Pharmaceutical Co., Ltd., batch number: 20170111). Apatinib 500 mg/d is taken continuously. If the patient has grade 3–4 hematological or nonhematological adverse reactions, the drug should be discontinued (not more than 2 weeks) until the symptoms are relieved or disappear, and then, the original dose is resumed. If the adverse reactions are not relieved after 2 weeks, the dose can be reduced to 250 mg/d; if grade 3/4 adverse reactions occur again after the dose reduction to 250 mg/d, it is recommended to permanently discontinue the drug.

2.4. Outcomes

2.4.1. Primary Outcomes. (a) PFS is the time from the start of apatinib treatment to disease progression; (b) OS is the time from apatinib treatment to the death of the patient, and they were followed up for a maximum of 2 years.

2.4.2. Secondary Outcomes. (a) Six months after treatment, the clinical efficacy was categorized into complete remission (CR), partial remission (PR), stable disease (SD), and progressive disease (PD). (b) Before treatment and 1 month after treatment, fasting venous blood was collected from patients, and the enzyme-linked immunosorbent assay was

Table 1: The baseline data of included patients.

	Control group ($n = 32$)	Study group ($n = 32$)	$\chi 2/t$	P
Gender			0.871	0.351
Male	19	22		
Female	14	10		
Age			1.237	0.266
<50 years	7	11		
≥50 years	25	21		
Primary histological subtypes			0.638	0.424
Adenocarcinoma	20	23		
Nonadenocarcinoma	12	9		
TNM stage of a primary tumor			0.333	0.564
I Or II	9	7		
III or IV	23	25		
Oligometastatic sites	55	52	0.781	0.854
Lung	24	21		
Liver	18	15		
Adrenal gland	8	9		
Spine	5	7		

used to determine the levels of the carcinoma embryonic antigen (CEA) and the VEGF in peripheral blood. (c) According to CTCAE, adverse reactions during follow-up were rated into grades I to IV, including the blood system, urinary system, digestive system, circulatory system, respiratory system, and immune system [13].

2.5. Statistical Analysis. The data analysis was performed with SPSS 22.0. Measurement data tested for normality are expressed as the mean ± standard deviation ($\overline{x} \pm s$), and the t-test was used for comparison; the data that did not match the normal distribution are expressed as the median (quartile) and were tested by the Wilcoxon test. The enumeration data are expressed as the rate and were tested by the chi-square test. Survival data are represented by survival curves and were tested by the Kaplan–Meier model.

3. Results

3.1. Baseline Data. As shown in Table 1, there was no statistical difference between the two groups in demographic data such as gender and age composition and disease data such as the location of the primary lesion, the pathological type of the primary lesion, the pathological stage of the primary lesion, and the location of the metastases (all $P > 0.05$).

3.2. Clinical Efficacy. Among the 32 patients in the control group, 6 had the CR, 6 had the PR, 9 had the SD, 11 had the PD, and the ORR was 65.62% (21/32); among the 32 patients in the study group, 7 had the CR and 15 had the PR, 7 had the SD and 3 had the PD, and the ORR was 90.63% (29/32). The ORR of the study group was significantly higher than that of the control group ($P = 0.016$) (Table 2).

Table 2: Comparison of clinical efficacy (n, %).

	CR	PR	SD	PD	ORR
Control group ($n = 32$)	6	6	9	11	21 (65.62%)
Study group ($n = 32$)	7	15	7	3	29 (90.63%)
$\chi 2$					5.851
P					0.016

3.3. Comparison of Tumor Marker Levels. As shown in Table 3, there was no significant difference in CEA and VEGF concentrations between the two groups before treatment; after treatment, the CEA and the VEGF in the two groups were significantly decreased, with lower results in the study group compared to the control group (all $P < 0.05$).

3.4. Comparison of Survival Rates. As shown in Table 4, the 6-month, 12-month, and 24-month survival rates of the control group were 90.63%, 75.00%, and 43.75%, respectively; those of the study group were 96.88%, 93.75%, and 71.68, respectively. Overall, the 12-month and 24-month overall survival rates of the study group were significantly higher than those of the control group (all $P < 0.05$).

3.5. Comparison of the OS and PFS. The PFS of the two groups of patients is shown in Figure 1, and the OS is shown in Figure 2. The median PFS of the control group was 13.4 months (95%CI: 6.5 to 17.6), and the median PFS of the study group was 15.6 months (95%CI: 12.4 to 23.1); there was no significant difference in the PFS between the two groups ($P = 0.11$). The median OS in the control group was 20.0 months (95%CI: 14.6~NA), and the study group had not yet reached the median OS; the OS in the study group was significantly higher than that in the control group ($P = 0.022$).

3.6. Comparison of Adverse Reactions. As shown in Table 5, the adverse reactions of all grades in the control group were 71.88% and the incidence of adverse reactions above grade 3 was 15.63%; the adverse reactions of all grades in the study group were 65.63%, and the incidence of adverse reactions above grade 3 was 25.00%. Overall, the two groups had similar safety profiles ($P > 0.05$).

4. Discussion

Traditionally, lung cancer metastasis equals to no chance of surgery, but the concept of oligometastasis can further determine whether it can be treated by radical means such as surgery and radiotherapy to gain longer survival [6]. The brain, adrenal gland, liver, bone, etc., are common distant metastatic organs of NSCLC, and local surgical resection and SBRT are the mainstay treatments. Retrospective studies have shown that NSCLC patients with synchronous brain solitary oligometastases have an overall 2-year survival rate

Table 3: Comparison of tumor markers ($\bar{x} \pm s$).

	CEA (μg/L)		VEGF (ng/L)	
	Before	After	Before	After
Control group ($n = 32$)	24.36 ± 4.17	16.36 ± 4.17	714.32 ± 146.44	425.21 ± 92.34
Study group ($n = 32$)	23.19 ± 5.03	9.24 ± 2.65	725.31 ± 174.56	203.46 ± 63.25
t	1.013	8.152	0.273	11.21
P	0.315	<0.001	0.786	<0.001

Table 4: Comparison of survival rates (n, %).

	6-month	12-month	24-month
Control group ($n = 32$)	29 (90.63)	24 (75.00)	14 (43.75)
Study group ($n = 32$)	31 (96.88)	30 (93.75)	23 (71.68)
χ^2	1.067	4.267	5.189
P	0.302	0.039	0.023

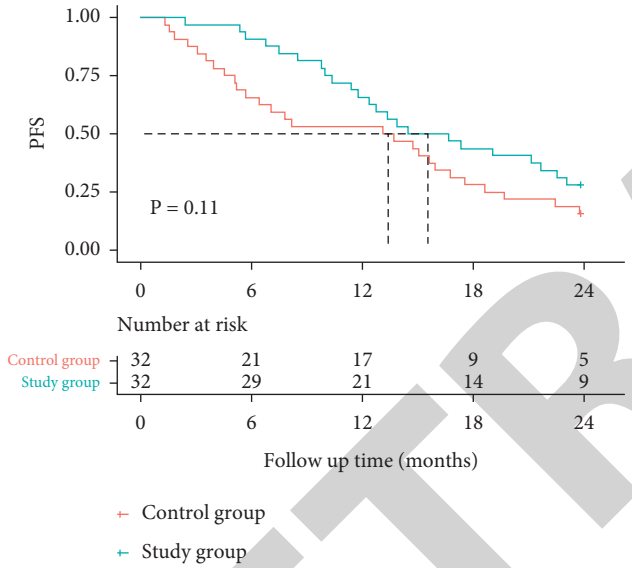

Figure 1: Comparison of the progression-free survival between patients of the two groups. Note: the abscissa represents time after treatment, and the ordinate represents the progression-free survival rate.

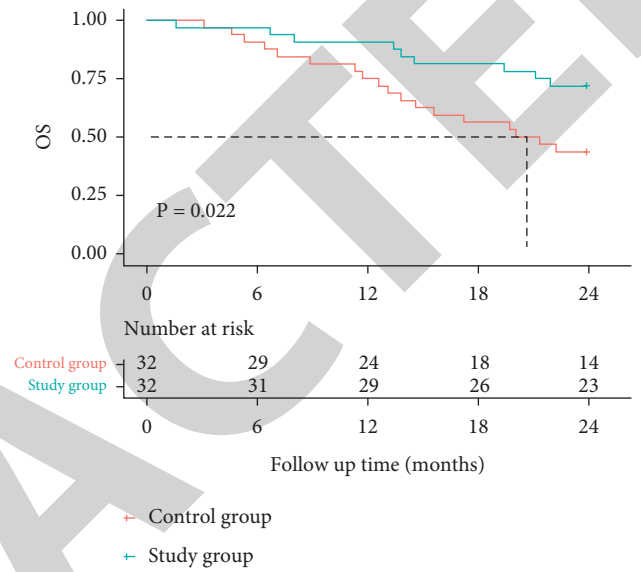

Figure 2: Comparison of the overall survival between patients of the two groups. Note: the abscissa represents time after treatment and the ordinate represents overall survival rate.

Table 5: Comparison of adverse reactions (n, %).

	All grade	≥ Grade 3
Control group ($n = 32$)	23 (71.88)	5 (15.63)
Study group ($n = 32$)	21 (65.63)	8 (25.00)
χ^2	0.291	0.869
P	0.590	0.351

of 30% after radical lung cancer surgery and SBRT treatment, and the 5-year survival rate is 10 to 20% [14]. Although radiotherapy can improve the local control rate and prolong the survival of patients with oligometastatic NSCLC, the physical condition of advanced patients, possible concomitant diseases, and the toxicity of radiotherapy are also key factors hindering the prognosis. Long-term radiotherapy may cause systemic adverse reactions such as bone marrow suppression, fatigue, fever, loss of appetite, nausea, and vomiting. In addition, it might also give rise to radiation lung injury, radiation esophagus injury, radiation heart injury, and other serious complications. Therefore, the improvement of the postoperative radiotherapy and chemotherapy regimen is of immense significance for the prognosis of patients [15].

Apatinib is a novel selective vascular endothelial growth factor receptor-2 (VEGFR-2) tyrosine kinase inhibitor, which is currently a targeted drug with a wide range of clinical applications. It mainly inhibits endothelial cell proliferation, cuts off tissue nutrient supply, and realizes antitumor function by competitively inhibiting the expression of the VEGFR-2 and blocking the binding of the VEGFR-2 and the VEGF to generate signal transduction [16]. In addition to its antiangiogenic effect, apatinib can enhance chemosensitization by reversing multidrug resistance. Apatinib has been used in the subsequent treatment of a variety of advanced or metastatic solid tumors, including NSCLC, breast cancer, and hepatocellular carcinoma [17].

The current study showed that the clinical efficacy of apatinib combined with radiotherapy was significantly better than that of radiotherapy alone. Notably, the OS was significantly longer than that of the control group, suggesting that apatinib combined with radiotherapy benefited the survival time of patients with advanced oligometastatic NSCLC, with a pronounced effectiveness profile. The CEA is one of the common tumor markers for lung cancer, and the positive rate is as high as 85%. CEA elevation indicates active

tumor cell proliferation, and a CEA decrease indicates tumor cell reduction [18]. The VEGF can autophosphorylate the receptor by binding to the receptor VEGFR, thereby activating the intracellular signal transduction pathway, promoting the proliferation and division of vascular endothelial cells, inducing angiogenesis, and increasing the permeability of blood vessels [19]. Studies have shown that more than 50% of NSCLC patients have abnormally high expression of VEGF *in vivo*, and its expression is related to the degree of cancer progression [20,21]. In addition, pharmacokinetic studies have confirmed that after continuous oral administration of apatinib for 4 days, the drug metabolism rate can exceed 70%. Moreover, the drug is mainly metabolized through urine and feces, with a high safety profile [22]. Similarly, the present study showed no significant difference in the incidence of adverse reactions between the two groups of patients, which confirms the safety of apatinib.

Resistance to VEGF therapy has been a considerable challenge, and advances in post-translational protein modifications (PTMs) have provided new directions. PTMs further facilitate an increase in complexity from the genomic level to the proteome, playing a key role in the functional proteome as they regulate activity, localization, and interactions with other cellular molecules such as proteins, nucleic acids, lipids, and cofactors. PTMs generally include chemical modification, removal of n-terminal formylmethionine or methionine, disulfide bond formation, and shearing. The VEGFR-2 undergoes a wide range of PTMs, including N-glycosylation, Tyr, Ser/Thr phosphorylation, Arg and Lys methylation, acetylation, and ubiquitination. Studies have shown that a disulfide bond can be formed between Cys1045 and Cys1024 of the VEGF receptor-2 in endothelial cells, and the formation of this disulfide bond can inhibit VEGF signaling and cell migration in vascular endothelial cells. It has been reported that the VEGF stimulates the reversible S-glutathione conversion of low molecular weight protein tyrosine phosphatase in human microvascular endothelial cells, thereby inhibiting its phosphorylation and activity, resulting in the transient activation of plaque adhesion kinase, and ultimately promoting endothelial cell migration. PTMs are the key to avoiding the resistance of lung cancer VEGF-TKIs in the future, but there is still no relevant study to prove the effect.

However, we must admit that our study has certain limitations. First, the sample size analysed is relatively small, which reduces the reliability of the study. Future research is still needed to potentially include the larger sample size.

5. Conclusion

For patients with oligometastatic NSCLC, apatinib combined with chemotherapy can significantly improve clinical efficacy, reduce tumor markers, and prolong the overall survival, with good safety.

Data Availability

All data generated or analysed during this study are included in this published article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] R. S. Herbst, D. Morgensztern, and C. Boshoff, "The biology and management of non-small cell lung cancer," *Nature*, vol. 553, pp. 446–454, 2018.

[2] S. Jonna and D. S. Subramaniam, "Molecular diagnostics and targeted therapies in non-small cell lung cancer (NSCLC): an update," *Discovery Medicine*, vol. 27, pp. 167–170, 2019.

[3] K. Sankar, S. M. Gadgeel, and A. Qin, "Molecular therapeutic targets in non-small cell lung cancer," *Expert Review of Anticancer Therapy*, vol. 20, no. 8, pp. 647–661, 2020.

[4] H. Suzuki and I. Yoshino, "Approach for oligometastasis in non-small cell lung cancer," *Gen Thorac Cardiovasc Surg*, vol. 64, no. 4, pp. 192–196, 2016.

[5] L. C. Villaruz, G. J. Kubicek, and M. A. Socinski, "Management of non-small cell lung cancer with oligometastasis," *Current Oncology Reports*, vol. 14, no. 4, pp. 333–341, 2012.

[6] Y. Shimada, H. Saji, M. Kakihana, N. Kajiwara, T. Ohira, and N. Ikeda, "Survival outcomes for oligometastasis in resected non-small cell lung cancer," *Asian Cardiovascular & Thoracic Annals*, vol. 23, no. 8, pp. 937–944, 2015.

[7] Y. Itatani, K. Kawada, T. Yamamoto, and Y. Sakai, "Resistance to anti-angiogenic therapy in cancer-alterations to anti-VEGF pathway," *International Journal of Molecular Sciences*, vol. 19, no. 4, p. 1232, 2018.

[8] D. Frezzetti, M. Gallo, M. R. Maiello et al., "VEGF as a potential target in lung cancer," *Expert Opinion on Therapeutic Targets*, vol. 21, no. 10, pp. 959–966, 2017.

[9] L. J. Scott, "Apatinib: a review in advanced gastric cancer and other advanced cancers," *Drugs*, vol. 78, no. 7, pp. 747–758, 2018.

[10] Y. Y. Liu, T. Chen, D. Shen et al., "Low-dose apatinib monotherapy in advanced chemotherapy-refractory small cell lung cancer: a case series and literature review," *Journal of International Medical Research*, vol. 48, no. 3, 2020.

[11] World Medical Association, "World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects," *JAMA*, vol. 310, no. 20, pp. 2191–2194, 2013.

[12] A. M. Mischel and D. A. Rosielle, "Eastern cooperative Oncology group performance status #434," *Journal of Palliative Medicine*, vol. 25, no. 3, pp. 508–510, 2022.

[13] P. J. Novotny, A. C. Dueck, D. Satele et al., "Effects of patient-reported outcome assessment order," *Clinical Trials*, vol. 19, no. 3, pp. 307–315, 2022 Jan.

[14] A. N. Blumenthaler and M. B. Antonoff, "Classifying oligometastatic non-small cell lung cancer," *Cancers*, vol. 13, no. 19, p. 4822, 2021.

[15] R. Mazzola, B. A. Jereczek-Fossa, D. Franceschini et al., "Oligometastasis and local ablation in the era of systemic targeted and immunotherapy," *Radiation Oncology*, vol. 15, no. 1, p. 92, 2020.

[16] N. Zhong, W. Zhuang, Q. Huang, Q. Wang, and W. Jin, "Apatinib inhibits the growth of small cell lung cancer via a mechanism mediated by VEGF, PI3K/Akt and Ki-67/CD31," *Journal of Cellular and Molecular Medicine*, vol. 25, no. 21, pp. 10039–10048, 2021.

[17] N. Fathi Maroufi, M. R. Rashidi, V. Vahedian, M. Akbarzadeh, A. Fattahi, and M. Nouri, "Therapeutic potentials of Apatinib

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Retraction

Retracted: Clinical Efficacy and Safety of Tumor Cytoreductive Surgery plus Hyperthermic Intraperitoneal Chemotherapy for Ovarian Cancer

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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, C. Xu, and Q. Li, "Clinical Efficacy and Safety of Tumor Cytoreductive Surgery plus Hyperthermic Intraperitoneal Chemotherapy for Ovarian Cancer," *Evidence-Based Complementary and Alternative Medicine*, vol. 2023, Article ID 6412679, 8 pages, 2023.

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Research Article

Clinical Efficacy and Safety of Tumor Cytoreductive Surgery plus Hyperthermic Intraperitoneal Chemotherapy for Ovarian Cancer

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Objective. To assess the clinical efficacy and safety of cytoreductive surgery (CRS) plus hyperthermic intraperitoneal chemotherapy (HIPEC) for ovarian cancer. *Methods*. From April 2018 to November 2021, 66 patients with ovarian cancer were admitted to our hospital and randomly allocated to undergo intravenous chemotherapy following CRS (the observation group) or CRS with HIPEC (the experimental group) using a parallel randomized technique, with 33 cases in each group. Clinical effectiveness, intraoperative and postoperative recovery, VEGF level, T-lymphocyte subpopulation cell level, adverse events, and patient survival were all outcome metrics. *Results*. CRS plus HIPEC was associated with significantly higher clinical efficacy versus CRS alone ($P < 0.05$). The difference in the intraoperative bleeding and operative time between the two groups did not meet the statistical standard ($P > 0.05$). Patients in the experimental group experienced shorter postoperative chemotherapy and length of hospital stay than those in the observation group ($P < 0.05$). CRS plus HIPEC resulted in significantly lower levels of VEGFA, VEGFB, and VEGFC and higher levels of CD3+, CD4+, and CD3+/CD4+ than CRS alone ($P < 0.05$). The two groups of patients had a similar incidence of adverse events ($P > 0.05$). The experimental group showed a longer median survival (25 months) and a 1-year survival rate (79.55%) than the observation group (22 months, 49.56%) (log rank = 20.411, $P < 0.05$). A significantly lower 1-year recurrence rate was observed in the experimental group than in the observation group ($P < 0.05$). *Conclusion*. CRS plus HIPEC effectively improves the clinical efficacy of ovarian cancer patients, prolongs the survival of patients, and improves the level of VEGF and T-lymphocyte subpopulation cells, with a manageable safety. In addition, the treatment method can improve the therapeutic effect, reduce the toxic and side effects, and improve the immunity of the body, which is worthy of clinical promotion.

1. Introduction

Ovarian cancer is one of the three major malignant tumors in gynecology. The incidence of ovarian cancer in China ranks third after cervical cancer and uterine cancer. The incidence rate accounts for about 70% of malignant tumors, and it occurs in middle-aged and elderly women. The disease mostly occurs in the deep pelvic cavity, and the initial symptoms are relatively insidious. There is currently no effective screening method. Therefore, many patients have usually developed to the middle and advanced stages (stages III and IV) when they are identified. There are many types of ovarian tumors in women. In addition to the primary tumor, there will also be cases of metastases from other organs. It accounts for 10% of female malignant tumors and is the female tumor with the highest fatality rate [1]. At present, surgery and chemotherapy are the most commonly used methods for the treatment of ovarian cancer, but the recurrence rate after surgery is generally high. It has a greater impact and is often accompanied by bone marrow suppression and gastrointestinal symptoms. Studies have shown that if the recurrence time of platinum-resistant drugs is less than 6 months, the chemotherapy regimen generally does not choose platinum-containing single-agent regimens;

platinum-sensitive recurrence time is greater than 6 months, and platinum-based combined chemotherapy regimens can be considered [2].

Currently, ovarian cancer patients are treated with tumor cytoreductive surgery (CRS), which allows for the precise removal of visible lesions [3]. According to clinical data, patients with advanced ovarian cancer typically have peritoneal lesions that cannot be entirely eliminated by CRS, resulting in postoperative recurrence and the need for subsequent adjuvant chemotherapy [4]. The low local drug concentration in the abdominal cavity of conventional systemic chemotherapy results in its poor eradication of residual tumor cells and therefore recurrence [5]. Hyperthermic intraperitoneal chemotherapy (HIPEC) is an emerging local chemotherapeutic technique in recent years, which is effective in targeting abdominal malignancies that are predisposed to metastasis [6]. HIPEC allows for the direct infusion of chemotherapeutic medications into the patient's peritoneal cavity, significantly increasing the concentration of local pharmaceuticals and therefore potentiating the pharmacological impact. This approach promotes chemotherapeutic medication penetration into tumor cells by increasing cell membrane permeability by local heating [7].

Many studies have shown that ovarian cancer patients after TCM adjuvant chemotherapy exhibited good outcomes. Traditional Chinese medicine believes that ovarian cancer belongs to the categories of "stony uterine mass" and "abdominal mass." The cause is the deficiency of the righteous qi, which in turn causes the accumulation of damp heat and evil toxins, obstruction of the meridians and collaterals, and the formation of ovarian cancer. And after surgical treatment, a large amount of qi and blood in the body was wasted, the righteous qi became weaker, and the dampness and evil were infested. Therefore, the treatment should be to invigorate the righteous qi, promote the qi, and remove the blood stasis.

Herein, 66 patients with ovarian cancer admitted to our hospital from April 2018 to November 2021 were recruited to assess the clinical efficacy and safety of CRS plus HIPEC for ovarian cancer.

2. Materials and Methods

2.1. Participants. A total of 66 patients with ovarian cancer admitted to our hospital from April 2018 to November 2021 were recruited and assigned to receive intravenous chemotherapy after CRS (the observation group) or CRS plus HIPEC (the experimental group) via the parallel randomized method, with 33 cases in each group. This study was approved by the ethics committee of our hospital.

The randomization was carried out using an online web-based randomization tool (freely available at https://www.randomizer.org/). The randomization procedure and assignment were managed by an independent assistant who was not involved in screening or evaluation of the participants.

The original sample size calculation estimated that 30 patients in each group would be needed to detect a 3-point difference between groups in a 2-sided significance test with a power of 0.8 and an alpha error level of 0.05.

The study protocol and all amendments were approved by the appropriate ethics committee at each centre. The study was conducted in accordance with the protocol, its amendments, and standards of good clinical practice. All participants provided written informed consent before enrolment (KJ-KU20180605).

2.2. Inclusion and Exclusion Criteria. Inclusion criteria are as follows: (1) patients who were diagnosed with ovarian cancer by clinically relevant pathological tests; (2) patients who were tolerant to the treatment modality of this study; (3) patients whose residual lesions did not exceed 1 cm after CRS; (4) patients with a prognosis of survival >1 year and a KPS score >70; (5) patients without adhesions in the abdominal cavity; and (6) patients and family members were informed about the study and voluntarily participated in the study.

Exclusion criteria are as follows: (1) patients with other serious organ diseases; (2) patients with distant organ metastases; (3) patients with hematopoietic and immune dysfunction; (4) patients with psychiatric disorders or communication disorders; and (5) patients who dropped out, died, and those with poor compliance and difficulty in cooperating with this study.

2.3. Treatment Methods. Patients in both groups were treated with CRS. After routine general anesthesia, dissection was performed. The patient's abdomen was incised from the glabellar pubic bone to allow full exposure of the patient's operative field followed by resection of the ovarian in situ lesion, regional debridement of the patient's mural abdominal wall, and subsequent resection of the abdominal and intestinal organ lesions [8].

(1) Patients in the observation group were treated with intravenous chemotherapy after CRS. Patients in the observation group received intravenous chemotherapy with paclitaxel injection (Chongqing Lemay Pharmaceutical Co., Ltd., State Drug Quotient H20054814) (175 mg/m^2) combined with carboplatin for injection (Qilu Pharmaceutical Co., Ltd., State Drug Quotient H10920028, AUC = 5) from 7 to 14 d after satisfactory CRS. With every 3 weeks as 1 cycle of chemotherapy, a total of 6 cycles of treatment were performed [9].

(2) Patients in the experimental group were treated with hyperthermic intraperitoneal chemotherapy (HIPEC) 7–13 d after CRS. Two perfusion tubes were placed in the left and right paracolic sulcus of the patient before the surgery, two drainage tubes were placed on the left and right pelvic floor of the patient, and the tubes flowing into the abdominal cavity were ≥25 cm. The treatment apparatus used was the BR-TRG-I body cavity thermal perfusion therapy system, and the perfusion fluid was 3000 mL of saline +50 mg/m^2 of cisplatin (Qilu Pharmaceutical Co.,

Ltd., State Drug Quantifier H37021358). The perfusate was placed in the instrument and preheated to 43°C. The appropriate flow rate was adjusted with the perfusion maintained for 60–90 min. The perfusion fluid was infused through the perfusion tube and released through the drainage tube. The second intraperitoneal thermal perfusion was continued on the second postoperative day in the same manner and with the same dose, and the perfusion tube and drainage tube were removed the day after the end of perfusion [10]. The first course of intravenous chemotherapy was administered 14 d after surgery, and the chemotherapy regimen and duration of treatment were consistent with those of the observation group.

On the basis of the two groups, Yiqi Yangyin Decoction was given as an adjuvant therapy. Prescription: Jujube 10 g, *Platycodon grandiflorum* 10 g, *Polygonatum* 15 g, *Curcuma* 15 g, *Prunella vulgaris* 15 g, dried radix rehmanniae 20 g, Scrophulariaceae 20 g, *Sagittaria* 20 g, *Ligustrum lucidum* 20 g, *Astragalus* 35 g, and *Chinese yam* 25 g. The specific dose can be adjusted according to the symptoms. It was decocted in water, 1 dose/d, orally twice in the morning and evening, with 4 weeks as a course of treatment.

2.4. Outcome Measure

(1) Clinical efficacy: clinical efficacy was classified into complete remission (CR), partial remission (PR), stable disease (SD), and progressive disease (PD) according to Response Evaluation Criteria in Solid Tumors (RECIST) 1.1.

(2) Intraoperative and postoperative recovery: the intraoperative and postoperative recovery indices included intraoperative bleeding volume, operation time, chemotherapy time, and hospitalization time. All the above indexes were recorded by the relevant medical and nursing staff of our hospital.

(3) Vascular endothelial growth factor (VEGF) levels: the levels of VEGFA, VEGFB, and VEGFC were determined before and 1 month after treatment by enzyme-linked immunosorbent assay.

(4) T-lymphocyte subpopulation cell levels: the patients' peripheral blood CD3+, CD4+, and CD3+/CD4+ levels were determined before chemotherapy and 1 week after treatment using a FACS Calibur-type flow cytometer.

(5) Adverse reactions and survival: The occurrence of adverse reactions during treatment and 1-year survival was recorded for both groups of patients. Adverse reaction conditions included wound infection, venous thrombosis, and bone marrow suppression.

2.5. Statistical Analysis. SPSS22.0 was used for data management and analyses. The measurement data were expressed as mean ± standard deviation ($\overline{x} \pm s$) and analyzed using the *t*-test. The count data were expressed as rates (%) and subject to the chi-square test. The Kaplan–Meier method was used to calculate the median survival time and the survival rate and plot the survival curve, and the Log-rank test was used to analyze the survival of the two groups. $P < 0.05$ was used as a cut-off for statistical significance.

3. Results

3.1. Patient Characteristics. This study comprised 66 ovarian cancer patients who were randomly assigned to two groups: observation ($n = 33$) or experimental ($n = 33$) using the parallel randomized controlled trial technique. Patients in the observation group were aged 27–74 (58.62 ± 5.73) years, with a BMI of 14.2–33.8 (23.27 ± 4.29) kg/m^2. There were 18 primary and 15 recurrent tumor types, 21 plasmacytic, 4 mucinous, 5 mixed and 3 other pathological types, 16 lymph node metastases, and 17 non-lymph node metastases. Patients in the experimental group were aged 26–76 (58.74 ± 5.69) years, with a BMI of 14.1–33.6 (23.31 ± 4.34) kg/m^2. There were 189 primary and 14 recurrent tumor types, 19 plasmacytic, 7 mucinous, 7 mixed and 5 other pathological types, 15 lymph node metastases, and 18 non-lymph node metastases. The patient characteristics between the two groups were comparable ($P > 0.05$). (Table 1).

3.2. Clinical Efficacy. In the observation group, there were 7 cases of CR, 5 cases of PR, 10 cases of SD, and 11 cases of PD, and the overall response rate (ORR) was 66.67% (22/33). In the experimental group, there were 9 cases of CR, 14 cases of PR, 7 cases of SD, and 3 cases of PD, with an ORR of 90.90% (30/33). CRS plus HIPEC was associated with significantly higher clinical efficacy versus CRS alone ($P < 0.05$). (Figure 1).

3.3. Intraoperative and Postoperative Recovery. The difference in intraoperative hemorrhage and operational time between the two groups was not statistically significant. Patients in the experimental group had shorter postoperative chemotherapy and hospital stays than those in the control group ($P < 0.05$) (Table 2).

3.4. VEGF Levels. Before treatment, there was no significant difference in the levels of VEGFA, VEGFB, and VEGFC between the two groups. CRS combined with HIPEC resulted in much lower VEGFA, VEGFB, and VEGFC levels than CRS alone ($P < 0.05$) (Table 3).

3.5. T-Lymphocyte Subpopulation Cell Levels. Before treatment, there were no significant differences in CD3+, CD4+, or CD3+/CD4+ levels between the two groups ($P > 0.05$). CRS plus HIPEC was associated with significantly higher levels of CD3+, CD4+, and CD3+/CD4+ than CRS alone ($P < 0.05$) (Table 4).

3.6. Adverse Events and Survival. The incidence of adverse reactions was 27.3% (9/33) in the observation group and

Table 1: Patients' characteristics ($\overline{x} \pm s$, n (%)).

	Observation ($n = 33$)	Experimental ($n = 33$)	t/x^2	P value
Age (years)	27–74	26–76		
Mean age (years)	58.62 ± 5.73	58.74 ± 5.69	−0.085	0.933
BMI (kg/m^2)	14.2–33.8	14.1–33.6		
Mean BMI (kg/m^2)	23.27 ± 4.29	23.31 ± 4.34	−0.038	0.97
Tumor type			0.062	0.804
Primary	18	19		
Recurrent	15	14		
Pathological type				
Plasma type	21	19	0.254	0.614
Mucus type	4	7	0.982	0.322
Mixed type	5	7	0.407	0.523
Others	3	5	0.569	0.451
Lymph node metastasis			0.061	0.805
Yes	16	15		
No	17	18		

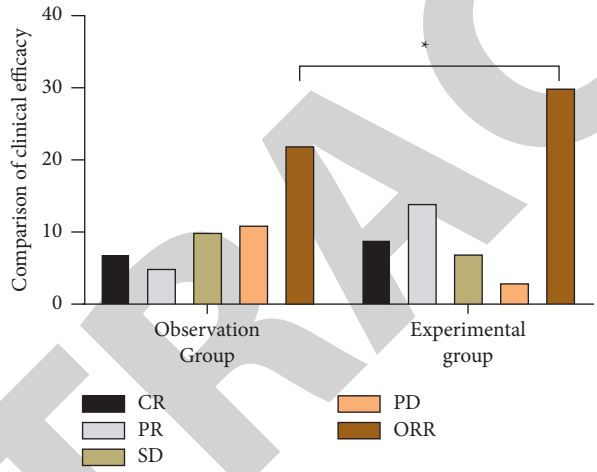

Figure 1: Clinical efficacy (n (%)). *Note.* *indicates $P < 0.05$.

Table 2: Intraoperative and postoperative recovery ($\overline{x} \pm s$).

Indices	Observation ($n = 33$)	Experimental ($n = 33$)	t-value	P value
Intraoperative bleeding volume (mL)	379.68 ± 38.47	378.26 ± 39.14	0.149	0.882
Operative time (min)	101.36 ± 11.27	99.67 ± 10.35	0.634	0.528
Chemotherapy time (d)	8.97 ± 0.93	7.02 ± 0.72	9.524	<0.001
Hospitalization time (d)	11.39 ± 1.29	9.11 ± 0.87	8.418	<0.001

Table 3: VEGF levels ($\overline{x} \pm s$, μg/L).

Timepoint	Indices	Observation ($n = 33$)	Experimental ($n = 33$)	t-value	P value
Before treatment	VEGFA	291.34 ± 40.11	289.68 ± 39.73	0.169	0.866
	VEGFB	365.87 ± 44.18	367.11 ± 40.68	−0.119	0.906
	VEGFC	232.42 ± 38.92	229.78 ± 41.74	0.266	0.791
After treatment	VEGFA	186.71 ± 21.39*	102.37 ± 16.88*	17.781	<0.001
	VEGFB	291.28 ± 23.14*	143.84 ± 20.73*	27.262	<0.001
	VEGFC	189.94 ± 25.21*	92.46 ± 20.69*	17.17	<0.001

Note. *indicates $P < 0.05$ when compared with pretreatment.

Table 4: T-lymphocyte subpopulation cell levels ($\overline{x} \pm s$).

Timepoint	Indices	Observation ($n = 33$)	Experimental ($n = 33$)	*t-value*	*P value*
Before treatment	CD3+ (%)	30.47 ± 3.19	30.33 ± 3.15	0.179	0.858
	CD4+ (%)	26.78 ± 2.74	26.75 ± 2.72	0.045	0.946
	CD3+/CD4+	1.13 ± 0.17	1.15 ± 0.14	−0.522	0.603
After treatment	CD3+ (%)	33.17 ± 3.44*	35.59 ± 3.65*	−2.772	0.007
	CD4+ (%)	34.08 ± 3.58*	36.19 ± 3.73*	−2.344	0.022
	CD3+/CD4+	0.85 ± 0.08*	0.94 ± 0.11*	−3.801	<0.001

Note. *indicates $P < 0.05$ when compared with pretreatment.

21.2% (7/33) in the experimental group. The two groups of patients had a similar incidence of adverse events ($P < 0.05$). The experimental group showed a longer median survival (25 months) and 1-year survival rate (79.55%) than the observation group (22 months, 49.56%) (log rank = 20.411 and $P < 0.05$). A significantly lower 1-year recurrence rate was observed in the experimental group than in the observation group ($P < 0.05$) (Figures 2 and 3).

4. Discussion

With the rapid development of economy in recent years, the pace of people's life has accelerated, the pressure on women in all aspects of life and work has increased, environmental pollution has aggravated, the number of new cases of ovarian cancer is increasing year by year, and it has become one of the more common malignant tumors in the female reproductive system, with a fatality rate of over 60% [11, 12]. Ovarian cancer is relatively insidious and difficult to detect and diagnose and provide clinical intervention in the early stage. Most patients are already in the middle and late stages when they go to the doctor. Cancer cells usually spread to various parts such as the uterus and appendages, making treatment more difficult and ineffective. The anatomical position of the ovary is special, and the pelvic and abdominal cavities are at risk of diffuse implant metastasis during surgery [13, 14]. Most patients have advanced ovarian cancer by the time of diagnosis, and advanced ovarian cancer is characterized by abdominal implantation and metastasis; therefore, adjuvant therapy plus chemotherapy is required after CRS [15]. Conventional intravenous chemotherapy is ineffective in killing and removing residual lesions and free tumor cells, which is associated with an increased risk of ovarian cancer recurrence [16]. HIPEC is a new type of chemotherapy based on the different tolerance of tumor cells and normal cells to temperature, and HIPEC causes irreversible damage to tumor cells at 43°C [17]. The HIPEC technique improves the activity of chemotherapeutic drugs, promotes the intertissue penetration of drugs, and interferes with the metabolism of tumor cells, which well inhibits ovarian cancer cells from developing distant metastases [18]. High-volume peritoneal perfusion causes secondary elimination of free tumor cells in the pelvic and abdominal cavities and effectively reduces the risk of subsequent recurrence [19].

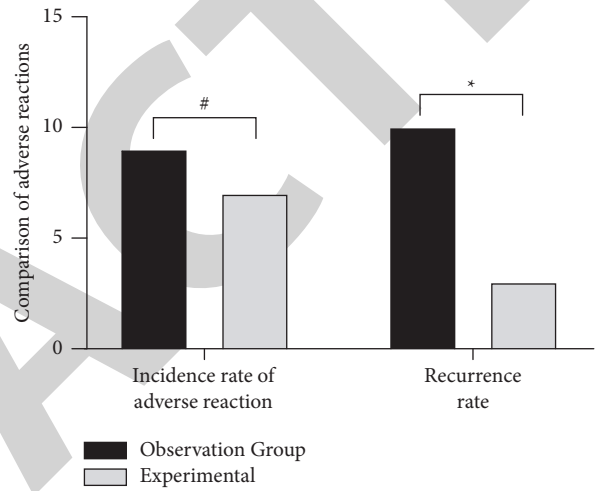

Figure 2: Adverse events (n(%)). *Note.* *indicates $P < 0.05$. #indicates $P > 0.05$.

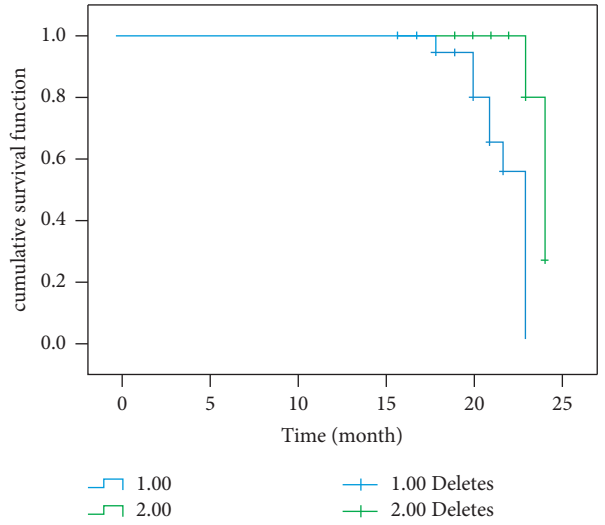

Figure 3: The Kaplan–Meier survival curve.

In the present study, the experimental group had a higher ORR and shorter duration of postoperative chemotherapy, length of hospital stay, and a lower 1-year postoperative disease recurrence rate than the observation

group, suggesting that HIPEC after CRS effectively enhances the clinical outcome and postoperative recovery of ovarian cancer patients and reduces their risk of disease recurrence. This is because intraperitoneal hyperthermic perfusion chemotherapy can greatly increase the tissue penetration of chemotherapeutic drugs and improve its anti-tumor effect; it can also kill heat-sensitive G0 cells, resulting in clinical benefits [20]. VEGF is a provascular endothelial cell growth factor including several isoforms; VEGFA and VEGFB have the effect of inducing neovascularization, while VEGFC induces lymphangiogenesis. Studies have confirmed that neovascularization provides support for the survival and proliferation of tumor cells, while the generation of lymphatic vessels provides conditions for the metastasis of tumor cells. Ghirardi et al. [21] showed that the thermal effect of HIPEC paired with chemotherapeutic drugs effectively inhibited the neovascularization of tumor tissues and also enhanced the sensitivity of tumor cells to chemotherapeutic drugs. In the present study, the levels of VEGFA, VEGFB, and VEGFC in the experimental group of patients after treatment were lower than those in the observation group of patients, indicating that CRS plus HIPEC could further inhibit tumor neovascularization and tumor local lymphangiogenesis in ovarian cancer patients, which is consistent with the findings of Ghirardi et al. This is because the thermal effect and chemotherapeutic drugs can synergistically inhibit tumor tissue neovascularization and at the same time increase the sensitivity of tumor cells to chemotherapeutic drugs, resulting in degeneration and necrosis of tumor tissue due to hypoxia, acidosis, and nutritional disorders [22].

Clinical studies have revealed a strong correlation between the level of T-cell differentiation and immune function, resulting in low immune function. Th1 cells have a regulatory immune role, and their elevated levels decrease the recognition of tumors by immune cells. Th2 cells have cytotoxic effects and can recognize and kill tumor cells [23]. In the present study, the CD3+, CD4+, and CD3+/CD4+ levels of patients in the experimental group were higher than those in the observation group after treatment, indicating that CRS plus HIPEC could better enhance the immune function of ovarian cancer patients. The clinical mechanism of action of CRS plus HIPEC to enhance immune function has not yet been clarified [24]. This is because the thermal effect can enhance the body's immune function, stimulate specific immune responses, and then enhance its own antitumor effect.

HIPEC increases the concentration of intraperitoneal drugs exponentially to promote apoptosis of cancer cells on the basis of the high-temperature killing of tumor cells [25], while some drugs in HIPEC do not enter the body circulation directly, thereby reducing the toxic side effects of chemotherapy drugs on patients' kidneys and gastrointestinal tract [26]. In the present study, there was no significant difference in the incidence of adverse reactions and survival between the two groups of patients. The median survival time was significantly longer in the experimental group (25 months) than in the observation group (22 months), and the 1-year survival rate was significantly higher in the experimental group (79.55%) than in the observation group (49.56%). This is similar to the results of the study by Xie et al. [27, 28] who used cisplatin for HIPEC, in which the prognosis and the survival rate of patients treated with HIPEC were better than those without HIPEC, indicating that the HIPEC features manageable safety in the treatment of ovarian cancer.

In addition, we also used traditional Chinese medicine treatment after surgery. Traditional Chinese medicine adjuvant chemotherapy has relatively good clinical feedback in the treatment of ovarian cancer, which can improve the treatment effect and reduce the toxic and side effects caused by chemotherapy and the impact on T-cell subsets. Chinese medicine believes that after chemotherapy, a large amount of qi, blood, and body fluids will be consumed, and the human body will be in a state of weakened yin and yang, which is easy to form the symptoms of deficiency and excess of phlegm coagulation, qi stagnation, stasis, and toxin. The main functions of Yiqi Yangyin Decoction are to clear away heat, detoxify, disperse knots, and nourish yin. *Astragalus* in the recipe can invigorate Qi, strengthen the spleen, and reduce swelling and diuresis; Chinese yam can invigorate the spleen and kidney, improve eyesight, and soothe the nerves; *Ligustrum lucidum* can nourish the liver and the kidney; *Curcuma lucidum* can promote Qi, relieve pain, eliminate accumulation, and disperse knots; Scrophulariaceae can nourish yin and cool blood, clear heat, and detoxify; *Sagittaria* and *Prunella vulgaris* can clear heat, detoxify, and disperse knots to eliminate carbuncle. The combination of the two drugs can accelerate the apoptosis of tumor cells. The combination of various medicines has the effects of clearing away heat, detoxifying, nourishing qi and yin, dispersing knots, and strengthening the body, thereby promoting the body to secrete immune factors, and has a good effect on adjuvant chemotherapy.

However, this study has the following limitations: (1) the observation time of this subject is short, and the number of cases collected is small; (2) due to the limitation of scientific research time and scientific research funds, this subject failed to study the mechanism of action of the drug through animal experiments; and (3) the follow-up time of this experiment is short, and there is no evaluation of the long-term effects of patients after surgery. Future studies with a larger sample size and long-term follow-up will be conducted to obtain more reliable data.

5. Conclusion

CRS plus HIPEC effectively improves the clinical efficacy of ovarian cancer patients, prolongs the survival of patients, and improves the level of VEGF and T-lymphocyte subpopulation cells, with a manageable safety. In addition, Yiqi Yangyin Decoction has a good therapeutic effect on patients with ovarian cancer after chemotherapy, which can reduce toxic and side effects and improve immune function, which is worthy of clinical promotion.

Data Availability

All data generated or analyzed during this study are included within this published article.

Consent

All authors have read and approved this manuscript to be considered for publication.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

Huapeng Yu drafted and revised the manuscript. Cuixia Xu and Qirong Li conceived and designed this article, were in charge of syntax modification, and revised the manuscript. All the authors have read and agreed to the final version of the manuscript.

References

[1] P. Harter, J. Sehouli, I. Vergote et al., "Randomized trial of cytoreductive surgery for relapsed ovarian cancer," *New England Journal of Medicine*, vol. 385, no. 23, pp. 2123–2131, 2021.

[2] U. Menon, A. Gentry-Maharaj, M. Burnell et al., "Ovarian cancer population screening and mortality after long-term follow-up in the UK collaborative trial of ovarian cancer screening (UKCTOCS): a randomised controlled trial," *The Lancet*, vol. 397, no. 10290, pp. 2182–2193, 2021.

[3] A. Fagotti, M. G. Ferrandina, G. Vizzielli et al., "Randomized trial of primary debulking surgery versus neoadjuvant chemotherapy for advanced epithelial ovarian cancer (SCORPION-NCT01461850)," *International Journal of Gynecological Cancer*, vol. 30, no. 11, pp. 1657–1664, 2020.

[4] S. Lheureux, M. C. Cristea, J. P. Bruce et al., "Adavosertib plus gemcitabine for platinum-resistant or platinum-refractory recurrent ovarian cancer: a double-blind, randomised, placebo-controlled, phase 2 trial," *The Lancet*, vol. 397, no. 10271, pp. 281–292, 2021.

[5] J. Spiliotis, E. Halkia, E. Lianos et al., "Cytoreductive surgery and HIPEC in recurrent epithelial ovarian cancer: a prospective randomized phase III study," *Annals of Surgical Oncology*, vol. 22, no. 5, pp. 1570–1575, 2015.

[6] O. Zivanovic, D. S. Chi, Q. Zhou et al., "Secondary cytoreduction and carboplatin hyperthermic intraperitoneal chemotherapy for platinum-sensitive recurrent ovarian cancer: an MSK team ovary phase II study," *Journal of Clinical Oncology*, vol. 39, no. 23, pp. 2594–2604, 2021.

[7] S. N. Koole, J. Kieffer, K. Sikorska et al., "Health-related quality of life after interval cytoreductive surgery with or without hyperthermic intraperitoneal chemotherapy (HIPEC) in patients with stage III ovarian cancer," *European Journal of Surgical Oncology*, vol. 47, no. 1, pp. 101–107, 2021.

[8] G. Baiocchi, F. O. Ferreira, H. Mantoan et al., "Hyperthermic intraperitoneal chemotherapy after secondary cytoreduction in epithelial ovarian cancer: a single-center comparative analysis," *Annals of Surgical Oncology*, vol. 23, no. 4, pp. 1294–1301, 2016.

[9] D. Marrelli, R. Petrioli, D. Cassetti et al., "A novel treatment protocol with 6 cycles of neoadjuvant chemotherapy followed by cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (HIPEC) in stage III primary ovarian cancer," *Surgical Oncology*, vol. 37, Article ID 101523, 2021.

[10] H. El Hajj, M. Vanseymortier, D. Hudry et al., "Rationale and study design of the CHIPPI-1808 trial: a phase III randomized clinical trial evaluating hyperthermic intraperitoneal chemotherapy (HIPEC) for stage III ovarian cancer patients treated with primary or interval cytoreductive surgery," *ESMO Open*, vol. 6, no. 2, Article ID 100098, 2021.

[11] S. S. Hashemi, Z. Amini-Farsani, S. Rahmati, J. Ali, M.-S. Marzieh, and A. Samira, "Oleuropein reduces cisplatin resistance in ovarian cancer by targeting apoptotic pathway regulators," *Life Sciences*, vol. 278, Article ID 119525, 2021.

[12] C. Hu, L. Zhang, Z. Yang, Z. Song, Q. Zhang, and Y. He, "Graphene oxide-based qRT-PCR assay enables the sensitive and specific detection of miRNAs for the screening of ovarian cancer," *Analytica Chimica Acta*, vol. 1174, Article ID 338715, 2021.

[13] S. Hakamy, M. Assidi, M. A. Jafri et al., "Assessment of prognostic value of tissue inhibitors of metalloproteinase 3 (TIMP3) protein in ovarian cancer," *Libyan Journal of Medicine*, vol. 16, no. 1, Article ID 1937866, 2021.

[14] N. Lin, J. Z. Lin, Y. Tanaka, P. Sun, and X. Zhou, "Identification and validation of a five-lncRNA signature for predicting survival with targeted drug candidates in ovarian cancer," *Bioengineered*, vol. 12, no. 1, pp. 3263–3274, 2021.

[15] M. C. Lim, S. J. Chang, B. Park et al., "Survival after hyperthermic intraperitoneal chemotherapy and primary or interval cytoreductive surgery in ovarian cancer: a randomized clinical trial," *JAMA Surg*, vol. 157, no. 5, pp. 374–383, 2022.

[16] I. Paris, S. Cianci, G. Vizzielli et al., "Upfront HIPEC and bevacizumab-containing adjuvant chemotherapy in advanced epithelial ovarian cancer," *International Journal of Hyperthermia*, vol. 35, no. 1, pp. 370–374, 2018.

[17] J. H. Kim, D. Lee, Y. Lee et al., "Quality of life outcomes from the randomized trial of hyperthermic intraperitoneal chemotherapy following cytoreductive surgery for primary ovarian cancer (KOV-HIPEC-01)," *J Gynecol Oncol*, vol. 33, no. 4, p. e54, 2022.

[18] S. N. Koole, C. van Lieshout, W. J. van Driel et al., "Cost effectiveness of interval cytoreductive surgery with hyperthermic intraperitoneal chemotherapy in stage III ovarian cancer on the basis of a randomized phase III trial," *Journal of Clinical Oncology*, vol. 37, no. 23, pp. 2041–2050, 2019.

[19] S. Sánchez-García, P. Villarejo-Campos, D. Padilla-Valverde, M. Amo-Salas, and J. Martin-Fernandez, "Intraperitoneal chemotherapy hyperthermia (HIPEC) for peritoneal carcinomatosis of ovarian cancer origin by fluid and CO_2 recirculation using the closed abdomen technique (PRS-1.0 combat): a clinical pilot study," *International Journal of Hyperthermia*, vol. 32, no. 5, pp. 488–495, 2016.

[20] C. Schettino, L. Musacchio, M. Bartoletti et al., "Olaparib beyond progression compared with platinum chemotherapy after secondary cytoreductive surgery in patients with recurrent ovarian cancer: phase III randomized, open-label MITO 35b study, a project of the MITO-MANGO groups," *International Journal of Gynecological Cancer: Official Journal of the International Gynecological Cancer Society*, vol. 32, no. 6, pp. 799–803, 2022.

[21] V. Ghirardi, F. De Felice, M. D'Indinosante et al., "Hyperthermic intraperitoneal chemotherapy (HIPEC) after primary

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Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9839158, 1 page
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Retraction

Retracted: Analysis of the Clinical Effect of Visual Electrophysiological Examination Combined with Targeted Health Education Nursing in Children

Evidence-Based Complementary and Alternative Medicine

Received 5 December 2023; Accepted 5 December 2023; Published 6 December 2023

This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Qiu and L. Xiong, "Analysis of the Clinical Effect of Visual Electrophysiological Examination Combined with Targeted Health Education Nursing in Children," *Evidence-based Complementary and Alternative Medicine*, vol. 2023, Article ID 3543790, 7 pages, 2023.

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Research Article

Analysis of the Clinical Effect of Visual Electrophysiological Examination Combined with Targeted Health Education Nursing in Children

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Objective. To analyze the clinical effect of visual electrophysiological examination combined with targeted health education nursing in children. *Methods*. A total of 100 children who underwent visual electrophysiological examinations in the Ophthalmology Department of our hospital from March 2019 to March 2021 were selected as the study subjects. The children were randomly divided into two groups, the control group and the observation group, with 50 children in each group. Children in the control group received routine nursing, while those in the observation group received a combination of routine nursing and targeted health education nursing. The nursing satisfaction, degree of cooperation with examination, examination time, changes in the psychological state, and the stress response of the children and their families were then compared and analyzed. *Results*. The nursing satisfaction of the observation group was higher than that of the control group (94.0% vs. 80.0%) ($P < 0.05$). The degree to which children in the observation group cooperated with examination was higher than that of children in the control group (96.0% vs. 78.0%) ($P < 0.05$). The average time spent on VEP and ERG examinations by children in the observation group was 6.33 ± 1.37 hours and 55.25 ± 4.92 hours, respectively, significantly lower than that of 12.45 ± 1.02 hours and 70.36 ± 5.31 hours, respectively, spent by children in the control group ($P < 0.05$). After intervention, the depression, hostility, anxiety, and obsession scores of children in the observation group were all significantly lower than those of children in the control group ($P < 0.05$). There was an increase in the heart rate, respiratory rate, and mean arterial pressure in children from both groups, but the magnitude of increase in the observation group was much smaller than that in the control group ($P < 0.05$). *Conclusion*. The combination of visual electrophysiological examination and targeted health education nursing in children has a remarkable clinical effect. It improves the children's degree of comfort as well as the parents' degree of satisfaction. It also reduces the time spent on examinations, facilitates the smooth completion of examinations, and improves the efficiency of examinations. This nursing method is one that merits more widespread promotion and clinical application.

1. Introduction

In recent years, due to the popularization of electronic products and the increase of academic pressure, the prevalence of myopia in children in China has been increasing year by year, and it has shown a younger trend [1]. Additionally, the development of myopia increases the risk of retinal detachment, macular choroidopathy, and other blinding eye diseases. In addition, because the current society still has high requirements for good distance vision, myopia is not only harmful to children's personal physical and mental health but also detrimental to social development and talent training. Therefore, the prevention and control of children's myopia is immensely critical [2, 3].

The increased level of attention that human beings pay to ophthalmic disorders has led to continuous developments in visual electrophysiological technology [4, 5]. Visual electrophysiological examination is a noninvasive, objective, and quantitative examination method that can reflect the dysfunction of the visual system from the retina to the visual

center. It has good application value in disease diagnosis, condition monitoring, prognosis, and judgment of curative effect, and it is also a good objective examination method to study the visual function of DME. At present, optical coherence tomography and visual electrophysiological examination have been widely used in the diagnosis and prognosis of DME [6, 7]. This technology has now become one of the most important functional examinations in the field of ophthalmology [8]. There are 3 main components of the examination, namely, electroretinogram (ERG), electrooculogram (EOG), and visual evoked potential (VEP), all of which are objective and noninvasive [9, 10]. It has proved to be of great value in the detection of declining visual function and is now widely used in the diagnosis, differentiation, prognosis, and pathogenesis of various ophthalmic disorders [11, 12].

Children present a special challenge because they are not as attentive and cooperative as adults. On the one hand, children in this age group are often afraid of hospitals and medical staff, and on the other hand, their comprehension and cooperation abilities are poor. Also, their families do not have a good understanding of visual electrophysiological examination, which often leads to psychological issues and longer times spent on examination. This tends to affect the authenticity of the results [13]. High-quality nursing is a nursing model following the concept of people-oriented on the basis of routine nursing. Traditional health education emphasizes form and ignores content, and it is easy to ignore the participation factor of children, which not only wastes time but also is not conducive to knowledge mastery. Therefore, this study adopts targeted health education with targeted strategies.

Therefore, targeted health education for patients undergoing visual electrophysiological examination can not only improve parents' understanding of the procedure but can also help them get rid of any concerns that they might have. It can also reduce the incidence of adverse reactions and ensure successful completion of the examination.

2. Materials and Methods

2.1. Clinical Information. A total of 100 children who underwent visual electrophysiological examinations in the Ophthalmology Department of our hospital from March 2019 to March 2021 were selected as the study subjects. The children were randomly divided into two groups, the control group and the observation group, with 50 children in each group. The control group consisted of 26 males and 24 females, aged between and 6 and 12 years, with an average age of 8.26 ± 1.38 years. The observation group consisted of 25 males and 25 females, aged between 6 and 13 years, with an average age of 8.39 ± 1.51 years. There was no significant difference in the baseline data of children in the two groups ($P > 0.05$), and the data were comparable.

The randomization was carried out using an online web-based randomization tool (freely available at https://www.randomizer.org/). For concealment of allocation, the randomization procedure and assignment were managed by an independent research assistant who was not involved in screening or evaluation of the participants.

The original sample size calculation estimated that 50 patients in each group would be needed to detect a 3-point difference between groups in a 2-sided significance test with a power of 0.8 and an alpha error level of 0.05.

The trial was done in accordance with standards of Good Clinical Practice and the Declaration of Helsinki. The trial protocol and all amendments were approved by the appropriate ethics body at each participating institution (KI-LI20100505). All patients provided written informed consent before enrolment. The trial protocol has been published online and is available with the full text of this article.

Inclusion criteria included the following:

(1) Children who did not undergo other eye surgeries or medical therapies during the study period.

(2) Children with complete clinical data.

Children and their parents were informed of the study, and the parents signed the informed consent form.

2.2. Examination Method. The RETI-Port 21 Compact of the German ROLAND ophthalmic electrophysiological diagnostic system was used. The electrodes were placed according to the manufacturer's instructions.

VEP Examination. The active electrode was placed 1.5–2.0 cm above the occipital tubercle, the reference electrode was placed in the middle of the forehead, and the ground electrode was placed on the earlobe.

ERG Examination. 1 drop of Benoxi eye solution was placed in the conjunctival sac. The corneal contact lens electrode was then placed 5 minutes later. The reference electrode was placed on the lateral aspect of both eyes, and the ground electrode was placed on the earlobe.

2.3. Nursing Method. The routine nursing method was adopted for children in the control group. Before the examination, family members of the children were informed of the precautions. During the examination, they assisted in fixing the child's head and paying attention to the child's situation. After the examination, they were again informed of other necessary precautions [14]. Targeted health education and nursing (similar to the one described for children in the control group) were adopted for children in the observation group. Before the examination, nursing staff provided a detailed explanation of visual electrophysiological examination and a brief explanation of the procedure to the children and their parents [15]. This was done to help them have a basic understanding of the examinations, some circumstances that may arise during the examination, and how to avert them. Children and their parents were asked to voice out their concerns, and the nursing staff provided appropriate explanations to dispel these concerns. This was done in order to increase their level of trust in the medical staff and to improve the child's cooperation. The child was

accompanied throughout the examination process. Local anesthetics were administered to relieve physiological factors such as tears and visual fatigue that can otherwise affect the examination [16, 17]. After ERG examination, the nursing staff rinsed the conjunctival sac with normal saline, applied eye drops to prevent infection, and instructed the child to refrain from rubbing the eyes. Children who underwent VEP examination were advised to avoid long-term exposure to bright light for 6–8 hours and to wear sunglasses when travelling. Upon discharge, children and their parents were given the necessary guidance and were instructed to seek medical attention immediately if they had any problems.

2.4. Observational Indicators

(1) Nursing satisfaction: A nursing satisfaction survey was carried out using a questionnaire developed by the hospital. The highest possible score is 100. A score of 25 or less is unsatisfactory, that above 25 but not greater than 75 is relatively satisfactory, and that greater than 75 is satisfactory. The higher the score, the higher the nursing satisfaction.

(2) Degree of cooperation with the examination: An individual was said to have highly cooperated with the examination if the individual was cooperative throughout the examination, without being very emotional or nervous, and the examination did not have to be stopped mid-way. The degree of cooperation was said to be good if the individual was mildly stressed, but the examination proceeded regardless. Lastly, an individual was said to have a low degree of cooperation with the examination if the individual was not cooperative throughout the examination process and struggled physically, necessitating an interruption in the examination process.

(3) Time spent on examination.

(4) Psychological state: The psychological state of the two groups of children was assessed before and after intervention using the self-rating symptom scale (SCL-90) based on 4 aspects: depression, hostility, anxiety, and obsession. Each aspect was scored from 1 to 5, and the result was interpreted as "none, mild, moderate, or severe." The lower the score, the better the psychological state.

(5) Stress response: The stress response indices of the two groups of children were assessed and compared. These included the heart rate, respiratory rate, and mean arterial pressure.

2.5. Statistical Methods. If the parameter beta is either a difference of means, a log odds ratio, or a log hazard ratio, then it is reasonable to assume that b is unbiased and normally distributed.

SPSS22.0 was used to process the data. The enumeration data (n (%)) and measurement data ($\pm s$) were subjected to chi-square and t tests, respectively. $P < 0.05$ was considered statistically significant.

3. Results

3.1. Clinical Information. There was no significant difference in the clinical information between children from the two groups ($P > 0.05$) (Table 1).

3.2. Nursing Satisfaction. The nursing satisfaction of the observation group (94.0%) was significantly higher than that of the control group (80.0%) ($P < 0.05$) (Table 2).

3.3. Degree of Cooperation with Examination. The degree of cooperation with examination in the observation group (96.0%) was significantly higher than that in the control group (78.0%) ($P < 0.05$) (Table 3).

3.4. Time Spent on Examination. The average time spent on VEP and ERG examinations by children in the observation group was 6.33 ± 1.37 hours and 55.25 ± 4.92 hours, respectively, significantly lower than that of 12.45 ± 1.02 hours and 70.36 ± 5.31 hours, respectively, spent by children in the control group ($P < 0.05$) (Table 4).

3.5. Psychological State. Before intervention, there was no significant difference in the depression, hostility, anxiety, and obsession scores of children in the two groups. However, after intervention, the depression, hostility, anxiety, and obsession scores of children in the observation group were all significantly lower than those of children in the control group ($P < 0.05$) (Table 5).

3.6. Stress Indicators. Before intervention, there was no significant difference in the heart rate, respiratory rate, and mean arterial pressure between children from the two groups. After intervention, there was an increase in the heart rate, respiratory rate, and mean arterial pressure in children from both groups, but the magnitude of increase in the observation group was much smaller than that in the control group ($P < 0.05$) (Table 6).

4. Discussion

The development of the visual system is immature at birth, and after being stimulated by normal visual experience, the shape and function of the visual pathway gradually develop to perfection. In this process, the best corrected visual acuity of one eye or both eyes caused by abnormal visual experience for various reasons is lower than normal. Amblyopia will seriously affect the development of children's visual function, which will become obstacles in their future education, employment, and work, thus affecting their life development [18, 19]. With the improvement of living standards and the enhancement of people's health awareness, more and more parents realize the importance of children's eye health, so more and more children with amblyopia are diagnosed. The purpose of amblyopia treatment is to eliminate visual inhibition, improve vision, and restore binocular vision. The earlier the treatment is started, the better the treatment effect is. The best treatment

Table 1: Comparison of clinical information.

Group	Control group ($n = 50$)	Observation group ($n = 50$)	t/x^2	P
Sex			0.04	0.841
M/F	26/24	25/25		
Age			0.449	0.654
Range	6~12	6~13		
Average age	8.26 ± 1.38	8.39 ± 1.51		
Ocular disease			0.041	0.839
High-degree myopia	20	21		
Pseudoblindness	3	2		
Color anomalopia	4	4		
Retinal detachment	6	5		
Retrobulbar neuritis	4	6		
Strabismus	5	4		
Fundus disease	3	5		
Ametropic amblyopia	4	3		

Table 2: Comparison of nursing satisfaction (n, %).

Group	n	Satisfied	Relatively satisfied	Unsatisfied	Total degree of satisfaction (%)
Observation group	50	27	20	3	47 (94.0%)
Control group	50	14	26	10	40 (80.0%)
X^2					4.332
P					0.037

Table 3: Comparison of degree of cooperation (n, %).

Group	n	Highly cooperative	Relatively cooperative	Uncooperative	Total degree of cooperation (%)
Observation group	50	26	22	2	48 (96.0%)
Control group	50	11	28	11	39 (78.0%)
X^2					29.936
P					<0.001

Table 4: Comparison of time spent on examination ($\overline{x} \pm s$).

Group	n	VEP examination time (h)	ERG examination time (h)
Observation group	50	6.33 ± 1.37	55.25 ± 4.92
Control group	50	12.45 ± 1.02	70.36 ± 5.31
T		25.336	14.76
P		<0.001	<0.001

Table 5: Comparison of psychological state between the two groups before and after intervention ($\overline{x} \pm s$).

Group	n	Depression		Hostility		Anxiety		Obsession	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Observation group	50	2.16 ± 0.31	0.72 ± 0.17	2.26 ± 0.38	0.77 ± 0.15	2.33 ± 0.27	0.71 ± 0.15	2.15 ± 0.36	0.70 ± 0.23
Control group	50	2.17 ± 0.32	1.47 ± 0.24	2.23 ± 0.39	1.42 ± 0.18	2.32 ± 0.28	1.34 ± 0.13	2.18 ± 0.37	1.25 ± 0.14
X^2		0.778	7.264	0.961	6.847	0.668	5.784	0.914	4.367
P		0.194	<0.001	0.327	<0.001	0.128	<0.001	0.277	<0.001

period is 3 to 5 years old, yet children in this age group are often afraid of hospitals and medical staff on the one hand and have poor understanding and cooperation skills on the other hand [20, 21]. Targeted health education nursing has become a very popular nursing model in recent years. It can provide patients with targeted nursing interventions at both the physical and psychological levels [22, 23].

In this study, targeted health education and nursing were adopted for children undergoing visual electrophysiological examinations. Differences in ways of thinking, personalities, and receptive abilities that naturally exist between children and their family members were taken into consideration before carrying out targeted health education. This greatly improved parents' understanding of the examination and

Table 6: Comparison of stress indicators between the two groups before and after intervention ($\overline{x} \pm s$).

Group	n	HR (beats/min)		RR (breaths/min)		MAP (mmHg)	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Observation group	50	73.57 ± 8.38	80.71 ± 6.14	21.28 ± 2.11	24.08 ± 2.93	80.52 ± 7.18	83.08 ± 6.62
Control group	50	73.69 ± 8.42	89.63 ± 9.38	21.94 ± 2.12	28.84 ± 3.19	80.33 ± 7.20	89.53 ± 6.96
X^2		0.071	5.626	1.56	7.771	0.132	4.748
P		0.944	<0.001	0.122	<0.001	0.895	<0.001

improved the children's cooperation and compliance to the examination [24, 25]. Because ERG must be performed in a dark room, some children may be afraid of the dark environment. Therefore, it is important to let the children familiarize themselves with the environment before the examination begins. Thereafter, depending on how the child reacted to the dark environment, appropriate encouragement and communication can be offered to relieve the child's tension and anxiety. The pupil must be dilated before an ERG examination can be performed. It is important that precautions that must be taken after pupillary dilation are explained to the child in advance. After the surface anesthetic has been applied onto conjunctival sac, the corneal contact lens electrode must be placed carefully, patiently, and correctly. While this is being done, the examiner must take the initiative to ask the child if there is any discomfort. During the examination, the child should be told to fixate his or her gaze on the optotype to avoid affecting the quality of the image acquired. After the examination, it is important to look out for signs of corneal damage such as redness, photophobia, and tearing. After 24 hours, the child (or the parents) must be called and asked about any signs of discomfort that the child may be having. This is done to ensure that children undergoing visual electrophysiological examinations are cared for throughout the process.

The results of this study showed that the nursing satisfaction of the observation group was significantly higher than that of the control group. At the same time, the degree of cooperation with examination in the observation group was significantly higher than that in the control group. The average time spent on VEP and ERG examinations by children in the observation group was significantly lower than that spent by children in the control group. These findings suggest that targeted health education nursing can improve cooperation among the subjects, facilitate the smooth completion of examinations, and reduce the time spent on examinations. Poor cooperation among subjects stems from psychological factors, mainly the unfamiliar environment, lack of trust in the examiner, and lack of relevant knowledge concerning the examination. This also reflects that most of the children have a certain fear of hospitals and medical staff; on the other hand, children at this age have poor understanding and cooperation ability and low treatment compliance.

In this study, children in the observation group and their family members received a background introduction of the examiner and detailed information concerning the examination procedure in advance. Before the examination, huge emphasis was placed on psychological guidance of the examinee. The examination room was kept clean, neat, and tidy, and the examinee was made familiar with the environment. This cleared any psychological barriers that the examinee may have harbored prior to the examination. The examinee was accompanied throughout the examination process to prevent him or her from developing negative emotions that can otherwise result in him or her not cooperating with the examination altogether. The results of this study showed that the depression, hostility, anxiety, and obsession scores of children in both groups decreased after intervention, but the decrease was more pronounced in the observation group than in the control group.

The results of this study also showed that there was an increase in the heart rate, respiratory rate, and mean arterial pressure in children from both groups, but the magnitude of increase in the observation group was much smaller than that in the control group. This shows that the use of targeted health education and nursing in visual electrophysiological examination can help to fully understand the subject's psychological status and concerns and provide the necessary guidance and education [26, 27]. This goes a long way in reducing such feelings as depression, hostility, anxiety, and obsession and ensuring the smooth progress of examinations and the authenticity of results. Furthermore, it reduces the time spent on examinations [28–30]. To establish a good interpersonal relationship between high-quality psychological care and children, it is necessary to communicate in their own way and take into account the feelings of the children. This also allows children to avoid the fear of back room testing. Targeted health education can more accurately point to the knowledge blind spots of rehospitalized patients through good early evaluation and solve the actual problems of patients from the perspective of children. However, individuals have different personalities, and individualized and targeted self-management education should be given at any time as needed, with particular attention paid to the physical and psychological education and counseling of preschool children, school-age children, and adolescents [31, 32].

Although this study has certain guiding significance, there are some limitations. This study only included children from a single center. This research conducted eye health education on campus and found that most young people lacked knowledge about eye health, neglected routine eye examinations, and did not pay attention to eye hygiene. In the early stage of the experiment, some students were skeptical or even resistant to the TCM therapy. Through publicity and explanation, on-site demonstration, and

evaluation of efficacy after treatment, it gradually gained more attention and recognition from students and parents.

5. Conclusion

The combination of visual electrophysiological examination and targeted health education nursing in children has a remarkable clinical effect. It improves the children's degree of comfort as well as the parents' degree of satisfaction. It also reduces the time spent on examinations, facilitates the smooth completion of examinations, and improves the efficiency of examinations. This nursing method is one that merits more widespread promotion and clinical application.

Data Availability

All data generated or analyzed during this study are included in this article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

Yanan Qiu drafted and revised the manuscript. Lan Xiong conceived and designed this study and edited and revised the manuscript. All the authors have read and agreed to the final version of the manuscript.

References

[1] J. Zhou, H. Dai, and Y. Zhang, "Differences in contrast sensitivity between children with amblyopia and normal children," *Chinese Journal of Optometry and Vision Science*, vol. 24, no. 4, pp. 241–247, 2022.

[2] X. Wang, X. Xing, and S. Wang, "Atropine suppression therapy and occlusion therapy in the treatment of children with anisometropic amblyopia," *International Journal of Ophthalmology*, vol. 22, no. 4, pp. 642–646, 2022.

[3] L. Xiao, H. Zhang, and S. Li, "Status and influencing factors of amblyopia in preschool children in Zigong City, Sichuan Province," *South China Journal of Preventive Medicine*, vol. 48, no. 3, pp. 318–320, 2022.

[4] L. F. B. Almeida, M. Kattah, L. O. Ventura et al., "Pattern-reversal visual evoked potential in children with congenital zika syndrome," *Journal of Pediatric Ophthalmology and Strabismus*, vol. 58, no. 2, pp. 78–83, 2021.

[5] H. Ameri, M. Naser, F. Choudhury, and N. A. Rao, "Electroretinogram and visual field correlation in birdshot chorioretinopathy," *Asia-Pacific Journal of Ophthalmology*, vol. 10, no. 2, pp. 208–211, 2021.

[6] L. Zhang, L. Li, X. Zhou, F. Xia, and Z. Zhang, "Visual electrophysiological examination in diagnosis of hepatic encephalopathy," *World Journal of Neuroscience*, vol. 3, no. 4, pp. 204–208, 2013.

[7] Z. Q. Yin, Z. Tao, and S. Y. Li, "Paying attention to the standardization of visual electrophysiological examination," *Chinese Journal of Ophthalmology*, vol. 56, no. 7, 2020.

[8] A. H. Brouwer, G. C. Wit, N. H. ten Dam, R. Wijnhoven, M. M. Genderen, and J. H. Boer, "Electroretinogram abnormalities in non-infectious uveitis often persist," *Acta Ophthalmologica*, vol. 98, no. 6, pp. 627–633, 2020.

[9] C. Carrarini, M. Russo, G. Pagliaccio et al., "Visual evoked potential abnormalities in dementia with Lewy bodies," *Neurophysiologie Clinique*, vol. 51, no. 5, pp. 425–431, 2021.

[10] K. J. Ciuffreda, N. K. Yadav, and D. P. Ludlam, "Binasal occlusion (BNO), visual motion sensitivity (VMS), and the visually-evoked potential (VEP) in mild traumatic brain injury and traumatic brain injury (mTBI/TBI)," *Brain Sciences*, vol. 7, no. 12, p. 98, 2017.

[11] T. J. Covey, D. Golan, G. M. Doniger et al., "Visual evoked potential latency predicts cognitive function in people with multiple sclerosis," *Journal of Neurology*, vol. 268, no. 11, pp. 4311–4320, 2021.

[12] D. J. Creel, "Electroretinograms," *Handbook of Clinical Neurology*, vol. 160, pp. 481–493, 2019.

[13] D. J. Creel, "Visually evoked potentials," *Handbook of Clinical Neurology*, vol. 160, pp. 501–522, 2019.

[14] M. Sarossy, J. Crowston, D. Kumar, A. Weymouth, and Z. Wu, "Prediction of glaucoma severity using parameters from the electroretinogram," *Scientific Reports*, vol. 11, no. 1, p. 23886, 2021.

[15] L. C. Shuffrey, C. Rodriguez, D. J. Rodriguez et al., "Delayed maturation of P2 flash visual evoked potential (VEP) latency in newborns of gestational diabetic mothers," *Early Human Development*, vol. 163, Article ID 105503, 2021.

[16] M. Tekavčič Pompe and M. Šuštar, "Flicker electroretinogram recorded with portable ERG device in prematurely born schoolchildren with and without ROP," *Documenta Ophthalmologica*, vol. 139, no. 1, pp. 59–65, 2019.

[17] R. Terracciano, A. Sanginario, S. Barbero, D. Putignano, L. Canavese, and D. Demarchi, "Pattern-reversal visual evoked potential on smart glasses," *IEEE Journal of Biomedical and Health Informatics*, vol. 24, no. 1, pp. 226–234, 2020.

[18] X. Zhang and L. Hu, "Research progress on non-visual impairment of children with amblyopia," *China Journal of Traditional Chinese Medicine*, vol. 32, no. 2, pp. 142–145, 2022.

[19] P. Wang, Y. Yang, and B. Zhang, "Effects of visual perception training based on binocular push-pull model on visual perception, binocular accommodation and visual acuity in 3-6-year-old children with myopia and amblyopia," *Chinese Journal of Integrative Traditional Chinese and Western Medicine*, vol. 14, no. 1, pp. 49–52, 2022.

[20] L. Jing, J. Shi, and X. Tan, "Clinical study of macular retinal thickness in children with hyperopia anisometropic amblyopia before and after treatment," *International Journal of Ophthalmology*, vol. 22, no. 2, pp. 205–210, 2022.

[21] Z. Wang, N. Li, and S. Cao, "Research on the status quo of life quality and its influencing factors in children with amblyopia," *International Journal of Ophthalmology*, vol. 22, no. 1, pp. 153–157, 2022.

[22] D. J. Creel, "The electrooculogram," *Handbook of Clinical Neurology*, vol. 160, pp. 495–499, 2019.

[23] D. K. Dai, L. Yang, H. H. Meng, X. P. Chen, and L. Y. Tao, "Characteristics of visual evoked potential in different parts of visual impairment," *Fa Yi Xue Za Zhi*, vol. 37, no. 5, pp. 632–638, 2021.

[24] A. V. Dmitriev, A. A. Dmitriev, and R. A. Linsenmeier, "K^+-dependent Müller cell-generated components of the electroretinogram," *Visual Neuroscience*, vol. 38, p. E010, 2021.

[25] E. Dziadkowiak, A. Sebastian, M. Wieczorek et al., "Visual evoked potentials as potential biomarkers of visual function in patients with primary sjögren's syndrome," *Journal of Clinical Medicine*, vol. 10, no. 18, p. 4196, 2021.

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Retraction

Retracted: Analysis of Risk Factors and Protective Strategies for Tube Blockage in Patients with Drug-Induced Liver Failure Based on Artificial Liver Therapy

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Shen, L. Shi, L. Deng, and X. Zhao, "Analysis of Risk Factors and Protective Strategies for Tube Blockage in Patients with Drug-Induced Liver Failure Based on Artificial Liver Therapy," *Evidence-Based Complementary and Alternative Medicine*, vol. 2023, Article ID 8201776, 5 pages, 2023.

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Research Article

Analysis of Risk Factors and Protective Strategies for Tube Blockage in Patients with Drug-Induced Liver Failure Based on Artificial Liver Therapy

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Objective. To analyse the influencing factors of tube blockage during the treatment of artificial liver in patients with drug-induced liver failure and explore effective patient protection strategies. *Methods*. In this study, 49 patients with pharmacological (antituberculosis drugs, antibiotics, proprietary Chinese medicine, gastric drugs, and antihyperthyroid drugs) liver failure admitted to our hospital from June 2015 to December 2021 were selected for prospective analysis. Clinical indicators and general data of all patients were collected and collated, risk factors leading to the obstruction of artificial liver treatment were analysed, and corresponding protective measures were proposed. *Results*. The incidence of tube blockage was 5.32% (10 times) in 49 patients with pharmacological liver failure treated 188 times with artificial liver therapy. The incidence of tube blockage was significantly higher in patients in the PDF mode than in those in the PP and PE modes ($P < 0.05$), and there were differences in the location of blocked tubes between the treatment modes. Blocked tubes occurred more often in the venous cauldron of the circuit in the PDF mode and in the plasma separator of the circuit in the PP mode. The incidence of tube blockage was significantly lower in patients with no more than 3 treatments than in those with 3 to 5 treatments and those with more than 5 treatments ($p < 0.05$). The incidence of catheter blockage was higher in patients with PTA values ≤20% than in those with PTA values between 20% and 30%, and higher than in those with PTA values above 30% ($P < 0.05$). *Conclusion*. The risk factors of tube plugging in patients with liver failure treated with artificial liver include different treatment modes, different treatment times, and different PTA values. The PDF mode has a higher rate of tube plugging than PE or PP treatment modes. The more the number of treatment times and the lower the PTA value of patients, the more tube plugging is likely to occur.

1. Introduction

The liver is the primary organ of drug metabolism and is therefore highly susceptible to damage by the drug itself or its metabolites, predisposing it to liver failure based on chronic liver disease [1]. Liver failure is a life-threatening clinical syndrome caused by severe impairment or failure to compensate for important liver functions such as biosynthesis, specific detoxification, excretion, and filtration, and may be triggered by a variety of factors such as viral infections, alcohol, drugs, and hepatotoxic substances [2]. Liver failure is rapidly progressive and difficult to treat, and the overall prognosis for patients is poor [3]. In China, acute (subacute) liver failure and chronic liver failure are predominantly in males, and the age of onset is predominantly in young and middle-aged [4]people. There are no reliable prognostic indicators or systems for assessing liver failure, but overall, it is a group of diseases with a poor prognosis [5].

In recent years, artificial livers have been widely used in the treatment of patients with drug-related liver failure and have become the standard of care for the treatment of acute liver failure [3]. The common treatment modalities for the artificial liver are plasma permeation (PDF), plasma perfusion (PP), and plasma exchange/selective plasma exchange (PE) [6–8]. The PE mode of treatment involves drawing the patient's blood, separating the plasma and cellular components with a plasma separator, discarding the patient's

plasma, and then injecting fresh plasma into the patient to reduce pathological damage and eliminate pathogenic substances [9]. The PP mode treatment involves the separation of plasma from whole blood followed by adsorption of various toxins from the plasma through a perfusion device; the plasma will then fuse with the tangible fractions of the blood and return to the patient [10]. The PDF mode involves filtering some of the plasma containing protein-bound toxins out of the membrane and discarding it, removing the water-soluble toxins to varying degrees by diffusion and convection, and replenishing the replacement fluid (fresh frozen plasma, albumin fluid, etc.) into the patient [11]. However, there are certain risks associated with artificial liver therapy, such as catheter blockage, allergic reactions, swelling at the puncture site, bleeding, pulmonary hemorrhage, and secondary infection, which seriously affect the patient's treatment outcome and prognosis. In view of this, this paper analyses the risk factors for catheter occlusion in patients undergoing artificial liver therapy for drug-related liver failure and proposes targeted protection strategies.

2. Materials and Methods

2.1. General Information. In this study, 206 patients with liver failure admitted to our hospital from June 2015 to December 2021 were selected for prospective analysis, of which 49 cases were diagnosed as drug-related liver failure. There were 30 male patients and 19 female patients, ranging in age from 8 to 87 years old, with an average age of 47.52 ± 2.67 years.

49 patients had a clear medication history before treatment, mainly including (1) antituberculosis drugs (mainly isoniazid and rifampin, a total of 31 cases); (2) antibiotics (mainly erythromycin, doxorubicin, and itraconazole, a total of 7 cases); (3) 5 cases of Chinese patent medicines; (4) 4 cases of gastric disease drugs; and (5) 2 cases of thiourea antihyperthyroidism drugs. The study was approved by the Ethics Committee of the First Affiliated Hospital of Nanjing Medical University, No. 8791991.

2.2. Methods. All patients were treated with comprehensive medical treatment. At the same time, the best combination of artificial liver support therapy was determined according to the actual progress of the patient's condition. A total of 188 artificial liver treatments were performed, including 61 times PE (plasma exchange) treatment, 52 times PDF (plasma diafiltration) treatment, and 75 times PP (plasma bilirubin adsorption) treatment.

The prothrombin time (PT) of all patients was detected, and the PTA value of prothrombin activity was calculated.

The instruments selected in this study included the Plasauto iQ21 blood purification machine (Asahi Kasei Medical, Tokyo, Japan).

2.3. Statistical Analysis. All data were analysed using SPSS 20.0. Enumerated data were expressed as numbers/percentages (n/%). Comparisons were made using the chi-squared test. Normally distributed measurements were calculated as mean ± standard deviation ($\overline{x} \pm s$). Comparisons between the groups were made using independent samples t-tests, and comparisons before and after the same group were made using paired t-tests. Differences were considered statistically significant when $P < 0.05$.

3. Results

3.1. General Data. A total of 49 patients with liver failure received artificial liver therapy 188 times; 10 times tube blockage occurred, and the incidence of tube blockage was 5.32%. Nineteen patients received no more than 3 treatments, 26 received 3–5 treatments, and 4 received more than 5 treatments (Table 1).

3.2. Comparison of the Incidence of Tube Blockage under Different Treatment Modes. The incidence of pipe blockage was 9.62% (5/52) in the PDF mode, 4% (3/75) in the PP mode, and 3.28% (2/61) in the PE mode. The PDF model is statistically more at risk of pipe blockage compared to the PE and PP modes ($P < 0.05$). Moreover, in the PDF mode, tube plugging mostly occurs in the venous kettle of the circuit, and in the PP mode, tube plugging mostly occurs in the plasma separator of the circuit (Table 2).

3.3. Comparison of the Incidence of Tube Blockage under Different Treatment Times. The incidence of blockage in patients with no more than 3 treatments was 2.04%, which was lower than the incidence of blockage in patients with 3–5 treatments (4.49%) and significantly lower than the incidence of blockage in patients with more than 5 treatments (16%) ($P < 0.05$) (Table 3).

3.4. Comparison of the Incidence of Blocked Pipes under Different PTA Values. The incidence of tube blockage in patients with the PTA value no more than 20% was 7.81% (5/64), which was higher than 5.48% (4/73) in patients with the PTA value ranging from 20% to 30% and higher than 1.96% (1/51) in patients with the PTA value higher than 30% ($P < 0.05$) (Table 4).

4. Discussion

There is no specific treatment for liver failure, but in principle, early diagnosis and treatment are important, with appropriate etiological and comprehensive treatment measures to delay the exacerbation of the disease and actively prevent and treat complications [12]. The prognosis of liver failure depends on a "contest" between the degree of hepatocyte necrosis and the ability to regenerate, with a gradual recovery if hepatocyte regeneration exceeds necrosis and a poor prognosis if the disease deteriorates [13]. A common treatment option for liver failure is artificial liver plasma exchange, and artificial liver therapy is becoming more common in drug-related liver failure [3]. Artificial liver therapy is widely used in clinical practice as it can increase the overall efficiency of treatment and help improve patient prognosis [14]. However, artificial liver therapy requires

Table 1: General information.

	Patients with drug-induced liver failure ($N = 49$)
Gender	
Male	30
Female	19
Average age	47.52 (±2.67)
Drug history	
Antituberculosis drugs	31
Isoniazid	13
Rifampin	10
Antibiotic drug	7
Erythromycin and adriamycin	4
Itraconazole	2
Proprietary Chinese medicine	5
Stomach medicine	4
Thiourea antihyperthyroid drugs	2
Manual treatment method (times)	
PE	61
PDF	52
PP	75

Table 2: Occurrence of tube blockage under different treatment modes.

Treatment modes	Number of blocked pipes	Total number of treatments
PE	2	61
PDF	5	52
PP	3	75
P value	$P < 0.05$	
x^2		

Table 3: Occurrence of tube blockage under different treatment times.

Treatment times	Number of blocked pipes	Total number of treatments
≤3 times	1	49
>3 and ≤5 times	5	114
>5 times	4	25
P value	$P < 0.05$	
x^2		

puncture, which is an invasive procedure and therefore has a complex impact on the treatment outcome [15]. Patients are highly susceptible to blockage, allergic reactions, haematoma at the puncture site, and decreased blood pressure [16]. Blockage is the most common and adequate protective measures must be taken to prevent catheter blockage from affecting patient outcomes.

In this study, 49 patients with drug-related liver failure received 188 treatments with artificial liver, and the incidence of tubular occlusion was 5.32% (10). The main risk factors included the mode of treatment, number of treatments, and PTA values (prothrombin activity). The incidence of tube blockage was 9.62% (5/52) in the PDF mode, which was significantly higher than 4.00% (3/75) in the PP mode and 3.28% (2/61) in the PE mode ($P < 0.05$), with

Table 4: Occurrence of blocked pipes under different PTA values.

Prothrombin activity PTA value	Number of blocked pipes	Total number of treatments
PTA ≤ 20%	5	64
20% ≤ PTA ≤ 30%	4	73
PTA > 30%	1	51
P value	$P < 0.05$	
t		

differences in the location of blocked tubes between treatment modalities. Blocked tubes occurred more often in the venous cauldron of the circuit in the PDF mode and in the plasma separator of the circuit in the PP mode. The incidence of blocked tubes was 2.04% (1/49) in patients with no more than 3 treatments, which was significantly lower than 4.39% (5/115) in patients with 3 to 5 treatments and 16% (4/25) in patients with more than 16 treatments. The incidence of catheter occlusion was 7.81% (5/64) in patients with PTA values ≤20%, which was higher than 5.48% (4/73) in patients with PTA values between 20% and 30%, and higher than 1.96% (1/51) in patients with PTA values above 30% ($P < 0.05$). In other words, the more the number of treatments in the PDF treatment modality, the lower the PTA values of the patients and the more likely they were to develop catheter occlusion.

The protective measures to avoid the above situations are as follows: first, when the intubation time is long and the blood source is relatively tight, the clinician should confirm with the blood transfusion department before treatment that there is no problem with the blood supply before starting the intubation. Before catheterization, the nurse in charge needs to confirm whether the patient's coagulation mechanism and platelet count are normal [17]. Second, strengthen the training of pretreatment personnel to strictly abide by the technical specifications of artificial liver surgery, formulate alarm treatment and complication treatment plans for mechanical equipment, and establish appropriate artificial hepatic vascular access to ensure adequate drainage; extracorporeal circulation pipelines must be installed correctly. Make sure that the tubing is heparinized and that no air is present after the tubing is flushed [15]. On the other hand, during the treatment, the patient should be re-evaluated and given ECG monitoring, closely monitor the changes of the patient's vital signs, observe whether the patient has adverse reactions, and monitor various pressures (including transmembrane pressure and arterial pressure, venous pressure, secondary membrane inlet pressure) changes, deal with various alarms in time, reduce the number of pump stops, and shorten the treatment time [18]. Finally, after treatment, keep the artificial liver indwelling catheter properly. Catheter care was performed in accordance with the ISO9001 Nursing Quality Management System [19]. Pay attention to observe the fixation of the indwelling catheter, whether there is loosening or falling off, etc., inform the patient and family members of the precautions, and use a restraint strap to assist in the fixation if necessary; properly massage and guide the patient to perform active and passive functional exercises of the limbs to ensure adequate blood circulation and to

reduce the risk of thrombosis; catheter patency checks and care are performed every other day [20].

According to TCM, the main causes of liver failure are heat, toxicity, blood stasis, and phlegm, so accordingly, detoxification, elimination of blood stasis, and dispelling phlegm are the main rules of treatment for liver failure [21]. In the treatment of complications caused by liver failure, such as upper gastrointestinal bleeding and hepatic encephalopathy, while clearing heat, reducing yellowing, detoxifying toxins, and resolving stasis, it is necessary to stop bleeding, open the internal organs, and open the orifices at the same time [22]. After liver failure has occurred, there are several TCM treatments that can be taken, including the following: patients can be treated with acupuncture or moxibustion, which can be helpful in treating liver failure [23]; if patients experience significant abdominal distention, they can be treated with an enema using Chinese herbs, which can promote the recovery of gastrointestinal function, reduce abdominal distention, and alleviate intraabdominal pressure [24]; patients can also be treated with oral Chinese medicine, but there needs to be a principle that mainly takes the form of clearing heat, relieving dampness, reducing yellowing, and resolving blood stasis, and it needs to be dialectically substantiated so that good results can be achieved [25]. In addition, TCM is only an adjunctive treatment. After liver failure has occurred, the most important treatment is Western medicine.

However, there are some limitations to our study. First, our sample size was small, leading to a greater degree of chance in the experiment. Second. we should have considered more influential factors, including regional and age differences, and based on this we will establish more detailed inclusion criteria for all subsequent experiments. Finally, we also need to conduct a large number of follow-ups to determine the accuracy of the results.

5. Conclusion

In summary, risk factors were evaluated for catheter blockage in patients with liver failure treated with artificial liver include different treatment modalities, different treatment times, differences in PTA values, and a higher rate of blockage in the PDF compared to the PE or PP treatments modes, while the more number of treatments the lower the patient's PTA value, the more likely they are to experience tube blockage.

Data Availability

All data generated or analysed during this study are included in this published article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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References

[1] R.-J. Lu, Y. Zhang, F.-L. Tang et al., "Clinical characteristics of drug-induced liver injury and related risk factors," *Experimental and Therapeutic Medicine*, vol. 12, no. 4, pp. 2606–2616, 2016.

[2] R. J. Andrade, N. Chalasani, E. S. Björnsson et al., "Drug-induced liver injury," *Nature Reviews Disease Primers*, vol. 5, no. 1, p. 58, 2019.

[3] W. Bernal, G. Auzinger, A. Dhawan, and J. Wendon, "Acute liver failure," *The Lancet*, vol. 376, no. 9736, pp. 190–201, 2010.

[4] C. A. Philips, R. Ahamed, S. Rajesh, T. George, M. Mohanan, and P. Augustine, "Comprehensive review of hepatotoxicity associated with traditional Indian ayurvedic herbs," *World Journal of Hepatology*, vol. 12, no. 9, pp. 574–595, 2020.

[5] E. Cholongitas, M. Senzolo, D. Patch et al., "Risk factors, sequential organ failure assessment and model for end-stage liver disease scores for predicting short term mortality in cirrhotic patients admitted to intensive care unit," *Alimentary Pharmacology and Therapeutics*, vol. 23, no. 7, pp. 883–893, 2006.

[6] X. Zhang and H. Zhang, "Operation and management of artificial liver support systems," in *Artificial Liver*, pp. 413–440, Springer, Berlin, Germany, 2021.

[7] J. Hadem, C. Hafer, A. S. Schneider et al., "Therapeutic plasma exchange as rescue therapy in severe sepsis and septic shock: retrospective observational single-centre study of 23 patients," *BMC Anesthesiology*, vol. 14, no. 1, p. 24, 2014.

[8] J. J. García Martínez and K. Bendjelid, "Artificial liver support systems: what is new over the last decade?" *Annals of Intensive Care*, vol. 8, no. 1, p. 109, 2018.

[9] A Abdollahi, "Plasmapheresis-review article," *Iranian Journal of Pathology*, vol. 9, no. 3, pp. 167–80, 2014.

[10] F.-M. Chen, M. Zhang, and Z.-F. Wu, "Toward delivery of multiple growth factors in tissue engineering," *Biomaterials*, vol. 31, no. 24, pp. 6279–6308, 2010.

[11] Z. Xie, Y. Zhao, D. Zhu, X. Xu, Q. Yang, and L. Li, "Non-bioartificial liver," in *Artificial Liver*, pp. 379–412, Springer, Berlin, Germany, 2021.

[12] B. Carpentier, A. Gautier, and C. Legallais, "Artificial and bioartificial liver devices: present and future," *Gut*, vol. 58, no. 12, pp. 1690–1702, 2009.

[13] G. Zaccherini, E. Weiss, and R. Moreau, "Acute-on-chronic liver failure: definitions, pathophysiology and principles of treatment," *JHEP Reports*, vol. 3, no. 1, Article ID 100176, 2021.

[14] D. A. Longbotham, "Post hepatectomy liver failure: risk factors and prediction of post-operative function using novel dynamic MRI," Doctoral dissertation, University of Leeds, Leeds, UK, 2019.

[15] F. D. Watanabe, C. J. P. Mullon, W. R. Hewitt et al., "Clinical experience with a bioartificial liver in the treatment of severe liver failure," *Annals of Surgery*, vol. 225, no. 5, pp. 484–494, 1997.

[16] K. De Boulle and I. Heydenrych, "Patient factors influencing dermal filler complications: prevention, assessment, and treatment," *Clinical, Cosmetic and Investigational Dermatology*, vol. 8, pp. 205–214, 2015.

[17] A. A. Demetriou, R. S. Brown, R. W. Busuttil et al., "Prospective, randomized, multicenter, controlled trial of a bioartificial liver in treating acute liver failure," *Annals of Surgery*, vol. 239, no. 5, pp. 660–670, 2004.

[18] L. Yang, T. Wu, J. Li et al., "Artificial liver treatment improves survival in patients with hepatitis B virus-related acute-on-

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Retraction

Retracted: Tea Drinking and the Risk of Carcinoma of the Urinary Bladder: A Meta-Analysis

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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] Q. Xia, J. Li, Y. Shen, and D. Zhang, "Tea Drinking and the Risk of Carcinoma of the Urinary Bladder: A Meta-Analysis," *Evidence-Based Complementary and Alternative Medicine*, vol. 2023, Article ID 2891120, 6 pages, 2023.

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Research Article

Tea Drinking and the Risk of Carcinoma of the Urinary Bladder: A Meta-Analysis

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Objective. For evaluation of the correlation between tea drinking and the risk of carcinoma of the urinary bladder. *Methods*. By searching PubMed, Embase, and Cochrane Library databases, the original studies on tea drinking and carcinoma of the urinary bladder risk were collected, the data were extracted, and meta-analysis package 5.2-0 of R language was used for meta-analysis. *Results*. This study contained 11 researches, composed of 7686 patients and 10320 controls. Tea drinking was not linked to carcinoma of the urinary bladder risk (OR:1.02, 95%CI: 0.95–1.11). *Conclusion*. Tea drinking may not be linked to carcinoma of the urinary bladder, but more definitive results are needed from higher-quality trials.

1. Introduction

Carcinoma of the urinary bladder is the most frequently diagnosed tumor in the urinary system, ranking 11th in the incidence of malignant tumors. The annual number of carcinoma of the urinary bladder deaths is about 170,000 [1]. According to the paper published by Lu Xin et al., the number of carcinoma of the urinary bladder deaths in China from the past ten years was 37,237, and the proportion of carcinoma of the urinary bladder deaths increased from 1.01% in 2004 to 1.23% in 2018 [2]. Bladder cancer can be divided into nonmuscule invasive bladder cancer (NMIBC) and muscule invasive bladder cancer (MIBC). At present, the preferred treatment for NMIBC is transurethral resection of bladder tumor (TURBT) plus postoperative adjuvant intravesical perfusion (chemotherapy and immunotherapy). The preferred treatment for MIBC is radical cystectomy plus pelvic lymph nodes. TURBT not only has a diagnostic role but also has a therapeutic effect, according to the pathological characteristics of the tumor for radical treatment.

Although the exact risk elements for carcinoma of the urinary bladder have not been elucidated, studies have found that there are risk elements linked to carcinoma of the urinary bladder. Various geographical factors, genes, and personal habits are Risk elements for carcinoma of the urinary bladder, such as smoking, age, etc. [3–5]. Vegetables and fruits can lower carcinoma of the urinary bladder risk [6, 7]. Some drugs even affect the risk of carcinoma of the urinary bladder. For example, the drug insulin may increase carcinoma of the urinary bladder risking smokers [8], but nonsteroidal anti-inflammatory drugs excluding aspirin can lower carcinoma of the urinary bladder risking nonsmokers [9, 10]. Tea drinking is a popular beverage all over the world and continuous studies have found its medical and health care effects. Current studies have found that tea can not only lower the risk of cardiovascular and cerebrovascular diseases [11, 12], but also lower the risk of oral cancer [13]. Although some studies have assessed the connection between tea drinking and carcinoma of the urinary bladder, the results are inconsistent [14–16]. Hence,

this study mainly used meta-analysis to explore whether tea drinking is a hazard element for carcinoma of the urinary bladder.

2. Data and Methods

2.1. Inclusion Criteria and Exclusion Criteria Inclusion Criteria. Inclusion criteria is as follows: (1) Human subjects; (2) the article type was case-control study; and (3) the language is English. Exclusion criteria is as follows: (1) Review, abstracts, and conference papers; (2) unable to obtain the full text; (3) low-quality literature (NOS ≤ 5 points); (4) human in vitro test, (5) concomitant with other cancers; and (6) metastatic bladder cancer.

2.2. Literature Retrieval. "Carcinoma of the urinary bladder," "bladder carcinoma," "bladder neoplasm," and "tea" were used as keywords to search the databases (PubMed, Embase, and Cochrane Library) for articles published before May 2022 that met the inclusion exclusion criteria.

2.3. Literature Screening and Data Extraction. Two investigators independently conducted literature search and performed literature screening based on inclusion and exclusion criteria, with confirmation by the principal investigator in case of disagreement. Data extraction was performed separately for the included literature by developing data collection forms including authors, follow-up time, sample size, and RR or OR including 95% CI for carcinoma of the urinary bladder as well as nontumor control group. If the article examined the effect of different tea drinking on carcinoma of the urinary bladder development, the minimum amount of data was extracted.

2.4. Evaluation of Literature Quality. Two investigators independently evaluated the quality of literature using the Newcastle-Ottawa Scale (NOS), and in case of disagreement, the primary investigator confirmed the quality. The scale was scored out of 9, and articles with a score of ≥7 were regarded as high quality, and articles with a score of >6 were included in the study.

2.5. Statistical Analysis Methods. The meta-analysis package of R language 4.1.0 software was used for data analysis. OR or RR values with 95% CI were used to describe the link between tea drinking and the risk of carcinoma of the urinary bladder. I^2 values were used to quantify the heterogeneity of the study for analysis, with $I^2 < 50\%$ indicating moderate heterogeneity and selection of a fixed-effects model and $I^2 \geq 50\%$ represents high levels of heterogeneity. $I^2 \geq 50\%$, sensitivity analysis was performed one-by-one. Sensitivity analysis was performed to discover the origin of heterogeneity and the robustness of the data results. Egger's test was used to quantify publication bias and was considered statistically significant at $p < 0.05$, meaning that publication bias was present. Funnel plots were drawn and the distribution characteristics were observed to examine the publication bias of the included literature.

3. Results

357 literature studies were searched in PubMed, Embase, and Cochrane Library databases by keywords, and 11 literature studies were finally included for analysis through inclusion and exclusion criteria. The specific screening process is shown in Figure 1.

The essential features of the incorporated studies are listed in Table 1.

Studies were conducted mainly in Western countries, with only one study conducted in China, and all included studies were retrospective studies using either questionnaires or a combination of questionnaires and interviews. 7,686 patients with carcinoma of the urinary bladder and 10,320 patients without cancer were included. Ten studies had NOS scores greater than 7, and they were considered high quality studies, and one study with a NOS score of 6 was considered lower quality but was still included in the analysis.

Eleven papers reported a link between tea drinking and the risk of carcinoma of the urinary bladder. The result of I^2 was 62%, indicating a high heterogeneity in the included literature, and hence a random effects model was used for the analysis. The results of the meta-analysis showed an OR of 1.02 with 95% CI of 0.93–1.11. The forest plot is shown in Figure 2.

Publication bias can be observed through funnel plot, which is roughly symmetrical in this study (Figure 3). Publication bias was measured by Egger's test ($p = 0.4651$), so there was no publication bias (Figure 4).

Heterogeneity analysis was performed using one-by-one exclusion to discover the origin of heterogeneity, and the results showed that by removing one study at a time and then analyzing it, the findings were stable (Figure 5).

4. Discussion

Carcinoma of the urinary bladder is multicentric in nature and has a high recurrence rate after surgery, requiring frequent reviews and long-term follow-up, and is hence a great economic burden for the patient's family and society. The factors of carcinoma of the urinary bladder development have been a hot topic of research. The use of natural food components for human tumor prevention is a hot topic of international research. For example, vegetables and fruits can lower carcinoma of the urinary bladder risk [6, 7]. The medicinal health value of tea has been studied since ancient times. For example, the medicinal effects of tea were reported in the Compendium of Materia Medica. Scientists at home and abroad have conducted in-depth studies on the anticancer and cardiovascular protective effects of tea [11–13].

The results of the current anticancer experiments with tea in animals are encouraging. Green and mixed teas inhibited dimethylbenzanthracene (DMBA) induced oral cancer in golden gopher [28]; green and black teas inhibited esophageal carcinogenesis by blocking the synthesis of methylbenzylnitrosamine (NMBzA) precursors in rats [29]. The main active ingredient in tea is tea polyphenol

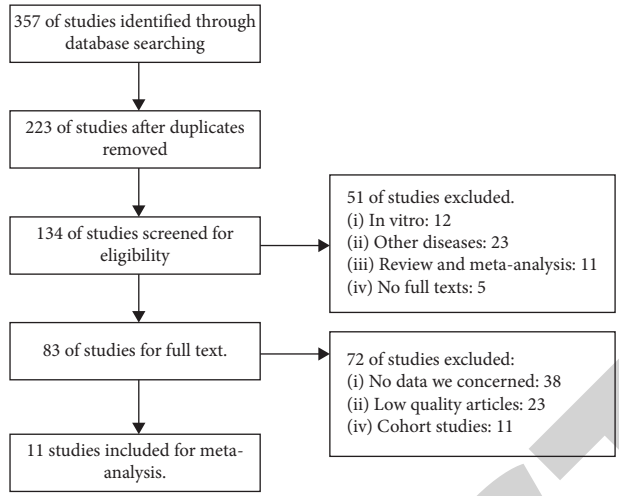

Figure 1: Literature screening process.

Table 1: Basic features of included studies.

Authors	Follow-up time	Place	Patients with carcinoma of the urinary bladder	Nononcology patients	NOS
Lu et al. [17]	1996–1997	Taiwan	40	160	7
D'Avanzo et al. [18]	1985–1990	Italy	555	855	8
Clavel and Cordier [19]	1984–1987	France	690	690	8
Risch et al. [20]	1979–1982	Canada	835	792	7
Jensen et al. [21]	1979–1981	Denmark	388	787	7
Bianchi et al. [22]	1986–1989	United States	818	1297	8
Geoffroy-Perez et al. [23]	1984–1987	France	765	765	8
Woolcott et al. [24]	1992–1994	Canada	927	2118	8
De Stefani et al. [25]	1996–2000	Uruguay	255	501	6
Jiang et al. [26]	1987–1999	United States	1586	1586	8
Hemelt et al. [27]	2005–2008	China	827	769	6

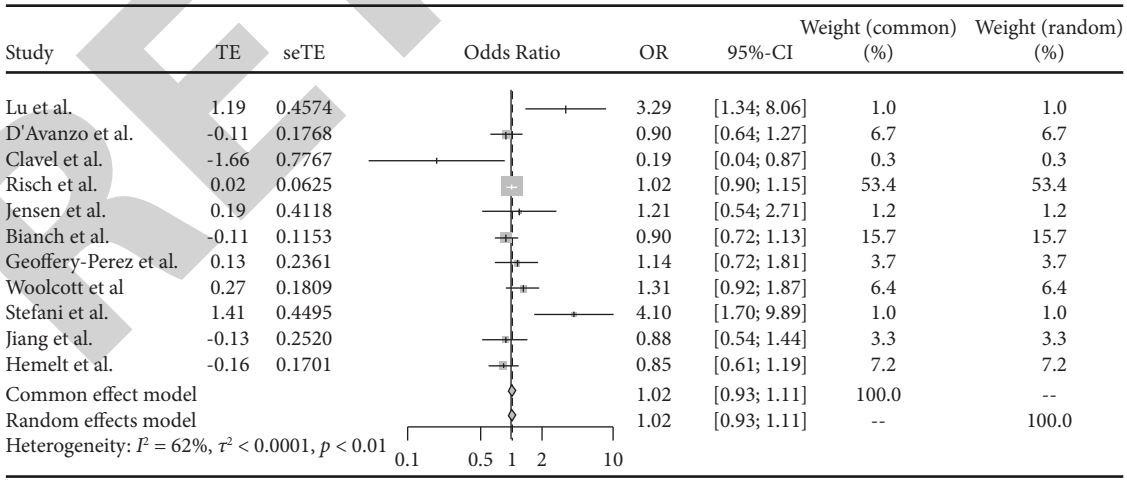

Figure 2: Forest map.

(Epigallocatechin-3-Gallate (EGCG)), which differs among different types of tea, for example, green tea polyphenol extract is catechin while black tea polyphenol extract is theaflavin. Tea polyphenols have excellent antitumor activity [30], and the main mechanisms involve antioxidant effects, immunomodulatory effects, inhibition of oncogene expression, induction of apoptosis, and prevention of DNA damage [31–34]. Although much in vitro evidence suggests that tea has good anticancer effects, real data studies on tea drinking against carcinoma of the urinary bladder are

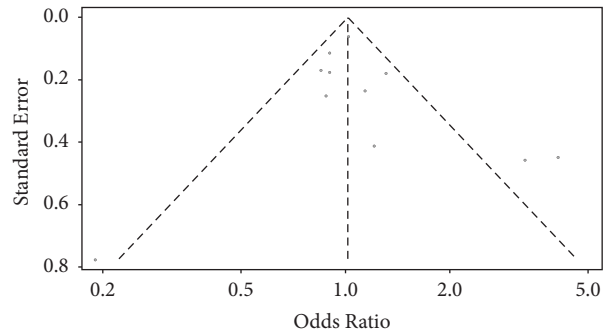

Figure 3: Funnel plot.

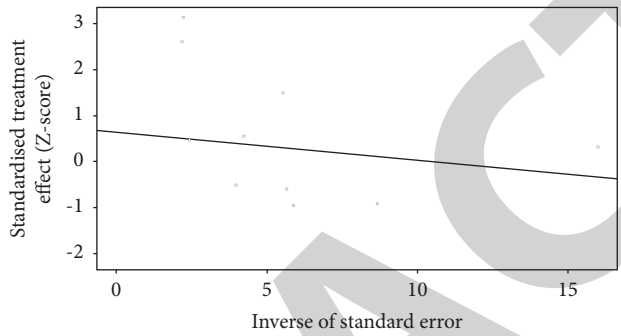

Figure 4: Egger's linear correlation diagram.

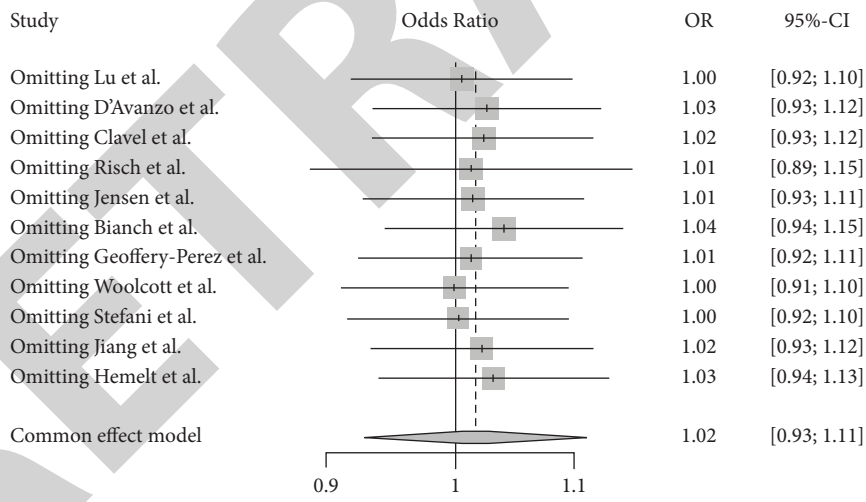

Figure 5: Sensitivity analysis.

mainly retrospective case-controlled studies and prospective single cohort studies, usually using questionnaires, and there is a lack of high-quality randomized controlled placebo studies with large samples.

Al-Zalabani et al. showed in their article that a higher level of tea consumption was associated with lower risk of bladder cancer incidence. In addition, dose-response analyses showed a lower bladder cancer risk with increment of 100 ml of tea consumption per day [35].

In summary, the results of this paper suggest that tea drinking may not lower the risk of carcinoma of the urinary bladder, but there are still some limitations of this study, mainly in the following aspects: (1) All included literature are retrospective case-control studies, and there are no randomized, double-blind, placebo-controlled studies, which would lower the reliability of the data in this study. (2) Most of the included studies considered the connection between tea and carcinoma of the urinary bladder risking general, without considering the type of tea and the amount of tea consumed, which prevented a more precise analysis of this study. (3) As there were no subgroup analyses of age, gender, and other adverse lifestyle habits in the included literature, the corresponding data could not be obtained for analysis in this study. Hence, high-quality randomized

controlled placebo studies with large samples are needed to confirm whether tea drinking lowers the risk of carcinoma of the urinary bladder.

Data Availability

All data generated or analysed during this study are included in this published article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] F. Bray, J. Ferlay, I. Soerjomataram, R. L. Siegel, L. A. Torre, and A. Jemal, "Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries," *CA: A Cancer Journal for Clinicians*, vol. 68, no. 6, pp. 394–424, 2018.

[2] X. Lu, X. Zhou, Y. Yang et al., "Epidemiological characteristics and trends of bladder cancer mortality in China from 2004 to 2018," *Shanghai preventive medicine*, vol. 33, no. 10, pp. 887–892, 2021.

[3] K. Saginala, A. Barsouk, J. S. Aluru, P. Rawla, S. A. Padala, and A. Barsouk, "Epidemiology of bladder cancer," *Medical sciences (Basel, Switzerland)*, vol. 8, no. 1, p. 15, 2020.

[4] A. H. Al-Zalabani, K. F. J. Stewart, A. Wesselius, A. M. W. J. Schols, and M. P. Zeegers, "Modifiable risk factors for the prevention of bladder cancer: a systematic review of meta-analyses," *European Journal of Epidemiology*, vol. 31, no. 9, pp. 811–851, 2016.

[5] A. T. Lenis, P. M. Lec, K. Chamie, and M. Mshs, "Carcinoma of the urinary bladder: a Review," *Jama*, vol. 324, no. 19, pp. 1980–1991, 2020.

[6] S. H. J. Jochems, R. C. Reulen, F. H. M. Osch et al., "Fruit consumption and the risk of bladder cancer: a pooled analysis by the bladder cancer epidemiology and nutritional determinants study," *International Journal of Cancer*, vol. 147, no. 8, pp. 2091–2100, 2020.

[7] E. Y. W. Yu, A. Wesselius, S. Mehrkanoon et al., "Vegetable intake and the risk of bladder cancer in the BLadder Cancer Epidemiology and Nutritional Determinants (BLEND) international study," *BMC Medicine*, vol. 19, no. 1, p. 56, 2021.

[8] C. H. Tseng, "Insulin use and smoking jointly increase the risk of bladder cancer mortality in patients with type 2 diabetes," *Clinical Genitourinary Cancer*, vol. 11, no. 4, pp. 508–514, 2013.

[9] H. Zhang, D. Jiang, and X. Li, "Use of nonsteroidal anti-inflammatory drugs and bladder cancer risk: a meta-analysis of epidemiologic studies," *PLoS One*, vol. 8, no. 7, Article ID e70008, 2013.

[10] N. Lipunova, A. Wesselius, K. K. Cheng et al., "Gene-environment interaction with smoking for increased non-muscle-invasive bladder cancer tumor size," *Translational Andrology and Urology*, vol. 9, no. 3, pp. 1329–1337, 2020.

[11] M. Chung, N. Zhao, D. Wang et al., "Dose–response relation between tea consumption and risk of cardiovascular disease and all-cause mortality: a systematic review and meta-analysis of population-based studies," *Advances in Nutrition*, vol. 11, no. 4, pp. 790–814, 2020.

[12] W. Liu, C. Wan, Y. Huang, and M. Li, "Effects of tea consumption on metabolic syndrome: a systematic review and meta-analysis of randomized clinical trials," *Phytotherapy Research*, vol. 34, no. 11, pp. 2857–2866, 2020.

[13] T. L. Kim, G. H. Jeong, J. W. Yang et al., "Tea consumption and risk of cancer: an umbrella review and meta-analysis of observational studies," *Advances in Nutrition*, vol. 11, no. 6, pp. 1437–1452, 2020.

[14] M. Hashemian, R. Sinha, G. Murphy et al., "Coffee and tea drinking and risk of cancer of the urinary tract in male smokers," *Annals of Epidemiology*, vol. 34, pp. 33–39, 2019.

[15] M. P. Zeegers, E. Dorant, R. A. Goldbohm, and P. A. Brandt, "Are coffee, tea, and total fluid drinking linked to the risk of carcinoma of the urinary bladder? Results from The Netherlands Cohort Study," *Cancer Causes & Control: Cancer Causes & Control*, vol. 12, no. 3, pp. 231–238, 2001.

[16] M. Hashibe, C. Galeone, S. S. Buys et al., "Coffee, tea, caffeine intake, and the risk of cancer in the PLCO cohort," *British Journal of Cancer*, vol. 113, no. 5, pp. 809–816, 2015.

[17] C. M. Lu, S. J. Lan, Y. H. Lee, J. K. Huang, C. H. Huang, and C. C Hsieh, "Tea consumption: fluid intake and bladder cancer risk in southern Taiwan," *Urology*, vol. 54, no. 5, pp. 823–828, 1999.

[18] B. D'Avanzo, C. La Vecchia, S. Franceschi, E. Negri, R. Talamini, and I. Buttino, "Coffee consumption and bladder cancer risk," *European Journal of Cancer*, vol. 28, no. 8-9, pp. 1480–1484, 1992.

[19] J. Clavel and S. Cordier, "Coffee consumption and bladder cancer risk," *International Journal of Cancer*, vol. 47, no. 2, pp. 207–212, 1991.

[20] H. A. Risch, J. D. Burch, A. B. Miller, G. B. Hill, R. Steele, and G. R. Howe, "Dietary factors and the incidence of cancer of the urinary bladder," *American Journal of Epidemiology*, vol. 127, no. 6, pp. 1179–1191, 1988.

[21] O. M. Jensen, J. Wahrendorf, M. Blettner, J. B. Knudsen, and B. L. Sorensen, "The Copenhagen case-control study of bladder cancer: role of smoking in invasive and non-invasive bladder tumours," *Journal of Epidemiology & Community Health*, vol. 41, no. 1, pp. 30–36, 1987.

[22] G. D. Bianchi, J. R. Cerhan, A. S. Parker et al., "Tea consumption and risk of bladder and kidney cancers in a population-based case-control study," *American Journal of Epidemiology*, vol. 151, no. 4, pp. 377–383, 2000.

[23] B. Geoffroy-Perez and S. Cordier, "Fluid consumption and the risk of bladder cancer: results of a multicenter case-control study," *International Journal of Cancer*, vol. 93, no. 6, pp. 880–887, 2001.

[24] C. G. Woolcott, W. D. King, and L. D. Marrett, "Coffee and tea consumption and cancers of the bladder, colon and rectum," *European Journal of Cancer Prevention*, vol. 11, no. 2, pp. 137–145, 2002.

[25] E. De Stefani, P. Boffetta, H. Deneo-Pellegrini et al., "Non-alcoholic beverages and risk of bladder cancer in Uruguay," *BMC Cancer*, vol. 7, no. 1, p. 57, 2007.

[26] X. Jiang, J. E. Castelao, S. Groshen et al., "Water intake and bladder cancer risk in Los Angeles County," *International Journal of Cancer*, vol. 123, no. 7, pp. 1649–1656, 2008.

[27] M. Hemelt, Z. Hu, Z. Zhong et al., "Fluid intake and the risk of bladder cancer: results from the South and East China case-control study on bladder cancer," *International Journal of Cancer*, vol. 127, no. 3, pp. 638–645, 2010.

[28] N. Li, C. Han, and J. Chen, "Tea preparations protect against DMBA-induced oral carcinogenesis in hamsters," *Nutrition and Cancer*, vol. 35, no. 1, pp. 73–79, 1999.

[29] Y. Xu and H. Chi, "The effect of Chinese tea on the occurrence of esophageal tumors induced by N-

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Research Article

Clinical Efficacy of Huangkui Capsule Plus Methylprednisolone for Immunoglobulin A Nephropathy and Its Effect on Renal Function and Serum Inflammatory Factors

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Objective. To assess the clinical efficacy of Huangkui capsule plus methylprednisolone for immunoglobulin A (IgA) nephropathy and its effect on renal function and serum inflammatory factors. *Methods*. A total of 80 patients with IgA nephropathy admitted to our hospital from April 2019 to December 2021 were recruited and assigned (1 : 1) to receive either conventional drugs + methylprednisolone tablets (observation group) or conventional drugs + methylprednisolone tablets + Huangkui capsules (experimental group), with 40 patients in each group. Outcome measures included clinical efficacy, renal function indices, serum inflammatory factor levels, and adverse events. *Results*. The experimental group showed a significantly higher clinical efficacy versus the observation group ($P < 0.05$). Patients in the experimental group had significantly lower serum creatinine, serum urea nitrogen, fibrinogen, and 24 h urine protein levels than those in the observation group after treatment ($P < 0.05$). After treatment, the experimental group showed lower levels of tumor necrosis factor-α (TNF-α), interleukin-6 (IL-6), and monocyte chemoattractant protein-1 (MCP-1) than the observation group ($P < 0.05$). The differences in the adverse events between the two groups did not come up to the statistical standard ($P > 0.05$). *Conclusion*. Huangkui capsule + methylprednisolone provides a feasible therapeutic option for IgA nephropathy by considerably boosting patients' renal function, successfully lowering the inflammatory response, and producing a good safety profile.

1. Introduction

Immunoglobulin A (IgA) nephropathy is a common clinical glomerulonephritis characterized by the deposition of immune complexes in the glomerular thylakoid region [1]. The main feature of the disease is the deposition of IgA-dominated immune complexes in the mesangial area of the glomerulus, which is shown by renal immunopathology. The clinical manifestations are various, with hematuria as the major one, accompanied by different degrees of proteinuria, kidney function damage, etc. It can even progress to end-stage renal disease, posing a serious threat to the health of patients. The clinical manifestations of the disease are acute and chronic nephritis syndrome, nephrotic syndrome, and hypertension. The current clinical treatment mainly includes nonimmune symptomatic supportive therapy and immunosuppressive therapy [2].

Methylprednisolone is an adrenal glucocorticoid that is effective in improving immune function in patients with IgA nephropathy [3]. Reduced renal function in patients with IgA nephropathy triggers a deterioration of all functional systems of the body and further worsens the condition of patients [4], and Patel et al. [5] indicated that the effectiveness of conventional drugs plus methylprednisolone tablets for patients with IgA nephropathy is unsatisfactory, which requires combined treatment with other drugs to further enhance the therapeutic effect of patients.

Traditional Chinese medicine has unique advantages in the treatment of IgAN, which can effectively attenuate the symptoms of patients and delay the progress of IgAN. However, the current research on the intervention of traditional Chinese medicine on IgAN mainly focuses on antioxidative stress, inhibiting the proliferation of

mesangial cells and mesangial hyperplasia, protecting the tubulointerstitium, and delaying renal interstitial fibrosis. Many studies have confirmed that the treatment of IgA nephropathy with integrated traditional Chinese and western medicine has achieved satisfactory results [6]. In traditional Chinese medicine, IgA nephropathy is classified as "kidney wind," "consumptive disease," "low back pain," "edema," "hematuria," etc., and the most common clinical syndromes of the disease are spleen-kidney qi deficiency syndrome, qi-yin deficiency syndrome, liver-kidney yin deficiency syndrome, etc. Among them, spleen-kidney qi deficiency syndrome is the most common. The etiology and pathogenesis of the disease may be the invasion of wind-heat-dampness pathogens, injury from diet and fatigue, and internal heat due to yin deficiency in the body. The kidney is the innate root, the spleen is the acquired root, and spleen-kidney qi deficiency causes qi not to absorb blood or blood stasis. And, the disease is a kind of deficiency symptoms, the primary deficiency is the deficiency of the spleen and kidney, and the symptoms are damp heat and blood stasis. Therefore, the treatment of the disease is to nourish qi and nourish yin, strengthen the spleen and kidney, promote blood circulation, and remove blood stasis.

Huangkui capsule is a TCM preparation composed mainly of Flower of Sunset Abelmoschus, which has the effects of clearing heat, relieving dampness, reducing swelling, and expelling toxins. The results by Ambarsari et al. [7] encouraged the combination of Chinese and western drugs for IgA nephropathy. Accordingly, this study was undertaken to investigate the clinical efficacy of Huangkui capsule plus methylprednisolone for IgA nephropathy, as well as its effect on renal function and serum inflammatory factors.

2. Materials and Methods

2.1. Participants. A total of 80 patients with IgA nephropathy admitted to our hospital from April 2019 to December 2021 were recruited and assigned (1 : 1) to receive either conventional drugs + methylprednisolone tablets (observation group) or conventional drugs + methylprednisolone tablets + Huangkui capsules (experimental group), with 40 patients in each group. The randomization was carried out using an online web-based randomization tool (freely available at https://www.randomizer.org/). For concealment of allocation, the randomization procedure and assignment were managed by an independent research assistant who was not involved in the screening or evaluation of the participants. Prior to enrollment, the study obtained the informed consent of the patients, and the protocol was approved by the hospital ethics committee (SD-ER20190708). All procedures were performed in line with the ethical guidelines of the Declaration of Helsinki.

The original sample size calculation estimated that 40 patients in each group would be needed to detect a 3-point difference between groups in a 2-sided significance test with a power of 0.8 and an alpha error level of 0.05.

2.1.1. Inclusion Criteria. Patients with a diagnosis of IgA nephropathy that was confirmed by clinical Chinese and western medicine-related test results and who provided written informed consent were included.

2.1.2. Exclusion Criteria. (1) Those with active bleeding disease; (2) those who are allergic to the drugs used in this study; (3) breastfeeding and pregnant women; (4) secondary IgA nephropathy induced by lupus nephritis, purpuric nephritis, etc.; (5)) hypertensive nephropathy, crescentic nephritis, acute interstitial nephritis, and other acute renal insufficiencies; (6) patients with renal artery stenosis and serious organs dysfunction; (7) received glucocorticoid dose >20 mg/d for >4 weeks in the past 3 months; (8) patients who have received immunosuppressive and cytotoxic treatment for more than 4 weeks in past 3 months; (9) patients with malignant tumors or a history of malignant tumors; (10) severe gastrointestinal diseases; (11) acute central nervous system diseases.

2.2. Treatment Methods. Patients in both groups received 30 mg of dipyridamole tablets (National Drug Administration: H20066585) thrice daily, 90 mg of valsartan capsules (National Drug Administration: H20010811) daily, and 45 mg of methylprednisolone tablets (National Drug Administration: H2220245) daily as an initial dose and 8 mg daily as a maintenance dose. All the above-given drugs were administered orally, and the duration of treatment was 10 weeks.

Patients in the experimental group additionally received 2 g of Huangkui capsules (National Drug Administration: Z19990040) thrice daily. The duration of treatment was 10 weeks.

2.3. Outcome Measures

(1) Clinical efficacy: cured: clinical symptoms completely disappeared, with 24 h urine protein amount of <0.3 g/d; effective: the patient's symptoms basically disappeared, and the 24 h urine protein amount decreased by more than 50% compared with the previous levels; ineffective: there were no improvement or even aggravation of clinical symptoms.

(2) Renal function indices: 3 mL of morning fasting venous blood was collected from both groups and centrifuged to obtain the serum for the following assays. The levels of serum creatinine and serum urea nitrogen were determined by an automatic biochemical analyzer (model: 7677–920), the levels of fibrinogen were determined by latex-enhanced immunoturbidimetric method, and the levels of 24 h urine protein were determined by ophthalmic triphenyl red colorimetric method.

(3) Serum inflammatory factors: serum inflammatory factors, including tumor necrosis factor-α (TNF-α), interleukin-6 (IL-6), and monocyte chemoattractant protein-1 (MCP-1) were measured by enzyme-linked immunosorbent assay.

The lgA level was detected by nephelometry using the automatic special protein analyzer of Beckman–Coulter Company. The expressions of MCP-1 and IL-6 were detected by ELISA.

(4) Adverse events: adverse events during treatment were recorded, including electrolyte disturbances, abdominal discomfort, gastrointestinal bleeding, and infections.

2.4. Statistical Analysis. SPSS21.0 was used for data analyses. Normally distributed measurement data were expressed as $(\overline{x} \pm s)$ and analyzed using the independent t-test, and count data were expressed as $n(\%)$ and analyzed by the chi-square test. $P < 0.05$ was used as a cut-off for statistical significance.

3. Results

3.1. Patient Characteristics. There were 24 males and 16 females in the observation group, aged 21–68 years, with a disease duration of 5–57 months. There were 27 males and 13 females in the experimental group, aged 25–71 years, with an illness duration of 3–55 months. The two groups' patient characteristics were equivalent ($P > 0.05$) (Table 1).

3.2. Clinical Efficacy. The experimental group showed a significantly higher clinical efficacy versus the observation group ($P < 0.05$) (Table 2).

3.3. Renal Function Indices. After therapy, patients in the experimental group had significantly lower blood creatinine, serum urea nitrogen, fibrinogen, and 24 h urine protein levels than those in the control group ($P < 0.05$) (Table 3).

3.4. Inflammatory Factor Levels. After treatment, the experimental group showed lower levels of TNF-α, IL-6, and MCP-1 than the observation group ($P < 0.05$) (Table 4).

3.5. Adverse Events. The disparities in adverse occurrences between the two groups did not meet the statistical threshold ($P > 0.05$) (Table 5).

4. Discussion

IgA nephropathy is a primary glomerular disease characterized by the deposition of IgA with other immunoglobulins in the glomerular thylakoid region [8]. The risk factors for the progression of the disease include glomerulosclerosis, serum creatinine, hypertension, hematuria, and proteinuria. Therefore, the main clinical manifestations of progressive (severe) IgA nephropathy are interstitial fibrosis, renal tubular atrophy, renal tissue light microscopy changes with glomerular sclerosis or glomerular sclerosis, persistent massive proteinuria, elevated serum creatinine, and primary glomerulonephritis with hypertensive lesions. Severe IgA nephropathy is Lee's grade III or higher, with significantly increased renal interstitial fibrosis, renal tubular damage, increased glomerular sclerosis or crescent formation and other lesions, renal biopsy pathology with necrosis, hypertension, and protein urine (>1.0 g/24 h) as the main clinical manifestation [9]. The current clinical treatment for patients with IgA nephropathy primarily involves pharmacological interventions for blood pressure management, dilation, decongestion, diuresis, and immunosuppression [10]. Therefore, angiotensin-converting enzyme inhibitors, angiotensin receptor inhibitors, lipid-lowering drugs, or glucocorticoids are commonly used for IgA nephropathy. Angiotensin II receptor blockers or angiotensin-converting enzyme inhibitors in the treatment of IgA nephropathy can effectively control urinary protein and improve renal function, but the effect is unsatisfactory [11].

Glucocorticoids are commonly used in the treatment of patients with IgA nephropathy as they improve the permeability of the glomerular membrane, facilitate urination, and reduce the level of urinary protein. Stangou et al. [12] found that glucocorticoids also inhibited the inflammation and immune response in patients with IgA nephropathy. Methylprednisolone is a medium-acting glucocorticoid that regulates the cellular and humoral immunity, thereby enhancing the immune function of the patients [13]. It has been suggested that methylprednisolone markedly increased the isotonicity of the patient and exhibited anti-immune, anti-inflammatory, and antitoxic effects with mild side effects of water and sodium retention [14]. Methylprednisolone is a medium-acting glucocorticoid with a moderate biological half-life, which prevents drug accumulation [15]. However, the reduced renal function of patients with IgA nephropathy causes an aggressive decline of the body's functional system, and glucocorticoids plus conventional drugs fail to manage urinary protein and increase the risk of disease progression. Wang et al. also indicated that the effectiveness of conventional drugs plus methylprednisolone tablets for IgA nephropathy is suboptimal and requires additional treatment in combination to improve therapeutic outcomes.

Studies have shown that the method of nourishing qi and tonifying the kidney can significantly reduce the fusion of podocytes, reduce the deposition of IgA in the mesangium of the glomerulus, improve the proliferation of the mesangial matrix, and delay the glomerular sclerosis [16]. Damp heat affects the entire pathological process of IgA nephropathy and is significantly correlated with the degree of glomerular disease, the degree of mesangial proliferation, the degree of immune complex deposition, and the degree of tubulointerstitial damage [17]. Pathological changes such as increased extracellular matrix accumulation, vascular loop occlusion, focal or segmental glomerulosclerosis, and interstitial fibrosis are in line with the characteristics of TCM [18]. During the pathogenesis of IgA nephropathy, damp heat, and blood stasis are not only important pathological products but also secondary causes of development and outcome [19]. Therefore, clearing heat and removing dampness, promoting blood circulation and removing blood stasis, and eliminating symptoms should be used throughout the treatment of IgAN. Huangkui capsules are commonly used in TCM as an adjunct for renal diseases and are characterized as sweet in taste, cold in nature, and nontoxic

Table 1: Patient characteristics [$\overline{x} \pm s$, n(%)].

	Observation ($n = 40$)	Experimental ($n = 40$)	t/x^2	P-value
Gender				
Male	24	27	0.487	0.485
Female	16	13		
Age (year)	21–68	25–71		
Mean age (year)	42.84 ± 10.35	43.24 ± 10.59	−0.171	0.865
Disease course (month)	5–57	3–55		
Mean disease course (month)	23.48 ± 11.59	22.94 ± 11.46	0.21	0.834

Table 2: Clinical efficacy [n(%)].

	Observation ($n = 40$)	Experimental ($n = 40$)	x^2	P
Cured	14	27		
Effective	16	12		
Ineffective	10	1		
Total efficacy (%)	30 (75%)	39 (98%)	8.538	0.003

[20]. The main component of Huangkui capsule is flower of sunset abelmoschus, containing active ingredients such as myricetin, quercetin-3-robinobioside, quercetin-3-glucoside, quercetin, and hyperin. Lv et al. [21] found that Huangkui capsules effectively inhibit the glomerular immunity of the body, reduce the inflammatory response, suppress platelet aggregation, and alleviate kidney function impairment. Besides, Huangkui capsule also scavenges oxygen free radicals and lowers urinary protein, blood urea nitrogen, and libido [22].

The results of this study showed that the experimental group had a significantly higher efficiency and higher levels of serum creatinine, serum urea nitrogen, fibrinogen, and 24-h urine protein than the observation group, indicating that Huangkui capsule plus methylprednisolone is clinically effective for IgA nephropathy and improves the renal function of the patient. The reason may be that the anti-inflammatory effect of methylprednisolone mitigates renal injury [23], and the effective removal of oxygen free radicals and reduction of urinary protein by Huangkui capsules strengthen the attenuation of renal injury. TNF-α and IL-6 are both common proinflammatory factors in IgA nephropathy. MCP-1, a low molecular weight chemokine and a soluble basic protein, is expressed in glomerular endothelial cells, immune cells, renal tubular epithelial cells, renal mesangial cells, renal interstitial fibroblasts, and other normal kidneys cells in after being stimulated. Studies have shown that the overexpression of MCP-1 can also cause damage to renal tissue and play an important role in the progression of IgA nephropathy. MCP-1 can promote the synthesis and secretion of ICAM-1 by activating the protease-1 pathway, thereby participating in the inflammatory response. MCP-1 can stimulate related cells to promote the release of superoxide anions and lysosomal enzymes, resulting in direct damage to the kidney; it can also activate and promote monocytes to secrete TGF-β and other factors that can cause cell fibrosis, thereby promoting glomerular sclerosis, causing fibrosis of the renal interstitium, and ultimately the progression of IgA nephropathy to end-stage renal failure [24, 25]. So these three inflammatory factors are often tested clinically to reflect the magnitude of inflammatory damage in the patient [26]. The results of this study showed that the serum TNF-α, IL-6 and MCP-1 levels in the experimental group were significantly lower than those in the observation group after treatment, which indicated that Huangkui capsules plus methylprednisolone effectively reduced the inflammatory response in patients with IgA nephropathy. The reason may be that flavonoids such as myricetin and quercetin are antibacterial and anti-inflammatory improve the immunity of patients and alleviate the inflammatory response of patients [27]. Considering the above-given theory, it is preliminarily speculated that the mechanism of action of Huangkui capsules may realize via inhibiting the expression of MCP-1 and inflammatory factors MCP-1 and IL-6, thereby reducing urinary protein excretion and exerting a certain renal protective effect.

In addition, the two groups showed no significant differences in terms of adverse events, suggesting a manageable safety of Huangkui capsules plus methylprednisolone in the treatment of patients with IgA nephropathy. However, this safety outcome may also be attributed to the limitations of the present study, including short followup and the small number of samples. Future multicenter trials with a larger sample size and long-term followup will be conducted to provide more reliable data [28, 29].

Although it has certain guiding significance, there are still several limitations: the number of samples is small, the observation period is short, and there is no long-term followup. Therefore, the strategy should be

Table 3: Renal function indices ($\overline{x} \pm s$).

Group	N	Serum creatinine (μmol/L)		Serum urea nitrogen (mmol/L)		Fibrinogen (g/L)		24 h urine protein (g)	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Observation	40	117.65 ± 16.38	95.84 ± 10.26	6.34 ± 2.35	5.47 ± 1.81	5.16 ± 1.27	4.19 ± 0.81	6.51 ± 2.97	3.75 ± 0.92
Experimental	40	117.59 ± 16.45	72.51 ± 8.19	6.33 ± 2.32	4.57 ± 1.26	5.18 ± 1.25	3.25 ± 0.54	6.48 ± 2.99	1.63 ± 0.54
t-value	—	0.016	11.24	0.019	2.581	−0.071	6.107	0.045	12.569
P-value	—	0.987	<0.001	0.985	0.012	0.944	<0.001	0.964	<0.001

Table 4: Inflammatory factor levels ($\overline{x} \pm s$).

Indices	Timepoint	Observation ($n = 40$)	Experimental ($n = 40$)	t-value	P-value
TNF-α (ng/L)	Before treatment	41.57 ± 7.39	41.62 ± 7.43	−0.03	0.976
	After treatment	37.74 ± 7.68	15.69 ± 6.21	14.12	<0.001
IL-6 (ng/L)	Before treatment	38.82 ± 7.11	38.68 ± 7.19	0.088	0.93
	After treatment	36.31 ± 5.76	17.68 ± 5.88	14.315	<0.001
MCP-1 (ng/L)	Before treatment	152.78 ± 16.84	151.67 ± 16.49	0.298	0.766
	After treatment	126.24 ± 15.33	102.09 ± 15.48	7.011	<0.001

Table 5: Adverse events [n(%)].

	Observation ($n = 40$)	Experimental ($n = 40$)	x^2	P-value
Electrolyte disorders	0	1	—	—
Abdominal discomfort	1	1	—	—
Gastrointestinal bleeding	0	0	—	—
Infections	1	1	—	—
Total incidence (%)	2 (5%)	3 (8%)	0.213	0.644

improved by expanding larger samples, so as to provide more clinical evidence for the research and application of this method.

5. Conclusion

Huangkui capsule plus methylprednisolone offers a viable treatment alternative for IgA nephropathy by significantly improving the renal function of patients, effectively reducing the inflammatory response, and providing a high safety profile, which shows great potential for clinical application.

Data Availability

The datasets used and analyzed during the current study are available from the author upon reasonable request.

Conflicts of Interest

The author declares that they have no conflicts of interest.

Authors' Contributions

Lili Yuan and Kan Cai contributed equally to this study as co-first author.

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References

[1] M. G. Wong, J. Lv, M. A. Hladunewich et al., "The therapeutic evaluation of steroids in IgA nephropathy global (TESTING) study: trial design and baseline characteristics," *Journal of the American Society of Nephrology*, vol. 52, no. 10-11, pp. 827–836, 2021.

[2] S. Fujinaga and C. Umeda, "Risk factor for persistent proteinuria in adulthood after clinical remission in Japanese children with immunoglobulin A nephropathy: impact of tonsillectomy combined with intravenous pulse methylprednisolone," *Clinical and Experimental Nephrology*, vol. 24, no. 8, pp. 734-735, 2020.

[3] D. Wang, F. Wang, J. Ding, H. Xiao, X. Zhong, and X. Liu, "[Retrospective study of primary IgA nephropathy with crescent formation and/or rapidly progressive glomerulonephritis in children]," *Zhonghua Er Ke Za Zhi*, vol. 53, no. 9, 2015.

[4] Y. Miyawaki, T. Katsuyama, K. E. Sada et al., "A retrospective observational study of glucocorticoid-induced diabetes mellitus with IgA nephropathy treated with tonsillectomy plus methylprednisolone pulse therapy," *PLoS One*, vol. 12, no. 5, Article ID e0178018, 2017.

[5] A. M. Patel, L. A. R. Karam, S. C. F. Rojas, W. E. Redfearn, L. D. Truong, and J. M. Gonzalez, "Rapidly progressive glomerulonephritis secondary to IgA nephropathy in a patient with systemic lupus erythematosus," *Case Reports in Nephrology*, vol. 2019, Article ID 8354823, 7 pages, 2019.

[6] M. Nagai, N. Kobayashi, N. Izumi, T. Ohbayashi, O. Hotta, and T. Hamano, "Pre-treatment hematuria and crescents predict estimated glomerular filtration rate trajectory after methylprednisolone pulse therapy with tonsillectomy for IgA nephropathy," *Journal of Nephrology*, vol. 35, no. 2, pp. 441–449, 2022.

[7] C. Ambarsari, S. Pardede, A. Grace, and M. Saraswati, "A modified regimen of methylprednisolone, cyclophosphamide, and mycophenolic acid for severe IgA vasculitis with nephritis in a child," *Saudi Journal of Kidney Diseases and Transplantation*, vol. 31, no. 5, pp. 1117–1124, 2020.

[8] Y. Kawasaki, R. Maeda, S. Kanno et al., "Long-term follow up of pediatric immunoglobulin A nephropathy treated with tonsillectomy plus methylprednisolone pulse therapy," *Pediatrics International*, vol. 59, no. 1, pp. 41–47, 2017.

[9] A. Yamada, S. Fujinaga, K. Sakuraya, A. Satoshi, and D. Hirano, "Initial treatment with pulse methylprednisolone followed by short-term prednisolone and tonsillectomy for childhood IgA nephropathy," *Clinical and Experimental Nephrology*, vol. 22, no. 5, pp. 1143–1149, 2018.

[10] Q. Chen, "Clinical efficacy of traditional Chinese medicine decoction in the treatment of IgA nephropathy with rheumatic internal disturbance syndrome," *Inner Mongolia Chinese Medicine*, vol. 40, no. 10, pp. 66-67, 2021.

[11] C. Y. Hsu, "In patients with proteinuric IgA nephropathy, benefits of methylprednisolone were offset by harms," *Annals of Internal Medicine*, vol. 167, no. 10, 2017.

[12] M. Stangou, M. Papasotiriou, D. Xydakis et al., "IgA nephropathy in Greece: data from the registry of the hellenic society of nephrology," *Clinical Kidney Journal*, vol. 11, no. 1, pp. 38–45, 2018.

[13] I. Laranjinha, P. Matias, J. Cassis et al., "IGA nephropathy - are intravenous steroid pulses more effective than oral steroids in relapse prevention?" *Nefrologia*, vol. 38, no. 4, pp. 355–360, 2018.

[14] M. Liang, L. Xiong, A. Li et al., "The effectiveness and safety of corticosteroid therapy for IgA nephropathy with crescents: a prospective, randomized, controlled study," *BMC Nephrology*, vol. 23, no. 1, 2022.

[15] Y. Li, R. Fu, J. Gao et al., "Effect of pulsed intravenous methylprednisolone with alternative low-dose prednisone on high-risk IgA nephropathy: a 18-month prospective clinical trial," *Scientific Reports*, vol. 12, no. 1, 2022.

[16] S. Xu and S. Yandong, "Effects of Yishen Decoction on the expression levels of MMP-9 and TIMP-1 in the kidney tissue of IgA nephropathy model mice and its mechanism," *Modern Distance Education of Chinese Medicine*, vol. 19, no. 20, pp. 158–160, 2021.

[17] T. Jing, L. Li, and Z. Xie, "Clinical observation of Qiteng decoction combined with losartan potassium tablets in the treatment of patients with IgA nephropathy with Qi and Yin deficiency syndrome," *World Journal of Integrated Traditional Chinese and Western Medicine*, vol. 17, no. 3, pp. 571–575, 2022.

[18] L. Zhang, "Application value of ziyin yiqi decoction in children with IgA nephropathy with deficiency of both qi and yin," *Medical Theory and Practice*, vol. 35, no. 9, pp. 1544–1546, 2022.

[19] Y. Wang, L. Xia, and Z. Feng, "Effects of qibo qinghua decoction combined with losartan potassium tablets on the expression of TLR4 and inflammatory cytokines in IgA nephropathy," *World Science and Technology-Modernization of Traditional Chinese Medicine*, vol. 23, no. 11, pp. 4165–4171, 2021.

[20] J. Lv, M. G. Wong, M. A. Hladunewich et al., "Effect of oral methylprednisolone on decline in kidney function or kidney failure in patients with IgA nephropathy: the TESTING randomized clinical trial," *JAMA*, vol. 327, no. 19, pp. 1888–1898, 2022.

[21] J. Lv, H. Zhang, M. G. Wong et al., "Effect of oral methylprednisolone on clinical outcomes in patients with IgA nephropathy: the TESTING randomized clinical trial," *JAMA*, vol. 318, no. 5, pp. 432–442, 2017.

[22] J. Saibaba, J. Selvaraj, S. Viswanathan, V. Pillai, B. H. Srinivas, and J. Mandal, "Diarrhea and acute tubular necrosis mimicking hemolytic uremic syndrome in a man with immunoglobulin A (IgA) nephropathy," *Cureus*, vol. 13, no. 6, Article ID e15369, 2021.

[23] T. Kojima, G. Hirose, S. Komatsu et al., "Development of antiglomerular basement membrane glomerulonephritis during the course of IgA nephropathy: a case report," *BMC Nephrology*, vol. 20, no. 1, 2019.

[24] W. Lan, X. Guo, and Y. Wang, *Correlation between MCP1, TLR4 and Urinary Protein Quantification and Pathological Damage in Primary IgA Nephropathy*, Medical & Pharmaceutical Journal of Chinese People's Liberation Army, Shijiazhuang, Hebei Province, China, 2019.

[25] X. Li, L. S. Er, and B. J. Xi, "Nephroprotective effect of losartan in IgA model rat," *Journal of International Medical Research*, vol. 47, no. 10, 2019.

[26] Z. Zhong, Y. Tang, J. Tan, L. Tan, G. Pei, and W. Qin, "Corticosteroids could improve the renal outcome of IgA nephropathy with moderate proteinuria," *International Urology and Nephrology*, vol. 53, no. 1, pp. 121–127, 2021.

[27] T. Kaneko, M. Arai, M. Ikeda et al., "Comparison of immunosuppressive therapies for IgA nephropathy after tonsillectomy: three-course versus one-course steroid pulse combined with mizoribine," *International Urology and Nephrology*, vol. 47, no. 11, pp. 1823–18230, 2015.

[28] R. Ramachandran, P. Doddi, B. Nandakrishna et al., "Combination of pulse cyclophosphamide and steroids in crescentic IgA nephropathy," *International Urology and Nephrology*, vol. 47, no. 11, pp. 1917-1918, 2015.

[29] W. Wan, J. Zhou, R. Lu et al., "Clinical efficacy of Huangkui capsule plus methylprednisolone in the treatment of nephropathy and the effect on urinary protein and serum inflammatory factors in patients," *Evidence-based Complementary and Alternative Medicine: eCAM*, vol. 2022, Article ID 6232264, 6 pages, 2022.

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Retraction

Retracted: Clinical Promotion of Comfort Nursing Combined with Comprehensive Nursing in the Treatment of Severe Stroke Patients with Diabetes in ICU

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Zhang, H. Chu, X. Qian, Y. Zhang, and Q. Wang, "Clinical Promotion of Comfort Nursing Combined with Comprehensive Nursing in the Treatment of Severe Stroke Patients with Diabetes in ICU," *Evidence-Based Complementary and Alternative Medicine*, vol. 2023, Article ID 1593651, 8 pages, 2023.

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Research Article

Clinical Promotion of Comfort Nursing Combined with Comprehensive Nursing in the Treatment of Severe Stroke Patients with Diabetes in ICU

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Objective. To investigate the application value of comprehensive nursing combined with comfort nursing for severe stroke patients with diabetes in the intensive care unit (ICU), as well as its effect on the incidence of pressure ulcers and aspiration. *Methods*. Between March 2019 and March 2021, 123 severe stroke patients with diabetes who were treated at our hospital were randomly assigned to one of two groups: the control group ($n = 61$) or the study group ($n = 62$). The control group received normal care, but the research group received comprehensive nursing as well as comfort nursing. The two patient groups were compared in terms of the effects of the clinical application. *Results*. The two groups did not differ significantly in general data ($P > 0.05$). The shorter ICU monitoring and extubation times, the lower incidence of pressure ulcers, aspiration, and nosocomial infections, and higher self-rating anxiety scale (SAS) and self-rating depression scale (SDS) scores and a lower MOS 36-item short-form health survey (SF-36) score were all observed in the research group when compared to the control group ($P < 0.05$). *Conclusion*. For severe stroke patients with diabetes in the ICU, comprehensive nursing combined with comfort nursing has a promising effect, significantly, lowering the risk of pressure ulcers, aspiration, and nosocomial infections, accelerating physical recovery, enhancing mental state, and ensuring a better prognosis, deserving general clinical promotion.

1. Introduction

Stroke is a common cerebrovascular disease with high mortality and disability risk. The incidence of stroke has increased in recent years due to the increasing aging of the population and alterations in a dietary structure. According to reports, one of the leading causes of disease-related death in China is stroke. Stroke not only has a high incidence, recurrence, and mortality rate but also causes functional impairment in varying degrees in about three-quarters of patients, causes excruciating physical pain and mental stress in patients, and has a significant negative impact on patients' quality of life and that of their families. The most frequent type of stroke is cerebral infarction brought on by carotid and intracranial atherosclerosis [1–3].

The comorbidity of dysphagia in patients with severe stroke may result in complications such as aspiration pneumonia and acute respiratory distress syndrome due to aspiration; In addition, patients with severe strokes who are bedridden for an extended period of time have a higher risk of developing pressure ulcers, which can hamper prognostic rehabilitation and possibly pose a threat to life without proper nursing interventions [4–7]. In order to reduce the incidence of aspiration and pressure ulcers, a therapeutic treatment must incorporate effective nursing intervention. Patients with abnormal blood glucose levels may be at a higher risk of cognitive impairment due to excessive insulin levels and insulin resistance, which also greatly increases the risk of the consequences listed. As a result, this population in the clinic needs to receive additional attention.

Because of its benefits of easy operation, low-personnel quality requirements, and widespread application, the conventional nursing intervention mode is frequently used in the care of various diseases. However, the conventional nursing lacks precise, specific, and humanized nursing measures, which make it challenging to achieve high-quality symptomatic interventions and results in an undesirable clinical nursing effect. A modified version of routine care is the comprehensive nursing, which is a model of high-quality care. The comprehensive nursing, an emerging nursing paradigm in recent years, primarily ensures nursing quality by systematizing nursing processes, integrating the advantages of responsible nursing and group nursing, and enhancing nursing work initiative and independence. The comfort nursing focuses on patient's comfort and satisfaction in fundamental nursing and nursing research, with comfort as the goal of the holistic nursing process. In order to create a mature and long-lasting clinical nursing program, this study combined the two techniques to investigate the impacts of their intervention on severely diabetic stroke patients in the intensive care unit.

2. Scheme Design

2.1. Research Object. One hundred and twenty three patients with severe stroke and diabetes who were admitted to our hospital's ICU between March 2019 and March 2021 were chosen based on the aforementioned criteria.

An online web-based randomization tool (freely available at https://www.randomizer.org/) was used to conduct the randomization. The randomization procedure and assignment were managed by an independent research assistant who was not involved in the screening or evaluation of the participants to ensure allocation concealment.

In order to detect a 3-point difference between groups in a 2-sided significance test with a power of 0.8 and an alpha error level of 0.05, the original sample size calculation predicted that 60 patients in each group would be required.

Prior to the enrollment in this study, patients signed informed consent forms. The hospital Ethics Committee gave its approval to the study protocol. JN-KI20190406 is the ethics code. All procedures adhered to the ethical principles stated in the Declaration of Helsinki for clinical research.

Inclusion criteria: ① patients whose stroke diagnosis was confirmed by the brain CT and MRI; ② patients who were clinically diagnosed as diabetic; ③ patients who were at least 18 years old and had been in the hospital for more than two weeks; ④ the Glasgow Coma Scale (GCS): 8–12 points; ⑤ the water swallow test (WST)> grade III, accompanied by swallowing dysfunction; ⑥ patients and their families were fully informed about the research process and willing to participate in this study.

Exclusion criteria: ① patients who died within seven days in ICU; ② patients whose conditions were quite severe and unstable; ③ patients with gastrointestinal diseases such as esophageal reflux; ④ patients with pressure ulcers or aspiration before admission; ⑤ patients who terminated the treatment; ⑥ patients with mental disorders and cognitive dysfunctions.

2.2. Grouping. In accordance with the timing of their admission, the patients were divided into two groups: the control group ($n = 61$) and the research group ($n = 62$). The implementation of this research protocol was subject to review and supervision by our hospital's ethical committee.

2.3. Intervention Methods. Patients in the research group received comprehensive nursing combined with the comfort nursing, while patients in the control group received routine ward management, medication guidance, condition monitoring, respiratory management, nutritional support, and other ICU nursing measures. The specific measures were as follows:

(1) Formulation of nursing schemes: the nursing goals and specific intervention measures were clarified after the formation of a dedicated nursing team and the evaluation of the patients' general information, state of consciousness, vital signs, mental status, family, swallowing function, language function, motor function, and ability to perform daily activities [8–11]. 2013 The nursing scheme was then appropriately and timely adjusted in response to changes in the patient's condition.

(2) Ward environment: to provide the patients a comfortable and secure environment, the ward needed to be calm, organized, and well-equipped, with a temperature of 20–24°C, relative humidity of 50–60%, good ventilation, fresh air, and soft lighting.

(3) Psychological intervention: many patients suffer from negative emotions such as anxiety and depression as a result of the acute attack of stroke, which necessitates the participation of comfort and encouragement in the communication with them in order to contribute to the formation of their confidence in the disease, the enhancement of the treatment coordination, and the motivation of their engagement in family and social activities.

(4) Risk assessment of pressure ulcers and aspiration: the "Pressure Ulcer Risk Assessment Form" was used to evaluate the risk for the development of pressure ulcers in combination with the patient's comprehensive nutritional status, body mass, and stool control ability; The drinking water swallow test (WST) was used to estimate the risk of aspiration in patients, with a focus on high-risk patients who require a prompt treatment.

(5) Skincare: patients were helped to change positions on a frequent basis, a mattress was used to alleviate skin pressure, the bedside angle was changed suitably, and the patient's skin was washed and kept dry. Regular cleaning of the skin of the perineum and anus was necessary for patients with incontinence. To guarantee that the patients have a comfortable body feeling, clothing, quilts, sheets, and other bedding should be dry and orderly [12–14].

(6) Sputum suction: the patients required regular sputum suction in order to maintain smooth breathing, which rigorously adhered to aseptic operating requirements. Following the culturing of the sputum samples in the laboratory, the nursing plan was modified in accordance with the results of the sputum test [15].

(7) Health education: after a thorough review of the patient's medical records, the patients and their families received health education through collective education, group education, individual conversations. The main topics covered in this health education were the basics of preventing cerebrovascular disease, rehabilitation advice, dietary recommendations, daily routines, complications, and other health information.

(8) Necessary nutritional support: utilizing a variety of resources to provide patients with enough social support and urge patients' families and friends to pay them regular visits.

2.4. Observational Indexes. General information: the following patient characteristics were gathered for the two patient groups: age, gender, hypertension, stroke type, focal site, stroke history, Acute Physiology and Chronic Health Evaluation II (APACHE II) score, and smoking and drinking histories.

The ICU monitoring and extubation times of the two patient groups were compared and assessed.

Pressure ulcers: there are four different levels of severity. Grade I: the skin is heated, numb, swollen, and tender, and the skin has not recovered 30 minutes after the pressure is released; Grade II: there are ulcers, blisters, and no scabs, and the skin is purple-red, swollen, and rigid. Grade III: the skin blisters have ruptured, exposing a wet, red lesion that has yellow exudate; Grade IV: necrosis and blackening of the skin tissue, local eschar, and foul-smelling purulent secretions.

Aspiration: the pepsin test in the sputum specimen was positive [16].

Mental State: prior to and following the intervention, patients' psychological states were evaluated using the self-rating anxiety scale (SAS) and self-rating depression scale (SDS). Mild anxiety was defined as 50 to 59 points, moderate anxiety as 60 to 69 points, and severe anxiety as 70 to 79 points. Mild depression was defined as 53 to 62 points, moderate depression as 63 to 72 points, and severe depression as 72 points and above. The higher the score, the more severe the psychological difficulties of the patients.

Quality of life: the prognostic quality of life of patients was evaluated using the MOS 36-item short-form health survey (SF-36) scale, which has eight dimensions with a score of 100 each. The score is directly correlated with the patient's quality of life.

The incidence of nosocomial infections: the number of nosocomial infections that occurred in the two patient groups during the nursing period was counted in order to determine the incidence of nosocomial infections.

The 2013 Chinese edition of the guideline for the prevention and treatment of type 2 diabetes is used to regulate the level of glycated hemoglobin. The goal is to keep glycosylated hemoglobin below 7%.

2.5. Statistical Processing. SPSS22.0 was used for the data analysis in this study to determine the difference between groups, and GraphPad Prism 7 (GraphPad Software, San Diego, USA) software was used to plot the graphs. Normally distributed measurement data were expressed as the mean ± standard deviation $(n = 2(\mu_\alpha + \mu_\beta)^2 p(1-p)/\delta^2)$, and the comparison was conducted using the t-test, while the analysis of the count data, represented by [n (%)], was conducted using the X^2 test. $P < 0.05$ indicated that the difference was statistically significant.

3. Results

3.1. General Information. The general features of the two patient groups, including age, stroke type, and lesion site, were the same. ($P > 0.05$). Table 1.

3.2. ICU Monitoring Time and Extubation Time. ICU monitoring and extubation times took substantially less time in the study group than that in the control group ($P < 0.05$), Figure 1.

3.3. Pressure Ulcers. Patients in the study group experienced pressure ulcers to a lesser extent and with a lower frequency than those in the control group ($P < 0.05$), Table 2.

3.4. Aspiration. The research group had a much lower aspiration rate than the control group, with only 2 cases of aspiration compared to 9 in the control group ($X^2 = 5.0182$, $P = 0.025$), Figure 2.

3.5. Mental State. The SAS and SDS scores of the study group were significantly lower than those of the control group ($P < 0.05$), Figure 3.

3.6. Quality of Life. The SF-36 score of the research group was considerably higher than that of the control group ($P < 0.05$), Table 3.

3.7. Nosocomial Infections. There were 3 nosocomial infections in the research group compared to 11 in the control group, showing that there was a considerably lower frequency of nosocomial infections there ($P < 0.05$), Figure 4.

3.8. Glycosylated Hemoglobin Level. In two groups of patients with diabetes mellitus and stroke, the amount of glycosylated haemoglobin was lower than it was prior to the intervention. ($t = 16.823/t = 14.441$ and $P < 0.001/P < 0.001$). There was no significant difference between the two groups before and after the intervention, Table 4.

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

Indexes	Control group ($n = 61$)	Research group ($n = 62$)	X^2/t	P
Age (year)	60.58 ± 6.42	59.83 ± 6.19	0.6596	0.5108
Male/female	36/25	35/27	0.0829	0.773
Hypertension	24 (39.34)	27 (43.55)	0.2239	0.636
Stroke types			0.0654	0.798
Cerebral infarction	38 (62.30)	40 (64.52)		
Cerebral hemorrhage	23 (37.70)	22 (35.48)		
Stroke history			0.0754	0.784
Yes	12 (19.67)	11 (17.74)		
No	49 (80.33)	51 (82.26)		
Focus location			0.0782	0.780
Unilateral cerebral hemisphere	27 (44.26)	29 (46.77)		
Bilateral cerebral hemispheres	26 (42.62)	24 (38.71)		
Cerebellum and brainstem	8 (13.11)	9 (14.52)		
APACHEII scores	13.49 ± 2.17	13.65 ± 3.24	0.1893	0.8502
Smoking history	25 (40.98)	24 (38.71)	0.0663	0.797
Drinking history	31 (50.82)	35 (56.45)	0.3922	0.531

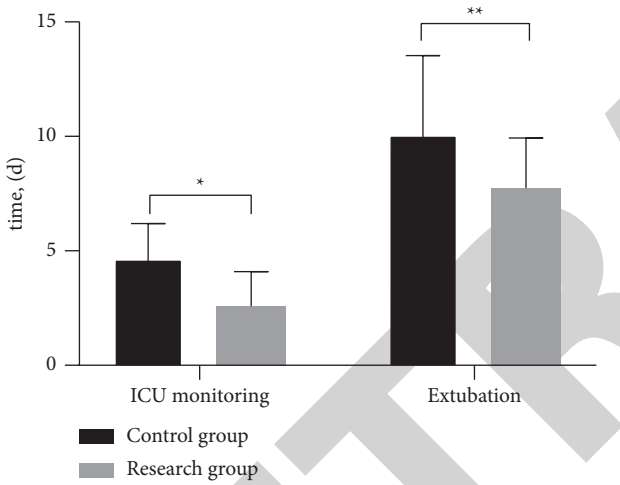

Figure 1: ICU monitoring time and extubation time. Note: the abscissa represents the evaluation index, and the ordinate represents the number of days, d; the ICU monitoring time and extubation time of the control group were as follows: (4.65 ± 1.66) and (10.07 ± 3.60); the ICU monitoring time and extubation time of the research group were as follows: (2.58 ± 1.52) and (7.74 ± 2.19); *indicates that there is a significant difference in ICU monitoring time between the two groups of patients ($t = 7.2147$, $P < 0.001$); **indicates that there is a significant difference in the extubation time between the two groups of patients ($t = 4.3444$, $P < 0.001$).

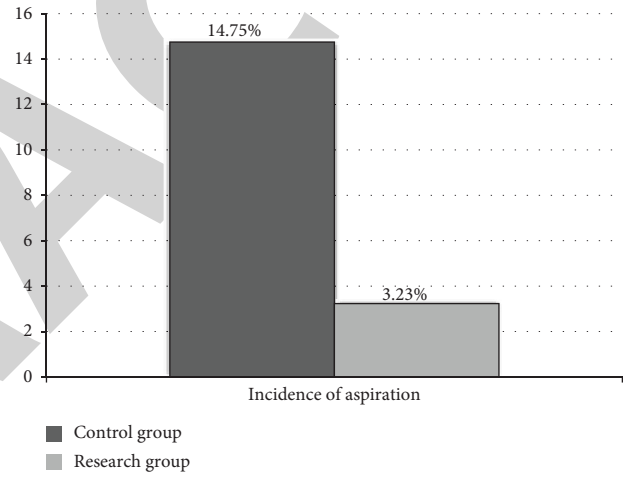

Figure 2: The incidence of aspiration in the two groups of patients (%).

Table 2: The incidence of pressure ulcers in the two groups [n (%)].

Grading	Control group ($n = 61$)	Research group ($n = 62$)	X^2	P
Grade I	4 (6.56)	3 (4.84)		
Grade II	4 (6.56)	2 (3.23)		
Grade III	3 (4.92)	0 (0)		
Grade IV	2 (3.28)	0 (0)		
Total	13 (21.31)	5 (8.06)	4.3191	0.038

4. Discussion

Due to the severity of their condition, patients with severe stroke frequently struggle to turn over and are unable to cough effectively. Pressure ulcers and aspiration are two common complications in people with severe strokes. Particularly for patients in the acute care period of the ICU, aspiration, to which aspiration pneumonia and acute respiratory distress syndrome are secondary, may cause a huge increase in the risk of death [17–20]. Pressure ulcers are defined as the localized tissue erosion and necrosis following blood flow obstructions brought on by persistent pressure on the patient's local tissues, which causes more discomfort and delays healing. Therefore, it is believed that effective pressure ulcer and aspiration control is essential for improving the clinical outcome of treatment for severe stroke patients who also have diabetes and nursing work [21–24].

Although conventional care can offer care for patients, the care process is fixed and the care model is singular, making it difficult to meet patients' expectations for excellent

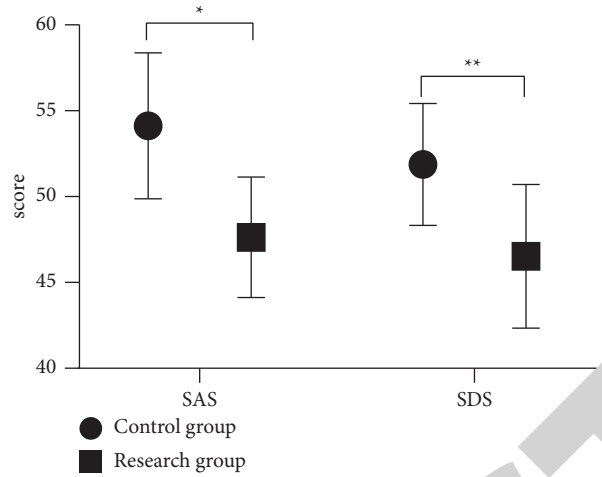

Figure 3: SAS and SDS score ($\overline{x} \pm s$). Note: the abscissa represents SAS and SDS, and the ordinate represents the score; the SAS and SDS scores of the control group were as follows: (54.12 ± 4.25) and (51.87 ± 3.55); the SAS and SDS scores of the research group were as follows: (47.63 ± 3.51) and (46.52 ± 4.18); * indicates that the SAS scores of the two groups are significantly different ($t = 9.2405$, $P < 0.001$); ** indicates that the SDS scores of the two groups are significantly different ($t = 7.6451$, $P < 0.001$).

Table 3: Comparison of the SF-36 scores of the two groups ($\overline{x} \pm s$).

Categories	Control group ($n = 61$)	Research group ($n = 62$)	t	P
General health	54.91 ± 4.62	59.85 ± 3.74	6.2559	<0.001
Bodily pain	53.28 ± 5.03	57.88 ± 4.26	5.4763	<0.001
Social functioning	52.37 ± 4.25	57.26 ± 4.32	6.3274	<0.001
Role physical	54.87 ± 2.52	60.29 ± 3.24	10.3444	<0.001
Physical functioning	55.17 ± 2.58	58.63 ± 4.75	5.0083	<0.001
Vitality	52.73 ± 4.57	57.16 ± 4.68	5.3104	<0.001
Mental health	53.22 ± 4.50	58.25 ± 3.51	6.9186	<0.001
Role emotional	53.54 ± 4.53	60.04 ± 3.51	8.9038	<0.001

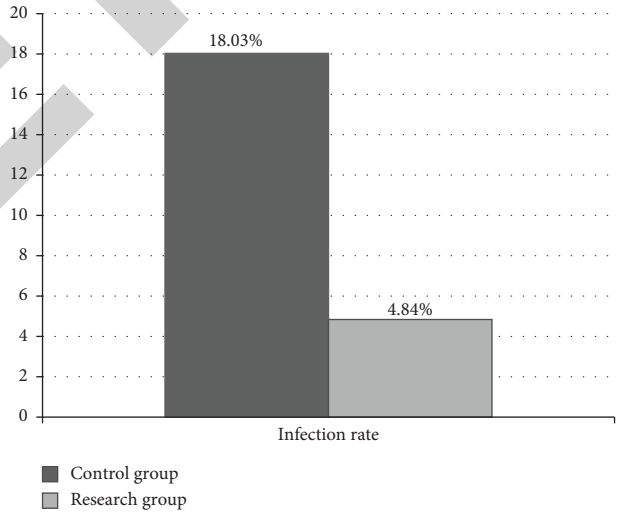

Figure 4: The incidence of nosocomial infections in the two groups (%).

care and having certain restrictions. The enhancement of the nursing effect and the improvement of the patient's prognosis are guaranteed by the comprehensive nursing, which has all-round nursing procedures as the core framework in terms of nursing responsibilities and evaluations, standardized nursing plans, patient education plans, discharge

Table 4: Comparison of the glycosylated hemoglobin level of the two groups ($\overline{x} \pm s$, (%)).

Group	n	Before intervention	After intervention	t	P
Control group	61	10.48 ± 1.06	6.95 ± 1.25	16.823	<0.001
Research group	62	10.23 ± 1.47	7.01 ± 0.96	14.441	<0.001
t		1.080	−0.299		
P		0.282	0.617		

plans, nursing forms filling, and control of nursing quality, which are interlocked and coordinated as a whole. Additionally, synergistic comfort nursing emphasizes the concept of "comfort" as part of holistic nursing in order to guarantee the most comfortable and pleasant condition in the patients' psychological, physical, and social aspects or to lessen the patients' discomfort. The purpose of this study was to provide a theoretical framework for the improvement of clinical nursing programs by investigating the impact of comprehensive nursing along with the comfort nursing on the incidence of pressure ulcers and aspiration in severe stroke patients with diabetes. This investigation was conducted in order to improve the quality of care for patients with severe stroke in the ICU.

The study's findings showed that the research group experienced shorter ICU monitoring and extubation times than the control group ($P < 0.05$), which indicates that the combination of the two nursing methods is highly effective in promoting patient recovery. It might be because the combined nursing approach is more mature and humane than traditional nursing methods, ensuring a stable recovery. The results were consistent with the research results by Hughes and Lapane [25]. Moreover, the research group in this study had a significantly lower incidence of pressure ulcers, aspiration, and nosocomial infections than the control group ($P < 0.05$), suggesting the promising efficacy of the combined nursing method adopted in this study, which may be attributed to the precautionary measures for latent high-risk complications such as pressure ulcers, aspiration, and infections after early evaluation of patients' emotional changes and clarification of the nursing orientation. On the one hand, comprehensive care includes high-quality symptomatic care techniques that lower the risk of peptic ulcer complications in patients by providing them with fundamental medical services such as health education, dietary guidance, digestive system care, and medication management. On the other hand, comfort care reduces patients' fears and stress reactions through psychological care, environmental care, and positive social support, thus improving patient's resistance and recovery [26, 27].

Additionally, the results showed that as compared to the control group, the research group had higher SF-36 scores and lower SAS and SDS scores ($P < 0.05$). With a nursing concept to conduct holistic, personalized, creative, and effective nursing practices, to meet patients' needs to the fullest extent and enhance the quality of care from various angles, comprehensive nursing combined with comfort nursing places additional importance on the mental health of the patients in contrast to conventional nursing methods that only focus on physical nursing. Modern medical research also values the integration of comfort nursing with existing nursing theories. This is because comfort care combined with integrated care involves physical and psychological care; health education can help patients alleviate fear and their stress response. Psychological care can help patients who are depressed or anxious due to medication or long-term bed rest, reduce their HAMD and HAMA scores, and improve their sleep quality [28, 29].

The advantages of integrated care combined with comfort care are as follows: ① patients can receive decent rest because of its ability to intervene on the ward. ② Its capacity to monitor the situation and minimize harm. ③ It enables psychological intervention and health education, and can raise patients' awareness of comprehensive care and lessen their negative feelings. ④ It makes it possible to perform physiological interventions and raises patient comfort. ⑤ It has the ability to step in with drugs that can control their uses and prevent accidents.

Limitation of this study: ① this study has a small sample size. Future studies will increase the sample size in order to more convincingly demonstrate the impact of comprehensive nursing along with the comfort nursing on the incidence of aspiration and pressure ulcers in severe stroke patients with diabetes in ICU. ② ICU patients with severe stroke and diabetes were included as research subjects in this study with the aim of raising nursing standards and the survival rate for ICU patients. However, the patient's follow-up nursing plan is not changed, and further clinical data support is needed to examine the overall clinical nursing model for stroke patients with diabetes. ③ The nursing effect is directly impacted by the professional quality and skills of nurses. In order to ensure that nursing work is carried out effectively in clinical practice, nursing professionals must undergo extensive training in both comfort nursing and comprehensive nursing.

In conclusion, comprehensive nursing combined with the comfort nursing has a promising effect on severe stroke patients with diabetes in the ICU, significantly reducing the incidence of pressure ulcers, aspiration, and nosocomial infections, accelerating physical recovery, enhancing mental state, and providing a better prognosis, deserving general clinical promotion.

Data Availability

All data generated or analyzed during this study are included in this published article.

Consent

All authors have read and approved this manuscript to be considered for publication.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

Haiqin Zhang drafted and revised the manuscript. Hongmei Chu, Xiaoli Qian, Yan Zhan, and Qiuping Wang conceived and designed this article, are in charge of syntax modification, and revised the manuscript. All the authors have read and agreed to the final version of the manuscript. Haiqin Zhang and Hongmei Chu contributed equally to this work.

References

[1] A. Smith, A. Kulhari, J. Wolfram, and A. Furlan, "Impact of insurance precertification on discharge of stroke patients to acute rehabilitation or skilled nursing facility," *Journal of Stroke and Cerebrovascular Diseases*, vol. 26, no. 4, pp. 711–716, 2017.

[2] L. H. Wan, L. M. You, S. X. Chen et al., "The effectiveness of a comprehensive reminder system in the secondary prevention of hypertensive ischaemic stroke: randomized controlled trial protocol," *Journal of Advanced Nursing*, vol. 72, no. 12, pp. 3195–3206, 2016.

[3] J. Valencia-Ramos, J. Arnaez, S. Calvo, F. Gomez, and I. Del Blanco, "Observational study of newborn infant parasympathetic evaluation as a comfort system in awake patients admitted to a pediatric intensive care unit," *Journal of Clinical Monitoring and Computing*, vol. 33, no. 5, pp. 749–755, 2019.

[4] L. Zallman, K. Finnegan, D. Roll, M. Todaro, R. Oneiz, and A. Sayah, "Impact of medical scribes in primary care on productivity, face-to-face time, and patient comfort," *The Journal of the American Board of Family Medicine*, vol. 31, no. 4, pp. 612–619, 2018.

[5] M. Barnett and C. Cantu, "Choice of and comfort with health care proxy among older adults: h," *Death Studies*, vol. 45, no. 3, pp. 202–208, 2021.

[6] S. Teplitsky, M. J. Counsilman, and P. Chung, "An assessment of an outpatient urology clinic's compassion, comfort and knowledge of transgender care," *Urology practice*, vol. 7, no. 1, pp. 61–67, 2020.

[7] A. Wickson-Griffiths, S. Kaasalainen, K. Brazil et al., "Comfort care rounds: a staff capacity-building initiative in long-term care homes," *Journal of Gerontological Nursing*, vol. 41, no. 1, pp. 42–48, 2015.

[8] M. A. Meeker, J. M. McGinley, and M. A. Jezewski, "Meta-synthesis: d-focused to comfort-focused care," *Journal of Advanced Nursing*, vol. 75, no. 10, pp. 2059–2071, 2019.

[9] C. Drolet, H. Roy, J. Laflamme, and M. E. Marcotte, "Feasibility of a comfort care protocol using oral transmucosal medication delivery in a palliative neonatal population," *Journal of Palliative Medicine*, vol. 19, no. 4, pp. 442–450, 2016.

[10] Y. Aksoy Derya and T. Pasinlioğlu, "The effect of nursing care based on comfort theory on women's postpartum comfort levels after caesarean sections," *International Journal of Nursing Knowledge*, vol. 28, no. 3, pp. 138–144, 2017.

[11] Y. Dan and H. Fan, "Clinical effect of individualized comprehensive diet nursing intervention on patients with type 2 diabetes mellitus," *International Journal of Clinical and Experimental Medicine Research*, vol. 4, no. 4, 2020.

[12] L. I. N. Li, J. X. Dai, L. Xu, Z. X. Huang, Q. Pan, and X. Zhang, "The effect of a rehabilitation nursing intervention model on improving the comprehensive health status of patients with hand burns," *Burns*, vol. 43, no. 4, pp. 877–885, 2017.

[13] C. Chen, H. Wang, H. Chang, and C. Hsueh, "Effectiveness of a modified comprehensive behavioral intervention for tics for children and adolescents with tourette's syndrome: a randomized controlled trial," *Journal of Advanced Nursing*, vol. 76, no. 3, pp. 903–915, 2020.

[14] R. C. Darling, C. Warner, C. C. Yeh, M. D. Shah, J. C. Hnath, and D. M. Shah, "Carotid interventions (CEA and CAS) in acute stroke patients: which procedure on which patient," *The Journal of Cardiovascular Surgery: Official Journal of the International Society for Cardiovascular Surgery*, vol. 57, no. 1, pp. 29–35, 2016.

[15] S. M. Lee, K. M. Sung, H. K. Kwon, and S. J. Lee, "The effect of a movie-based nursing intervention program on rehabilitation motivation and depression in stroke patients," *Journal of Korean Academy of Nursing*, vol. 47, no. 3, pp. 345–356, 2017.

[16] H. Liu, D. Zhu, J. Cao et al., "The effects of a standardized nursing intervention model on immobile patients with stroke: a multicenter study in China," *European Journal of Cardiovascular Nursing*, vol. 18, no. 8, pp. 753–763, 2019.

[17] M. I. Loft, B. Martinsen, B. A. Esbensen, L. L. Mathiesen, H. K. Iversen, and I. Poulsen, "Strengthening the role and functions of nursing staff in inpatient stroke rehabilitation: developing a complex intervention using the Behaviour Change Wheel," *International Journal of Qualitative Studies on Health and Well-Being*, vol. 12, no. 1, 2017.

[18] M. I. Loft, I. Poulsen, B. Martinsen, L. L. Mathiesen, H. K. Iversen, and B. A. Esbensen, "Strengthening nursing role and functions in stroke rehabilitation 24/7: a mixed-methods study assessing the feasibility and acceptability of an educational intervention programme," *Nursing Open*, vol. 6, no. 1, pp. 162–174, 2019.

[19] S. Y. Tan, Y. M. Liu, J. Yang, M. L. Chen, and Y. J. Tong, "Application study of continuous nursing intervention among ischemic stroke patients," *International Journal of Clinical and Experimental Medicine Research*, vol. 4, no. 3, pp. 107–111, 2020.

[20] M. Miladinia, S. Baraz, A. Shariati, and A. S. Malehi, "Effects of slow-stroke back massage on symptom cluster in adult patients with acute leukemia," *Cancer Nursing*, vol. 40, no. 1, pp. 31–38, 2017.

[21] S. Hou, B. Li, Y. Luo, and S. Shang, "Creation and location-specific revision of a core nursing outcomes evaluation system based on nursing outcomes classification for stroke inpatients in China," *International journal of nursing knowledge*, vol. 30, no. 3, pp. 154–161, 2019.

[22] M. J. Van Dijk, T. B. Hafsteinsdóttir, M. J. Schuurmans, and J. M. Man-van Ginkel, "Feasibility of a nurse-led intervention for the early management of depression after stroke in hospital," *Journal of Advanced Nursing*, vol. 74, no. 12, pp. 2882–2893, 2018.

[23] S. Middleton, D. Bruch, C. Martinez-Garduno, S. Dale, and M. McNamara, "International uptake of a proven intervention to reduce death and dependency in acute stroke: a cross-sectional survey following the qasc trial," *Worldviews on Evidence-Based Nursing*, vol. 14, no. 6, pp. 447–454, 2017.

[24] C. J. Smith, M. Horne, G. McCracken et al., "Development and feasibility testing of an oral hygiene intervention for stroke unit care," *Gerodontology*, vol. 34, no. 1, pp. 110–120, 2017.

Hindawi
Evidence-Based Complementary and Alternative Medicine
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Retraction

Retracted: The Effective Components, Core Targets, and Key Pathways of Ginseng against Alzheimer's Disease

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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 and X. Liu, "The Effective Components, Core Targets, and Key Pathways of Ginseng against Alzheimer's Disease," *Evidence-Based Complementary and Alternative Medicine*, vol. 2023, Article ID 9935942, 12 pages, 2023.

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Research Article

The Effective Components, Core Targets, and Key Pathways of Ginseng against Alzheimer's Disease

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Background. *Panax ginseng* C. A. Mey (*ginseng*) is a traditional Chinese medicinal herb used for the treatment of nervous system disorders, such as Alzheimer's disease (AD). However, the pharmacological mechanisms of *ginseng* involved in AD have not been systematically investigated. Here, a network pharmacology approach was adopted to explore the effective components, core targets, and key pathways of *ginseng* against AD. *Methods*. TCMSP database was used to screen the active ingredients of *ginseng*. Prediction of the targets of ginseng and AD-related genes was performed using online public databases. "Compound-Target," "Compound-Target-Disease," "Protein-Protein Interaction (PPI)," "Compound-Target-Pathway," and "Compound-Target-GO–Pathway" networks were constructed with Cytoscape 3.7.2 software. Gene Ontology (GO) function annotation and Kyoto Encyclopedia of Genes and Genomes (KEGG) pathway enrichment were performed by using the DAVID database. *Results*. A total of 22 bioactive compounds were identified from *ginseng*, and 481 targets of *ginseng* and 763 AD-related targets were obtained from public databases. The PPI network screened out 19 hub genes of *ginseng* against AD. According to GO function enrichment, ginseng influenced cell proliferation, death, the nitric oxide biosynthetic process, hypoxia response, and synaptic transmission. Neuroactive ligand-receptor interaction, serotonergic synapse, calcium signaling, cAMP signaling, FoxO signaling, Ras signaling, and PI3K-AKT signaling were among the most key regulatory pathways. The compound-target-GO-route network found EGFR, MAPK1, MAPK14, AKT1, CASP3, and PRKACA as key genes, with PI3K-AKT signaling being the most important pathway for ginseng's anti-AD activity. *Conclusion*. *Ginseng* exerts neuroprotective effects in AD patients through multicomponent, multitarget, and multipathway modes, providing novel insight into the pharmacological and experimental research on *ginseng* against AD.

1. Introduction

Alzheimer's disease (AD) is a chronic neurodegenerative disease and a primary cause of dementia in the aging population worldwide [1]. AD is characterized by a progressive memory deficit, cognitive disorder, loss of acquired learning capacity, compromised daily activity ability, and psychiatric symptoms [2]. The senile plaque formed by aggregation of extracellular β-amyloid (Aβ) protein and neurofibrillary tangles triggered by hyperphosphorylation of intracellular tau protein is the typical pathogenesis of AD [3]. Additionally, neuron death, oxidative stress, neurotransmitter dysregulation, and neuroinflammation are also associated with the occurrence and development of AD [4]. As reported, two-thirds of the 50 million cases of dementia worldwide are AD, and the number of dementia cases is expected to reach 152 million by 2050 [5]. In China, it is estimated that there will be 2.35 times more people with AD in 2050 than in 2015, placing a heavy burden on social healthcare costs and families [6]. As FDA-approved anti-AD drugs in clinical practice, acetylcholinesterase inhibitors (AChEIs) and N-methyl-D-aspartic acid (NMDA) receptor antagonists only provide partial symptomatic improvement [7]. Despite the recent approval of aducanumab as the first putative disease-modifying therapy (DMT) for AD, considerable controversy remains over the use of the drug [8].

In view of the complicated pathological mechanisms, multitarget regimens may be a better choice than traditional single-target drugs.

Traditional Chinese medicine (TCM) has evolved and been passed down for thousands of years, forming its theoretical foundation and herb-use features. In TCM, two or more herbs are frequently used for synergism and toxicity reduction. For hundreds of years, TCM, particularly herbal therapy, has been utilized as a supplementary and alternative therapeutic strategy to treat neurodegenerative disorders [9]. *Panax ginseng* C. A. Mey (*ginseng*), a common Chinese herbal medicine, exerts neuroprotective effects against pathological cascades in AD, such as Aβ formation, neuroinflammation, oxidative stress, and mitochondrial dysfunction [10, 11]. As the main active components of *ginseng*, ginsenosides feature antitumor, anti-inflammatory, antioxidant, and antiapoptotic effects [12]. Ginseng protein is one of the active components of ginseng with anti-AD effects in vivo and in vitro [13, 14], and the mechanism of action is associated with the activation of the cyclic adenosine monophosphate/cyclic phosphoadenosine effector element-binding protein (cAMP/CREB) signaling pathway. Brain-derived neurotrophic factor (BDNF) is a CREB downstream effector that binds to tyrosine-protein kinase receptor B (TrkB), causing an increase in TrkB autophosphorylation, which consequently facilitates neuronal growth, survival, and differentiation [15, 16] and protects against neuronal damage elicited by β-amyloid (Aβ) [17]. The BDNF/TrkB signaling pathway is closely related to cognitive function, and inactivation of this pathway may lead to abnormal cognitive function [18]. Also, BDNF expression is closely associated with gut microbes, and disturbances in the gut flora reduce BDNF levels in the cerebral cortex and hippocampus, thereby leading to dysfunction of the central nervous system, behavioral abnormalities, cognitive impairment, or even AD [19].

Nevertheless, *ginseng* or ginsenosides have been frequently investigated in single-target studies. For instance, *ginseng* improved the memory ability and decreased the level of Aβ_{1-42} and p-tau in AD rats by activating PI3K/AKT signaling pathway [20], ginsenoside Rg1 lowered Aβ contents via suppressing CDK5-mediated PPARγ phosphorylation in a neuron model of AD [21], and ginsenoside Rg2 protected against Aβ_{25-35}-induced apoptosis in AD by the enhancement of PI3K/Akt signaling pathway [22]. However, single-target research is insufficient to fully understand the entire medicinal effects and mechanism of action of ginseng for AD therapy. As a result, proper multitarget research is required to thoroughly explore the mechanisms of ginseng in AD.

Network pharmacology is an integrated approach based on pharmacology, network biology, systems biology, bioinformatics, and computational science [23]. It is widely applied to reveal the action mechanism of TCM through establishing a "drug-component-target-disease" interaction network [24]. Accordingly, the present study employs a new network pharmacology approach to investigate the interaction between drug and target by searching databases of genes, proteins, illnesses, and medications, as well as real experimental data, to establish a relationship network between "drug-gene-target-disease." It is envisaged that medications will be able to rebalance the biological network to investigate the influence of ginseng against AD. Furthermore, the integrity and systematic character of pharmacological research strategy of the TCM network, in accordance with the principles of disease diagnosis and treatment, is also a feature of the synergistic action of multicomponents, multiapproaches, and multitargets in TCM and its prescriptions.

2. Materials and Methods

2.1. Screening of Active Ingredients in Ginseng. Traditional Chinese Medicine Systems Pharmacology (TCMSP) database (https://old.tcmsp-e.com/tcmsp.php) [25] was used to select the chemical compounds with the keywords of "Panax *Ginseng* C. A. Mey." The absorption, distribution, metabolism, and excretion (ADME) model were used to predict the pharmacokinetic properties of natural compounds. The bioactive components were screened from *ginseng* as per the criteria of oral bioavailability (OB) ≥30% and drug-likeness (DL) ≥0.18.

2.2. Collecting Potential Targets Related to Bioactive Ingredients of Ginseng. The relevant targets of the active components of *ginseng* were obtained by using the TCMSP database. PharmMapper (https://www.lilab-ecust.cn/pharmmapper/submitfile.html) [26] and TargetNet [27] were also employed to acquire compound-related targets. Firstly, PubChem (https://pubchem.ncbi.nlm.nih.gov/) and TCMSP were used to collect the canonical smiles and mol2 structure files, respectively. The protein structure in mol2 format was uploaded to PharmMapper with the limitations of "Homo sapiens" and "normal fit score >0.6." Then, canonical smiles were imported into TargetNet with limitations of "Homo sapiens" and "probability >0.8." UniProt database (https://www.uniprot.org/) [28] was adopted to obtain the corresponding gene symbols with species limited to "Homo sapiens." After ruling out the duplicates, all putative targets of *ginseng* were obtained.

2.3. Identification of Candidate Targets for AD. The AD-related genes were retrieved from 5 public databases, including GeneCards (https://www.genecards.org/) [29], DisGeNET (https://www.disgenet.org/) [30], AlzPlatform (https://www.cbligand.org/AD/) [24], DrugBank (https://www.drugbank.ca/) [31], and Therapeutic Target Database (TTD) (https://db.idrblab.net/ttd/) [32], with the search term of "Alzheimer's disease." All targets were standardized to the UniProtKB form. The final AD target genes were acquired after removing the repetitive items.

2.4. Network Establishment

2.4.1. "Compound-Target (C-T)" Network of Ginseng. The active components and corresponding targets of *ginseng* were introduced into Cytoscape 3.7.2 to construct this network.

2.4.2. "Compound-Target-Disease (C-T-D)" Network. An online Venn diagram tool (https://bioinformatics.psb.ugent.be/webtools/Venn/) was used to obtain the intersection of *ginseng*- and AD-related genes. Then, the active ingredients, diseases, and overlapping targets were entered into Cytoscape 3.7.2 to establish this network.

2.4.3. "Protein-Protein Interaction (PPI)" Network. Although PPI networks are less closely associated with mRNA expressions, the goal of the present study after differential analysis was to identify hub genes using the PPI network, which had no implications for the results. The intersection targets were imported into the STRING database (https://string-db.org/) [33] to analyze the interaction between proteins with "Homo sapiens" and "minimum required interaction score >0.7." The TSV files were downloaded from the STRING database and imported into Cytoscape 3.7.2 software for PPI analysis and visualization. The topological importance of the nodes in the network was evaluated with three important topological parameters, namely, betweenness centrality (BC), closeness centrality (CC), and degree centrality (DC). The two rounds of screening for hub genes were performed based on threshold values of BC, CC, and DC ≥median values.

2.4.4. "Compound-Target-Pathway (C-T-P)" Network. The pathway annotation of overlapping genes was conducted using KEGG pathway enrichment analysis. The active components, target proteins, and pathway information were introduced into Cytoscape 3.7.2 to establish the CTP network.

2.4.5. "Compound-Target-GO-Pathway (C-T-G-P)" Network. The 17 key genes from the PPI network, corresponding active components, top 20 GO terms, and top 25 pathways were imported into Cytoscape software to construct the C-T-G-P integrative network.

2.5. GO Function and KEGG Pathway Enrichment Analysis. Online bioinformatics tool DAVID (https://david.ncifcrf.gov/) [34] was utilized for GO function and KEGG pathway enrichment analysis of drug-disease common targets. When $P < 0.05$, the enriched terms were considered significantly significant. The top 20 relevant biological processes and top 30 KEGG pathways were displayed as bubble charts by using online tool bioinformatics (https://www.bioinformatics.com.cn/). The KEGG mapper (https://www.kegg.jp/kegg/mapper/) was employed to analyze the upstream and downstream genes of crucial signaling pathways.

3. Results

3.1. Screening of Bioactive Components from Ginseng. A total of 190 chemical ingredients were identified in *ginseng*. After ADME screening with OB ≥30% and DL ≥0.18, 22 active components of *ginseng* were finally obtained (Figure 1 and Table 1).

3.2. Collection of Potential Targets for Bioactive Ingredients of Ginseng. TCMSP, PharmMapper, and TargetNet were used to predict the potential targets of 22 bioactive components. There were 117 targets from TCMSP, 256 targets from PharmMapper (norm fit >0.6), and 206 targets from TargetNet (probability >0.8). After ruling out the duplicate targets, the remaining 481 targets were identified as the candidate targets of *ginseng*. The detailed information is shown in Supplemental Table S1. By using Cytoscape 3.7.2, a "Compound-Target" network was established (Figure 2). In this network, there were 503 nodes and 2793 edges. The ginseng active components were represented by yellow arrow nodes and the targets by green diamond nodes, illustrating the interaction between chemical compounds and probable targets. The top ten constituents are presented below in order of degree: MOL005320 (arachidonate, degree = 208); MOL005318 (dianthramine, degree = 199); MOL002879 (Diop, degree = 171); MOL005344 (dinsenoside rh2, degree = 168); MOL004492 (chrysanthemaxanthin, degree = 161); MOL000422 (kaempferol, degree = 160); MOL005360 (malkangunin, degree = 159); MOL005376 (panaxadiol, degree = 141); MOL000358 (beta-sitosterol, degree = 133); and MOL000449 (stigmasterol, degree = 127).

3.3. Interactional Network Analysis of Active Compound Targets and AD-Targets. GeneCards, DisGeNET, AlzPlatform, DrugBank, and TTD databases were employed to predict targets related to AD. There were 363 targets from GeneCards (relevance score ≥20), 154 targets from DisGeNET (Score_gda >0.2), 320 targets from AlzPlatform, 89 targets from DrugBank, and 131 targets from TTD. After excluding duplicates, 763 targets were found to be linked to AD, as shown in Supplementary Table S2. The Venn diagram showed that a total of 177 targets may be implicated in ginseng therapy for AD (Figure 3(a) and Supplemental Table S3). Through Cytoscape 3.7.2, a "Compound-Target-Disease" network was constructed (Figure 3(b)), among which there were 201 nodes and 1318 edges. These data suggested that *ginseng* might affect AD through these bioactive compounds to regulate multiple targets.

3.4. PPI Network Construction. The 177 common targets were inputted into the STRING database and Cytoscape 3.7.2 software to establish a PPI network of compound targets and AD targets. This network consisted of 166 nodes and 845 edges (Figure 4(a)), among which nodes and edges represent interacting proteins and interactions, respectively. The topological properties of this PPI network were analyzed based on three major network parameters of "BC," "CC," and "DC." The targets with BC, CC, and DC exceeding median values were identified as hub genes to establish the core network of *ginseng* against AD. The cutoff values of the first screening were DC ≥ 9, CC ≥ 0.399, and BC ≥ 0.0024, with the results of 53 nodes and 322 edges (Figure 4(b)). Subsequently, the 53 targets were further processed with threshold values as degree ≥11, CC ≥ 0.5, and BC ≥ 0.0084, and 19 nodes and 86 edges were finally obtained (Figure 4(c)). The node size and color are proportionate to

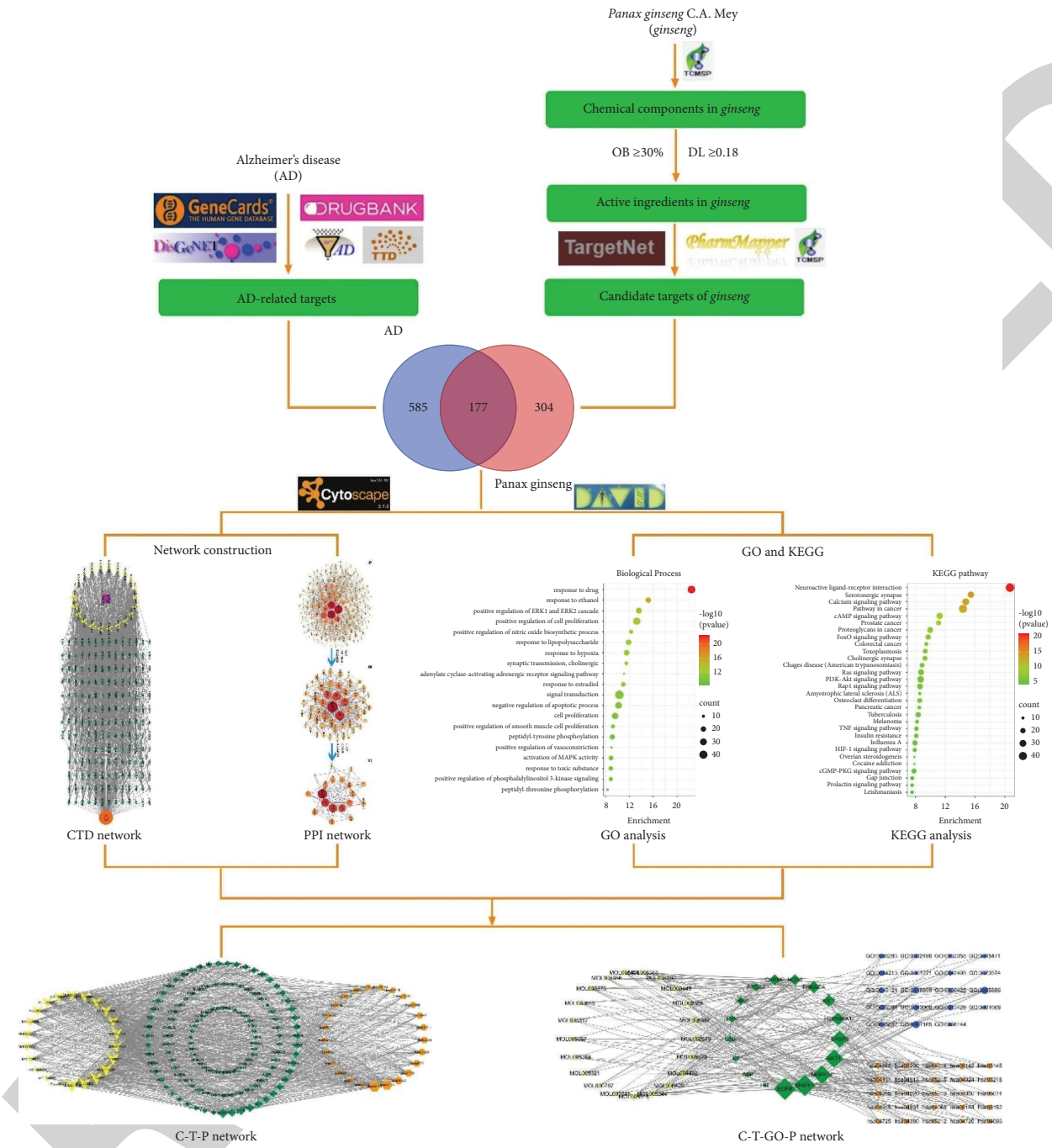


Figure 1: Flowchart of the network pharmacology analysis for *ginseng* against AD.

the degree. The bigger and darker the node, the more significant it is in the hub network. MAPK1, TNF, EGFR, AKT1, and IL2 may account for the important therapeutic benefits of ginseng against AD as the target genes with the highest degree values.

3.5. Biological Functions and Pathways Enrichment. To further illustrate the action mechanism of *ginseng* on AD, the 177 common targets were imported into the DAVID database for GO function and KEGG pathway enrichment. When $P \leq 0.05$, the GO terms and KEGG pathways were considered significantly enriched. The results showed a variety of GO enrichment terms, including 441 biological processes (BP), 54 cell components (CC), and 103 molecular functions (MF) items. The GO information is displayed in detail in Supplemental Table S4. The top 15 significantly enriched GO terms in BP, CC, and MF were plotted and visualized into a bar graph (Figure 5(a)), indicating that *ginseng* might regulate cell proliferation, apoptosis, nitric oxide biosynthetic process, response to hypoxia, and synaptic transmission via enzyme binding, protein tyrosine

Table 1: Potential active components of *ginseng*.

Mol ID	Molecule name	MW	OB (%)	DL
MOL002879	Diop	390.62	43.59	0.39
MOL000449	Stigmasterol	412.77	43.83	0.76
MOL000358	Beta-sitosterol	414.79	36.91	0.75
MOL003648	Inermin	284.28	65.83	0.54
MOL000422	Kaempferol	286.25	41.88	0.24
MOL004492	Chrysanthemaxanthin	584.96	38.72	0.58
MOL005308	Aposiopolamine	271.34	66.65	0.22
MOL005314	Celabenzine	379.55	101.88	0.49
MOL005317	Deoxyharringtonine	515.66	39.27	0.81
MOL005318	Dianthramine	289.26	40.45	0.2
MOL005320	Arachidonate	304.52	45.57	0.2
MOL005321	Frutinone A	264.24	65.9	0.34
MOL005344	Ginsenoside rh2	622.98	36.32	0.56
MOL005348	Ginsenoside-Rh4_qt	458.8	31.11	0.78
MOL005356	Girinimbin	263.36	61.22	0.31
MOL005357	Gomisin B	514.62	31.99	0.83
MOL005360	Malkangunin	432.56	57.71	0.63
MOL005376	Panaxadiol	460.82	33.09	0.79
MOL005384	Suchilactone	368.41	57.52	0.56
MOL005399	Alexandrin_qt	414.79	36.91	0.75
MOL005401	Ginsenoside Rg5_qt	442.8	39.56	0.79
MOL000787	Fumarine	353.4	59.26	0.83

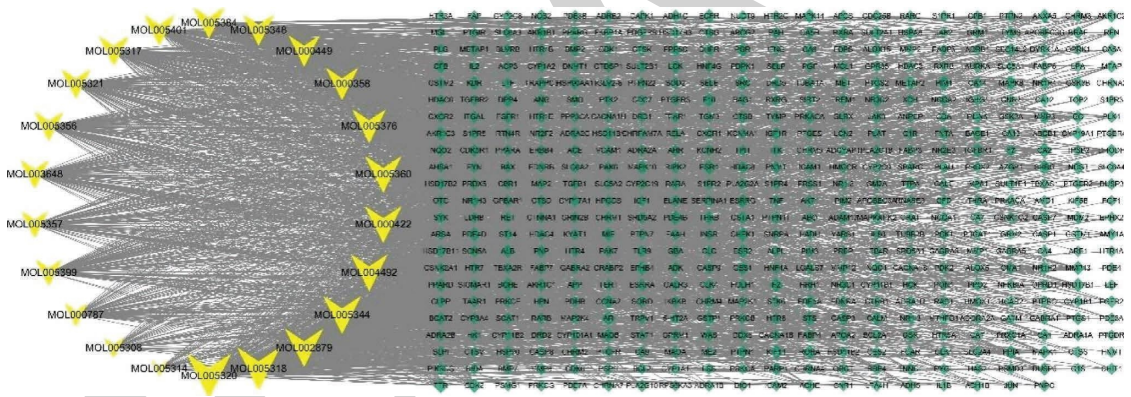
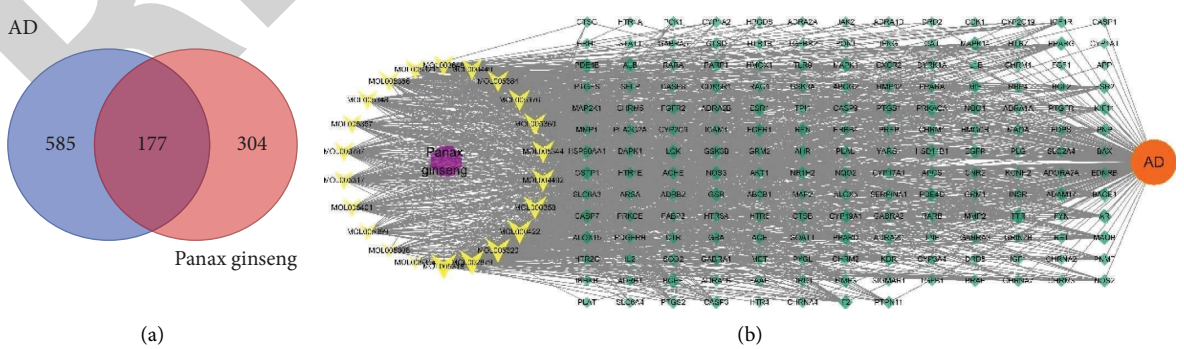


Figure 2: Compound-target network of *ginseng*. Yellow arrows represent 22 active components and green diamonds represent 503 putative targets. The larger the size of compound nodes, the more of the number of degrees.



(a) (b)

Figure 3: (a) Venn diagram showing the overlapping genes of *ginseng*-targets and AD-targets. (b) Compound-target-disease network. The purple octagon stands for *ginseng*, the yellow arrows stands for the compounds of *ginseng*, the green diamond stands for targets, and the orange circle stands for AD.

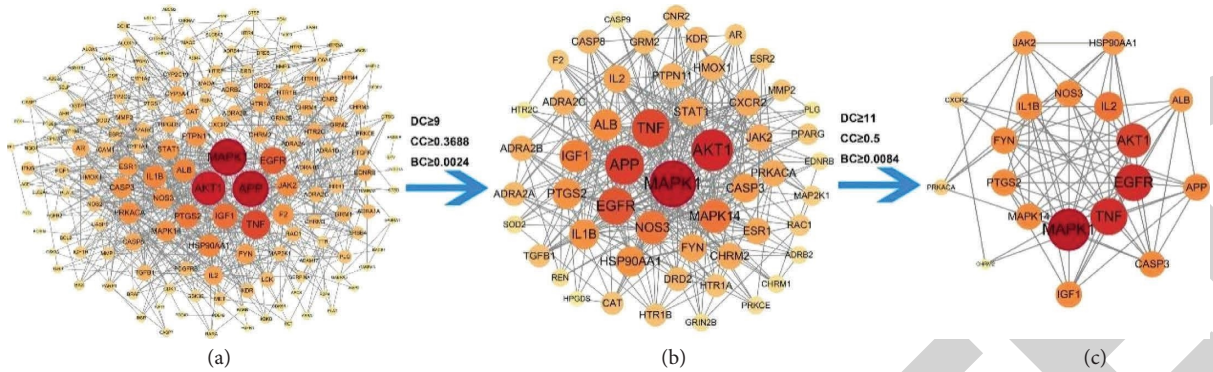


FIGURE 4: Identification of core targets of *ginseng* against AD. (a) The interactive PPI network of *ginseng* putative targets and AD-related targets. (b) PPI network of important targets extracted from A. (c) PPI network of core targets of *ginseng* against AD. DC, degree centrality; CC, closeness centrality; BC, betweenness centrality.

kinase activity, heme binding, and oxygen binding in the plasma membrane, membrane raft, dendrite, extracellular space, and cytosol to exert its anti-AD effects. The top 20 biological processes were used to draw a bubble chart (Figure 5(b)). In addition, a total of 113 related pathways were identified (Supplemental Table S5). The most significantly enriched 30 pathways involved in *ginseng* against AD are shown in Figure 5(c), including neuroactive ligand-receptor interaction, serotonergic synapse, calcium signaling pathway, cAMP signaling pathway, FoxO signaling pathway, Ras signaling pathway, PI3K-AKT signaling pathway, Rap1 signaling pathway, TNF signaling pathway, HIF-1 signaling pathway, and cGMP-PKG signaling pathway. The important genes were mainly enriched in the PI3K-AKT signaling pathway (Figure 6).

3.6. Compound-Target-Pathway Network Analysis. A compound-target-pathway network was built with the bioactive components, top 25 signal pathways (Supplemental Table S5), and corresponding target genes. In this network, there were 174 nodes and 1225 edges (Figure 7). The yellow arrows, green diamonds, and orange hexagons represent active ingredients, targets, and regulatory pathways, respectively. According to the degree number, 11 components including MOL005318 (dianthramine), MOL002879 (Diop), MOL000422 (kaempferol), MOL000358 (beta-sitosterol), MOL005320 (arachidonate), MOL005344 (ginsenoside rh2), MOL000449 (stigmasterol), MOL004492 (chrysanthemaxanthin), MOL005384 (suchilactone), and MOL005321 (frutinone A) were considered of great significance. Targets serve as links between chemicals and pathways. MAPK1, MAPK14, EGFR, PRKACA, AKT1, AR, ESR1, CASP3, BRAF, and NOS3 were the top 20 targets in the compound-target-pathway network. The key pathways implicated in *ginseng* against AD were hsa04080 (neuroactive ligand-receptor interaction), hsa04020 (calcium signaling pathway), hsa04151 (PI3K-Akt signaling pathway), hsa04726 (serotonergic synapse), hsa04024 (cAMP signaling pathway), hsa04014 (Ras signaling pathway), hsa04015 (Rap1 signaling pathway), and hsa04068 (FoxO signaling pathway). These data suggested the multiple components, multiple targets, and multiple pathways of *ginseng* in preventing AD.

3.7. Compound-Target-GO-Pathway Network Analysis. The top 25 KEGG pathways, top 20 GO terms, 17 common targets, and active components were input into Cytoscape software to construct the "C-T-G-P" integrative network, and 82 nodes and 308 edges were observed in this network (Figure 8). MOL000422 (kaempferol), MOL005318 (dianthramine), MOL005344 (ginsenoside rh2), MOL004492 (chrysanthemaxanthin), MOL005320 (arachidonate), MOL000358 (beta-sitosterol), MOL000449 (stigmasterol), and MOL002879 (Diop) were identified as the key compounds. EGFR, MAPK1, MAPK14, AKT1, CASP3, and PRKACA were identified as kernel targets. GO:0005886 (plasma membrane) and GO:0007165 (signal transduction) were the most important GO terms. hsa04151 (PI3K-Akt signaling pathway) was the most crucial pathway.

4. Discussion

AD is a complicated and progressive neurodegenerative disorder with multiple pathophysiological mechanisms [35]. *Ginseng* is a TCM herb with pharmacological activities and is considered beneficial for neurological damage and related diseases, including AD [1]. A thorough network pharmacology analysis was performed in the current study to investigate the underlying processes and therapeutic targets of *ginseng* in AD. The findings identified 22 chemical components, 19 key targets, 441 biological processes, and 113 related signal pathways for *ginseng* in the treatment of AD. Compound-target-pathway network identified MAPK1, MAPK14, EGFR, PRKACA, AKT1, CASP3, and NOS3 as core targets of *ginseng* against AD.

Twenty two chemical components of *ginseng* were identified as per the criteria of OB ≥30% and DL ≥0.18. In the present study, a compound-target network of *ginseng* was established. This network showed that each component could yield complications on multiple targets. For example, Arachidonate, dianthramine, Diop, Ginsenoside rh2, Chrysanthemaxanthin, and Kaempferol, respectively, acted

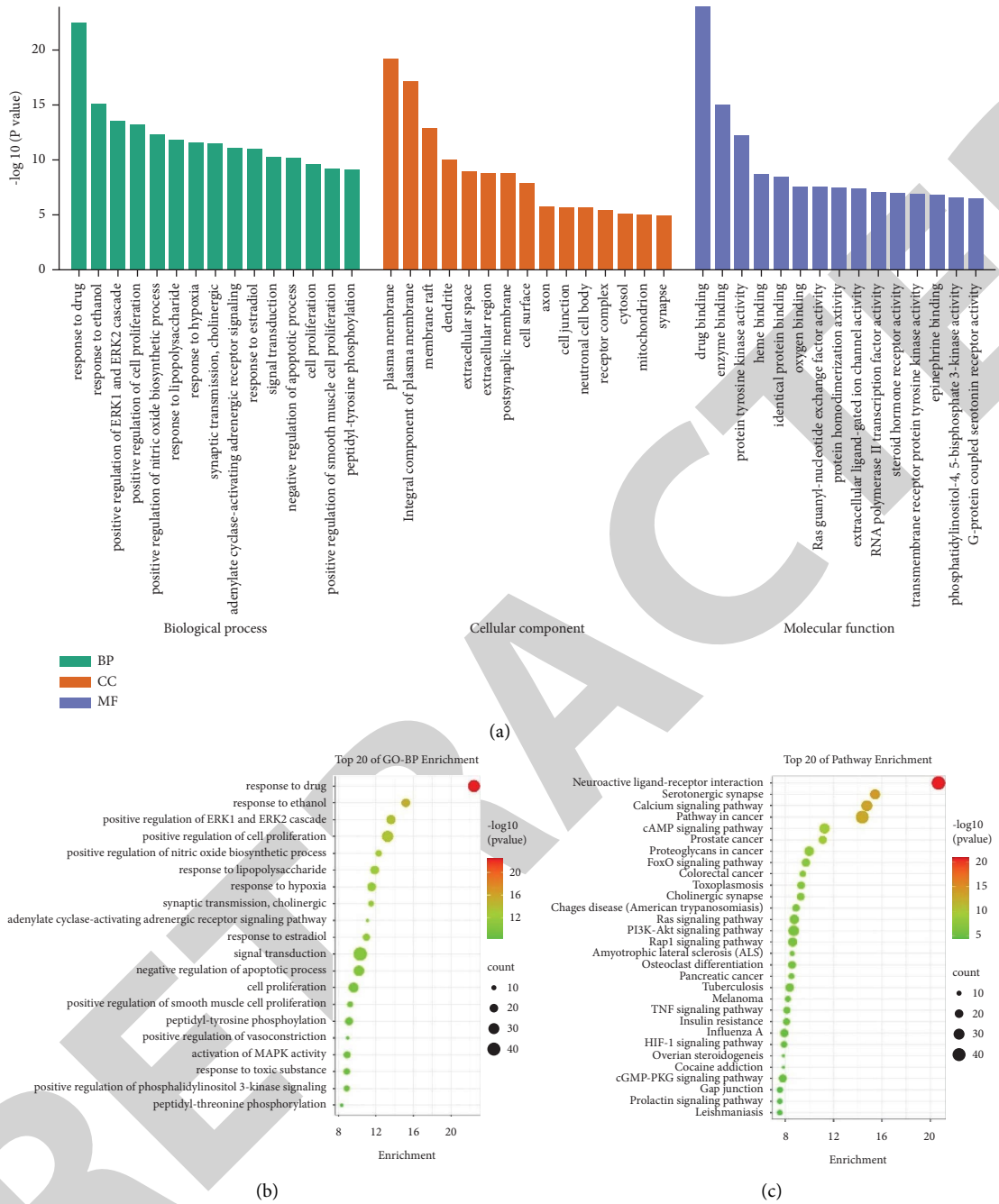


Figure 5: GO function annotation and KEGG pathway enrichment. (a) GO second class enrichment analysis of 177 common targets for against AD. (b) Bubble plot of top 20 enriched biological processes (BP). (c) Bubble plot of top 30 enriched signaling pathways.

on 208, 199, 171, 168, 161, and 160 targets. Also, most active components act on the same targets. These results indicated the multicomponent and multitarget action mode of *ginseng*. Some of these compounds have been documented to exert a suppressive effect on central nervous system diseases, including AD. Moreover, exposure of AD flies to kaempferol resulted in the loss of climbing and memory ability, lowered oxidative stress, and inhibited acetylcholinesterase activity [36]. A recent report found that the administration of β-sitosterol in amyloid protein precursor/presenilin 1 (APP/PS1) mice could decrease Aβ deposition and mitigate cognitive impairment [37]. Ginsenoside Rh2 exhibited neuroprotective effects against scopolamine-induced memory deficits in mice possibly through regulating cholinergic transmission, oxidative stress, and the ERK-CREB-BDNF signaling pathway [38]. Stigmasterol could protect against oxidative stress-induced neuronal cell death via the sirtuin family, suggesting the potential of stigmasterol to alleviate neurodegeneration [39]. Panaxadiol was revealed to reduce synaptic damage in AD via inactivating the Fyn/GluN2B/CaMKIIα signaling pathway [40]. Ginsenoside Rg5 alleviated cognitive deficits and Aβ deposition in

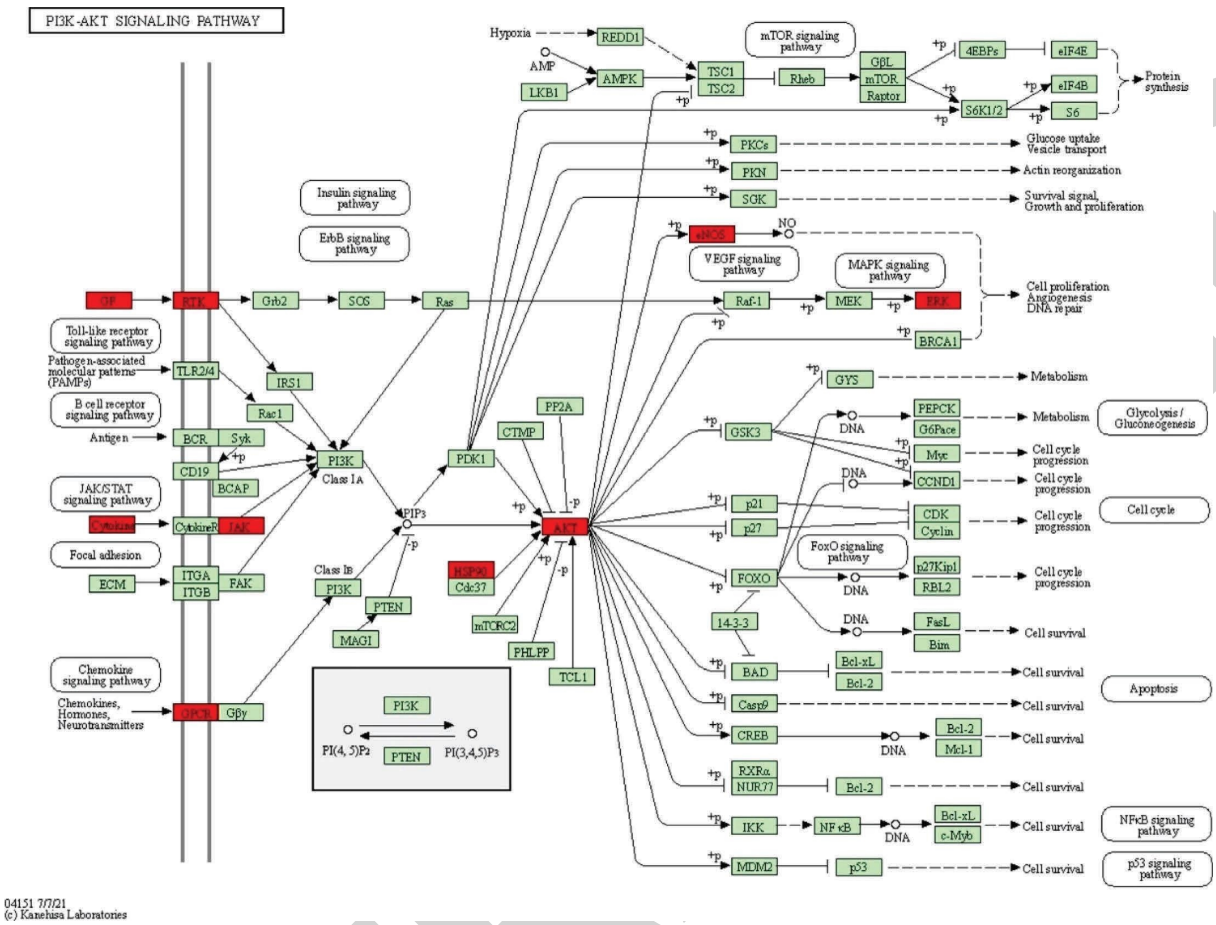


Figure 6: The core genes of *ginseng* against AD are mainly distributed in PI3K-AKT signaling pathway. The red nodes are representative for the intersection genes.

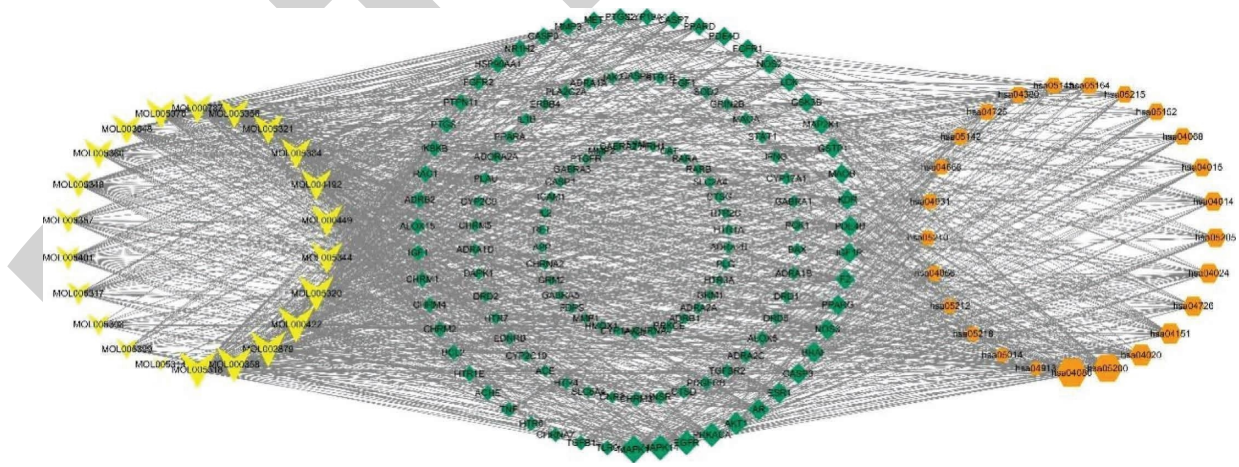


Figure 7: Compound-target-pathway network of *ginseng* against AD. The yellow arrow nodes represent the compounds, the green diamond nodes represent the targets, and the orange hexagon nodes represent the regulatory pathways.

streptozotocin (STZ)-induced rats through repressing neuroinflammatory responses [41]. Inflammation [42], oxidative stress [43], and apoptosis [44] are considered vital risk factors for the onset and progression of AD. Hence, they might play a neuroprotective role in AD by modulating inflammation, oxidative stress, and apoptosis.

A PPI network of *ginseng* against AD was constructed, with the results of 166 nodes and 845 edges. Based on the topological parameters, 19 hub genes (MAPK1, TNF, EGFR, AKT1, IL2, MAPK14, NOS3, IGF1, CASP3, FYN, PTGS2, APP, IL1B, ALB, HSP90AA1, JAK2, CXCR2, PRKACA, and CHRM2) were obtained. Activation of the TNF pathway

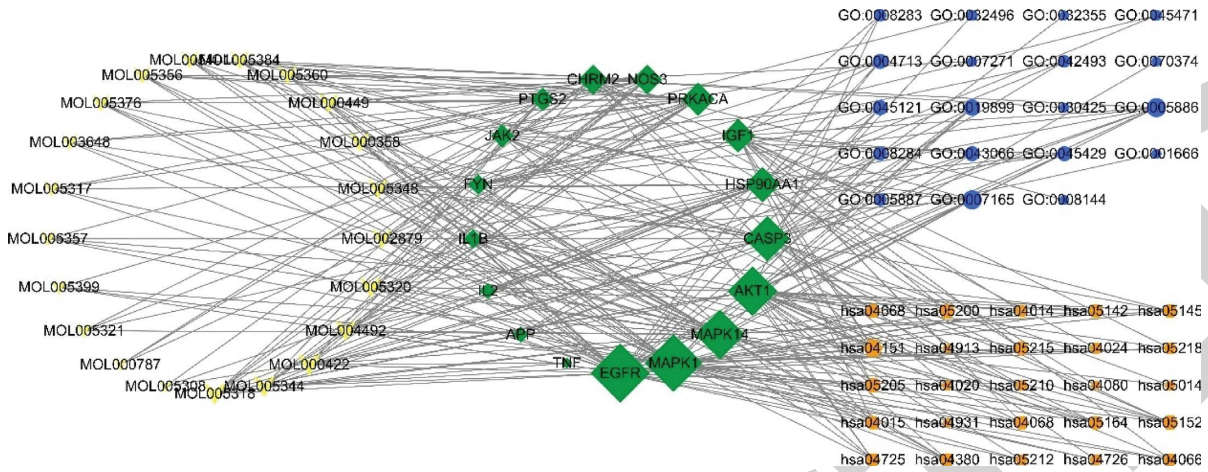


Figure 8: Compound-target-GO-pathway network of *ginseng* against AD. The yellow arrow nodes represent the compounds, the green diamond nodes represent the targets, the blue circles represent the GO terms, and the orange hexagon nodes represent the regulatory pathways.

mediated by miR-206 promotes the production and release of inflammatory mediators such as TNF-α, IL-8, and IL-6 by driving NF-κB into the nucleus, thereby participating in inflammatory and immune processes [45]. The high presence of TNF inflammatory cytokines in the tumor microenvironment promotes tumor growth, disrupts cell proliferation and death, and impairs the innate immune response to cancer cells [46]. These studies all demonstrate the reliability of the current experimental results. Numerous studies have revealed that TNF-α activates JAK/STAT signal pathway via the protein-gp130 on the cell membrane surface and facilitates the control of degenerative alterations in the central nervous system [47].

Based on the data from GO analysis, *ginseng* was implicated in AD progression possibly via affecting cell proliferation, apoptosis, nitric oxide biosynthetic process, response to hypoxia, and synaptic transmission. The KEGG enrichment analysis found that the main mechanisms of *ginseng* against AD were neuroactive ligand-receptor interaction, serotonergic synapse, calcium signaling pathway, cAMP signaling pathway, FoxO signaling pathway, Ras signaling pathway, PI3K-AKT signaling pathway, and Rap1 signaling pathway. The neuroactive ligand-receptor interaction signaling pathway is associated with neurological diseases, such as Parkinson's disease (PD) [48] and glioblastoma [49]. Disruption of calcium signaling may trigger synaptic deficits and induce the accumulation of Aβ plaques and neurofibrillary tangles in AD [50]. cAMP/PKA signaling pathway contributed to neuronal apoptosis and Aβ accumulation in a mixed model in Type 2 diabetes (T2D) and AD through regulating IDE expression [51]. FoxO proteins, a family of transcription factors with 4 members (FOXO1, FOXO3a, FOXO4, and FOXO6), protect multiple cells in the brain by controlling autophagy and apoptosis, highlighting FoxO as a biomarker and potential target for AD treatment [52]. Inhibition of Ras-MAPK signaling suppressed the hyperphosphorylation of tau and amyloid precursor protein (APP) as well as neuronal cell cycle entry in AD [53]. Thereby, *ginseng* might slow down AD progression via regulating oxidative stress, apoptosis, and synaptic transmission through these related signaling pathways.

To elucidate the key targets of *ginseng* against AD in the related pathways, a "compound-target-GO-pathway" network was also built up, and 6 core targets including EGFR, MAPK1, MAPK14, AKT1, CASP3, and PRKACA were obtained. MAPK1 and MAPK14, members of the MAPK family, regulate various cellular activities, such as oxidative stress, inflammatory reaction, immune response, apoptosis, proliferation, and survival [54]. p38 MAPK can control tau phosphorylation, neurotoxicity, neuroinflammation, and synaptic dysfunction associated with AD [55]. EGFR, expressed in both central and peripheral nervous systems, possesses specific important neurotrophic functions, particularly in the central nervous system [56]. Inhibition of EGFR decreases reactive astrocytes, induces autophagy, weakens Aβ toxicity and neuroinflammation, and regenerates axonal degradation in AD [57]. PKA, encoded by PRKACA, is found to exert a neuroprotective effect in a cell culture model of AD [49]. Activation of the PKA/SIRT1 signaling pathway by photobiomodulation therapy decreases Aβ levels in AD [58]. Caspase-3 is a key mediator of neuronal programmed cell death in many chronic neurodegenerative diseases [59] and is involved in the regulation of multi-neuro-degenerative disorders, including AD [60]. Moreover, PI3K-AKT signaling was identified as the most important pathway involved in *ginseng* against AD. PI3K/AKT signaling pathway is a critical regulator for various signal transduction and biological processes such as cell proliferation, apoptosis, and metabolism. PI3K/AKT signal pathway is found to be involved in the formation of two special pathological structures in AD [61]. Various downstream targets of this pathway are closely related to the occurrence and development of AD [62, 63]. PI3K-Akt signal pathway activates PI3K by promoting Akt phosphocreatine and regulates cell proliferation to facilitate tumor growth [64]. In addition, aerobic glycolysis, as a unique metabolic mode of tumor, provides substantial carbon sources for tumor tissue for proliferation and inhibits the

aerobic oxidation pathway to avoid the production of oxygen radicals and apoptosis, in which PI3K/Akt signaling pathway plays an important role [65].

Natural products, such as flavonoids, alkaloids, phenylpropanoids, and glycosides, are widely used for the prevention and treatment of AD based on the PI3K/AKT pathway [66–68]. This study demonstrates the features of active components, multiple targets, and different routes in ginseng for Alzheimer's disease. However, more extensive experimental validation is required prior to the clinical promotion of *ginseng* in the treatment of Alzheimer's disease.

Although this study provides some ideas for *ginseng* against Alzheimer's disease, it has some limitations. (1) We only used the TCMSP database. Although the drugs included in this database are relatively comprehensive, it has not been updated for a long time, and there may be some new discoveries or newly identified active ingredients are not included. We will synthesize multiple databases such as TCMID, ETCM, and YaTCM to complement drug targets. We will also supplement the literature. (2) Only the disease database was included in this study. Although these are the disease targets of Alzheimer's disease, they still lack specificity relative to the differential genes compared with healthy people. We will perform a variance analysis to enrich the content. (3) We only carried out the bond energy of molecular docking for the compound, lacking specific molecular docking, and the weight is not great although it has a certain impact.

5. Conclusion

A network pharmacology approach was utilized to elucidate the target genes and underlying molecular mechanisms of *ginseng* against AD. Kaempferol, dianthramine, ginsenoside rh2, chrysanthemaxanthin, arachidonate, beta-sitosterol, stigmasterol, and Diop are considered the main active compounds of *ginseng*. Ginseng may act as a regulator via the PI3K-AKT signaling pathway. The primary targets identified were EGFR, MAPK1, MAPK14, AKT1, CASP3, and PRKACA, and ginseng and its constituents may have therapeutic promise for Alzheimer's disease.

Data Availability

The datasets used during the present study are available from the corresponding author upon reasonable request.

Consent

All authors have read and approved this manuscript to be considered for publication.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Authors' Contributions

Yabo Wang drafted and revised the manuscript. Xinxin Liu conceived and designed this article, in charge of syntax modification and revise of the manuscript. All the authors have read and agreed to the final version manuscript. Yabo Wang and Xinxin Liu contributed equally to this work.

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Supplementary Materials

Table S1: putative targets for bioactive compounds from *ginseng*. Table S2: AD-related target genes. Table S3: the *ginseng*-AD common targets. Table S4: the GO function enrichment analysis. Table S5: the KEGG pathway enrichment analysis. (*Supplementary Materials*)

References

[1] A. Kumar, A. Singh, and Ekavali, "A review on Alzheimer's disease pathophysiology and its management: an update," *Pharmacological Reports*, vol. 67, no. 2, pp. 195–203, 2015.

[2] C. A. Lane, J. Hardy, and J. M. Schott, "Alzheimer's disease," *European Journal of Neurology*, vol. 25, no. 1, pp. 59–70, 2018.

[3] M. A. Busche and B. T. Hyman, "Synergy between amyloid-β and tau in Alzheimer's disease," *Nature Neuroscience*, vol. 23, no. 10, pp. 1183–1193, 2020.

[4] J. A. Soria Lopez, H. M. González, and G. C. Léger, "Alzheimer's disease," *Handbook of Clinical Neurology*, vol. 167, pp. 231–255, 2019.

[5] C. Patterson, *World Alzheimer Report 2018*, Alzheimer's Disease International, London,UK, 2018.

[6] Y. Zhang, Y. Li, and L. Ma, "Recent advances in research on Alzheimer's disease in China," *Journal of Clinical Neuroscience*, vol. 81, pp. 43–46, 2020.

[7] B. Kisby, J. T. Jarrell, M. E. Agar et al., "Alzheimer's disease and its potential alternative therapeutics," *J Alzheimers Dis Parkinsonism*, vol. 9, no. 5, p. 477, 2019.

[8] P. Yang and F. Sun, "Aducanumab: the first targeted Alzheimer's therapy," *Drug Discoveries & Therapeutics*, vol. 15, no. 3, pp. 01061–168, 2021.

[9] S. G. Sreenivasmurthy, J. Y. Liu, J. X. Song et al., "Neurogenic traditional Chinese medicine as a promising strategy for the treatment of Alzheimer's disease," *International Journal of Molecular Sciences*, vol. 18, no. 2, p. 272, 2017.

[10] J. Li, Q. Huang, J. Chen et al., "Neuroprotective potentials of Panax ginseng against Alzheimer's disease: a review of preclinical and clinical evidences," *Frontiers in Pharmacology*, vol. 12, Article ID 688490, 2021.

[11] K. H. Kim, D. Lee, H. L. Lee, C. E. Kim, K. Jung, and K. S. Kang, "Beneficial effects of Panax ginseng for the treatment and prevention of neurodegenerative diseases: past findings and future directions," *Journal of Ginseng Research*, vol. 42, no. 3, pp. 239–247, 2018.

[12] M. P. Razgonova, V. V. Veselov, A. M. Zakharenko et al., "Panax ginseng components and the pathogenesis of Alzheimer's disease (Review)," *Molecular Medicine Reports*, vol. 19, no. 4, pp. 2975–2998, 2019.

[13] X. Shen, Q. Zhang, and W. Shao, "Medication Reconciliation Role and Value in Alzheimer's Disease Treatment," *Arquivos de neuro-psiquiatria*, 2022.

[14] T. Zieneldien, J. Kim, and C. Cao, "The multifaceted role of neuroprotective plants in Alzheimer's disease treatment," *Geriatrics*, vol. 7, no. 2, p. 24, 2022.

[15] M. Saeedi and F. Mehranfar, "Challenges and Approaches of Drugs Such as Memantine, Donepezil, Rivastigmine and Aducanumab in the Treatment, Control and Management of Alzheimer's Disease," *Recent patents on biotechnology*, 2022.

[16] A. A. Gomaa, H. S. M. Farghaly, A. M. Ahmed, M. A. El-Mokhtar, and F. K. Hemida, "Advancing combination treatment with cilostazol and caffeine for Alzheimer's disease in high fat-highfructose-STZ induced model of amnesia," *European Journal of Pharmacology*, vol. 921, Article ID 174873, 2022.

[17] E. Giacobini, A. C. Cuello, and A. Fisher, "Reimagining cholinergic therapy for Alzheimer's disease," *Brain*, vol. 145, no. 7, pp. 2250–2275, 2022.

[18] M. Valenza and C. Scuderi, "How useful are biomarkers for the diagnosis of Alzheimer's disease and especially for its therapy?" *Neural regeneration research*, vol. 17, no. 10, p. 2205, 2022.

[19] M. Pawlowski and T. Warnecke, "Causal Treatment of Alzheimer's Disease: Amyloid Antibodies," *Der Internist*, 2022.

[20] H. Li, T. Kang, B. Qi et al., "Neuroprotective effects of ginseng protein on PI3K/Akt signaling pathway in the hippocampus of D-galactose/AlCl3 inducing rats model of Alzheimer's disease," *Journal of Ethnopharmacology*, vol. 179, pp. 162–169, 2016.

[21] Q. Quan, X. Li, J. Feng, J. Hou, M. Li, and B. Zhang, "Ginsenoside Rg1 reduces β-amyloid levels by inhibiting CDK5-induced PPARγ phosphorylation in a neuron model of Alzheimer's disease," *Mol Med Rep*, vol. 22, pp. 3277–3288, 2020.

[22] J. Cui, J. Wang, M. Zheng, D. Gou, C. Liu, and Y. Zhou, "Ginsenoside Rg2 protects PC12 cells against β-amyloid25-35-induced apoptosis via the phosphoinositide 3-kinase/Akt pathway," *Chemico-Biological Interactions*, vol. 275, pp. 152–161, 2017.

[23] D. C. Hao and P. G. Xiao, "Network pharmacology: a Rosetta Stone for traditional Chinese medicine," *Drug Development Research*, vol. 75, no. 5, pp. 299–312, 2014.

[24] R. Zhang, X. Zhu, H. Bai, and K. Ning, "Network pharmacology databases for traditional Chinese medicine: review and assessment," *Frontiers in Pharmacology*, vol. 10, p. 123, 2019.

[25] J. Ru, P. Li, J. Wang et al., "TCMSP: a database of systems pharmacology for drug discovery from herbal medicines," *Journal of Cheminformatics*, vol. 6, no. 1, p. 13, 2014.

[26] X. Wang, Y. Shen, S. Wang et al., "PharmMapper 2017 update: a web server for potential drug target identification with a comprehensive target pharmacophore database," *Nucleic Acids Research*, vol. 45, no. 1, pp. W356–W360, 2017.

[27] Z.-J. Yao, J. Dong, Y.-J. Che et al., "TargetNet: a web service for predicting potential drug–target interaction profiling via multi-target SAR models," *Journal of Computer-Aided Molecular Design*, vol. 30, no. 5, pp. 413–424, 2016.

[28] The UniProt Consortium, "UniProt: the universal protein knowledgebase," *Nucleic Acids Research*, vol. 45, no. 1, pp. D158–D169, 2017.

[29] M. Safran, I. Dalah, J. Alexander et al., "GeneCards Version 3: the human gene integrator," *Database*, vol. 2010, Article ID 1093, 2010.

[30] J. Piñero, À Bravo, N. Queralt-Rosinach et al., "DisGeNET: a comprehensive platform integrating information on human disease-associated genes and variants," *Nucleic Acids Research*, vol. 45, no. 1, pp. D833–D839, 2017.

[31] H. Liu, L. Wang, M. Lv et al., "AlzPlatform: an Alzheimer's disease domain-specific chemogenomics knowledgebase for polypharmacology and target identification research," *Journal of Chemical Information and Modeling*, vol. 54, no. 4, pp. 1050–1060, 2014.

[32] D. S. Wishart, Y. D. Feunang, A. C. Guo et al., "DrugBank 5.0: a major update to the DrugBank database for 2018," *Nucleic Acids Research*, vol. 46, no. 1, pp. D1074–D1082, 2018.

[33] Y. Wang, S. Zhang, F. Li et al., "Therapeutic target database 2020: enriched resource for facilitating research and early development of targeted therapeutics," *Nucleic Acids Research*, vol. 48, no. 1, pp. D1031–D1041, 2020.

[34] D. Szklarczyk, A. L. Gable, K. C. Nastou et al., "The STRING database in 2021: customizable protein–protein networks, and functional characterization of user-uploaded gene/measurement sets," *Nucleic Acids Research*, vol. 49, no. 1, pp. D605–D612, 2021.

[35] D. W. Huang, B. T. Sherman, Q. Tan et al., "DAVID Bioinformatics Resources: expanded annotation database and novel algorithms to better extract biology from large gene lists," *Nucleic Acids Research*, vol. 35, no. 2, pp. W169–W175, 2007.

[36] W.-Y. Ong, T. Farooqui, H.-L. Koh, A. A. Farooqui, and E.-A. Ling, "Protective effects of ginseng on neurological disorders," *Frontiers in Aging Neuroscience*, vol. 7, p. 129, 2015.

[37] T. Beg, S. Jyoti, F. Naz et al., "Protective effect of kaempferol on the transgenic Drosophila model of Alzheimer's disease," *CNS & Neurological Disorders - Drug Targets*, vol. 17, no. 6, pp. 421–429, 2018.

[38] J. Y. Ye, L. Li, Q. M. Hao, Y. Qin, and C. S. Ma, "β-Sitosterol treatment attenuates cognitive deficits and prevents amyloid plaque deposition in amyloid protein precursor/presenilin 1 mice," *KOREAN JOURNAL OF PHYSIOLOGY and PHARMACOLOGY*, vol. 24, pp. 39–46, 2020.

[39] J. Lv, C. Lu, N. Jiang et al., "Protective effect of ginsenoside Rh2 on scopolamine-induced memory deficits through regulation of cholinergic transmission, oxidative stress and the ERK-CREB-BDNF signaling pathway," *Phytotherapy Research*, vol. 35, no. 1, pp. 337–345, 2021.

[40] R. Pratiwi, C. Nantasenamat, W. Ruankham et al., "Mechanisms and neuroprotective activities of stigmasterol against oxidative stress-induced neuronal cell death via sirtuin family," *Frontiers in Nutrition*, vol. 8, Article ID 648995, 2021.

[41] X. Liang, Y. Yao, Y. Lin et al., "Panaxadiol inhibits synaptic dysfunction in Alzheimer's disease and targets the Fyn protein in APP/PS1 mice and APP-SH-SY5Y cells," *Life Sciences*, vol. 221, pp. 35–46, 2019.

[42] S. Chu, J. Gu, L. Feng et al., "Ginsenoside Rg5 improves cognitive dysfunction and beta-amyloid deposition in STZ-induced memory impaired rats via attenuating neuroinflammatory responses," *International Immunopharmacology*, vol. 19, no. 2, pp. 317–326, 2014.

[43] J. W. Kinney, S. M. Bemiller, A. S. Murtishaw, A. M. Leisgang, A. M. Salazar, and B. T. Lamb, "Inflammation as a central mechanism in Alzheimer's disease," *Alzheimer's and Dementia: Translational Research & Clinical Interventions*, vol. 4, no. 1, pp. 575–590, 2018.

[44] F. Cioffi, R. H. I. Adam, and K. Broersen, "Molecular mechanisms and genetics of oxidative stress in Alzheimer's disease," *Journal of Alzheimer's Disease*, vol. 72, no. 4, pp. 981–1017, 2019.

[45] G. Jinesh G, S. Chunduru, and A. M. Kamat, "Smac mimetic enables the anticancer action of BCG-stimulated neutrophils

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Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9876128, 1 page
https://doi.org/10.1155/2023/9876128

Retraction

Retracted: Efficacy of Ambroxol Hydrochloride Combined with Amoxicillin Potassium Clavulanate Combination on Children with Bronchopneumonia and Its Impact on the Level of Inflammatory Factors

Evidence-Based Complementary and Alternative Medicine

Received 20 June 2023; Accepted 20 June 2023; Published 21 June 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.

References

[1] X. Zhu, Z. Wei, and X. Liu, "Efficacy of Ambroxol Hydrochloride Combined with Amoxicillin Potassium Clavulanate Combination on Children with Bronchopneumonia and Its Impact on the Level of Inflammatory Factors," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2604114, 5 pages, 2022.

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Evidence-Based Complementary and Alternative Medicine
Volume 2022, Article ID 2604114, 5 pages
https://doi.org/10.1155/2022/2604114

Research Article

Efficacy of Ambroxol Hydrochloride Combined with Amoxicillin Potassium Clavulanate Combination on Children with Bronchopneumonia and Its Impact on the Level of Inflammatory Factors

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Objective. The goal of the present study was to examine the effect of ambroxol hydrochloride combined with amoxicillin potassium clavulanate combination on children with bronchopneumonia and its influence on the level of inflammatory factors. *Methods*. From January 2018 to June 2019, 100 children with bronchopneumonia admitted to the Pediatric Department of Nanjing Pukou District Hospital of Traditional Chinese Medicine were enrolled as the study subjects. The children were assigned either to an observation group or a control group in a ratio of 1:1 using the random alphabet method. The observation group was treated with ambroxol hydrochloride plus amoxicillin potassium clavulanate combination, and the control group was treated with amoxicillin potassium clavulanate combination. The therapeutic efficiency and serum white blood cells (WBC), C-reactive protein (CRP), interleukin-6 (IL-6), and tumor necrosis factor-a (TNF-α) were compared between the two groups. *Results*. Regarding the effective rate of treatment, the observation group (94%) was observed to be notably higher as compared to the control group (84%). The levels of WBC, CRP, IL-6, and TNF-α were reported to be significantly lower in the two groups after treatment. The WBC, CRP, IL-6, and TNF-α after treatment in the observation group were lower than those in the control group. The time for clinical symptoms to disappear of fever, cough, asthma, and pulmonary rales was all shorter in the observation group. *Conclusion*. The findings of the present study demonstrate that ambroxol hydrochloride combined with amoxicillin potassium clavulanate combination might be a reliable approach for the treatment of bronchopneumonia in children. It can synergistically relieve inflammation with high safety profiles.

1. Introduction

Bronchopneumonia, also known as lobular pneumonia, is one of the most common infant infectious diseases that leads them to be hospitalized. The contributing factors are one or multiple pathogenic microorganism infections of bacteria, viruses, and mycoplasma *pneumoniae*, and the main clinical signs and symptoms include fever, cough, asthma, vomiting, irritability, dyspnea, and pulmonary rales [1]. The mainstays of bronchopneumonia include inflammation control, ventilation improvement, prevention, and treatment of complications. [2]. Bronchopneumonia belongs to the category of "pneumonia and cough" in traditional Chinese medicine (TCM). The main clinical manifestations are fever, cough, wheezing, and nasal fans. The incidence rate of bronchopneumonia in children is high because of the stenosis of the trachea and bronchial lumen, the lack of mucus secretion, the occurrence of mucus blockage, and the incomplete development of the overall respiratory system [3]. However, for reasons such as children's compliance, TCM decoction is rarely used.

Ambroxol hydrochloride is one expectorant for treating respiratory system diseases related to abnormal mucous secretion and damaged mucous transport by promoting

mucous clearance and sputum excretion, relieving cough, and controlling inflammation. The use of ambroxol hydrochloride is deemed effective to restore the physiological clearance mechanism of the respiratory tract via stimulating the synthesis and release of the surface reactive substance and decreasing mucus's adherence to the bronchial wall [4]. Ambroxol is an antioxidant mucus-dissolver that plays an important role in protecting infants' respiratory systems. Amoxicillin potassium clavulanate combination is an antisepsis and anti-inflammation medicine made from amoxicillin potassium clavulanate combination disproportionately. It is a reliable strategy for treating lower respiratory tract infections, otitis media, nasosinusitis, urinary tract infections, skin, soft tissue infections, and other diseases [5].

Currently, both drugs have been applied to the treatment of bronchitis pneumonia in children [6, 7]. However, there are few studies on the combined application. In this regard, this study aims to investigate the effect of ambroxol hydrochloride combined with amoxicillin potassium clavulanate combination on children with bronchial pneumonia and its impact on the level of inflammatory factors.

2. Materials and Methods

2.1. General Information. From January 2018 to June 2019, 100 children with bronchopneumonia admitted to the Pediatric Department of Nanjing Pukou District Hospital of Traditional Chinese Medicine were enrolled as the study subjects. The children were assigned either to an observation group or a control group in a ratio of 1 : 1 using the random alphabet method. The study has been reviewed and approved by the medical ethics committee (no. 2018/14–524), and the family members of the children provided informed consent prior to its commencement.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria. (1) patients who met the diagnostic criteria for bronchial pneumonia [8]; (2) children who had not received antibiotic therapy 24 hours prior to admission; (3) children who had no serious systemic disease and injury of the liver and the kidney; (4) children who had no history of drug allergy.

2.2.2. Exclusion Criteria. (1) children with severe respiratory and circulative system diseases; (2) children with unclear pathogenesis; (3) children with pulmonary infections or other severe diseases; (4) children with drug allergies.

2.3. Treatments. Both groups were given conventional symptomatic treatment upon admission, including relieving cough, oxygen inhalation, reducing phlegm, and fever reduction. On this basis, the control group was given an intravenous injection of amoxicillin potassium clavulanate combination (North China Pharmaceutical Co. Ltd, SFDA approval number: H20054213) at a dose of 50 mg/kg per time, once every 8 hours. The observation group was given an additional intravenous injection of ambroxol hydrochloride (AstraZeneca Pharmaceutical Co. Ltd, SFDA approval number: H20120906) at a dose of 30 mg/kg per time, once every 8 hours. One week was taken as a course of treatment. Medication should be stopped in the case of any severe adverse reactions. If there is no pronounced efficacy after the first course of treatment, another course or other medication should be given.

2.4. Therapeutic Effect Criteria. The therapeutic effects are categorized into (1) cured: patients' signs and symptoms disappeared after a course of treatment with a clear lung image using chest X-ray; (2) effective: patients' signs and symptoms significantly mitigated with marked reduction of lung shadows using chest X-ray; (3) ineffective: no significant improvement or even aggravation in signs and symptoms was observed with no reduction or increase of lung shadows using chest X-ray. Effective rate = (Cured + Effective)/Total cases × 100%.

2.5. Outcomes. During the treatment, the signs and symptoms of all pediatric patients were monitored, and the disappearance time of fever, cough, asthma, and pulmonary rales was recorded. 5 ml of venous blood was collected before and after the treatment and centrifuged, and then, the serum was secured. The white blood cell (WBC) count was evaluated by an automatic hematology analyzer (SYSMEX-5000). The serum level of C-reactive protein (CRP) was evaluated by immunoturbidimetry (Cobas E 801). The serum levels of interleukin-6 (IL-6) and tumor necrosis factor-a (TNF-α) were evaluated by enzyme-linked immune sorbent assay (ELISA) kits. The kit of IL-6 was provided by Abcam (cat no. ab178013); the kit of TNF-α was provided by Elabscience (cat no. E-EL-H0109c).

2.6. Statistical Analysis. The statistical analysis was conducted using SPSS Statistics software 22.0. All measurement data were tested for normality first, and those that did not conform to normal distribution were transformed for normality. The enumeration data were represented by (n (%)) and analyzed by the chi-square test. The measurement data were represented by ($\overline{x} \pm s$) and analyzed by the t-test. Significance was claimed at a p value of less than 0.05.

3. Results

3.1. General Information. The children aged 2–6 years old, with the average of 4.41 ± 0.72 years and the average course of 7.89 ± 3.44 days. The differences did not reach statistical significance in the baseline data ($p > 0.05$, Table 1).

3.2. Therapeutic Efficiency. 31 cases were cured in the observation group, and 21 cases were cured in the control group. The effective rate in the observation group was higher than the control group (94.00% vs. 84.00%) ($p < 0.05$, Table 2).

Table 1: General information.

Data	Observation group ($n = 50$)	Control group ($n = 50$)	$\chi^{2/t}$	p
Gender (n)			0.161	0.688
Male	28	26		
Female	22	24		
Age (year)	4.13 ± 0.85	4.81 ± 0.74	2.433	0.478
Course of disease (d)	7.48 ± 3.35	8.29 ± 3.50	1.426	0.519

Table 2: Therapeutic effects.

Group	Cured	Effective	Ineffective	Effective rate (%)
Observation group ($n = 50$)	31	16	3	94.00
Control group ($n = 50$)	21	21	8	84.00
χ^2			2.167	
p			0.030	

3.3. WBC Count. Prior to treatment, the WBC of the observation group and the control group were, respectively, 16.75×109/L and 16.54×109/L, which were not significantly different ($p > 0.05$). Both groups witnessed a marked decrease in the WBC after treatment, with the observation group having a lower value than the control group ((5.13×109/L) vs. (9.69×109/L)) ($p < 0.05$, Figure 1).

3.4. Inflammatory Factors. No differences were observed in the serum in terms of the level of CRP, IL-6, and TNF-α between the two groups prior to treatment; all the parameters significantly decreased after treatment ($p < 0.05$), with greater reduction observed in the observation group compared to the control group ($p < 0.05$, Table 3).

3.5. Time for Clinical Symptoms to Disappear. The time for clinical symptoms to disappear for fever, cough, asthma, and pulmonary rales were all shorter in the observation group compared to the control group ($p < 0.05$, Table 4).

3.6. Adverse Reaction. The two groups had a similar safety profile with no noticeable adverse reaction in the two groups.

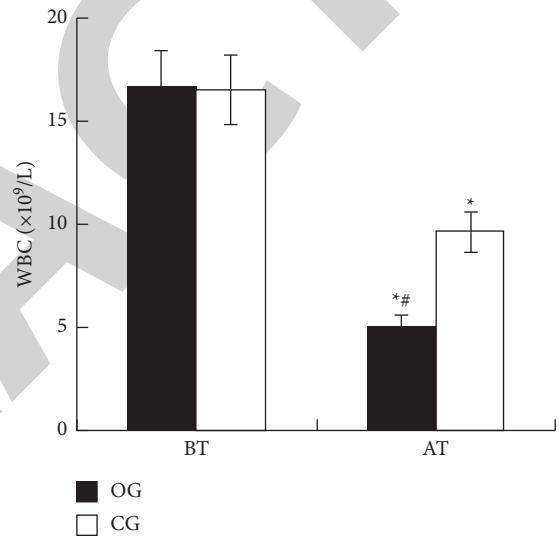

Figure 1: WBC in two groups of children with bronchopneumonia before and after treatment. Note: BT: before treatment; AT: after treatment; OG: observation group; CG: control group; *: compared with BT, $p < 0.05$; #: compared with OG, $p < 0.05$.

4. Discussion

Due to the fact that infants and children's immune systems have not fully developed, they are prone to suffering bronchopneumonia caused by infections from bacteria, viruses, and other pathogens [9]. At the moment, penicillin is the main medication for bronchopneumonia in children, but it is associated with resistance to pathogenic microorganisms, which hinders its the clinical efficacy [10].

This study found that the effective rate of treatment of ambroxol hydrochloride plus amoxicillin potassium clavulanate combination is significantly higher than that of amoxicillin potassium clavulanate combination. Amoxicillin is a widely used semisynthetic penicillin's broad-spectrum β-lactam antibiotic, which has strong absorbability and can sterilize and permeate cell membranes in the gastrointestinal tract. Although it has low antimicrobial activity, clavulanate potassium binds to the majority of enzymes within the β-lactam and inhibits their activity [11]. Therefore, clavulanate potassium combined with penicillins has favorable clinical efficacy in inflammatory infectious diseases [12]. The interpretation can be attributed to the fact that ambroxol hydrochloride reduces the inflammatory responses by promoting sputum excretion and clearing pathogenic bacteria; thus, it can relieve cough and other symptoms. Amoxicillin potassium clavulanate combination can counter the drug resistance of pathogenic bacteria. As a result, a promisingly synergistic effect was produced using ambroxol hydrochloride combined with amoxicillin potassium clavulanate combination.

In this study, the WBC, CRP, IL-6, and TNF-α after treatment in the observation group were lower than those in the control group. Leukocytes are blood cells that can

Table 3: Serum CRP, IL-6, and TNF-α.

Group	CRP (mg/L)		IL-6 (ng/L)		TNF-α (ng/L)	
	Before	After	Before	After	Before	After
Observation group ($n = 50$)	33.35 ± 6.27	31.53 ± 4.38	3.03 ± 0.89	2.91 ± 0.92	7.68 ± 1.26	8.03 ± 1.36
Control group ($n = 50$)	2.36 ± 1.17	8.25 ± 3.46	0.67 ± 0.12	1.59 ± 0.10	3.11 ± 0.56	4.52 ± 0.79
t	54.765	47.854	11.647	1.745	13.754	5.769
p	<0.001	<0.001	0.001	0.005	0.001	0.011

Table 4: Time for clinical symptoms to disappear.

Group	Fever	Cough	Asthma	Pulmonary rales
Observation group ($n = 50$)	2.32 ± 0.54	4.25 ± 0.84	3.21 ± 0.51	4.02 ± 0.95
Control group ($n = 50$)	3.14 ± 0.61	5.84 ± 0.75	4.17 ± 0.62	5.11 ± 1.04
t	7.117	9.984	8.456	5.472
p	<0.001	<0.001	<0.001	<0.001

phagocytose foreign bodies and produce antibodies, which are closely related to the body's immunity and resistance to pathogens. In clinical practice, WBC is often considered an indicator of infection, inflammation, physical trauma, and disease progression [13]. CRP is a common indicator of inflammation caused by bacterial infection and has a high sensitivity to acute infection. IL-6 is an interleukin encoded by the gene IL6. IL-6 is secreted by T cells and macrophages, stimulates immune responses, and plays an important role in infection and tissue damage [14]. TNF-α is a cell signaling protein involved in systemic inflammatory response; it is produced by the activation of macrophages, neutrophils, lymphocytes, and other cells, and it is one of the cytokines in acute inflammatory phase infection [15]. According to the results, children with bronchitis and pneumonia have a higher level of WBC and higher expression of inflammatory factors such as CRP, IL-6, and TNF-α. After the proper treatment, the four indicators have significantly decreased [16, 17]. Moreover, the treatment with ambroxol hydrochloride combined with amoxicillin potassium clavulanate combination resulted in lower WBC and inflammatory factors as compared with amoxicillin potassium clavulanate combination, suggesting a prominent efficacy of ambroxol hydrochloride combined with amoxicillin potassium clavulanate combination in the treatment of bronchitis pneumonia in children. The possible explanation may be that the drug combination can promote the removal and sterilization of pathogenic bacteria, thereby reducing the inflammatory response and exerting a therapeutic effect [18, 19]. Importantly, no noticeable adverse reactions were found, suggesting a satisfactory safety profile.

However, this study still has the following limitations. First of all, the follow-up time of this study was short. The efficacy and various indicators were compared only one week after treatment, so the long-term efficacy and safety evaluation were insufficient. Secondly, the sample size of this study was small, with only 50 patients in each group, and the reliability of evidence was insufficient. At the same time, children's compliance is poor, and the treatment effect is also affected by family, nursing, and other factors, so the heterogeneity is difficult to exclude.

5. Conclusion

Ambroxol hydrochloride plus amoxicillin potassium clavulanate combination is effective in the treatment of bronchopneumonia with acceptable safety. It, therefore, warrants a promotion in clinics.

Data Availability

The datasets used during the present study are available from the corresponding author upon reasonable request. All data generated or analysed during this study are included within this published article.

Ethical Approval

The experiment was conducted with the human subjects' understanding and consent, as well as that the responsible ethics committee has approved the experiments (no. 2018/14–524).

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

Xiaoli Zhu and Zongcheng Wei contributed equally to the study. All authors contributed equally.

References

[1] A. P. Britton, T. Redford, E. Zabek et al., "Bronchopneumonia associated with Mannheimia granulomatis infection in a Belgian hare (Lepus europaeus)," *Journal of Veterinary Diagnostic Investigation*, vol. 29, no. 4, pp. 566–569, 2017.

[2] A. K. Elfadl, S. W. Lee, J. H. Kim et al., "Fatal fibrino-hemorrhagic bronchopneumonia associated with *Morganella morganii* in a bottlenose dolphin: a case report," *Diseases of Aquatic Organisms*, vol. 127, no. 1, pp. 41–47, 2017.

[3] X. Shang, T. Liabsuetrakul, P. Sangsupawanich, X. Xia, P. He, and H. Cao, "Satisfaction and preference for traditional Chinese medicine drugs among guardians of children with acute bronchiolitis," *Journal of Alternative & Complementary Medicine*, vol. 21, no. 10, pp. 623–627, 2015.

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Retraction

Retracted: The Application of Dopamine Combined with Intravenous Furosemide Infusion Therapy Has an Apparent Clinical Effect in Treating Patients with Heart Failure

Evidence-Based Complementary and Alternative Medicine

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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] J. Shi, R. Wang, S. Qin, Z. Zhang, and H. Li, "The Application of Dopamine Combined with Intravenous Furosemide Infusion Therapy Has an Apparent Clinical Effect in Treating Patients with Heart Failure," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 1055160, 7 pages, 2022.

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Research Article

The Application of Dopamine Combined with Intravenous Furosemide Infusion Therapy Has an Apparent Clinical Effect in Treating Patients with Heart Failure

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Objective. To observe the efficacy and safety of dopamine plus furosemide in treating patients with heart failure. *Methods*. This research included 150 patients with heart failure who were diagnosed and treated at our hospital between March 2018 and November 2020. The patients were randomly assigned to a study group or a reference group according to the data of admission (the cut-off date was June 2019). Patients in the reference group were given furosemide, whereas those in the study group were given dopamine plus furosemide intravenous pumping. Outcome measures included clinical effectiveness, heart function changes, and adverse responses. *Results*. Dopamine plus furosemide resulted in higher treatment efficiency (96.00%) versus furosemide (74.67%) study group ($P < 0.05$). Before therapy, there was no significant change in the scores of cardiac function indices between the two groups ($P > 0.05$). The cardiac function of the two groups of patients was improved after treatment, and the left ventricular ejection fraction (LVEF) of the study group (44.85 ± 4.12) was higher than that of the reference group (38.45 ± 4.36), and the left ventricular end-systolic diameter (LVESD), left ventricular end-diastolic diameter (LVESD), and plasma N-terminal pro-B-type natriuretic peptide (NT-proBNP) (43.17 ± 3.98, 51.32 ± 4.25, 3045.56 ± 365.48) were lower than the reference group (47.56 ± 4.65, 56.28 ± 4.85, 4856.48 ± 395.46) ($P < 0.05$). There was no significant difference in the total incidence of adverse reactions between the two groups ($P > 0.05$). *Conclusion*. Dopamine plus intravenous furosemide infusion treatment has an obvious therapeutic benefit in treating patients with heart failure and dramatically enhances cardiac function without noteworthy adverse responses. It demonstrated great potential for clinical promotion.

1. Introduction

Heart failure is a condition in which the heart's pumping function is compromised for a variety of causes, and the cardiac output is insufficient to support the fundamental metabolic demands of the entire body. The blood flow in the veins fails to be completely discharged from the heart, resulting in stagnation of blood in the venous system and insufficient circulation in the arterial system [1, 2]. It mostly manifests as pulmonary congestion, hollow venous congestion, and other tissues and organs circulation congestion, such as palpitations, dyspnea, fluid retention, and lower limb edema [3].

According to statistics, in 2019, the prevalence of adult heart failure was 0.9% [4]. According to epidemiology, early symptoms of heart failure are insidious due to the compensatory mechanisms of the heart. The incidence of heart failure increases with age. The prevalence of heart failure in people over 70 years exceeds 10%, with a 5-year mortality of 50%, and the 1-year mortality rate in patients with severe heart failure can reach 50% [5, 6]. Congestion of the pulmonary circulation is the initial symptom of heart failure, which is a progressive disease requiring long-term management. Ineffective treatment will result in recurrent disease and increased patient mortality [7].

At present, heart failure is mostly manageable by comprehensive treatment, mainly including etiology treatment and symptomatic support therapy, including drugs, cardiac resynchronization therapy (CRT), and implantable cardioverter-defibrillator (ICD) [8].

Diuretics are one of the basic drugs for the treatment of heart failure [9], among which furosemide (Furosemide, Frusemide, LASIX) [10], also known as furosemide, furosemide, is a widely used treatment for congestive heart failure. It is a powerful diuretic with a strong but short effect [11]. It is primarily used to treat edema caused by heart, liver, renal, and other illnesses. However, previous experimental results revealed that diuretics may aggravate the disease condition due to renal insufficiency when used for chronic heart failure. The progression of the condition and the use of other antihypertensive medications may further impair renal function, resulting in efficacy and diuretics [12, 13]. Moreover, dopamine is the most abundant neurotransmitter in the brain, which regulates various physiological functions of the central nervous system as a neurotransmitter [14, 15]. Therefore, the use of diuretics to relieve the symptoms of patients with nephrogenic edema and cirrhosis and the addition of dopamine to stabilize the patient's cardiac function to meet the patient's therapeutic needs and enhance the efficacy are mostly recommended in clinical practice [16].

According to traditional Chinese medicine (TCM), chronic heart failure is a manifestation of heart qi deficiency, which belongs to the categories of "heart water," "edema," and "asthma." The main treatment is to warm Yang and promote water. Left ventricular ejection fraction (LVEF), left ventricular end-systolic diameter (LVESD), and plasma N-terminal pro-B-type natriuretic peptide (NT-proBNP) are routine clinical indicators of cardiac function. To this end, the purpose of this study is to analyze and observe the effect and safety of dopamine combined with furosemide intravenous pumping in the treatment of patients with heart failure to provide a reference for clinical treatment.

2. Subjects and Methods

2.1. Subjects of Study. This study included 150 patients with heart failure diagnosed and treated at our institution between March 2018 and November 2020, comprising 88 males and 62 females. The recruited patients were aged from 50 to 75 years. According to the random procedure, all patients were reference groups assigned to a study group or a reference group after admission. The randomization was carried out using an online web-based randomization tool (https://www.randomizer.org/). For concealment of allocation, the randomization procedure and assignment were managed by an independent research assistant who was not involved in screening or evaluation of the participants.

The cut-off point was June 2019, and 75 patients were enrolled in each group according to the principle of equal distribution. The reference group was treated with furosemide, while the study group was treated with dopamine plus furosemide.

All eligible patients provided written informed consent prior to enrollment. The study protocol was approved by the hospital ethics committee, and the ethics number was SHHS 20180203. All procedures complied with the Declaration of Helsinki's ethical guidelines for clinical research.

2.2. Inclusion and Exclusion Criteria. Inclusion criteria: (1) patients who met the relevant diagnostic criteria in the "2014 Chinese Heart Failure Diagnosis and Treatment Guidelines" were diagnosed with heart failure by relevant imaging diagnostic tests; (2) patients who met the NYHA (New York Heart Association, United States) cardiac function classification standard; and (3) patients and their families were informed of the study and signed the consent form voluntarily.

Exclusion criteria: (1) patients with acute myocardial infarction; (2) patients with other organ failures or severe organ dysfunction; (3) patients with refractory arrhythmias; (4) patients with relevant drug allergies; (5) patients with psychiatric disorders or cognitive abnormalities that prevent normal communication; (6) patients with a severe audiovisual impairment that prevents communication; (7) patients who are pregnant or breastfeeding; and (8) patients with congenital anatomical abnormalities of the heart.

2.3. Methods. All patients were treated with conventional treatment of heart failure and drugs such as angiotensin-converting enzyme inhibitors or angiotensin receptor antagonists.

The patients in the reference group were given furosemide alone for treatment: 20–40 mg of intravenous furosemide (national medicine approved: H31021074, Shanghai Zhaohui Pharmaceutical Co., Ltd.) was administered daily. The patients in the study group were given dopamine combined with furosemide intravenous infusion therapy as follows: 0.5–1 g/kg·min of dopamine (national medicine approved: H44022388, Guangzhou Baiyunshan Mingxing Pharmaceutical Co., Ltd.) was administered through continuous intravenous infusion, and 20–40 mg of furosemide (Chinese medicine approved: H31021074, Shanghai Zhaohui Pharmaceutical Co., Ltd.) was administered through intravenous injection, using WZ-50C2 (Zhejiang University Medical Instrument Co., Ltd.). Furthermore, adjustments to the dosage of drugs were performed according to the daily weight loss of patients or negative balance. If fluid retention is not relieved by an increase in dose, the treatment regimen was modified to 100–205 μg/min dopamine plus 10–40 mg of continuous intravenous furosemide infusion per hour.

The two groups received Zhenwu Decoction. The ingredients of the decoction included 15 g of Red ginseng, 15 g of Aconiti Lateralis Radix Praeparata, 15 g of Astragali Radix, 15 g of Poria, 12 g of Atractylodis Macrocephalae Rhizoma, 12 g of Paeoniae Radix Alba, 12 g of Alismatis Rhizoma, 10 g of Pepperweed Seed, 10 g of ginger, 10 g of cinnamon, and 10 g of dried Aconiti Lateralis Radix Praeparata. The above herbs were decocted with 1200 mL of water to obtain 500 mL of filtrate and administered with a half dose in the morning and a half in the evening. The treatment was discontinued after 30 days of treatment or patient death.

2.4. Outcomes

(1) Clinical efficacy: The treatment effect was evaluated according to the clinical symptoms and was divided

into markedly effective, effective, and ineffective. Markedly effective: all the clinical symptoms disappeared after treatment. Effective: clinical symptoms were alleviated after treatment. Ineffective: the clinical symptoms were not improved. The total effective rate of the two groups was calculated and compared. Total response rate = (significant + effective)/total number of cases × 100%.

(2) Cardiac function: Routine examination by echocardiography was used to measure the cardiac function-related indicators in the two groups before and after treatment, including left ventricular ejection fraction (LVEF), left ventricular end-systolic diameter (LVESD), and plasma N-terminal pro-B-type natriuretic peptide (NT-proBNP).

(3) Adverse reactions: The occurrence of adverse reactions in all patients was recorded, including nausea, headache, hypokalemia, and blurred vision, and the incidence of adverse reactions in the two groups was calculated and compared between groups.

2.5. Data Analysis. SPSS22.0 software was used for data analysis. Normally distributed measurement data were expressed as mean plus or minus standard deviation ($n = ((2(\mu_\alpha + \mu_\beta)^2 p(1-p))/\delta^2)$). The comparison of means between two groups was preceded by the chi-squared F-test. Data with chi-squared differences was tested with the independent samples t-test, and data with nonchi-squared differences were tested with the independent samples t-test. Intragroup pre-post comparisons were performed with paired samples t-test. The counting data was represented by the number of cases (%) and tested by chi-square test. $P < 0.05$ indicated that the comparison was statistically significant.

3. Results

3.1. Ba Characteristics. 75 patients were enrolled in the reference group, including 42 males and 33 females, aged 52–72 (62.85 ± 6.18) years, disease course of 3–6 (4.17 ± 1.32) years, 35 cases of coronary heart disease, 23 cases of hypertensive heart disease, 10 cases of dilated cardiomyopathy, 5 cases of cardiomyopathy, and 2 cases of congenital heart disease. The study group included 75 patients, including 46 males and 29 females, aged 50–75 (62.33 ± 6.25) years, disease course of 2–6 (4.25 ± 1.41) years, 32 cases of coronary heart disease, 24 cases of hypertensive heart disease, 9 cases of dilated cardiomyopathy, 6 cases of cardiomyopathy, and 4 cases of congenital heart disease. The patient characteristics of the two groups were comparable ($P > 0.05$) (Table 1).

3.2. Clinical Effectiveness. There were 23 (30.67%) cases of markedly effective, 33 (44.00%) cases of effective, and 19 (25.33%) cases of ineffective in the reference group. There were 33 cases of markedly effective, 39 (52.00%) cases of effective, and 3 (4.00%) cases of ineffective in the study group. The study group showed higher treatment efficacy (96.00%) than the references group (74.67%) (Table 2).

3.3. Cardiac Function Index Scores. The results showed no significant difference in cardiac function index scores between the two groups before treatment ($P > 0.05$). The cardiac function of the two groups of patients was improved after treatment, and the LVEF of the study group (44.85 ± 4.12) was higher than that of the reference group (38.45 ± 4.36). (44.85 ± 4.12). Higher than the reference group (38.45 ± 4.36), LVESD, LVEDD, NT-proBNP (43.17 ± 3.98, 51.32 ± 4.25, 3045.56 ± 365.48) were lower than the reference group (47.56 ± 4.65, 56.28 ± 4.85, 4856.48 ± 395.46) ($P < 0.05$) (Table 3).

3.4. Adverse Reaction. There were 2 (2.67%) cases of nausea, 4 (5.33%) cases of headache, 1 (1.33%) case of hypokalemia, and 2 (2.67%) cases of blurred vision in the reference group. There were 2 (2.67%) cases of nausea, 4 (5.33%) cases of headache, 1 (1.33%) case of hypokalemia, and 2 (2.67%) cases of blurred vision in the study group. There was no statistically significant difference in the incidence of adverse events between the two groups ($P > 0.05$) (Table 4).

4. Discussion

Heart failure is a syndrome of pulmonary or body circulation stasis caused by the fatigue and low blood expulsion of the heart in the process of venous return, and the amount of blood expulsion is not compatible with the metabolic needs of the body's organs and tissues, resulting in fluid retention, which is one of the important factors in the aggravation of heart failure disease. Therefore, a scientific approach to clinical improvement is required to avoid the deterioration of heart failure disease in patients [17]. Clinically, diuresis is the mainstay of conventional therapy for patients with heart failure, and diuretics are critical for treating patients with heart failure. The most critical symptom of heart failure is fluid retention, which induces pulmonary congestion and peripheral edema, as well as shortness of breath and exhaustion, and restricts exercise tolerance. Diuretics inhibit the reabsorption of sodium or chloride in certain parts of the renal tract, inhibit sodium retention in heart failure, and reduce venous recovery and preload, thereby mitigating pulmonary congestion and improving exercise tolerance. Furosemide is a representative of loop diuretics; its scientific name is 4-Chloro-2-[(furan-2-ylmethyl) amino]-5-sulfamoylbenzoic acid [18]. It is primarily used for the treatment of edema, hypertension, acute pulmonary edema, and cerebral edema. It effectively enhances urinary sodium excretion and improves free water clearance and renal function in terms of fluid retention. However, as the condition advances, reduced renal blood flow or electrolyte balance, intestinal edema, or small bowel hypoperfusion impede drug delivery, resulting in diuretics' failure to establish diuretic resistance in the absence of a response.

According to current guidelines, low doses of dopamine (scientific name; DA, or 3,4-dihydroxyphenylalanine

Table 1: Comparison of general data of the two groups of patients ($\overline{x} \pm s$).

Group	Number of cases	Gender		Age (years)		Duration of disease (years)		Type of disease				
		Male	Female	Scope	Average	Scope	Average	Coronary heart disease	Hypertensive heart disease	Dilated cardiomyopathy	Cardiac disease	Congenital heart disease
Reference group	75	42	33	52–72	62.85 ± 6.18	3–6	4.17 ± 1.32	35	23	10	5	2
Study group	75	46	29	50–75	62.33 ± 6.25	2–6	4.25 ± 1.41	32	24	9	6	4
t	—	—	—	—	0.512	—	0.359	—	—	—	—	—
P	—	—	—	—	0.609	—	0.720	—	—	—	—	—

Table 2: Comparison of clinical efficacy between the two groups of patients (%).

Group	Number of cases	Markedly effective	Effective	Ineffective	Total efficiency
Reference group	75	23 (30.67)	33 (44.00)	19 (25.33)	56 (74.67)
Study group	75	33 (44.00)	39 (52.00)	3 (4.00)	72 (96.00)
x^2	—		13.636		
P	—		<0.001		

Table 3: Comparison of cardiac function scores between the two groups before and after treatment ($\overline{x} \pm s$).

Group	Time	Reference group ($n = 75$)	Study group ($n = 75$)	t	P
LVEF (%)	Before therapy	32.14 ± 4.24	31.99 ± 4.53	0.209	0.835
	After treatment	38.45 ± 4.36*	44.85 ± 4.12*	9.240	<0.001
LVESD (mm)	Before therapy	51.29 ± 3.48	51.32 ± 3.68	0.051	0.959
	After treatment	47.56 ± 4.65*	43.17 ± 3.98*	6.211	<0.001
LVEDD (mm)	Before therapy	61.02 ± 5.12	60.98 ± 4.97	0.049	0.961
	After treatment	56.28 ± 4.85*	51.32 ± 4.25*	6.661	<0.001
NT-proBNP (ng/L)	Before therapy	7568.15 ± 590.15	7572.45 ± 591.56	0.045	0.964
	After treatment	4856.48 ± 395.46*	3045.56 ± 365.48*	29.124	<0.001

Note: *indicates that the difference between before and after treatment in the same group is statistically significant, $P < 0.05$.

Table 4: Comparison of adverse events in the two groups of patients (%).

Group	Number of cases	Nausea	Headaches	Hypokalemia	Blurred vision	Total incidences
Reference group	75	2 (2.67)	4 (5.33)	1 (1.33)	1 (1.33)	8 (10.67)
Study group	75	2 (2.67)	4 (5.33)	1 (1.33)	2 (2.67)	9 (12.00)
x^2	—			0.066		
P	—			0.797		

(DOPA)) may be considered to overcome diuretic resistance [19]. It is a neurotransmitter and is an endogenous nitrogen organic compound. Tyrosine dihydroxy hitches in the metabolic process of phenylalanine intermediate [20], a chemical that helps cells carry impulses, brain secretion, and people's desires and feelings. It also conveys information about excitement and happiness [21]. Accordingly, this study recruited 150 patients with heart failure diagnosed and treated in our hospital from March 2018 to November 2020 for analysis. In TCM, heart failure belongs to the category of "palpitation," and the main pathogenesis is Yang deficiency [22]. The heart is the host of blood vessels, the kidneys store essence, and the kidney vessels are superiorly connected to the heart. The patient's Yang deficiency causes deficiency of Yang in the heart and kidney, resulting in blood stasis in the veins and collaterals and causing disease onset. For patients with heart and kidney yang deficiency type of heart failure, the main treatment principle is to benefit qi and warm yang, invigorate blood, and promote water circulation. Zhenwu Decoction has a targeted effect for conditions such as internal stagnation of water and qi and deficiency of spleen and kidney yang.

The results showed that the total clinical efficiency (96.00%) of the patients in the study group was significantly higher than that in the reference group (74.67%). Before the clinical manifestations of diuretic resistance, the combination of dopamine and furosemide could stimulate dopamine receptors, dilate kidneys, mesentery, and coronary arteries, increased renal blood flow. All this will fully optimize the action of diuretics, reduce fluid retention, maintain proper blood pressure levels during venous pumping, and have mild positive inotropic effects and changes in heart rate. It has a modest effect, total peripheral resistance is reduced, and symptoms and signs can be greatly improved. The combination of the two effectively improves glomerular filtration and renal vascular circulation and raises the patient's urine excretion and salt excretion. Based on the findings, it is obvious that the use of dopamine plus furosemide intravenous infusion in the treatment of patients with heart failure can dramatically improve symptoms. The effect is significant and consistent with the research results of Zhanting et al. The results of this study also showed that the cardiac function of the two groups of patients improved after treatment. The LVEF level of patients in the study group was higher than in the reference group. LVESD, LVEDD, and NT-probNP were lower than the reference group. Dopamine is a key neurotransmitter that improves people's mood and condition and increases the overall contractility of the myocardium, increases cardiac blood production, selectively dilates renal blood vessels, accelerates renal blood flow and blood circulation, reduces the oxygen consumption of the myocardium, and enhances the urine volume and frequency of patients. It is mainly used for the treatment of renal failure, heart disease and heart failure, and may significantly increase the cardiac output of patients. The combination of the two has a greater impact and assists to mitigate high cardiac load in patients and enhances cardiac function.

Furthermore, for intravenous infusion, this study used a micropump, which lowers blood pressure and avoids renal insufficiency. Furthermore, controlled drug concentrations allow for a more concentrated effect. There was no significant difference in the overall incidence of adverse reactions between the two groups, suggesting that intravenous pumping of dopamine combined with furosemide is not associated with an increased risk of adverse reactions and yields a manageable safety.

Zhenwu Decoction warms the spleen and kidney, facilitates urination, and dispels water evils [24]. In the formula, Aconiti Lateralis Radix Praeparata moves moisture and transforms qi, helps Yang to warm the kidneys and spleen, Atractylodis Macrocephalae Rhizoma dries dampness and strengthens the spleen, Poria permeates dampness and facilitates drainage, ginger, and Paeoniae Radix Alba expels dampness, strengthens the spleen, and warms the middle. Paeoniae Radix Alba promotes diuresis and invigorates the blood vessels, and Aconiti Lateralis Radix Praeparata is excessively hot and depletes yin qi [24, 25]. Astragali Radix tonifies water and dampness and nourishes the middle energy, Red ginseng greatly tonifies the vital energy, cinnamon, and Aconiti Lateralis Radix Praeparata tonifies the heart and kidney yang energy, Alismatis Rhizoma and Pepperweed Seed tonify water and reduce swelling [26]. The limitations of this study are the small sample size and the absence of long-term follow-up. Future studies will be conducted with a larger sample size and long-term follow-up to obtain more reliable data.

In conclusion, dopamine plus intravenous furosemide infusion treatment has an obvious therapeutic benefit in treating patients with heart failure and dramatically enhances cardiac function without noteworthy adverse responses. It demonstrated great potential for clinical promotion.

Data Availability

All data generated or analysed during this study are included in this published article.

Consent

All authors have read and approved this manuscript to be considered for publication.

Conflicts of Interest

All authors declared that they have no conflicts of interest.

Authors' Contributions

Jinzheng Shi drafted and revised the manuscript. Rui Wang, Shaoqiang Qin, Zhanshuai Zhang, and Huixian Li conceived and designed this article and are in charge of syntax modification and revision of the manuscript. All the authors have read and agreed to the final version of the manuscript.

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References

[1] B. Bozkurt and S. Khalaf, "Heart failure in women," *Methodist DeBakey Cardiovascular Journal*, vol. 13, no. 4, pp. 216–223, 2017.

[2] M. G. Crespo-Leiro, M. Metra, L. H. Lund et al., "Advanced heart failure: a position statement of the heart failure association of the European society of cardiology," *European Journal of Heart Failure*, vol. 20, no. 11, pp. 1505–1535, 2018.

[3] D. Snipelisky, S. P. Chaudhry, and G. C. Stewart, "The many faces of heart failure," *Cardiac Electrophysiology Clinics*, vol. 11, no. 1, pp. 11–20, 2019.

[4] E. Tanai and S. Frantz, "Pathophysiology of heart failure," *Comprehensive Physiology*, vol. 6, no. 1, pp. 187–214, 2015.

[5] K. Dharmarajan and M. W. Rich, "Epidemiology, pathophysiology, and prognosis of heart failure in older adults," *Heart Failure Clinics*, vol. 13, no. 3, pp. 417–426, 2017.

[6] M. King, J. Kingery, and B. Casey, "Diagnosis and evaluation of heart failure," *American Family Physician*, vol. 85, no. 12, pp. 1161–1168, 2012.

[7] M. R. Costanzo, "The cardiorenal syndrome in heart failure," *Heart Failure Clinics*, vol. 16, no. 1, pp. 81–97, 2020.

[8] M. Gedela, M. Khan, and O. Jonsson, "Heart failure," *South Dakota Medicine*, vol. 68, no. 9, pp. 403–405, 2015.

[9] F. Orso, G. Fabbri, and A. P. Maggioni, "Epidemiology of heart failure," *Handbook of Experimental Pharmacology*, vol. 243, pp. 15–33, 2017.

[10] L. Carone, S. G. Oxberry, R. Twycross, S. Charlesworth, M. Mihalyo, and A. Wilcock, "Furosemide," *Journal of Pain and Symptom Management*, vol. 52, no. 1, pp. 144–150, 2016.

[11] B. Abraham, M. Megaly, M. Sous et al., "Meta-analysis comparing torsemide versus furosemide in patients with heart failure," *American Journal of Cardiology*, vol. 125, no. 1, pp. 92–99, 2020.

[12] K. T. Ng and J. L. L. Yap, "Continuous infusion vs. intermittent bolus injection of furosemide in acute decompensated heart failure: systematic review and meta-analysis of randomised controlled trials," *Anaesthesia*, vol. 73, no. 2, pp. 238–247, 2018.

[13] G. J. Zhao, C. Xu, J.-C. Ying et al., "Association between furosemide administration and outcomes in critically ill patients with acute kidney injury," *Critical Care*, vol. 24, no. 1, p. 75, 2020.

[14] F. Chen, B. Fang, and S. Wang, "A fast and validated HPLC method for simultaneous determination of dopamine, dobutamine, phentolamine, furosemide, and aminophylline in infusion samples and injection formulations," *Journal of Analytical Methods in Chemistry*, vol. 2021, Article ID 8821126, 9 pages, 2021.

[15] F. K. Triposkiadis, J. Butler, G. Karayannis et al., "Efficacy and safety of high dose versus low dose furosemide with or without dopamine infusion: the dopamine in acute decompensated heart failure II (DAD-HF II) trial," *International Journal of Cardiology*, vol. 172, no. 1, pp. 115–121, 2014.

[16] K. Sharma, J. Vaishnav, R. Kalathiya et al., "Randomized evaluation of heart failure with preserved ejection fraction patients with acute heart failure and dopamine: the ROPA-DOP trial," *Journal of the American College of Cardiology: Heart Failure*, vol. 6, no. 10, pp. 859–870, 2018.

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Retraction

Retracted: Effects of Collagen Antibacterial Functional Dressing plus Continuous Nursing on Lower Extremity Skin Injury Caused by Norepinephrine in Patients with Septic Shock

Evidence-Based Complementary and Alternative Medicine

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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] X. Hu, H. Wang, and Y. Lin, "Effects of Collagen Antibacterial Functional Dressing plus Continuous Nursing on Lower Extremity Skin Injury Caused by Norepinephrine in Patients with Septic Shock," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 4160637, 5 pages, 2022.

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Research Article

Effects of Collagen Antibacterial Functional Dressing plus Continuous Nursing on Lower Extremity Skin Injury Caused by Norepinephrine in Patients with Septic Shock

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Background. This study was designed to explore the effects of collagen antibacterial functional dressing plus continuous care on norepinephrine-induced lower extremity skin injury in patients with septic shock. *Methods*. In this prospective, randomized, controlled study, 120 patients with septic shock receiving norepinephrine in our hospital from February 2020 to February 2021 were recruited. All the enrollments were randomized into the experimental group ($n = 60$) and the control group ($n = 60$). The control group received continuous care, while the experimental group additionally received collagen antibacterial functional dressing. Outcome measures included skin sensation scores, incidence of lower extremity skin injuries, recovery time, inflammatory factor levels, and care satisfaction. *Results*. Collagen antibacterial functional dressing plus continuous care resulted in significantly lower skin sensation scores and a lower incidence of skin injuries versus continuous care alone. Patients in the experimental group had faster recovery of lower extremity skin injury than those in the control group. Collagen antibacterial functional dressing plus continuous care was associated with significantly lower levels of inflammatory factors and a higher satisfaction rate than continuous care alone. *Conclusion*. Collagen antibacterial functional dressing plus continuous care improves the local skin condition of patients with septic shock receiving norepinephrine, regulates the levels of inflammatory factors, reduces the risk of skin injuries, and enhances care satisfaction.

1. Introduction

Septic shock is a clinical syndrome characterized by systemic infection. Metabolic disorders and dysfunctions are frequently seen in most cases, in which the hemodynamic effects, inflammatory factors, and immune factors are mutually influenced, leading to homeostasis imbalance or even multiple organ failure in severe cases. The total mortality rate of septic shock ranges from 40% to 70% [1–3]. In current practice, liquid resuscitation plus vasoactive drugs is a well-recognized protocol for septic shock management. Norepinephrine is a commonly used vasoactive drug in clinical practice [4, 5] that regulates the blood pressure of patients, improves their organ perfusion, and prevents organ functional failure; however, it is highly irritating and may cause skin tissue injuries. Mild injury symptoms include redness, pain, and local tissue necrosis, while severe cases may suffer dysfunction, seriously compromising the treatment effect and the nurse-patient relationship [6, 7]. To this end, comprehensive nursing has been identified for complication prevention of the lower extremities to potentiate the efficacy of norepinephrine; nonetheless, the expected treatment outcome is somehow compromised [8, 9]. Previous studies have found that in the treatment of the skin radiation injury of breast cancer patients during radiotherapy [10, 11], the collagen antibacterial functional dressing accelerated cell metabolism, promoted wound healing, relieved skin pain, and regulated the level of local inflammatory factors, which is conducive to injured skin repair. Accordingly, this study was designed to explore the effectiveness of collagen

antibacterial functional dressing plus continuous care on the skin injury of lower extremities caused by norepinephrine in patients with septic shock.

2. Materials and Methods

2.1. General Materials. In this prospective, randomized, controlled study, 120 patients with septic shock treated with norepinephrine in our hospital from February 2020 to February 2021 were included. All the enrollments were randomized into the experimental group ($n = 60$) and the control group ($n = 60$). This study was approved by the ethical committee of our hospital (No. 2020-15/254).

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria. Inclusion criteria were as follows: (1) patients or their family members were fully informed of the research process and signed the consent form and (2) patients met the diagnostic criteria for septic shock [12] and were treated with norepinephrine.

2.2.2. Exclusion Criteria. Exclusion criteria were as follows: (1) patients with mental problems that prevented normal communication [13]; (2) patients with other organic diseases [14]; and (3) norepinephrine was not included in the treatment plan.

2.2.3. Withdrawal Criteria. Withdrawal criteria were as follows: (1) patients with adverse events or serious adverse events; (2) patients with disease deterioration during the experiment; and (3) patients who revoked their consent.

2.3. Methods

2.3.1. Norepinephrine Therapy. Both groups of patients received an intravenous infusion of norepinephrine (GrandPharma China Co., Ltd., National Medicine Standard H42021301) at the medial malleolus saphenous vein of the lower limbs. The infusion site was altered accordingly in the event of skin injury, and 0.25% procaine was given (Jiangsu Jiuxu Pharmaceutical Co., Ltd., National Medicine Standard H20023101) for partial pain alleviation.

2.3.2. Continuous Care. Both groups of patients were given continuous care. (1) A continuous care exchange group consisting of septic shock patients was established, with the head nurse as the group administrator, and chief physicians were invited to assist the group administration. A continuous care nursing team with two chief physicians, three nurses, a psychologist, and a nutritionist was established to answer the patients' questions and formulate tailored continuous care protocols. The patients and their families were fully informed of the purpose, process, and significance of the study to ensure proactive and effective participation. (2) The patients in the exchange group were named "Department + Patient Name + Bed Number," which is convenient for information collection and condition monitoring and documentation. Before discharge, the patients were given disease and care instructions, including knowledge of treatment, nursing, and related complications, and were instructed to correctly perform home care. The following conditions during treatment were documented: ① sudden increase or decrease of body temperature; ② impaired consciousness, such as apathy and lethargy; ③ excessive blood pressure fluctuation (an alteration of blood pressure by 15% was considered an excessive fluctuation); and ④ decreased urine output. (3) The patients were informed of the importance of skin management. Patients with septic shock might have flush or clammy skin or have a vascular endometrial injury due to injections of norepinephrine and other drugs, which caused local skin swelling and bruising. (4) Cured cases and proper psychological guidance were introduced to patients to enhance their treatment compliance. (5) The patients were followed up by telephone 3 days after discharge. Then, the telephone follow-up was conducted every 1 month. The duration of follow-up was 3 months.

Table 1: Comparison of the general information.

	Experimental group	Control group	$\chi 2/t$	P
n	60	60		
Gender (male/female)	41/19	42/18	0.039	0.843
Age (years)	50.11 ± 2.15	50.23 ± 2.16	0.305	0.761
Weight (kg)	56.21 ± 2.01	56.25 ± 2.10	0.107	0.915
BMI (kg/m2)	22.10 ± 2.10	22.12 ± 2.14	0.052	0.959
Primary disease				
AOSC	12	11	0.054	0.817
ALP	10	11	0.058	0.810
CRI	12	13	0.051	0.822
PC	8	7	0.076	0.783
ANP	10	11	0.058	0.810
COPD	8	7	0.076	0.783

AOSC: acute obstructive suppurative cholangitis, ALP: acute lobar pneumonia, CRI: chronic renal insufficiency, PC: posthepatitic cirrhosis, ANP: acute necrotizing pancreatitis, and COPD: chronic obstructive pulmonary disease.

2.3.3. Collagen Antibacterial Functional Dressing Treatment. The experimental group received collagen antibacterial functional dressing (Tibet Beizhuya Pharmaceutical Co., Ltd., Tibet Naqu Medical Device (2015) No. 1640001) at the norepinephrine injection site. After the injection, with the patients in a sitting position, their skin was cleaned with 37°C water, and the collagen antibacterial dressing was evenly applied to the injection area with a thickness of around 2 mm–3 mm and a diameter of 4 cm around the needlepoint. The dressing was applied once a day before bed. After discharge, the patients were instructed to perform collagen antibacterial functional dressing 3 days later.

2.4. Outcome Measures

2.4.1. Skin Sensation Score. The evaluation is based on the skin toxicity assessment tool [15], and the scale includes

Table 2: Comparison of skin sensation scores ($\overline{x} \pm s$, points).

	Burning		Itchiness		Stretching		Stinging	
	Before	1 month after	Before	1 month after	Before	1 month after	Before	1 month after
Experimental group	0.60 ± 0.08	0.34 ± 0.02	0.79 ± 0.06	0.45 ± 0.04	0.29 ± 0.04	0.15 ± 0.03	1.21 ± 0.05	0.78 ± 0.04
Control group	0.74 ± 0.05	0.49 ± 0.05	0.90 ± 0.08	0.65 ± 0.06	0.39 ± 0.05	0.26 ± 0.04	1.40 ± 0.06	1.00 ± 0.04
t	11.50	21.58	8.52	21.48	12.10	17.04	18.84	30.13
P	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

three domains of treatment characteristics, skin reaction, and patient sensation. There are four items in patient sensation, including burning, itching, pressing pain, and stretching. The Riggett five-level scoring method was adopted to investigate the skin sensation scores of patients before and one month after discharge. The higher the score, the more severe the skin injury.

2.4.2. Incidence of Lower Extremity Skin Injury. The drug extravasation and tissue injury during the treatment of patients were meticulously documented. Mild injury includes skin redness, swelling, subcutaneous induration, and pain in the local exudation area, and severe injury includes local tissue necrosis and dysfunction. The number of patients with skin injuries of lower extremities was recorded to calculate the corresponding incidence.

2.4.3. Recovery Time of Lower Extremity Skin Injury. The recovery time of the patient's lower extremity skin injury was recorded.

2.4.4. Inflammatory Factor Level. 5 ml of morning fasting venous blood was collected from the patients before treatment and 1 month after discharge, and the immunoturbidimetric method was used (kit: Nanjing Getein Biotech Co., Ltd., Su Food and Drug Administration Approval Number 2012 No. 2400146) to determine the levels of C-reactive protein (CRP), serum procalcitonin (PCT), and tumor necrosis factor-alpha (TNF-α), and the operation process was carried out in strict accordance with the kit instructions.

2.4.5. Care Satisfaction. The hospital's self-developed scale was used to evaluate patients' care satisfaction. The scale has a maximum score of 5 points, with 5 points for highly satisfied, 3-4 points for satisfied, and 2 points and below for dissatisfied. The satisfaction rate 1 month after discharge was calculated.

2.5. Statistical Analysis. The selected data processing software for this study was SPSS 20.0, and the graphics were plotted by using GraphPad Prism 7 (GraphPad Software, San Diego, USA). The research included count data and measurement data. The count data were analyzed by the chi-square test, and the measurement data were analyzed by the t-test. $P < 0.05$ indicates that the difference is statistically significant.

Table 3: Comparison of the incidence rate of skin injury of the lower extremities.

	n	Skin injury	No skin injury
Experimental group	60	3	57
Control group	60	14	46
χ^2		8.292	
P		0.004	

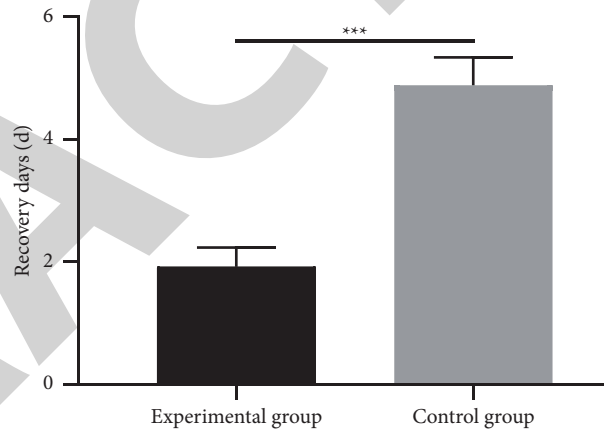

Figure 1: Comparison of recovery time of patients with lower extremity skin injury, $^{***}P < 0.001$.

3. Results

3.1. Patient Characteristics. The patient characteristics of the two groups were comparable ($P > 0.05$) (Table 1).

3.2. Comparison of Skin Sensation Scores of Patients. Collagen antibacterial functional dressing plus continuous care resulted in significantly lower skin sensation scores versus continuous care alone ($P < 0.001$), as shown in Table 2.

3.3. Comparison of the Incidence Rate of Skin Injury of the Lower Extremities. A lower incidence of lower limb skin injury in the experimental group was observed ($P < 0.05$), as shown in Table 3.

3.4. Comparison of Recovery Time of Patients with Lower Extremity Skin Injury. Patients in the experimental group had faster recovery of lower extremity skin injury than those in the control group ($P < 0.001$) (Figure 1).

Table 4: Comparison of the levels of inflammatory factors ($\overline{x} \pm s$).

	CRP (mg/L)		PCT (ng/L)		TNF-α (pg/mL)	
	Before	1 month after	Before	1 month after	Before	1 month after
Experimental group	172.65 ± 24.11	10.20 ± 1.21	25.56 ± 3.21	1.01 ± 0.25	20.12 ± 2.65	3.58 ± 1.20
Control group	172.56 ± 25.13	13.58 ± 2.23	26.14 ± 3.20	1.45 ± 0.30	20.23 ± 2.10	5.24 ± 2.15
t	0.006	2.503	0.285	2.354	0.079	1.273
P	0.996	0.024	0.778	0.033	0.938	0.222

Table 5: Comparison of care satisfaction rate (n (%)).

	n	Highly satisfied	Satisfied	Dissatisfied	Satisfaction rate
Experimental group	60	30 (50.0)	18 (30.0)	2 (3.3)	58 (96.7)
Control group	60	18 (30.0)	30 (50.0)	12 (20.0)	48 (80.0)
$\chi 2$					8.086
P					0.004

3.5. Comparison of Inflammatory Factor Levels in Patients. Collagen antibacterial functional dressing plus continuous care was associated with significantly lower levels of inflammatory factors than continuous care alone ($P < 0.05$) (Table 4).

3.6. Comparison of Patient Care Satisfaction. A higher nursing satisfaction was obtained in the patients in the experimental group versus the control group ($P < 0.05$) (Table 5).

4. Discussion

The results showed that the skin sensation scores and the incidence rate of skin injuries of the experimental group were significantly lower than those of the control group. Pathogenic microorganisms and cell wall products invading the blood circulation during septic shock result in activation of cellular and the humoral immune system, and various endogenous mediators act in the organs and systems, leading to metabolic disorders and even multiple organ failure [16]. In the pathogenesis of septic shock, inflammatory factors are the most important factors that induce hemodynamic alterations and may lead to systemic vasodilation [17] and reduced organ perfusion. Therefore, proper hemodynamic management is key to avoid multiple organ failures [18]. At present, vasoactive drugs are administered for tissue perfusion restoration [19], in which norepinephrine is the most common one for septic shock. Norepinephrine effectively constricts blood vessels, increases arterial blood pressure, and averts internal organ injury. However, norepinephrine has strong penetrability and is prone to drug extravasation, causing vascular smooth muscle spasm, vascular intima damage, and endometritis [20]. Previously, comprehensive care has been recommended for septic shock management to avoid complications secondary to norepinephrine [21] but failed to achieve the expected outcome. In the present study, the incidence of lower extremity skin injury in the experimental group was significantly lower than that in the control group, which may be attributed to the intense antibacterial effects of collagen stock solution, hydrogel, and polylysine in the collagen antibacterial functional dressing [22]. The research of Wunsch et al. showed that collagen antibacterial functional dressing enhanced the phagocytic function of wound macrophages and reduced the inflammatory response of patients with breast cancer [23].

In addition, the experimental group has significantly lower levels of inflammatory factors after discharge, indicating that the collagen antibacterial functional dressing yields strong local anti-inflammatory and moisturizing effects to boost the growth of epidermal cells and promote metabolism.

The current study found that the skin-tingling sensation score of the patient was slightly lower in the experimental group. The reason may be ascribed to the individual differences between the patients. Also, continuous care ensured a high home care quality and resulted in a better recovery of the patients in the experimental group. A prior study has revealed that collagen antibacterial functional dressing contributed to the repair of skin defects in diabetic patients and promoted vascular regeneration [24]. Thus, collagen antibacterial functional dressing could also accelerate wound repair and reduce the pain of the patient with lower extremity skin injuries. Kasugai et al. treated patients with septic shock with collagen antibacterial functional dressing and compared them with Kanghuier's enhanced transparent paste. It was found that collagen antibacterial functional dressing facilitated vascular regeneration, reduced local edema, and relieved the stimulation of peripheral nerves by active factors after drug extravasation [25].

5. Conclusions

Collagen antibacterial functional dressing plus continuous care improves the local skin condition of patients with septic shock receiving norepinephrine, regulates the levels of inflammatory factors, reduces the risk of skin injuries, and enhances care satisfaction.

Data Availability

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

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Retraction

Retracted: κ-Opioid Receptor Agonist U50448H Protects Against Acute Lung Injury in Rats with Cardiopulmonary Bypass via the CAP-NLRP3 Signaling Pathway

Evidence-Based Complementary and Alternative Medicine

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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] G. Gao, D. Song, L. Li, F. Zhao, and Y. Sun, "κ-Opioid Receptor Agonist U50448H Protects Against Acute Lung Injury in Rats with Cardiopulmonary Bypass via the CAP-NLRP3 Signaling Pathway," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2868135, 11 pages, 2022.

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Research Article

κ-Opioid Receptor Agonist U50448H Protects Against Acute Lung Injury in Rats with Cardiopulmonary Bypass via the CAP-NLRP3 Signaling Pathway

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Objective. Acute lung injury (ALI) is one of the common and severe complications of cardiopulmonary bypass (CPB), which is the primary cause of death in intensive care units. Nevertheless, there is a lack of effective treatment for ALI secondary to CPB. κ-Opioid receptor (KOR) agonists have been demonstrated to improve lung function after pulmonary hypertension. However, its protective role has been barely reported in CPB-induced acute respiratory distress syndrome (ARDS). Therefore, this research focused on the protective effect of a KOR agonist U50448H on ARDS and investigated its potential relationship with the NOD-like receptor family pyrin domain-containing 3 (NLRP3) inflammasome. *Method*. Forty-five rats were randomly allocated into Sham, CPB, and U50448 groups ($n = 15$ rats/group). After a CPB model was successfully established in rats, CPB rats were treated with the KOR agonist U50448H. The values of extravascular lung water (EVLW), alveolar-arterial oxygen tension difference (AaDO2), and respiratory index (RI) were examined, and the lung wet/dry (*W*/*D*) weight ratio was also calculated. Western blot (WB) was utilized to measure the expression of MMP-9, GSDMD-C, GSDMD-N, NLRP3, ASC, pro-Caspase-1, pro-IL-1β, and α7-nAChR. The immunofluorescence assay was performed for examining the expression of ROS, F480, iNOS, CD206, and α7-nAChR. Cell apoptosis was detected by the TUNEL assay. ELISA was used to test the level of LPS in serum and the level of MDA, GSH, SOD, TNF-α, IL-4, IL-6, IL-18, and IL-1β in lung tissues. *Results*. It was observed that the administration of U50448H significantly reduced EVLW values and LPS levels in the lung of rats. Meanwhile, U50448H increased AaDO2 values while decreasing RI values. Moreover, the administration of U50448H alleviated the pathological damage caused by ALI secondary to CPB. U50448H repressed ROS release and oxidative stress responses, as well as lowered LPS levels in plasma and MMP-9 expression in the lung of CPB rats. Furthermore, U50448H facilitated the shift of macrophage phenotype to *M*2. In addition, U50448H decreased the activity of the CAP-NLRP3 inflammasome and suppressed pyroptosis in pulmonary cells. *Conclusion*. The KOR agonist U50448H improved lung function and relieved lung injury in CPB rats, accompanied by diminished ROS and MMP-9 levels in lung tissues, promoted macrophage polarization from *M*1 to *M*2, and reduced NLRP3 inflammasome activities. These results indicated U50448H as a promising drug for the treatment of ALI secondary to CPB.

1. Introduction

As a severe acute inflammatory disorder of the lung, acute lung injury (ALI) refers to diffuse parenchymal lung damage induced by various direct or indirect factors and acute respiratory dysfunction attributed to increased permeability of alveolar walls and lung capillaries and interstitial and alveolar edema. This disease is mainly characterized by an imbalance in the ventilation/blood flow ratio and a substantial reduction in lung compliance in terms of pathophysiology and is clinically manifested by respiratory distress and progressive hypoxemia. Despite the complex etiology of ALI, tremendous progress has been achieved in research on the pathogenesis of ALI after half a century. Unfortunately, the exact pathogenesis of ALI is not completely elucidated. Additionally, it is generally exhibited in

the current studies that the major pathophysiological change of ALI is the uncontrolled inflammatory response that is caused by excessive activation and recruitment of inflammatory cells in the lung and the mutual activation and interaction of numerous inflammatory factors and effector cells. In this context, inhibiting the uncontrolled inflammatory response may be the key strategy for the treatment of ALI.

Moreover, ALI is one of the major complications following cardiac surgery with cardiopulmonary bypass (CPB) [1]. During CPB, the lung is the first affected organ during ischemia, hypoxia, and reperfusion due to aortic block, cardiac arrest, and resuscitation [2]. Almost all CPB patients suffer from varying degrees of postoperative pulmonary decompensation since the lung is the only organ that is not protected by effective cooling in the extracorporeal circulation system [3]. Among these patients, only temporary subclinical symptoms are present in mild cases of lung injury, while acute respiratory distress syndrome (ARDS) is existent in approximately 2% of severe cases, which have a mortality rate of up to 50% [2]. Accordingly, it is imperative to explore effective strategies for preventing and treating CPB-induced lung injury.

κ-Opioid receptor (KOR), composed of 380 amino acids, belongs to the G-protein-coupled receptor family [4]. The KOR agonist, U50488H, has been documented to interfere with hippocampal neurological damage and dramatically reduce cognitive impairment after ischemia [5]. U50488H can prevent acetylcholine transport via the KOR-modulated opioid neural system, hence counteracting the reduction in acetylcholine release triggered by mecamylamine, an N-cholinoceptor-blocking medication, and ameliorating learning and memory deficits [6]. Recently, it has been widely confirmed that KOR agonists are associated with cognitive function and related to lung barrier dysfunction due to pulmonary hypertension [7–9]. However, the effect of U50488H on lung injury induced by CPB has not yet been reported adequately, nor have the detailed mechanisms been elucidated.

The activation and polarization of macrophages are vital for ALI and lung inflammation by mediating the maintenance of immune homeostasis in lung tissues. Damage during ALI can be decreased through macrophage shift from a resting state to an amoebic active state. Macrophages can be polarized into two phenotypes: the classical *M*1 phenotype that displays proinflammatory functions or the alternative *M*2 phenotype that exerts anti-inflammatory effects. Likewise, little is known about the therapeutic function of U50448H in macrophage polarization.

Inflammasomes are macromolecular complexes formed in the cytoplasm of the organism in response to signals from microbial invasion and destruction. NOD-like receptor family pyrin domain-containing 3 (NLRP3) inflammasomes are implicated in a wide range of inflammatory and other injuries in the lung [10], including transfusion-associated ALI, mechanical ventilation-induced lung injury, asthma, tuberculosis, and pulmonary fibrosis [11, 12]. The NLRP3 inflammasome, an extensively studied inflammasome, recruits the adapter protein apoptosis-associated speck-like protein containing a CARD (ASC) upon the activation of its core protein NLRP3, further recruiting and activating pro-Caspase-1, which induces the cleavage of pro-caspase-1 protein to activated caspase-1. Caspase-1 induces the mature activation of the precursors of the proinflammatory cytokines, interleukin (IL)-1β and IL-18 [13, 14]. Multiple studies have discovered the involvement of NLRP inflammasomes in the pathological process of ALI and the alleviation of ALI by the inactivation of NLRP inflammasomes [15]. The modulation of inflammasomes may afflict the levels of local inflammatory factors and influence extracorporeal circulation-induced ALI, as the pathogenesis of extracorporeal circulation-induced lung injury shares many similarities to these diseases. However, the precise mechanisms of NLRP3 inflammasomes in ALI secondary to CPB remain poorly identified.

Our previous studies have unveiled that KOR agonists can mitigate intestinal damage [8] and attenuate postoperative cognitive dysfunction [5] following CPB surgery. Nonetheless, there has hitherto been little research on the mechanism by which KORs protect against CPB-induced lung injury. Consequently, this study focused on the promoting role of U50448H on the analgesic effect of conventional opioids and elaborated that U50448H reduced lung injury after CPB, promoted macrophage polarization, and influenced NLRP3 inflammasomes.

2. Materials and Methods

2.1. Animals and Animal Groups. Forty-five Sprague-Dawley rats (weighing 350–400 g) were obtained from Laboratory Animal Center at China Medical University (CMU; certificate number: SCXK [Jing] 2019-0001). These rats were housed in the animal facilities of the Laboratory Animal Center of CMU at 22–24°C with a relative humidity of $50 \pm 5\%$ and free access to normal diets and water. Then, the rats fasted for 12 h prior to surgery. The entire animal surgery and experiments were ratified by the IACUC of CMU (Approved no. CMU2020423). After two weeks of acclimatization, the rats were randomly arranged into three groups: Sham, CPB, and KOR agonist (*K*) groups ($n = 15$ rats per group). Rats in the Sham group were subjected to intubation and mechanical ventilation in the right femoral artery, and their right internal jugular vein was catheterized without bypass. Rats in the CPB group underwent CPB surgery with the protocol described below. Rats in the KOR group were injected intravenously with U50488H (1.5 mg/kg, D8040, Sigma, St. Louis, MO, USA) before the CPB surgery.

The original calculation of sample size estimated that 100 patients per group would be needed to detect a three-point difference between groups in a two-sided significance test with a power of 0.8 and an alpha error level of 0.05.

The informed consent form was obtained from all patients prior to enrollment in this study. The study protocol was approved by the Ethics Committee of XX hospital (Approval no. FH-JU20200504). All processes conformed to ethical principles for clinical research in the *Declaration of Helsinki*.

In addition, a blank control group was not designed in this study because the Sham group could already adequately serve as a negative control and the blank control could be dispensed with. Based on the late consideration, we believe that there is no significant difference between the Sham group and the negative control group in the current experiments, although we have not conducted the relevant pre-experiments in the early stage.

2.2. Establishment of a CPB Rat Model. The CPB rat model was developed as per the previous publications [16, 17]. The rats were anesthetized by the intraperitoneal injection of pentobarbital sodium at 30 mg/kg, fixed in a supine position on the operating table, intubated, and connected to a small animal ventilator and an anesthesia machine. Afterwards, the anesthesia was maintained with 2% isoflurane. Real-time arterial pressure was monitored by inserting a 22G cannula needle into the left femoral artery. In addition, extracorporeal circulation was established by inserting a 22G cannula needle into the caudal artery and an 18G cannula needle into the right jugular vein (with a lateral hole at the head end). After the tubes were connected and secured, intravenous blood was drained into a reservoir and returned. The dose of medication was adjusted based on the blood gas analysis to maintain MAP >60 mmHg, pH within the normal range, the $PaCO_2$ range of 35–45 mmHg, and alkali residual (BE) of −3–3 mmol/L. Mechanical ventilation was resumed after the diversion was gradually terminated when the erythrocyte-specific volume (Hct) reached 0.25. Subsequent to the removal of tubes, mechanical ventilation continued. The residual blood in the reservoir was maintained via slow infusion.

2.3. Examination of Alveolar-Arterial Oxygen Tension Difference ($AaDO_2$) and Respiratory Index (RI). A blood gas analyzer (Roche) was utilized to analyze the artery blood gas level, including arterial partial pressure of oxygen (PaO2), base excess, and Hb content, before the CPB surgery and at 0 h, 1 h, and 2 h after the CPB surgery. The derived variables consisted of the arterial-alveolar oxygen tension ratio (a/A), AaDO2, and RI.

2.4. The Measurement of the Lung Wet/Dry (W/D) Weight Ratio and Extra-vascular Lung Water (EVLW). Subsequently, rats were euthanized with an overdose of sodium pentobarbital through intraperitoneal injection. The final wet lung weight was detected by weighing the excised left lung from rats. Thereafter, the tissues were dried at 60°C for 48 h, followed by the analysis of the lung *W/D* weight ratio. Additionally, EVLW was analyzed as reported in a previous publication [18]. In short, lung tissues were homogenized after the addition of equal quantities of distilled water, and then, 50 mL homogenates were centrifuged at $2,000 \times g$ for 10 min before 1 h of cultivation at 5°C. The Hb concentration was tested in the supernatant. Arterial blood, tissue homogenates, and supernatants were dried at 80°C for 72 h, followed by the calculation of water content percentages in the samples. Next, the lobe of the right lung was immersed with 10% formalin for further examination. Other lobes of the right lung were frozen for further biochemical detection. After the rats were anesthetized, the neck was depilated and disinfected, and the neck muscles were cut longitudinally with ophthalmic scissors to fully expose the trachea. An inverted *T*-shaped incision was made on the trachea for intubation, and the trachea was slowly injected with prechilled PBS using a 1-mL syringe, washed 2 times (0.8 mL each wash), and flushed 3 times each wash. The recovered fluid was the bronchoalveolar lavage fluid (BALF). The BALF was centrifuged at 1500 r/min and 4°C for 15 min, and the supernatant was aliquoted into Eppendorf (EP) tubes and cryopreserved at −80°C for late use.

2.5. Enzyme-Linked Immunosorbent Assay. The blood of rats was harvested before the surgery and at 0 h, 1 h, and 2 h after the surgery and centrifuged at $1000g$ for 10 min to collect the serum. Then, the level of lipopolysaccharide (LPS) was detected by ELISA. After the euthanasia of rats, the same amount of lung tissues in rats from different groups were prepared into 10% homogenates, which were centrifuged at $1500g$ for 10 min at 4°C. The levels of malondialdehyde (MDA), glutathione (GSH), superoxide dismutase (SOD), tumor necrosis factor-α (TNF-α), IL-4, IL-6, IL-18, and IL-1β were measured in the supernatant by ELISA as per the instructions of corresponding kits.

2.6. Hematoxylin-Eosin (H & E) Staining. Lung tissues from rats were fixed in formaldehyde for 48 h, dehydrated, and cleared. After that, the lung tissues were paraffin-embedded and cut into 4-μm sections. The sections were dewaxed, rehydrated, and stained with hematoxylin for 5 min. Subsequent to rinsing with PBS, the sections were differentiated with hydrochloric acid ethanol, stained with eosin for 1 min, and mounted with neutral resin. At last, the pathological morphology of lung tissues was analyzed under a microscope.

2.7. Terminal Deoxynucleotidyl Transferase dUTP Nick End Labeling (TUNEL) Staining. The apoptosis in lung tissues was detected as instructed in the manuals of an in situ apoptosis detection kit (Roche Diagnostics, Mannheim, Germany). The sections (5 μm) of paraffin-embedded lung tissues were dewaxed, permeabilized, reacted with 50 μL TUNEL solution, and warmed in a humid and dark box at 37°C for 60 min. Thereafter, the sections were cultured with 50 μL streptavidin-horseradish peroxidase (HRP) working solution in a dark box for 30 min. Cell nuclei were stained with 4′,6-diamidino-2-phenylindole (DAPI) for fluorescent staining, followed by routine dehydration and fixation. The sections were observed and photographed under the microscope. For each captured picture, the total of nuclei and the number of TUNEL-positive nuclei were counted to calculate the apoptosis rate.

2.8. Immunofluorescence Assay. The levels of inflammatory factors in the BALF supernatant and the serum were detected with corresponding Quantikine™ ELISA kits.

Specifically, the samples were prepared by thawing the serum and BALF samples. Afterwards, all reagents were placed at room temperature prior to the experiment, and washing solution, diluent, and standards of different concentrations were prepared as required. Additionally, the microplate was taken out from the sealed bag that had been equilibrated to room temperature.

Paraffin-embedded lung tissues were dewaxed and hydrated, immersed in 3% hydrogen peroxide solution for 15 min, and rinsed with PBS, followed by antigen retrieval with 0.1 M sodium citrate solution. The tissues were blocked with goat serum and incubated at 37°C for 30 min. Next, the sections were separately probed with diluted antibodies against reactive oxygen species (ROS), F480, inducible nitric oxide synthase (iNOS), CD206, and α7-nicotinic acetylcholine receptor (α7-nAChR) at 4°C overnight. After being rinsed with PBS, the sections were re-probed with fluorescence-labeled secondary antibodies for 30 min at 37°C. Subsequent to PBS rinsing, the sections were subjected to nucleus staining with DAPI and 10 min of incubation at room temperature. Thereafter, the sections were rinsed with PBS, mounted with neutral resin, and analyzed under a fluorescent microscope.

2.9. Western Blot (WB). Lung tissues were homogenized and reacted with radio-immunoprecipitation assay lysis solution (Thermo, 89900) encompassing protease inhibitors on ice for 30 min, followed by the collection of the supernatant. Then, the concentration of the collected proteins was quantified with a bicinchoninic acid kit (Thermo Fisher Scientific Inc.). The same amount of proteins was loaded, separated by sodium dodecyl sulfate-polyacrylamide gel electrophoresis, and then transferred to a polyvinylidene fluoride membrane. After being blocked in skim milk solution, the membrane underwent overnight incubation with diluted primary antibodies against the C terminal of Gasdermin D (GSDMD-C), the N terminal of GSDMD (GSDMD-C), NLRP3, ASC, pro-Caspase-1, pro-IL-1β, matrix metallopeptidase-9 (MMP-9), glyceraldehyde-3-phosphate dehydrogenase, and α7-nAChR at 4°C. After PBS rinsing, HRP-labelled secondary antibodies were supplemented for 2 h of cultivation with the membrane at room temperature. Proteins were visualized with the electrogenerated chemiluminescence kit on a gel imaging system. Finally, the results were analyzed based on greyscale value using ImageJ.

2.10. Statistical Analysis. The findings were demonstrated as mean ± standard deviation and statistically analyzed using SPSS version 11.5 statistical software (SPSS, Chicago, IL, USA). Normally distributed measurement data were expressed as mean ± standard deviation and analyzed using the student's *t*-test when two groups were compared and one-way analysis of variance when multiple groups were compared, followed by the Bonferroni post hoc test. $P < 0.05$ was considered statistically different.

3. Results

3.1. The KOR Agonist U50448H Improves the Lung Epithelial Barrier Function and Reduces ALI in CPB Rats. EVLW, one of the pivotal indicators of ALI, is a marker of the fluid in pulmonary interstitial and alveolar spaces [19]. Therefore, EVLW levels were initially analyzed, which showed an obviously higher level of EVLW in rats of the CPB group than in the Sham group (Figure 1(a), $P < 0.05$). Interestingly, U50448H treatment remarkably diminished the level of EVLW in CPB rats. $AaDO_2$ and RI were measured by the blood gas analysis to evaluate lung function. As depicted in Figure 1(b), the values of AaDO2 (Figure 1(b), $P < 0.05$) and RI (Figure 1(c), $P < 0.05$) evidently increased at 0 h, 1 h, and 2 h after the CPB in the CPB group compared to the Sham group. Of note, U50488H treatment partially decreased the values of $AaDO_2$ and RI at 0 h, 1 h, and 2 h after the CPB surgery ($P < 0.05$). Furthermore, the concentration of LPS in the serum of rats was analyzed using ELISA to determine the change in inflammatory factor levels. The data displayed that serum LPS concentrations were higher in the CPB group than in the Sham group but observably lower in the U50448H group than in the CPB group (Figure 1(d), $P < 0.05$), suggesting that the KOR agonist U50448H might be effective in the treatment of ALI in CPB rats. *H* & *E* staining was adopted to test histological changes in lung tissues from rats, and the results manifested that rats in the CPB group developed substantial lung damage and intra-alveolar congestion/hemorrhage, accompanied by extensive inflammatory cell infiltration. The lung damage was ameliorated in the U50448H group (Figure 1(e), $P < 0.05$).

3.2. U50448H Inhibits Pulmonary Oxidative Stress, Reduces Apoptosis in Lung Tissues, and Downregulates MMP-9 Expression in CPB Rats. Moreover, the rat serum was tested for the levels of SOD, MDA, and GSH, which are common indicators of oxidase stress [20]. The concentration of SOD was reduced, and the level of MDA and GSH was elevated in the CPB group compared to the Sham group (Figure 2(a), $P < 0.05$), which was partially nullified by further U50448H treatment (Figure 2(a), $P < 0.05$). Similarly, U50448H treatment also decreased the overactivity of ROS in lung tissues following the CPB surgery (Figure 2(b), $P < 0.05$). In addition, our data also exhibited that apoptosis in pulmonary tissues was blocked in CPB rats by U50448H treatment (Figure 2(c), $P < 0.05$). Finally, MMP-9 is one of the factors related to ALI because it can increase the alveolar-capillary membrane permeability [20]. In our study, the findings presented that U50448H treatment considerably lowered MMP-9 expression in lung tissues, suggesting that U50448H restored the injured lung function (Figure 2(d), $P < 0.05$).

3.3. U50448H Facilitates Lung Macrophage Polarization to M2 Phenotype in CPB Rats. Our study further dissected the regulatory role of U50448H in lung macrophage polarization. Subsequent to the CPB surgery, there were enhancements in the expression of *M*1 macrophage-related biomarkers including TNF-α and IL-6 and decreases in the

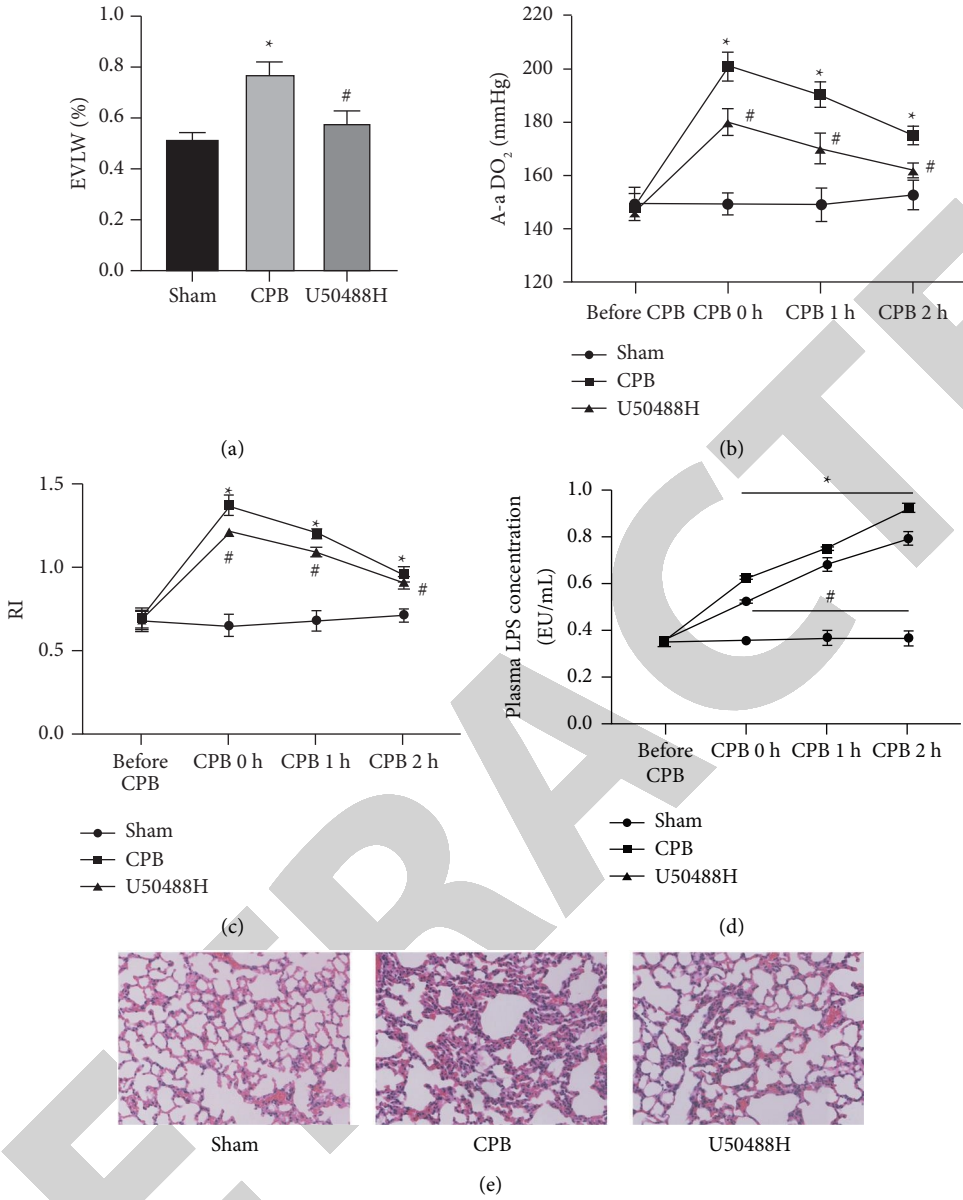

Figure 1: The KOR agonist U50448H alleviates lung injury in CPB rats. Extravascular lung water and AaDO2, RI, water maze, and neurological function scores were used to evaluate postoperative cognitive dysfunction. (a) The results of extravascular lung water; (b) the results of AaDO2; (c) the value of RI; (d) the concentrations of LPS in the rat serum; (e) the result of *H* & *E* staining (scale bar = 50 μm); $^*P < 0.05$.

expression of the *M*2 macrophage-related biomarker IL-4 in rats. Conversely, the levels of TNF-α and IL-6 were noticeably diminished and the levels of IL-4 were signally augmented by U50448H treatment (Figure 3(a), $P < 0.05$). Concordantly, immunofluorescence assay results revealed that U50448H treatment contributed to reductions in the level of the *M*1 macrophage-related biomarker iNOS and elevations in the level of the *M*2 macrophage-related biomarker CD206 in lung macrophages (Figure 3(b), $P < 0.05$).

3.4. U50448H Activates the Cholinergic Anti-inflammatory Pathway (CAP). We detected the expression of α7-nAChR, a key receptor in the CAP [21], to further ascertain whether U50448H activated the CAP. As reflected by the results of the immunofluorescence assay, no striking difference was observed in α7-nAChR expression between the Sham group and the CPB group (Figure 4(a), $P > 0.05$). However, U50448H treatment remarkably increased α7-nAChR expression (Figure 4(b), $P < 0.05$). In addition, the same trend was obtained by WB that the upregulation of α7-nAChR expression was observed under U50448H treatment (Figure 4(b), $P < 0.05$).

3.5. U50448H Represses Cell Pyroptosis Induced by the NLRP3/Caspase-1 Signaling Pathway in Lung Tissues. Finally, the relationship between NLRP3/Caspase-1-mediated cell pyroptosis and U50448H was identified in our research. Firstly, WB analyses of pyroptosis indicators

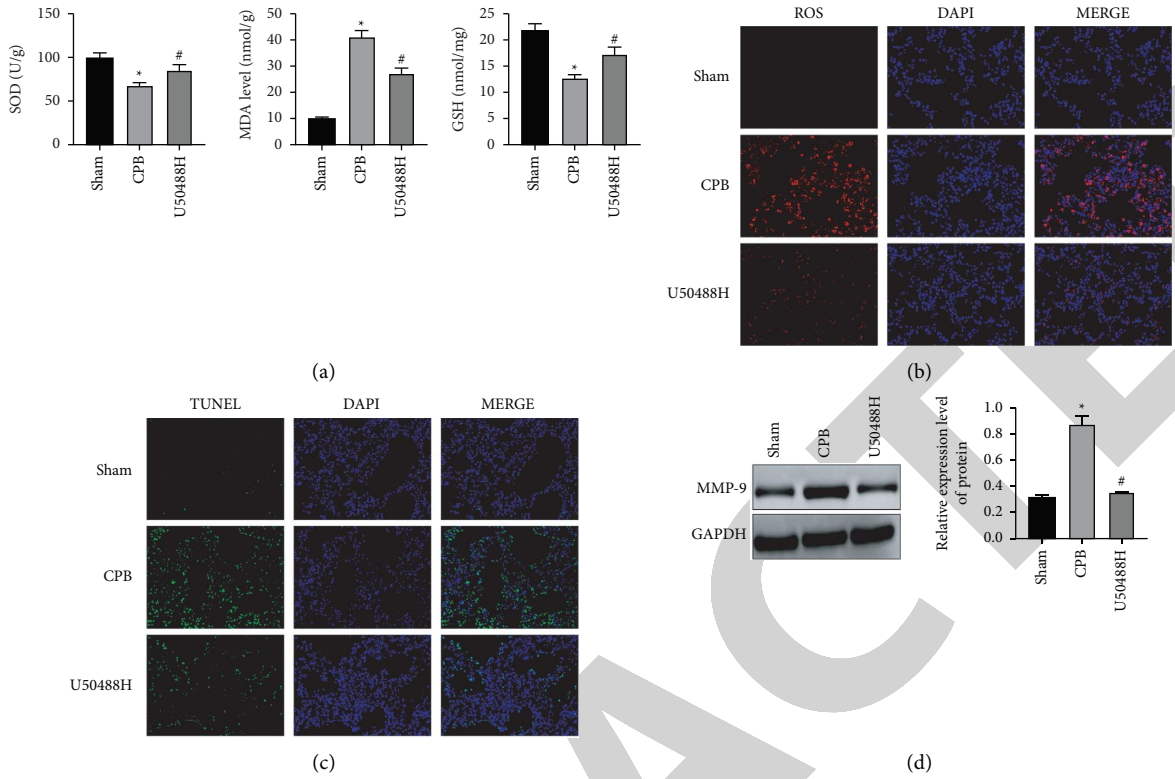

Figure 2: The KOR agonist U50448H reduces the levels of ROS and MMP-9 and apoptosis in lung tissues of ALI rats. (a) The ELISA results of GSH, MDA, and SOD levels. (b) The level of ROS detected by the immunofluorescence assay (scale bar = 50 μm); (c) the results of TUNEL staining (scale bar = 50 μm); (d) Western blot analysis of MMP9 expression. $^{*}P < 0.05$ compared to the Sham group; $^{\#}P < 0.05$ compared to the CPB group.

manifested that GSDMD-C and GSDMD-N were both upregulated in the CPB group in contrast to the Sham group, suggesting the rupture of the pulmonary cell membrane and the release of proinflammatory factors. It was illustrated that cell pyroptosis occurred during CPB-induced ALI. Moreover, U50448H treatment might prevent lung tissues from cell pyroptosis. Likewise, our findings exhibited dramatic diminishments in the expression of NLRP3, ASC, procaspase-1, and pro-IL-1β after U50448H treatment (Figure 5(b), $P < 0.05$), the same as the immunofluorescence assay results of ASC and NLRP3 in lung macrophages (Figure 5(c), $P < 0.05$). Meanwhile, conspicuously downregulated IL-1β and IL-18 (inflammatory factors) were also measured following U50448H treatment (Figure 5(d), $P < 0.05$).

4. Discussion

ALI is a clinical syndrome characterized by inflammation and increased capillary permeability, which results from a plethora of pathogenic factors, such as infection, trauma, and inhalation of noxious gases. In the United States, nearly 200,000 individuals are admitted to intensive care units annually due to ALI, and 75,000 deaths occur in spite of aggressive and effective treatment. Although reliable statistical data are not available for China, the incidence rate is assumed to be five times higher in China than in the United States because of the high prevalence of infection as well [22, 23]. CPB-induced ALI has emerged as a clinical issue that afflicts the development of cardiac surgery, directly correlates to the success or failure of surgical therapy, and largely impedes the development of cardiac surgery [24].

Current research suggests that ALI is majorly related to several pathophysiological changes, including the hyperactivation of inflammatory cells in the lung, the release of abundant inflammatory mediators, the mutual activation and interaction of a large number of inflammatory factors and effector cells, and uncontrolled inflammatory responses. Mounting studies have elucidated that CPB can stimulate severe systemic inflammatory responses. Abnormal cytokine release has been extensively accepted to be related to the contact of blood components with the artificial surface of the CPB circuit, operative trauma, abnormal shear stress, and ischemia-reperfusion damage during aortic decompression [25, 26]. At present, no effective therapeutic drugs and treatment options have been yet developed for ALI secondary to CPB. Our study identified the alleviatory role of the KOR agonist U50448H in ALI of CPB rats. Specifically, U50448H curtailed lung injury, reduced the expression of inflammatory factors, decreased apoptosis in lung tissues, partially recovered the function of the injured lung, and inhibited cell pyroptosis in the lungs of CPB rats.

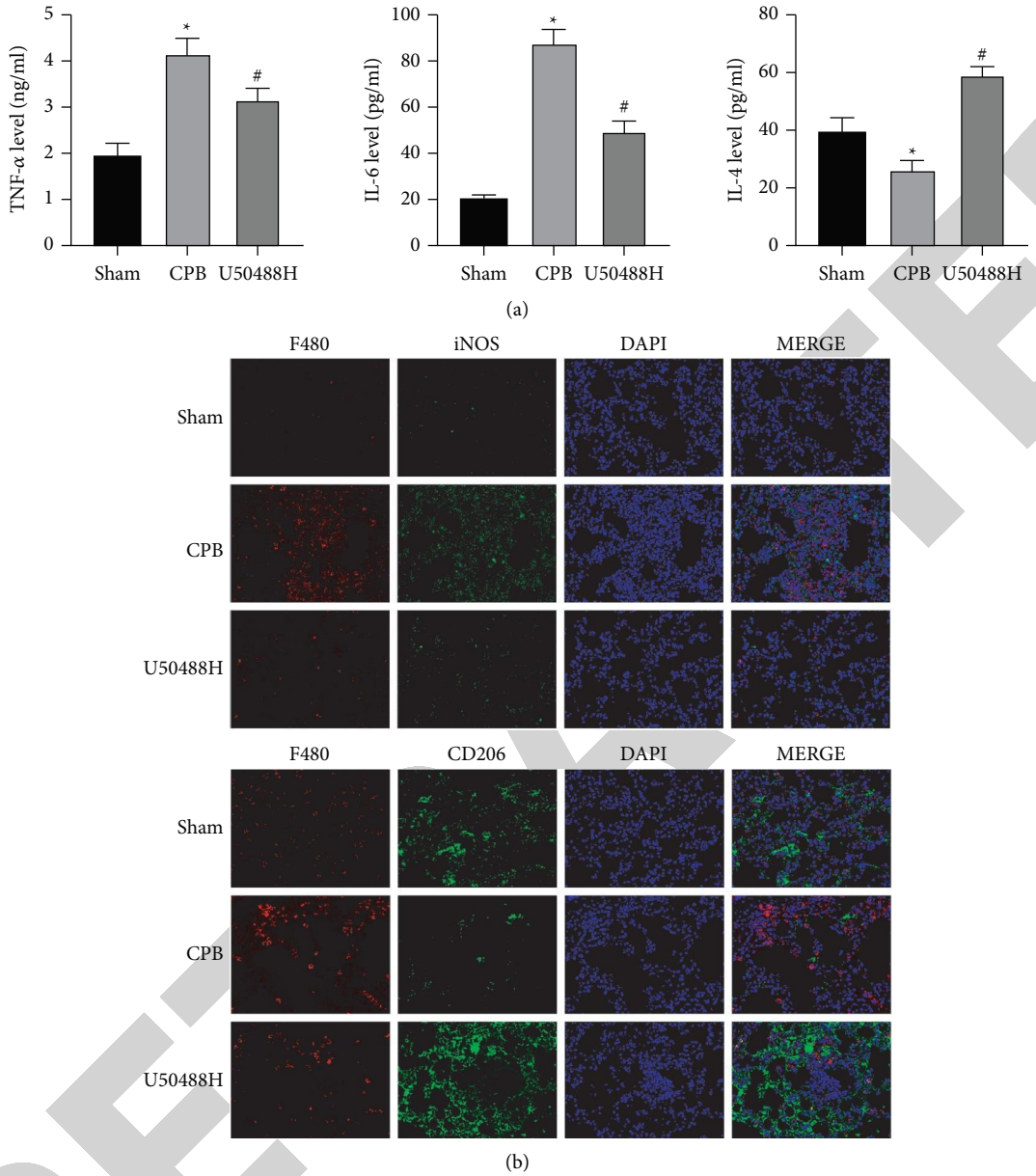

Figure 3: The KOR agonist U50448H polarizes macrophages from the M1 phenotype to the M2 phenotype. (a) The ELISA results of TNF-α, IL-6, and IL-4 levels in lung tissues; (b) the levels of iNOS and CD206 in the hippocampus detect by the immunofluorescence assay (scale bar = 50 μm). $^{*}P < 0.05$ compared with the Sham group; $^{\#}P < 0.05$ compared with the CPB group.

The effective control of macrophage activation and differentiation is useful for orchestrating the balance between inflammation and anti-inflammation in lung tissues during ALI. Lung resting macrophages ($M0$) can be polarized into proinflammatory $M1$ phenotype or anti-inflammatory $M2$ phenotype. In the pathogenesis of ALI, resident alveolar macrophages shift toward $M1$ phenotype, thus secreting large amounts of proinflammatory cytokines. At the end of the therapy phase, macrophages can shift from $M1$ to anti-inflammatory $M2$ phenotype, which decreases the inflammatory responses and accelerates lung recovery to repress lung injury. In our study, the data revealed that U50448H curbed the inflammatory response by promoting the transition of macrophages toward $M2$.

MMP-9 activity was demonstrated to be appreciably increased in a lung injury animal model [27]. In a study on ALI, the degree of lung injury was lower in MMP-9-deficient mice than in wild-type mice [28]. MMP-9 elevates the permeability of the alveolar-capillary basement membrane to cause ALI [29]. The development of CPB is accompanied by the activation of leukocytes-platelet adhesion [30] and release of inflammatory factors, cytokines, ROS, and other adhesion molecules [31]. The cytokines IL-6 and TNF-α have been unveiled to be associated with ALI secondary to CPB [32]. Of note, our research exhibited decreases in the levels of MMP-9 and ROS, and these cytokines after U50448H treatment, indicating U50448H as a promising favorable medicine for the treatment of ALI secondary to CPB.

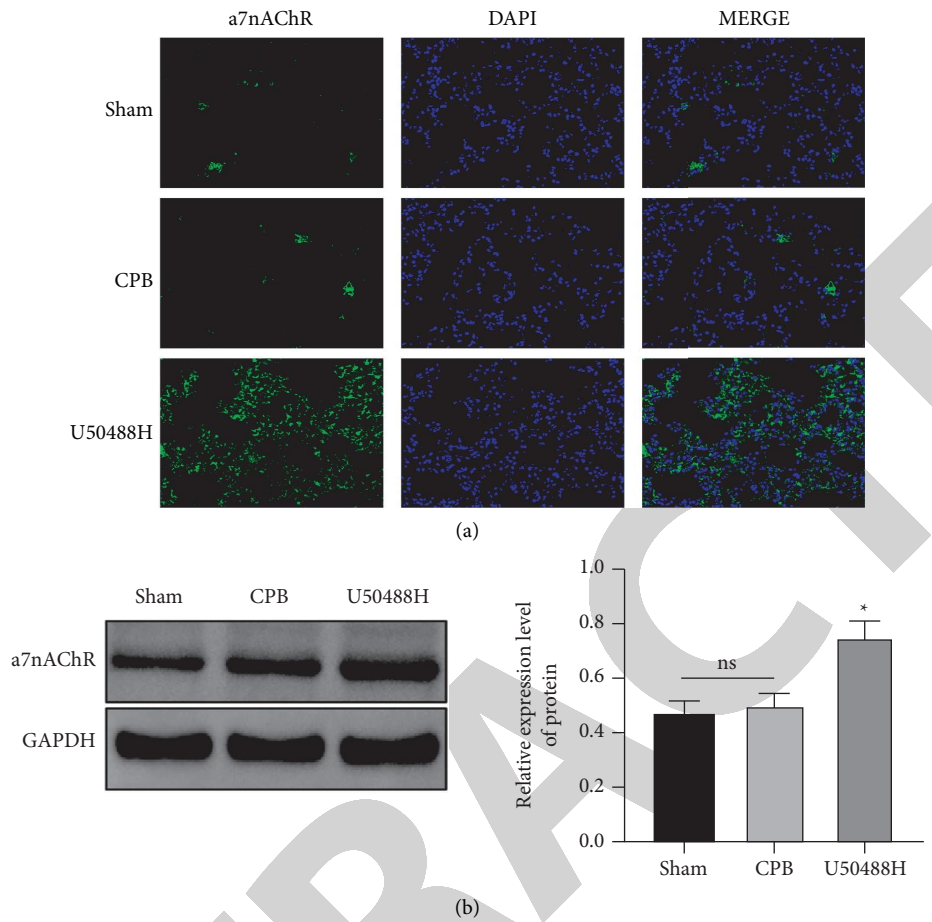

Figure 4: The KOR agonist U50448H promotes the activation of the cholinergic anti-inflammatory pathway. (a) The immunofluorescence assay results of α7-nAChR expression in lung tissues (scale bar = 50 μm); (b) Western blot results of α7-nAChR expression in lung tissues ns which indicated $P > 0.05$; $^{*}P < 0.05$ compared with the CPB group.

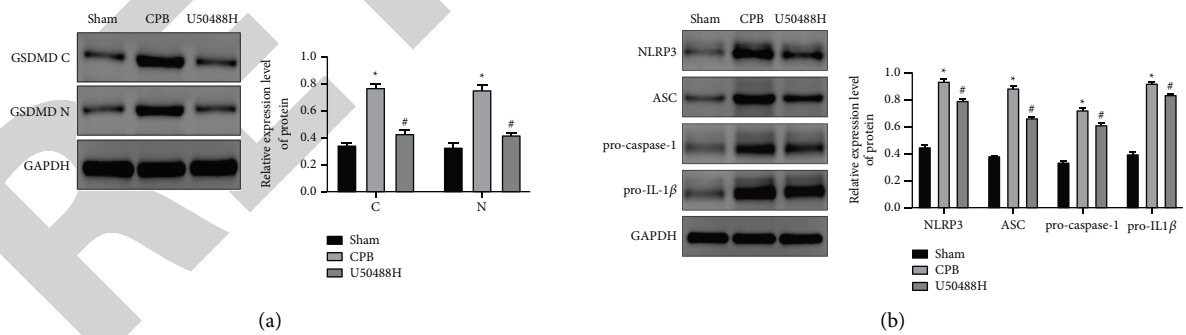

Figure 5: Continued.

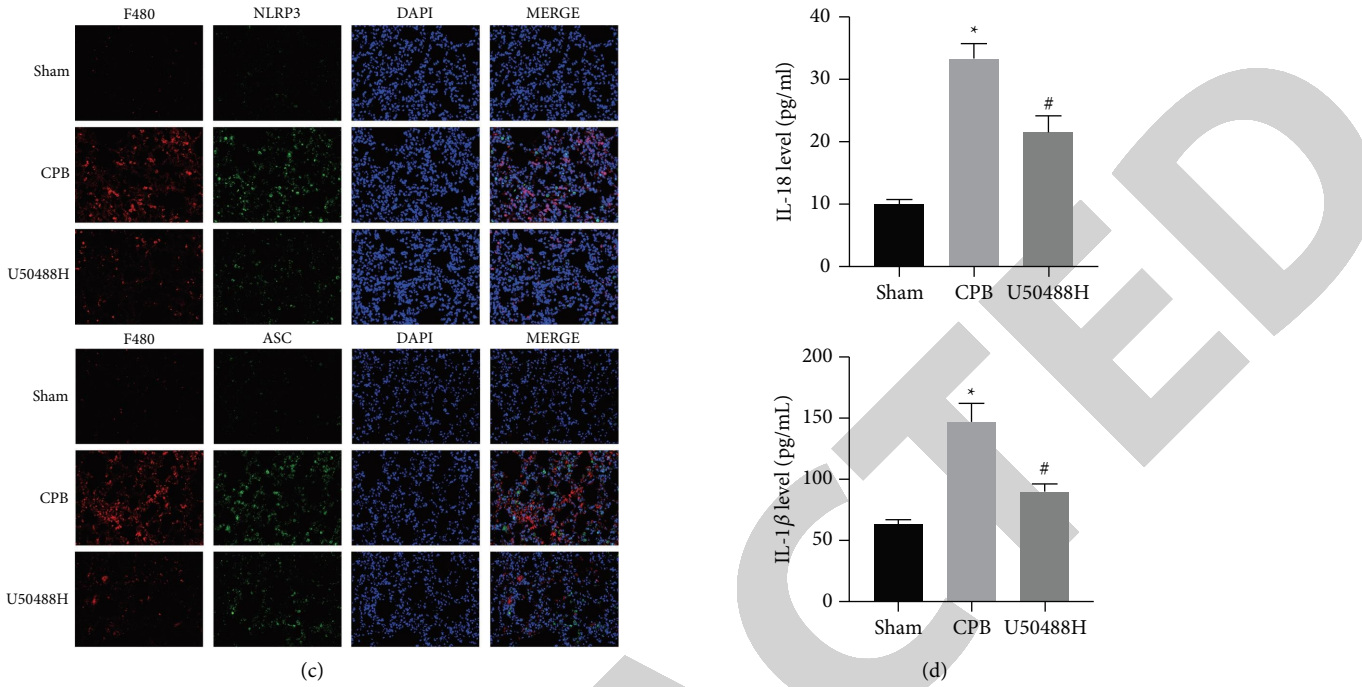

Figure 5: The KOR agonist U50448H decreases the level of ASC-NLRP3 inflammasomes. (a) Western blot results of GSDMS-C and GSDMS-N expression in lung tissues; (b) Western blot results of NLRP3, ASC, pro-caspase-1, and pro-IL-1β expression in lung tissues; (c) immunofluorescence assay results of NLRP3 and ASC proteins in lung macrophages (scale bar = 50 μm); (d) ELISA results of IL-18 and IL-1β. $^{*}P < 0.05$ compared with the Sham group; $^{\#}P < 0.05$ compared with the CPB group.

The CAP is an endogenous neuro-feedback pathway that is regulated by the release of ACh from the vagus nerve to the peripheral tissues as the body is exposed to destructive stimuli that trigger inflammatory responses. ACh can bind to the corresponding receptors on the surface of macrophages or other immune cells and exert anti-inflammatory effects via a series of pathophysiological responses within the body. During ALI, elevated ACh activity results in the activation of inflammatory cells, including macrophages and neutrophils, and inhibits the secretion of proinflammatory factors and chemokines related to inflammatory cells such as alveolar macrophages, which, therefore, leads to the attenuation of inflammation and injury in the lung. Intriguingly, the CAP was observed in our study to be activated by U50448H treatment.

Pyroptosis, a cell necrosis form, is manifested by membrane rupture and the release of intracellular proinflammatory contents and can be induced by the spontaneous activation of the NLRP3 inflammasome [33]. As an assembly of NLRP3, ASC, and pro-Caspase-1 with a molecular weight of approximately 700 KDa, the NLRP3 inflammasome is also a cytoplasmic pattern recognition receptor that is expressed in a variety of cells, including monocytes/macrophages, microglia, lymphocytes, neutrophils, and dendritic cells. The *C*-terminus of NLRP3 recognizes different pathogen-associated molecular patterns (PAMPs) and danger-associated molecular patterns (DAMPs) in the cytoplasm, exposes its effector structural domains through its own oligomerization, and recruits ASC. ASC is recruited to convene pro-caspase-1 through the CARD structural domain and co-assemble into NLRP3 inflammasomes. Upon inflammasome activation by stimulation, pro-caspase-1 is cleaved to caspase-1 through self-shearing and activates pro-IL-1β and pro-IL-18 to produce mature IL-1β and IL-18, thus culminating in inflammatory responses and tissue damage [23, 34]. Our results unraveled that U50448H could downregulate the *C* and *N* terminals of GSDMD, NLRP3, ASC, pro-caspase-1, and pro-IL-1β, as well as block cell pyroptosis, indicating the repressive effects of U50448H on NLRP3 inflammasome-induced cell pyroptosis during ALI secondary to CPB. This is probably because NLRP3 can manipulate the production of proinflammatory cytokines, which maintains the accumulation of inflammatory factors to a certain extent by regulating extracorporeal circulation and diminishes the occurrence of inflammatory diseases [35]. The research of Zhou et al. validated that miR-495 attenuates cardiac microvascular endothelial injury and represses inflammatory cells by negatively modulating the expression of the NLRP3 inflammatory signaling pathway and reducing the levels of proinflammatory factors (TNF-a, IL-6, and IL-LP) in alveolar macrophages. This finding suggests that the modulation of NLRP3 can delay the inflammatory response induced by ALI and can be a potential research target for protection against ALI.

5. Conclusion

It was demonstrated in the present study that the KOR agonist U50448H improved lung function, mitigated lung injury, decreased ROS and MMP-9 expression in lung

tissues, augmented macrophage polarization from *M*1 to *M*2, and reduced NLRP3 inflammasomes in CPB rats, proposing U50448H as a promising drug for the treatment of ALI secondary to CPB. In the future, more in-depth studies on the mechanisms underlying ALI are warranted to further clarify the mechanisms of action of these biomarkers and targets in the early detection and prevention of lung injury and other diseases.

Abbreviations

ALI: Acute lung injury
CPB: Cardiopulmonary bypass
ICU: Intensive care unit
KOR: κ-Opioid receptor
AaDO2: Alveolar-arterial oxygen pressure difference
WB: Western blot
EVLW: Extravascular lung water
RI: Respiratory index
IACUC: Institutional animal care and use committee
Hb: Hemoglobin
W/*D*: Wet-to-dry
PAMPs: Pathogen-associated molecular patterns
DAMPs: Damage-associated molecular patterns.

Data Availability

No data were used to support this study.

Conflicts of Interest

All authors declared that they have no financial conflicts of interest.

Authors' Contributions

Guang-Jie Gao drafted and revised the manuscript. Dan-Dan Song, Long Li, Fan Zhao, and Ying-Jie Sun conceived and designed this article, and were in charge of syntax modification and revise of the manuscript. All the authors have read and agreed to the final version manuscript.

Acknowledgments

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References

[1] C. Schlensak and F. Beyersdorf, "Lung injury during CPB: pathomechanisms and clinical relevance," *Interactive Cardiovascular and Thoracic Surgery*, vol. 4, 2005.

[2] S. C. Clark, "Lung injury after cardiopulmonary bypass," *Perfusion*, vol. 21, no. 4, pp. 225–228, 2006.

[3] M. Ranucci, G. Soro, A. Frigiola et al., "Normothermic perfusion and lung function after cardiopulmonary bypass: effects in pulmonary risk patients," *Perfusion*, vol. 12, no. 5, pp. 309–315, 1997.

[4] K. Wang, Z. Liu, M. Zhao et al., "κ-opioid receptor activation promotes mitochondrial fusion and enhances myocardial resistance to ischemia and reperfusion injury via STAT3-OPA1 pathway," *European Journal of Pharmacology*, vol. 874, Article ID 172987, 2020.

[5] J. Fan, L. Li, P. Qu, Y. Diao, and Y. Sun, "κ-opioid receptor agonist U50488H attenuates postoperative cognitive dysfunction of cardiopulmonary bypass rats through the PI3K/AKT/Nrf2/HO-1 pathway," *Molecular Medicine Reports*, vol. 23, no. 4, pp. 293–312, 2021.

[6] M. C. Olianas, S. Dedoni, R. Ambu, and P. Onali, "Agonist activity of N-desmethylclozapine at delta-opioid receptors of human frontal cortex," *European Journal of Pharmacology*, vol. 607, no. 1-3, pp. 96–101, 2009.

[7] L. C. Price, D. F. McAuley, P. S. Marino, S. J. Finney, M. J. Griffiths, and S. J. Wort, "Pathophysiology of pulmonary hypertension in acute lung injury," *American Journal of Physiology—Lung Cellular and Molecular Physiology*, vol. 302, no. 9, pp. L803–L815, 2012.

[8] X. Zhang, Y. Sun, D. Song, and Y. Diao, "κ-opioid receptor agonists may alleviate intestinal damage in cardiopulmonary bypass rats by inhibiting the NF-κB/HIF-1α pathway," *Experimental and Therapeutic Medicine*, vol. 20, no. 1, pp. 325–334, 2020.

[9] Y. Feng, X. He, Y. Yang, D. Chao, H. Lazarus, and Y. Xia, "Current research on opioid receptor function," *Current Drug Targets*, vol. 13, no. 2, pp. 230–246, 2012.

[10] F. Li, M. Xu, M. Wang et al., "Roles of mitochondrial ROS and NLRP3 inflammasome in multiple ozone-induced lung inflammation and emphysema," *Respiratory Research*, vol. 19, no. 1, pp. 230–312, 2018.

[11] J. Fukumoto, I. Fukumoto, P. T. Parthasarathy et al., "NLRP3 deletion protects from hyperoxia-induced acute lung injury," *American Journal of Physiology—Cell Physiology*, vol. 305, no. 2, pp. C182–C189, 2013.

[12] M. T. Kuipers, H. Aslami, J. Janczy et al., "Ventilator-induced lung injury is mediated by the NLRP3 inflammasome," *Anesthesiology*, vol. 116, no. 5, pp. 1104–1115, 2012.

[13] E. Theofani, M. Semitekolou, I. Morianos, K. Samitas, and G. Xanthou, "Targeting NLRP3 inflammasome activation in severe asthma," *Journal of Clinical Medicine*, vol. 8, no. 10, p. 1615, 2019.

[14] A. Dorhoi, G. Nouailles, S. Jorg et al., "Activation of the NLRP3 inflammasome by *Mycobacterium tuberculosis* is uncoupled from susceptibility to active tuberculosis," *European Journal of Immunology*, vol. 42, no. 2, pp. 374–384, 2012.

[15] J.-F. Xu, G. R. Washko, K. Nakahira et al., "Statins and pulmonary fibrosis: the potential role of NLRP3 inflammasome activation," *American Journal of Respiratory and Critical Care Medicine*, vol. 185, no. 5, pp. 547–556, 2012.

[16] D. F. Senra, M. Katz, G. H. Passerotti et al., "A rat model of acute lung injury induced by cardiopulmonary bypass," *Shock*, vol. 16, no. 3, pp. 223–226, 2001.

[17] D. Song, X. Liu, Y. Diao et al., "Hydrogen-rich solution against myocardial injury and aquaporin expression via the PI3K/Akt signaling pathway during cardiopulmonary bypass in rats," *Molecular Medicine Reports*, vol. 18, no. 2, pp. 1925–1938, 2018.

[18] S. Ingelse, M. M. Ijiand, L. Van Loon, R. Bem, J. Van Woensel, and L. M. Joris, "Effects of early fluid restriction in mechanically ventilated lambs with ARDS," in *D108. Mechanism of Lung Injury*American Thoracic Society, New York, NY, USA, 2019.

[19] W. Isakow and D. P. Schuster, "Extravascular lung water measurements and hemodynamic monitoring in the critically ill: bedside alternatives to the pulmonary artery catheter,"

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Retraction

Retracted: Effect of Enalapril Combined with Bisoprolol on Cardiac Function and Inflammatory Indexes in Patients with Acute Myocardial Infarction

Evidence-Based Complementary and Alternative Medicine

Received 20 June 2023; Accepted 20 June 2023; Published 21 June 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.

References

[1] K. Huang, Y. Zhang, F. Yang, X. Luo, W. Long, and X. Hou, "Effect of Enalapril Combined with Bisoprolol on Cardiac Function and Inflammatory Indexes in Patients with Acute Myocardial Infarction," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 6062450, 7 pages, 2022.

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Volume 2022, Article ID 6062450, 7 pages
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Research Article

Effect of Enalapril Combined with Bisoprolol on Cardiac Function and Inflammatory Indexes in Patients with Acute Myocardial Infarction

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Objective. The use of enalapril in combination with bisoprolol in patients with acute myocardial infarction (AMI) was studied for its effect on cardiac function and inflammatory parameters. *Methods*. Sixty-two cases of AMI patients admitted to our clinic from November 2019 to November 2021 were selected for the study and grouped according to the random number table method, those enrolled were given conventional treatment such as oxygenation, absolute bed rest, and sedation, and administered low molecular heparin, aspirin, atorvastatin calcium tablets, clopidogrel, and nitrates. The control group (31 cases) was treated with enalapril maleate folic acid tablets, and the treatment group (31 cases) was treated with bisoprolol fumarate tablets on top of the control group, and the efficacy, adverse effects, cardiac function, inflammatory indexes, and oxidative stress indexes of the two arms were contrasted. *Results*. The incidence of adverse reactions in the therapy cohort was 12.90% higher than that in the controlled arm, but the discrepancy was not medically relevant ($P < 0.05$). The SOD level was larger than the concentration in the corresponding drug therapy group, and the MDA level was lower than the concentration in the respective test cases ($P < 0.05$); the incidence of 12.90% adverse reactions in the treatment period was lower than that of 16.13% in the specific drug therapy group, but the variance was not scientifically evident ($P > 0.05$). *Conclusion*. Enalapril application combined with bisoprolol in AMI patients is beneficial to boost the efficacy, promote the improvement of cardiac function, reduce the inflammatory response, and improve the oxidative stress with fewer adverse effects, which can ensure the therapeutic security.

1. Introduction

Acute myocardial infarction (AMI) is one of the common and frequently-occurring diseases in the clinic. Patients often present with severe and persistent pain behind the sternum, accompanied by symptoms such as heart failure, arrhythmia, and circulatory function decline [1]. Myocardial infarction is one of the most common clinical causes of chronic heart failure, and more than 50% of heart failure patients die within 5 years of diagnosis. Studies have found that once AMI occurs, a series of changes can occur in the structure and morphology of the left ventricular infarcted area and the noninfarcted area, which is called left ventricular remodeling [2]. One of the common complications of AMI is cardiac insufficiency, which can increase the mortality rate of patients. Therefore, the prevention of cardiac insufficiency should be the main content in the clinical treatment of AMI. The first step in the treatment of AMI is to quickly identify the disease through biological indicators, electrocardiogram, etc., and give drugs to relieve ischemic pain, evaluate hemodynamic indicators, and correct possible abnormalities. Although it has been reported that the use of drug therapy during hospitalization can prolong the survival time of AMI patients and help reduce the mortality rate, problems such as recurrence, cardiac structural reconstruction and cardiac function changes still exist [3]. Angiotensinase inhibitor (ACEI) can inhibit the progressive left ventricular remodeling of AMI. As an ACEI, enalapril can control the scope of myocardial infarction to achieve the purpose of

reducing mortality [4, 5]. β-blockers are beneficial to reduce the recurrence of myocardial ischemia, and bisoprolol, as a β-blocker, can effectively reduce the risk of arrhythmia. The efficacy of the combination of the two drugs in the treatment of AMI has been clinically recognized, but there are few reports on the effect of the combination therapy on the inflammatory indexes in patients with AMI. This time, 62 AMI patients admitted to our hospital from November 2019 to November 2021 were selected to study the effects of enalapril combined with bisoprolol on cardiac function and inflammatory indexes in AMI patients. The report is as follows.

2. Materials and Methods

2.1. General Materials. Sixty-two patients with AMI admitted to our hospital from November 2019 to November 2021 were selected for the study, and the inclusion criteria were (1) all met the diagnostic criteria for AMI in the Expert Consensus on Integrated Chinese and Western Medicine Treatment of Acute Myocardial Infarction [6]; (2) age >18 years; (3) New York Heart Association (NYHA) class II–IV; (4) onset to admission time <6 h; (5) patient informed consent; (6) complete patient medical records and other information. Exclusion criteria: (1) combination of malignancy; (2) combination of hepatic and renal insufficiency; (3) combination of psychiatric or hematologic disorders; (4) combination of severe atrioventricular block; (5) allergy to this study drug; (6) presence of shock symptoms. The control group (31 cases) consisted of 18 males and 13 females, aged 48–81 years, with a mean of (60.97 ± 2.48) years; infarct sites: 13 cases in the inferior wall, 7 cases in the anterior interstitial wall, 8 cases in the anterior wall, and 3 cases in the extensive anterior wall, according to the random number table method. In the treatment group (31 cases), there were 16 males and 15 females, aged 51–78 years, with a mean of (60.86 ± 2.52) years; infarct sites: 14 cases in the inferior wall, 8 cases in the anterior interstitial wall, 7 cases in the anterior wall, and 2 cases in the extensive anterior wall. No noticeable discrepancy was detected when comparing the data of the two types of groups, $P > 0.05$. This study was approved by the ethics committee.

2.2. Methods. All the participants were given routine treatment such as oxygen inhalation, absolute bed rest and sedation, low molecular weight heparin (Shenzhen Saibaoer Bio-Pharmaceutical Co. Ltd.; National Medicine Zhunzi H20060191), aspirin (Heilongjiang Fuhe Pharmaceutical Group Co. Ltd.; Sinopharm approved H23023494), atorvastatin calcium tablets (Guangdong Dongguang Pharmaceutical Co. Ltd.; Sinopharm H20213513), clopidogrel (Shandong New Times Pharmaceutical Co. Ltd.; Sinopharm H20173366), and nitrates treat. On this basis, the control group was additionally treated with enalapril maleate and folic acid tablets (Shenzhen Osa Pharmaceutical Co., Ltd.; National Medicine Zhunzi H20103724; enalapril maleate 10 mg, folic acid 0.4 mg) at a dose of 5 mg/time–10 mg/time, 2 times a day. The treatment group was additionally treated with bisoprolol fumarate tablets (Beijing Huasu Pharmaceutical Co. Ltd.; Guoyao Zhunzi H20023132; 2.5 mg) on the basis of the control group, the dose ranged from 2.5 mg/time to 5.0 mg/time, 4 times a day Second-rate. All participants received treatment for 3 months.

2.3. Observation Indexes

2.3.1. Treatment Effect. The treatment was evaluated by NYHA cardiac function grading 3 months after treatment: disappearance of arrhythmia and heart failure, reduction of NYHA cardiac function grading ≥2 or normal cardiac function test results were considered effective; significant improvement of arrhythmia and heart failure and reduction of NYHA cardiac function grading I were considered effective; not meeting the above criteria were considered ineffective. The total effective rate = the number of cases (effective + effective)/sample number × 100%.

2.3.2. Cardiac Function. Echocardiography was performed 1 day before treatment and 3 months after treatment. The equipment used a UGU-100 color Doppler ultrasound system (Shenzhen Aosheng Medical Technology Co. Ltd.; Guangdong Machinery Note 20212060678) to measure left ventricular end-diastolic phase Left ventricular end-diastolic diameter (LVED), left ventricular ejection fraction (LVEF), left ventricular end-systolic diameter (left ventricular end-systolic diameter), and left ventricular mass index (LVM).

2.3.3. Inflammation Indicators. 3 ml fasting venous blood was collected from patients 1 day before treatment and 3 months after treatment, and after centrifugation (3500 r/min, time 10 min, radius 14 cm), the supernatant was taken and stored at −20°C for inspection; equipment: EC9400 automatic biochemical analyzer (Guangzhou Exxon Biotechnology Co., Ltd.; Guangdong Machinery Standard 20152221248) and MR-96A Type Microplate Reader (Shenzhen Mindray Biomedical Electronics Co. Ltd.; Guangdong Machinery Standard 20192220393). The serum level of interleukin-6 (IL-6) was determined by enzyme-linked immunosorbent assay; the serum *N*-terminal natriuretic peptide precursor (NT-) was determined by the electrochemiluminescence double-antibody sandwich method. The proBNP level and serum C reactive protein (CRP) level were determined by turbidimetry; the kits were all provided by Shanghai Zhicheng Biotechnology Co. Ltd., and the above tests were performed in strict accordance with the kit instructions.

2.3.4. Oxidative Stress. 3 ml fasting venous blood was collected from patients 1 day before treatment and 3 months after treatment, and the supernatant was collected after centrifugation (speed 3000 r/min, time 10 min, radius 10 cm) for testing; EC9400 automatic biochemical analyzer (Guangzhou Exxon Biotechnology Co., Ltd.; Guangdong Machinery Note 20152221248) was used, and serum levels of

superoxide dismutase (SOD) and malondialdehyde (MDA) were determined by radioimmunoassay.

2.3.5. Adverse Reactions. The occurrence of hypotension, sinus bradycardia, cough, and rash in patients was recorded, and the incidence was calculated.

2.4. Statistical Analysis. The study data were analyzed by SPSS19.0 software, and the measurement data (conforming to normal distribution) and count data were expressed as ($\pm s$) and %, respectively, by t and χ^2 tests. $P < 0.05$ means the discrepancies were of statistical importance.

3. Results

3.1. Contrast of the Therapeutic Efficiency among the Two Sets of Groups. The aggregate effective rate of 93.55% in the treatment cohort was superior to 67.74% in the control cohort ($P < 0.05$) (Figure 1).

3.2. Cooperation of Cardiac Functionality between the Two Arms. Compared with the levels of LVEF, LVED, LVES, and LVM, there was no significant difference between the two groups on the first day of treatment ($P > 0.05$). The level of LVM was lower ($P < 0.05$); the level of LVEF in the treatment group was higher than that in the control group 3 months after treatment, and the levels of LVED, LVES, and LVM were lower than those in the control group ($P < 0.05$), as shown in Figure 2.

3.3. Comparison of Inflammatory Indexes between the Two Groups. Compared with the levels of NT-proBNP, CRP, and IL-6, there was no significant difference between the two groups on the first day of treatment ($P > 0.05$). The levels of IL-6 were lower ($P < 0.05$); the levels of NT-proBNP, CRP, and IL-6 in the treatment group were lower than those in the control group 3 months after treatment ($P < 0.05$), as shown in Figure 3.

3.4. Oxidative Stress Index Contrast between the Two Sets of Groups. Comparing the levels of SOD and MDA, there was no significant difference between the two groups on the first day of treatment ($P > 0.05$); the SOD level in the treatment group was higher than that in the control group 3 months after treatment, and the MDA level was lower than that in the control group ($P < 0.05$), as shown in Table 1.

3.5. Adverse Reaction Situation Contrasts by Two Groups. The occurrence rate of 12.90% adverse reactions in the therapy cohort was lower than that of 16.13% in the reaction cohort, but the discrepancy was not statistical sense ($P > 0.05$) (Table 2).

4. Discussion

AMI has a high incidence in China, formed by the development of chronic heart failure; patients mostly show symptoms such as shortness of breath and dyspnea, and clinical examination reveals an enlarged left ventricle with cardiogenic shock or pulmonary edema, etc. The pathogenesis is complex and is generally considered to be closely related to infection, atrial fibrillation, and heart rate arrhythmias. It has been found that once AMI occurs, it can lead to progressive left ventricular dilatation reconstruction, which is an important mechanism accompanying heart failure in patients with this disease and is an independent marker of death in AMI patients [7–10]. Left ventricular remodeling mainly includes the following aspects: (1) secondary dilatation of distant noninfarcted hypertrophic myocardium is seen; (2) expansion of the infarct zone occurs; (3) fibrosis of the myocardial interstitium occurs and the contractility is significantly reduced; (4) spherical changes in the left ventricular structure, i.e., a tendency to spherical shape from the original normal long oval shape [7–10]. Clinical treatment of AMI mostly focuses on controlling blood pressure, anti-infection, maintaining blood circulation, and controlling blood glucose to correct the patient's cerebral hypoxia and ischemia, which helps to control the degree of brain injury in order to reduce mortality [11]. After the onset of AMI patients, their neuroendocrine is in an activated state, and neurohumoral regulatory factors and matrix metalloproteinases all play an important role in left ventricular remodeling. Myocardial infarction occurs due to the synthesis and secretion of a large number of catecholamines, resulting in a continuous state of sympathetic overactivation, causing vasoconstriction and tachycardia, which can increase the myocardial ischemic burden and, to a certain extent, myocardial oxygen consumption, leading to further myocardial injury or necrosis and myocardial fibroblast proliferation, resulting in ventricular remodeling [12–15]. Thus, clinical treatment of AMI needs to focus on alleviating or reversing left ventricular remodeling.

In this study, the treatment group was treated with enalapril combined with bisoprolol, and the results showed that 93.55% of the total effective rate in the treatment group was higher than 67.74% in the control group; the LVEF level at 3 months after treatment was higher in the treatment group than in the control group, and the LVED, LVES, and LVM levels were lower than those in the control group; the incidence of 12.90% adverse reactions in the treatment group was lower than that of 16.13% in the control group, but the difference was not statistically significant. It is suggested that the combination of enalapril and bisoprolol in the treatment of AMI can promote efficacy and improve the cardiac function of patients without increasing the adverse effects, which can guarantee the safety of treatment. The reason for this is that enalapril is a kind of ACEI, which can inhibit the release of angiotensin II to control the abnormal sympathetic nerve activity, and at the same time, it can promote vasodilation, which is conducive to increasing coronary artery perfusion in the infarct area and achieving the purpose of

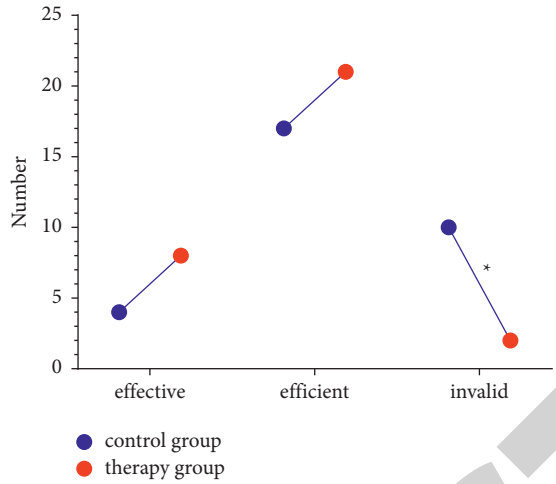

Figure 1: Treatment effectiveness.

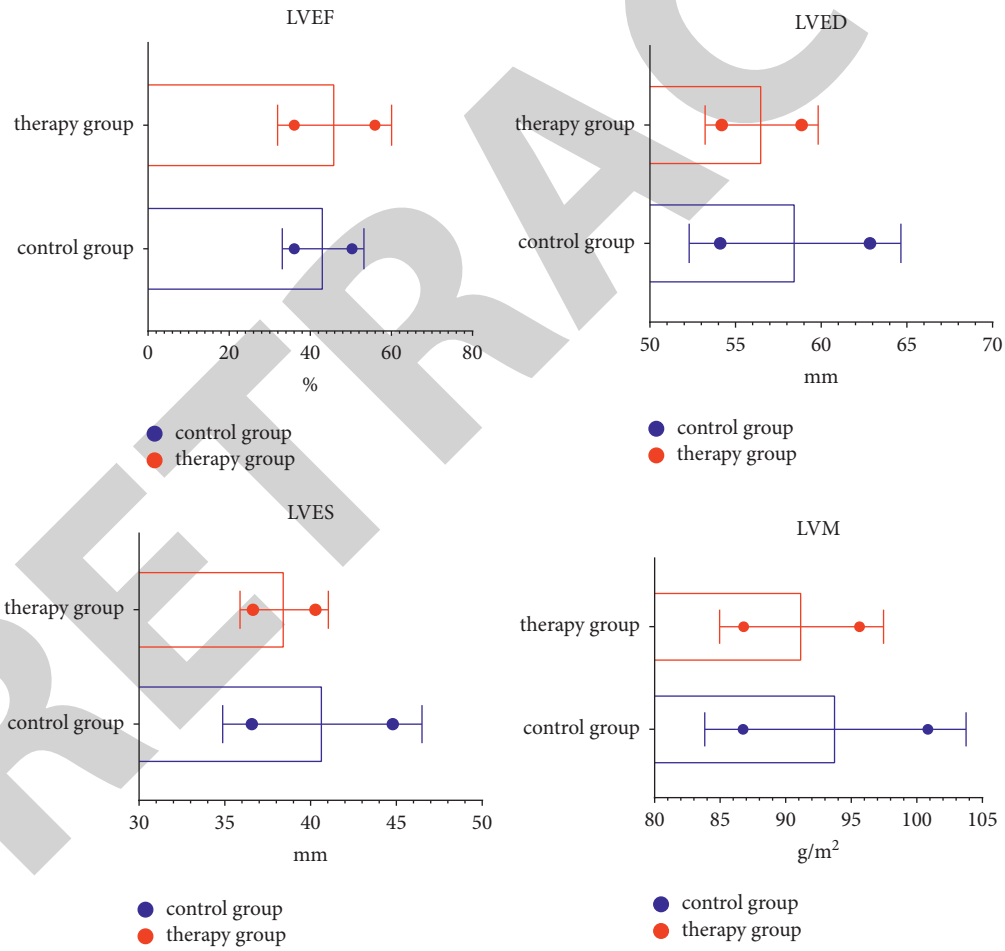

Figure 2: Cardiac function.

reducing the heart burden. In addition, enalapril administration strengthens ventricular systolic function and reduces the risk of myocardial ischemia-reperfusion [16]. Bisoprolol, as a highly selective β-blocker, has a higher cardioselectivity and longer effective duration of action after administration, which can produce inhibition of sympathetic nerve activity, induce a decrease in heart rate and prolong ventricular diastole for the purpose of improving myocardial blood supply, which can limit the infarct size and reduce arrhythmic conditions. In addition, bisoprolol modulates the pressure

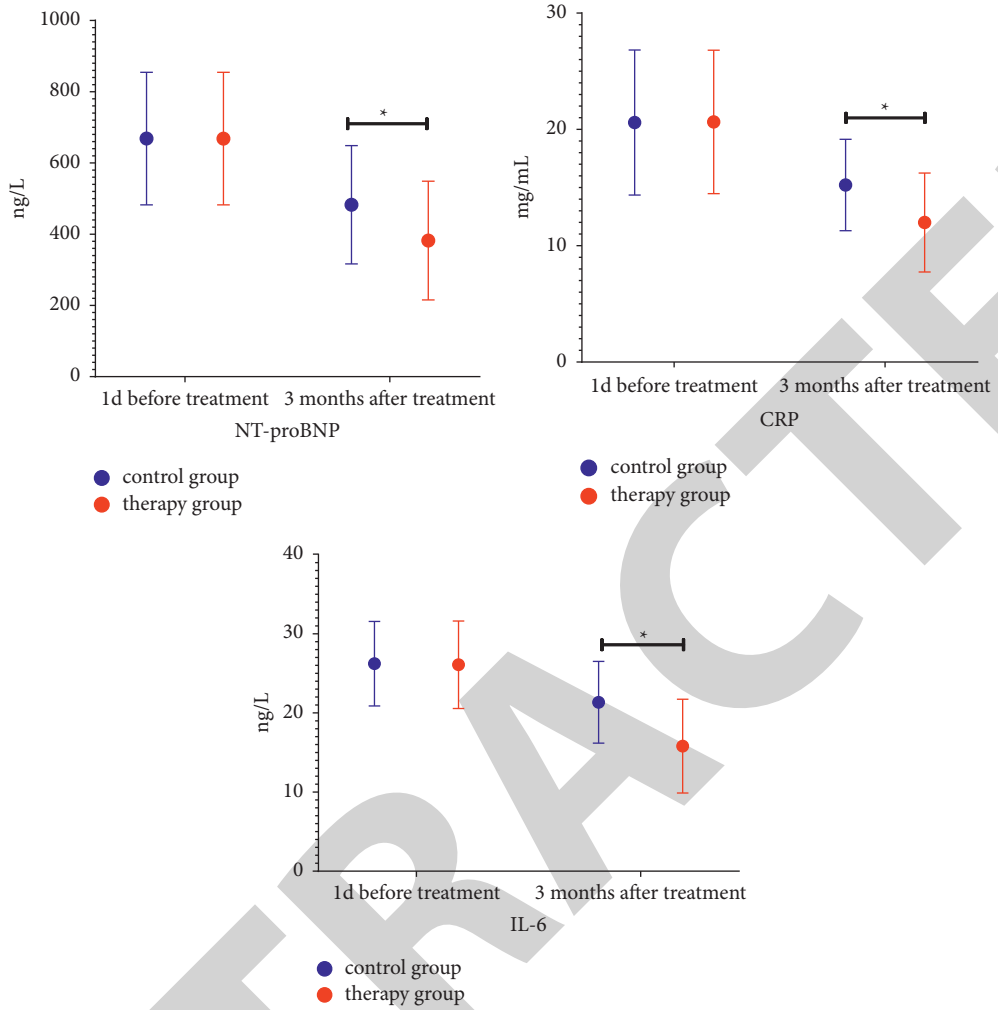

Figure 3: Inflammation indicators.

Table 1: Oxidative stress index comparison in the two types of groups ($\overline{x} \pm s$).

Time	Group	SOD (IU/ml)	MDA (nmol/ml)
1d before treatment	Control group ($n = 31$)	65.58 ± 7.15	6.55 ± 0.88
	Treatment group ($n = 31$)	65.29 ± 7.54	6.57 ± 0.79
t		0.155	0.094
P value		0.877	0.925
3 months after treatment	Control group ($n = 31$)	89.54 ± 10.29	5.11 ± 0.42
	Treatment group ($n = 31$)	104.26 ± 9.78	4.01 ± 0.66
T		5.773	7.828
P value		0.001	0.001

Table 2: Adverse reactions situation comparison between two sets of groups (n (%)).

Group	Number of cases	Low blood pressure	Sinus bradycardia	Cough	Rash	Incidence
Control group	31	1 (3.23)	1 (3.22)	2 (6.45)	1 (3.23)	5 (16.13)
Treatment group	31	1 (3.22)	1 (3.23)	1 (3.22)	1 (3.23)	4 (12.90)
X^2						0.130
P value						0.718

reflex mechanism mediated by the vagus nerve and blocks the myocardial toxic effects of early overactivated sympathetic nerves in patients with AMI to improve myocardial remodeling [17]. NT-proBNP is currently recognized as one of the semester markers of heart failure and can be secreted in large amounts once neurosecretory activation occurs, and

neuroendocrine activation can directly lead to increased risk of heart failure [18–20]. Both CRP and IL-6 are proinflammatory response factors, which can reflect the degree of inflammatory response stimulation in AMI, and have a certain predictive effect on prognosis [21]. This study found that the levels of NT-proBNP, CRP, and IL-6 in the treatment group were lower than those in the control group 3 months after treatment, suggesting that enalapril combined with bisoprolol in the treatment of AMI can improve the inflammatory response. Analysis of the reasons, bisoprolol can reduce sympathetic nerve activity, promote the improvement of myocardial diastolic function, reduce myocardial oxygen consumption, and at the same time can regulate the level of myocardial β1 receptors, achieve the purpose of improving myocardial autonomic regulation, reduce myocardial damage, and then downregulation of NT-proBNP, CRP., and IL-6 expression [22, 23]. SOD is a kind of metalloprotease, a natural oxygen free radical scavenger, which can accurately predict the oxidative stress state of the body, and its level is proportional to the anti-peroxidation ability of cardiomyocytes. MDA is a membrane lipid peroxidation product, which can free proteins and amino acids, promote the cross-linking of the above products, damage the vascular basement membrane, increase its thickness, and aggravate the degree of oxidative stress in the body. This study found that the SOD level in the treatment group was higher than that in the control group 3 months after treatment, and the MDA level was lower than that in the control group. Analysis of the reasons shows that after administration of bisoprolol, it can activate the activity of SOD, reduce the MDA produced by tissue hypoxia, improve arterial blood flow, and promote vasodilation in ischemic sites to protect cardiomyocytes [24, 25]. Secondly, the drug absorption and utilization rate of enalapril is high, and it can be rapidly hydrolyzed into enalapril after entering the human body, which is beneficial to reduce the vascular resistance of the body, so as to promote vascular expansion, increase cardiac output, and improve oxidative stress. The purpose of the state can eliminate MDA and regulate vascular endothelial function. The authors analyzed that the combination of enalapril and bisoprolol in the treatment of AMI can improve the efficacy, but the safety of drug combination therapy and monotherapy is not clear, which may be due to the small number of samples selected in this study.

Taken together, the application of enalapril in combination with bisoprolol for AMI promotes improved efficacy, facilitates improved cardiac function, and promotes the reduction of inflammatory response and oxidative stress.

Data Availability

All the data generated or analysed during this study are included in this published article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] M. D. Solomon, E. J. McNulty, J. S. Rana et al., "The covid-19 pandemic and the incidence of acute myocardial infarction," *New England Journal of Medicine*, vol. 383, no. 7, pp. 691–693, 2020.

[2] J. Zeng, J. Huang, and L. Pan, "How to balance acute myocardial infarction and COVID-19: the protocols from Sichuan provincial people's hospital," *Intensive Care Medicine*, vol. 46, no. 6, pp. 1111–1113, 2020.

[3] A. Elbadawi, I. Y. Elgendy, K. Mahmoud et al., "Temporal trends and outcomes of mechanical complications in patients with acute myocardial infarction," *JACC: Cardiovascular Interventions*, vol. 12, no. 18, pp. 1825–1836, 2019.

[4] J. Mesnier, Y. Cottin, P. Coste et al., "Hospital admissions for acute myocardial infarction before and after lockdown according to regional prevalence of COVID-19 and patient profile in France: a registry study," *The Lancet Public Health*, vol. 5, no. 10, pp. e536–e542, 2020.

[5] M. P. Than, J. W. Pickering, Y. Sandoval et al., "Machine learning to predict the likelihood of acute myocardial infarction," *Circulation*, vol. 140, no. 11, pp. 899–909, 2019.

[6] K. Chen, M. Zhang, and Y. Huo, "Expert consensus on the diagnosis and treatment of acute myocardial infarction with integrated traditional Chinese and western medicine," *Journal of Cardiovascular and Cerebrovascular Diseases of Integrated Traditional Chinese and Western Medicine*, vol. 2, no. 6, pp. 389–395, 2014.

[7] D. J. Hausenloy, R. K. Kharbanda, U. K. Møller et al., "Effect of remote ischaemic conditioning on clinical outcomes in patients with acute myocardial infarction (CONDI-2/ERIC-PPCI): a single-blind randomised controlled trial," *Lancet*, vol. 394, no. 10207, pp. 1415–1424, 2019.

[8] R. Khera, J. Haimovich, N. C. Hurley et al., "Use of machine learning models to predict death after acute myocardial infarction," *JAMA Cardiology*, vol. 6, no. 6, pp. 633–641, 2021.

[9] A. M. Chaulin and D. V. Duplyakov, "Biomarkers of acute myocardial infarction: diagnostic and prognostic value part 1," *Journal of Clinical Practice*, vol. 11, no. 3, pp. 75–84, 2020.

[10] U. Zeymer, H. Bueno, C. B. Granger et al., "acute cardiovascular care association position statement for the diagnosis and treatment of patients with acute myocardial infarction complicated by cardiogenic shock: a document of the acute cardiovascular care association of the European society of cardiology," *European Heart Journal: Acute Cardiovascular Care*, vol. 9, no. 2, pp. 183–197, 2020.

[11] S. Vallabhajosyula, S. M. Dunlay, A. Prasad et al., "Acute noncardiac organ failure in acute myocardial infarction with cardiogenic shock," *Journal of the American College of Cardiology*, vol. 73, no. 14, pp. 1781–1791, 2019.

[12] H. M. Krumholz, S. L. T. Normand, and Y. Wang, "Twenty-year trends in outcomes for older adults with acute myocardial infarction in the United States," *JAMA Network Open*, vol. 2, no. 3, Article ID e191938, 2019.

[13] S. Vallabhajosyula, S. H. Patlolla, S. M. Dunlay et al., "Regional variation in the management and outcomes of acute myocardial infarction with cardiogenic shock in the United States," *Circulation: Heart Failure*, vol. 13, no. 2, Article ID e006661, 2020.

[14] J. Wu, M. Mamas, M. Rashid et al., "Patient response, treatments, and mortality for acute myocardial infarction during the COVID-19 pandemic," *European Heart Journal-Quality of Care and Clinical Outcomes*, vol. 7, no. 3, pp. 238–246, 2021.

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Volume 2023, Article ID 9858953, 1 page
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Retraction

Retracted: Observation on the Effect of High-Quality Nursing Intervention plus Health Education in Chemotherapy for Non-Small Cell Lung Cancer and Its Influence on the Physical and Mental Health of Patients

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Feng and D. Yang, "Observation on the Effect of High-Quality Nursing Intervention plus Health Education in Chemotherapy for Non-Small Cell Lung Cancer and Its Influence on the Physical and Mental Health of Patients," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2459013, 8 pages, 2022.

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Research Article

Observation on the Effect of High-Quality Nursing Intervention plus Health Education in Chemotherapy for Non-Small Cell Lung Cancer and Its Influence on the Physical and Mental Health of Patients

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Objective. The objective is to analyze the effect of high-quality nursing intervention combined with health education in the chemotherapy for non-small cell lung cancer and its impact on the physical and mental health of patients. *Methods.* The study included 136 patients with non-small cell lung cancer treated at our hospital from March 2020 to December 2021, who were divided into the observation group and the routine/control group by randomization, with 68 patients in each. All patients received the GP (gemcitabine + cisplatin) chemotherapy. The control group received routine nursing care, whereas the observation group received high-quality nursing care mixed with health education. The effect of nursing intervention, patient self-management, and the influence on the physical and mental health of the patients was compared between the two groups. *Results.* The total efficacy rate (89.71%) of the observation group was significantly higher than that of the routine group (57.35%) ($P < 0.05$). The self-management level of the patients in the observation group, indicated by the Exercise of Self-Care Agency (ESCA) score, was considerably higher than that of the regular group after nursing intervention. Similarly, the observation group's quality of life, which was evaluated in terms of physical function, role function, emotional function, cognitive function, social function, and overall health status, was much better than the routine group's. Furthermore, the SAS, SDS, and overall incidence of adverse events were lower in the observation group than in the regular group. ($P < 0.05$). *Conclusion.* The application of high-quality nursing intervention combined with health education in chemotherapy for non-small cell lung cancer has favorable clinical benefits, enhances patient compliance and self-management capacity, and exerts a positive influence on the patient's physical and mental health. Adverse reactions can provide a more trustworthy scientific basis for therapeutic therapy. The method should be widely used.

1. Introduction

Non-small cell lung cancer (Non-small cell lung carcinoma) (NSCLC) [1] is a malignant tumor, accounting for about 80–85% of all lung cancer cases. NSCLC originates from the bronchial mucosa, bronchial glands, and alveolar epithelium, defined by the light microscope. It is constituted by nuclear atypia, large cells, and abundant cytoplasm [2, 3]. According to the 2013 Lung Cancer Review Report [4], lung cancer ranks first in new cases and is the leading cause of cancer-related deaths, among which NSCLC accounts for about 85% of all lung cancer types. The morbidity and mortality rates among men are higher than those among women. NSCLC is classified histopathologically as adenocarcinoma, squamous cell carcinoma, adenosquamous cell carcinoma, big cell carcinoma, and nodular carcinoma [5]. With the comparatively slow apparent diffusion, NSCLC cancer cells develop and divide at a slower speed than small cell carcinoma [6].

Relevant clinical studies have related the symptoms of NSCLC to the location of the primary tumor and its metastasis. The early symptoms are relatively mild and gradually aggravate as the disease progresses, mainly including chest pain, blood in the sputum, low-grade fever, cough, etc. Symptoms include fatigue, weight loss, loss of appetite, and other local symptoms such as shortness of breath, cough, and hemoptysis [7]. NSCLC is a highly prevalent type of cancer. If patients experience a prolonged cough or inexplicable sputum with blood, hemoptysis, or inenarrable chest discomfort, they should seek medical help as soon as possible. It requires early detection, early diagnosis, and early treatment. Chemotherapy is the primary treatment for lung cancer; more than 90% of lung cancers require chemotherapy in early and advanced stages, with the tumor remission rate reaching 40–50% [8]. Clinically, different chemotherapy drugs and chemotherapy regimens should be selected according to different histological types of lung cancer [9]. In clinical chemotherapy, gemcitabine and cisplatin are commonly utilized. To destroy cancer cells and boost the efficacy of chemotherapy, a combination of Gemcitabine and Cisplatin is usually required. Nonetheless, chemotherapy, nonselective as it is, can take a toll on both healthy and normal tissues, resulting in severe adverse responses. [10, 11].

Chemotherapy can help inhibit the progression of tumor lesions and prolong the survival time of patients, yet it is subject to such factors as adverse reactions and lung cancer lesions, which can easily stimulate a variety of negative emotions in patients and have an impact on their quality of life. Studies have shown that most NSCLC patients, especially those in the advanced stage, are prone to a series of nursing problems and serious psychological problems during chemoradiotherapy, resulting in the severe retrogression of the therapeutic efficacy and their quality of life [12]. Therefore, the application value of nursing intervention in concurrent chemoradiotherapy for patients with advanced NSCLC has attracted widespread attention. High-quality nursing is to provide nursing services that can accommodate the specific needs of patients on the basis of routine nursing, guided by the "people-oriented" principle and taking into consideration the actual conditions of patients, aiming to improve the quality of clinical nursing care [13]. In addition, lung cancer patients have a high degree of unsatisfied demand for disease-related information during treatment. At present, health education is the main method to meet patients' demand for information in clinical practice. Providing patients with information support can strengthen their awareness of self-care and improve their quality of life [14]. Therefore, this study observed the effect of high-quality nursing intervention combined with health education in chemotherapy for patients with non-small cell lung cancer and its impact on their physical and mental health.

2. Methodology

2.1. Research Subject. From March 2020 to December 2021, 136 NSCLC patients were treated at our institution and divided into two groups by randomization: the observation group and the routine/control group, each with 68 patients. The randomization was carried out using an online web-based tool (freely available at https://www.randomizer.org/). For concealment of allocation, the randomization procedure and assignment were managed by an independent research assistant who was not involved in screening or evaluating the participants.

The original sample size calculation estimated that 60 patients in each group would be needed to detect a 3-point difference between groups in a 2-sided significance test with a power of 0.8 and an alpha error level of 0.05.

All patients were treated with GP (gemcitabine + cisplatin) chemotherapy regimen. Among the patients, there were 77 males and 59 females aged 42–75, with an average age of 50.23 ± 6.18 years.

Before inclusion, informed consent was obtained from the patients, who signed the informed consent forms. This study protocol was approved by the hospital ethics committee, No. SD-EU20200405. All procedures comply with the ethical guidelines on clinical research of the Declaration of Helsinki.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria. (1) All patients met the relevant clinical diagnostic criteria for non-small cell lung cancer with proper pathological examinations. (2) All patients had a survival rate for more than 3 months. (3) Patients and their families were informed of the purpose of the study and voluntarily signed the informed consent forms.

2.2.2. Exclusion Criteria. (1) NSCLC patients with severe organ dysfunction; (2) Allergic constitution or patients with an allergic response to the drugs used in the study, past allergy history or related treatment contraindications; (3) Patients with abnormal mental state and those unable to communicate normally; (4) Pregnant or breastfeeding women; (5) Those with severe liver and kidney dysfunction; (6) Those with severe diabetes complications; and (7) Those with mental illnesses such as depression or Alzheimer's.

2.3. Methods. All patients were subjected to GP (gemcitabine + cisplatin) chemotherapy regimen as follows: The initial dose administered on the 1st day was 500 ml of 0.9% sodium chloride injection (national medicine Zhunzi: H20153227, Hubei Kelun Pharmaceutical Co., Ltd.), mixed with 75 mg/m2 cisplatin injection (national medicine Zhunzi: H20043888, Yunnan Bio Valley Pharmaceutical Co., Ltd.) delivered intravenously for 2–3 hours. Another dose delivered on the 1st and 8th days of the 21-day cycle includes the intravenous drip containing 100 ml of 0.9% chlorine and 1000 mg/m2 gemcitabine in sodium injection (Guoyao Zhunzi: H20153227, Hubei Kelun Pharmaceutical Co., Ltd.) (21 days as a treatment cycle, a total of 4 cycles).

The routine group was subjected to routine nursing interventions, which include informing patients of relevant knowledge about the disease, taking appropriate preventive

measures when admitted to the hospital, and monitoring the patients' phenotypic changes. In addition, routine nursing provides a comfortable hospitalization environment for the patients with improved patient sleep comfort and detailed instructions. Medicines were given to the patients on a timely basis and their adverse reactions were noted. [13, 14].

The observation group received high-quality nursing intervention combined with health education, as follows: (1) A professional team was established, which consisted of a head nurse, two experienced nurses, and several inpatient nurses. The nursing staff underwent comprehensive training on appropriate interventions. (2) Psychological nursing: The patient's psychological state was assessed and targeted psychological assistance was provided according to the conditions of the patient. Psychological nursing included the formulation of a comprehensive psychological intervention strategy, timely adjustment during the implementation process, the establishment of a sound doctor-patient relationship, the improvement of the patient compliance, confidence and self-control, and the motivation of the patient's enthusiasm in treatment. (3) Pain care: It was necessary to analyze the patient's pain intensity comprehensively to assess the conditions of the patient. Pain care included implementing individualized pain management, strengthening communication with the patient, and diverting the patient's attention, thereby relieving the pain. (4) Preventive care included protective measures for various adverse reactions that may occur during the treatment process. It also included advice on nutrition, assistance in cleaning and maintaining the body, and formulation of a proper rehabilitation training, with the patient's age and physical conditions are taken into consideration. (5) Health education: A responsible nurse was assigned to individually teach the patient about the ward environment, NSCLC, and disease management. The nurse also taught the patient to take in food within the acceptable range. (6) Education: By integrating the eating habits of the patient and the principles of an appropriate diet, a healthy diet plan was formulated, and at the same time, the patients were educated on developing good daily habits. Follow-up on the patients was conducted on a regular basis after discharge and the issues confronting them during self-monitoring were solved in a timely manner.

2.4. Evaluation Standard

2.4.1. Clinical Effect. With reference to "Evaluation Criteria for Treatment of Solid Tumors," the clinical effect was classified into four levels: complete remission (CR), partial remission (PR), stable disease (SD), and disease progression (PD). CR refers to the disappearance of all clinical symptoms of tumors and the state of remission maintained for more than 1 month; PR refers to the sum of the maximum diameters of the lesions reduced by at least >30% and the state of partial remission maintained for more than 1 month; SD refers to neither sufficient shrinkage to qualify for PR nor sufficient expansion to qualify for PD. The sum of maximum lesion diameters was reduced by <30%, or increased by >20%; PD refers to the lesion volume increased by >20% compared with that before treatment or the appearance of a new lesion. Total efficacy rate=(CR + PR)/total number of cases x100%.

2.4.2. Compliance. The Exercise Compliance Scale established by our hospital was adopted to evaluate the compliance, which was divided into 3 grades on a 10-point scale: complete compliance (≥8 points), partial compliance (≥6 and < 8 points), and non-compliance (<6 points). The total treatment compliance of the two groups was calculated and compared using the following formula. Total compliance rate = (complete compliance + partial compliance)/total number of cases × 100%.

2.4.3. Self-Management. The Exercise of Self-Care Agency Scale (ESCA) [15] was used to evaluate the patient's self-management ability. ESCA scored from 0 to 172 points, classified into 4 sub-classes: self-concept with a full score of 32; self-care responsibility with a full score of 24; health knowledge level with a full score of 68 and self-care skills with a full score of 48 points. The score was directly proportional to the self-management ability, with higher scores indicating better self-management ability.

2.4.4. Physical and Mental Health. EORTC QLQ-C30, Self-Rating Anxiety Scale (SAS), and Self-Rating Depression Scale (SDS) [16] were used to evaluate the physical and mental health status of the patients, including 5 functional scales, 3 symptom scales, 6 general health items, and 1 specific item. The total score of each scale is 100 points, and the scores are proportional to the patient's quality of life, with higher scores indicating higher quality of life.

2.4.5. Adverse Reactions. The incidences of complications in response to the treatment regimen, including gastrointestinal reactions, skin and mucous membrane damage, bone marrow suppression, and a decrease in white blood cell count, were recorded in detail.

2.5. Statistical Analysis. GraphPad Prism 8 software was used to process images. SPSS 26.0 software was used as data analysis software, and the measurement data were expressed as ($\pm s$), tested with Independent samples t-test. The count data were expressed as number of cases (%) and tested by x^2. $P < 0.05$ was considered statistically significant.

3. Results

3.1. Baseline Data. The routine group enrolled 68 patients, including 36 males and 32 females ranging in age from 42 to 75 years, with an average age of 50.59 ± 6.11 years. The illness lasted for 0.5–2 years, averaged at 0.71 ± 0.23 years. The educational levels of the patients in the routine group were as follows: high school degree or below (19), high school to a junior college degree (32), and bachelor's degree or above (17). The observation group enrolled 68 patients, including

Table 1: Comparison of clinical data between the two groups of patients (±*s*).

Group	Number of cases	Gender		Age (years)		Disease course (years)		Educational level		
		Male	Female	Range	Average	Range	Average	<High school	High school to college	>Undergraduate
Routine group	68	36	32	42–75	50.59 ± 6.11	0.5–2	0.71 ± 0.23	19	32	17
Observational group	68	41	27	45–74	50.07 ± 6.21	0.5–2	0.69 ± 0.25	18	34	16
t	—	—	—	—	0.492	—	0.485	—	—	—
P	—	—	—	—	0.624	—	0.628	—	—	—

Table 2: Comparison of clinical efficacy between the two groups after intervention (%).

Group	Number of cases	CR	PR	SD	PD	Total efficiency
Control group	68	16 (23.53)	23 (33.82)	16 (23.53)	13 (19.12)	39 (57.35)
Observational group	68	23 (33.82)	38 (55.88)	5 (7.35)	2 (2.94)	61 (89.71)
x^2	—			18.284		
P	—			<0.001		

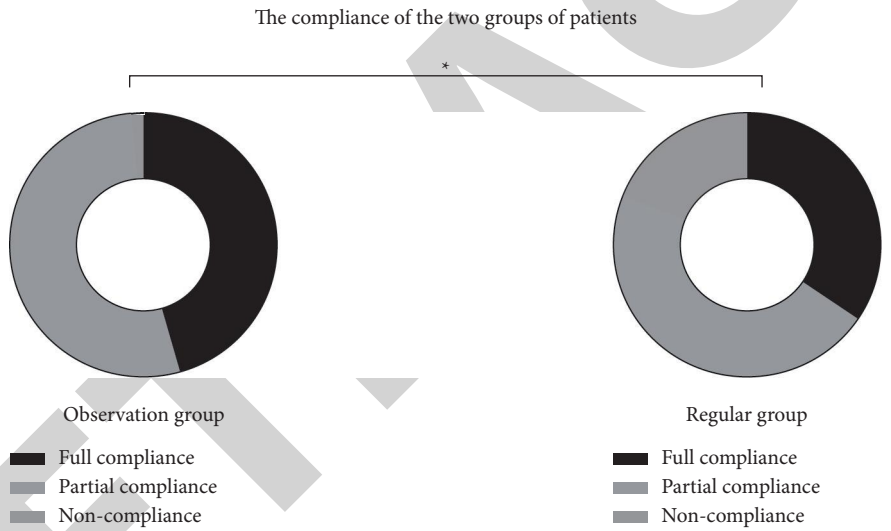

Figure 1: Comparison of compliance of the two groups of patients after the intervention. Note: * indicates a statistically significant difference between the two groups, $P < 0.05$.

41 males and 27 females aged 45–74 years, with an average age of 50.07 ± 6.21 years. The illness lasted for 0.5–2 years, averaged at 0.69 ± 0.25 years. The educational levels of the patients in the observational group included 18 cases with a high school degree or below, 34 cases with high school to junior college degree, and 16 cases with a bachelor's degree or above. There was no significant difference in clinical data between the two groups ($P > 0.05$), as shown in Table 1.

3.2. Clinical Efficacy. The observation group included more cases of CR and PR (23, 38) than the conventional group (16, 23), however, the number of SD and PD cases (5, 2) was considerably smaller than that of the routine group (16, 13). The total clinical efficacy rate of patients in the observational group (89.71%) was substantially higher than that in the routine group (57.35%) ($P < 0.05$), as shown in Table 2.

3.3. Compliance. The number of patients in the observation group with complete and partial compliance (31, 36) was substantially greater than that in the routine group (20, 27), although the number of non-compliant patients (1) was significantly smaller than that in the routine group (11). Moreover, the total compliance rate of the patients in the observation group (98.53%) was higher than that in the control group (83.82%), ($P < 0.05$). Details are shown in Figure 1:

3.4. Self-Management. There was no significant difference in the self-management level between the two groups before the intervention ($P > 0.05$). Following the intervention, the patients in the observation group had considerably higher ESCA scores, in terms of self-concept, self-care responsibility, health knowledge level, and self-care abilities, compared with patients in the routine group ($P < 0.05$) (see Table 3).

Table 3: Comparison of ESCA scores between the two groups before and after intervention (±*s*).

Period	Dimension	Control group ($n = 68$)	Observational group ($n = 68$)	t	P
Before intervention	Self-control	15.59 ± 5.34	15.66 ± 5.24	0.077	0.939
	Self-care	13.68 ± 5.17	13.71 ± 5.31	0.033	0.974
	Health education level	21.01 ± 6.98	20.94 ± 7.03	0.058	0.954
	Self-care skills	18.89 ± 5.62	18.68 ± 5.97	0.211	0.833
After intervention	Self-control	21.56 ± 1.56*	29.54 ± 1.61*	29.353	<0.001
	Self-care	19.56 ± 1.01*	23.87 ± 0.31*	33.640	<0.001
	Health education level	50.59 ± 2.14*	64.23 ± 2.34*	35.471	<0.001
	Self-care skills	34.61 ± 3.25*	43.88 ± 2.97*	17.363	<0.001

Table 4: Comparison of EORTC QLQ-C30 scores between the two groups after intervention (±*s*).

Dimensions	Control group ($n = 68$)	Observational group ($n = 68$)	t	P
Physical function	58.45 ± 9.32	78.05 ± 8.87	12.562	<0.001
Role function	69.45 ± 7.89	83.28 ± 7.26	10.637	<0.001
Emotional function	61.12 ± 8.48	80.98 ± 7.74	14.264	<0.001
Cognitive function	63.48 ± 5.11	83.23 ± 6.12	20.427	<0.001
Social function	61.21 ± 6.56	76.87 ± 6.89	13.574	<0.001
General health	64.28 ± 6.98	79.98 ± 7.50	12.636	<0.001

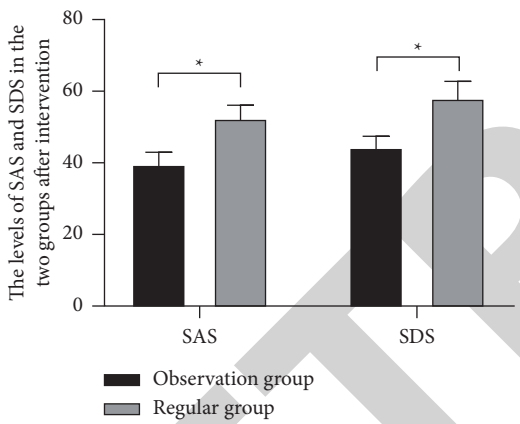

Figure 2: Comparison of SAS and SDS levels between the two groups after intervention. Note: * indicates a statistically significant difference between the two groups, $P < 0.05$.

3.5. Physical and Mental Health

3.5.1. Quality of Life. Following the intervention, patients in the observation group had significantly higher scores of quality of life, evaluated in terms of physical function, role function, emotional function, cognitive function, social function, and overall health status, than those in the routine group ($P < 0.05$), as shown in Table 4.

3.5.2. Emotional Management. The SAS and SDS scores of the observation group (39.58 ± 3.37, 44.28 ± 3.13) were lower than those of the routine group (52.41 ± 3.68, 58.05 ± 4.70) ($P < 0.05$)F, as shown in Figure 2.

3.6. Adverse Reactions. The number of cases of gastrointestinal reaction, skin and mucous membrane damage, bone marrow suppression reaction, and decreased white blood cell count (1, 1, 3, 3) in the observation group were smaller than that in the routine group (9, 7, 6, 6). The total incidence of adverse reactions (11.76%) was significantly lower than that of the routine group (41.18%) ($P < 0.05$) (see Table 5 for details).

4. Discussion

Non-small cell lung cancer (NSCLC) is a common malignant lung tumor. In China, it has a high mortality rate, prevalent in middle-aged and elder people. Relevant epidemiological data show that its pathogenesis is closely associated with many factors, such as smoking, occupational exposure and previous chronic lung infection [17]. Currently, chemotherapy is regarded as an effective clinical treatment method [18], which can destroy cancerous cells, yet given its nonselective nature, it can also damage healthy tissues, resulting in a variety of adverse reactions [19]. In addition, lung cancer, a common disease in oncology, inflicts patients with fear, anxiety, and other emotions due to fatigue and cancer pain, which severely undermines their quality of life [20]. If proper care for patients with lung cancer is not provided during chemotherapy, the disease is likely to deteriorate and even results in death, which puts forward higher requirements for the quality of nursing care [21]. In order to alleviate the negative psychological emotions of patients and further improve their quality of life during chemotherapy, it is crucial to implement high-quality nursing care for patients with lung cancer [22] The recent advances in medicine have also updated and improved the nursing model [23]. The high-quality nursing model is newly emerging in the development of modern medical care in China. Combined with health education, it adopts a variety of nursing interventions for patients. A previous study reported that analysis into the evolution of the patient's conditions can positively impact the patient's prognosis [24]. On the basis of previous findings, the current study selected patients diagnosed with

Table 5: Comparison of adverse reactions between the two groups (%).

Groups	n	Gastrointestinal reactions	Skin and mucous membrane damage	Myelosuppressive response	Decreased WBC count	Total incidence
Routine group	68	9 (13.24)	7 (10.29)	6 (8.82)	6 (8.82)	28 (41.18)
Observational group	68	1 (1.47)	1 (1.47)	3 (4.41)	3 (4.41)	8 (11.76)
x^2	—			15.111		
P	—			<0.001		

NSCLC treated in our hospital as the research objects, aiming to observe and analyze the effect of high-quality nursing intervention combined with health education in chemotherapy for NSCLC and its impact on the physical and mental health of patients.

The study results revealed that after the intervention, the self-management level of patients in the observation group, indicated by the ESCA scores, was significantly higher than that in the routine group. The reason could be that health education can help enhance the patients' sense of identity and awareness of self-management. More targeted and intuitive as it is, high-quality nursing outperforms routine nursing in terms of reducing cancer-related fatigue, improving sleep quality, and enhancing self-care ability [25]. The reason could be that the high-quality nursing intervention was carried out from the aspects of basic nursing, psychological nursing, infusion nursing, and chemotherapy nursing. Basic nursing, mainly including vital sign monitoring, environmental nursing, and skin nursing, aimed to improve the comfort of patients, whereas psychological care is targeted at stabilizing the patients' emotions, helping them build confidence in treatment, and involving them in active cooperation with treatment and nursing care, thereby facilitating the development of various tasks. Infusion care can reduce pain in patients while preventing or relieving phlebitis [26]. Combined with high-quality care, an exclusive nursing plan was tailored in accordance with the patient's conditions to maintain the physical and mental health of the patient and keep the patient with a good awareness and compliance during the long process of chemotherapy. Quality nursing also promotes early recovery and ensures a good prognosis of the patient. The findings of the current study revealed that the clinical efficacy rate (89.71%) in the observation group was significantly higher than that in the routine group (57.35%). The main purpose of chemotherapy nursing was to alleviate adverse reactions, such as gastrointestinal reactions and renal toxicity, that are prone to occur during chemotherapy. At the same time, special care was given to patients with symptoms such as thrombocytopenia and leukopenia, and various nursing measures were strengthened to improve the quality of life of patients and to boost the chemotherapy effect [27].

In this study, GC chemotherapy was comprised of gemcitabine and cisplatin. Gemcitabine is a cytosine drug that can be effective in treating metastatic or locally advanced NSCLC, whereas cisplatin is one of the first-line anticancer drugs with broad-spectrum anticancer activity, which can improve the survival rate of patients. Previous studies suggested that this regimen has positive effects on the treatment of NSCLC. However, in the course of chemotherapy, patients are prone to fatigue, poor mood, etc., and the development of the disease will seriously affect the treatment process. The intervention method of high-quality nursing combined with health education aims to implement a humanized nursing intervention. By providing patients with high-quality nursing services, nursing staff can more comprehensively fulfill nursing responsibilities, extend the connotation of nursing care, and provide patients with nursing care of the best quality. High-quality nursing can improve the patient's sense of satisfaction, security and comfort, with a focus on the psychological care of patients to improve patient compliance and self-confidence [28]. In accordance with earlier findings, it is proposed that high-quality nursing intervention combined with health education during chemotherapy for patients with NSCLC can optimize treatment compliance and confidence, raise the patient's mood, and successfully improve the therapeutic outcomes. This research assessed the patients' physical and emotional well-being following the intervention. After the intervention, the patients' quality of life in the observation group was considerably higher than that in the routine group, evaluated from the aspects of physical function, role function, emotional function, cognitive function, social function, and overall health status. Furthermore, the SAS and SDS scores of the patients in the observation group were lower than those in the routine group, suggesting that the application of high-quality nursing intervention combined with health education in the chemotherapy for NSCLC has a positive impact on the physical and mental health of patients. This is generally attributed to the nursing measures such as health education and psychological intervention carried out by the nursing staff. The nursing staff introduced knowledge on the disease and chemotherapy to the patients, corrected their misunderstandings of chemotherapy, and offered proper psychological counseling to alleviate their negative emotions. Combined with progressive muscle relaxation training, the psychological intervention has further relieved the physical and mental burden of the patient so that the patient could face lung cancer chemotherapy more optimistically and effectively improve their quality of life [29].

The high-quality nursing intervention combined with health education includes physiotherapy, exercise instruction, and lifestyle guidance, on the basis of psychological support. Chemotherapy may induce an energy imbalance and worsen the prognosis in NSCLC patients, which may be related to serotonin disorder, HPA axis disorder, vagus nerve excitation, and rhythm disorder. One of the key explanations is neuroendocrine dysfunction; exercise

instruction can effectively intervene in patients. Exercise can strengthen the regulating function of the neuroendocrine system by promoting neurotransmitter activity, neuron excitability, and hormone production. The increased muscular load can enhance sleep quality, thereby improving the patient's quality of life. In addition to offering guidance and paying attention to patients' psychological and emotional changes, timely education and counseling are particular methods for quality improvement. The psychological and physical discomfort of patients can be alleviated through the participation in the therapy and adaptation to daily life activities. The findings and conclusions of related literature (Jinmin Kim et al.) confirmed our conclusion that the application of high-quality nursing intervention combined with health education can effectively improve the physical and mental health of NSCLC patients undergoing chemotherapy. The findings of this study revealed that the total incidence of adverse reactions in the observation group (11.76%) was significantly lower than that in the routine group (41.18%). The reason could be that the nursing staff correctly guided the patients to carry out rehabilitation exercises so as to ensure the patient's whole body in a relaxed state, which was conducive to enhancing the cardiopulmonary function, accelerating the metabolic rate, and improving the sleep of the patient. As patients received psychological and social support from medical staff and community personnel, they were more optimistic to accept their illness, and further improving their quality of life by engaging in more physical activities [30].

Besides, the establishment of a high-quality nursing team can help strengthen health education and psychological intervention, so that patients can fully understand liberation and chemotherapy methods. The highly skilled nursing team will assist in improving patient tolerance, providing intensive preventative care, relieving patient discomfort throughout the treatment process, and addressing adverse responses that take a toll on patients' daily life and treatment. Scholars like Amina and Haiqu have found that exposing NSCLC patients to a diverse nursing model can reduce cancer-related tiredness, increase chemotherapy compliance, and improve nursing satisfaction, which is consistent with the findings of this study.

This study carried out high-quality nursing intervention combined with health education for lung cancer patients undergoing chemotherapy. It has certain guiding significance, yet with the following flaws: the sample size was small, the observation period was short, and no long-term follow-up was performed. Despite the flaws, this method can be applied to the routine care of lung cancer patients undergoing chemotherapy in various medical institutions. It is hoped that future clinical studies based on samples of a larger size will be conducted through the cooperation between researchers and patients, so as to provide more clinical evidence for the research and application of this method.

To sum up, the application of high-quality nursing intervention combined with health education in the chemotherapy for NSCLC effectively improves the patient's compliance and self-management ability. It has a positive impact on the patient's physical and mental health. It reduces the incidence of adverse reactions in patients and provides a more reliable scientific basis for clinical treatment. More extensive research is needed to evaluate the practice and to fully understand the intricacies related to this method.

Data Availability

All data generated or analyzed during this study are included in this published article. No data were used to support this study.

Consent

All authors have read and approved this manuscript to be considered for publication.

Conflicts of Interest

All authors declare that they have no conflicts of interest.

Authors' Contributions

Liyun Feng drafted and revised the manuscript. Dongmei Yang conceived and designed this article, in charge of syntax modification and revision of the manuscript. All the authors have read and agreed to the final version manuscript.

References

[1] N. Coudray, P. S. Ocampo, T. Sakellaropoulos et al., "Classification and mutation prediction from non-small cell lung cancer histopathology images using deep learning," *Nature Medicine*, vol. 24, no. 10, 2018.

[2] V. Relli, M. Trerotola, E. Guerra, and S. Alberti, "Abandoning the notion of non-small cell lung cancer," *Trends in Molecular Medicine*, vol. 25, no. 7, pp. 585–594, 2019.

[3] R. Su, J. Zhang, X. Liu, and L. Wei, "Identification of expression signatures for non-small-cell lung carcinoma subtype classification," *Bioinformatics*, vol. 36, no. 2, pp. 339–346, 2020.

[4] H. Nassereddine, A. Sannier, S. Brosseau et al., "Clinicopathological and molecular study of peritoneal carcinomatosis associated with non-small cell lung carcinoma," *Pathology and Oncology Research*, vol. 26, no. 4, 2020.

[5] A. S. Grewal, E. J. Min, Q. Long et al., "Early tumor and nodal response in patients with locally advanced non-small cell lung carcinoma predict for oncologic outcomes in patients treated with concurrent proton therapy and chemotherapy," *International Journal of Radiation Oncology, Biology, Physics*, vol. 106, no. 2, pp. 358–368, 2020.

[6] A. Yaren, F. Bir, A. Aksoy Altınboga, N. L. Satiroglu Tufan, S. Kaya, and S. Baser, "Potential utility of p63 expression in differential diagnosis of non-small-cell lung carcinoma and its effect on prognosis of the disease," *Medical Science Monitor*, vol. 20, pp. 219–226, 2014.

[7] D. Hutchings, Z. Maleki, and E. F. Rodriguez, "Pulmonary non-small cell carcinoma with morphologic features of adenocarcinoma or "Non-Small cell carcinoma favor adenocarcinoma" in cytologic specimens share similar clinical and molecular genetic characteristics," *American Journal of Clinical Pathology*, vol. 149, no. 6, pp. 514–521, 2018.

[8] T. Burns, V. Ramfidis, M. Socinski, and L. Villaruz, "Personalizing therapy in advanced non-small cell lung cancer,"

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Retraction

Retracted: Diagnostic Effectiveness of Dual Source Dual Energy Computed Tomography for Benign and Malignant Thyroid Nodules

Evidence-Based Complementary and Alternative Medicine

Received 20 June 2023; Accepted 20 June 2023; Published 21 June 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.

References

[1] T. Zhu, K. Xie, C. Wang, L. Wang, W. Liu, and F. Zhang, "Diagnostic Effectiveness of Dual Source Dual Energy Computed Tomography for Benign and Malignant Thyroid Nodules," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2257304, 8 pages, 2022.

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Research Article

Diagnostic Effectiveness of Dual Source Dual Energy Computed Tomography for Benign and Malignant Thyroid Nodules

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Objective. To evaluate the diagnostic effectiveness of dual source dual energy computed tomography (DS-DECT) for benign and malignant thyroid nodules. *Methods*. Between January 2019 and December 2021, 60 patients with surgically and pathologically verified thyroid nodules treated at our institution were recruited. DS-DECT was administered to all patients. The iodine content of lesioned and normal tissues, the normalized iodine concentration (NIC) and standardized CT values of benign and malignant nodules, the consistency of examination results and pathological findings, and diagnostic effectiveness were all investigated. *Results*. The diagnosis accuracy was the same as that of surgical pathology, producing a 100% accuracy for the 60 patients with thyroid nodules (42 were benign and 18 were malignant). The iodine content of lesioned solid tissue differed significantly from that of normal tissue, as did the iodine content of malignant and benign nodules ($P < 0.05$). In the arterial phase, no significant difference was found in NIC and standardized CT values between benign and malignant nodules ($P > 0.05$). The optimal critical NIC for differentiating benign and malignant nodules in the venous phase was 0.74 and the standardized CT value was 0.79 HU according to the receiver operating characteristics (ROC) curve. Malignant nodules were diagnosed when the NIC was <0.74 and the standardized CT value was <0.79 HU, with AUC values of 0.89 and 0.93, respectively, where the sensitivity and specificity of the differential diagnosis of NIC were 90.48% (38/42) and 88.89% (16/18), respectively, and those of the differential diagnosis of standardized CT value were 92.86% (39/ 42) and 94.44% (17/18), respectively. The diagnosis accuracy of DS-DECT was 100%, and the diagnostic results of morphological characteristics and pathological testing were consistent. The sensitivity and specificity of the NIC values and standardized CT values in the venous phase differential diagnosis of benign and malignant nodules were compatible with the morphological differential diagnosis. *Conclusion*. DS-DECT is highly accurate in determining the benignity and malignancy of thyroid nodules and has a strong potential for clinical promotion to allow for prompt treatment.

1. Introduction

Thyroid nodules are abnormal masses of tissue structure in the thyroid gland and differ significantly from normal thyroid tissue [1]. Thyroid nodules have been more common in China in recent years, and the major causes of thyroid nodules include inflammation and a bad lifestyle. The treatment for thyroid nodules of various types varies greatly [2, 3], with medical treatment as the mainstay for benign nodules and surgical management for malignant ones. For thyroid nodules, regular follow-up, surgery, radioelectric therapy, laser/radiofrequency/microwave ablation, and thyroid hormone suppression are all available clinically, yet no standard treatment protocol has been established [4]. Thyroid nodules belong to the category of "gall disease" in traditional Chinese medicine (TCM) and are often treated clinically with evidence-based treatment to soften and disperse the nodules [5].

The current diagnostic modalities comprise mainly imaging, immunoassays, and biopsies [6, 7]. Fine-needle aspiration cytology biopsy is the main method for qualitative diagnosis of thyroid nodules, but it is invasive and results in poor patient compliance. Thus, further exploration of safer and more effective diagnostic options is required. Ultrasound and contrast-enhanced CT currently deliver rapid and accurate examinations in the imaging diagnosis of thyroid

nodules [8]. Dual-source CT features the advantage of dual-energy imaging with a unique algorithm that separates iodine from soft tissue [9].

Computed tomography energy spectral imaging can acquire various quantitative parameters on the basis of conventional imaging, analyze lesions with the aid of three-dimensional regions of interest, and effectively clarify the internal spatial heterogeneity of lesions, so it has been widely used in the diagnosis of tumor diseases [10]. In addition, dual-source CT compares the iodine content of thyroid nodules and surrounding normal thyroid tissue, displays the CT values of different tissues and organs and lesions, and constructs energy spectrum curves to achieve the judgment of benign and malignant nodules [11, 12]. In addition, it can effectively reflect the state of distribution of base materials such as water, iodine, and calcium and further reflect the margins and internal structure of the lesion with the help of standardized iodine concentration [13]. Herein, this study was conducted to evaluate the diagnostic effectiveness of dual-source dual energy computed tomography (DS-DECT) for benign and malignant thyroid nodules.

2. Materials and Methods

2.1. Participants. A total of 60 patients with surgically and pathologically confirmed thyroid nodules treated in our hospital between January 2019 and December 2021 were recruited, including 35 males and 25 females, aged 29–78 (52.64 ± 14.42) years. After surgery and a puncture biopsy, the patients were found with thyroid nodules, 42 of which were benign and 18 of which were malignant. The eligible patients and their families were notified about the trial, and they agreed to participate. Patients with functional impairment of vital organs and inability to communicate were excluded. Informed consent was obtained from patients and signed prior to enrollment in this study. The study protocol was approved by the hospital ethics committee. Ethics number: HX-YEYI20190104. All processes were in accordance with the Declaration of Helsinki ethical guidelines for clinical research.

2.2. Methods. The CT scans were performed using the 2nd generation Siemens Dual Source CT (Definition Flash) instrument. Before the examination, the patient was informed about the relevant examination precautions. The patient was injected with 70–90 ml of non-ionic contrast agent iohexol (300 mg/ml) at a rate of 3 ml per second with the CT machine in the dual energy mode and tube voltages of 80 and 140 kV. Body thickness and density were adjusted before the examination with a layer thickness of 5 mm. A CT plain scan was performed, the patient's axial raw data were analyzed, and then the data were reconstructed with a reconstructed layer thickness of 0.75 mm. The 3D software was applied to obtain image information in the coronal and sagittal planes, and the scan was performed from the skull base to the thoracic inlet. The patient was kept in a supine position during the scan to avoid the influence of clavicular artifacts on the examination results. After routine scanning, a contrast-enhanced scan was performed at 30 and 60 seconds after the contrast injection in the dual-energy mode to obtain the DS-DECT images.

2.2.1. Measurement of Iodine Content. The iodine content of the region of interest (ROI) was measured by a double-blind method in the iodine images, with the solid part of the ROI selected, avoiding calcifications and artifacts, in the range of 10 mm 2 to 20 mm 2, and the averaged value was obtained from three measurements.

2.2.2. Diagnostic Criteria. Lesions with regular morphology, clear borders, and no "intensification residual circle sign" in the contrast scan are considered benign nodules. Lesions with irregular morphology, blurred boundary, microcalcifications inside, "reinforced residual circle sign" in the contrast scan and enlarged lymph nodes in the neck were considered malignant nodules.

During the examination, the CT signs were analyzed to determine the nature of the nodule. Malignant nodules show disruption of the pseudo-envelope to form an interrupted reinforcing ring, which completely penetrates the envelope and invades the surrounding tissue.

2.3. Observation Indices

(1) Iodine content of diseased solid and normal tissues was compared.

(2) Normalized iodine concentration (NIC) and standardized CT values of benign and malignant nodules: NIC and standardized CT values were calculated for benign and malignant nodules. NIC = intra-lesion iodine concentration/intra-phase carotid iodine concentration; standardized CT value = intra-lesion CT value/intra-phase carotid CT value.

(3) Consistency between examination results and pathological results: Consistency analysis was performed using the Kappa test, with $\text{Kappa} < 0.2$ for poor consistency, $0.2 \leq \text{Kappa} < 0.4$ for fair consistency, $0.4 \leq \text{Kappa} < 0.6$ for moderate consistency, $0.6 \leq \text{Kappa} < 0.8$ for good consistency, and $0.8 \leq \text{Kappa} \leq 1$ for excellent consistency.

(4) Diagnostic efficacy.

2.4. Statistical Analysis. SPSS20.0 was adopted for data analyses. The Shapiro–Wilk line normal distribution test was used for the measurement data. Normally distributed measures were expressed as (mean plus or minus standard deviation). Comparisons of means between the two groups were first performed with the chi-squared F-test, and data with chi-squared were subjected to the independent samples t-test, and data with non-chi-squared were tested with the independent samples t-test. Within-group pre-post comparisons were performed with paired-sample t-tests. Differences with $P < 0.05$ was considered statistically significant.

Table 1: Iodine content (mg/ml).

Group	n	Diseased solid tissues		Normal tissues	
		Range	Mean	Range	Mean
Benign nodules	42	−0.9–2.3	0.5 ± 0.2	1.4–4.4	2.1 ± 0.6
Malignant nodules	18	−2.4–0.9	0.1 ± 0.1	1.5–4.4	2.3 ± 0.4
t-value			3.750		0.607
P value			0.003		0.555

Table 2: NIC and standardized CT values for benign and malignant nodules.

Group	n	Arterial phase		Venous phase	
		NIC	Standardized CT values (HU)	NIC	Standardized CT values (HU)
Benign nodules	42	0.35 ± 0.05	0.33 ± 0.05	0.83 ± 0.12	0.87 ± 0.15
Malignant nodules	18	0.36 ± 0.07	0.32 ± 0.06	0.61 ± 0.08	0.64 ± 0.11
t-value		−0.627	0.668	7.112	5.854
P value		0.533	0.507	<0.001	<0.001

Table 3: Examination results.

Groups	n	Morphological irregularities	Lesions with clear boundaries	Calcifications
Benign nodules	42	8 (19.05)	42 (100.00)	30 (71.43)
Malignant nodules	18	10 (55.56)	0 (0.00)	5 (27.78)
X^2		7.997	60.0	9.878
P value		0.005	<0.001	0.002

3. Results

3.1. Analysis of Iodine Content in Diseased Solid Tissues and Normal Tissues. Iodine concentration was substantially reduced in sick thyroid tissues compared to normal tissues, as well as significantly lower in malignant nodules compared to benign nodules ($P < 0.05$) (Table 1).

3.2. NIC and Standardized CT Values for Benign and Malignant Nodules. There was no significant difference in the arterial phase between NIC and standardized CT readings of benign and malignant nodules ($P > 0.05$). The NIC and normalized CT values of benign nodules were greater in the venous phase than those of malignant nodules ($P < 0.05$) (Table 2).

3.3. Examination Results and Pathological Findings. Of the 60 patients with thyroid nodules, 42 cases were benign and 18 cases were malignant.

3.3.1. Morphology. 8 out of 42 patients with benign lesions had irregular morphology, and 10 out of 18 patients with malignant nodules had irregular morphology. The detection rate of malignant nodules with irregular morphology (55.56%) was higher than that of benign nodules (19.05%) ($P < 0.05$). The examination results were consistent with the pathological findings, and the diagnostic accuracy of DS-DECT was 100%.

3.3.2. Boundaries. Distinct lesion margins were found in 42 individuals with benign nodules, with one having a nodule extending into the mediastinum and a clear fat gap between the lesion tissue and surrounding tissues. The boundaries between the lesion tissue and the surrounding tissue were blurred in eighteen cases with malignant lesions. Benign nodular lesions with clean borders were detected at a considerably greater rate than malignant nodules ($P < 0.001$).

3.3.3. Calcification. 30 of the 42 individuals with benign lesions had calcification of the lesions, with spotty, eggshell, and massive calcifications being the most common. Five of the 18 patients with malignant tumors had calcification, most of which was fine granular calcification. The detection rate of calcification in benign nodules (71.43%) was significantly higher than that of calcification in malignant nodules (27.78%) ($P < 0.05$) (Table 3 and Figures 1 and 2).

3.4. Diagnostic Efficacy. The optimal critical NIC for differentiating benign and malignant nodules in the venous phase was 0.74 and the standardized CT value was 0.79 HU according to the receiver operating characteristics (ROC) curve. Malignant nodules were diagnosed when the NIC was <0.74 and the standardized CT value was <0.79 HU, with AUC values of 0.89 and 0.93, respectively, where the sensitivity and specificity of the differential diagnosis of NIC were 90.48% (38/42) and 88.89% (16/18), respectively, and those of the differential diagnosis of standardized CT value were 92.86% (39/42) and 94.44% (17/18), respectively. The diagnostic results of morphological features and

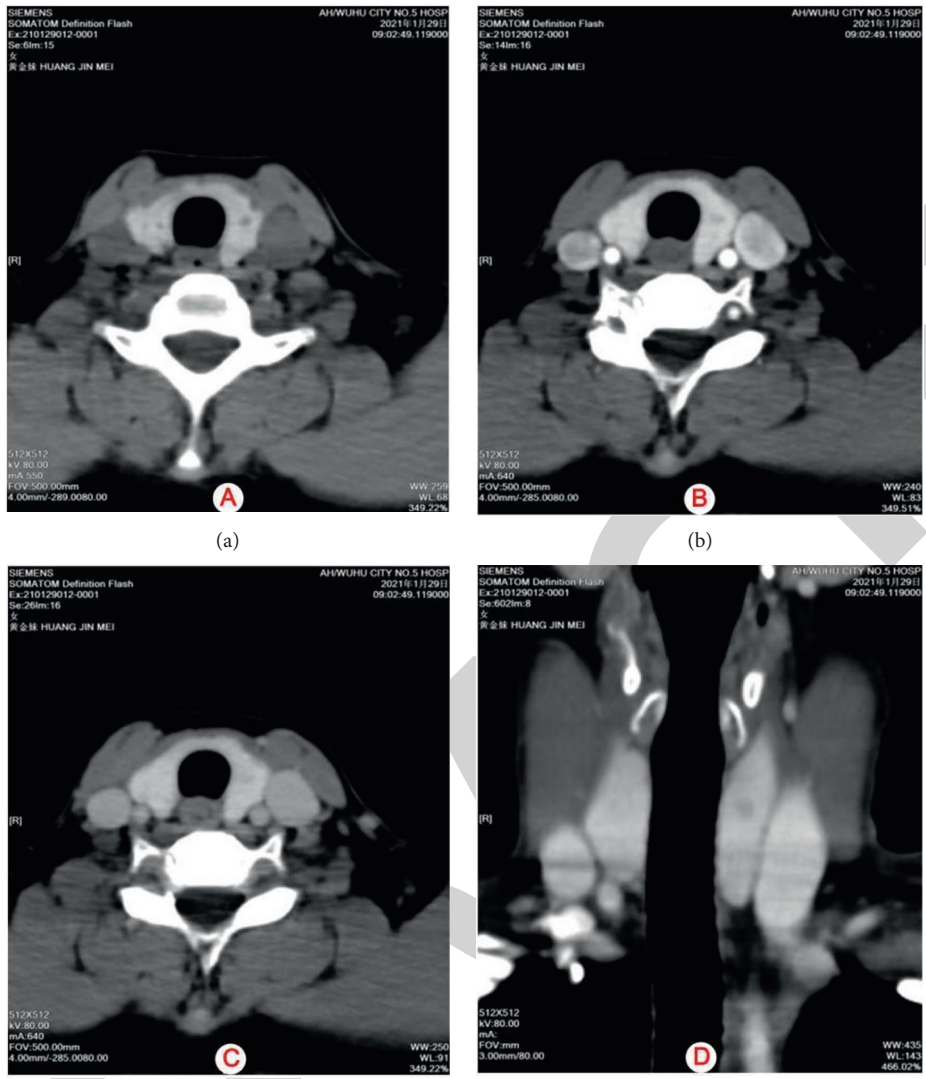


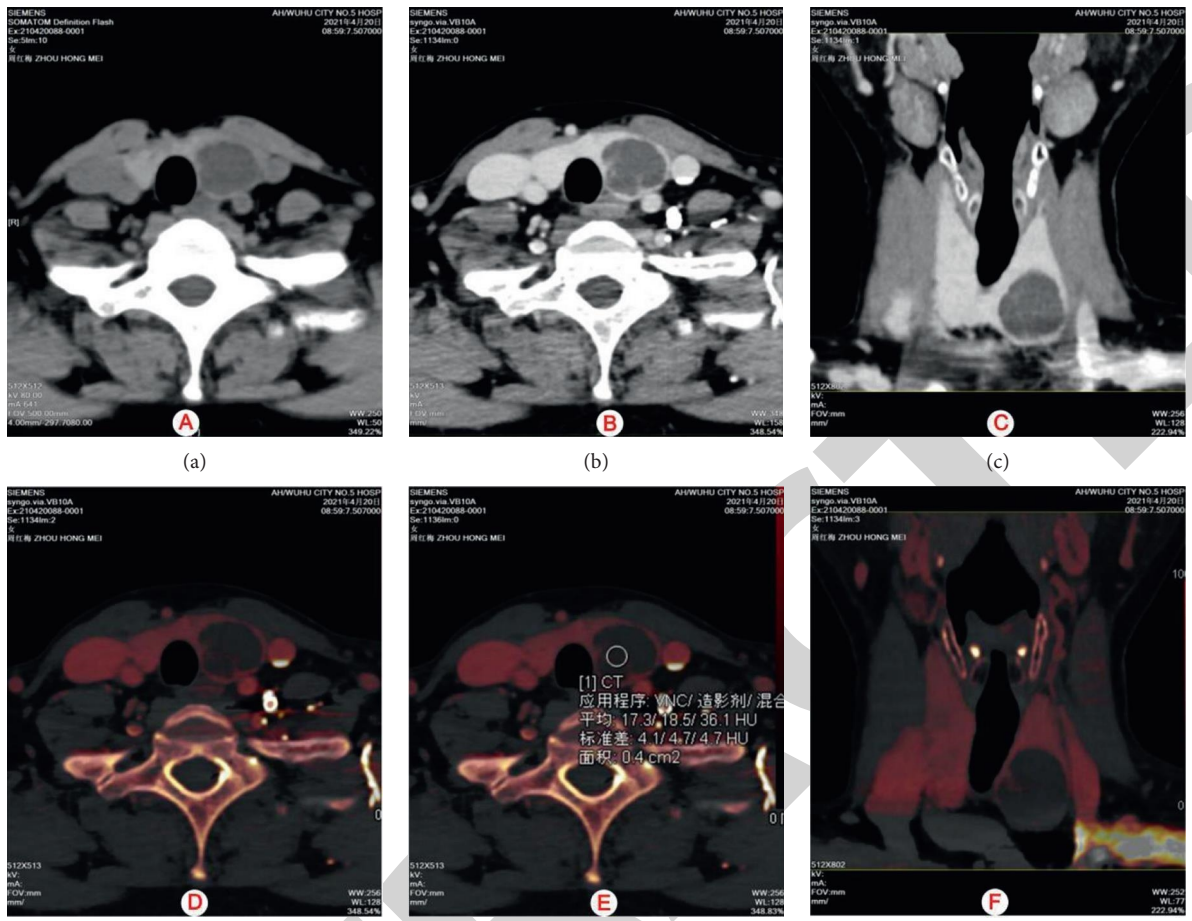
Figure 1: (a)–(d) is plain scan image, arterial phase image, venous phase image, and coronal MPR reconstruction of the thyroid gland image, respectively. Patient information: A 43-year-old female was admitted to the hospital with a left-sided thyroid mass found on physical examination for over 1 month. The thyroid ultrasound suggested a nodule in the left lobe of the thyroid gland with TI-RADS class 4a. CT showed a small nodular hypointense shadow in the left lobe of the thyroid gland with a maximum size of about 4.3×3.9 mm, which was progressively and significantly enhanced and was slightly hypointense compared with the surrounding normally enhanced thyroid gland, with indistinct demarcation. Postoperative pathology confirmed that the nodule was a papillary thyroid carcinoma.

pathological examination were consistent, and the diagnostic accuracy of DS-DECT was 100%. The sensitivity and specificity of the NIC values and standardized CT values in the differential diagnosis of benign and malignant nodules in the venous phase were consistent with the sensitivity and specificity of the morphological differential diagnosis (Kappa = 0.901, 0.883) (Figure 3).

4. Discussion

In recent years, the incidence of thyroid nodules has increased significantly with the increased work pressure and changes in the lifestyle of people. Its pathogenesis is mainly associated with abnormal iodine intake, immunity, lipid metabolism, genetics, and other factors, with the core mechanism being the negative feedback regulation of the hypothalamic-pituitary-thyroid axis by many factors leading to the hyperplasia of thyroid follicles and the formation of thyroid nodules [14, 15]. Thyroid nodules generally show no specific clinical manifestations, and patients with abnormal functional manifestations are mostly treated with levothyroxine sodium tablets [16]. However, Western medication predisposes patients to adverse events such as metabolic organ damage and increased pain.

In TCM, the occurrence of thyroid nodules is considered to be closely related to emotional abnormalities, diet, and loss of proper water and soil [17]. The increased work pressure and accelerated pace of life lead to the loss of spleen



(a) (b) (c)

(d) (e) (f)

Figure 2: (a)–(f) show the thyroid plain scan image, venous phase image, coronal MPR reconstruction image, iodine coverage image, dual energy image, and coronal iodine coverage image. Patient information: A 52-year-old female was admitted to the hospital with bilateral thyroid masses found on physical examination for 2 years. A multifocal cystic mass was found in the thyroid gland, with a large left lobe and TI-RADS grade 3. CT showed an enlarged left lobe of the thyroid gland with a round cystic low-density shadow of approximately 23 × 18 mm in size, with a clear border and uniform density, and a visible separation. No significant enhancement was seen in the cystic portion. The iodine image clearly showed the distribution of iodine in the compartment and allowed for quantitative measurement of iodine content, which resulted in the diagnosis of nodular goiter. The postoperative pathology confirmed that the "left thyroid mass" was a nodular goiter with hemorrhage and cystic changes.

health and function and result in the development of nodules, so the treatment should be based on draining the liver and Qi, strengthening the spleen, resolving phlegm, activating blood circulation, and eliminating galls [18, 19]. The nature of benign and malignant thyroid nodules is usually determined by morphology, number, and blood supply on plain or contrast CT scans [20]. In contrast to benign thyroid nodules, malignant thyroid nodules usually appear hypodense because the tumor cells destroy the iodine storage units of the normal thyroid gland. Because of the infiltrative growth of the lesions, the nodules are irregular in shape and the tumor tissue often invades the fibrous envelope. Some malignant tumors may undergo cystic necrosis, such as papillary thyroid carcinoma characterized by cystic changes and calcified wall nodules [21]. Although CT of benign and malignant thyroid nodules shows certain morphological and enhancing features, there are overlaps in conventional imaging presentations, resulting in difficult qualitative diagnosis. Determination of the nature of nodules often relies on CT-enhanced scans, which, however, increase the radiation dose and contrast events, while plain scans alone fail to provide a qualitative diagnosis [22, 23].

Dual-source CT achieves the separation of iodine from the surrounding soft tissues and acquires information about the lesion [24]. Previous research has revealed a *U*-shaped association between iodine consumption and thyroid problems, as well as abnormal modifications in iodine metabolism in thyroid lesions [15–27]. DS-DECT detects the iodine content of thyroid nodules, and the iodine content in benign nodules exceeds that of malignant nodules, indicating that thyroid lesions have implications for follicular cells and the decreased iodine metabolism in the lesion area. Moreover, DS-DECT allows for in-depth analysis of the lesion by establishing iodine images [28]. Iodine uptake by thyroid follicular cells within thyroid nodules and adenomas is reduced in the presence of hyperplasia or degeneration of

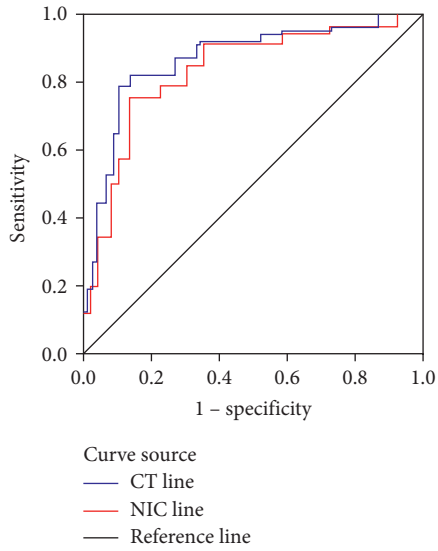


Figure 3: ROC curve of NIC and standardized CT for diagnosis of malignant thyroid nodules in the venous phase.

thyroid tissue or incomplete degeneration within the nodule; in malignant nodules, cellular heterogeneity within the lesion is more pronounced, and thyroid follicular cells have a reduced or even absent capacity for iodine uptake [29, 30]. The iodine content in follicular adenoma lesions is negative in malignant nodules and positive in benign nodules [31]. Therefore, the use of DS-DECT to analyze the iodine content of thyroid nodules enhances the accuracy of determining the benignity and malignancy of nodules [32]. In DS-DECT, two X-ray bulbs emit X-rays using different tube voltages, and the relevant information is collected using a detector, followed by the acquisition of the images after mathematical operations. In comparison to color ultrasonography, DS-DECT achieves chemical processing of chemicals, which increases the sensitivity of the examination and enhances the diagnostic effect on thyroid nodules [33, 34]. In the material separation of DS-DECT, the decay of iodine at different energies is available for an accurate diagnosis of thyroid nodules [35].

In the present study, there was a significant difference in the iodine content of the lesioned solid tissue versus normal tissue, and a significant difference in the iodine content of malignant and benign nodules, suggesting that DS-DECT enhances the diagnostic accuracy of the malignancy of thyroid nodules and facilitates early treatment. The reason for this may be that the iodogram technique is an imaging technique that extracts iodine from the image based on the different attenuation trends of iodine at different energies under dual-energy CT scans compared to other tissues [36]. Dual-source CT dual-energy imaging iodogram measures the iodine content of thyroid nodules more accurately than a CT plain scan alone [37]. Moreover, in the venous phase, the NIC and standardized CT values of benign nodules were higher than those of malignant nodules, which was consistent with the results by Varghese [38]. Their findings showed lower iodine concentrations of malignant nodules than in benign nodules in the venous phase. This indicates that thyroid follicular cells in benign nodules uptake iodine, whereas in malignant nodules thyroid follicular cells are mostly substituted by cancer cells and connective tissue, which severely compromises iodine uptake capacity. In addition, the detection rate of malignant nodules with irregular morphology and calcification was higher than that of benign nodules, suggesting that benign nodules have clear borders with an intact envelope and no invasion into the surrounding normal thyroid tissue. The sensitivity and specificity of NIC differential diagnosis were 90.48% (38/42) and 88.89% (16/18), respectively, and the sensitivity and specificity of standardized CT value differential diagnosis were 92.86% (39/42) and 94.44% (17/18), respectively, as shown by the ROC curve. By the Kappa test, the differential diagnosis of NIC and standardized CT values in the venous phase was in high agreement with the morphological differential diagnosis (Kappa = 0.901, 0.883). This suggests that the iodine content of the thyroid lesion is available to determine the nature of the thyroid lesion preoperatively and to avoid overtreatment. The reason may be that dual-source CT is a quantitative identification of the iodine content of the iodogram by the different attenuation coefficients of two different energies on the substance, using iodine as the reference substance, which is the physical basis for the separation of dual-energy substances in dual-source CT [39, 40]. Therefore, by observing the iodine content of thyroid lesions, a quantitative indicator can thus be obtained, which allows for preoperative determination of the nature of the thyroid lesion to avoid overtreatment.

5. Conclusion

DS-DECT is indeed highly accurate in determining the benignity and malignancy of thyroid nodules and yields a strong potential for clinical promotion to allow for prompt treatment.

Data Availability

All data generated or analysed during this study are included in this published article.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Authors' Contributions

Tong Zhu and Faping Zhang drafted and revised the manuscript. Kanglin Xie, Chongxiao Wang, Linkui Wang, and Wei Liu were in charge of data collection. All the authors have read and agreed to the final version of manuscript. All the authors have read and approved this manuscript to be considered for publication.

References

[1] P. Agretti, G. De Marco, E. Ferrarini et al., "Gene expression profile in functioning and non-functioning nodules of autonomous multinodular goiter from an area of iodine deficiency: unexpected common characteristics between the two entities," *Journal of Endocrinological Investigation*, vol. 45, no. 2, pp. 399–411, 2022.

[2] J. Bojunga and A. Mondorf, "Thyroid elastography," *Laryngo-Rhino-Otologie*, vol. 98, no. 3, pp. 150–156, 2019.

[3] O. Cohen, G. Lahav, D. Schindel, and D. Halperin, "Surgeon performed thyroid and neck ultrasound as a tool for better patient care," *Harefuah*, vol. 159, no. 1, pp. 128–131, 2020.

[4] M. Wang and Z. Wang, "Effect observation of Qichai Xiaoying recipe on benign thyroid nodules," *Huaxia Medicine*, vol. 35, no. 2, pp. 15–19, 2022.

[5] J. Deng, X. Wang, and X. Zhu, "Efficacy of Xiaoying recipe combined with microwave ablation in the treatment of Hashimoto's thyroiditis with nodules," *Shaanxi Traditional Chinese Medicine*, vol. 43, no. 3, pp. 309–313, 2022.

[6] K. M. Derwahl and P. Goretzki, "Thyroid nodules: the guidelines of the American thyroid association from a European perspective," *Deutsche medizinische Wochenschrift*, vol. 145, no. 17, pp. 1227–1235, 2020.

[7] K. Dobruch-Sobczak, Z. Adamczewski, E. Szczepanek-Parulska et al., "Histopathological verification of the diagnostic performance of the EU-TIRADS classification of thyroid nodules-results of a multicenter study performed in a previously iodine-deficient region," *Journal of Clinical Medicine*, vol. 8, no. 11, p. 1781, 2019.

[8] Y. Chen, J. Zhong, L. Wang et al., "Multivendor comparison of quantification accuracy of iodine concentration and attenuation measurements by dual-energy CT: a phantom study," *American Journal of Roentgenology*, 2022.

[9] A. Euler, J. Solomon, M. A. Mazurowski, E. Samei, and R. C. Nelson, "How accurate and precise are CT based measurements of iodine concentration? a comparison of the minimum detectable concentration difference among single source and dual source dual energy CT in a phantom study," *European Radiology*, vol. 29, no. 4, pp. 2069–2078, 2019.

[10] F. Yan, "Analysis of the application value of spectral CT in the pathological classification of lung cancer," *Modern Diagnosis and Treatment*, vol. 30, no. 15, pp. 2627-2628, 2019.

[11] V. Harsaker, K. Jensen, H. K. Andersen, and A. C. Martinsen, "Quantitative benchmarking of iodine imaging for two CT spectral imaging technologies: a phantom study," *European Radiology Experimental*, vol. 5, no. 1, p. 24, 2021.

[12] M. C. Jacobsen, E. N. K. Cressman, E. P. Tamm et al., "Dual-energy CT: lower limits of iodine detection and quantification," *Radiology*, vol. 292, no. 2, pp. 414–419, 2019.

[13] L. Yang, X. Yuan, and J. Qu, "Dual-source CT iodine concentration and overlay value in the diagnosis of gastric cancer and metastatic lymph nodes with different degrees of differentiation," *China Medical Imaging Technology*, vol. 34, no. 12, pp. 1834–1838, 2018.

[14] J. Wang, Y. Li, and C. Wang, "Clinical efficacy and safety observation of yingliu sanjie recipe in the treatment of benign thyroid nodules," *Hebei Traditional Chinese Medicine*, vol. 44, no. 3, pp. 393–396, 2022.

[15] Q. Yang, Z. Tian, and Y. Yao, "Curative effect observation of shugan jianpi huatan formula combined with levothyroxine in the treatment of multiple benign thyroid nodules of liver depression and phlegm condensation type," *World Journal of Integrative Medicine*, vol. 16, no. 11, pp. 2092–2096, 2021.

[16] R. Wang and Y. Zhu, "Clinical observation on the treatment of thyroid nodules by introducing medicine into the lungs and self-prepared formula for strengthening the body," *Yunnan Journal of Traditional Chinese Medicine*, vol. 42, no. 8, pp. 41–44, 2021.

[17] R. Tong, J. Meng, and W. Wu, "Efficacy of liqi huatan xiaoying recipe combined with levothyroxine in the treatment of benign thyroid nodules," *World Chinese Medicine*, vol. 15, no. 22, pp. 3451–3454, 2020.

[18] C. Jia, "Effect of shugan sanjie recipe intervention on clinical efficacy of thyroid nodules [J]," *Inner Mongolia Traditional Chinese Medicine*, vol. 40, no. 3, pp. 59-60, 2021.

[19] B. Lin, *Clinical Study on the Treatment of Benign Thyroid Nodules (Qi Stagnation and Phlegm Stasis Type) with Shuli Huoxue*, Yunnan University of Traditional Chinese Medicine, Kunming, China, 2021.

[20] Y. Liang, *The Efficacy of Shugan Huatan Xiaoying Recipe in the Treatment of Benign Thyroid Nodules (Qi Stagnation and Phlegm Obstruction syndrome)*, Shanxi University of Traditional Chinese Medicine, Taiyuan, China, 2021.

[21] F. Yang and S. Zhang, "Efficacy observation and safety analysis of shugan huatan sanjie recipe in the treatment of thyroid nodules with qi stagnation and phlegm condensation," *Chinese Journal of Metallurgical Industry*, vol. 38, no. 3, pp. 249–251, 2021.

[22] L. Giovanella, A. Avram, and J. Clerc, "Molecular imaging for thyrotoxicosis and thyroid nodules," *Journal of Nuclear Medicine*, vol. 62, 2021.

[23] L. Giovanella and P. Petranović Ovčariček, "Functional and molecular thyroid imaging," *Quarterly Journal of Nuclear Medicine and Molecular Imaging*, vol. 66, no. 2, pp. 86–92, 2022.

[24] T. Ha, W. Kim, J. Cha et al., "Differentiating pulmonary metastasis from benign lung nodules in thyroid cancer patients using dual-energy CT parameters," *European Radiology*, vol. 32, no. 3, pp. 1902–1911, 2022.

[25] E. H. Holt, "Current evaluation of thyroid nodules," *Medical Clinics of North America*, vol. 105, no. 6, pp. 1017–1031, 2021.

[26] L. Jiang, D. Liu, L. Long, J. Chen, X. Lan, and J. Zhang, "Dual-source dual-energy computed tomography-derived quantitative parameters combined with machine learning for the differential diagnosis of benign and malignant thyroid nodules," *Quantitative Imaging in Medicine and Surgery*, vol. 12, no. 2, pp. 967–978, 2022.

[27] D. H. Lee, Y. H. Lee, H. S. Seo et al., "Dual-energy CT iodine quantification for characterizing focal thyroid lesions," *Head & Neck*, vol. 41, no. 4, pp. 1024–1031, 2019.

[28] F. Li, F. Huang, C. Liu et al., "Parameters of dual-energy CT for the differential diagnosis of thyroid nodules and the indirect prediction of lymph node metastasis in thyroid carcinoma: a retrospective diagnostic study," *Gland Surgery*, vol. 11, no. 5, pp. 913–926, 2022.

[29] M. T. Morna, D. A. Tuoyire, B. B. Jimah, S. Eliason, A. Baffour Appiah, and G. A. Rahman, "Prevalence and characterization of asymptomatic thyroid nodules in Assin north district, Ghana," *PLoS One*, vol. 17, no. 2, Article ID e0263365, 2022.

[30] E. Papini, H. Monpeyssen, A. Frasoldati, and L. Hegedüs, "2020 European thyroid association clinical practice guideline for the use of image-guided ablation in benign thyroid nodules," *European Thyroid Journal*, vol. 9, no. 4, pp. 172–185, 2020.

[31] P. W. Rosario, T. G. Rocha, G. F. Mourão, and M. R. Calsolari, "Is radioiodine scintigraphy still of value in thyroid nodules with indeterminate cytology?: a prospective study in an

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Retraction

Retracted: Expression of Serum Omentin, CTRP9, and Vaspin in Patients with Polycystic Ovary Syndrome

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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, N. Liu, J. Lu et al., "Expression of Serum Omentin, CTRP9, and Vaspin in Patients with Polycystic Ovary Syndrome," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 1862404, 6 pages, 2022.

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Research Article

Expression of Serum Omentin, CTRP9, and Vaspin in Patients with Polycystic Ovary Syndrome

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Objective. To explore the relationship between serum omentin, C1q/tumor necrosis factor-related protein-9 (CTRP9), and visceral fat-specific serine protease inhibitor (vaspin) levels in different phenotypes in patients with polycystic ovary syndrome (PCOS). *Methods*. One hundred PCOS patients treated at our hospital's clinic of reproductive medicine were chosen and included into the research group, and 100 healthy women who came for physical examination during the same time period were included into the control group. According to the definition of obesity by the WHO (body mass index (BMI) $\geq 25\ kg/m^2$), 100 patients with PCOS were equally divided into obese (study group A) and nonobese (study group B) groups. 100 healthy women were also divided into obese (control group A) and nonobese (control group B) groups with 50 patients each. Comparison among the 4 groups was performed in factors/indicators including the serum omentin, CTRP9, and vaspin levels and biochemical indexes (triglyceride (TG), total cholesterol (TC), high density lipoprotein cholesterol (HDL-C), low density lipoprotein cholesterol (LDL-C), fasting insulin (FINS), total testosterone, and homeostasis model assessment of insulin resistance (HOMA-IR) levels), and the correlation analysis was conducted with omentin, CTRP9, and vaspin. *Results*. There was no significant difference in age, TG, TC, and LDL-C among the 4 groups ($P > 0.05$). The BMI, WHR, HDL-C, and omentin of the obese phenotype were significantly different from those of the nonobese phenotype ($P < 0.05$). Among the four groups, FINS, HOMA-IR, and vaspin in group A (obesity) was the highest, and the control group B (nonobese) was the lowest. There was no significant difference in the levels of study group B (nonobese) and control group A (obesity). The level of CTRP9 in the study group was significantly lower than that in the control group ($P < 0.05$). Taking serum omentin, CTRP9, and vaspin levels of patients in the study group as dependent variables, Pearson correlation analysis showed that the omentin level was negatively correlated with BMI, WHR, FINS, TG, TC, LDL-C, HOMA-IR, and TT levels ($P < 0.05$) and was positively correlated with the HDL-C level ($P < 0.05$); CTRP9 level was negatively correlated with BMI, TC, and HOMA-IR ($P < 0.05$) and was not correlated with age, WHR, FINS, TG, HDL-C, LDL-C, HOMA-IR, and TT levels. The vaspin level was positively correlated with BMI, WHR, FINS, TG, TC, LDL-C, HOMA-IR, and TT levels ($P < 0.05$) and negatively correlated with HDL-C levels ($P < 0.05$) and was not correlated with age. *Conclusion*. When compared with healthy people, PCOS patients have higher serum vaspin levels and lower CTRP9 levels; BMI, TC, LDL-C, FINS, TG, total testosterone, HDL-C levels, waist-to-hip ratio, and HOMA-IR are all closely related to serum vaspin and CTRP9 levels; increasing serum CTRP9 levels and decreasing vaspin levels help to slow progress and promote prognosis of the disease. Serum omentin level is connected with the obesity index but not with PCOS.

1. Introduction

Polycystic ovary syndrome (PCOS) is one of the most common reproductive and endocrine disorders in gynecology. With complex pathogenesis, it is characterized by chronic anovulation and hyperandrogenism [1, 2]. Typical symptoms such as menstrual disorder, infertility, obesity, and others could have serious impact on the physical and psychological health of women at reproductive age. And, with the progress of the disease, it would possibly raise the risk of endometrial cancer, gestational diabetes, and hyperlipidemia. About 5%–10% of reproductive women are

affected by PCOS, 15% to 20% of the infertile women was diagnosed with PCOS. In addition to the disorder of sex hormone metabolism, most patients with PCOS also disorder of glucose and lipid metabolism [3–5].

In modern western medicine, PCOS is commonly treated with diane-35, an oral contraceptive medicine. Hyperandrogenism symptoms can be effectively attenuated but is prone to recurrence after withdrawal. For infertile women of reproductive age with PCOS, clomiphene citrate (CC) or human chorionic gonadotropin (HCG) is prescribed orally to promote ovulation, with the advantages of low cost and fewer by-effects. But research showed that the probability of pregnancy for patients treated with CC or HCG is only about a half. As for surgery, it comes with short term effects and high risk of recurrence, with certain damage to the body and high incidence of postoperative adhesion [6, 7]. In recent years, more and more researchers looked into the effect of traditional Chinese medicine (TCM) on PCOS. It was found to be with fewer by-effects, higher security, and longer efficacy. TCM scholars found that PCOS is similar to diseases in TCM gynecology like "menstrual blood melting down or dripping," "menstruation delay," and "amenorrhea." Most TCM doctors believe that the occurrence of the disease is inseparable from the liver, spleen, and kidney. Weak kidney impedes development of human body, spleen deficiency causes phlegm and dampness, and liver-Qi stagnation leads to blood stasis; then, the normal operation of blood and *Qi* would be disrupted and so came the disease [8, 9]. As the TCM wisdom holds "superior doctors cure diseases before external symptom shows," early stage prevention and diagnosis is of utterly importance.

In clinical settings, exclusionary diagnosis is commonly used to clarify patients' condition based on clinical symptoms and ultrasonography image. However, the condition of PCOS patients is fairly complex for highly varied clinical symptoms and ultrasound imaging presentations, making it readily mistaken with other conditions, resulting in missed diagnosis and misdiagnosis [10, 11]. Therefore, it is of great clinical significance to seek PCOS serum markers with high sensitivity and specificity. Multiple alternatives have been reported to predict PCOS, such as anti-Müllerian hormone (AMH) level, higher blood urea nitrogen to albumin ratio (BAR) (>7.83) for long-term mortality in AMI patients, elevated ADMA, CRP, Hcy, PAI-1, VEGF, ANGPTL6, and endotrophin level [12–14].

Current studies have concluded that serum omentin is involved in regulating and maintaining the balance of glucose and lipid metabolism from changes in the levels of serum lactones, adiponectin, omentin, and other indicators in patients with PCOS [15]. Other research believes omentin, as a hormone released by the omental tissue that regulates metabolism and immunological response, may be implicated in the development of insulin resistance and hence the pathological process of PCO [16]. C1q/tumor necrosis factor-related protein 9 (CTRP9) is an adipokines that synthesize and secrete adipose tissue, which can protect the myocardium and blood vessels, regulate metabolism, and exert an anti-inflammatory function [17, 18]. Vaspin is a serine protease inhibitor first identified by Hida et al. in 2005. It is involved in the process of glucose and lipid metabolism in the body and is closely related to endocrine function [19, 20]. Vaspin gene polymorphisms have been discovered to be strongly related with diabetes and cardiovascular disease in studies. Currently, few research focused on the expression of serum omentin, CTRP9, and vaspin in PCOS patients. This study will investigate the relationship between serum omentin, CTRP9, vaspin, glucose, and lipid metabolism, *T*, body mass index (BMI), and islet function in patients with PCOS.

2. Research Objects and Methods

2.1. Research Objects. From April 2019 to April 2021, 100 PCOS patients treated at our hospital's clinic of reproductive medicine were chosen and included into the research group, and 100 healthy women who came for physical examination during the same time period were included into the control group. According to the definition of obesity by the WHO (body mass index (BMI) $\geq 25\,kg/m^2$), 100 patients with PCOS were equally divided into obese (study group A) and nonobese (study group B) groups. The 100 healthy women were also divided into obese (control group A) and nonobese (control group B) groups with 50 patients each. The age of the control group was 22–54 years, with an average of 35.42 ± 7.51 years. The age of the study group ranged from 21 to 52 years, with an average of 34.94 ± 8.07 years.

Inclusion criteria for the study group: (1) met the diagnostic criteria in the "Chinese Diagnostic Guidelines for Polycystic Ovary Syndrome" [21]; (2) had no history of diabetes, cardiovascular disease, and hypertension; (3) had not taken insulin sensitizers and steroid hormone drugs in the past 3 months; (4) signed the informed consent.

Inclusion criteria for the control group: (1) with normal menstrual cycle; (2) without polycystic ovarian changes (confirm through ultrasound examination); (3) with normal basal sex hormone levels.

The exclusion criteria for both the study group and the control group were as follows: (1) without a complete uterus and ovary; (2) in acute phase of systemic diseases; (3) with other endocrine diseases, tumors, and cardiovascular diseases. All those research objects have been informed and been required to sign the informed consent before inclusion. Patients in study group and healthy women in control group were fully informed of the purpose of the study, and the experiment was authorized by the ethics committee of Handan Central Hospital (registration number: HD-7768-19). All procedures comply with the ethical guidelines of the Declaration of Helsinki on clinical research.

2.2. Experimental Method

2.2.1. Basic Data Collection. Basic information of all subjects, including age, BMI, waist-to-hip ratio (WHR) (BMI = weight/height (kg/m2); WHR = waist/hip (cm/cm)); systolic blood pressure (SBP) and diastolic blood pressure (DBP), was measured 3 times to obtain the average value.

2.3. Biochemical Indexes Measurement. On the morning of the fourth day of a menstrual cycle (any time for amenorrhea patients), 5 ml of fasting venous blood was drawn from all subjects to determine serum omentin, CTRP9, and vaspin levels and biochemical indicators (triglyceride (TG), total cholesterol (TC), high density lipoprotein cholesterol (HDL-C), low density lipoprotein cholesterol (LDL-C), fasting insulin (FINS), total testosterone, and homeostasis model assessment of insulin resistance (HOMA-IR)). Among them, the levels of serum omentin, CTRP9, and vaspin were determined using an enzyme-linked immunosorbent assay, blood lipids were determined by a fully automated biochemical detector, total testosterone, and FINS levels were determined using electrochemiluminescence, and plasma glucose level was measured through the glycokinase method. HOMA-IR = fasting blood glucose (FBG) × FINS/22.5.

2.4. Outcome Indicators. The levels of omentin, CTRP9, and vaspin in serum were compared amongst the four groups.

2.5. Statistical Analysis. All data were processed by SPSS 22.0, measurement data were expressed as $x \pm s$, and independent samples T test was used for comparison between groups, while one-way ANOVA was used for comparison amongst multiple groups. Relationship between indicators was determined by Pearson linear correlation and multiple linear regression analysis. $P < 0.05$ was assumed as statistically significant.

3. Results

3.1. Comparison of Clinical Data and Metabolism-Related Indicators among the Four Groups. There was no significant difference in age, TG, TC, and LDL-C among the 4 groups ($P > 0.05$). The obese phenotype's BMI, WHR, HDL-C, and omentin levels were considerably higher than those of the nonobese phenotype ($P < 0.05$). FINS, HOMA-IR, and vaspin levels were the highest in group A (obese), and the lowest in control group B (nonobese), with no significant difference between study group B (nonobese) and control group A (obese). CTRP9 level of the study group was considerably lower than of the control group ($P < 0.05$), as shown in Table 1.

3.2. Analysis of Factors Related to Serum Omentin, CTRP9, and Vaspin Levels. With serum omentin, CTRP9, and vaspin levels as dependent variables, Pearson correlation analysis revealed that the omentin level was negatively correlated with BMI, WHR, FINS, TG, TC, LDL-C, HOMA-IR, and TT levels but positively correlated with the HDL-C level ($P < 0.05$); the CTRP9 level was negatively correlated with BMI, TC, and HOMA-IR ($P < 0.05$) and was not correlated with age, WHR, FINS, TG, HDL-C, LDL- C, HOMA-IR, and TT levels. The vaspin level was positively correlated with BMI, WHR, FINS, TG, TC, LDL-C, HOMA-IR, and TT levels ($P < 0.05$) and negatively correlated with HDL-C levels ($P < 0.05$) and was not correlated with age (see Table 2).

4. Discussion

PCOS, one of the most common reproductive endocrine diseases in women, is often manifested as ovulatory dysfunction, hyperandrogen status, hyperinsulinemia, and ovarian polycystic changes [22]. Though its pathology has yet to be fully understood, most scholars believe that lipid metabolism, heredity, body hormone level, and other factors are engaged [23, 24]. Data shows that 30%~60% of PCOS patients are obese, 50%~70% of PCOS patients are also diagnosed with insulin resistance, and insulin resistance may be the central link or initial factor of the disease. The development of insulin resistance is related to the conduction defect of insulin signal pathway [25, 26]. It is reported that, in recent years, the population diagnosed with PCOS becomes increasingly larger and younger, posing great hazard on the physical and mental health of women of childbearing age. However, due to the complexity and diversity of PCOS, its pathogenic causes and mechanisms are still not clear, and some studies believe that it is related to genetic, endocrine, metabolic, immune, environmental, mental and psychological factors. PCOS is a refractory disease and cannot be completely cured for now. In clinical practice, symptomatic treatments such as ovulation promotion, androgen reduction, and insulin resistance alleviation are mainly used, and surgical treatment is adopted when necessary [27, 28].

Western medicine has not clarified the exact pathogenesis of PCOS, but genetic and environmental factors are considered to be the possible directions for exploration. According to the clinical symptoms of patients with PCOS, western medicine applies symptomatic treatment. For example, estrogen and progesterone are used to regulate women's menstrual cycle, androgen lowering therapy is adopted for patients with high androgen, and ovulation promotion and ovarian drilling are applied to patients with fertility requirements [29, 30]. In traditional Chinese medicine, there is no related record of "polycystic ovary syndrome," but its clinical manifestations such as irregular menstruation, rare hair, late closure, amenorrhea, and irregular uterine bleeding relate it to diseases like "menstruation delay," "amenorrhea," and "infertility." Clinical manifestations of this disease are diverse, and the dialectical classification is complex. So far, a unified dialectical treatment standard has not been reached. Most doctors think that the disease is mainly related to the dysfunction of an axis from kidney–Tiankui (menstruation)—Chong and Ren Meridians–and finally to uterine. Kidney deficiency harms menstruation, spleen deficiency induces endogenous wet and turbidities, and liver stagnation impedes free flow of Qi and blood. As time goes by, wet, phlegm, blood stasis, and other pathological products accumulates in the body and will eventually block Chong and Ren meridians and uterine if not cured in time and then lead to PCOS. Doctors hold different dialectical views on treatment, but the methods they adopted are invariably from the basic pathogenesis of viscera deficiency and the intermingled deficiency and excess [31, 32].

Table 1: Comparison of clinical data and metabolism-related indexes of the four groups ($\overline{x} \pm s$).

Groups	n	Age (year)	BMI (kg/m^2)	WHR	FINS (mIU/L)	
Study group A (obesity)	50	34.63 ± 6.09	27.84 ± 3.87^{a}	0.97 ± 0.07^{a}	24.93 ± 16.37^{ac}	
Study group B (nonobesity)	50	33.81 ± 7.11	20.69 ± 1.62	0.84 ± 0.08	10.63 ± 6.92^{d}	
Control group A (obesity)	50	35.25 ± 7.48	27.33 ± 4.25^{b}	0.96 ± 0.06^{b}	10.60 ± 6.84^{b}	
Control group B (nonobesity)	50	34.66 ± 7.50	19.81 ± 1.60	0.82 ± 0.05	4.22 ± 1.91	
F		1.326	63.269	13.731	35.536	
P		0.294	≤0.001	≤0.001	≤0.001	
Groups	n	TG (mmol/L)	TC (mmol/L)	HDL-c (mmol/L)	LDL-c (mmol/L)	
Study group A (obesity)	50	2.84 ± 0.89	4.67 ± 1.13	1.11 ± 0.24^{a}	3.32 ± 0.61	
Study group B (nonobesity)	50	1.57 ± 1.08	4.62 ± 1.24	1.19 ± 0.35	2.79 ± 0.55	
Control group A (obesity)	50	2.23 ± 1.46	4.57 ± 0.96	1.13 ± 0.21^{b}	3.22 ± 0.78	
Control group B (nonobesity)	50	1.58 ± 0.92	4.38 ± 0.73	1.24 ± 0.35	2.97 ± 0.92	
F		2.132	0.656	3.679	1.673	
P		0.110	0.592	0.015	0.179	
Groups	n	HOMA-IR	TT (mmol/L)	Omentin (pg/L)	CTRP9 (ng/L)	Vaspin (μg/L)
Study group A (obesity)	50	6.37 ± 1.52^{ac}	1.47 ± 0.62^{c}	42.87 ± 19.52^{a}	239.31 ± 36.17^{c}	0.63 ± 0.44^{ac}
Study group B (nonobesity)	50	2.31 ± 1.57^{d}	1.41 ± 0.53^{d}	111.23 ± 34.74	241.76 ± 42.73^{d}	0.45 ± 0.34^{d}
Control group A (obesity)	50	2.26 ± 1.55^{b}	1.04 ± 0.87^{b}	45.91 ± 18.54^{b}	463.58 ± 64.72	0.33 ± 0.31^{b}
Control group B (nonobesity)	50	0.91 ± 0.38	0.93 ± 0.47	115.28 ± 33.78	461.39 ± 55.45	0.13 ± 0.10
F		22.341	4.131	60.308	206.516	6.782
P		≤0.001	≤0.001	≤0.001	≤0.001	≤0.001

Table 2: Analysis of related influencing factors of serum omentin, CTRP9, and vaspin levels ($\overline{x} \pm s$).

Indexes	Omentin		CTRP9		Vaspin	
	r	P	r	P	r	P
Age	−0.356	0.021	0156	0.231	0.023	0.136
BMI	−0.913	0.007	−0.323	0.008	0.211	0.021
WHR	−0.640	0.041	0.055	0.673	0.197	0.003
FINS	−0.529	0.033	−0.079	0.553	0.204	0.017
TG	−0.641	0.006	0.040	0.905	0.192	0.007
TC	−0.722	0.009	−0.341	0.010	0.191	0.023
HDL-C	0.917	0.034	−0.085	0.512	−0.212	0.031
LDL-C	−0.338	0.027	−0.071	0.575	0.231	0.019
HOMA-IR	−0.402	0.005	−0.309	0.021	0.217	0.023
TT	−0.715	0.039	−0.112	0.059	0.209	0.025

More and more studies have shown that PCOS is not only a reproductive system dysfunction but rather a complex multisystem syndrome [33, 34]. Despite advances in PCOS related research, the cause of the condition remains unknown. People tend to focus on menstruation and fertility, thus overlooking metabolic problems and insulin resistance (IR) in patients. IR and the dysfunction of hypothalamic-pituitary-gonadal axis could be two core links in the progress of PCOS. Patients with PCOS are faced with higher risks of metabolic abnormalities, dyslipidemia, and cardiovascular problems, but opinions still varied on whether adipokines are related to the occurrence and development of gynecological endocrine diseases.

Adipose tissue is an endocrine organ that can perform autocrine and paracrine, store energy, and form an intricate metabolic-neuroendocrine-immune network. Serum vaspin and CTRP9 are adipokines most commonly seen in clinical studies on obesity and cardiovascular diseases [35]. As studies go deeper, it is found out that adipose tissue can not only store energy but also produce hormones (called adipokines). In other words, adipose tissue performs endocrine function. Vaspin, a member of the serine protease inhibitor family, is found in visceral adipose tissue and exhibits insulin-sensitizing property. Elevated serum vaspin concentration is associated with obesity and altered insulin sensitivity in humans. As reported in previous studies, the serum vaspin level, if abnormally elevated, can induce abnormal lipid metabolism, and elevated levels of hormones in patients can lead to hormone regulation disorder and thus increase its content [36]. In animal experiments, Bongrani et al. [37] found that when the body weight and insulin resistance index of obese diabetic rats rose, their serum vaspin levels also increased, and vice versa. After insulin sensitizer treatment, their serum vaspin levels markedly increased. Thus, serum vaspin may have a role in insulin sensitivity. The serum vaspin level in PCOS patients was higher than that in healthy subjects, indicating its role of a indicator for clinical diagnosis of PCOS, and the increase in its level may be the body's compensatory response to the glucose metabolism disorder and insulin resistance. In addition, this study also found the following correlations between serum vaspin and lipid metabolism and obesity of PCOS patients: serum vaspin is positively correlated with BMI, WHR, FINS, TG, TC, LDL-C, HOMA-IR, and TT levels and negatively correlated with HDL-C ($P < 0.05$). A possible reason may be that the increase of body fat content stimulates adipose tissue to a certain extent, prompting it to secrete vaspin, which contributes to fat deposit in a compensatory manner or it may be related to the compensatory increase of vaspin expression in obesity.

Adiponectin is a cytokine negatively correlated with obesity. Secreted and synthesized by adipocytes, it has many biological effects such as antiatherosclerosis, antidiabetes, anti-inflammatory, and antiapoptosis [38]. The CTRPs family, discovered clinically in recent years, is highly homological to adiponectin. Among them, CTRP9 and can be

used as an indicator to reflect the body's insulin sensitivity [39]. This study showed that the CTRP9 level was negatively correlated with BMI, TC, and HOMA-IR, but had no correlation with age, WHR, FINS, TG, HDL-C, LDL-C, HOMA-IR, and TT levels. As for the reason behind, we think that CTRP9 level may affect liver cholesterol synthesis and decomposition or blood sugar tolerance, resulting in local oxidative stress injury or local stress injury caused by blood lipid metabolism disorder, thereby promoting local ovarian epithelial endocrine functional disorders in PCOS patients, inhibiting ovulation and inducing excessive androgen secretion and further facilitating progress of PCOS in patients.

Since the lowering of the omentin level is related to insulin resistance and obesity, we speculated that omentin plays a role in the occurrence and development of PCOS [40]. In this study, serum omentin in PCOS patients was found to be significantly lower than that in normal people of the control group, and that omentin level was negatively correlated with BMI, WHR, FINS, TG, TC, LDL-C, HOMA-IR, and TT levels and positively correlated with the HDL-C level. Thus, the speculation was supported.

Due to objective factors like funds, time and complexity, and diversity of the disease, this study included relatively a small number of patients with limited observation indicators, short time of observation, and follow-up visits, from which the evaluation of clinical effects was not comprehensive. The absence of animal tests means the action mechanism of relevant drugs could not be further explored.

Multicenter clinical research with expanded sample size, double-blind comparison, longer time of treatment, observation, and follow-up visits, standardize and accurate observation indicators, and animal tests when necessary to explore the pharmacological mechanism is supposed to be the future direction.

In conclusion, PCOS patients present higher serum vaspin levels and lower CTRP9 levels when compared with healthy people; BMI, TC, LDL-C, FINS, TG, total testosterone, HDL-C levels, waist-to-hip ratio, and HOMA- IR are closely related to serum vaspin and CTRP9 levels; increasing serum CTRP9 level and reducing vaspin level can help slow the progress of PCOS and promote disease prognosis. Serum omentin level is associated with the obesity index but not with PCOS.

Data Availability

All data generated or analysed during this study are included in this published article.

Conflicts of Interest

The authors declare no conflicts of interest.

Authors' Contributions

Yuhong Wang and Ning Liu drafted and revised the manuscript. Jing Lu, Liping Yang, Changyan Wang, Jing Chen, and Wenliang Chang were in charge of data collection. All the authors have read and agreed to the final version of manuscript.

References

[1] N. Ajmal, S. Z. Khan, and R. Shaikh, "Polycystic ovary syndrome (PCOS) and genetic predisposition: a review article," *European Journal of Obstetrics & Gynecology and Reproductive Biology X*, vol. 3, Article ID 100060, 2019.

[2] Z. Kamenov and A. Gateva, "Inositols in PCOS," *Molecules*, vol. 25, no. 23, p. 5566, 2020.

[3] M. J. Khan, A. Ullah, and S. Basit, "Genetic basis of polycystic ovary syndrome (PCOS): current perspectives," *The Application of Clinical Genetics*, vol. 12, pp. 249–260, 2019.

[4] C. Delcour, G. Robin, J. Young, and D. Dewailly, "PCOS and Hyperprolactinemia: what do we know in 2019?" *Clinical Medicine Insights: Reproductive Health*, vol. 13, Article ID 1179558119871921, 2019.

[5] S. Patel, "Polycystic ovary syndrome (PCOS), an inflammatory, systemic, lifestyle endocrinopathy," *The Journal of Steroid Biochemistry and Molecular Biology*, vol. 182, pp. 27–36, 2018.

[6] Y. Wang, Y. Xing, and Y. U. Xing, "Clinical observation on the treatment of obese polycystic ovary syndrome with Bushen Huatan Decoction combined with acupunctur," *China Family Planning and Obstetrics*, vol. 14, pp. 75–80, 2022.

[7] J. Lipei, "Clinical study of Bushen Huayu Recipe combined with western medicine in the treatment of polycystic ovary syndrome infertility," *New Chinese Medicine*, vol. 54, pp. 112–116, 2022.

[8] W. Song and J. Yan, "Clinical effect of Bushen Huayu Recipe combined with moxibustion in the treatment of ovulatory infertility with blood stasis type polycystic ovary syndrome," *Journal of Clinical Rational Medicine*, vol. 15, no. 16, pp. 118–121, 2022.

[9] C. Xie, Y. Zhao, and A. Zhang, "Ultrasound observation of uterine artery blood flow in patients with polycystic ovary syndrome treated with Jianpi Huatan Formula," *Journal of Hubei University of Traditional Chinese Medicine*, vol. 24, pp. 97–100, 2022.

[10] S. F. Witchel, H. J. Teede, and A. S. Peña, "Curtailing PCOS," *Pediatric Research*, vol. 87, no. 2, pp. 353–361, 2020.

[11] E. Otto-Buczkowska, K. Grzyb, and N. Jainta, "Polycystic ovary syndrome (PCOS) and the accompanying disorders of glucose homeostasis among girls at the time of puberty," *Pediatric Endocrinology, Diabetes and Metabolism*, vol. 24, no. 1, pp. 40–44, 2018.

[12] G. Guney, M. I. Taskin, O. Baykan et al., "Endotrophin as a novel marker in PCOS and its relation with other adipokines and metabolic parameters: a pilot study," *Therapeutic Advance Endocrinology Metabolism*, vol. 12, Article ID 20420188211049607, 2021.

[13] E. Elci, C. Kaya, N. Cim, R. Yildizhan, and G. G. Elci, "Evaluation of cardiac risk marker levels in obese and non-obese patients with polycystic ovaries," *Gynecological Endocrinology*, vol. 33, no. 1, pp. 43–47, 2017.

[14] H. Cengiz, M. Ekin, H. Dagdeviren, Ş Yildiz, C. Kaya, and A. Kanawati, "Comparison of serum anti-Müllerian hormone levels in normal weight and overweight-obese adolescent patients with polycystic ovary syndrome," *European Journal of Obstetrics & Gynecology and Reproductive Biology*, vol. 180, pp. 46–50, 2014.

[15] T. Watanabe, K. Watanabe-Kominato, Y. Takahashi, M. Kojima, and R. Watanabe, "Adipose tissue-derived

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Evidence-Based Complementary and Alternative Medicine
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Retraction

Retracted: Effects of Personalized Nursing plus Dietary Nursing Management on LP-PLA2, Hcy Levels, and Quality of Life in Elderly Patients with Acute Coronary Syndrome

Evidence-Based Complementary and Alternative Medicine

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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] F. Luo, J. Qi, L. Zhao, Y. Wang, and M. Yang, "Effects of Personalized Nursing plus Dietary Nursing Management on LP-PLA2, Hcy Levels, and Quality of Life in Elderly Patients with Acute Coronary Syndrome," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 8770996, 6 pages, 2022.

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Research Article

Effects of Personalized Nursing plus Dietary Nursing Management on LP-PLA2, Hcy Levels, and Quality of Life in Elderly Patients with Acute Coronary Syndrome

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Objective. To explore the effect of individual nursing combined with dietary management on blood glucose levels and quality of life in elderly patients with acute coronary syndrome with diabetes. *Method*. This study included 68 elderly patients who underwent acute coronary syndrome at Department of Emergency in our hospital from January 2018 to January 2020. And they were assigned to a control group ($n = 34$) treated with individual nursing and a research group ($n = 34$) treated with individual nursing and dietary management according to the random number table. A comparison of the changes in blood glucose levels, anxiety and depression, quality of life, and nursing satisfaction was made between groups before and after nursing. *Result*. Before nursing, the differences in blood glucose levels, SAS scores, and SDS scores between groups were not considered statistically significant ($P > 0.05$). After nursing, the blood glucose levels, SAS, and SDS levels of patients in both groups significantly decreased, and the research group presented a higher decrease when compared with the control group ($P < 0.05$). The short form health survey (SF-36) showed that the research group had higher scores in physical function (PF), general health (GH), vitality (VT), mental health (MH), social function (SF), role-physical (RP), bodily pain (BP), and role-emotional (RE) compared with the control group ($P < 0.05$). The satisfaction survey presented that the research group had a significantly higher total score than the control group [(91.40 ± 5.23) vs. (86.61 ± 7.14), $P < 0.05$]. *Conclusion*. The combination of individual nursing and dietary management not only effectively reduces glycosylated hemoglobin levels and anxiety and depression but also wins better nursing satisfaction in the treatment of acute coronary syndrome in elderly patients. Moreover, their quality of life has been significantly improved after discharge.

1. Introduction

Acute coronary syndrome (ACS) usually results from sudden rupture or erosion of plaque inside the coronary artery that leads to thrombus and acute stenosis or blockage. It is common among the elderly and the main reason for death and disability caused by coronary heart disease [1]. Sympathetic excitation, increased blood viscosity, and increased myocardial oxygen consumption lead to rupture or erosion of unstable atherosclerotic plaques, causing platelet agglutination and consequent thrombosis, which can eventually result in acute or subacute myocardial hypoxia or ischemia, or even myocardial injury [2]. Coronary heart disease is often accompanied by multiple complications, among which patients with type 2 diabetes mellitus account for about 20%–30%. Dyslipidemia can exist in patients with coronary heart disease and type 2 diabetes. When the two diseases interact, disorders of lipid metabolism are more severe, while blood glucose levels have pathogenic mechanisms that lead to vascular atherosclerosis, and their levels are sensitive to the vascular condition and are of great value for prediction, diagnosis, and prognostic assessment [3, 4].

It is challenging to standardize diagnosis and treatment, improve the successful treatment rate, and improve the quality of life and long-term survival rate in the treatment of ACS with diabetes with the acceleration of population aging

in China. Individualized care is patient-centered and places greater emphasis on primary care. Previous studies have shown that individualized nursing interventions are effective in improving the quality of life of patients, combined with the importance of diet in elderly patients with acute coronary syndrome combined with diabetes. The aim of this study was to investigate the effect of individualized care combined with dietary management on postoperative glycated hemoglobin levels and quality of life in elderly patients with ACS combined with diabetes mellitus, with a view to clinical reference.

2. Subjects and Methods

2.1. Research Subjects. Sixty-eight elderly patients with ACS combined with diabetes mellitus attending our emergency department from January 2018 to January 2020 were included in this study for prospective analysis, and all patients in this study were divided into a control group ($n = 34$) and a study group ($n = 34$). The ethics committee of our hospital approved this study.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria

(1) Patients who met the standards in guidelines for emergency rapid diagnosis and treatment of acute coronary syndrome, and whose diagnosis was confirmed by electrocardiogram and relevant laboratory tests [5];

(2) Clinically diagnosed as diabetes;

(3) Patients with age ≥ 60 years old;

(4) Patients who experienced percutaneous coronary intervention, including balloon angioplasty, and stent implantation;

(5) Patients with a normal mentality and the ability to communicate;

(6) Patients who had been informed and voluntarily participated in this study

2.2.2. Exclusion Criteria

(1) Patients who were retired medical staffs;

(2) Patients with malignant tumors;

(3) Patients with liver and kidney dysfunction;

(4) Patients with ACS followed by thyroid dysfunction and leukemia.

2.3. Nursing Methods

2.3.1. Control Group. The control group was provided with individual nursing.

(1) Medication guidance: medical staffs gave the prescriptions with mild adverse reactions and low cost based on the conditions of patients, relevant laboratory tests, drug contraindications, history of drug allergy, financial status, etc. Next, they instruct patients to take the medication and monitor the efficacy and side effects in real time. If patients experience serious adverse reactions, medical staff should immediately inform the physician in order to adjust the dose and improve patient compliance.

(2) Psychological intervention: medical staffs provided specific psychological counseling after communicating many times. Provided that patients were not confident about treatment, medical staffs shared successful cases to enhance their confidence. If patients refused treatment because of costly expenses, medical staffs helped raise medical expenses through crowdfunding, and donations. In addition, medical staffs explained the conditions of patients and their required nursing in simple words to facilitate their understanding and ease their anxiety, thereby building a good nurse-patient relationship.

(3) Health education: medical staffs threw lectures to analyze the causes, clinical manifestations, and treatment of ACS and instruct patients to have such good habits as normal rest, proper exercise, smoking cessation and quitting alcohol, and a scientific diet.

(4) Discharge guidance: when patients left the hospital, they were reminded to take medications as prescribed by physicians. (4) Family members assume supervisory responsibility to help patients maintain good lifestyle habits, for example, patients perform daily exercises such as jogging, tai chi and bada-jen, drink tea appropriately, take adequate fiber, and patients must seek medical advice if they are unwell. Medical staff follows up with discharged patients from time to time through WeChat, phone calls, and SMS to understand their condition and answer their questions, for 12 months per patient.

2.3.2. Research Group. The research group was provided with dietary management plus the same individual nursing as the control group. Specific steps for dietary management are as follows:

(1) First was to evaluate the daily diet of patients to establish a record.

(2) The second was to collect and record general information like height, weight, work, blood pressure, and blood sugar,. Then, based on the dietary preferences of patients, medical staffs drew a calorie chart and designed a scientific and reasonable recipe [6]. In addition to rice and flour, patients also eat whole grains such as sweet potatoes, purple potatoes, corn, potatoes, yams, buckwheat, and oatmeal to meet their calorie needs. They also eat fresh vegetables and seasonal fruit every day for vitamins, and appropriate amounts of meat, eggs, milk, and soya products for protein.

(3) Trained medical staffs instructed families to cook meals by recipes.

(4) After discharge, patients were requested to regularly follow the recipe to have a healthy diet. In the meantime, patients appropriately drank weak tea instead of strong tea, were forbidden to have tea with drugs or at night, and monitored blood pressure and blood sugar daily.

2.4. Observation Indexes

(1) The changes in glycosylated hemoglobin levels before and after nursing (at discharge) were compared between the two groups. Before and after the intervention, the fasting blood in the morning was collected and the glycosylated hemoglobin level was measured by the hospital's automatic biochemical analyzer (Jinan Oulaibo Scientific Instrument Co., Ltd.; bk-200). The normal value of glycosylated hemoglobin is 4%~6%.

(2) Assessed the anxiety and depression of the two groups with the self-rating anxiety scale (SAS) [7] and self-rating depression (SDS) before and after nursing [8].

(3) Assessed the quality of life of the two groups with short-form health survey 36 (SF-36), after follow-up, consisting of eight aspects like physical function (PF), general health (GH), vitality (VT), mental health (MH), social function (SF), role-physical function (RP), bodily pain (BP), and role-emotional function (RE), with a total of 36 items [9].

(4) Created a nursing satisfaction questionnaire that consisted of nursing attitude, health education, humanistic care, nursing efficacy, and discharge guidance, with 20 points for each item and a total score of 100 points. A higher score meant better satisfaction, and this collection was completed within one week after discharge.

2.5. Statistical Analysis. In this study, the data was analyzed using SPSS23.0. The enumeration data were expressed as n (%) using the Chi-square test, and the measurement data were expressed as the mean ± standard deviation and compared between groups using t-test. $P < 0.05$ implied a statistical significance.

3. Results

3.1. Comparison of General Data. There were 34 patients in each group, and there was no significant difference in gender, age, clinical classification, hypertension, and other general data ($P > 0.05$), as shown in Table 1.

3.2. Comparison of Glycosylated Hemoglobin Levels between Groups before and after Nursing. There was no significant difference in the level of glycosylated hemoglobin between the two groups before nursing ($P > 0.05$). After nursing, the level of glycosylated hemoglobin decreased significantly ($P < 0.001$), and the level of glycosylated hemoglobin in the study group was significantly lower than that in the control group ($P < 0.05$), as shown in Table 2.

3.3. Comparison of SAS and SDS Scores before and after Nursing. No significant difference was observed in SAS and SDS scores between groups before nursing ($P > 0.05$). After nursing, the SAS and SDS scores of the two groups both significantly decreased, and the research group had lower SAS and SDS scores when compared with the control group ($P < 0.05$). See Table 3.

3.4. Comparison of SF-36 Scores after Follow-Up. The SF-36 score showed that the research group had higher scores in PF, GH, TV, MH, SF, RP, BP, and RE when compared with the control group ($P < 0.05$). See Table 4, and Figure 1.

3.5. Comparison of Nursing Satisfaction after Follow-Up. The satisfaction survey showed that patients in the research group gave higher total scores than patients in the control group, and they gave higher scores in nursing efficacy and discharge guidance ($P < 0.05$). See Table 5.

4. Discussion

ACS is a common and serious cardiovascular disease seen in the elderly, postmenopausal women, and people with a history of smoking, hypertension, diabetes, hyperlipidemia and abdominal obesity, and a family history of early coronary heart disease [10]. It presents with paroxysmal chest pain and tightness, leading to arrhythmias, heart failure, and even sudden death, thus, affecting the quality of life and life expectancy [11, 12].

Compared with other traditional risk factors, glycosylated hemoglobin reflects vascular conditions more sensitively. Their levels are positively correlated with the occurrence of cardiovascular malignant diseases and mortality. The increase in glycated hemoglobin induces vascular inflammation and promotes the formation and rupture of arterial plaque, which leads to various cardiovascular diseases. Studies have found that acute cardiovascular disease is closely related to plaque stability, and if plaque is in an unstable state, it can lead to increased blood glucose and patients are more likely to develop malignant cardiovascular disease [13]. The increase in glycosylated hemoglobin brings damage to blood vessels, leading to coronary artery disease, peripheral vascular disease, cerebrovascular disease, and venous thrombosis. The local thrombus is gradually replaced by fibrous tissue, with changes in smooth muscle proliferation in the process, thereby increasing the risk of cardiac, cerebral, and peripheral vascular atherosclerosis, ultimately leading to a greatly increased risk of myocardial infarction and stroke [14, 15].

Individual nursing meets the physiological, psychological, social, and spiritual needs of patients with ACS with diabetes and improves their prognosis. Individual nursing is

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

Group	n	Gender		Age	Type		Hypertension
		Male	Female		Acute myocardial infarction	Unstable angina	
Control group	34	21	13	68.21 ± 9.47	18	16	29
Research group	34	23	11	69.58 ± 9.54	20	14	30
t		0.258		0.594	0.239		0.128
P		0.400		0.554	0.404		0.500

Table 2: Comparison of glycosylated hemoglobin between groups before and after nursing ($\overline{x} \pm s$).

Group	n	Before nursing	After nursing	t	P
Control group	34	10.08 ± 1.46	6.65 ± 1.35	10.058	<0.001
Research group	34	9.93 ± 1.57	6.01 ± 0.96	12.421	<0.001
t		0.408	2.253		
P		0.684	0.028		

Table 3: Comparison of SAS and SDS scores before and after nursing ($\overline{x} \pm s$).

Group	n	SAS		SDS	
		Before nursing	Before nursing	Before nursing	After nursing
Control group	34	65.39 ± 7.27	49.22 ± 5.51*	29.14 ± 3.45	19.12 ± 2.47*
Research group	34	66.67 ± 7.45	38.47 ± 4.32*	28.98 ± 3.13	14.28 ± 1.79*
t		0.717	8.953	0.200	9.252
P		0.476	<0.001	0.842	<0.001

Note. Comparison with before nursing, (*$P < 0.05$).

Table 4: Comparison of SF-36 scores after follow-up ($\overline{x} \pm s$).

Item	Control group	Research group	t	P
PF	86.14 ± 5.98	95.78 ± 4.51	7.505	<0.001
GH	42.21 ± 7.99	81.03 ± 1.95	27.520	<0.001
TV	55.78 ± 6.91	93.26 ± 3.37	28.430	<0.001
MH	66.82 ± 7.56	88.67 ± 3.56	15.250	<0.001
SF	87.69 ± 8.57	104.41 ± 9.77	7.502	<0.001
RP	85.48 ± 17.92	94.16 ± 8.78	2.536	0.014
BP	60.72 ± 6.53	71.87 ± 10.13	5.394	<0.001
RE	51.42 ± 5.34	89.45 ± 6.74	25.790	<0.001

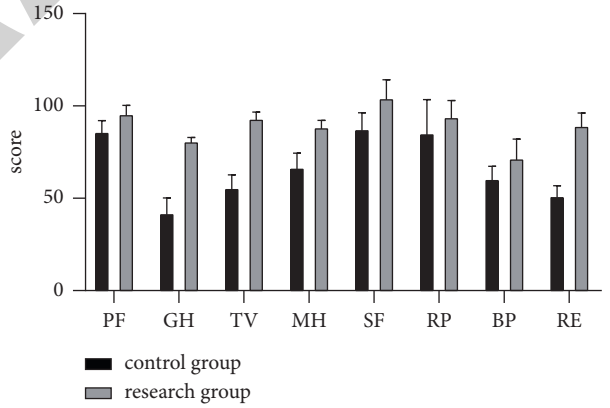

Figure 1: Comparison of quality of life scores between the two groups.

patient-centered, emphasizes primary nursing, and provides more satisfying comprehensive nursing. Individualized nursing interventions are used to alleviate patients' dysphoria, increase their awareness of the disease, and play a positive role in strengthening their immune system and creating a good therapeutic environment [16]. Poor diet directly worsens the patient's condition. If patients consume too much fat, sodium, and sugar, it can directly lead to increased blood pressure, blood sugar and lipids, metabolic disorders, and elevated Lp-PLA2 and Hcy levels. It is therefore necessary to develop scientific dietary recipes to correct metabolic disorders [17, 18].

In this study, the decrease in glycosylated hemoglobin levels was significantly lower in the study group than in the control group aftercare, and SAS and SDS scores were lower in the study group, suggesting that individualized care combined with dietary management provides not only specific nursing interventions, especially in physical and psychological aspects but also detailed medication instructions. Psychological intervention is to relieve their anxiety and depression, deliver health education and enhance self-confidence, and specific dietary management is to improve their diets and nutritional balance. In addition, discharge instructions are a solution to their postdischarge worries. In the treatment of ACS combined with diabetes mellitus, there is a certain damage to the body of elderly patients, and with various physical functions declining with age, they are prone to a series of adverse reactions, and most patients experience adverse reactions followed by poor mood, which affects the efficacy and reduces the quality of life [19, 20].

Table 5: Comparison of nursing satisfaction ($\overline{x} \pm s$).

Type	Control group ($n = 34$)	Research group ($n = 34$)	t	P
Nursing attitude	17.75 ± 1.34	18.01 ± 1.12	0.868	0.388
Health education	17.46 ± 1.01	17.89 ± 1.24	1.568	0.122
Humanistic care	18.13 ± 1.04	18.36 ± 0.87	0.989	0.326
Nursing efficacy	16.84 ± 2.23	18.98 ± 0.51	5.455	<0.001
Discharge guidance	16.43 ± 2.51	18.16 ± 1.32	3.557	<0.001
Total score	86.61 ± 7.14	91.40 ± 5.23	3.156	0.002

In China, the current focus of our medical service is to improve the quality of life, including the conditions of patients and their survival. This study found that after follow-up, the research group had a better quality of life compared with the control group, and also gives better nursing satisfaction. Most elderly patients experience ACS with diabetes because of smoking, hypertension, diabetes, hyperlipidemia, and abdominal obesity. Individualized care provides patients with targeted care strategies and effective dietary management to help them manage their blood glucose and intervene [21]. Proper dietary management is essential for self-management in patients with chronic diseases, and most elderly ACS patients with diabetes have difficulty matching their daily diet due to low education, low health awareness, and financial constraints. However, in this study, patients were provided with tailor-made recipes and taught cooking skills by medical staff in person to help patients eat scientifically and with strict control of daily intake by patients, which helps to reduce cardiac load and regulate metabolic disturbances. Eating more coarse fiber food has four benefits. Firstly, it promotes bowel movement, improves gastrointestinal function, and prevents constipation and even bowel cancer. The second is to improve blood sugar response and lower postmeal blood sugar to treat diabetes. The third is to reduce the cholesterol in plasma to prevent and treat hyperlipidemia and cardiovascular disease. The fourth is to control weight so as to reduce the occurrence of obesity [22, 23]. In the meantime, it is also recommended to appropriately drink tea because of its role in anticoagulation and promoting fibrinolysis. Tea polyphenols can improve the permeability of microvascular walls, effectively enhancing the elasticity and resistance of myocardial and vascular walls and reducing the severity of atherosclerosis [24]. Moreover, caffeine and theophylline directly excite the heart, expand coronary arteries, and enhance myocardial function. In this study, the baseline data of SF-36 in the two groups were not collected, which may weaken the research conclusion of this study. However, since the two groups of patients were randomly grouped through the random number table, it is reasonable to believe that the baseline levels of SF-36 in the two groups are similar.

Non-ST-segment elevation coronary syndromes are usually treated with antimyocardial ischemic drugs to reduce myocardial oxygen consumption, dilate coronary arteries, increase coronary blood flow and relieve myocardial ischemia [25]. β-receptor antagonists can reduce myocardial oxygen consumption, reduce recurrent episodes of myocardial ischemia, and may improve patient prognosis [26]. Calcium channel blockers are the first choice for vasospastic angina and can also be used in patients whose symptoms are not controlled despite adequate nitrate and beta antagonist therapy [27]. Antiplatelet therapy is primarily an antiplatelet coagulation therapy to prevent thrombosis [28].

There is no evidence-based treatment for this disease, but some TCM treatments or medications can relieve symptoms. The clinical manifestations of ACS are breath power deficiency, Yang deficiency, Yin deficiency, and breath power-Yin deficiency or breath power -Yang deficiency, as well as breath power stagnation, blood stasis, phlegm blockage and cold condensation, and blood stasis is a prevalent pathological feature [29]. The blood-activating herbs Radix Paeoniae, *Salviae miltiorrhiza*, Rhizoma Chuanxiong, *Panax notoginseng*, peach kernel, and rhubarb in wine have certain plaque-stabilizing effects, and their plaque-stabilizing effects vary [30]. Rhubarb made from blood-breaking herbal wine has the best plaque-stabilizing effect, almost similar to that of the western drug simvastatin, followed by *Panax notoginseng* [31]. The mechanism may be related to the regulation of lipid metabolism and the inhibition of inflammatory responses, but there may be differences in the link and intensity of action [30–32].

5. Conclusion

In conclusion, the combination of individual nursing and dietary management not only effectively reduces glycosylated hemoglobin levels and relieves anxiety and depression, but also wins higher nursing satisfaction in the treatment of acute coronary syndrome in elderly patients. Moreover, their quality of life has been significantly improved after discharge. There is some geographical variation in this study, the patients in the study may not be representative of the entire affected population, and secondly, there may be some methodological heterogeneity and clinical heterogeneity. In conclusion, we need a more detailed experimental design for clinical studies.

Data Availability

The datasets used during the present study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] Bellenguez, Chevalier, and Duhaut, "Acute coronary syndrome," *Annales de Cardiologie et d'Angeiologie*, vol. 68, no. 1, pp. 39–48, 2018.

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Retraction

Retracted: Application Effect and Prognosis of High-Quality Nursing in the Whole Process of Nursing in Lung Cancer Surgery

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Mei, Y. Xu, Q. Shi, and C. Wu, "Application Effect and Prognosis of High-Quality Nursing in the Whole Process of Nursing in Lung Cancer Surgery," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 9491559, 6 pages, 2022.

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Research Article

Application Effect and Prognosis of High-Quality Nursing in the Whole Process of Nursing in Lung Cancer Surgery

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Objective. To explore the application effect and prognostic benefits of whole-course high-quality nursing in lung cancer patients after surgery. *Methods*. Sixty patients with lung cancer who underwent surgical treatment in the Department of Respiratory Medicine from April 2020 to July 2021 were recruited and assigned to receive either conventional nursing (control group) or whole-course high-quality nursing (intervention group) using the random number table method, with 30 cases in each group. Outcome measures included self-rating anxiety scale (SAS) scores, self-rating depression scale (SDS) scores, nursing compliance, patient satisfaction, complications, and patient prognosis. *Results*. Patients receiving whole-course high-quality nursing showed significantly lower SAS and SDS scores versus those given conventional nursing ($P < 0.05$). Whole-course high-quality nursing resulted in higher patient compliance versus conventional nursing ($P < 0.05$). Patients in the intervention group were more satisfied with the nursing compared with those in the control group ($P < 0.05$). Whole-course high-quality nursing resulted in a lower incidence of complications, postoperative recurrence, and mortality versus conventional nursing ($P < 0.05$). *Conclusion*. Whole-course high-quality nursing alleviates the negative emotions of patients after lung cancer surgery, enhances patient compliance and satisfaction, and reduces the incidence of postoperative relapse and complications, which demonstrates great potential for clinical promotion.

1. Introduction

Lung cancer is a common malignant tumor with high clinical morbidity and mortality [1]. Due to the insidiousness of early symptoms, the disease may have progressed into the advanced stage by the time of diagnosis, resulting in poor patient prognosis [2]. Surgery is the mainstay of treatment for lung cancer with established effectiveness, but its invasiveness is associated with negative psychological responses of patients, compromising postoperative recovery [3]. Over the past few decades, the treatment of lung cancer has become increasingly precise and diverse, with chemotherapy being widely used in clinical practice. However, chemotherapy may cause collateral damage to the adjacent tissues during treatment, and the most common adverse reactions are digestive tract reactions, bone marrow suppression, and liver function impairment [4]. In view of the shortcomings of chemotherapy, traditional Chinese medicine (TCM), such as acupuncture, TCM herbal compression, and herbal decoction, is encouraged as adjuvant therapy to reduce toxicity of chemotherapy drugs and enhance treatment efficacy [5].

Wang et al. showed that good perioperative nursing might boost postoperative recovery of patients and improve prognosis [6]. Nonetheless, conventional nursing fails to alleviate the patients' adverse emotions and leads to compromised treatment efficacy [7]. The whole-course high-quality nursing is a patient-oriented nursing modality that provides patients with physical and psychological care [8]. Nevertheless, there is dearth of reports on the application of whole-course high-quality nursing in lung cancer patients undergoing surgical treatment [9]. To this end, this study explored the application effect and prognostic benefits of

whole-course high-quality nursing in lung cancer patients after surgery to provide relevant references for clinical practice.

2. Materials and Methods

2.1. Baseline Data. The eligible patients were assigned to a control group ($n = 30$) or intervention group ($n = 30$).

The medical ethics committee has approved this study (no. AHYZ-9597), and all patients and their families signed informed consent.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria

(1) Patients were clinically diagnosed with lung cancer
(2) Patients underwent surgical treatment in our hospital
(3) Patients voluntarily agreed to cooperate with this study

2.2.2. Exclusion Criteria

(1) Patients with severe other organ diseases
(2) Patients with contraindications
(3) Patients with mental abnormalities
(4) Patients who were unconscious or unable to cooperate with this study reasonably

2.3. Methods

2.3.1. Patients in the Control Group Received Conventional Nursing. The nursing staff provided patients with basic nursing measures such as health education, medication guidance, dietary guidance, and life care. Patients with advanced lung cancer were given dietary plans, with light and high nutrition as the mainstay. In daily care, the nursing staff helped the patients to turn over or change their positions on the bed, massaged their limbs, and performed passive activities. Moreover, analgesic drugs were administered when necessary. Daily instructions such as dietary guidance, exercise instruction, and self-care instructions were provided through regular telephone follow-ups after discharge.

2.3.2. Patients in the Intervention Group Received Whole-Course High-Quality Nursing

(1) Environmental Nursing. The humidity and temperature of the operating room were adjusted accordingly to maintain the physical and psychological comfort of the patients, and the nursing staff communicated with the patients after entering the operating room to alleviate their psychological pressure.

(2) Preoperative Nursing

(1) The nursing staff carefully assessed the patient's condition to formulate a reasonable nursing plan.
(2) The patients were given health education, such as disease knowledge, treatment procedures, and surgery precautions, to enhance their disease awareness and enhance their treatment compliance.
(3) The nursing staff provided patients with psychological counseling to mitigate their negative emotions.
(4) The patients were also given dietary guidance and assistance in terms of self-care and hospital examinations.
(5) The nursing staff communicated with the patients to offer them psychological support, so as to enhance their treatment confidence and compliance [10].

(3) Intraoperative Nursing

(1) The nursing staff comforted the patients before anesthesia
(2) The vital signs of the patients were closely monitored by the nursing staff [11]

(4) Postoperative Nursing

(1) The patients were given analgesics when necessary
(2) The patients were given tailored dietary protocols to promote postoperative recovery
(3) After recovery from anesthesia, the patient may experience anxiety, irritability, and other emotions. If the patient's mood fluctuates significantly, the nursing staff should use the restraint belt to avoid the accidental extubation and falling of the patient.
(4) The nursing staff should pay attention to preventing complications such as pressure ulcers and lower extremity deep vein thrombosis. Complications, if any, were promptly managed.
(5) During the bandage change, the nursing staff should check for any signs of infection and the color and amount of any drainage
(6) The patients were informed of the surgery outcome and postoperative cautions after full recovery of patients from anesthesia [12]

Patients in both groups were followed up for two years after surgery, with one telephone follow-up every month and one home follow-up every year.

2.4. Observation Indicators

(1) Self-rating anxiety scale (SAS) and self-rating depression scale (SDS) scores [13, 14]: SAS was used to evaluate the anxiety of patients, with a score ranging from 0 to 100 points and a cutoff value of 50 points, of which 50 to 59 indicates mild anxiety, 60–69 indicates moderate anxiety, and 69 or more indicates severe anxiety. SDS was used to evaluate the degree of depression of the patients, with a score of 0–100 and a cutoff value of 53 points, of which 53–62 indicates mild depression, 63–72 indicates moderate

Table 1: Patient characteristics.

	Control group ($n = 30$)	Intervention group ($n = 30$)	t/x^2	P value
Gender			0.077	0.781
Male	21	20		
Female	9	10		
Age	25–61	24–62		
Average age	48.23 ± 8.15	48.34 ± 8.23	−0.052	0.959
TNM stages			0.361	0.548
Stage I	17	19		
Stage IIa	9	7		
Stage IIIa	4	4		

depression, and 73 or above indicates severe depression.

(2) Nursing compliance: the nursing compliance was assessed with a full score of 100 points, with ≥90 for good compliance, 70–89 for general compliance, <70 for poor compliance. Compliance=(good + general)/total cases × 100%.

(3) Nursing satisfaction: the "nursing satisfaction questionnaire" made by the hospital was used. There are 20 questions in this questionnaire, and the total score is 100 points, with <70 points for dissatisfied, 70–89 points for satisfied, and ≥90 points for very satisfied. Satisfaction = (very satisfied + satisfied)/total number of cases × 100%.

(4) Complications: postoperative complications include infection, bleeding, pressure ulcers, and fever.

(5) Prognosis: The disease recurrence and mortality of the patients were recorded.

2.5. Statistical Methods. Statistical analysis of the data was done using the SPSS20.0 software. The measurement data were expressed as (mean ± standard deviation) and analyzed using the t-test. The counting data were expressed as the number of cases (rate) and subject to the X^2 test. $P < 0.05$ indicates the presence of statistical significance. GraphPad Prism 8 was selected as the mapping software.

3. Results

3.1. Patient Characteristics. In the control group, there were 21 males and 9 females, aged 25 to 61 (48.23 ± 8.15) years, with 17 cases of tumor, node, metastasis (TNM) stage I, 9 cases of stage IIa, and 4 cases of stage IIIa. In the intervention group, there were 20 males and 10 females, aged 24 to 62 (48.34 ± 8.23) years, with 19 cases of TNM stage I, 7 cases of stage IIa, and 4 cases of stage IIIa. There was no significant difference in general data between the two groups ($P > 0.05$), as shown in Table 1.

3.2. SAS and SDS Scores. Patients receiving whole-course high-quality nursing showed significantly lower SAS and SDS scores (45.33 ± 4.21, 46.56 ± 4.87) versus those given conventional nursing (54.74 ± 5.15, 55.28 ± 5.31) ($P < 0.05$), as shown in Table 2.

3.3. Nursing Compliance. Whole-course high-quality nursing resulted in higher patient compliance (97%) versus conventional nursing (70%) ($P < 0.05$), as shown in Table 3.

3.4. Nursing Satisfaction. More patients were satisfied with the nursing method in the intervention group (100%) than in the control group (63%) ($P < 0.05$), as shown in Table 4.

3.5. Complications. The incidence of complications in the intervention group (5%) was significantly lower than in the control group (28%) ($P < 0.05$), as shown in Table 5.

3.6. Prognosis. Patients receiving whole-course high-quality nursing had a lower recurrence rate and mortality at 1 and 2 years after surgery than those given conventional nursing ($P < 0.05$), as shown in Table 6.

4. Discussion

Lung cancer is associated with high clinical mortality and morbidity. Lung cancer includes non-small-cell lung cancer (NSCLC) and small-cell lung cancer, of which NSCLC accounts for more than 85% [15]. In the clinical research of lung cancer over the years, the treatment of lung cancer has become more and more precise and diversified, and chemotherapy is widely used in clinical practice [16]. The prevalence of lung cancer in China has been growing year after year as people's lifestyles and dietary habits have changed [17]. Due to the insidiousness of early symptoms, the disease may have progressed into the advanced stage by the time of diagnosis, resulting in poor patient prognosis [18]. Current treatments for lung cancer include surgery, chemotherapy, and radiotherapy, and TCM treatment is also effective as adjuvant therapy to enhance the treatment efficiency and reduce adverse events. Surgery is the treatment of choice for early lung cancer with recognized effectiveness [19]. However, Li[20] stated that the invasive nature of surgery is associated with a cascade of postoperative adverse reactions, which compromises the treatment outcomes and prognosis of patients [21]. In addition, Wang [22] noted that most patients are unaware of the disease and its treatment, which leads to negative emotions such as anxiety and depression during treatment. The research by Wang et al. [23] demonstrated that perioperative nursing plays an important role in enhancing the postoperative recovery of patients,

Table 2: Comparison between SAS and SDS scores ($\overline{x} \pm s$).

Groups	Number of patients	SAS score		SDS score	
		Before nursing	After nursing	Before nursing	After nursing
Control group	30	64.32 ± 5.63	54.74 ± 5.15	64.17 ± 6.34	55.28 ± 5.31
Intervention group	30	65.23 ± 4.84	45.33 ± 4.21	63.82 ± 6.19	46.56 ± 4.87
t	—	-0.671	7.748	0.216	6.629
P	—	0.505	< 0.001	0.83	< 0.001

Table 3: Comparison of nursing compliance (n (%)).

Groups	Patients	Good	Satisfactory	Poor	Overall compliance rate
Control group	30	9	12	9	21 (70%)
Intervention group	30	18	11	1	29 (97%)
x^2	—	—	—	—	7.68
P	—	—	—	—	0.006

Table 4: Comparison of nursing satisfaction (n (%)).

Groups	Patients	Very satisfied	Satisfied	Unsatisfied	Overall satisfaction rate
Control group	30	10	9	11	19 (63%)
Intervention group	30	22	8	0	30 (100%)
x^2	—	—	—	—	13.469
P	—	—	—	—	< 0.001

Table 5: Comparison of complications (n (%)).

Groups	Patients	Infections	Bleeding	Pressure ulcers	Fever	Overall complication rate
Control group	30	4	1	2	4	11 (28%)
Intervention group	30	1	0	0	1	2 (5%)
x^2	—	—	—	—	—	7.44
P	—	—	—	—	—	0.006

Table 6: Comparison of prognosis (n (%)).

Groups	Patients	First year		Second year	
		Recurrence rate (%)	Death rate (%)	Recurrence rate (%)	Death rate (%)
Control group	30	6 (20%)	4 (13%)	11 (37%)	7 (23%)
Intervention group	30	2 (7%)	0 (0%)	5 (17%)	1 (3%)
x^2	—	7.236	13.904	10.147	17.683
P	—	0.007	< 0.001	0.001	< 0.001

alleviating their negative emotions and complications, and improving their prognosis. In whole-process high-quality nursing, the patients are provided with both physical and psychological care perioperatively. The whole-process high-quality nursing provides patients with physiological and psychological nursing rather than focusing solely on medical care during hospitalization [24].

The results of the present study showed that patients receiving whole-process high-quality nursing had lower SAS and SDS scores, a lower incidence of complications, and higher satisfaction than those given conventional nursing. The reason may be that during whole-process high-quality nursing, targeted psychological counseling increased the patients' treatment confidence and reduced their anxiety and depression, which improved their nursing compliance and satisfaction and reduced the incidence of postoperative complications [25]. Research by Li et al. [26] has shown that negative emotions resulted in a 13% reduction in lung cancer patients' survival rates, which suggested the role of effective psychological intervention in the postoperative nursing of patients. Furthermore, whole-process high-quality nursing also contributes to enhancing the immune function and treatment efficiency of patients, as evidenced by the lower recurrence rate and mortality rate of patients in the intervention group at 1 year and 2 years after surgery than those in the control group. The reason may be that whole-process high-quality nursing effectively regulates the psychological status of lung cancer patients and prevents postoperative complications, which facilitates the recovery of the immunity of patients, thereby prolonging patient survival [27].

5. Conclusion

Whole-course high-quality nursing alleviates the negative emotions of patients after lung cancer surgery, enhances patient compliance and satisfaction, and reduces the incidence of postoperative relapse and complications, which demonstrates great potential for clinical promotion.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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References

[1] T. Berghmans, Y. Lievens, M. Aapro et al., "European cancer organisation essential requirements for quality cancer care (ERQCC): lung cancer," *Lung Cancer*, vol. 150, pp. 221–239, 2020.

[2] R. Bhagat, M. R. Bronsert, W. G. Henderson et al., "Analysis of discharge destination after open versus minimally invasive surgery for lung cancer," *The Annals of Thoracic Surgery*, vol. 109, no. 2, pp. 375–382, 2020.

[3] E. J. Driessen, M. E. Peeters, B. C. Bongers et al., "Effects of prehabilitation and rehabilitation including a home-based component on physical fitness, adherence, treatment tolerance, and recovery in patients with non-small cell lung cancer: a systematic review," *Critical Reviews in Oncology*, vol. 114, pp. 63–76, 2017.

[4] R. L. Siegel, K. D. Miller, H. E. Fuchs, and A Jemal, "Cancer statistics, 2021," *CA: A Cancer Journal for Clinicians*, vol. 71, no. 1, pp. 7–33, 2021.

[5] Y. Lan, J. Xia, and T. Wang, "Research progress of traditional Chinese medicine adjuvant chemotherapy in the treatment of advanced non-small cell lung cancer," *China Medical Innovation*, vol. 18, no. 36, pp. 184–188, 2021.

[6] K. T. Han, W. Kim, and S. Kim, "Does delaying time in cancer treatment affect mortality? A retrospective cohort study of Korean lung and gastric cancer patients," *International Journal of Environmental Research and Public Health*, vol. 18, no. 7, p. 3462, 2021.

[7] M. S. Hung, Y. C. Chen, T. Y. Huang et al., "Erectile dysfunction after surgical treatment of lung cancer: real-world evidence," *Clinical Epidemiology*, vol. 12, pp. 977–987, 2020.

[8] K. Compton, F. E. Dean, W. Fu et al., "Cancer incidence, mortality, years of life lost, years lived with disability, and disability-adjusted life years for 29 cancer groups from 2010 to 2019: a systematic analysis for the global burden of disease study 2019," *JAMA Oncology*, vol. 8, no. 3, pp. 420–444, 2022.

[9] B. Krusinska, I. Hawrysz, L. Wadolowska et al., "Associations of mediterranean diet and a posteriori derived dietary patterns with breast and lung cancer risk: a case-control study," *Nutrients*, vol. 10, no. 4, p. 470, 2018.

[10] X. Li, S. Chen, J. Zhang, L. Li, Y. Li, and M. Ye, "Resilience process and its protective factors in long-term survivors after lung cancer surgery: a qualitative study," *Supportive Care in Cancer*, vol. 29, no. 3, pp. 1455–1463, 2021.

[11] D. Q. Lin, Jg Zhu, Xh Xu et al., "Chronic progression of lung cancer recurrence after surgery: warning role of postoperative pneumonia," *Cancer Management and Research*, vol. 13, pp. 7387–7398, 2021.

[12] J. F. Liu, N. Y. Kuo, T. P. Fang, J. O. Chen, H. I. Lu, and H. L. Lin, "A six-week inspiratory muscle training and aerobic exercise improves respiratory muscle strength and exercise capacity in lung cancer patients after video-assisted thoracoscopic surgery: a randomized controlled trial," *Clinical Rehabilitation*, vol. 35, no. 6, pp. 840–850, 2021.

[13] M. Lu and L. Zhong, "Observation on the effect of comprehensive nursing intervention in patients with lung cancer during radiotherapy and chemotherapy," *China Oncology Clinic and Rehabilitation*, vol. 29, no. 04, pp. 491–494, 2022.

[14] J. Wang, "The effect of comprehensive comprehensive nursing intervention on the quality of life of patients with advanced non-small cell lung cancer after radiotherapy and chemotherapy," *Chinese Medicine Guide*, vol. 20, no. 14, pp. 142–145, 2022.

[15] R. L. Siegel, K. D. Miller, H. E. Fuchs, and A Jemal, "Cancer statistics, 2022," *CA: A Cancer Journal for Clinicians*, vol. 72, no. 1, pp. 7–33, 2022.

[16] W. Chen, R. Zheng, P. D. Baade et al., "Cancer statistics in China, 2015," *CA: A Cancer Journal for Clinicians*, vol. 66, no. 2, pp. 115–132, 2016.

[17] Y. Mo, L. Lin, Z. Li et al., "[Efficacy of lung autotransplantation for central non-small cell lung cancer]," *Zhongguo Fei Ai Za Zhi*, vol. 23, no. 8, pp. 673–678, 2020.

[18] T. Naito, S. Mitsunaga, S. Miura et al., "Feasibility of early multimodal interventions for elderly patients with advanced pancreatic and non-small-cell lung cancer," *Journal of Cachexia, Sarcopenia and Muscle*, vol. 10, no. 1, pp. 73–83, 2019.

[19] L. Ning, C. Yuan, Y. Li et al., "Effect of continuous nursing based on the omaha system on cancer-related fatigue in patients with lung cancer undergoing chemotherapy: a randomized controlled trial," *Annals of Palliative Medicine*, vol. 10, no. 1, pp. 323–332, 2021.

[20] Q. Shi, Y. Diao, and J. Qian, "[Application of single-hole thoracoscopic surgery combined with ERAS concept for respiratory function exercise in perioperative period of lung cancer]," *Zhongguo Fei Ai Za Zhi*, vol. 23, no. 8, pp. 667–672, 2020.

[21] T. S. Solheim, B. J. Laird, T. R. Balstad et al., "A randomized phase II feasibility trial of a multimodal intervention for the management of cachexia in lung and pancreatic cancer," *Journal of Cachexia, Sarcopenia and Muscle*, vol. 8, no. 5, pp. 778–788, 2017.

[22] V. Sun, J. Y. Kim, D. J. Raz et al., "Preparing cancer patients and family caregivers for lung surgery: development of a multimedia self-management intervention," *Journal of Cancer Education*, vol. 33, no. 3, pp. 557–563, 2018.

[23] Y. Sun, Y. H. Pang, N. Q. Mao, J. N. Luo, D. L. Cai, and F. F. Chen, "[Effect of transcutaneous electrical acupoint stimulation on venous thrombosis after lung cancer surgery: a randomized controlled trial]," *Zhongguo Zhen Jiu*, vol. 40, no. 12, pp. 1304–1308, 2020.

[24] S. Taylor, J. Yorke, S. Tsim et al., "Impact on quality of life from multimodality treatment for lung cancer: a randomised

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Retraction

Retracted: Effect of Entresto on Clinical Symptoms, Ventricular Remodeling, Rehabilitation, and Hospitalization Rate in Patients with Both Acute Myocardial Infarction and Acute Heart Failure

Evidence-Based Complementary and Alternative Medicine

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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.

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References

[1] G. Wang, X. Liu, Z. Guo et al., "Effect of Entresto on Clinical Symptoms, Ventricular Remodeling, Rehabilitation, and Hospitalization Rate in Patients with Both Acute Myocardial Infarction and Acute Heart Failure," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 7650937, 7 pages, 2022.

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Research Article

Effect of Entresto on Clinical Symptoms, Ventricular Remodeling, Rehabilitation, and Hospitalization Rate in Patients with Both Acute Myocardial Infarction and Acute Heart Failure

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Objective. To determine the influence of Entresto on clinical symptoms, ventricular remodeling (VR), and economic stress of patients with both acute myocardial infarction (AMI) and acute heart failure (AHF). *Methods*. Totally 120 patients with AMI complicated with AHF admitted to our hospital between January 2017 and August 2019 were enrolled and randomly assigned to an observation group (obs group) and a control group (con group) (each $n = 60$). The obs group was treated with Entresto, while the other with angiotensin-converting enzyme inhibitors (ACEI). After treatment, the efficacy on both groups was evaluated, and their cardiac function-associated indexes (left ventricular end-systolic diameter (LVESd), left ventricular end-diastolic dimension (LVEDd), left ventricular ejection fraction (LVEF), VR-associated indexes (interventricular septal thickness (IVST), and left ventricular mass index (LVMI)) were determined and compared before treatment and after 1 month of treatment. Additionally, their NT-pro-BNP, CRP, and TNF-α were tested and compared before and after treatment, and they were also compared in hospitalization time, treatment expense, readmission rate within one year after discharge, and adverse events. *Results*. After treatment, the obs group showed notably higher efficacy than the con group ($P < 0.05$). Before treatment, the two groups were not greatly different in LVESd, LVEDd, LVEF, IVST, LVMI, NT-pro BNP, CRP, and TNF-α (all $P > 0.05$), while after treatment, these indexes of both groups were improved, but the improvement in the obs group was more notable ($P < 0.05$). Additionally, the hospitalization time, treatment expense, readmission rate one year after discharge, and incidence of adverse events in the obs group were notably lower (all $P < 0.05$). *Conclusion*. For patients with both AMI and AHF, Entresto can contribute to strong amelioration of their clinical symptoms and prognosis and ventricular reverse-remodeling, with a high safety, so it is worthy of clinical promotion.

1. Introduction

Acute heart failure (AHF) is a disease in which systolic and diastolic dysfunction of the heart due to a variety of reasons results in the disturbance of blood flow from the heart, resulting in venous blood stasis and arterial hypoperfusion [1, 2]. It is a chronic and progressive clinical syndrome induced by structural or functional cardiac abnormalities [3]. In developed countries, AHF has become a substantial public health concern, affecting 2% of the adult population. Conventionally, AHF is mainly treated by ACEI or ARB, β-blocker, and aldosterone antagonist under synchronous diuretic and cardiotonic therapy. Current therapies are moderately effective at relieving the symptoms and signs of congestion by addressing the hemodynamic changes associated with AHF but have not demonstrated any benefit on long-term outcomes, presumably because they have limited effects on the underlying pathophysiology and fail to protect organs from damage in AHF [4]. At present, numerous studies confirmed that Entresto (sacubitril valsartan

sodium) is more effective than enalapril in reducing the risk of death from AHF or cardiovascular disease in patients with stable AHF during hospitalization [5]. Entresto, mainly composed of sacubitril and valsartan, is the first angiotensin receptor enkephalinase inhibitor [6]. Sacubitril can promote sodium discharge, diuresis induction, blood vessel relaxation, and heart protection by enhancing the natriuretic peptide system, while valsartan can contribute to blood vessel relaxation, heart load reduction, and improvement of water-sodium retention by inhibiting renin-angiotensin-aldosterone and it further reduces both blood pressure and biomarkers of cardiovascular risk (troponin I and N-terminal pro-B-type natriuretic peptide) [7, 8].

However, there is a paucity of studies reporting the application of Entresto in patients with both AMI and AHF. In this regard, this study we hypothesized that Entresto could yield beneficial results on the efficacy and ventricular remodeling (VR)-associated indexes and economic burden of the patients.

2. Materials and Methods

2.1. Participants. A total of 120 patients with AMI complicated with AHF (69 males and 51 females, with average (64.11 ± 5.29) years old) admitted to Tangshan Gongren Hospital between January 2017 and August 2019 were enrolled and randomly assigned to an observation group (obs group) and a control group (con group) at a ratio of 1 : 1. The obs group was treated with Entresto, while the con group with angiotensin-converting enzyme inhibitors (ACEI).

Inclusion criteria: patients meeting the diagnostic criteria of AMI combined with AHF, patients at II or III Killip classification, patients undergoing revascularization, patients with NT-proBNP ≥ 600 pg/ml, and those with an estimated survival ≥ 1 year. Exclusion criteria: patients with other severe comorbid systemic diseases that compromise the efficacy, patients with comorbid cardiac, liver or kidney dysfunction, patients with serious immune dysfunction, patients with paropsia, and those infected with bacteria, viruses or other pathogenic bacteria. All patients were informed of the study prior to signing informed consent, and the experiment was approved by the Ethics Committee of Tangshan Gongren Hospital (approval no. 71–141) and was in line with the *Declaration of Helsinki*.

2.2. Treatment Methods. All patients were given drugs when their hemodynamics was stable after admission. Those in the con group were treated with ACEI. Specifically, each patient was given 2.5 ml ACEI once a day initially, and then the dose was adjusted to an optimal one according to blood pressure and tolerance. Patients in the obs group were treated with Entresto. In essence, each patient was given 25 mg of Entresto twice a day initially, and then the dose was increased by 50 mg every 2–4 weeks until the maximum one of 200 mg (twice a day). The dose was adjusted according to the blood pressure and physical condition of the patients.

2.3. Outcome Measures. (1) The New York Heart Association classification (NYHA) was adopted to evaluate the clinical efficacy on the two groups after treatment [9]. Markedly effective: the NYHA of the patient reached class I or was improved by 2 classes; effective: the NYHA of the patient did not reach class I, but was improved by 1 class; ineffective: the NYHA of the patient had no change. The effective treatment rate = (the number of cases treated markedly effectively + the number of cases treated effectively)/the total number of cases $\times 100\%$. (2) The echocardiographic system was adopted to determine cardiac function-associated indexes: left ventricular end-systolic diameter (LVESd), left ventricular end-diastolic dimension (LVEDd), and left ventricular ejection fraction (LVEF) of the two groups, before treatment and after 1 month of treatment. (3) The patients' VR-associated indexes (interventricular septal thickness (IVST) and left ventricular mass index (LVMI)) were determined and compared before treatment and after 1 month of treatment. Additionally, NT-pro-BNP, CRP, and TNF-α of the two groups were tested and compared before and after treatment. (5) The hospitalization time, treatment expense, and readmission rate within one year after discharge in the two groups were recorded and compared. (6) Adverse events during follow-up among the two groups were recorded and compared, and the events included hypotension, hyperkalemia, elevated serum creatinine, angioedema, and cardiogenic shock.

2.4. Statistical Analyses. All data analyses were performed with SPSS20.0 (Bizinsight (Beijing) Information Technology Co. Ltd.), and the graphics visualization was conducted with GraphPad Prism 6. The enumeration data were verified by chi-square test, and the measurement data (mean $\pm$ standard deviation) were analysed via t-test. $P < 0.05$ was defined as a statistical difference.

3. Results

3.1. Comparison of General Data. The two groups were not notably different in sex, age, body mass index (BMI), smoking history, hypertension history, and diabetes mellitus history ($P < 0.05$) (Table 1).

3.2. Comparison of Efficacy. In the obs group, there were 36 patients of markedly effective, 22 of effective, and 2 of ineffective, while in the con group, the corresponding numbers were 23, 24, and 13, respectively. Overall, the obs group showed a notably higher total effective rate than the con group (96.67% vs. 78.33%; $P < 0.05$) (Table 2).

3.3. Comparison of Cardiac Function-Associated Indexes. Before treatment, there was no notable difference between the two groups in cardiac function-associated indexes (all $P > 0.05$); while after treatment, both groups had decreased LVEDs and LVEDd and increased LVEF (all $P < 0.01$), with

Table 1: General data.

Factor	The observation group ($n = 60$)	The control group ($n = 60$)	$t/X2$	P value
Sex			0.367	0.580
Male	36 (60.00)	33 (55.00)		
Female	24 (40.00)	27 (45.00)		
Age (years)			0.302	0.583
≥64	31 (51.67)	34 (56.67)		
<64	29 (48.33)	26 (43.33)		
BMI (kg/m^2)	22.85 ± 1.26	22.79 ± 1.31	0.226	0.799
Smoking history			0.136	0.713
Yes	27 (45.00)	25 (41.76)		
No	33 (55.00)	35 (51.47)		
Alcohol abuse history			0.391	0.532
Yes	14 (23.33)	17 (28.33)		
No	46 (76.67)	43 (71.67)		
Hypertension history			0.033	0.855
Yes	31 (51.67)	32 (53.33)		
No	29 (48.33)	28 (46.67)		
Diabetes mellitus history			0.367	0.580
Yes	33 (55.00)	36 (60.00)		
No	27 (45.00)	24 (40.00)		

Table 2: Evaluation of clinical efficacy of the two groups (n, (%)).

Efficacy	The observation group ($n = 60$)	The control group ($n = 60$)	$X2$	P value
Markedly effective	36 (60.00)	23 (38.33)	—	—
Effective	22 (36.67)	24 (40.00)	—	—
Ineffective	2 (3.33)	13 (21.67)	—	—
Total effective rate	58 (96.67)	47 (78.33)	9.219	0.003

the obs group having lower LVEDs and LVEDd and higher LVEF than the con group ($P < 0.05$) (Figure 1).

3.4. Comparison of VR-Associated Indexes. Before treatment, there was no notable difference between the two groups in VR-associated indexes (all $P > 0.05$), while after treatment, both groups showed decreased IVST and LVMI ($P < 0.01$), with significantly lower indexes in the obs group (both $P < 0.05$) (Figure 2).

3.5. Comparison of NT-proBNP, CRP, and TNF-α. Before treatment, there was no notable difference between the two groups in the levels of NT-proBNP, CRP, and TNF-α (all $P > 0.05$), while after treatment, the levels of them in both groups were improved (all $P < 0.05$), and the corresponding values in the obs group were notably lower (all $P < 0.05$) (Figure 3).

3.6. Comparison of Hospitalization Time, Treatment Expense, and Readmission Rate within One Year after Discharge. The hospitalization time, treatment expense, and readmission rate within one year after the discharge of the obs group were (5.97 ± 1.48) d, (24213.75 2576.44) Yuan, and 23.33%, respectively, while those of the con group were (9.55 ± 1.82) d, (49328.51 ± 3697.18) Yuan, and 53.33%, respectively. Overall the hospitalization time, treatment expense, and readmission rate within one year after the discharge of the obs group were greatly lower than those of the con group (all $P < 0.05$) (Table 3).

3.7. Comparison of Adverse Events. After treatment, the obs group had 2 patients with hypotension, 1 patient with hyperkalemia, 1 patient with elevated serum creatinine, 1 patient with angioedema, and 0 patients with cardiogenic shock, with an incidence of adverse events of 8.33%, while the con group had 4 patients with hypotension, 5 patients with hyperkalemia, 3 patients with elevated serum creatinine, 3 patients with angioedema, and 2 patients with cardiogenic shock, with an incidence of adverse events of 28.33%. The incidence of adverse events in the obs group was noticeably lower ($P < 0.05$) (Table 4).

4. Discussion

Over the past decades, the improvement of people's living standards and the change in lifestyle give rise to the incidence of cardiovascular disease and increase the incidence of AMI. AMI-induced AHF remains one of the leading causes of death associated with cardiovascular disease [10, 11]. For patients with AMI-induced AHF, aggressive measures to reduce cardiac load, relieve hemodynamics, and relieve symptoms are critical to improve prognosis [12].

In this study, we evaluated the efficacy and found that Entresto was more effective than enalapril. The possible explanation is that the Entresto formed in the sodium salt

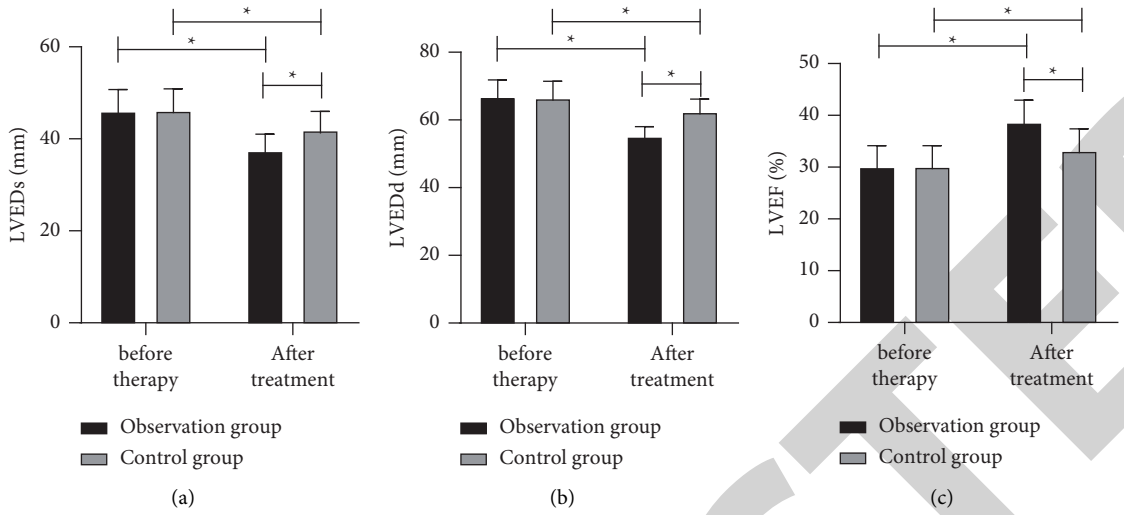

Figure 1: Comparison of cardiac function-associated indexes between the two groups before and after treatment. (a) LVEDs. (b) LVEDd. (c) LVEF. $^{*}P < 0.05$.

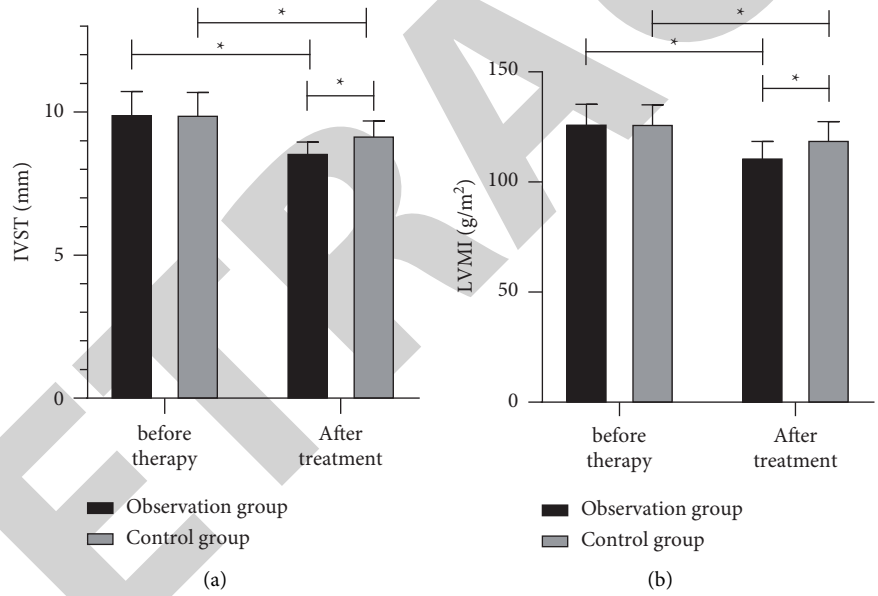

Figure 2: Comparison of ventricular remodeling-associated indexes between the two groups before and after treatment. (a) IVST. (b) LVMI. $^{*}P < 0.05$.

complex can effectively block angiotensin and inhibit enkephalinase to treat diseases, and can effectively improve the symptoms and cardiac function of patients, and delay the further development of the disease [13, 14]. In patients with AMI, myocardial remodeling involving various neurohumoral factors is a major cause of AHF [15]. Therefore, we also tested VR-related metrics in both groups and found that the obs group showed significantly better improvements in these metrics. According to reports [16, 17], Entresto has a dual-target regulation mechanism, and its mechanism of action is the same as that of enalapril. It can participate in natriuretic expansion, blood pressure reduction, myocardial remodeling reversal and cardiac function by inhibiting enkephalase and upregulating natriuretic peptide and bradykinin. The above results can confirm that Entresto can strongly relieve the clinical symptoms of patients and improve their cardiac function, thereby relieving the disease.

Among the biomarkers for assessing AHF, NT-proBNP, a natriuretic hormone, is considered an important laboratory test for the diagnosis of heart failure [18]. The increase of cardiac load will cause further stretch of ventricular myocytes, so that the compensatory synthesis of brain natriuretic peptides occurs in the blood circulation, and proteolytic enzymes are hydrolyzed into BNP and NT-proBNP in the blood circulation. NT-proBNP is specific to patients with cardiac insufficiency, with higher NT-

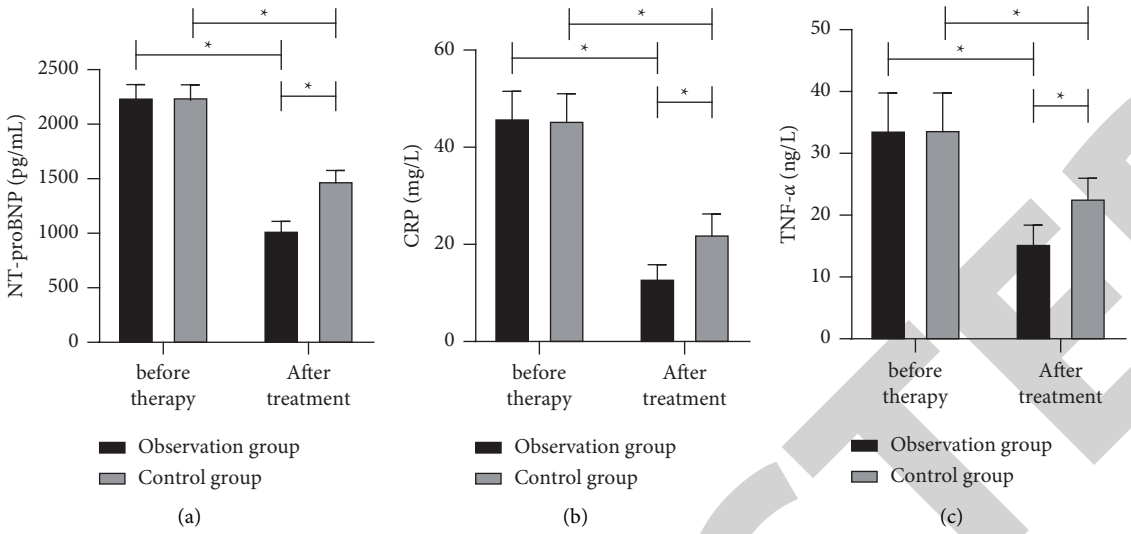

Figure 3: Comparison of NT-proBNP, CRP, and TNF-α between the two groups before and after treatment. (a) NT-proBNP. (b) CRP. (c) TNF-α. $^*P < 0.05$.

Table 3: Comparison of hospitalization time, treatment expense, and readmission rate within one year after discharge.

	The observation group ($n = 60$)	The control group ($n = 60$)	T/X^2	P value
Hospitalization time (days)	5.97 ± 1.48	9.55 ± 1.82	11.82	<0.001
Total treatment expense (Yuan)	24213.75 ± 2576.44	49328.51 ± 3697.18	43.17	
Readmission rate (n (%))	14 (23.33)	32 (53.33)	11.42	0.001

Table 4: Comparison of the incidence of adverse events between two groups (n (%)).

Adverse events	The observation group ($n = 60$)	The control group ($n = 60$)	X^2	P value
Hypotension	2 (3.33)	4 (6.67)	—	—
Hyperkalemia	1 (1.67)	5 (8.33)		
Elevated serum creatinine	1 (1.67)	3 (5.00)	—	—
Angioedema	1 (1.67)	3 (5.00)	—	—
Cardiogenic shock	0 (5.77)	2 (3.33)	—	—
Incidence of adverse events	5 (8.33)	17 (28.33)	8.015	0.005

proBNP levels indicating poorer cardiac function [19, 20]. As previously noted [21], inflammatory factors play a crucial role in promoting the pathogenesis of AHF, and their expression is bound up with disease severity and cardiac function of patients. Therefore, we also determined and compared NT-proBNP and serum inflammatory factors between the two groups before and after treatment, and the results showed that after treatment, NT-proBNP and serum inflammatory factors in both groups were improved, and the improvement in the obs group was more remarkable. The findings suggest that Entresto is effective in improving the inflammatory level of patients with AHF. For patients with AMI and AHF, long-term treatment and disease recurrence will not only bring great pain to the patients but also pose a heavy economic burden to the family [22]. Therefore, how to reduce the economic burden of patients while improving the efficacy of patients also needs to be considered. We found that the length of stay and the total cost of treatment were significantly lower in the obs group, suggesting that Entresto can not only shorten the length of hospital stay but also reduce the financial burden on patients. Importantly, we analysed the adverse events and readmission rates of patients in the two groups. The results showed that the incidence of adverse reactions and readmission rate of the obs group were notably lower, which suggests a good safety profile of Entresto.

In addition, acute heart failure can be classified as "heart palsy" and "palpitation" in traditional Chinese medicine. Traditional Chinese medicine believes that the heart dominates the blood vessels, and the spleen is easily affected by the deficiency of the heart and yang. If the yang qi of the heart and spleen are both deficient, the essence of water and grain cannot be metaplasticized, resulting in insufficient blood production. The normal heart function depends on the visible blood in the blood vessels, and insufficient blood

production can cause the heart qi to be unable to promote blood flow, and finally form a vicious circle. Also, a previous study confirmed that Chinese herbal formula (50 g of semen ziziphi spinosae, 15 g of Rhizoma Angustifolia, 30 g of oyster, Bupleurum 25 g, 20 g of sun-cured ginseng, 20 g of *Rehmannia glutinosa*, 20 g of *Angelica*, 15 g of Radix Paeoniae Alba, 15 g of *Ligusticum wallichii*, and 10 g of cinnamon) has produced promising results. The possible explanation might be the followings: Semen ziziphi spinosae promotes fluid and soothes the nerves, Rhizoma nourishes Qi and promotes blood circulation, oyster calms the liver, sun-dried ginseng nourishes the heart and nourishes blood, *Rehmannia glutinosa* nourishes Yin and promotes body fluid, *Angelica sinensis* promotes blood and nourishes blood, and white peony root nourishes blood, *Ligusticum wallichii* removes blood stasis and relieves pain, while cinnamon promotes blood circulation and clears meridians. The combination of these medicines can play a role in nourishing heart Yin, invigorating heart Yang, and restoring blood vessels.

5. Conclusion

To sum up, for patients with both AMI and AHF, Entresto contributes immensely to melioration of clinical symptoms and prognosis, ventricular reverse-remodeling, rehabilitation, and economic burden ease, with a high safety profile. However, this study also has some limitations. First of all, since the number of cases we included is relatively small, it is necessary to further expand the sample size for further demonstration in the future. Second, we have not explored the specific mechanism of action of Entresto, so we should conduct further experiments in this regard to support our conclusions.

Data Availability

All the data generated or analysed during this study are included in this published article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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References

[1] H. Ashraf and J. L. Rosenthal, "Right heart failure: causes and clinical epidemiology," *Cardiology Clinics*, vol. 38, no. 2, pp. 175–183, 2020.

[2] J. Bauersachs, T. Konig, P. Meer et al., "Pathophysiology, diagnosis and management of peripartum cardiomyopathy: a position statement from the Heart Failure Association of the European Society of Cardiology Study Group on peripartum cardiomyopathy," *European Journal of Heart Failure*, vol. 21, no. 7, pp. 827–843, 2019.

[3] S. P. Chaudhry and G. C. Stewart, "Advanced heart failure: prevalence, natural history, and prognosis," *Heart Failure Clinics*, vol. 12, no. 3, pp. 323–333, 2016.

[4] L. Desta, M. Khedri, T. Jernberg et al., "Adherence to beta-blockers and long-term risk of heart failure and mortality after a myocardial infarction," *ESC Heart Failure*, vol. 8, 2020.

[5] M. Senni, R. Wachter, K. K. Witte et al., "Initiation of sacubitril/valsartan shortly after hospitalisation for acutely decompensated heart failure in patients with newly diagnosed (de novo) heart failure: a subgroup analysis of the TRANSITION study," *European Journal of Heart Failure*, vol. 22, no. 2, pp. 303–312, 2020.

[6] J. Pereira Sousa, H. Neves, C. Lobao, R. Goncalves, and M. Santos, "The effectiveness of education on symptoms recognition in heart failure patients to manage self-care: a systematic review protocol," *Professioni Infermieristiche*, vol. 72, no. 1, pp. 50–54, 2019.

[7] E. H. De Marchis, D. Hessler, C. Fichtenberg et al., "Assessment of social risk factors and interest in receiving health care-based social assistance among adult patients and adult caregivers of pediatric patients," *JAMA Network Open*, vol. 3, no. 10, Article ID e2021201, 2020.

[8] O. Leiva, A. S. Bhatt, and M. Vaduganathan, "Innovation in ambulatory care of heart failure in the era of coronavirus disease 2019," *Heart Failure Clinics*, vol. 16, no. 4, pp. 433–440, 2020.

[9] L. A. Allen, F. Tang, P. Jones, T. Breeding, A. Ponirakis, and S. J. Turner, "Signs, symptoms, and treatment patterns across serial ambulatory cardiology visits in patients with heart failure: insights from the NCDR PINNACLE® registry," *BMC Cardiovascular Disorders*, vol. 18, no. 1, p. 80, 2018.

[10] R. Hata, T. Kato, H. Yaku et al., "Implantable cardioverter defibrillator therapy in patients with acute decompensated heart failure with reduced ejection fraction: an observation from the KCHF registry," *Journal of Cardiology*, vol. 77, no. 3, pp. 292–299, 2021.

[11] J. A. Ezekowitz, F. A. McAlister, J. Howlett et al., "A prospective evaluation of the established criteria for heart failure with preserved ejection fraction using the Alberta HEART cohort," *ESC Heart Failure*, vol. 5, no. 1, pp. 19–26, 2018.

[12] J. A. Dugan, "Fixed effects analysis of the incidence of cardiovascular outcomes under managed care following the managed care backlash," *Medicine (Baltimore)*, vol. 99, no. 23, Article ID e20636, 2020.

[13] M. S. Sabbah, A. U. Fayyaz, S. de Denus et al., "Obese-inflammatory phenotypes in heart failure with preserved ejection fraction," *Circulation: Heart Failure*, vol. 13, no. 8, Article ID e006414, 2020.

[14] F. Zannad, J. P. Ferreira, S. J. Pocock et al., "SGLT2 inhibitors in patients with heart failure with reduced ejection fraction: a meta-analysis of the EMPEROR-Reduced and DAPA-HF trials," *The Lancet*, vol. 396, no. 10254, pp. 819–829, 2020.

[15] N. V. Medvedev and N. K. Gorshunova, "Age-related sarcopenia as the risk factor of development of myocardial dysfunction and chronic heart failure in elderly patients with arterial hypertension," *Advances in Gerontology*, vol. 25, no. 3, pp. 456–460, 2012.

[16] F. M. Bertera, D. M. Santa-Cruz, K. B. Balestrasse et al., "Tempol-nebivolol therapy potentiates hypotensive effect increasing NO bioavailability and signaling pathway," *Free Radical Research*, vol. 48, no. 2, pp. 109–118, 2014.

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Retraction

Retracted: Imaging Diagnosis of Primary Solitary Bone Neoplasts and Its Comparison with Tumor-like Lesions

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 Research Integrity and Research Publishing teams and anonymous and name 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. Wei, W. Zheng, and W. Tang, "Imaging Diagnosis of Primary Solitary Bone Neoplasts and Its Comparison with Tumor-like Lesions," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2692539, 7 pages, 2022.

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Research Article

Imaging Diagnosis of Primary Solitary Bone Neoplasts and Its Comparison with Tumor-like Lesions

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Objective. To explore the imaging diagnostic value of primary solitary bone tumor and tumor-like lesion of iliac crest. *Methods*. A total of 156 patients with primary solitary bone tumors and tumor-like lesions of the iliac bone treated in our hospital were selected, and the patients were diagnosed by X-ray, CT, and MRI. Sexual analysis of single diagnostic and combined diagnostic value was carried out. *Results*. Round high-density shadow, soft tissue mass shadow, soft tissue mass, right intestinal tube, and bladder obvious pressure were observed. The detection rates of giant cell tumor of bone, myeloma, osteochondroma, chondroma, eosinophilic granuloma, osteosarcoma, fibrous dysplasia, and Hodgkin lymphoma were 34.6%, 12.8%, 11.5%, 10.3%, 7.7%, 6.4%, 3.8%, and 2.6%, and the differences were statistically significant (P < 005); X-ray, CT, MR single diagnostic comparison, three methods joint diagnostic missed diagnosis rate and misdiagnosis rate, higher detection rate ($P < 0.05$); combined with X-ray, CT, MR single diagnosis, three methods joint diagnosis sensitivity, specificity, accuracy, statistical significance ($P < 0.05$); comparison with X-ray, CT, MR single diagnosis, three methods jointly diagnosed *positive* predictive value, negative predictive value higher, difference statistics significance ($P < 0.05$); there is a significant difference in the near-end, backbone, and distal detection rate of different bone tumors and tumor lesions, including the humerus and tibia. There is a statistical significance of the detection rate, and the difference is$P < 0.05$. *Conclusion*. X-ray plays an important role in the diagnosis of primary solitary bone tumor and tumor-like lesion of iliac crest and is the first choice in clinical diagnosis. In the diagnosis of tumor disease, range, and soft tissue mass, MRI and CT diagnostic value can provide effective theoretical basis for patient clinical treatment. Therefore, the appropriate diagnostic method should be selected according to the specific situation of the patient, so that the efficiency of the clinical feature is improved.

1. Introduction

Data statistical results showed the crowd of cartilantic tumors in the middle of the 40-year-old population changes with age, and the chance of chondrosarcoma will also change [1]. Primary malignant bone tumors mainly occur in long bones of the limbs, which increases the difficulty of imaging diagnosis due to various types of tumors [2]. Iliac bone lesions are more common, such as flat bones with abundant red bone marrow, and myeloma and metastatic tumors are also more common. Metastatic tumors account for about 31% of pelvic tumors. However, single tumor-like lesions and primary tumors of the iliac bone are not common, and eosinophilic granuloma and chondroma are common [3, 4].

There are relatively many clinical reports on Ewing tumor, metastatic tumor, myeloma, and non-Hodgkin lymphoma, but there are few reports on primary solitary bone tumor and tumor-like lesions of the iliac crest [5]. Primary solitary bone tumors and tumor-like lesions of the iliac bone greatly interfere with the normal life of patients. Therefore, it is necessary to accurately diagnose patients and formulate treatment plans based on imaging features. In this study, 156 patients with primary solitary bone tumors and tumor-like lesions of the iliac bone treated in our hospital were selected as the research objects, which are representative of the research objects. The patients were diagnosed by X-ray, CT, and MRI, respectively. Imaging features of primary solitary bone tumors and tumor-like lesions, to explore

the detection rates of different types of bone tumors and tumor-like lesions in the proximal, diaphysis, and distal ends and to evaluate the dynamic changes of primary solitary bone tumors and tumor-like lesions of the iliac bone situation, discover its changing laws and causes and provide a basis for the treatment of the disease. The relevant content is now reported as follows.

2. Data and Methods

2.1. General Information. A total of 62 patients with primary isolated bone tumor and tumor-like lesion of iliac crest treated in our hospital were selected for X-ray. All subjects included in this study did not drop out. CT and MRI diagnosis were performed successively. There were 62 patients, including 37 males and 25 females, with an average age of 46.0 ± 19.2 years, an average body weight of 56.8 ± 8.7 kg, and an average BMI of 21.0 ± 2.2 kg/㎡. The subjects agreed to this study, which was approved by the hospital ethics committee.

2.2. Inclusion Criteria. The inclusion criteria were as follows: (1) According to the "Guidelines for Clinical Evidence-Based Diagnosis and Treatment of Osteosarcoma" [6], patients were diagnosed with primary solitary bone tumor and tumor-like lesions of the iliac bone. (2) The initial site of tumor is the bone. (3) Patients with multifocal or single-focal lesions diagnosed by imaging were included. (4) Patients with normal cognitive function can cooperate with the study.

2.3. Exclusion Criteria. The exclusion criteria were as follows: (1) patients with autoimmune diseases; (2) patients who were not followed up for clinical prognosis; (3) patients during pregnancy or lactation; (4) patients with mental illness.

2.4. Termination Criteria. The termination criteria were as follows: (1) patients who do not comply with the approved protocols or relevant regulations; (2) patients with sudden adverse events; (3) patients lost to follow-up; (4) patients who voluntarily withdraw their informed consent.

3. Method

The X-ray machine (GeRevolutionxR/*D*) is used for the X-ray diagnosis of the frontal pelvis. CT diagnosis included the following scanning parameters: the slice thickness, 5–10 mm; matrix, 512×512; voltage, 100–120 kV; current, 140–200 mAs; and reconstruction interval, 1.0–1.25 mm. 3.0 T superconductive MR core magnetic resonance unit was applied to perform MR-enhanced scan for patients, using 70–90 ml omnipac via cubital vein mass injection.

3.1. Observation Indicators

3.1.1. Patient Baseline Data Analysis. Baseline data included gender, age, weight, BMI, and other materials.

3.1.2. Imaging Features of Primary Isolated Bone Tumors and Tumorigenic Lesions of Iliac Crest. Conditions such as metastasis, myeloma, osteochondroma, chondroma, eosinophilic granuloma, Ewing sarcoma, osteosarcoma, fibrodysplasia, and Hodgkin's lymphoma were measured, and the detection rate was calculated.

3.1.3. Diagnostic Value of Primary Isolated Bone Tumor and Tumor-like Lesion-Type Metastases of the Ilium. It was predicted using diagnostic rate, missed diagnosis rate, misdiagnosis rate, sensitivity, specificity, accuracy, positive predictive value, and negative predictive value.

3.1.4. Comparison of the Detection Rates of Different Types of Bone Tumors and Tumor-like Lesions. The cases of an examination on the humerus, tibia, proximal fibula, ulna, radius, and femur are counted.

3.2. Statistical Method. The collected data were input into EXCEL, and the statistical software SPSS22.0 was used for data analysis. The normal distribution test was carried out using the collected data. If the data met the normal distribution, the composition ratio and rate were used to describe the counting data, and the Chi-square test was used to analyze the difference between groups. The T test was used to analyze the difference between groups. Logistic regression was used to analyze the influencing factors of physical fitness in the case group, and $P < 0.05$ was considered to be statistically significant. GraphPadPrism8 was used in the study.

4. Results

4.1. Analysis of the Baseline Data in 156 Patients. The study included 82 males and 74 females, with an average age of 46.0 ± 19.2 years, an average body weight of 56.8 ± 8.7 kg, and an average BMI of 21.0 ± 2.2 kg/m^2 (Table 1).

4.2. Imaging Features of Primary Isolated Bone Tumors and Tumor-like Lesions of the Iliac Crest. Features such as round high-density shadow, soft tissue mass shadow, soft tissue mass, and obvious compression of the right intestine and bladder were observed (Table 2).

4.3. Primary Solitary Bone Tumor and Tumor-like Lesion-Type Metastases of the Iliac Crest. The detection rates of metastasis, myeloma, osteochondroma, chondroma, fibrodysplasia, Ewing sarcoma, eosinophilic granuloma, osteosarcoma, and Hodgkin's lymphoma were 30.6%, 14.5%, 12.9%, 1.6%, 4.8%, 4.8%, 1.6%, 1.6%, and 1.6% (Figure 1).

By contrast, in diagnostic methods of X-ray, CT, and MR, the diagnostic values were statistically significant ($P < 0.05$) (Figure 2).

By contrast, in diagnostic methods of X-ray, CT, and MR, the diagnostic values were statistically significant ($P < 0.05$) (Figure 3).

Table 1: Analysis of patient baseline data.

General clinical data		
Gender	Male	37
	Female	25
Average age (years)		46.0 ± 19.2
Average weight (kg)		56.8 ± 8.7
Average BMI (kg/m^2)		21.0 ± 2.2

Table 2: Imaging features of iliac crest isolated osteotic neutral tumors and tumor morphology (N (%)).

Imaging characteristics	Count	Proportion (%)
Uniform length T1, long T2 signal	10	6.4
Soft tissue swellings in the disease	20	12.8
Soft tissue mass	18	11.5
The bone expansion is thin, the elliptical changes, the hardening edge is surrounded, and the boundary is clear	6	3.8
Point-to-spot calcification	12	7.7
Ankle joint, gap blur, soft tissue mass	10	6.4
Interpretation of irregular calcification in tissue mass, no bone film reaction	6	3.8
High-tertiary, multicircular, high density	54	34.6
T1WI medium signal and T2WI high signal disease in the iliac crestand tibia, and the bone marrow cavity in the lesion can be reinforced	4	2.6
Right bowel and bladder are obviously compressed	16	10.3

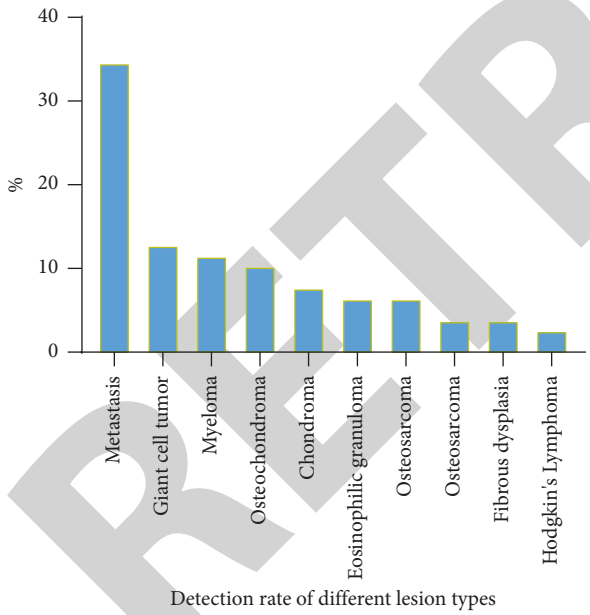

Figure 1: Primary solitary bone tumor and tumor-like lesion-type metastases of the iliac crest.

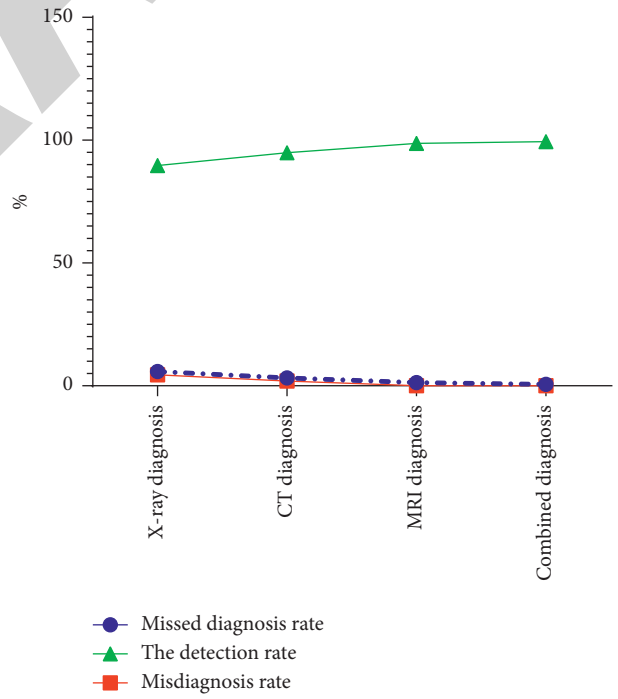

Figure 2: X-ray, CT, and MRI diagnosis: missed diagnosis rate and misdiagnosis rate.

By contrast, in diagnostic methods of X-ray, CT, and MR, the diagnostic values were statistically significant ($P < 0.05$) (Figure 4).

Near-end, backbone, and distal detection rates of different bone tumors and distal detection rates, have significant differences in the near-end, backbone and distal detection rate of different bone tumors and tumor morphology, including humerus, tibia, tibia proximal And the blem, the distal radius, and the femoral femur is relatively high, and the detection rate comparisons, the difference is statistically significant ($P < 0.05$) (Figure 5).

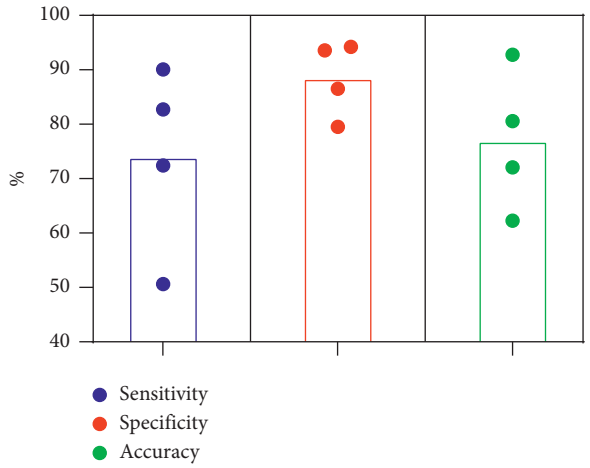

Figure 3: Diagnostic value of X-ray, CT, and MRI.

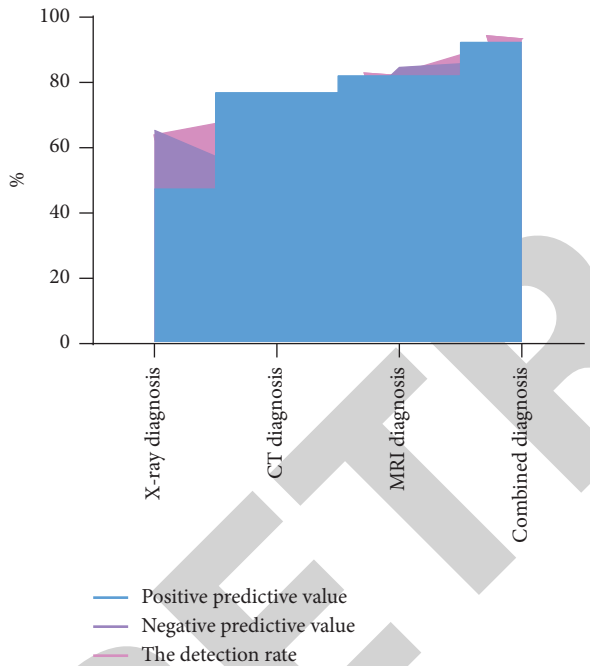

Figure 4: X-ray, CT, and MRI diagnosis: positive predictive value and negative predictive value.

5. Discussion

At present, the etiology of bone tumors is not very clear, but the occurrence of bone tumors is an extremely complex process, which is the result of the combined effects of genetic factors, environmental abnormalities, and toxic exposure. Genetics is the most important factor. If there is a family history of malignant bone tumor, the incidence rate is higher than that of the general population. Bone pain, arthralgia, and movement disorders are considered bone tumors; however, many bone tumors do not have typical clinical symptoms in the early stage, so it is difficult to detect early. Bone tumors are usually benign in the initial stages of the disease, but as the disease progresses, they can develop around the bone and even compress the surrounding soft tissue cells, causing pain. When this pain occurs, it means that the disease has progressed to the middle and late stages. Bone tumor formation is a very complex process, with many different genetic changes affecting different transmission pathways. Variations in some genes can lead to similar functional outcomes and produce similar tumors. All tumors have many changes in transmission pathways at the same time. Genetic mutations may have indirect or secondary effects, with tumors overexpressing normal growth factors or receptors, cytokines, and enzymes, allowing tumor cells to invade tissues, recruit new blood vessels, and even form distant metastases. These molecular biological processes are not associated with mutated genes but can be used as new biotherapeutic targets. According to the different nature of primary bone tumor, it is divided into benign bone tumor and malignant bone tumor. After the diagnosis of primary bone tumor, surgery is usually the first choice to remove the tumor.

The tibia has an irregular characteristic, which is the body's maximum flat bone, which is a large number of bone tumors, with the proportion of metastasis than being relatively high, and other bone marrow tumors, bone malignant lymphoma [7–9]. Clinical data show that the incidence of ilibular disease in the primary malignant bone tumor is about 9.6%, of which the patient is high in chondrosatoma is high, and it is an osteosarcoma, and Juventi meat [10–12]. This study analyzed primary solitary bone tumors and tumor-like lesion-type metastases of the iliac bone, including giant cell tumor of bone, myeloma, osteochondroma, chondroma, eosinophilic granuloma, osteosarcoma, osteosarcoma, fibrous dysplasia, and Hodgkin's lymphoma. The detection rates were 34.6%, 12.8%, 11.5%, 10.3%, 7.7%, 6.4%, 6.4%, 3.8%, 3.8%, and 2.6%. The results of this study are consistent with those of other clinical scholars, and the results are credible and have high promotion value and significance. The results confirmed that giant cell tumor of bone, myeloma, and osteochondroma were the primary solitary bone tumors of the iliac bone and the main metastatic tumors of tumor-like lesions.

Osteopolysis is obvious in tumor-like lesions, and the characteristics of iliac tumor lesions are obvious. Most tumor patients will have soft tissue mass that plays an important role in the clinical diagnosis of skeletal lesion [13]. The discrepancy is no statistically significant [14]y[15]. The bone cortex thickening or thinning is the main imaging characteristics of chondrosarcoma. It often has a soft tissue mass, and the main form of the lesion is a circular arc shape, with internal flute calcification, spot shape or annular, and there is a difference in calcification of different soft bone tumors [16]. The study analyzed the image characteristics of primary isolated bone tumor and tumor morphology of the iliac bone, and the results showed that the round high-density shadow, soft tissue swelling, soft tissue mass, right bowel, and bladder were significantly compressed [17]. The results confirmed that there is a lesionic imaging characteristics to identify a variable and malignant tumor, often through the osteospondel cartilage cap, osteogenic protrusion, soft tissue mass, tumor calcification, plaque shape, jet tumor bone, and clinical diagnosis, which can be used for

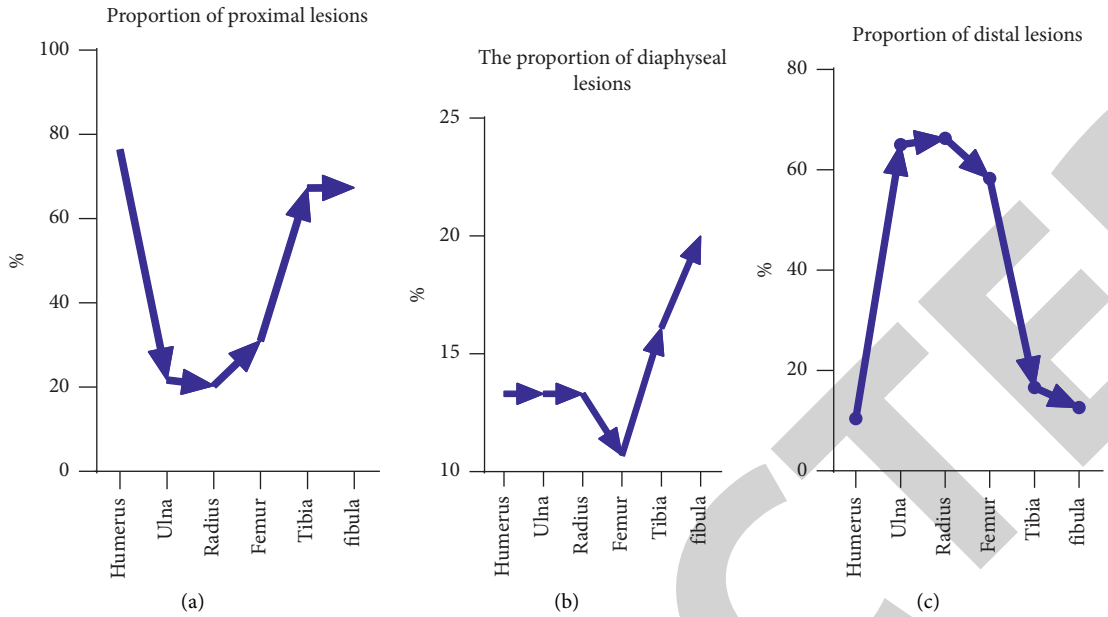

Figure 5: Proximal, diaphyseal, and distal detection rates of different bone tumors and tumor morphologies.

diagnosis and formulation of treatment options [18]. It is worth noting in clinical diagnosis, which should be distinguished from the bone and hardened myelitis. The tuberculous joint surface is easily destroyed, where the ankle joint is the main part, and it can easily cause cold abscess [19].

The clinical common diagnostic method of iliac crest tumor morbidity is *X*-ray extensive diagnosis, which can show most of the bone damage, especially in the diagnosis rate of overlapping diagnosis of the iliac crest [20]. However, due to the more of the bone structure, the structure is complex, the common intestinal content, intestinal gas and other factors, pelvic soft tissue, mild bone damage and soft tissue mass, missed diagnosis and misdiagnosis, and this will affect the diagnosis accuracy [21]. Therefore, the diagnostic method can improve the diagnostic accuracy and ensure good photographing conditions, which requires cleaning of the intestines. If the iliac lesion has a change in soft tissue, this will affect the X-ray diagnosis, so it is necessary to add MRI and CT diagnostics [22]. At present, imaging technology has continuously developed, and the image is not clearly displayed by CT diagnosis, which can be made up of the flat film, and the clinical diagnosis rate is significantly improved [23]. The CT diagnostic advantage of the iliac bone tumor and tumor-like lesions is obvious. Firstly, it is possible to clarify the internal structure and mass of the tissue and determine the calcification of tissue mass and show the degree of enhancement [24]. Secondly, it can be display the soft tissue mass and the surrounding tissue relationship. Thirdly, the X-ray diagnostic defect makes up for the bone reaction. Fourthly, CT diagnosis can be multiorientation, multiplane display lesion, size, and morphology, while showing the interval anatomical relationship and osteoporous change range [18]. Currently, in the diagnosis of the primary isolated bone tumors and tumor morbidity, CT and MRI diagnoses are increasingly widely used, can more accurately judge the osteoporous variation, and will show the tibia failure. They can timely evaluate whether the iliac bone signal is abnormal, which provides a good basis for the diagnosis of disease [25]. More and more academic researchers pay attention to the imaging diagnosis of primary solitary bone tumors and tumor-like lesions of the iliac bone. X-ray and CT are used to diagnose patients. Two of the 20 patients have the "floating ice sign," the boundary is blurred, there will be residual bone density sclerosis and increase, and the original bone shape and contour are still maintained. Studies confirmed this conclusion. This study analyzed the diagnostic value of X-ray, CT, and MRI in bone tumors and tumor-like lesions. The results showed that the diagnostic rates of X-ray, CT, MRI, and combined diagnosis were 5.8%, 3.2%, 1.3%, and 0.6%, respectively, and the missed diagnosis rates were 4.5%, 1.9%, 0.0%, and 0.0%, respectively. The misdiagnosis rates were 89.7%, 94.9%, 98.7%, and 99.4%, respectively. Compared with X-ray, CT, and MRI single diagnosis, the combined diagnosis rate of the three methods was higher, the rate of missed diagnosis and misdiagnosis was lower, and the rate of missed diagnosis and misdiagnosis was lower. The detection rate, sensitivity, specificity, and accuracy were higher than those of other diagnostic methods, and the differences were statistically significant ($P < 0.05$). Different diagnostic methods have different characteristics and advantages. The clinical should choose the appropriate diagnosis method according to the age, the onset site, soft tissue mass, and osteopoly damage imaging characteristics. If there are difficulties in diagnosis, it should be combined with pathological diagnosis. The study explores the proximal end, backbone, and distal end detection rate of different bone tumors and tumor lesions. The results show that there is a significant difference in the near-end, backbone, and distal end detection rate of different bone tumors and tumor diseases, and there were statistical discrepancies in the diagnosis of humerus, tibia, distal radius, and femur

($P < 0.05$). The results of the study were consistent with the study results of clinicians, and the clinical reference value was higher [26].

This study can analyze the detection rates of the proximal end, backbone, and distal end of different bone tumors and tumor-like lesions in order to find out the disease progression. The structure of the paper is designed reasonably. However, there are still deficiencies that need to be improved. The study only analyzed the difference between single diagnosis and combined diagnosis of X-ray, CT, and MRI and did not analyze the combination of the two detection methods. This problem needs to be investigated in the research. Further lucubrate is needed to improve the accuracy of the study.

6. Conclusion

X-ray plays an important role in the clinical diagnosis of primary solitary bone tumors and tumor-like lesions of the iliac crest and is the preferred diagnostic method. MRI and CT have higher diagnostic value in tumor lesion staging, scope, and soft tissue mass diagnosis, which can provide effective theoretical basis for clinical treatment of patients. Therefore, the appropriate diagnostic method should be selected according to the specific situation of the patient, and the efficiency of the clinical feature shall be improved.

Data Availability

All data generated or analyzed during this study are included in this article.

Disclosure

Xuying Wei and Wenxin Zheng are the co-first authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] B. Chaib, K. Malhotra, M. Khoo, and A. Saifuddin, "Pathological fracture in paediatric bone tumours and tumour-like lesions: a predictor of benign lesions?" *British Journal of Radiology*, vol. 94, no. 1125, Article ID 20201341, 2021.

[2] C. Neyisci and Y. Erdem, "Battle against musculoskeletal tumors: descriptive data of military hospital experience," *Frontiers in Public Health*, vol. 8, 2020.

[3] S. Subramanian and V. K. Viswanathan, "Lytic bone lesions," in *StatPearls Treasure Island (FL)*StatPearls Publishing, St. Petersburg, FL, USA, 2021.

[4] M. Uhl and G. W. Herget, "[Tumor-like bone lesions of the skeleton]," *Orthopäde, Der*, vol. 49, no. 9, pp. 825–838, 2020.

[5] M. Uhl and G. W. Herget, "[Tumor-like bony Lesions of the skeleton]," *Radiologe, Der*, vol. 60, pp. 655–668, 2020.

[6] W. Guo, X. Niu, and J. Xiao, "Guidelines for clinical evidence-based diagnosis and treatment of osteosarcoma," *Journal of European Economy*, vol. 28, 2022.

[7] D. H. Lee, J. M. Hills, M. I. Jordanov, and K. A. Jaffe, "Common tumors and tumor-like lesions of the Shoulder," *Journal of the American Academy of Orthopaedic Surgeons*, vol. 27, 2019.

[8] E. Maj, K. Wójtowicz, Aleksandra et al., "Intramedullary spinal tumor-like lesions," *Acta Radiologica*, vol. 60, 2019.

[9] S. Gao, R. Zhou, Q. Xu, and H. Chen, "Edema surrounding benign tumors and tumor-like lesions," *BioMed Research International*, vol. 2019, Article ID 8206913, 7 pages, 2019.

[10] O. Papakonstantinou, A. Isaac, D. Dalili, and I. M. Noebauer-Huhmann, "T2-weighted hypointense tumors and tumor-like lesions," *Seminars in Musculoskeletal Radiology*, vol. 23, no. 1, pp. 58–75, 2019.

[11] M. Atif, O. H. Ali Hasan, U. Ashraf, M. Mustafa, and M. Umer, "Benign tumours and tumour like lesions of bone," *JPMA. The Journal of the Pakistan Medical Association*, vol. 68, no. 10, pp. 1502–1507, 2018.

[12] N. Oren, A. Vaysberg, and D. T. Ginat, "Updated WHO nomenclature of head and neck lesions and associated imaging findings," *Insights into Imaging*, vol. 10, no. 1, 2019.

[13] G. Toğral, A. Yapar, and T. Tolunay, "Which one of the benign tumors and tumor-like lesions located in long bones needs prophylactic fixation during surgery?" *Joint Diseases and Related Surgery*, vol. 32, no. 1, pp. 210–217, 2021.

[14] E. A. Sezgin and O. Ş Atik, "Tumors and tumor-like lesions of infrapatellar fat pad and surrounding tissues: a review of the literature," *Joint Diseases and Related Surgery*, vol. 29, no. 1, pp. 58–62, Apr 2018.

[15] S. Luo, T. Jiang, X. Yang, Y. Yang, and J. Zhao, "Treatment of tumor-like lesions in the femoral neck using free non-vascularized fibular autografts in pediatric patients before epiphyseal closure," *Journal of International Medical Research*, vol. 47, no. 2, pp. 823–835, 2019.

[16] Y. Karakoç and C. Ulucaköy, "Management and retrospective analysis of tumors and tumor-like lesions localized in the talus," *Joint diseases and related surgery*, vol. 32, no. 1, pp. 218–223, 2021.

[17] S. Al-Qassab, R. Lalam, R. Botchu, and A. Bazzocchi, "Imaging of pediatric bone tumors and tumor-like lesions," *Seminars in Musculoskeletal Radiology*, vol. 25, no. 1, pp. 57–67, 2021.

[18] S. Xia, X. Wang, and J. Xiang, "Inmetry of primary osteogency-permeable primitive neurodexeroma," *Chinese Medical Journal*, vol. 42, pp. 1121–1126, 2019.

[19] Y. Arikan, A. Misir, D. Ozer et al., "The incidence and distribution of primary fibula tumors and tumor-like lesions: a 35-year experience," *Journal of Orthopaedic Surgery*, vol. 26, no. 3, Article ID 2309499018798180, 2018.

[20] J. Evans, A. G. Shamrock, and J. Blake, "Unicameral bone cyst," in *StatPearls Treasure Island (FL)*StatPearls Publishing, St. Petersburg, FL, USA, 2021.

[21] M. Wolska-Krawczyk, "Benigne und entzündliche Veränderungen der Schädelbasis," *Radiologe, Der*, vol. 59, no. 12, pp. 1071–1079, 2019.

[22] P. Mundada, M. Becker, V. Lenoir et al., "High resolution MRI of nail tumors and tumor-like conditions," *European Journal of Radiology*, vol. 112, pp. 93–105, 2019.

[23] J. Wang, D. Li, R. Yang, X. Tang, T. Yan, and W. Guo, "Epidemiological characteristics of 1385 primary sacral tumors in one institution in China," *World Journal of Surgical Oncology*, vol. 18, 2020.

Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9826497, 1 page
https://doi.org/10.1155/2023/9826497

Retraction

Retracted: Efficacy of Donepezil Hydrochloride plus Olanzapine for Senile Dementia and Its Effect on the Recovery of Cognitive Function

Evidence-Based Complementary and Alternative Medicine

Received 20 June 2023; Accepted 20 June 2023; Published 21 June 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.

References

[1] W. Zheng, X. Sun, and J. Liu, "Efficacy of Donepezil Hydrochloride plus Olanzapine for Senile Dementia and Its Effect on the Recovery of Cognitive Function," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 4156312, 5 pages, 2022.

Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2022, Article ID 4156312, 5 pages
https://doi.org/10.1155/2022/4156312

Research Article

Efficacy of Donepezil Hydrochloride plus Olanzapine for Senile Dementia and Its Effect on the Recovery of Cognitive Function

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Objective. To investigate the efficacy of donepezil hydrochloride plus olanzapine for senile dementia and its effect on the recovery of cognitive function. *Methods*. A total of 60 patients with senile dementia admitted to our hospital from April 2020 to July 2021 were recruited and assigned to receive either olanzapine alone (observation group) or donepezil hydrochloride plus olanzapine (experimental group) via the random number table method, with 30 patients in each group. *Results*. The combined therapy resulted in significantly higher clinical efficacy versus monotherapy of olanzapine ($P < 0.05$). Before treatment, the difference in the scores of cognitive function between the two groups did not come up to the statistical standard ($P > 0.05$). Donepezil hydrochloride plus olanzapine was associated with significantly higher scores of cognitive function in patients versus olanzapine alone ($P < 0.05$). The two groups had a similar incidence of adverse reactions ($P > 0.05$). *Conclusion*. Donepezil hydrochloride plus olanzapine substantially enhances the recovery of cognitive function of patients with senile dementia and features a manageable safety. Further trials are, however, required prior to clinical promotion.

1. Introduction

Alzheimer's disease (AD) is a common clinical neurological disease in the elder population and is characterized by mental retardation, cognitive dysfunction, and behavioral dysfunction, severely compromising quality of life [1]. Medication is the current management for senile dementia, but specific drugs have not yet been identified [2]. Hence, clinical treatment is usually performed to delay disease progression, restore cognitive function, and improve the self-care and quality of life of patients [3]. Research has reported a prevalence of AD reaching 23.3% among the elderly. AD is characterized by progressive learning and memory loss, and cognitive dysfunction, and is frequently accompanied by non-cognitive symptoms such as sleep disturbances, anxiety and fear, and activity disorders [4]. Currently, benzodiazepines are the most widely used drugs for sleep disorders, which achieve sedative-hypnotic effects through central nervous system inhibition. However, these drugs are associated with strong dependence and cognitive impairment, which restricts their application in the prevention and treatment of AD [5]. In traditional Chinese medicine (TCM), Suanzaoren Decoction is used to nourish blood and nourish yin to treat sleep disorders. Previous animal research [6] showed that Suanzaoren Decoction mediates anti-inflammatory, brain-protective, and neurotrophic effects in regulating sleep while improving spatial learning memory function in rats.

Olanzapine is a common antipsychotic drug for psychiatric diseases that acts on various receptor systems and exerts various pharmacological activities [7]. Nevertheless, prior research has also reported unfavorable efficiency of olanzapine alone for senile dementia patients [8]. Donepezil hydrochloride is a common cholinesterase inhibitor that effectively inhibits the hydrolysis of acetylcholine [9] to enhance the cognitive dysfunction of patients with senile dementia. Nonetheless, it can only postpone AD progression. To this end, combined therapy of donepezil hydrochloride plus olanzapine and adjuvant TCM treatment were adopted to investigate the treatment efficiency. This study included 60 senile dementia patients treated in our hospital from April 2020 to July 2021 to evaluate the efficacy of

donepezil hydrochloride plus olanzapine for senile dementia and its effect on the recovery of cognitive function.

2. Materials and Methods

2.1. Participants. A total of 60 patients with senile dementia admitted to our hospital from April 2020 to July 2021 were recruited and assigned to receive either olanzapine alone (observation group) or donepezil hydrochloride plus olanzapine (experimental group) via the random number table method, with 30 patients in each group. Undersigned informed consent was obtained from all the eligible patients, and the study protocol was approved by the hospital ethics committee, with the ethics number: SH-SY20200402. All procedures complied with the Declaration of Helsinki's ethical guidelines for clinical research.

2.2. Inclusion and Exclusion Criteria. Inclusion criteria were as follows: (1) patients who were clinically diagnosed with Alzheimer's disease and (2) the patients and their families were informed and voluntarily participated in this study.

Exclusion criteria were as follows: (1) patients who have recently received psychotropic drugs; (2) patients with other psychiatric diseases; and (3) patients and their families who were not willing to comply and cooperate reasonably with the present study.

2.3. Methods

(1) The patients in the two groups received 5 mg of olanzapine (approval no. H20052688) daily at the beginning of administration, and the dose was increased according to disease severity, with a maximum of 20 mg daily [10].

(2) The patients in the experimental group additionally received 5 mg of donepezil hydrochloride (H20070181) daily before bed. The dose was increased according to disease severity, with a maximum of 10 mg daily [11]. The duration of treatment was two months.

TCM Adjuvant Therapy. The two groups received Jieyu Yizhi Decoction. The ingredients of the decoction include 12 g of Bupleuri Radix and Polygalae Radix, 30 g of Codonopsis Radix, Angelicae Sinensis Radix, Poria, Atractylodis Macrocephalae Rhizoma, and Schisandrae Chinensis Fructus, 9 g of Pinelliae Rhizoma, 15 g of Paeoniae Radix Alba and Acori Tatarinowii Rhizoma, and 10 g of Licorice. The herbs were decocted with water to obtain 200 mL of filtrate and administered twice daily. Benzodiazepines were prevented during TCM treatment.

2.4. Outcome Measures

2.4.1. Clinical Efficacy

Cured: the patient's BEHAVE-AD score decreased by less than 75% after treatment.

Markedly effective: the patient's BEHAVE-AD score decreased by 50–75% after treatment.

Effective: the patient's BEHAVE-AD score after treatment decreased by 25–50%.

Ineffective: the patient's BEHAVE-AD score after treatment decreased by less than 25%.

2.4.2. Cognitive Function Score. Wechsler Adult Intelligence Test and Clinical Memory Scale were used to evaluate the cognitive function of patients, including image-free recall, recognition of meaningless images, pointing memory, memory of portrait characteristics, learning association, memory IQ, speech IQ, operational IQ, and total IQ. The higher the score of each index, the better the recovery of the cognitive function of the patient.

2.4.3. Adverse Reactions. Adverse reactions during treatment include insomnia, lethargy, nausea and vomiting, and abnormal liver function.

2.5. Statistical Analysis. SPSS 21.0 was the software used for data analyses. Measurement data were expressed as $(\overline{x} \pm s)$ and analyzed using the independent sample T test. Count data were expressed as the number of cases (rate) and analyzed using the chi-square test. Statistical significance was indicated by $P < 0.05$.

3. Results

3.1. Patient Characteristics. There were 19 males and 11 females in the observation group, aged 62 to 81 (73.27 ± 3.35) years, with disease duration of 1 to 7 (3.82 ± 0.58) years. There were 22 males and 8 females in the experimental group, aged 61 to 83 (73.44 ± 3.42) years. The patient characteristics of the two groups were comparable ($P > 0.05$) (Table 1).

3.2. Comparison of Clinical Efficacy. The combined therapy resulted in significantly higher clinical efficacy versus monotherapy of olanzapine ($P < 0.05$) (Table 2).

3.3. Cognitive Function Score Comparison. Before treatment, the difference in the scores of cognitive function between the two groups did not come up to the statistical standard ($P > 0.05$). Donepezil hydrochloride plus olanzapine was associated with significantly higher scores of cognitive function in patients versus olanzapine alone ($P < 0.05$) (Table 3).

3.4. Comparison of Adverse Reactions. There was no statistically significant difference in the incidence of adverse events between the two groups ($P > 0.05$) (Table 4).

Table 1: Patient characteristics ($\overline{x} \pm s, n(\%)$).

	Observation group ($n = 30$)	Experimental group ($n = 30$)	t (t/x^2)	P value
Gender			0.693	0.405
Male	19	22		
Female	11	8		
Age (years)	62 – 81	61 – 83		
Average age (years)	73.27 ± 3.35	73.44 ± 3.42	−0.194	0.847
Disease duration (years)	1 – 7	1 – 8		
Average disease duration (years)	3.82 ± 0.58	3.94 ± 0.61	−0.781	0.438

Table 2: Comparison of clinical efficacy ($n(\%)$).

Group	n	Cured	Markedly effective	Effective	In effective	Total efficiency (%)
Observation group	30	6	10	6	8	22 (73%)
Experimental group	30	10	8	11	1	29 (97%)
x^2	—		—	—	—	6.405
P	—		—	—	—	0.011

Table 3: Cognitive function score comparison ($\overline{x} \pm s$).

Indices	Time	Observation group ($n = 30$)	Experimental group ($n = 30$)	t	P
Image-free recall	Before therapy	12.67 ± 2.43	12.68 ± 2.43	−0.016	0.987
	After treatment	13.66 ± 2.79	17.87 ± 3.13	−5.499	<0.001
Recognition of meaningless images	Before therapy	15.46 ± 3.11	15.42 ± 3.09	0.05	0.96
	After treatment	16.64 ± 2.80	19.70 ± 3.25	−3.907	<0.001
Pointing memory	Before therapy	9.53 ± 1.25	9.45 ± 1.48	0.226	0.822
	After treatment	10.72 ± 1.84	13.78 ± 2.36	−5.601	<0.001
Portrait feature memory	Before therapy	12.45 ± 2.18	12.35 ± 2.43	0.168	0.867
	After treatment	13.06 ± 1.83	15.71 ± 2.25	−5.005	<0.001
Learning association	Before therapy	11.49 ± 2.32	11.43 ± 2.31	0.1	0.921
	After treatment	12.05 ± 2.47	16.09 ± 2.66	−6.096	<0.001
Memory IQ	Before therapy	77.45 ± 5.53	77.54 ± 5.48	−0.063	0.95
	After treatment	83.69 ± 5.66	90.65 ± 6.19	−4.545	<0.001
Speech IQ	Before therapy	82.42 ± 3.85	83.41 ± 4.15	−0.958	0.342
	After treatment	85.86 ± 4.53	91.78 ± 5.26	−4.671	<0.001
Operational IQ	Before therapy	77.05 ± 4.28	76.95 ± 4.35	0.09	0.929
	After treatment	79.78 ± 4.30	83.68 ± 4.28	−3.521	<0.001
Total IQ	Before therapy	82.59 ± 4.52	82.63 ± 4.35	−0.035	0.972
	After treatment	85.76 ± 4.69	90.81 ± 5.15	−3.971	<0.001

Table 4: Comparison of adverse reactions (n (%)).

	Observation group ($n = 30$)	Experimental group ($n = 30$)	x^2	P value
Insomnia	1	2		
Lethargy	1	1		
Feeling sick and vomiting	1	1		
Abnormal liver function	0	0		
Overall incidence (%)	3 (10%)	4 (13%)	0.162	0.688

4. Discussion

Senile dementia, also known as Alzheimer's disease, is a common central nervous system degenerative disease in the elderly [12]. It is associated with severe cognitive and behavioral disorders and even mental disorders. Research has revealed that the leading causes of Alzheimer's disease are amyloid deposition, neurofibrillary tangles, and decreased levels of acetylcholine in the brain's neurotransmitters, resulting in a continuous decrease in the number of neurons and compromised memory [13]. Symptoms of dementia patients include delusions and agitation. At present, antipsychotic drugs are mainly used for the clinical management of senile dementia, but specific drugs for the disease are still unavailable [14]. At present, the western drug treatment for Alzheimer's disease mainly includes [15] (i) choline acetyltransferase (AChE) inhibitors; (ii) antipsychotic drugs and anti-anxiety and depression drugs (risperidone, fluoxetine, and buspirone); and (iii) neuroprotective agents. However, these drugs only temporarily alleviate cognitive

impairment and its associated abnormal behaviors and are associated with poor patient intolerance and compliance and a cascade of adverse events such as nausea and vomiting, dizziness, diarrhea, and delayed-onset dyskinesia. Alzheimer's disease belongs to the category of dementia in TCM [16], and the onset of this disease is related to three key factors: deficiency, phlegm, and stasis, so its management mostly involves tonifying the kidney and strengthening the spleen, dispelling phlegm, and activating blood circulation to resolve stasis.

Olanzapine is a new clinical atypical neuroleptic drug [17] with a strong affinity with serotonin, dopamine D, and histamine receptors. It effectively blocks D2 and HT2A receptors. The secretion of dopamine significantly relieves patients' mental symptoms such as delusions, hallucinations, and destructive emotions [18]. Donepezil hydrochloride, as a common clinical cholinesterase inhibitor, effectively inhibits the hydrolysis of acetylcholine by acetylcholinesterase and increases the level of acetylcholine in the synaptic space, thus enhancing the role of acetylcholine in the central nervous system [19]. Devanand et al. [20] indicated that donepezil hydrochloride could effectively improve the dementia behavior and cognitive function of patients with Alzheimer's disease. Eskandary et al. [21] have shown that the single use of donepezil hydrochloride or olanzapine in patients with Alzheimer's disease is suboptimal. Matsunaga et al. [22] also showed that joint administration of drugs could effectively relieve the symptoms of Alzheimer's disease.

The results of the present study showed that the donepezil hydrochloride plus olanzapine was associated with significantly higher clinical efficacy and scores of cognitive function in patients versus olanzapine alone ($P < 0.05$), indicating a favorable treatment efficiency of donepezil hydrochloride plus olanzapine for senile dementia. It effectively increases the concentration of acetylcholine in the relevant areas of the patient's brain, which positively affects the cognitive status of the patient's body function [23]. The reason may be that donepezil hydrochloride regulates the hydrolysis of acetylcholine ester in the central neurons, boosts the level of acetylcholine in brain tissue, and alleviates memory loss and mental agitation in Alzheimer's disease patients [24]. Moreover, the patients in the present study received TCM adjuvant therapy. In the Jieyu Yizhi Decoction, Bupleuri Radix detoxifies the liver and regulates liver qi, Codonopsis Radix and Angelicae Sinensis Radix, as the monarch drug, strengthen the spleen, benefit the qi, and tonify the blood, Poria and Atractylodis Macrocephalae Rhizoma strengthen the spleen and resolve dampness, Schisandrae Chinensis Fructus nourishes blood and softens liver, Pinelliae Rhizoma dries dampness and resolves phlegm, Paeoniae Radix Alba and Polygalae Radix clear phlegm and invigorate the brain, Acori Tatarinowii Rhizoma tonifies the kidneys, and Licorice harmonizes all the medicines. Curcumae Radix, Cyperi Rhizoma, and Chuanxiong Rhizoma can be added for elderly female patients to enhance the liver detoxification, and Epimedii Folium, Eucommiae Cortex, and Taxilli Herba can be added for elderly male patients to tonify the kidney. The dosages of Acori Tatarinowii Rhizoma and Polygalae Radix can be increased in obese patients, and Crataegi Fructus and lotus leaves can be added. If the disease has been prolonged and there are signs of blood stasis, Tongqiao Huoxue Decoction was administered.

Donepezil hydrochloride plus olanzapine herein significantly improved the cognitive function of patients and considerably relieved the disease condition of patients with Alzheimer's disease [25]. There was no statistically significant difference in the incidence of adverse reactions between the two groups of patients, which indicated a manageable safety of the combined therapy of donepezil hydrochloride plus olanzapine [26, 27].

In conclusion, donepezil hydrochloride plus olanzapine substantially enhances the recovery of cognitive function of patients with senile dementia and features a manageable safety. Further trials are, however, required prior to clinical promotion.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] J. Huang, Y. Yu, W. Lin, D. Zhang, Z. Deng, and Q. Ding, "Olanzapine-induced peripheral eosinophilia and eosinophilic pleural effusion: a case report," *Medicine (Baltimore)*, vol. 97, no. 7, Article ID e9996, 2018.

[2] A. Fakhri, S. Pakseresht, M. R. Haghdoost, N. Hekmatkhah, M. Torkashvand, and B. Ghorbanzadeh, "Memantine enhances the effect of olanzapine in patients with schizophrenia: a randomized, placebo-controlled study," *Acta Medica Iranica*, vol. 54, no. 11, pp. 696–703, 2016.

[3] S. See, V. Daniel, and M. Sanon, "Late-onset dystonia with low-dose olanzapine in an older person: a case report," *Sr Care Pharm*, vol. 36, no. 10, pp. 493–500, 2021.

[4] A. Peng, Y. Gao, X. Zhuang et al., "Bazhu decoction, a traditional Chinese medical formula, ameliorates cognitive deficits in the 5xFAD mouse model of Alzheimer's disease," *Frontiers in Pharmacology*, vol. 10, 2019.

[5] Y. Gao, W. Shao, and G. Chen, "A preliminary investigation on the mechanism of treating cerebral infarction and Alzheimer's disease with the same disease by Huang Lian Detoxification Tang," *Journal of Liaoning University of Traditional Chinese Medicine*, vol. 22, no. 07, pp. 145–148, 2020.

[6] G. Chen and L. Cao, "Advances in clinical treatment of Alzheimer's disease in Chinese medicine," *Journal of Xinxiang Medical College*, vol. 38, no. 06, pp. 593–596, 2021.

[7] A. N. Voineskos, B. H. Mulsant, E. W. Dickie et al., "Effects of antipsychotic medication on brain structure in patients with major depressive disorder and psychotic features: neuroimaging findings in the context of a randomized placebo-controlled clinical trial," *JAMA Psychiatry*, vol. 77, no. 7, pp. 674–683, 2020.

[8] A. J. Flint, B. S. Meyers, A. J. Rothschild et al., "Effect of continuing olanzapine vs placebo on relapse among patients with psychotic depression in remission: the STOP-PD II

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Retraction

Retracted: Vitamin AD Drops are More Effective than Intramuscular Injection of Thymosin in Reducing the Rate of Growth Retardation in Children

Evidence-Based Complementary and Alternative Medicine

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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] M. Luo and H. Zhang, "Vitamin AD Drops are More Effective than Intramuscular Injection of Thymosin in Reducing the Rate of Growth Retardation in Children," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 7799111, 6 pages, 2022.

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Research Article

Vitamin AD Drops are More Effective than Intramuscular Injection of Thymosin in Reducing the Rate of Growth Retardation in Children

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Objective. To explore the effect of vitamin AD drops on growth retardation in children. *Methods*. From February 2020 to February 2021, 100 children with constipation and recurrent respiratory infections treated in our hospital were assigned to a vitamin AD drops group and intramuscular thymosin group, with 50 cases in each group. Outcome measures included mean height, body mass index (BMI), frequency of respiratory infections, increase in height and BMI, growth retardation, clinical effectiveness, immune function, medication compliance, and adverse responses. *Results*. The vitamin AD drops group showed higher mean height ($t = 5.958$, $P < 0.05$), greater body mass ($t = 3.997$, $P < 0.05$), and less frequency of respiratory infections than the intramuscular thymosin group ($t = 26.564$, $P < 0.05$). The vitamin AD drops group resulted in a lower ratio of height increase of >1 cm and a higher ratio of >2 cm as compared with the intramuscular thymosin group ($\chi^2 = 8.167$, $P < 0.05$). The vitamin AD drops group showed a lower ratio of weight gain of 0 and > 1 kg and a higher ratio of >2 kg versus the intramuscular thymosin group ($\chi^2 = 4.058$, $P < 0.05$). Vitamin AD drops resulted in a significantly lower growth retardation rate than intramuscular thymosin administration ($\chi^2 = 5.530$, $P < 0.05$). The vitamin AD drops group yielded markedly higher treatment efficiency in contrast to the intramuscular thymosin group ($Z = 2.111$, $P < 0.05$). The levels of CD3+CD4+, CD3+CD8+, CD4/CD8, IgA, IgG, and IgM in the two groups of patients after medication were higher than those before medication ($P < 0.05$), with higher levels in the vitamin AD drops group compared with the intramuscular thymosin group ($P < 0.05$). The vitamin AD drops group showed remarkably higher medication compliance in patients versus the intramuscular thymosin group ($Z = 2.239$, $P < 0.05$). The vitamin AD drops group experienced a significantly lower incidence of adverse reactions ($\chi^2 = 4.396$, $P < 0.05$). *Conclusion*. Vitamin AD drops are more effective than the intramuscular injection of thymosin in reducing the incidence of growth retardation in children.

1. Introduction

Short stature is defined as individuals of the same race, sex, and age whose height is less than 2 standard deviations from the mean height of the normal population, or less than the 3rd percentile (P3), in similar living environments. Currently, growth hormone therapy is effective in treating short stature, but it is costly and associated with side effects. In children under P3 height, excluding those with growth hormone deficiency and idiopathic dwarfism due to the effects of related diseases, growth hormone therapy is mostly used [1, 2].

Furthermore, diseases such as repeated respiratory tract infections and constrictions are far more common in infants and children, and nutrients such as zinc and vitamin D in infants and children are easily deficient under various factors during the growth course, leading to various diseases and jeopardizing their development [3].

Children with height between the 3rd and 10th percentile (P3 to P10) have short stature and growth retardation but fail to reach the diagnostic criteria for dwarfism and growth hormone therapy is discouraged, for which modern medicine only provides nutrition and exercise guidance, but

the results are unfavorable. These children exhibit thinness, yellowish complexion, poor appetite, partial and picky eating, loose stools, thick and greasy tongue coating, inactivity, and poor sleep, which are consistent with spleen deficiency with dampness in the traditional Chinese medicine (TCM) theory [4]. Research has revealed that children with short stature are commonly deficient in 25 hydroxyvitamins and trace elements of zinc compared to normal children of the same age [5]. Therefore, early diagnosis of bone mineral density deficiency in children with growth retardation is merited for effective clinical treatment. Bone mineral density values provide an accurate evaluation of the mineral content of the bones and facilitate the understanding of the skeletal development of the child, which plays a crucial role in bone density testing. Vitamin A is a micronutrient and vitamin D provides the body with the required nutrients and plays a role in the regulation of calcium metabolism [6]. Clinical research has demonstrated significantly lower vitamin D levels in children with growth retardation compared to normal children, but related current clinical reports are scarce [7].

Vitamin AD drops are a compound preparation for vitamin A and vitamin D supplementation, they regulate the immune system, and enhance the anti-infection ability of the body [8]. Tiaozhong Zhuyun decoction strengthens the spleen and benefits the qi. This study statistically analyzed the clinical data of 100 children with constriction in our hospital from February 2020 to February 2021 and explored the effect of vitamin AD drops on growth retardation in children.

2. Materials and Methods

2.1. General Information. From February 2020 to February 2021, 100 children with constipation and recurrent respiratory infections treated in our hospital were assigned to a vitamin AD drops group and an intramuscular thymosin group, with 50 cases in each group. The randomization was carried out using an online web-based randomization tool (https://www.randomizer.org/). For concealment of allocation, the randomization procedure and assignment were managed by an independent research assistant who was not involved in screening or evaluation of the participants.

In the vitamin AD drops group, there were 21 females and 29 males, aged 1–14 (7.02 ± 1.32) years, 24 cases with a disease duration of 1–2 years, and 26 cases with 3–4 years; there were 44 cases of repeated upper respiratory tract infections, 41 cases of anorexia, and 9 cases of malnutrition. In the intramuscular thymosin group, there were 20 females and 30 males, aged 1–14 (7.10 ± 1.52) years, 23 cases with a disease duration of 1–2 years, and 27 cases with 3–4 years; there were 43 cases of repeated upper respiratory tract infections, 40 cases of anorexia, and 11 cases of malnutrition. The patient characteristics between the two groups were comparable ($P > 0.05$).

The original sample size calculation estimated that 50 patients in each group would be needed to detect a 3-point difference between the groups in a 2-sided significance test with a power of 0.8 and an alpha error level of 0.05. Undersigned informed consent was obtained from patients prior to enrollment in this study. The study protocol was approved by the hospital's ethics committee, ethics number: SU-EU20200204. All the processes were in accordance with the Declaration of Helsinki's ethical guidelines for clinical research.

2.1.1. Inclusion Criteria. (1) All had complete medical records; (2) children with birth length ≥50 cm, body mass ≥2.5 kg, normal intelligence, and no congenital organic disease; (3) children with height growth curves between P3 and P10; (4) children with growth retardation: 5 cm < 6 cm/year growth rate; (5) bone age lagged behind the actual age (≤1 year); (6) children with chronic anorexia, picky eating, or low food intake; (7) patients who provided informed consent and cooperated with treatment.

2.1.2. Exclusion Criteria. (1) Patients with acute myocardial infarction; (2) patients with arrhythmia; (3) patients with cardiopulmonary insufficiency. (4) patients with thyroid dysfunction, skeletal disorders, genetic metabolic diseases, Turner syndrome, precocious puberty, early menarche, early breast development, pituitary tumors, and other organic pathologies that cause growth retardation; (5) patients with treatment adherence.

2.2. Method

2.2.1. Intramuscular Injection of Thymosin Group. The children were intramuscularly administered with 1 mg of thymosin, twice a week. With 1 month as one treatment cycle, the duration was 3 courses.

2.2.2. Vitamin AD Drops Group. The children were given one pill of vitamin AD drops once on alternate days. With 1 month as one treatment cycle, the duration was 3 courses.

The two groups received Tiaozhong Zhuyun granules. The ingredients of the granules include 12 g of Pseudostellariae Radix, 8 g of Poria, 9 g of Atractylodis Macrocephalae Rhizoma and Atractylodis Rhizoma, 10 g of Dioscoreae Rhizoma, 6 g of *Pinellia tuberifera*, 9 g of tangerine peel, 8 g of fried white lentils, Coicis Semen and Galli gigeriae endothelium corneum, 6 g of Amomi Fructus, 3 g of licorice, and 2 g of *Stevia rebaudiana*. The granules were administered with one dose daily for 5 days a week. With 3 months as one treatment cycle, the duration was 2 courses.

2.3. Observation Indicators. The patients were followed up for 3 months. (1) Mean height, body mass index, and frequency of respiratory infections; (2) height and weight gain; (3) growth retardation; (4) immune function, including CD3+CD4+, CD3+CD8+, CD4/CD8, and other T cell subsets, and IgA, IgG, IgM, and other serum immunoglobulin indicators; before and after treatment, 9 mL of morning fasting venous blood was collected from patients

and centrifuged to obtain the serum, which was stored at −20°C for assays. The rate method was adopted for measurement using a Beckman fully automated biochemistry analyzer (Beckman Kulk, USA); (5) medication compliance; (6) adverse reactions.

2.4. Efficacy Evaluation Criteria. Markedly effective: the clinical manifestations and respiratory infections after medication have been significantly reduced, with the frequency of less than 0.66 times one month, and no recurrence was observed within 3 months; effective: the clinical manifestations and respiratory infections after medication have been significantly reduced, with the frequency of 0.66~2.65 times/month, and no recurrence was observed within 3 months; ineffective: the clinical manifestations and respiratory tract infections worsened after the medication, with a frequency of 2.65 times one month, and recurrence was observed within months [9].

2.5. Statistical Analysis. All the data analyses were performed by SPSS21.0. The count data were expressed as rates and analyzed using the χ^2 test or rank sum test. Measurement data were expressed as $\overline{x} \pm s$ and examined using the t-test or F test. $\alpha = 0.05$ was assumed to be significant.

3. Results

3.1. Comparison of Mean Height, BMI, and the Frequency of Respiratory Infections. The vitamin AD drops group showed higher mean height ($t = 5.958$, $P < 0.05$), greater body mass ($t = 3.997$, $P < 0.05$), and less frequency of respiratory infections than the intramuscular thymosin group ($t = 26.564$, $P < 0.05$). (Table1).

3.2. Comparison of Growth in Height, BMI, and Growth Retardation. The ratio of height increase >1 cm was lower in the vitamin AD drops group and higher in the intramuscular thymosin group (2 = 8.167, $P < 0.05$); the ratio of weight gain of 0 and > 1 kg was lower in the vitamin AD drops group and higher in the intramuscular thymosin group (2 = 4.058, $P < 0.05$), and the growth retardation rate was lower in the vitamin AD drops group (2 = 5.530, $P < 0.05$). (Table 2).

3.3. Comparison of Clinical Efficacy. The vitamin AD drops group yielded markedly higher treatment efficiency in contrast to the intramuscular thymosin group ($Z = 2.111$, $P < 0.05$) (94.00% (47/50) vs 80.00% (40/50)) ($Z = 2.111$, $P < 0.05$). (Table 3).

3.4. Comparison of Immune Function. The levels of CD3+CD4+, CD3+CD8+, CD4/CD8, IgA, IgG, and IgM in the two groups of patients after medication were higher than those before medication ($P < 0.05$), with higher levels in the vitamin AD drops group compared with the intramuscular thymosin group ($P < 0.05$, Tables 4 and 5).

3.5. Comparison of Medication Compliance. The vitamin AD drops group showed remarkably higher medication compliance in patients versus the intramuscular thymosin group (90.00% (45/50) vs 66.00% (33/50)) ($Z = 2.239$, $P < 0.05$) (Table 6).

3.6. Comparison of Adverse Reactions. The vitamin AD drops group experienced a significantly lower incidence of adverse reactions (2.00% (1/50) vs 16.00% (8/50)) ($\chi^2 = 4.396$, $P < 0.05$). (Table 7).

4. Discussion

Since the publication of the guidelines for the diagnosis and treatment of children with short stature by the Chinese Academy of Pediatrics, children with short stature below the 3rd percentile (P3) in height have received widespread attention, and 60%–80% of these children with growth retardation are classified as idiopathic short stature (ISS) whose pathogenesis remains poorly understood [10]. Infants and young children are extremely susceptible to various factors that lead to insufficient intake of nutrients [11]. The current consensus is to use growth hormones for disease management. However, due to the high price of growth hormone preparations, the need for long-term injections, and unknown side effects, the widespread use of the growth hormone is largely limited. Modern medical nutrition and exercise guidance for short stature is insufficient, and some cases are characterized by lagging growth, bloating, partiality, and picky eating [12]. Vitamin AD drops contain vitamin A and vitamin D, among which vitamin D promotes the body's absorption of calcium and facilitates the growth and development of children [1]. Studies have shown [13, 14] that vitamin AD drops play a positive role in the prevention of upper respiratory tract infections and provide favorable conditions for the growth and development of children.

In TCM, "short stature" is included in the category of "five growth delays." The present study revealed that spleen deficiency is common in children with growth retardation according to clinical practice. Children require high nutritional needs during growth and development, and adequate nutritional supply necessitates a strong spleen and stomach to properly transport and absorb water and grain essences; thus, tonifying the spleen and stomach is the key to treatment. In this formula, Pseudostellariae Radix and Atractylodis Macrocephalae Rhizoma strengthen the spleen and tonify qi, while Atractylodis Rhizoma, Dioscoreae Rhizoma, tangerine peel, Poria, Dioscoreae Rhizoma, white lentils, and Coicis Semen invigorate the spleen and remove dampness. Amomi Fructus and Galli gigeriae endothelium corneum stimulate the spleen and help digestion, and licorice tonifies the middle, strengthens the qi, and harmonizes the medicines. Modern pharmacological studies have shown that Liujunzi decoction promoted the absorption and secretion function of the small intestine and the secretion function of the stomach and pancreas. Pseudostellariae Radix is immune-promoting and rich in zinc, and Atractylodis

Table 1: Comparison of average height, BMI, and frequency of respiratory infections ($\overline{x} \pm s$).

Groups	n	Average height (cm)	BMI (kg)	Frequency of respiratory infections (time/month)
Vitamin AD drops group	50	118.84 ± 9.67	26.84 ± 5.95	0.64 ± 0.12
Intramuscular thymosin group	50	108.20 ± 8.12	22.62 ± 4.51	2.03 ± 0.35
t		5.958	3.997	26.564
P		<0.001	<0.001	<0.001

Table 2: Comparison of growth in height, BMI, and growth retardation (n (%)).

Groups	n	Growth in height		Growth in BMI			Growth retardation
Vitamin AD drops group		>1 cm	>2 cm	0	>1 kg	>2 kg	
Intramuscular thymosin group	50	13 (26.00)	37 (74.00)	0 (0)	17 (34.00)	33 (66.00)	0 (0)
Groups	50	27 (54.00)	23 (46.00)	1 (2.00)	26 (52.00)	23 (46.00)	7 (14.00)
χ^2		8.167			4.058		5.530
P		0.004			0.044		0.019

Table 3: Comparison of clinical efficacy (n (%)).

Groups	n	Markedly effective	Effective	Ineffective	Total effectiveness
Vitamin AD drops group	50	24 (48.00)	23 (46.00)	3 (6.00)	47 (94.00)
Intramuscular thymosin group	50	16 (32.00)	24 (48.00)	10 (20.00)	40 (80.00)
Z					2.111
P					0.035

Table 4: Comparison of immune function ((%), $\overline{x} \pm s$).

Groups	n	Time	$CD_3^+CD_4^+$	$CD_3^+CD_8^+$	CD_4/CD_8
Vitamin AD drops group	50	Before medication	22.02 ± 4.14	33.42 ± 5.24	1.02 ± 0.26
		After indication	26.23 ± 5.24	38.75 ± 4.41	1.52 ± 0.41
Intramuscular thymosin group	50	Before medication	21.75 ± 4.06	33.75 ± 5.03	1.03 ± 0.30
		After indication	23.45 ± 4.15	34.45 ± 4.65	1.12 ± 0.30

Table 5: Comparison of the immune function (g/L, $\overline{x} \pm s$).

Groups	n	Time	IgA	IgG	IgM
Vitamin AD drops group	50	Before medication	1.02 ± 0.30	7.25 ± 1.06	1.02 ± 0.35
		After indication	1.52 ± 0.25	8.32 ± 1.14	1.35 ± 0.28
Intramuscular thymosin group	50	Before medication	1.03 ± 0.30	7.15 ± 1.25	1.05 ± 0.28
		After indication	1.10 ± 0.30	7.42 ± 1.48	1.12 ± 0.31

Table 6: Comparison of medication compliance (n (%)).

Groups	n	Totally compliant	Partially compliant	Completely incompliant	Total compliance
Vitamin AD drops group	50	22 (44.00)	23 (46.00)	5 (10.00)	45 (90.00)
Intramuscular thymosin group	50	16 (32.00)	17 (34.00)	17 (34.00)	33 (66.00)
Z					2.239
P					0.025

Table 7: Comparison of adverse reactions (n (%)).

Groups	n	Nausea and vomiting	Itchy skin	Constipation	Dry mouth	Headache	Total incidence
Vitamin AD drops group	50	1 (2.00)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2.00)
Intramuscular thymosin group	50	3 (6.00)	1 (2.00)	2 (4.00)	1 (2.00)	1 (2.00)	8 (16.00)
χ^2							4.396
P							0.036

Macrocephalae Rhizoma and Atractylodis Rhizoma are both rich in vitamin A. Vitamin A contributes to the better functioning of vitamin D. The whole formula is balanced and has the effect of strengthening the spleen, benefiting Qi to help growth, and harmonizing the stomach to help transportation of qi and promote absorption [15].

Vitamin AD drops resulted in a significantly lower growth retardation rate than intramuscular thymosin administration ($\chi^2 = 5.530$, $P < 0.05$). The vitamin AD drops group yielded markedly higher treatment efficiency in contrast to the intramuscular thymosin group ($Z = 2.111$, $P < 0.05$). The levels of CD3+CD4+, CD3+CD8+, CD4/CD8, IgA, IgG, and IgM in the two groups of patients after medication were higher than those before medication ($P < 0.05$), with higher levels in the vitamin AD drops group compared with those in the intramuscular thymosin group ($P < 0.05$). The vitamin AD drops group showed remarkably higher medication compliance in patients versus the intramuscular thymosin group ($Z = 2.239$, $P < 0.05$). The vitamin AD drops group experienced a significantly lower incidence of adverse reactions ($\chi^2 = 4.396$, $P < 0.05$). The results of the present study showed that the vitamin AD drops group showed higher mean height ($t = 5.958$, $P < 0.05$), greater body mass, and less frequency of respiratory infections than the intramuscular thymosin group. Moreover, the vitamin AD drops group resulted in a lower ratio of height increase>1 cm and a lower ratio of weight gain 0 and > 1 kg, and a higher ratio of>2 cm and a ratio of >2 kg as compared with the intramuscular thymosin group. Moreover, the vitamin AD drops group yielded markedly higher total treatment efficiency in contrast to the intramuscular thymosin group (94.00% (47/50) vs 80.00% (40/50)). All the abovementioned results were in line with the previous studies [16, 17], which may be attributed to the key role of vitamins A and D. Vitamin A ensures embryonic development, and bone reproduction and growth, presents in both osteoblasts and osteoclasts, inhibits osteoclast activity, activates osteoclasts, and facilitates skeletal growth, development, and bone formation [18]. Vitamin D regulates bone metabolism, maintains normal cellular activity, and increases calcium absorption, thereby facilitating bone development and growth [19]. Vitamin A affects thyroid and the growth hormone-insulin growth factor axis function, which consequently regulates bone metabolic indexes [20], and vitamin D regulates calcium and phosphorus metabolism, facilitates the promotion of calcium and phosphorus absorption, provides essential minerals for normal bone tissue, and contributes to osteocalcin and osteoclast synthesis [21, 22].

Previous studies reported [23–26] that vitamin D effectively regulated the human immune function. The present study showed that after medication, the levels of CD3+CD4+, CD3+CD8+, CD4/CD8, IgA, IgG, and IgM in the two groups of patients after medication were higher than those before medication, with a higher level in the vitamin AD drops group compared with the intramuscular thymosin group, and the vitamin AD drops group showed higher medication compliance than the intramuscular thymosin group (90.00% (45/50) vs 66.00% (33/50)); the vitamin AD drops group experienced a considerably lower adverse reaction rate (2.00% (1/50) vs 16.00% (8/50)), which were consistent with the results of the prior study [27]. It is presumably attributed that vitamin D in AD drops enhances the immune function of the monocyte-macrophage system, activates T cells, provides favorable conditions for monocytes-macrophages, and induces the production of the tumor necrosis factor and interleukin [28–30]. Thymosin is a biologically active peptide extracted from calf thymus tissue that regulates the immune system and boosts body disease resistance but fails to provide sufficient vitamin A required by the body, resulting in a somber effect compared with vitamin AD drops [31, 32].

This trial was a guideline for the treatment of vitamin AD in patients with growth retardation. However, the present study may compromise the quality of the results due to the small number of samples included. Therefore, more samples should be included in future studies for an in-depth study to improve the accuracy of the results. In the future, a greater sample size and longer follow-up studies will be necessary to give more authentic evidence for clinical practice. Collectively, vitamin AD drops may provide a viable treatment alternative for growth retardation.

Data Availability

All data generated or analyzed during this study are included in this published article.

Conflicts of Interest

All authors declared that they have no conflicts of interest.

References

[1] N. Lv, C. Ma, J. Li, and Q. Shang, "The role of vitamin AD in the rehabilitation of children with motor developmental delay," *Chinese Journal of Child Health Care*, vol. 28, no. 6, pp. 676–679, 2020.

[2] H. Liang, "Analysis of the effect of vitamin AD drops on children's growth and development," *Family Medicine Medical Treatment and Drug Selection*, no. 9, p. 372, 2018.

[3] Y. Tang, X. Li, J. Bai, and B. Wang, "The correlation between serum vitamin A and 25(OH)D levels and allergic purpura in children," *Hebei Medicine*, vol. 43, no. 16, pp. 2467–2470, 2021.

[4] G. Y. Huang, Y. M. Shu, F. Y. Qiao, B. X. Yuan, and S. Y. Lai, "The effect of tonifying the kidney and invigorating the blood on placental function in intrauterine growth retardation," *Chinese Pharmacology and Clinical Practice*, no. 1, pp. 38–40, 1999.

[5] Q. Huang, "Clinical study and analysis of vitamin D foot-sanli acupoint injection for the treatment of growth retardation," *Electronic Journal of Clinical Medicine Literature*, vol. 5, no. 13, p. 82, 2018.

[6] Y. Q. Wang and Z. F. Lu, "Correlation of serum 25-hydroxyvitamin D levels with gross motor development in children with autism," *Experimental and Laboratory Medicine*, vol. 39, no. 2, pp. 440–443, 2021.

[7] N. Ma, Z. J. Cao, and X. Y. Wu, "Analysis of clinical characteristics and independent influencing factors of growth retardation in adolescent children," *Shaanxi Medical Journal*, vol. 50, no. 7, pp. 818–820, 2021.

[8] C. Xiao, "Study on the correlation between serum fat-soluble vitamin levels and the severity of atopic dermatitis in children," *Chinese Journal of Child Health Care*, vol. 29, no. 7, pp. 791–793, 2021.

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Retraction

Retracted: Efficacy of Fluticasone and Salmeterol Dry Powder in Treating Patients with Bronchial Asthma and Its Effect on Inflammatory Factors and Pulmonary Function

Evidence-Based Complementary and Alternative Medicine

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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] X. Zhang, M. Liu, and Y. Mao, "Efficacy of Fluticasone and Salmeterol Dry Powder in Treating Patients with Bronchial Asthma and Its Effect on Inflammatory Factors and Pulmonary Function," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 8555417, 6 pages, 2022.

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Research Article

Efficacy of Fluticasone and Salmeterol Dry Powder in Treating Patients with Bronchial Asthma and Its Effect on Inflammatory Factors and Pulmonary Function

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Objective. To evaluate the efficacy of fluticasone and salmeterol dry powder in treating patients with bronchial asthma and its effects on inflammatory factors and pulmonary function. *Methods*. One hundred patients with bronchial asthma, admitted to our hospital between April 2019 and June 2020, were enrolled and assigned into two groups using the random number table method. The observation group ($n = 50$) received budesonide powder, and the experimental group received fluticasone and salmeterol dry powder. The two groups were compared with regard to clinical efficacy, inflammatory factors, pulmonary function, and adverse reactions. *Results*. In the experimental group, the total effective rate of treatment was significantly higher than that in the observation group ($P < 0.05$); after treatment, the levels of inflammatory factors in the experimental group were lower than those in the observation group ($P < 0.05$); after treatment, lung function in the experimental group was significantly higher than that in the observation group ($P < 0.05$); the incidence of adverse reactions in the experimental group was significantly lower than that in the observation group ($P < 0.05$). *Conclusion*. Salmeterol and fluticasone powder has shown impressive clinical benefits in the treatment of bronchial asthma patients. It might be a viable approach to reduce inflammatory factors and improve pulmonary function. Moreover, its good clinical safety profile makes it a promising treatment that ought to be promoted and used widely.

1. Introduction

Clinical respiratory medicine considers bronchial asthma to be one of the most common pathological forms, mostly caused by the heterogeneity of the body's cells [1]. A cascade of factors is accountable including physiology and environment [2]. The main symptoms of bronchial asthma are shortness of breath, sudden wheezing, cough, and chest discomfort [3]. The disease is more common in individuals with allergic constitutions and individuals with low resistance [4].

For the treatment of bronchial asthma, salmeterol and fluticasone powder and budesonide powder are both commonly used drugs. Although both can significantly mitigate the symptoms of patients, budesonide powder is too irritating, which may increase the risk of adverse reactions in patients [5]. In recent years, salmeterol and fluticasone powder has emerged as a mainstay for bronchial asthma, and the drug is composed of fluticasone propionate and salmeterol [6]. Since the former aims to improve lung function, the latter targets to improve patients' overall health, these two treatments complement one another [7]. To this end, we hypothesized in this study that salmeterol and fluticasone powder in the treatment of patients with bronchial asthma yields a promising result in inflammatory factors and lung function.

2. Data and Methods

2.1. Baseline Data. The study population was 100 patients with bronchial asthma admitted to our hospital from April

2019 to June 2020, who were equally divided into the observation group ($n = 50$) and the experimental group ($n = 50$) using the random number table method. All patients themselves and their families were informed of the study and signed consent forms, and the study was approved by the ethics committee (Approval No. 20192524).

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria

(1) Bronchial asthma was diagnosed in all patients by clinical examination [8]

(2) Patients without other serious heart diseases

(3) The patients were informed about the study and voluntarily participated in it

(4) The patient has not used glucocorticoids 30 days before treatment, β2-receptor agonists within 7 days, or other asthma drugs except albuterol aerosol within 15 days

(5) Patients with no abnormal liver and kidney function, severe gastrointestinal diseases, blood diseases, and malignant tumors

2.2.2. Exclusion Criteria

(1) Patients with other serious medical conditions

(2) Patients with poor compliance who are unwilling to participate in the study

(3) Patients who are unconscious or have other mental illnesses

(4) Patients who have had serious adverse reactions to the drugs used in the experiment

(5) Pregnant and lactating women

2.3. Methods. In both groups, fluid rehydration, anti-infection, spasmolysis, and aminophylline were administered as symptomatic treatment. In the observation group, budesonide powder (Xinyi Baluda Pharmaceutical Co., Ltd., National Drug Approval H20080316, specification: 0.2 mg) was administered twice daily at a dose ranging from 0.4 to 1.2 mg. The experimental group was given daily doses of salmeterol and fluticasone powder twice (Glaxo Operations UK Limited, National Drug Approval H20090242, Specification: 55 μg), 55 μg each time. Both groups underwent treatment for six months.

2.4. Observational Indicators

2.4.1. Clinical Efficacy: Markedly Effective. A marked improvement in the patient's asthma attack was noted, and his breathing was smooth. Effective: the asthma attack of the patient has been relieved; there are, however, occasional instances of difficulty breathing. Ineffective: the condition has failed to improve or worsen.

2.4.2. Levels of Inflammatory Factors. The level of inflammatory factors (tumor necrosis factor (TNF-α), interleukin-4 (IL-4), and IL-8) in patient serum was assessed by enzyme-linked immunosorbent assay (Thermo Fisher) after routine centrifugation of 5 mL of fasting venous blood collected before and after treatment.

2.4.3. Pulmonary Function. The pulmonary function tests were performed using a spirometer (Jaeger, Germany) including 1s forced expiratory volume (FEV1), forced vital capacity (FVC), and peak expiratory flow (PEF).

2.4.4. Adverse Reactions. The potential adverse reactions were defined as follows: patient's health has not improved or has worsened, such as severe discomfort, rash, and oropharyngeal irritation.

2.5. Statistical Analysis. SPSS20.0 was used for the analysis of the data. Measurement data were expressed as ($\overline{x} \pm s$) and the independent sample t-tests were used for the comparison. Enumeration data were expressed as the number of cases (%) and the x^2 test was utilized for the comparison. Significance was determined with P values less than 0.05. The mapping software used was GraphPad Prism 8.

3. Results

3.1. Baseline Data. The observation group consisted of 31 males and 19 females; ages ranged from 24 to 59 years, with an average age of 41.28 ± 3.45 years; the disease course ranged from 1 to 13 years, with an average duration of 7.14 ± 1.28 years. There were 33 males and 17 females in the experimental group; their ages ranged from 23 to 60 years, with an average age of 41.34 ± 3.52 years. There was no significant difference between the two groups of patients in terms of the general data ($P > 0.05$), as shown in Table 1.

3.2. Comparison of Clinical Efficacy. Compared to the control group, the total effectiveness rate in the experimental group was significantly higher ($P < 0.05$), as shown in Table 2.

3.3. Comparison of Inflammatory Factors. Before treatment, there was no substantial difference in inflammatory factors between the experimental and observation groups ($P > 0.05$); after treatment, inflammatory factors in the experimental group were lower than those in the observation group ($P > 0.05$) (Figure 1).

3.4. Comparison of Pulmonary Functions. Significant differences did not exist between the two groups in terms of pulmonary function indexes before treatment ($P > 0.05$); the pulmonary function indexes of the experimental group were higher than those of the observation group after treatment ($P < 0.05$), as shown in Figure 2.

Table 1: Comparison of general data [n (%)].

	Observation group ($n = 50$)	Experimental group ($n = 50$)	t/x^2	P
Gender			0.174	0.677
Male	31	33		
Female	19	17		
Age (years)	24–59	23–60		
Average age (years)	41.28 ± 3.45	41.34 ± 3.52	−0.086	0.932
Disease course (years)	1–13	1–14		
Average course of disease (years)	7.14 ± 1.28	7.29 ± 1.36	−0.568	0.571

Table 2: Comparison of clinical efficacy [n (%)].

	Observation group ($n = 50$)	Experimental group ($n = 50$)	x^2	P
Markedly effective	24	38		
Effective	15	11		
Ineffective	11	1		
Overall response rate (%)	39 (78%)	49 (98%)	9.47	0.002

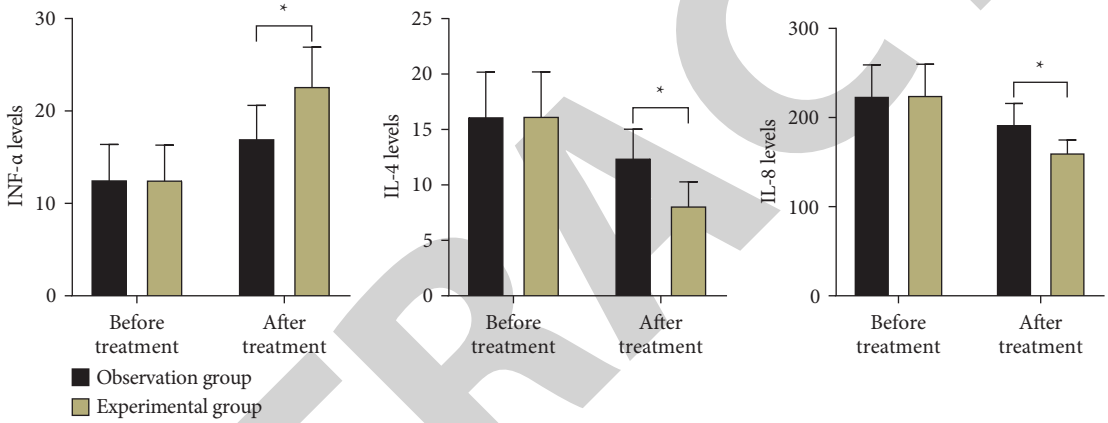

Figure 1: Comparison of inflammatory factors ($\overline{x} \pm s$).

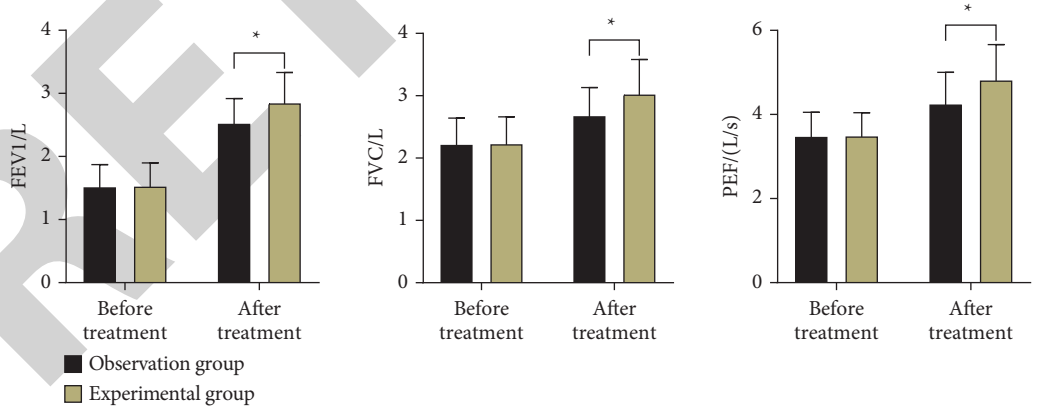

Figure 2: Comparison of pulmonary functions ($\overline{x} \pm s$).

3.5. Comparison of Adverse Reactions. In the experimental group, adverse reactions were significantly less frequent than those in the observation group ($P < 0.05$) (Table 3).

4. Discussion

The incidence of bronchial asthma in China has been on the rise as a result of the ever-worsening environmental pollution. The contributors to bronchial asthma include inflammatory cytokines and chronic inflammatory factors [9]. Moreover, genetics and the environment are two essential factors in the pathogenesis of asthma patients, among which genetics only determines the allergic constitution of patients, that is, prone to asthma, and environmental factors play a crucial role [10]. Early symptoms of bronchial asthma include coughing, chest tightness, and dyspnea, and dry

Table 3: Comparison of adverse reactions [n (%)].

	Observation group ($n = 50$)	Experimental group ($n = 50$)	x^2	P
Hoarse voice	3	1		
Skin rash	1	0		
Oropharyngeal irritation	5	1		
Overall rate (%)	9 (18%)	2 (4%)	5.005	0.025

cough and white foamy sputum may occur in severe cases [11]. The disease has high clinical morbidity and is relapsing, which significantly affects the daily lives of patients [12]. Asthma cannot be cured, and drug treatment is generally used, and it is divided into control drugs and relievers [13]. Controller medications require long-term use of daily medications that maintain clinical control of asthma primarily through anti-inflammatory effects, including inhaled corticosteroids, systemic corticosteroids, long-acting beta 2 agonists, anti-IgE monoclonal antibodies, and other asthma-lowering drugs [14]. Reliever medications, also known as rescue medications, relieve asthma symptoms by rapidly relieving bronchospasm, including fast-acting inhaled and short-acting oral beta 2 agonists, systemic corticosteroids, inhaled anticholinergics, and short-acting theophylline [15].

Currently, hormonal anti-inflammatory drugs are used to treat patients with bronchial asthma in clinical settings. In treating patients with bronchial asthma, budesonide powder is a commonly used medication. Budesonide is a cortical anti-inflammatory drug that can effectively alleviate inflammatory responses in patients' bodies. Nonetheless, budesonide has a high affinity for glucocorticoid receptors, which can significantly reduce the amount of budesonide entering the patient's body [16]. According to the research of Wang (2020), budesonide powder can effectively treat allergic-induced inflammatory diseases and effectively control inflammatory factors, but the outcome remains insufficiently ideal for patients who suffer from recurrent bronchial asthma. Salmeterol and fluticasone powder is a new common drug that has been used in the treatment of bronchial asthma in recent years [17, 18]. It has been demonstrated that salmeterol (β2 receptor agonist) has a significant dilating effect on the bronchi of patients [19]. The release of pulmonary mast cell mediators such as triene and histamine is the basis for improvement and remission of the patient's disease condition, while fluticasone propionate is one of the glucocorticoids with strong water- and fat-soluble properties [20]. It can have an anti-inflammatory effect on the patient's body and clinical studies have confirmed that it does not cause any adverse effects [21].

The results of the present study demonstrated that the clinical efficacy of the experimental group was significantly higher than that of the observation group; the adverse reactions of the experimental group were significantly less than those of the observation group. Moreover, salmeterol fluticasone has a significant clinical effect and has a high safety profile in the treatment of patients with bronchial asthma. The possible explanation is the fact that salmeterol and fluticasone powder has a fast onset and long drug effect on patients, and it can directly act on them. Taking the drug through the patient's smooth muscle allows the patient's body membrane to absorb the drug completely, and the salmeterol in the drug can cause the bronchi to relax for a long period of time, helping the patient ease bronchospasm, thus improving their symptoms of disease [22]. Compared with the budesonide powder, the salmeterol and fluticasone powder has less irritation to the patient's body, and its dose is simpler to control, so its clinical treatment safety is higher. As previously noted, the level of inflammatory factors in the body is closely correlated with the recurrence of bronchial asthma in clinical studies. Ewing et al. have demonstrated that reducing the level of inflammatory factors in patients with bronchial asthma can effectively prevent recurrence [23]. Gans and Gavrilova found that improving lung function indicators in patients with bronchial asthma can significantly enhance the effect of treatment and improve their quality of life [24]. As part of this study, we compared the levels of inflammatory factors and pulmonary function between the two groups of patients and found that the inflammatory factors in the experimental group were significantly lower than those in the observation group after treatment. Presumably, the main component of salmeterol and fluticasone propionate are salmeterol and fluticasone propionate. In contrast, the latter is a new type of long-acting β2 receptor agonist that has the ability to effectively stimulate the biological activity of the adenosine activating enzyme in the body's cells, resulting in much faster conversion of adenosine triphosphate within the human body. This can result in a decrease in the body's cyclic adenine phosphate concentration, reducing bronchospasm, and improving lung function. Promisingly, salmeterol's effect lasts for a long time, ensuring that the patient enjoys persistent effectiveness of the drug throughout the night [25]. Fluticasone propionate is a glucocorticoid, which can bind to the glucocorticoid receptor in the local inflammatory response area of the patient's body, so that the patient's body is able to produce steroids to inhibit epithelial cell growth and the expression of inflammatory factors, thereby providing anti-inflammatory action. Salmeterol is capable of significantly improving the sensitivity of the patient's body to glucocorticoids, thereby enhancing the efficacy of fluticasone propionate. Additionally, it can reduce the levels of inflammatory factors in the patient's body [26].

According to traditional Chinese medicine (TCM), asthma is a disease with the main symptoms of phlegm in the throat, dyspnea, and even the inability to lie down due to wheezing [27]. TCM treatment of asthma requires staging and syndrome differentiation. In essence, responding to the different stages of patients, different treatment measures should be taken to effectively relieve symptoms. For instance, symptomatic treatment can be taken in acute attack, while in the remission stage, root-consolidating treatment

can be adopted [28, 29]. TCM treatment of asthma mainly includes dispelling wind and dissipating heat, clearing heat and dispersing the lungs, and resolving phlegm and relieving asthma. [30]. Asthma attack is mostly caused by exogenous cold, interaction of internal and external pathogens, and stagnation of phlegm and qi, and it is generally treated with Xiaoqinglong soup or Ma Hengshi Gan soup [31]. In the remission phase of asthma, the spleen should be tonified, the kidney should be benefited, and phlegm should be dispelled to calm asthma, and Sheng Wei San and Ginseng and Bai Zhu San can be used [32].

However, we need further research to more accurately determine the role of combination therapy, especially the dose-related issues, to examine the potential systemic side effects. Despite the current recommendations that are primarily resulted from clinical trials, the potential benefits of combination therapy may lead to changes in these recommendations. We are firmly convinced that understanding the mechanisms of the interactions may provide insights into the development of more effective therapies.

5. Conclusion

In conclusion, the combination of salmeterol and fluticasone powder yields a pronounced efficiency in the treatment of patients with bronchial asthma. It mitigates the inflammatory reactions and improves pulmonary function, which warrants a wide promotion.

Data Availability

All data generated or analysed during this study are included in this published article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] R. Kalhan, D. Slade, R. Ray et al., "Umeclidinium/vilanterol compared with fluticasone propionate/salmeterol, budesonide/formoterol, and tiotropium as initial maintenance therapy in patients with COPD who have high costs and comorbidities," *International Journal of Chronic Obstructive Pulmonary Disease*, vol. 16, pp. 1149–1161, 2021.

[2] D. E. Shaw, L. G. Heaney, M. Thomas, R. Beasley, P. G. Gibson, and I. D. Pavord, "Balancing the needs of the many and the few: where next for adult asthma guidelines?" *The Lancet Respiratory Medicine*, vol. 9, no. 7, pp. 786–794, 2021.

[3] C. R. Marion, M. Izquierdo, H. C. Hanes, and C. Barrios, "Asthma in cystic fibrosis: definitions and implications of this overlap syndrome," *Current Allergy and Asthma Reports*, vol. 21, no. 2, p. 9, 2021.

[4] M. W. Pijnenburg and L. Fleming, "Advances in understanding and reducing the burden of severe asthma in children," *The Lancet Respiratory Medicine*, vol. 8, no. 10, pp. 1032–1044, 2020.

[5] D. P. Tashkin, J. A. Ohar, A. Koltun, R. Allan, and J. K. Ward, "The role of ICS/LABA fixed-dose combinations in the treatment of asthma and COPD: bioequivalence of a generic fluticasone propionate-salmeterol device," *Pulmonary Medicine*, vol. 2021, Article ID 8881895, 7 pages, 2021.

[6] M. Kupczyk, P. Majak, P. Kuna et al., "A new formulation of fluticasone propionate/salmeterol in a metered-dose inhaler (MDI HFA) allows for the reduction of a daily dose of corticosteroid and provides optimal asthma control - a randomized, multi- center, non-inferiority, phase IV clinical study," *Respiratory Medicine*, vol. 176, Article ID 106274, 2021.

[7] N. M. Ainali, E. Xanthopoulou, G. Michailidou, A. Zamboulis, and D. N. Bikiaris, "Microencapsulation of fluticasone propionate and salmeterol xinafoate in modified chitosan microparticles for release optimization," *Molecules*, vol. 25, no. 17, p. 3888, 2020.

[8] L. Zhang and Y. Chen, "Clinical observation of salmeterol and ficasone in the treatment of moderate to severe bronchial asthma," *China Pharmacy*, vol. 27, no. 23, pp. 3270–3272, 2016.

[9] Z. W. El-Husseini, R. Gosens, F. Dekker, and G. H. Koppelman, "The genetics of asthma and the promise of genomics-guided drug target discovery," *The Lancet Respiratory Medicine*, vol. 8, no. 10, pp. 1045–1056, 2020.

[10] Y. Demirdag and S. Bahna, "The role of genetics in food allergy," *Expert Review of Clinical Immunology*, vol. 18, no. 4, pp. 401–411, 2022.

[11] I. Agache, C. A. Akdis, M. Akdis et al., "EAACI biologicals guidelines-recommendations for severe asthma," *Allergy*, vol. 76, no. 1, pp. 14–44, 2021.

[12] G. Kardas, P. Kuna, and M. Panek, "Biological therapies of severe asthma and their possible effects on airway remodeling," *Frontiers in Immunology*, vol. 11, p. 1134, 2020.

[13] J. M. García-Menaya, C. Cordobés-Durán, E. García-Martín, and J. A. G. Agúndez, "Pharmacogenetic factors affecting asthma treatment response. potential implications for drug therapy," *Frontiers in Pharmacology*, vol. 10, p. 520, 2019.

[14] T. Boonpiyathad, Z. C. Sözener, P. Satitsuksanoa, and C. A. Akdis, "Immunologic mechanisms in asthma," *InSeminars in Immunology*, Academic Press, Cambridge, MA, USA, 2019.

[15] S. Zhang, D. King, V. M. Rosen, and A. S. Ismaila, "Impact of single combination inhaler versus multiple inhalers to deliver the same medications for patients with asthma or COPD: a systematic literature review," *International Journal of Chronic Obstructive Pulmonary Disease*, vol. 15, pp. 417–438, 2020.

[16] D. P. Tashkin, A. Koltun, and R. Wallace, "A generic fluticasone propionate and salmeterol dry powder inhaler: evidence of usability, function, and robustness," *Allergy & Asthma Proceedings*, vol. 42, no. 1, pp. 30–35, 2021.

[17] J. Paik, L. J. Scott, and R. A. Pleasants, "Fluticasone propionate/salmeterol MDPI (AirDuo RespiClick(®)): a review in asthma," *Clinical Drug Investigation*, vol. 38, no. 5, pp. 463–473, 2018.

[18] S. Haughie, R. Allan, N. Wood, and J. Ward, "Equivalent systemic exposure to fluticasone propionate/salmeterol following single inhaled doses from advair diskus and wixela inhub: results of three pharmacokinetic bioequivalence studies," *Journal of Aerosol Medicine and Pulmonary Drug Delivery*, vol. 33, no. 1, pp. 34–42, 2020.

[19] F. Herth, J. M. Hohlfeld, J. Haas et al., "The effect of tiotropium/olodaterol versus fluticasone propionate/salmeterol on left ventricular filling and lung hyperinflation in patients with COPD," *BMJ Open Respiratory Research*, vol. 7, no. 1, Article ID e000741, 2020.

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Retraction

Retracted: The Efficacy of Calcium Carbonate-Vitamin D3 in Pregnant Women for the Prevention of Hypertensive Disorders in Pregnancy

Evidence-Based Complementary and Alternative Medicine

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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.

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] Z. Chen and J. Chen, "The Efficacy of Calcium Carbonate-Vitamin D3 in Pregnant Women for the Prevention of Hypertensive Disorders in Pregnancy," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 7971976, 6 pages, 2022.

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Research Article

The Efficacy of Calcium Carbonate-Vitamin D3 in Pregnant Women for the Prevention of Hypertensive Disorders in Pregnancy

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Objective. To evaluate the efficacy of calcium carbonate-vitamin D3 in pregnant women for the prevention of hypertensive disorders in pregnancy. *Methods*. Between April 2020 and June 2021, 60 pregnant women undergoing prenatal examinations in our hospital were recruited and assigned via the random number table method at a ratio of 1 : 1 to receive conventional pregnancy care (observation group) or conventional pregnancy care plus calcium carbonate-vitamin D3 administration (experimental group). Outcome measures included blood pressure, blood calcium, the occurrence of hypertensive disorders, and adverse events. *Results*. The diastolic blood pressure (DBP) and systolic blood pressure (SBP) levels at delivery in the experimental group were significantly lower than those in the observation group ($P < 0.05$). Pregnant women in the experimental group had significantly higher blood calcium levels at labor than those in the observation group ($P < 0.05$). The administration of calcium carbonate-vitamin D3 resulted in a significantly lower incidence of hypertensive disorders and adverse events versus conventional pregnancy care ($P < 0.05$). *Conclusion*. The effect of calcium carbonate-vitamin D3 administration during pregnancy for the prevention of hypertensive disorders is significant, which effectively improves the blood calcium level of pregnant women and reduces the occurrence of adverse events, so it is worthy of clinical promotion and application.

1. Introduction

Hypertensive disorder of pregnancy is a syndrome unique to pregnancy, which mainly occurs after 20 weeks of gestation. The disease mainly presents clinical symptoms such as edema and hypertension, and it is easy to complicate with multiple organ dysfunction, resulting in poor maternal and infant outcomes. Studies have pointed out that the incidence of gestational hypertension in China is as high as 9.7% to 10.4%, which poses immense threat to maternal and infant health [1, 2]. The gestational hypertension can be classified into the categories of "sub-halo," "sub-swollen," and "eclampsia" with the liver-kidney yin deficiency and liver-yang hyperactivity. The liver-kidney yin deficiency type is one of the most common clinical syndromes. Most of the patients are vulnerable to deficiency of liver and kidney yin in the body due to lack of congenital development. It is known that kidney stores essence, liver stores blood, with essence and blood sharing with the same origin. During pregnancy, if the essence and blood are injected to nourish the fetus, in the second and third trimesters of pregnancy, the kidney yin deficiency is often manifested, and the yin deficiency is insufficient to restrain the yang, inducing gestational hypertension. Therefore, the main principles of treatment are to nourish the yin of the liver and kidney, and to suppress the yang of the liver [3, 4].

Hypertensive disorder of pregnancy, together with bleeding and infection, constitutes the three fatal pregnancy complications, and becomes one of the main causes of maternal death. At present, the specific pathogenesis of gestational hypertension is elusive, but calcium deficiency is mostly believed to be a major contributor to gestational

hypertension [5]. Epidemiological studies have found that the incidence of gestational hypertension in calcium-deficient people is significantly higher than that in healthy people [6]. Pregnant women's blood volume expansion, increased calcium excretion, and the inhibitory effect of progesterone on calcium absorption result in a decrease in serum calcium levels. In recent years, with the improvement of people' understanding of the function of calcium in human physiology, it is believed that the occurrence of gestational hypertension may be associated with calcium [7]. Clinical research has found that the calcium requirement of the maternal body increases significantly at about 20 weeks of gestation [8], and at about 30 weeks, the calcium requirement of the maternal body can be about 6 times higher than that at 20 weeks, so the maternal body is prone to calcium deficiency in the second trimester [9].

Calcium deficiency in the maternal organism increases the permeability of cell membranes and causes a significant increase in the concentration of calcium ions in the vascular smooth muscle cells, which predisposes to hypertensive disorders during pregnancy [10]. The maternal body is the only source of calcium and nutrition for the fetus, and deficiency of calcium in the maternal body leads to calcium deficiency in the fetus, which seriously compromises the maternal health and the normal growth and development of the fetus [11]. Calcium carbonate-vitamin D3 tablets are a compound calcium supplement commonly used in clinical practice to rapidly replenish calcium in the body, and clinically relevant research has indicated no toxic side effects of the drug on pregnant women and fetuses [5].

In the present study, 60 pregnant women undergoing prenatal examinations in our hospital were recruited between April 2020 and June 2021 to evaluate the efficacy of calcium carbonate-vitamin D3 in pregnant women for the prevention of hypertensive disorders in pregnancy and provide a clinical reference.

2. Materials and Methods

2.1. Baseline Data. Between April 2020 and June 2021, 60 pregnant women undergoing prenatal examinations in our hospital were recruited and assigned via random number table method at a ratio of 1 : 1 to an observation group or an experimental group.

The participants provided the informed consent form before enrollment, and the study protocol was granted by the hospital ethics committee (SD-SDE20200402). All procedures were in compliance with the guidelines of the Declaration of Helsinki.

2.2. Inclusion and Exclusion Criteria. Inclusion criteria: (1) All subjects included in this study were diagnosed with gestational hypertension through relevant examinations. (2) Complete medical history data. (3) Did not receive any treatment for gestational hypertension previously. (4) The patient's mental cognition is normal and can cooperate with the medical staff to complete the whole treatment.

Exclusion criteria: (1) with hypertension, diabetes mellitus, and liver and kidney insufficiency before this diagnosis; (2) with severe mental illness; (3) with malignant tumor; (4) with infectious diseases; (5) with a history of antihypertensive treatment.

2.3. Methods. Pregnant women in the observation group received a reasonable diet and exercise interventions to help them control their body mass, without the administration of calcium supplements. Pregnant women in the experimental group received 1.5 g calcium carbonate-vitamin D3 (Beijing Kangyuan Pharmaceutical Co., Ltd., Approval No. H20090334) orally, twice daily, and the treatment was continued until the delivery [12].

On the basis of the treatment in two groups, patients were given Qiju Dihuang Decoction with modified and subtracted treatment. The ingredients of the prescription were 2 g of whole scorpion, 12 g of herb of *Herba cirsii*, *Cirsium japonicum* dc, and turtle shell, respectively, 15 g of *Ophiopogon japonicus*, mulberry seed, and Scrophularia Radix, respectively, 10 g of chrysanthemum, salvia, earthworm, red peony root, angelica, *Rehmannia glutinosa*, and wolfberry, and 30 g of mother of pearl, cassia, oyster, and keel, respectively. It was boiled in water to take 500 mL of juice, and taken with warm water in the morning and evening, for a total of 2 weeks.

2.4. Outcome Measures

(1) Blood pressure level: the diastolic blood pressure (DBP) and systolic blood pressure (SBP) levels were measured upon enrollment and at labor using the EK648 electronic blood pressure monitor purchased from Shanghai Yuejin Medical Equipment Co.

(2) Blood calcium level: 1 ml of elbow venous blood was collected from pregnant women upon enrollment and at the time of delivery and stored at 4°C for assay. Before and after the treatment, the fasting serum was secured and determined in the morning by the rate method (Beckman brand automatic biochemical analyzer produced by Beckman Coulke, USA).

(3) Incidence of hypertensive disorders during pregnancy: the occurrence of hypertensive disorders was recorded by the medical staff of our hospital as per the following criteria: the pregnant woman had the first episode of elevated blood pressure during pregnancy with a systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥90 mmHg.

(4) Adverse events: adverse events including joint pain, low back pain, gastrocnemius spasm, and numbness of the limbs were recorded.

2.5. Statistical Analysis. The data obtained in this study were analyzed using the SPSS21.0 software, and GraphPad Prism 8 was used to plot the graphics. The measurement data are expressed as (mean ± SD) and analyzed using the Student's *t*-

test after the test of normal distribution, and the count data are expressed as cases (%) and analyzed using the chi-square test. Differences were considered statistically significant at $P < 0.05$.

3. Results

3.1. Baseline Patient Profile. The baseline characteristics of the observation group (aged 22–34 years), body mass of 51–76 kg, gestational week of 20–27) weeks, were comparable with those of the experimental group (aged 21–35 years, body mass of 50–75 kg, gestational week of 21–27 weeks) ($P > 0.05$) (Table 1).

3.2. Blood Pressure. The DBP and SBP levels at delivery in the experimental group were significantly lower than those in the observation group ($P < 0.05$) (Figure 1).

3.3. Blood Calcium Levels. Pregnant women in the experimental group had significantly higher blood calcium levels at labor than those in the observation group ($P < 0.05$). (Figure 2).

3.4. Incidence of Hypertensive Disorders and Adverse Events. The administration of calcium carbonate-vitamin D3 resulted in a significantly lower incidence of hypertensive disorders and adverse events versus conventional pregnancy care ($P < 0.05$) (Table 2).

4. Discussion

The nutritional requirements and intake of pregnant women are significantly higher compared to nonpregnant women of the same age [13, 14]. Hypertensive disorders in pregnancy are specific to women during pregnancy and mostly occur after 20 weeks of gestation. The clinical manifestations of the disease include hypertension, edema, and proteinuria, and some severe cases may experience nausea, vomiting, abdominal pain, convulsions, and coma [15], which severely compromise the health of the mother and fetus. At present, Western medicine treatment mainly focuses on blood pressure, sedation, volume expansion, and spasmolysis. Clinically, patients often receive nifedipine sustained-release tablets, which is a calcium channel blocker, and can effectively reduce the entry of calcium ions into cells through the slow calcium channel, reduce the excitation of blood vessels, reduce the resistance of blood vessels, and then achieve the purpose of antihypertension. However, the long-term use of the drug is associated with many adverse reactions that easily increase the physical and mental burden of the patient [16].

Clinical research has shown that hypertensive disorders during pregnancy are mainly attributed to calcium deficiency [17]. The metabolic demand of pregnant women and the growth and development of the fetus increase significantly during pregnancy, during which the unfulfilled calcium demand of the pregnant women predisposes to the development of hypertensive disorders [18]. Research has shown that calcium deficiency in pregnant women causes abnormal contraction of vascular smooth muscle, leading to an increase in blood pressure and an increased risk of hypertensive disorders during pregnancy [19]. Calcium carbonate-vitamin D3 tablets are a compounded calcium supplement commonly used in clinical practice [20], consisting of calcium carbonate and vitamin D3. Vitamin D3 is a fat-soluble vitamin that efficiently promotes the absorption and utilization of calcium elements in pregnant women, reduces the metabolism of calcium elements by the kidneys, and helps maintain the blood calcium level in the body [21]. Wang[22] et al. stated that the detection of blood pressure levels in the maternal organism is effective in preventing the occurrence of hypertensive disorders [23].

The ingredients of the prescription were 2 g of whole scorpion, 12 g of herb of *Herba cirsii*, *Cirsium japonicum* dc, and turtle shell, respectively, 15 g of *Ophiopogon japonicus*, mulberry seed, and Scrophularia Radix, respectively, 10 g of chrysanthemum, salvia, earthworm, red peony root, angelica, *Rehmannia glutinosa*, and wolfberry, and 30 g of mother of pearl, cassia, oyster, and keel, respectively. It was boiled in water to take 500 mL of juice, and taken with warm water in the morning and evening, for a total of 2 weeks.

From the perspective of traditional Chinese medicine, gestational hypertension is mostly related to the deficiency of liver and kidney, deficiency of qi and blood, and imbalance of yin and yang in pregnant women. Its treatment should focus on nourishing yin and clearing heat, and calming liver and subduing yang. The patients were given Qiju Dihuang Decoction on the basis of conventional Western medicine treatment. Among the prescription ingredients, herb of *Herba cirsii* has the effect of strengthening the heart and inhibiting blood vessels. *Cirsium japonicum* dc and red peony can remove blood stasis and reduce swelling. Oyster can enhance the antihypertensive, clearing heat and sedative effects of the prescription. Mother-of-pearl and keel have the effect of calming the liver and subduing the yang. The combination of various medicines can effectively improve the symptoms of patients with hypertension, edema, proteinuria, etc., and can effectively protect the function of the body's organs and achieve the purpose of treatment.

In the present study, the result showed that the DBP and SBP levels at delivery in the experimental group were significantly lower than those in the observation group, indicating that the administration of calcium carbonate-vitamin D3 tablets during pregnancy can effectively contribute to the reduction and control of blood pressure levels in pregnant women. The reason may be that the administration of calcium carbonate-vitamin D3 alleviates the abnormal contraction of maternal vascular smooth muscle, thereby providing effective control of maternal blood pressure levels [24]. Calcium deficiency is the main cause of hypertensive disorders in pregnancy, and there are several reasons for calcium deficiency: (1) the blood volume of the pregnant woman's body will increase significantly during pregnancy, which may lead to a decrease in the blood calcium level [25]. (2) The glomerular filtration rate of pregnant women increases during pregnancy, resulting in a large amount of calcium excreted in the urine and a decrease in the blood calcium level of the maternal organism [26]. (3) The level of

Table 1: Comparison of baseline data (n (%)).

	Observation group ($n = 30$)	Experimental group ($n = 30$)	t or x^2	P value
Age (year)	$\overline{x} \pm s$	$\overline{x} \pm s$		
Mean age (year)	26.12 ± 3.15	26.28 ± 3.16	−0.196	0.845
Body mass (kg)	$\overline{x} \pm s$	$\overline{x} \pm s$		
Mean body mass (kg)	64.51 ± 6.78	64.39 ± 6.68	0.069	0.945
Gestational week (week)	$\overline{x} \pm s$	$\overline{x} \pm s$		
Mean gestational week (week)	24.32 ± 1.27	24.27 ± 1.33	0.149	0.882

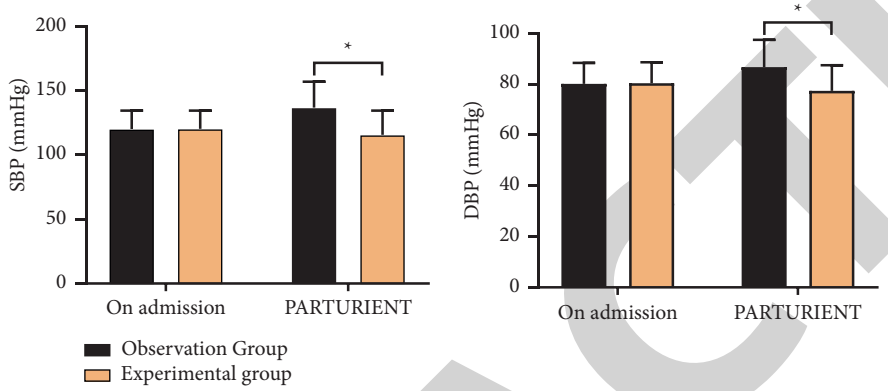

Figure 1: Comparison of blood pressure ($\overline{x} \pm s$). $^*P < 0.05$.

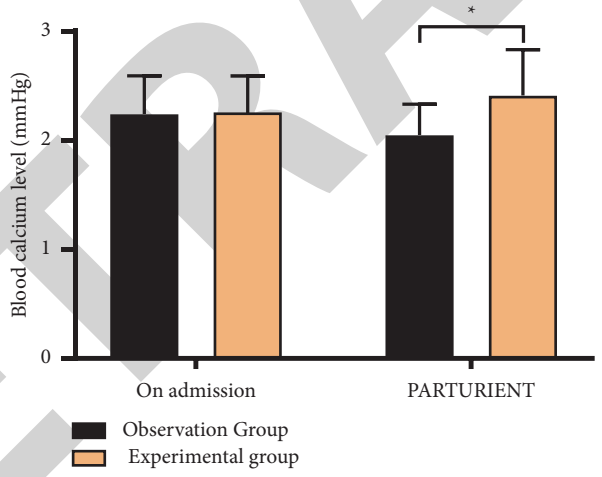

Figure 2: Comparison of blood calcium levels ($\overline{x} \pm s$). $^*P < 0.05$.

Table 2: Comparison of incidence of hypertensive disorders and adverse events (n (%)).

	Observation group ($n = 30$)	Experimental group ($n = 30$)	x^2	P value
Incidence of hypertensive disorder	9 (30%)	1 (3%)	7.68	0.006
Adverse events				
Joint pain	3	1		
Low back pain	2	0		
Gastrocnemius muscle spasm	2	0		
Numbness of limbs	3	1		
Total incidence (%)	10 (33%)	2 (7%)	6.667	0.01

progesterone in the body of pregnant women increases during pregnancy, and the high level of progesterone inhibits the absorption of calcium elements in the body, which contributes to the reduction of blood calcium levels in the body of pregnant women [27]. Here, pregnant women in the experimental group had significantly higher blood calcium levels at labor than those in the observation group, suggesting that the administration of calcium carbonate-

vitamin D3 during pregnancy can effectively increase blood calcium levels in the body. The reason may be that vitamin D3 effectively promotes the absorption and utilization of calcium elements in pregnant women, facilitating the improvement and maintenance of blood calcium levels [28, 29]. Moreover, the administration of calcium carbonate-vitamin D3 resulted in a significantly lower incidence of hypertensive disorders and adverse events versus conventional pregnancy care, indicating a safety benefit of calcium carbonate-vitamin D3 for the prevention of hypertensive disorders by lowering the risk of hypertension during pregnancy.

Preventive calcium supplementation during pregnancy has been a clinical consensus, but due to factors such as health literacy and economic conditions, pregnant women have poor compliance with treatment and often fail to achieve ideal preventive effects. Although this study provides a certain guiding significance for calcium supplementation treatment for patients with gestational hypertension, there are still the following problems: the number of samples is small, the observation period is short, and there is no long-term follow-up. It is hoped that in the future, the majority of researchers and patients will cooperate to conduct clinical studies with larger samples, so as to provide more clinical evidence for the research and application.

To summarize, the effect of calcium carbonate-vitamin D3 administration during pregnancy for the prevention of hypertensive disorders is significant, as it effectively improves pregnant women's blood calcium levels and reduces the occurrence of adverse events, making it worthy of clinical promotion and application.

Data Availability

No data were used to support this study.

Conflicts of Interest

All the authors declare that they have no financial conflicts of interest.

Authors' Contributions

Zhen Chen drafted and revised the manuscript. Jing Chen conceived and designed this article and was in charge of syntax modification and revision of the manuscript. All the authors have read and agreed to the final version of the manuscript.

References

[1] J. Zhang, "Efficacy observation of Pinggan Xifeng decoction in adjuvant treatment of hypertensive disorders in pregnancy," *Clinical Research in Traditional Chinese Medicine*, vol. 12, no. 25, pp. 113–115, 2020.

[2] X. Cheng, M. Yuan, and H. Liu, "Efficacy of Yiqi Yangyin Decoction in the treatment of gestational hypertension and its effect on serological indexes of patients," *Hainan Medical Journal*, vol. 30, no. 23, pp. 3034–3037, 2019.

[3] R. Wang, "Clinical study on Ziyin Xifeng Decoction combined with conventional therapy in the treatment of gestational hypertension," *New Chinese Medicine*, vol. 51, no. 12, pp. 172–174, 2019.

[4] W. Chunyun, "Clinical observation of Pinggan Xifeng Decoction in adjuvant treatment of gestational hypertension," *Bright Chinese Medicine*, vol. 36, no. 14, pp. 2292–2294, 2021.

[5] Y. Liu, "Intervention effect of calcium combined with aspirin on pregnant women with high risk of gestational hypertension," *Journal of Clinical Rational Medicine*, vol. 14, no. 31, pp. 93–95, 2021.

[6] L. Zhou, L. Zhang, and X. Sun, "Changes and significance of coagulation function indexes, platelet parameters and serum calcium ion concentration in patients with gestational hypertension," *Hebei Medicine*, vol. 44, no. 12, pp. 1851–1854, 2022.

[7] C. Xia, W. Wang, and W. Peiwei, "The effect of nicardipine combined with vitamin E and calcium in the treatment of gestational hypertension and its effect on pregnancy outcome," *Clinical Medical Engineering*, vol. 29, no. 04, pp. 519-520, 2022.

[8] J. Zhang, T. Zhang, X. Xu, Q. Cai, and D. Zhao, "Zoledronic acid combined with percutaneous kyphoplasty in the treatment of osteoporotic compression fracture in a single T12 or L1 vertebral body in postmenopausal women," *Osteoporosis International*, vol. 30, no. 7, pp. 1475–1480, 2019.

[9] N. V. Dzavakwa, M. Chisenga, G. McHugh et al., "Vitamin D(3) and calcium carbonate supplementation for adolescents with HIV to reduce musculoskeletal morbidity and immunopathology (VITALITY trial): study protocol for a randomised placebo-controlled trial," *Trials*, vol. 23, no. 1, p. 78, 2022.

[10] E. L. Barry, J. L. Peacock, J. R. Rees et al., "Vitamin D receptor genotype, vitamin D3 supplementation, and risk of colorectal adenomas: a randomized clinical trial," *JAMA Oncology*, vol. 3, no. 5, pp. 628–635, 2017.

[11] Z. Liu, C. Li, Y. Mao et al., "Study on zoledronic acid reducing acute bone loss and fracture rates in elderly postoperative patients with intertrochanteric fractures," *Orthopaedic Surgery*, vol. 11, no. 3, pp. 380–385, 2019.

[12] A. Ehterami, M. Salehi, S. Farzamfar et al., "A promising wound dressing based on alginate hydrogels containing vitamin D3 cross-linked by calcium carbonate/d-glucono-δ-lactone," *Biomedical Engineering Letters*, vol. 10, no. 2, pp. 309–319, 2020.

[13] Y. Xu and Y. Yu, "Primary hyperparathyroidism presenting as a brown tumor with hypercalcemia crisis in a second-trimester pregnant woman: a case report," *Medicine (Baltimore)*, vol. 100, no. 20, Article ID e25968, 2021.

[14] A. Gloux, N. Le Roy, J. Ezagal et al., "Possible roles of parathyroid hormone, 1.25(OH)(2)D(3), and fibroblast growth factor 23 on genes controlling calcium metabolism across different tissues of the laying hen," *Domestic Animal Endocrinology*, vol. 72, Article ID 106407, 2020.

[15] R. Mandlik, Z. Mughal, A. Khadilkar et al., "Occurrence of infections in schoolchildren subsequent to supplementation with vitamin D-calcium or zinc: a randomized, double-blind, placebo-controlled trial," *Nutrition Research and Practice*, vol. 14, no. 2, pp. 117–126, 2020.

[16] Y. Wang, "Yishen Pinggan Ziyin Decoction in the treatment of 60 cases of gestational hypertension with liver-kidney yin deficiency," *Zhejiang Journal of Traditional Chinese Medicine*, vol. 56, no. 1, p. 34, 2021.

[17] R. Weinstein, S. Haynes, Y. Zhao et al., "A liquid calcium+vitamin D(3) supplement is effective prophylaxis against hypocalcemic toxicity during apheresis platelet

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Retraction

Retracted: Efficacy of Risperidone Orally Disintegrating Tablets Combined with Oxazepam in the Treatment of Schizophrenia

Evidence-Based Complementary and Alternative Medicine

Received 20 June 2023; Accepted 20 June 2023; Published 21 June 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.

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References

[1] L. Fang, Y. Xu, X. Tong, X. Wu, and X. Zhou, "Efficacy of Risperidone Orally Disintegrating Tablets Combined with Oxazepam in the Treatment of Schizophrenia," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2344946, 5 pages, 2022.

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Research Article

Efficacy of Risperidone Orally Disintegrating Tablets Combined with Oxazepam in the Treatment of Schizophrenia

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Objective. To explore the efficacy of risperidone orally disintegrating tablets combined with oxazepam in the treatment of schizophrenia. *Methods*. From May 2019 to May 2021, 60 patients with schizophrenia treated in our hospital were recruited and assigned into an observation group (risperidone orally disintegrating tablets combined with oxazepam treatment) and a control group (alprazolam combined with chlorpromazine treatment) according to the random number table method. The positive and negative symptom score (PANSS), quality of life score (QOL-75), ability of daily living score (ADL), clinical efficacy, incidence of adverse reactions, and disease recurrence were compared between the two groups before and after treatment. *Results*. The PANSS scores were similar in the two groups before treatment ($P > 0.05$). The two groups presented a declining trend in PANSS score after treatment, whereas a remarkable lower score in the observation group was observed ($P < 0.05$). The QOL scores of the two groups of patients before treatment was not significantly different ($P > 0.05$). Both groups witnessed improvements one month and three months after treatment, with considerable improvements being obtained in the observation group (all $P < 0.05$). The two groups did not differ in ADL scores before treatment ($P > 0.05$). At 1 month and 3 months after treatment, the ADL scores of the two groups were improved, with a higher score in the observation group ($P < 0.05$). The observation group had a markedly higher total effective rate as compared to the control group ($X^2 = 5.455$, $P = 0.020$). Adverse reaction occurred in both groups, with milder results in the observation group. The recurrence rate of the two groups was not statistically different one month after treatment ($P > 0.05$), while two and three months after treatment, they were lower than those of the control group (all $P < 0.05$). *Conclusion*. Risperidone orally disintegrating tablets combined with oxazepam shows potential in the treatment of schizophrenia by relieving patients' mental symptoms, improving quality of life and activities of daily living, and minimizing the incidence of adverse reactions.

1. Introduction

Schizophrenia is a common clinical mental disease characterized by the distortion and abnormality of individual thinking, perception and behavior, unresponsiveness, aggressive behavior, and disordered thinking. Schizophrenia is one of the most debilitating disorders worldwide, and is associated with high costs for hospital admissions, unemployment, and loss of productivity. In addition, relationships are often jeopardised and it might give rise to suicide. All these have an impact in terms of burden for patients, families, and society. It is highly prevalent in younger populations and is associated with genetics, environment, and the brain structure [1]. As the disease progresses, patients are prone to negative emotions such as anxiety and depression, and even suicidal tendencies, aggression, and violent tendencies.

Antipsychotic drugs are the mainstay of the clinical treatment of schizophrenia, and the efficacy is remarkable [2]. Nevertheless, a bulk of evidence shows that the traditional treatment option of alprazolam and chlorpromazine produced a somber outcome that cannot satisfy clinical needs.

Additionally, traditional Chinese medicine treats it based on syndrome differentiation in clinical practice. Zhang divided schizophrenia patients into five syndrome types

through TCM syndrome differentiation: phlegm and fire disturbing the heart type, qi stagnation and blood stasis type, phlegm-damp internal resistance type, yin deficiency and fire prosperous type, and yang deficiency type [3]. The treatment using syndrome differentiation can significantly improve the cognitive function and social participation of schizophrenia patients [4]. With this background, we attempted to investigate the effectiveness of risperidone orally disintegrating tablets combined with oxazepam.

2. Materials and Methods

2.1. Participants. A total of 60 cases of schizophrenia was evenly assigned into two groups using the random table methods. In the observation group, there were 19 males and 11 females; aged 18–68 years, with an average age of 39.59 ± 4.32 years; the course of the disease was 7 months to 10 years, with an average course of disease of 5.35 ± 1.16 years; in the control group, there were 18 males and 12 females; aged 19–69 years, with a mean age of 39.56 ± 4.57 years; the course of disease was 10 months to 9 years, with a mean course of disease of 5.32 ± 1.13 years. The two groups presented similar baseline data. Prior to the study commencement, the patients and their family members were informed of the research purpose and significance, and signed the informed consent form voluntarily. The medical ethics committee reviewed and approved the study (QS-201904).

2.2. Inclusion and Exclusion Criteria. The participants were assessed as eligible if they (1) met the diagnosis criteria of post schizophrenia depression (Li et al., 2022); (2) could communicate and cooperate with the study; (3) had complete clinical data. Whereas patients who met the following were excluded: (1) with severe damage to important organs; (2) with other types of mental illness; (3) cancer patients; (4) with systemic infectious diseases; (5) poor coordination or failure to finish the study; (6) with intolerance to the treatment or allergic reactions; (7) with immune system diseases or blood coagulation disorders; (8) pregnant women; (9) with a history of drug abuse.

3. Method

The control group received alprazolam combined with chlorpromazine: alprazolam (Jinling Pharmaceutical Co., Ltd., Nanjing Jinling Pharmaceutical Factory, approval No. H32024413, specification 0.4 mg) was administered at a starting dose of 1.2 mg/d and chlorpromazine (Diao Group Chengdu Pharmaceutical Co., Ltd., approval No. H51021169, specification 25 mg) was administered at an initial dosage of 100 mg/d; the dosage was adjusted according to the patient's condition and the treatment lasted for 3 months. The observation group was given risperidone orally disintegrating tablets (Jilin West Point Pharmaceutical Technology Development Co., Ltd., approval No. H20060283, specification 1 mg) at an initial dosage of 1 mg/d and gradually increased to 4 mg/d within 2 weeks, and oxazepam (Beijing Yimin Pharmaceutical Co., Ltd., approval No. H11020894, specification 15 mg) at an initial dosage of 15 mg/d, and the maximum should not exceed 45 mg/d; the treatment lasted for 3 months.

3.1. Outcomes

(1) Positive And Negative Syndrome Scale (PANSS) score: the scale was used to evaluate the positive and negative symptoms of patients, and includes a total of 30 items. Each item scores from 1 to 7, and the higher the score, the more severe the psychiatric symptoms [5].

(2) Quality of Life -75 Scale (QOL-75) score: the scale was scored from four dimensions of material, physical, psychological, and social, with a total score of 100 for each item. A high score indicates a better quality of life [6].

(3) Abilities of Daily Life (ADL) Scale score: the ADL scale was used to assess the daily living ability, it comprises 10 items and each component has a score that ranges from 0 to 10 points. The scores of the 10 components will be summed to yield a global score ranging from 0 to 100. High scores represent better activities of daily living [7].

(4) Efficacy: after treatment, if the symptoms disappear and the PANSS score is reduced by $\geq 75\%$, it is deemed as markedly effective; if all symptoms are relieved after treatment, and the PANSS score is reduced by 35% to 74%, it is considered effective; if the symptoms are not mitigated or even aggravated, it is considered ineffective. The total effective rate- = percentage of markedly effective + effective [8].

3.2. Statistical Analysis. All statistical analyses were done by the SPSS22.0 software package. The counting data and measurement data were expressed as (%) and ($x \pm s$), respectively, and analyzed by the chi-square and t-test, respectively. Significance was assumed at a P-value of <0.05.

4. Results

4.1. Comparison of the PANSS Scores. The PANSS scores of the two groups before treatment were similar ($P > 0.05$). After treatment, the PANSS scores in both groups showed a downward trend, while the scores in the observation group were significantly lower ($P < 0.05$, Table 1).

4.2. Comparison of QOL-75 Scores. There was no significant difference in QOL-75 scores between the two groups before treatment ($P > 0.05$). Both groups improved at 1 month and 3 months after treatment, and the observation group showed a significant improvement ($P < 0.05$, Table 2).

Table 1: Comparison of PANSS scores between the two groups ($\bar{x} \pm s$, point).

Groups	N	Positive symptoms	Negative symptoms	Psychopathology	Total score
Before treatment	Observation group	30.85 ± 5.23	20.68 ± 4.42	39.32 ± 4.22	91.04 ± 8.65
	Control group	29.74 ± 5.52	21.07 ± 4.34	38.59 ± 4.14	92.35 ± 7.89
	t	0.800	0.345	0.676	0.613
	P	0.427	0.732	0.502	0.542
After treatment	Observation group	10.83 ± 2.18*	13.38 ± 2.49*	27.31 ± 4.24*	52.25 ± 6.45*
	Control group	14.35 ± 2.52*	17.66 ± 3.36*	32.94 ± 4.22*	65.62 ± 6.87*
	t	5.786	5.606	5.155	7.771
	p	≤0.001	≤0.001	≤0.001	≤0.001

Note. Compared with the same group before treatment, $^*P < 0.05$.

Table 2: Comparison of QOL-75 scores between the two groups ($\bar{x} \pm s$, point).

Groups	n	Before treatment	One month after treatment	Three months after treatment
Observation group	30	52.32 ± 5.32	74.53 ± 7.57	82.12 ± 5.53
Control group	30	51.55 ± 5.43	63.49 ± 6.43	70.63 ± 5.45
T	—	0.555	6.088	8.106
P	—	0.581	≤0.001	≤0.001

4.3. Comparison of ADL Scores. There was no significant difference in ADL scores between the two groups before treatment ($P > 0.05$). At 1 month and 3 months after treatment, the ADL scores of the two groups were improved, and the observation group had a higher score ($P < 0.05$, Table 3).

4.4. Comparison of Clinical Efficacy. The total effective rate of the observation group was significantly higher than that of the control group ($X^2 = 5.455$, $P = 0.020$), as shown in Table 4.

4.5. Comparison of Adverse Reactions. Adverse reactions occurred in both groups, while the proportion in the observation group was smaller, as shown in Table 5.

4.6. Comparison of the Recurrence Rate. There was no significant difference in the recurrence rate between the two groups after 1 month of treatment ($P > 0.05$). The recurrence rates of the observation group 2 and 3 months after treatment were 3.3% and 6.7%, respectively, which were lower than those of the control group ($P < 0.05$, Figure 1).

5. Discussion

Schizophrenia is a chronic, severe mental illness that affects 1% of the population throughout their lives, and may lead to a tendency to become chronic or mentally retarded [9]. It is reported that psychiatric disorders are associated with multiple factors such as genetics, environment, brain structure, and neurotransmitters. A good prognosis after treatment may account for 40%, and some patients have symptoms such as anorexia and depression, which are the triggers for patients to commit suicide [10, 11]. In addition, their social functioning and ability of daily living are impaired, thereby affecting the quality of life, and increasing the financial pressure and caregiving burden on families. As a consequence, it is urgent to strengthen efforts to find an efficient and safe treatment strategy.

Traditionally, schizophrenia patients are treated with alprazolam and chlorpromazine. However, despite its certain effect in relieving the positive and negative symptoms of patients, it is associated with poor medication compliance and multiple adverse reactions, restraining the efficacy of the drug [12, 13]. As an atypical antipsychotic drug, risperidone orally disintegrating tablets are derivatives of benzisoxazole, which can effectively block dopamine D2 receptors and serotonin receptors, and can target dopamine receptors and subtypes at multiple sites in the brain [14].

In addition to the abovementioned conventional treatments, traditional Chinese medicine (TCM) can also effectively improve the mental symptoms of schizophrenia patients, improve the quality of life, improve treatment compliance, and reduce the incidence of adverse reactions. According to its clinical symptoms, Chinese medicine classifies it as "madness" and "dementia." Treatment includes syndrome differentiation and prescription according to syndrome type, special prescription treatment, acupuncture treatment, TCM emotional therapy, and TCM exercise therapy [15].

Some scholars have previously revealed that risperidone plays a role in regulating the patient's dopamine system, thereby inhibiting the adverse reactions of the extravertebral system, relieving the patient's discomfort, and ultimately improving medication compliance [16, 17]. In addition, risperidone orally disintegrating tablets also possess excellent water solubility and can be dissolved in the daily diet, ensuring the efficacy of the drug in the case of poor coordination [18]. Oxazepam, a new generation of benzodiazepines with merits of strong activity and a short half-life, functions well in mitigating patients' symptoms such as insomnia, anxiety, and convulsions, and has a high safety profile [19, 20, 21].

Table 3: Comparison of ADL scores between the two groups ($\overline{x} \pm s$, point).

Groups	n	Before treatment	One month after treatment	Three months after treatment
Observation group	30	42.06 ± 4.42	67.03 ± 6.04	73.53 ± 7.64
Control group	30	43.75 ± 4.35	55.02 ± 5.08	60.49 ± 6.73
T	—	1.493	8.335	7.015
P	—	0.141	≤0.001	≤0.001

Table 4: Comparison of clinical efficacy between the two groups (%).

Groups	n	Markedly effective	Effective	Ineffective	Total effectiveness
Observation group	30	21 (70.0)	7 (23.3)	2 (6.7)	28 (93.3)
Control group	30	15 (50.0)	6 (20.0)	9 (30.0)	21 (70.0)
X^2	—	—	—	—	5.455
P	—	—	—	—	0.020

Table 5: Comparison of adverse reactions between the two groups (%).

Groups	n	Constipation	Tremor	High muscle tone	Lethargy	Adverse reaction rate (%)
Observation group	30	1 (3.3)	0 (0.0)	0 (0.0)	1 (3.3)	2 (6.7)
Control group	30	2 (6.7)	1 (3.3)	3 (10.0)	2 (6.7)	8 (26.7)
X^2	—	—	—	—	—	4.320
P	—	—	—	—	—	0.038

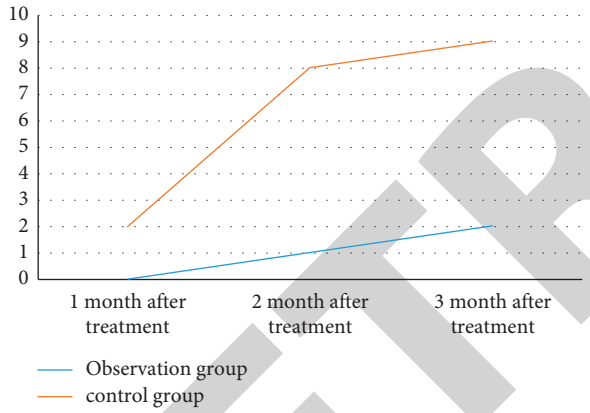

Figure 1: Comparison of the recurrence rate between the two groups.

This study showed that the PANSS score, QOL-75 score, and ADL score of the observation group improved more significantly than those of the control group after treatment. In terms of drug safety, the major adverse reactions such as gastrointestinal reactions and extravertebral adverse reactions of risperidone orally disintegrating tablets and oxazepam are relatively mild, and they can disappear without special treatment. It is mainly attributed to its half-life that if the drug is stopped, the side effects will disappear in about a week to more than half a month [22].

Promisingly, the follow-up showed that the total effective rate in the observation group was higher than that in the control group, and the incidence of adverse reactions was lower than that in the control group. After 3 months of follow-up, the recurrence rate of the observation group was lower than that of the control group, suggesting an ideal efficacy of risperidone orally disintegrating tablets combined with oxazepam. The possible explanation may be that risperidone is a potent D2 antagonist, antagonizing serotonin and dopamine in the central system, adjusting their balance to reduce the occurrence of extrapyramidal side effects, and extending its therapeutic effect to schizophrenia of negative symptoms, affective symptoms, etc.

However, there are several limitations that merit attention. First, the outcome measures are not so comprehensive that long-term indicators failed to be evaluated, such as anxiety, depression, and coordination degree. In addition, depressed patients are often accompanied by anxiety, sleep disorders, etc., which may also affect the presentation of the results, but these patients were not included in this study. In the future, it is suggested that future trials should be planned with a larger sample size and longer period of intervention to make better judgment on the efficacy and safety of this strategy.

6. Conclusion

The combination of risperidone orally disintegrating tablets and oxazepam in the treatment of schizophrenia can reduce the psychotic symptoms of patients, improve the quality of life, and enhance the ability of daily living, with higher safety.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] W. Changhong, L. Liulu, and Y. Fengju, "Epidemiological investigation of mental disorders in Henan Province, analysis

Hindawi
Evidence-Based Complementary and Alternative Medicine
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Retraction

Retracted: The Correlation and Copathogenesis of Coronary Aortic Sandwich and Renal Cysts

Evidence-Based Complementary and Alternative Medicine

Received 20 June 2023; Accepted 20 June 2023; Published 21 June 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.

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] H. Zhang, L. Gong, Z. Wu, and X. Luo, "The Correlation and Copathogenesis of Coronary Aortic Sandwich and Renal Cysts," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 5483155, 5 pages, 2022.

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Research Article

The Correlation and Copathogenesis of Coronary Aortic Sandwich and Renal Cysts

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Objective. To determine the correlation for aortic occlusion and hydronephrosis and the pathogenesis of copathogenesis. *Methods*. A retrospective census was established to probe the correlation with renal cysts by gathering aortic coarctation details concerning generic symptoms, diabetes, and liver and kidney profiles from 244 hospitalized aortic clinographers from April 2014 to December 2021 (study category, SG category), 150 hypertensive clients with primary hypertension attending our institution in the same period (matched category, MG category), and 150 able-bodied volunteers (control category, CG category). *Results*. (1) Intercategory discrepancies in regard to aortic occlusion, diabetic malfunction, and kidney and liver abnormality were neither mutually nor predominantly measured ($P > 0.05$); (2) 244 enrolled SG for aortic occlusion and 150 CG for aortic occlusion were categorized by whether or not aortic occlusion was manifested, and the correlation between maternal age, gender, diabetic malfunction, and kidney and liver abnormality and renal cysts was estimated. The correlation of clogged aorta was demonstrated by a multifactorial logistic regression with gender and the presence of renal cysts ($P < 0.05$); (3) the correlation of clogged aorta was demonstrated by a multifactorial logistic regression with renal cysts as an independent risk factor for clogged aorta (95% CI: 1.028–10.291;$P = 0.031$). *Conclusion*. As renal cysts are an autonomous risk of aortic coarctation, it is recommendable to strengthen clinical investigations such as monitoring of clinical blood pressures in kidney cyst recipients to assess their aortic function in order to evaluate their prognosis and minimize the prevalence of aortic coarctation.

1. Introduction

Aortic coarctation is a phenomenon in which blood from the lumen of the aorta passes through an endothelial breach and enters the middle layer of the aortic wall, thereby forming haematoma [1]. Aortic coarctation is not an expansion of the aortic wall and differs markedly from aortic aneurysm [2]. Aortic coarctation is currently one of the more common and most complex and dangerous cardiovascular diseases, with an incidence of approximately 100 per 100,000 people per year, and its incidence has tended to increase in recent years as the population's dietary habits and lifestyles have changed [3, 4].

Aortic coarctation is still a great challenge for clinicians. It is an acute vascular pathology that is associated with various pathologies such as hypertension, atherosclerosis, hyperlipidaemia, and Marfan syndrome. The study of these related diseases not only aids to reveal the pathogenesis of renal cysts but also has positive implications for predicting the emergence of aortic coarctation [5, 6]. In recent years, as research on aortic coarctation has intensified, some scholars have pointed out that renal

cysts are more common in patients with aortic coarctation [7], but there are still few studies on the association between these two diseases. We now propose to analyse the association between aortic coarctation and renal cysts by including 244 patients with aortic coarctation as subjects, with the aim of contributing to the diagnosis and prognosis of these conditions.

2. Materials and Methods

2.1. General Data. Retrospectively, 244 patients with aortic coarctation who were undergoing inpatient treatment at our hospital from April 2014 to December 2021 were selected as the investigation category (study category, SG category), 150 patients with essential hypertension who consulted at our museum during the same period were the case-control category (matched category, MG category), and 150 healthy physical examiners were the control category (control category CG category). This research has been reported to the hospital ethics committee for approval.

2.1.1. Inclusion and Exclusion Criteria for Patients in the SG Category. (1) All met the diagnostic criteria of the American Heart Association Guidelines for Aortic Coarctation [8] and were diagnosed under imaging; (2) clinical data were complete and available. Exclusion criteria: (1) patients with comorbid psychiatric disorders; (2) those with comorbid end-stage renal disease, hydronephrosis, or renal tumours; (3) other unresolved clinical investigators have been included.

2.1.2. Inclusion and Exclusion Criteria for Patients in the MG Category. (1) All patients in the category met the diagnostic criteria for hypertension in the Guidelines for the Treatment of Hypertension [9]; (2) clinical data were complete and available. Exclusion criteria: (1) repeated hospitalisation; (2) incomplete clinical data; (3) concurrent end-stage renal disease, hydronephrosis, renal tumour, aortic coarctation, and aortic aneurysm; (4) other unresolved clinical investigators have been included.

2.1.3. Inclusion and Exclusion Criteria for Patients in the CG Category. Inclusion criteria: healthy individuals who underwent screening at our medical screening centre. Exclusion criteria: patients with end-stage renal disease, hydronephrosis, renal tumour, aortic coarctation, and aortic aneurysm.

2.2. Intervention Method. The age, gender, previous medical history of hypertension, and diabetes were included, and the admission symptoms, blood pressure, heart rate, and ancillary tests (liver and kidney function tests) of the three categories of individuals were recorded.

All individuals were divided into aortic coarctation and nonaortic coarctation categories according to the presence or absence of aortic coarctation, and analyses were conducted on the univariate and multifactorial logistic influencing factors of aortic coarctation to investigate the correlation between aortic coarctation and renal cysts.

2.3. Statistical Methods. The data were analysed using SPSS 24.0 statistical software. The Kolmogorov–Smimov test was used to test the normality of quantitative data. The indicators conforming to the normal distribution were tested by independent samples t-test (two groups) or analysis of variance (three groups or more), and the SNK test was used for post hoc comparison, and the results were expressed as mean ± standard deviation. The indicators that did not conform to the normal distribution were tested by the Kruskal–Wallis rank sum test, and the results were expressed as the median and quartile. The chi-square test was used for between-group comparisons of qualitative data. Differences were considered statistically significant at $P > 0.05$.

3. Results

3.1. Generic Clinical Data Analysis of the Three Clusters of Sufferers. The clinical data such as gender, age, history of diabetes mellitus, abnormal liver function, abnormal kidney function, and renal cyst were carried out to facilitate interaction between the three clinical categories, and the general clinical data showed that, in terms of mean age, history of diabetes mellitus, abnormal liver function, and abnormal kidney function, they did not differ substantially from each other ($P > 0.05$) (Table 1 and Figure 1).

3.2. Univariate Analysis of Aortic Coarctation in the Three Categories of Patients. The 244 SG patients, 150 MG patients, and 150 CG patients enrolled were categorized according to the presence or absence of aortic coarctation, and analysis was carried out on the correlation between mean age, gender, history of diabetes, abnormal liver and kidney function, and renal cysts and aortic coarctation, which revealed that the univariate consequence of aortic coarctation was gender and the presence or absence of renal cysts ($P < 0.05$) (Table 2).

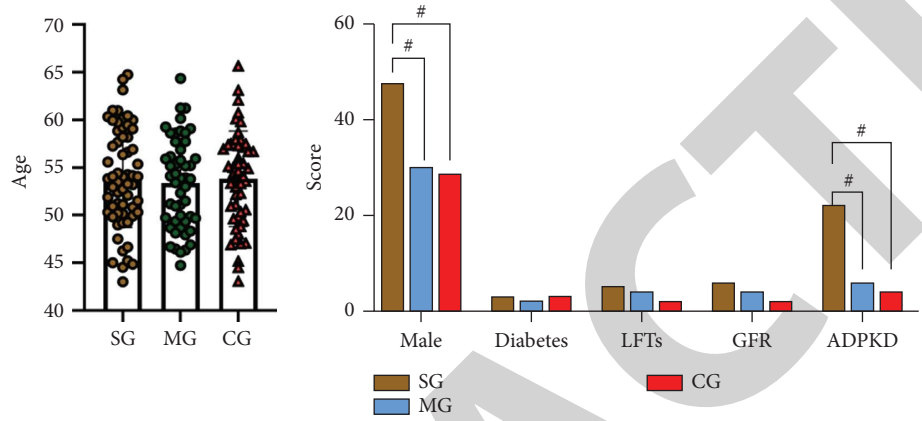
3.3. Multifactor Logistic Regression Analysis of Aortic Coarctation. The univariate factors of gender and renal cyst associated with aortic coarctation were assigned (male = 0; female = 1; presence of renal cyst = 0; absence of renal cyst = 1), and multifactorial logistic regression analysis was performed on the dependent variable in relation to aortic coarctation. The results demonstrated that renal cyst was an independent risk factor for aortic coarctation ($P < 0.05$) (Table 3).

4. Discussion

Aortic coarctation is a state in which blood in the aortic lumen enters the aortic mesentery from a tear in the aortic intima, causing the mesentery to split and expand in the direction of the long axis of the aorta forming a true/false separation of the two lumens of the aortic wall [10]. The peak age of onset of aortic coarctation is 50–70 years, with a male

Table 1: Anatomy of the overall mechanical data of the victims in the corresponding categories.

General information	SG ($n = 244$)	MG (n = 150)	CG (n = 150)	P^a	P^b
Mean age (years)	54.16 ± 5.04	54.62 ± 5.66	54.74 ± 4.91	0.402	0.263
Male/female	136/39	90/60	87/63	0.032	0.019
History of diabetes mellitus	9	6	9	0.817	0.802
Abnormal liver function	15	12	6	0.970	0.365
Abnormal kidney function	18	12	18	0.737	0.237
Renal cysts	66 (27.05)	18 (12.00)	12 (8.00)	0.004	0.001



(a) (b)

Figure 1: Diagnosis of generic commercial statistics of the three clinical categories. In the three categories, the discrepancy in median age showed no statutory sensitivity ($P > 0.05$) (Figure (a)), while the variance on gender and prevalence of renal cysts was regarded as supplementary variance between categories ($P < 0.05$) (Figure (b)). #signifies a statistical sense of variance between categories for the identical index.

Table 2: Univariate analysis of aortic coarctation in the three categories of aortic coarctation.

Clinical characteristics		Aortic coarctation category (n = 244)	No aortic coarctation category (n = 300)	t/X^2	P
Mean age (years)		54.16 ± 5.04	54.69 ± 4.58	0.140	0.889
Gender	Male	136	177	17.224	<0.001
	Female	39	123		
History of diabetes	Yes	9	15	0.549	0.459
	No	235	285		
Abnormal liver function	Yes	15	18	0.005	0.943
	No	229	282		
Abnormal kidney function	Yes	18	30	1.151	0.283
	No	226	270		
Renal cysts	Yes	66	30	26.913	<0.001
	No	178	270		

Table 3: Multi-factor logistic regression thesis of aortic coarctation.

Variables	β	SE	Wald	95% CI	P
Gender	1.022	0.417	1.819	0.421–0.781	0.054
Renal cysts	1.698	0.851	0.071	1.084–10.5189	0.006

to female ratio of about 2–3:1. About 65%–70% of patients with aortic coarctation will die in the acute phase due to cardiac compression and arrhythmias, making early diagnosis and treatment of the condition very important [11,12].

The management of aortic coarctation is still one of the hotspots of clinical research, and current studies have shown that it is closely related to various diseases such as hypertension, atherosclerosis, Marfan syndrome, and aneurysm

[13]. In recent years, several scholars from home and abroad have pointed out that renal cysts may be closely associated with aneurysms [14], while others have directly pointed out that aortic coarctation may be associated with renal cysts [15]. In this study, 244 patients with aortic coarctation were included and analysed, and the combined incidence of renal cysts in the enrolled patients was 27.05% (66/244), which far exceeded the 12.00% (18/150) in the MG category and 8.00% (12/150) in the CG category, which is similar to the findings of other scholars. A retrospective analysis of 405 patients with aortic coarctation noted that the prevalence of renal cysts in this category was 36.5%, and another study found that the prevalence of renal cysts in patients with aortic coarctation after receiving propensity matching was 37.00%, well above 9% in normal individuals [16].

The authors of this paper analysed that this result confirms that there may be a similar pathogenesis between aortic coarctation and renal cysts. Studies have confirmed that polycystin is an essential component in maintaining the body's structure and that this protein is extensively involved in processes such as cell contraction, proliferation, and apoptosis, as well as having a specific relationship with polycystic kidney disease [17]. It has been noted that polycystin 1 and polycystin 2 are two isoforms of polycystin with expressed genes PKD1 and PKD2, which have been shown to be key genes in the development and progression of cystic kidney disease [18]. An animal study found that if the PKD1 and PKD2 genes were knocked out in mice, a series of changes such as fibrous breaks in the vessel wall, varying degrees of haematoma, and even entrapment in the vessel wall were also observed in the model mice [19]. Another animal study found that PKD1 knockout mice expressed polycystin 1 at only 25% of the level of normal mice, and postmortem examination revealed that five of the nine knockout mice showed preaortic coarctation manifestations such as intravascular wall haematomas [20]. These measurements demonstrate that aortic coarctation and renal cysts have a similar pathogenesis, and that the presence of renal cysts may have an inhibitory factor on the immunity of the aortic coarctation.

Renal cysts are an independent risk element for aortic coarctation, and it is recommended that clinical investigations such as blood pressure monitoring in patients with renal cysts be strengthened to assess aortic fitness so as to assess aortic function in an attempt to optimise patient prognosis and minimize the incidence of aortic coarctation.

Data Availability

All data generated or analysed during this study are included in this published article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] V. Tchana-Sato, N. Sakalihasan, and J. O. Defraigne, "La dissection aortique [Aortic dissection]," *Revue Médicale de Liège - Supplements*, vol. 73, no. 5-6, pp. 290–295, 2018.

[2] Y. Zhu, B. Lingala, M. Baiocchi et al., "Type A aortic dissection-experience over 5 decades: JACC historical breakthroughs in perspective," *Journal of the American College of Cardiology*, vol. 76, no. 14, pp. 1703–1713, 2020.

[3] I. Sen, Y. M. Erben, C. Franco-Mesa, and R. R. DeMartino, "Epidemiology of aortic dissection," *Seminars in Vascular Surgery*, vol. 34, no. 1, pp. 10–17, 2021.

[4] T. Gudbjartsson, A. Ahlsson, A. Geirsson et al., "Acute type A aortic dissection - a review," *Scandinavian Cardiovascular Journal*, vol. 54, no. 1, pp. 1–13, 2020.

[5] X. Meng, J. Han, L. Wang, and Q. Wu, "Aortic dissection during pregnancy and postpartum," *Journal of Cardiac Surgery*, vol. 36, no. 7, pp. 2510–2517, 2021.

[6] M. S. Khaja and D. M. Williams, "Aortic dissection: introduction," *Techniques in Vascular and Interventional Radiology*, vol. 24, no. 2, Article ID 100745, 2021.

[7] J. Bao, S. Zheng, C. Huang et al., "Association of renal cyst and type A acute aortic dissection with hypertension," *Journal of Thoracic Disease*, vol. 12, no. 12, pp. 7374–7386, 2020.

[8] A. S. Jassar and T. M. Sundt, "How should we manage type A aortic dissection?" *Gen Thorac Cardiovasc Surg*, vol. 67, no. 1, pp. 137–145, 2019.

[9] K. Akutsu, "Etiology of aortic dissection," *Gen Thorac Cardiovasc Surg*, vol. 67, no. 3, pp. 271–276, 2019.

[10] A. Sayed, M. Munir, and E. I. Bahbah, "Aortic dissection: a review of the pathophysiology, management and prospective advances," *Current Cardiology Reviews*, vol. 17, no. 4, Article ID e230421186875, 2021.

[11] H. Ram, S. Dwarakanath, A. E. Green, J. Steyn, and E. A. Hessel 2nd, "Iatrogenic aortic dissection associated with cardiac surgery: a narrative review," *Journal of Cardiothoracic and Vascular Anesthesia*, vol. 35, no. 10, pp. 3050–3066, 2021.

[12] J. M. Alsac, "Dissection aortique à la phase aiguë [Aortic dissection at the acute phase]," *Revue du Praticien*, vol. 71, no. 8, pp. 842–846, 2021.

[13] T. Zeng, L. Shi, Q. Ji et al., "Cytokines in aortic dissection," *Clinica Chimica Acta*, vol. 486, pp. 177–182, 2018 Nov.

[14] A. J. Brownstein, S. U. Bin Mahmood, A. Saeyeldin et al., "Simple renal cysts and bovine aortic arch: markers for aortic disease," *Open Heart*, vol. 6, no. 1, Article ID e000862, 2019.

[15] A. Chewcharat, R. Hamaya, C. Thongprayoon, L. D. Cato, M. A. Mao, and W. Cheungpasitporn, "The association between simple renal cyst and aortic diseases: a systematic review and meta-analysis of observational studies," *Journal of Evidence-Based Medicine*, vol. 13, no. 4, pp. 265–274, 2020.

[16] B. A. Ziganshin, P. Theodoropoulos, M. N. Salloum et al., "Simple renal cysts as markers of thoracic aortic disease," *Journal of American Heart Association*, vol. 5, no. 1, Article ID e002248, 2016.

[17] Y. J. Dun, H. W. Guo, Y. Chang et al., "Characteristics of organ cysts and their association with type A aortic dissection," *The Anatolian Journal of Cardiology*, vol. 25, no. 4, pp. 236–242, 2021.

[18] E. K. Kim, E. R. Choi, B. G. Song et al., "Presence of simple renal cysts is associated with increased risk of aortic

Hindawi
Evidence-Based Complementary and Alternative Medicine
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Retraction

Retracted: Review on Comfort Nursing Interventions for Patients Undergoing Neurosurgery and General Surgery

Evidence-Based Complementary and Alternative Medicine

Received 26 September 2023; Accepted 26 September 2023; Published 27 September 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. Wu, Y. Chen, J. Zhang, and H. Yu, "Review on Comfort Nursing Interventions for Patients Undergoing Neurosurgery and General Surgery," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 6735054, 6 pages, 2022.

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Research Article

Review on Comfort Nursing Interventions for Patients Undergoing Neurosurgery and General Surgery

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Objective. To summarize the commonalities and particularities of comfort care interventions for neurology and general surgery patients. *Methods*. The development of comfort care and its practical application in neurology and general surgery were discussed and summarized by searching the current literature on comfort care interventions for neurology and general surgery patients, including case reports, clinical studies, and systematic reviews. *Results*. Comfort nursing intervention is a kind of nursing intervention with integrity and creativity. In addition to its uniqueness, the comfort nursing model also has strong effectiveness. Clinical holistic nursing has been significantly improved through the application of comfort nursing intervention theory, and its nursing mode has enhanced the connotation of clinical nursing. *Conclusion*. Comfort nursing intervention for neurology and general surgery patients can help patients recover and deserves further promotion.

1. Introduction

Neurology is a secondary discipline within clinical neurology. There are many diseases that are treated in its department, and the majority of patients are elderly [1]. It is common that elderly patients in neurology, due to the influence of illness or age, will suffer from different degrees of hemiplegia, aphasia, confusion, etc. It is clinically necessary to develop neurological care in a precise and comfortable manner to help patients recover and improve their quality of life [2]. General surgery is the largest specialty within the surgical system, and it is a clinical discipline with surgery as its primary modality of treatment. As surgical patients are usually in critical condition, and patients in their departments present a variety of nursing risks, it is difficult to provide nursing care. The continuous improvement in people's income and clinical medical level in China has led to an increase in the demand for clinical care. The comfort nursing intervention is an exceptional, creative, and holistic nursing approach, and the effectiveness of its nursing model has been recognized by a number of departments. Almost all patients may create a pleasant condition with this mode, and its application can successfully lessen or alleviate the discomfort of patients during treatment [3].

To date, the concept of patient-centered holistic nursing has gradually become a consensus in the industry, and the proposal and application of comfort nursing intervention theory has enriched the meaning of clinical nursing. In addition, with the development of modern medical model, the theoretical system of modern nursing has deepened the connotation of nursing service and expanded the scope of nursing service. Under the new historical conditions, traditional Chinese medicine (TCM) nursing has exhibited a certain advantage; people have a new understanding of TCM nursing technology and rationally apply it to the condition observation, emergency treatment, and psychological care of emergency patients. Therefore, TCM nursing is also helpful for the recovery of patients after neurology and general surgery [4]. The purpose of this review was to analyze, synthesize, and explore the commonalities and specificities of comfort care interventions applied to neurology and general surgery patients.

2. Progress of Comfort Nursing

2.1. Comfort Nursing Theory: Its Emergence and Improvement. According to Miss Nightingale, the founder of nursing education, the patient's ward should have several aspects such as cleanliness, comfort, quietness, and a pleasant fragrance, which is the foundation of comfort nursing theory. According to Kolcaba [5], the theoretical framework for comfort nursing was formally formulated in 1995. Kolcaba believed that comfort nursing is the inevitable outcome of the entire nursing process. The double-C nursing model was also proposed by Hiao Fufeng from Taiwan in 1998, who believes that nursing research and practice should be focused on the comfort of patients. According to Hiao's double-C nursing model, "double-C" refers to "nursing activities + comfort activities." Nursing activities refer to taking care of patients, including providing simple comfort care; comfort activities pertain to enabling patients to achieve physiological, psychological, and spiritual comfort.

2.2. Connotation Policy for Comfort Nursing Services. The connotation of comfort nursing is to enable the patient to obtain a pleasant state in terms of psychology, physiology as well as soul. This will include

2.2.1. Psychological Care. In the event of a disease, the patient will learn from a familiar situation when they are afflicted. However, the environment changes into an unfamiliar one. As a result of the unfamiliar environment, the psychological state of the patient will cause a certain amount of anxiety, and the comfort nurse shall present a dignified appearance and decent language in order to ease the patient's fears. Comfort enables the patient to form a bond of trust with the nursing staff in a short period of time, which helps to make the patient's mind and body happy, which helps to make the patient's mind comfortable as well. It is the comfort nurses' responsibility to welcome patients and introduce them patiently to the competent doctors, nurses, ward environment, rules, and regulations, as well as work procedures related to their diseases, in order to help the patients adapt to the hospital environment. According to Li Song and others, a cup of hot water, a greeting, a smile, etc., can greatly relieve the tension of patients and reduce the distance between nurses and patients. In the course of the nursing process, nurses should listen more and respect the opinions and suggestions of patients [6].

2.2.2. Physical Comfort Nursing. The purpose of comfort nursing is to provide a clean, comfortable, quiet, and clutter-free medical environment for the patient and to adjust the lighting, temperature, and humidity in the patient's room to a comfortable and appropriate level. The staff may also provide humorous books, healthy and nutritious recipes, and fashion magazines for the patients or play some relaxing music for them, all of which can help the patients distract themselves from their discomfort. A stable mood is conducive to the health of the patient's body and mind. Additionally, nurses will provide patients with information regarding complications and skin-related comfort measures. Nurses should pay close attention to the essentials of fast, stable, and accurate care when implementing nursing procedures, grasp the appropriate nursing intensity, and strive to minimize patient discomfort.

2.2.3. Mental Comfort Nursing. The comfort nursing staff will be aware of the patient's beliefs and will respect and support those beliefs. It is the responsibility of nursing staff to take the initiative to understand some of the patient's preferences and to aid the patient's preferences, entertainment, and learning, assisting patients as they explore the meaning of life. As well as encouraging good relationships between patients and other patients, nursing staff will also ask family members to encourage and support patients. It is necessary to make patients feel wanted and needed in order to reduce their loneliness, to make them appreciate life [7].

2.3. Different Types of Comfort Care. Comfort care can be divided into two types: basic comfort care and advanced comfort care.

(1) The basic comfort care guidelines are primarily based on common sense, such as avoiding noise after the patient has fallen asleep and paying attention to the warm environment when checking the patient's physical condition. It is not typically necessary to perform detailed demonstrations and research in order to provide comfort care.

(2) Advanced comfort care is usually above common sense in everyday living, and it is typically divided into two categories: invasive and noninvasive. Invasive care includes methods for administering anesthesia, taking blood, and administering medications in a comfortable manner [8]. On the other hand, noninvasive care involves psychological, physical, social, and spiritual comfort. Nursing students are required not only to acquire basic medical knowledge and nursing professional knowledge but also to actively get involved in related fields such as psychology, pharmacology, and traditional Chinese medicine so that they can provide better comfort care to patients.

2.4. Advances in Clinical Practice and Application of Comfort Nursing

(1) A comfort nurse's primary responsibility is to provide a quiet, clean, and comfortable environment for patients. It was pointed out by the scholar Li Ming and others that comfortable temperature, humidity, smell, etc., can play a significant role in patients' physical and mental well-being and their ability to recover. Comfort nursing can make the patient's body and mind achieve the best state, which has a very important impact on the patient's follow-up treatment effect [9].

(2) The diagnosis and treatment technology of comfort nursing will run throughout the daily life of the patient, as well as into the details of the patient's daily care. When it comes to clinical nursing behaviors, skilled operations, sufficient knowledge, and warm service are the most important guarantees for a comfortable nursing experience. Currently, the clinical needs for nursing and the research on nursing innovation give more consideration to the comfort effect. The purpose of comfort nursing is to minimize the patient's pain, anxiety, and other physical and psychological discomfort, regardless of the prognosis of the patient's disease [10].

(3) To date, the theory of comfort nursing has been constantly revised and improved, but its enthusiasm and sustainable development have not been replicated. As a patient-centered, patient-oriented, selective nursing method, comfort nursing has long valued the comfort effect felt by the patient as its primary goal, which allows its various aspects to work together harmoniously. Despite its simplicity and operability, comfort nursing has strong connection between clinical nursing practice and nursing research, and it has been shown to significantly improve the quality of clinical nursing. The reason is that its theory is in accordance with holistic nursing and evidence-based nursing. Since comfort nursing has rich connotations, it requires nursing staff to broaden their knowledge. This encourages clinical nursing staff to learn relevant knowledge, in order to be able to meet the increasing comfort needs of patients in the future. Several nursing experts with their own strengths have laid the foundation for improving the status of clinical nursing [11].

(4) Comfort nursing understands that even if a patient's body is afflicted with disease, he or she remains a social being with his or her own personality, so his or her dignity cannot be dismissed. The nursing staff should treat the patient with the utmost respect, which is reflected in the quality of the patient's life. Clinical treatment and nursing are intended not only to treat the patient's physical illness but also to prevent the disease process, prolong the patient's life, and at the same time respect the patient's wishes. In addition to encouraging patients to fulfill their own wishes, the nursing staff should consider using life support technology when necessary to make up for the deficiencies of traditional concepts.

2.5. Chinese Medicine Nursing

(1) Observing the condition: The human body is an organic whole, and local lesions can affect the whole body; internal organs lesions can be reflected from various aspects such as the head, face, facial features, and four limbs. And the four diagnostic methods of TCM: Wang (seeing), Wen (listening and smelling), Wen (questioning), and Qie (touching pulses) advocated by Chinese medicine are favorably in tune with this [12]. In emergency care, rhubarb can be used as a catharsis for the care of patients with acute poisoning to help the patient to eliminate the poison; for some common multiple diseases, bupleurum injection and scraping can be used for routine care; in addition, during first aid, the corresponding acupoints can be stimulated for adjuvant therapy [13].

(2) First aid: TCM nursing techniques are relatively simple and easy to master and can effectively deal with patients' emergencies in the process of practical operation. In addition, using the knowledge of TCM to observe the changes of the patient's complexion and tongue coating can help to indicate the patient's condition changes. If the patient's tongue and pulse change significantly, such as the red tongue turning into a red-purple tongue, it represents that the evil has entered the blood, indicating a critical condition [14, 15].

(3) Emotional care: Clinical practice shows that the more serious the patient is, the more emotional the patient is, and the high-risk disease brings huge psychological pressure to the patient [16]. Emotional nursing occupies an important position in TCM nursing. If the emotions are too stimulated, the internal organs will be affected. In the case of imbalance of yin and yang, the dysfunctions of the internal organs are caused. TCM nursing focuses on the methods of enlightenment, diversion, and suggestion to smoothen the qi of patients [17].

(4) Dietary care: TCM should not use all drugs in the nursing process because drugs often damage the vitality of the human body after reaching a certain amount [18]. TCM believes that food and medicine should be combined. Nursing staff can give corresponding dietary guidance based on the principles of TCM such as "Yang should be cultivated in spring and summer, and Yin in autumn and winter" and the patient's condition. Scientific and reasonable collocations need to be carried out according to the climate, the patient's condition, and the nature of the food, so as to reduce the stimulation of the diet to the patient [19, 20].

3. Application and Specific Measures of Comfort Nursing in Neurology and General Surgery Departments

3.1. The Application and Specific Measures of Comfort Nursing in the Neurology Department. The application of comfort nursing in the neurology department should reflect its "people-oriented" philosophy and should adhere to all patient-centered nursing concepts in order to implement effective and humanized nursing measures that can provide neurological benefits for patients. It should establish a solid foundation for the treatment and rehabilitation of medical patients. Patients in the neurology department are prone to

tension, irritability, low self-esteem, fear of dragging family members, and other emotions as a result of their paralysis and the loss of their self-care abilities and language abilities [21], which makes them susceptible to anxiety, tension, and irritability [22]. These negative emotions will often lead patients to give up their treatment.

Comfort nurses who work in the neurology department communicate well with patients and provide them with appropriate psychological counseling and psychological counseling in a timely manner. A comfortable nurse will look at the issue from the point of view of the patient, will understand the patient's pain, and will provide comfort and encouragement to the patient in time, which will enable the patient's underlying negative emotions to vent and be relieved, and in turn, will improve their psychological state. Having a comfortable environment allows patients to remain in a positive frame of mind during future treatment [23]. Patients with neurology problems often require prolonged bed rest and suffer from urinary incontinence, causing psychological and physiological distress to the patient. Thus, the nursing staff will regularly assist the patient in changing their bed position, thereby reducing the risk of the patient's failure. Furthermore, the comfort caregiver provides skin comfort care, which contributes to maintaining the integrity of a patient's skin. Comfort nurses are responsible for aiding patients with breathing, digestion, excretion, sleep, rest, and disinfecting and isolating patients to prevent cross-infections [24].

3.2. The Practical Application and Specific Measures of Comfort Nursing in General Surgery. Comfort nursing formulates different nursing measures based upon the surgical procedure and the part of the patient that requires care. Comprehensive overall comfort nursing, including different comfort nursing measures before, during, and after the operation are the main measures.

(1) The purpose of preoperative comfort nursing is to help patients relax, adjust their diet, assist them in preparing for surgery, and provide information related to health care before and after surgery [25].

(2) The nursing care in the intraoperative period includes pacification of patients, reducing anxiety, and increasing patients' confidence in the treatment; adjusting the temperature and humidity in the operating room; and aiding the patient to situate themselves in a comfortable and stable position during surgery to reduce the physiological discomfort caused by the operation. The nursing staff should be steady, accurate, and light when performing various procedures. An efficient nursing staff should be technically skilled and standardized and strive to prevent the adverse stimulation and unnecessary pain caused by careless or repeated operation. During the operation, the nursing staff should check closely for abnormalities in the patient's vital signs and puncture site [26].

(3) Preoperative comfort nursing interventions are designed to reduce the pain and stress response of the patient and to prevent sharp fluctuations in their vital signs.

The nursing staff must closely observe the postoperative complications of the patients, report any problems in a timely manner, and cooperate with the doctors in the treatment of the patients.

Nurses should recognize the psychological needs of patients after surgery and provide targeted psychological counseling to assist in the early recovery of patients [27].

4. Common Characteristics of Comfort Nursing for Neurology and General Surgery Patients and Particular Characteristics of Comfort Nursing for Neurology and General Surgery Patients

4.1. The Commonness of Comfort Nursing for Patients in Neurology and General Surgery. Currently, clinical nursing work focuses primarily on neurology and general surgery. The comfort nursing approach is commonly used within these departments [28]. In general, neurology patients have varying degrees of paralysis, aphasia, and self-care ability. There is a low level of emotional maturity, etc., which can lead to irritability, low self-esteem, fear, depression, self-defeating behavior, and other adverse effects. General surgery patients usually undergo surgical treatment. As an invasive procedure, surgical treatment will also have adverse effects on the patient's heart, as well as possible complications after surgery. This condition is accompanied by severe pain, which further affects the patient's mood [29].

Accordingly, this study concludes that the commonality in patient care between neurology and general surgery lies in the psychological component of comfort care. Despite the fact that patients in the two departments have experienced different adverse emotions, both departments require comfort care; this includes psychological support. A comfortable psychological nursing approach refers to a series of nursing interventions, such as voice communication and behavioral guidance, that are intended to alleviate patients' negative emotions. Studies by scholars such as Ma Wenli have indicated that comfort nursing interventions can contribute to a more comfortable psychological state for the patient. It has been shown that a comfortable psychological state can significantly improve both patient enthusiasm for treatment and its effectiveness [30].

4.2. The Particularities of Comfort Nursing for Patients in Neurology and General Surgery. There are some particulars concerning the nursing care provided to patients in the Department of Neurology and General Surgery. Nursing in the Department of Neurology is unique in the sense that patients in the Department of Neurology undergo a long-term treatment and rehabilitation process. These patients require long-term hospitalization. It is common for patients

in the Department of Neurology to have strong feelings and thoughts, such as loneliness and helplessness, during the course of their treatment. The subjective emotional aspects of these patients will significantly affect their follow-up treatment and recovery, so comfort nursing for neurology patients is primarily based on companionship, care, and careful attention.

Nursing care for general surgery patients is distinguished by the fact that they do not need long periods of rehabilitation treatment. The discomfort they experience in their bodies is caused by the invasive nature of the surgical procedure and its potential complications. For general surgery patients, the focus of comfort nursing care will be on timely postoperative analgesia, strengthening the patient's nutrition intake, and assisting the patient in accelerating their body's recuperation process [31].

However, we only included the application in neurology and general surgery in this study. In the future, we would include more departments to enrich its value; second, we only qualitatively described and reviewed the previous studies. Future studies using a quantitative method are warranted to more accurately assess its value.

5. Conclusion

In conclusion, when comfort nursing intervention is used in patients with neurology and general surgery, it fully embodies the comprehensive nursing concept of individual care, disease care, and need care. As a result, comfort nurses must continually develop their cultural literacy and their ability to communicate, observe, analyze, and solve problems along with establishing good patient relationships; only in this manner can they provide patients with a more comfortable experience. Despite the fact that the comfort nursing model still has certain shortcomings and imperfections, a healthy development of its nursing model will have a significant impact on the field of clinical nursing and in-depth nursing research; the positive impact will be immeasurable.

Data Availability

No data were used to support this study.

Conflicts of Interest

All authors declare that they have no conflicts of interest.

References

[1] N. L. Ifejika, M. N. Okpala, H. A. Moser, J. N. Watkins, and E. A. Noser, "Rehab MATRIX: content validity of a nursing-led patient Assignment algorithm," *Journal of Neuroscience Nursing*, vol. 51, no. 1, pp. 33–36, 2019.

[2] J. M. Solomon, S. Bhattacharyya, A. S. Ali et al., "Randomized study of bedside vs hallway rounding: neurology rounding study," *Neurology*, vol. 97, no. 9, pp. 434–442, 2021.

[3] S. Tang, J. Ma, H. Meng, J. Guo, S. Cao, and B. Wang, "Standardized Nursing Management of Enzyme Replacement Therapy for Late-Onset Pompe Disease," *Medicine (Baltimore)*, vol. 100, Article ID e24276, 2021.

[4] Yu Ping, "Research on the application of traditional Chinese medicine nursing in neurology," *Inner Mongolia Traditional Chinese Medicine*, vol. 36, no. 18, pp. 141-142, 2017.

[5] L. Min Zhi and W. F. Dan, "Innovation and research of teaching way of clinical nursing interns in internal neurology department," *Iranian Journal of Public Health*, vol. 45, no. 6, pp. 824-825, 2016.

[6] L. Bendtsen, J. M. Zakrzewska, J. Abbott et al., "European Academy of Neurology guideline on trigeminal neuralgia," *European Journal of Neurology*, vol. 26, no. 6, pp. 831–849, 2019.

[7] C. Zhang and J. Xiao, "Application of fast-track surgery combined with a clinical nursing pathway in the rehabilitation of patients undergoing total hip arthroplasty," *Journal of International Medical Research*, vol. 48, no. 1, Article ID 030006051988971, 2020.

[8] D. Stefanidis, K. M. Ingram, K. H. Williams, C. L. Bencken, and D. Swiderski, "Are nursing students appropriate partners for the interdisciplinary training of surgery residents?" *Journal of Surgical Education*, vol. 72, no. 5, pp. 823–828, 2015.

[9] G. Roveron, M. Antonini, M. Barbierato et al., "Clinical practice guidelines for the nursing management of percutaneous endoscopic gastrostomy and jejunostomy (PEG/PEJ) in adult patients: an executive summary," *The Journal of Wound, Ostomy and Continence Nursing*, vol. 45, no. 4, pp. 326–334, 2018.

[10] Y. Liu, M. Qu, N. Wang, and L. Wang, "Effects of an evidence-based nursing intervention on neurological function and serum inflammatory cytokines in patients with acute cerebral infarction: a randomized controlled trial," *Restorative Neurology and Neuroscience*, vol. 39, no. 2, pp. 129–137, 2021.

[11] M. Ning, F. Chen, H. Wu, H. Zheng, C. Zheng, and S. Li, "Effect of early rehabilitation and nursing intervention on the rehabilitation prognosis of elderly stroke hemiplegia patients in the department of neurology," *Applied Bionics and Biomechanics*, vol. 2022, pp. 1–5, 2022.

[12] L. Hui, "Effect observation of early nursing intervention combined with traditional Chinese medicine in the treatment of severe craniocerebral trauma," *China Journal of Practical Neurological Diseases*, vol. 23, no. 01, pp. 80–83, 2020.

[13] R. Cuiping, "Wang Lu, Xu Yan. The effect of early nursing intervention combined with traditional Chinese medicine treatment on the rehabilitation of severe craniocerebral trauma," *Evaluation and Analysis of Medication in Chinese Hospitals*, vol. 16, no. S1, pp. 42-43, 2016.

[14] Li Na and C. Hui, "Intervention effect of traditional Chinese medicine nursing in ventilator-associated pneumonia," *Journal of Practical Chinese Medicine*, pp. 1–4, 2022.

[15] Y. Li, D. Xiaojing, and S. Jingjing, "Promoting effect of traditional Chinese medicine nursing on limb rehabilitation after stroke," *Journal of Practical Chinese Medicine*, pp. 1–3, 2022.

[16] C. Shaomin, "Zhang Qihong. The effect of early nursing intervention combined with traditional Chinese medicine treatment on the recovery of neurological function in severe craniocerebral trauma," *Liaoning Journal of Traditional Chinese Medicine*, vol. 42, no. 01, pp. 173–175, 2015.

[17] Q. Fan, "Wan Lijuan. The application of traditional Chinese medicine nursing intervention in patients with urinary system stone pain," *China Modern Distance Education of Traditional Chinese Medicine*, vol. 20, no. 08, pp. 142–144, 2022.

[18] Z. Li, "Influence of early TCM nursing intervention on cognition and prognosis of patients with cerebral infarction [J]," *China Modern Distance Education of Traditional Chinese Medicine*, vol. 20, no. 08, pp. 144–146, 2022.

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Retraction

Retracted: The Correlation between Serum Sclerostin Level and Arterial Stiffness in Peritoneal Dialysis Patients

Evidence-Based Complementary and Alternative Medicine

Received 20 June 2023; Accepted 20 June 2023; Published 21 June 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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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.

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References

[1] F. Liu, H. Ma, Y. Ma, W. Zhou, C. Wang, and Y. Xiong, "The Correlation between Serum Sclerostin Level and Arterial Stiffness in Peritoneal Dialysis Patients," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 4247782, 6 pages, 2022.

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Research Article

The Correlation between Serum Sclerostin Level and Arterial Stiffness in Peritoneal Dialysis Patients

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Objective. To study the correlation between serum sclerostin (SO) and arterial stiffness in peritoneal dialysis (PD) patients. *Methods*. The study included 50 Parkinson's disease (PD) patients on continuous ambulatory peritoneal dialysis (CAPD) for more than 6 months at the nephrology department of our hospital. Without regard for age, the eligible patients were assigned to a low PWV group and a high PWV group with brachial-ankle pulse wave velocity (Ba PWV) of 1400 cm/s as the cutoff value. Patient characteristics such as age, gender, height, weight, BMI, smoking history, dialysis age, systolic blood pressure (SBP), diastolic blood pressure (DBP), urea clearance index (Kt/V), residual renal function (RRF), and diabetes mellitus (DM) were analyzed. Biochemical indices for analysis include hemoglobin (Hb), albumin (ALB), total cholesterol (TC), urea nitrogen (BUN), creatinine (CREA), triglyceride (TG), uric acid (UA), parathyroid hormone (PTH), blood phosphorus(P), fasting blood glucose (GLU), corrective calcium (Ca), calcium-phosphorus product, low-density lipoprotein (LDL-C), high-density lipoprotein (HDL-C), SO, and arterial stiffness. *Results*. There were 9 males and 16 females in the low PWV group and 12 males and 13 females in the high PWV group. Statistical significance was absent in patient characteristics despite more males in the high PWV group ($P = 0.055$). The low PWV group had significantly lower mean age, SBP, SO, and PWV level, fewer diabetic patients, and higher CREA than the control group. Analysis of PWV-related factors showed that PWV was positively correlated with age, P, Ca, GLU, SBP, PTH, and SO while negatively correlated with CREA. Multiple stepwise regression analysis showed that age, SO, and SBP demonstrated great potential to predict PWV ($P < 0.05$). *Conclusion*. The degree of vascular sclerosis is highly correlated with SO level in Parkinson's disease patients, which might provide a theoretical basis for the evaluation of cardiovascular illness in Parkinson's disease patients. High serum sclerostin level is a risk factor for deteriorated arterial stiffness. Given the limited sample size, the relevant results require further validation by expanding the sample size.

1. Introduction

The mortality rate of end-stage renal disease (ESRD) accounts for about 20% of all renal diseases, posing a great threat to the patients [1, 2]. The clinical efficacy of the two commonly used continuous renal replacement therapies (CRRTs), peritoneal dialysis (PD) and hemodialysis (HD), is similar [3]. PD patients are predisposed to complications such as calcium-phosphate metabolic disorders and bone lesions. Despite previous evidence on the varying magnitude of correlation between SO level and arterial stiffness, discrepancies result in compromised research outcomes [4, 5]. Research [6] showed that with prolonged dialysis, about 61.6% of peritoneal dialysis patients experienced abnormal digestive symptoms such as acid reflux, nausea and vomiting, early satiety, and postprandial bloating, leading to poor appetite and malnutrition in peritoneal dialysis patients. Medications such as acid suppressants and gastroprokinetics

are frequently used in Western medicine, but the long-term efficacy is unfavorable. It has been shown [7] that traditional Chinese medicine (TCM) provides significant efficacy in the treatment of gastrointestinal dysfunction in peritoneal dialysis patients with fewer adverse effects. It was found that spleen deficiency is the main type of evidence in ESRD patients, and blood stasis and dampness are present throughout the disease. Patients with ESRD have a depleted kidney essence and require care to protect kidney qi to replenish the innate kidney essence [8].

The development of coronary heart disease is linked to systemic atherosclerosis. Patients with elevated levels of medial calcification may provide insight into this phenomenon, so it is feasible to assess the hypothesis of death and prognosis of patients [9–11]. Thus, accurate determination of the degree of AS in patients or exploration of related biomarkers is of great importance for patient prognosis [12]. Previous approaches for the detection of arterial elasticity included central aortic pressure (CAP), CT, ultrasound, and X-ray plain scanning, but all of them exhibit limitations. In recent years, arterial pulse wave velocity (PWV) has been widely used in the detection of arterial elasticity and achieved certain clinical results [13, 14]. It contributes to the early identification and prevention of vascular sclerotic illnesses by identifying arterial elasticity, vascular stiffness, and vascular stenosis [15, 16].

It has been found that dialysate calcium concentration is one of the important factors affecting calcium homeostasis in patients on maintenance hemodialysis, and dialysate higher than blood calcium concentration increases the risk of disorders of calcium and phosphorus metabolism in patients, leading to a variety of complications [17]. In peritoneal dialysis, the mode of calcium ion transport through the peritoneum in dialysate varies from that in maintenance hemodialysis, and the possibility that dialysate calcium concentration still yields a greater impact on calcium and phosphorus metabolism and bone metabolism in peritoneal dialysis patients deserves further in-depth study. To this end, this study investigated the incidence of cardiovascular events in individuals with typical Parkinson's disease and documented alterations in serum sclerostin levels to evaluate the association between SO level and arterial stiffness in PD patients.

2. Materials and Methods

2.1. Research Subjects. 50 patients with PD on continuous ambulatory peritoneal dialysis (CAPD) for more than 6 months in the nephrology department of our hospital were included in the study.

Inclusion criteria were as follows: (1) patients meeting the criteria for dialysis in the Clinical Guidelines for Hemodialysis [18]; (2) duration of dialysis ≥3 months; (3) aged >18 years; (4) with complete data; (5) with regular PD ≥ 3 months; and (6) with acute physiological and chronic health status II scores [19] <25.

Exclusion criteria were as follows:(1) patients with mental illness or mobility difficulties that prevented cooperation with the study; (2) patients who used hormones or immunosuppressants within the past one year; (3) patients who underwent surgery or had trauma within the past one month; (4) patient with other serious diseases, such as malignant tumors; (5) patients with mental illnesses such as dementia and impaired consciousness; (6) patients with immune system disorders; (7) patients with severe liver function and cardiac insufficiency; (8) patients during pregnancy; (9) patients who revoked their consent or died; and (10) patients with renal failure requiring renal transplantation treatment. This study was approved by ethics committee of Shexian Hospital of Traditional Chinese Medicine, No.8293799/1, and our patients and their families signed informed consent.

2.2. Methods

(1) Collection of baseline patient profile, including age, gender, height, weight, BMI, smoking history, dialysis age, urea clearance index (Kt/V), residual renal function (RRF), diabetes mellitus (DM), diastolic blood pressure (DBP), and systolic blood pressure(SBP).

(2) Biochemical indicators, including hemoglobin (Hb), albumin (ALB), total cholesterol (TC), urea nitrogen (BUN), creatinine (CREA), triglyceride (TG), uric acid (UA), parathyroid hormone (PTH), blood phosphorus (P), fasting blood glucose (GLU), corrective calcium (Ca), calcium-phosphorus product, low-density lipoprotein (LDL-C), and high-density lipoprotein (HDL-C), were recorded.

(3) Detection of serum sclerostin concentration: the detection was performed with enzyme-linked immunosorbent assay (ELISA) double antibody sandwich method. 5 mL of fasting venous blood was collected from enrolled patients, and the supernatant was centrifuged and stored for testing. The levels of Hb, ALB, TC, BUN, CREA, TG, UA, PTH, GLU, Ca, LDL-C, HDL-C, BUN, P, Ca, and calcium and phosphorus were determined using a CX9 large automatic biochemical analyzer manufactured by Beckman Coulter, USA. The reagent kit was purchased from Tianjin Asil Biotechnology Co.

(4) Determination of arterial stiffness: each patient was given an arteriosclerosis detector to record their vascular stiffness measurement (baPWV). Without taking age into account, arterial stiffness (BaPWV) of 1400 cm/s was considered a cutoff value, with a value below 1400 cm/s considered normal. The mild elevation is defined as 20–30% over the usual value, moderate elevation is defined as 30%–50% above the normal value, and severe elevation is defined as more than 50% above the normal value.

2.3. Statistical Analysis. SPSS 24.0 was used for data processing in this study. The counting data and measurement data were analyzed using the chi-square (X^2) test and the *t*-test, respectively. Pearson linear correlation analysis was

used for correlation analysis between data. $P < 0.05$ indicates a statistically significant difference.

3. Results

3.1. Comparison of General Data of Patients in Two Groups. Without regard for age, the eligible patients were assigned to a low PWV group and a high PWV group with brachial-ankle pulse wave velocity (Ba PWV) of 1400 cm/s as the cutoff value. Statistical significance was absent in patient characteristics despite more males in the high PWV group ($P = 0.055$). The low PWV group had significantly lower mean age, SBP, SO, and PWV levels, fewer diabetic patients, and higher CREA than the control group (Table 1).

3.2. Analysis of PWV-Related Factors. PWV was shown to be correlated with age, SBP, PTH, P, Ca, GLU, and serum sclerostin while negatively correlated with CREA (Table 2).

3.3. PWV Multiple Regression Analysis. Multiple stepwise regression analysis showed that age, SO, and SBP demonstrated great potential to predict PWV ($P < 0.05$) (Table 3).

4. Discussion

With the increasing incidence of chronic kidney disease, more than 100 million people in China are suffering from chronic kidney disease, and a significant proportion of these patients have progressed to the end stage and require renal replacement therapy. Peritoneal dialysis is the main alternative therapy for patients with end-stage renal disease in China due to its simple operation, no site restrictions, and its advantages over hemodialysis in protecting patients' residual renal function and maintaining hemodynamic stability [20–22]. With the increase in the number of patients on peritoneal dialysis and the prolongation of patients' dialysis, patients' quality of life and dialysis efficacy have gradually been highlighted, and the factors affecting patients' quality of life and dialysis efficacy mainly include residual renal function, nutritional status, peritonitis, peritoneal function, and other related complications [23]. Many clinical studies have confirmed [24, 25] that TCM carries great significance in the prevention and treatment of dialysis-related complications in peritoneal dialysis patients and in improving the efficacy of treatment. ESRD belongs to the category of "edema" and "deficiency labor" in TCM, and spleen deficiency is considered the main type of evidence in ESRD patients, and blood stasis and dampness are present throughout the disease. Patients with ESRD have a depleted kidney essence and require care to protect kidney qi to replenish the innate kidney essence [26].

Sclerostin, a glycoprotein expressed by the SOST gene in osteocytes, is a newly identified protein implicated in bone-vascular axis metabolism and is hypothesized to be related to the development of arteriosclerosis and vascular calcification [27]. Sclerostin is a newly identified protein that regulates vascular calcification and has been found in calcified vascular smooth muscle cells in addition to bone-derived sclerostin [28, 29]. Studies have shown that serum sclerostin levels gradually increase with the progression of CKD, and the relevant mechanism is unclear [30, 31]. Increased cardiovascular and cerebrovascular events in patients with chronic kidney disease (CKD) may be associated with arteriosclerosis, and PWV, as an index of arterial stiffness, contributes to non-invasively diagnosing the severity of vascular sclerosis [32, 33]. Studies have shown that baPWV is a strong predictor of cardiovascular mortality in HD patients, and SO level may serve as a potential biomarker of atherosclerosis, whereas there is a dearth of relevant research. At present, non-invasive methods for PWV measurement based on waveform analysis include brachial-ankle pulse wave velocity (baPWV), heart rate, and multi-neck pulse wave (cfPWV), among which cfPWV directly reflects the degree of aortic stiffness and shows excellent clinical relevance. It is currently considered the gold standard for assessing aortic stiffness and cardiovascular events [34, 35]. Recent research has shown that hyperphosphatemia, high calcium-phosphorus product, and hyperparathyroidism could lead to vascular calcification, increased arterial stiffness, and an increased risk of cardiovascular events [36].

The analysis of PWV-related factors in the present study showed that PWV was positively correlated with age, SBP, PTH, SO, P, Ca, and GLU while negatively related with CREA. The results of multiple stepwise regression analysis indicated that the age, SBP, and SO were predictors of PWV ($P < 0.05$). SO level in PD patients is significantly related with vascular sclerosis severity, which provides a theoretical basis for the evaluation of cardiovascular disease in PD patients. The level of PWV in PD patients was correlated with age, BNP, brachial artery systolic blood pressure, Hb, and previous history of DM. It is indicated that the control of blood pressure, volume, and blood glucose is key to achieve vascular function protection.

This may be related to the small sample size of this study and possibly because this study did not group patients with or without other preexisting diseases. It has been suggested that hemodialysis corrects disorders of calcium and phosphorus metabolism, improves vascular calcification and arterial stiffness, and delays or blocks arterial calcification and sclerosis in patients with abnormal parathyroid function [37]. Active vitamin D deficiency is prevalent in peritoneal dialysis patients. Krause et al. [38] found that 58.8% of maintenance hemodialysis patients had 25-hydroxyvitamin D deficiency and that vitamin D deficiency increased mortality. Therefore, specific correlations are required in animal experiments.

The degree of vascular sclerosis is highly correlated with SO level in Parkinson's disease patients, which might provide a theoretical basis for the evaluation of cardiovascular illness in Parkinson's disease patients. High serum sclerostin

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

Factor	Low PWV group($n = 25$)	High PWV group ($n = 25$)	P
Age	56.23 ± 13.24	65.43 ± 8.81	<0.001
Gender (male/female)	9/16	12/13	0.055
Height	158.01 ± 7.73	161.37 ± 7.49	0.314
Weight	59.38 ± 11.26	60.47 ± 10.63	0.658
BMI	23.57 ± 4.49	23.90 ± 3.61	0.621
Smoking	14	17	1.233
Dialysis time	30.31 ± 26.17	24.47 ± 15.31	0.131
Urea clearance index (Kt/V)	1.55 ± 0.54	1.67 ± 0.75	0.762
Residual renal function (RRF)	0.57 ± 0.63	0.59 ± 0.62	0.652
Systolic blood pressure (SBP)	134.34 ± 22.45	158.72 ± 22.36	0.006
Diastolic blood pressure (DBP)	83.76 ± 13.84	83.51 ± 14.27	0.112
Diabetes mellitus	2	8	<0.001
Hemoglobin (Hb)	114.67 ± 21.51	116.53 ± 18.74	0.591
Albumin (ALB)	37.39 ± 4.28	36.27 ± 3.64	0.138
Blood urea nitrogen (BUN)	23.15 ± 5.53	21.16 ± 5.62	0.145
Creatinine (CREA)	881.33 ± 247.83	742.41 ± 272.63	0.003
Uric acid (UA)	383.25 ± 93.69	404.92 ± 91.31	0.225
Parathyroid hormone (PTH)	2.09 ± 0.51	1.95 ± 0.49	0.775
Serum phosphorus (P)	1.66 ± 0.37	1.57 ± 0.35	0.104
Corrected calcium (Ca)	2.23 ± 0.32	2.21 ± 0.27	0.846
Calcium-phosphorus product	3.42 ± 1.43	3.38 ± 1.27	0.936
Total cholesterol (TC)	4.68 ± 1.02	5.03 ± 1.25	0.232
Triglyceride (TG)	2.03 ± 1.26	2.09 ± 1.28	0.832
Low-density lipoprotein (LDL-C)	3.15 ± 0.73	1.46 ± 0.97	0.42
High-density lipoprotein (HDL-C)	1.33 ± 0.35	1.44 ± 0.93	0.547
Fasting blood sugar (GLU)	5.63 ± 1.67	6.37 ± 2.56	0.083
Serum sclerostin	202.13 ± 20.14	433.37 ± 24.52	0.004
PWV	9.66 ± 1.35	13.36 ± 1.48	<0.001

Table 2: Analysis of PWV-related factors.

Factor	r	P
Age	0.428	<0.001
Dialysis time	0.096	0.274
Systolic blood pressure (SBP)	0.561	<0.001
Diastolic blood pressure (DBP)	0.026	0.761
Hemoglobin (Hb)	0.076	0.410
Albumin (ALB)	−0.142	0.102
Creatinine (CREA)	−0457	0.021
Parathyroid hormone (PTH)	0.662	<0.001
Serum phosphorus (P)	0.589	0.021
Corrected calcium (Ca)	−0.503	<0.001
Total cholesterol (TC)	0.112	0.378
Triglyceride (TG)	−0.101	0.441
Low-density lipoprotein (LDL-C)	0.006	0.952
High-density lipoprotein (HDL-C)	0.057	0.671
Fasting blood sugar (GLU)	0.238	0.027
Serum sclerostin	0.219	<0.001

Table 3: PWV multiple regression analysis.

Factor	β	t	P
Age	0.067	4.891	<0.001
Systolic blood pressure (SBP)	0.029	7.537	<0.001
Serum sclerostin	2.721	13.562	0.003

level is a risk factor for deteriorated arterial stiffness. Given the limited sample size, the relevant results require further validation by expanding the sample size.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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References

[1] S. Ahmadmehrabi and W. H. W. Tang, "Hemodialysis-induced cardiovascular disease," *Seminars in Dialysis*, vol. 31, no. 3, pp. 258–267, 2018.

[2] A. Chuasuwan, S. Pooripussarakul, A. Thakkinstian, A. Ingsathit, and O. Pattanaprateep, "Comparisons of quality of life between patients underwent peritoneal dialysis and hemodialysis: a systematic review and meta-analysis," *Health and Quality of Life Outcomes*, vol. 18, no. 1, p. 191, 2020.

[3] M. Cozzolino, M. Mangano, A. Stucchi, P. Ciceri, F. Conte, and A. Galassi, "Cardiovascular disease in dialysis patients," *Nephrology Dialysis Transplantation*, vol. 33, no. 3, pp. iii28–iii34, 2018.

[4] C. Garofalo, S. Borrelli, T. De Stefano et al., "Incremental dialysis in ESRD: systematic review and meta-analysis," *Journal of Nephrology*, vol. 32, no. 5, pp. 823–836, 2019.

[5] H. Kanda, Y. Hirasaki, T. Iida et al., "Perioperative management of patients with end-stage renal disease," *Journal of Cardiothoracic and Vascular Anesthesia*, vol. 31, no. 6, pp. 2251–2267, 2017.

[6] J. F. Shen, L. W. Hu, and F. Hu, "Efficacy of renal failure formula combined with Western medicine in the treatment of maintenance peritoneal dialysis patients," *Chinese Journal of Traditional Chinese Medicine*, vol. 36, no. 05, pp. 3030–3033, 2021.

[7] Y. B. Shuang and Y. Wen, "The efficacy of the formula to benefit the kidney and invigorate blood on peritoneal dialysis. The effect of the formula for benefiting kidney and activating blood on residual kidney function in peritoneal dialysis patients," *Shaanxi TCM*, vol. 42, no. 04, pp. 486–488, 2021.

[8] B. Yang, M. Wang, Meng, and L. Sun, "Effects of Fu Ren Formula on peritoneal function and VEGF, TNF-α, IL-12 and IFN-γ in uremic peritoneal dialysis rats," *Chinese Journal of Comparative Medicine*, vol. 31, no. 04, pp. 15–20, 2021.

[9] E. Lam, Y. T. K. Lien, W. K. Kraft et al., "Vancomycin in peritoneal dialysis: clinical pharmacology considerations in therapy," *Peritoneal Dialysis International*, vol. 40, no. 4, pp. 384–393, 2020.

[10] T. Li, C. Wilcox, M. Lipkowitz, J. Gordon-Cappitelli, and S. Dragoi, "Rationale and strategies for preserving residual kidney function in dialysis patients," *American Journal of Nephrology*, vol. 50, no. 6, pp. 411–421, 2019.

[11] B. Mehdi, H. Kaveh, and V. F. Ali, "Implantable cardioverter-defibrillators in patients with ESRD: complications, management, and literature review," *Current Cardiology Reviews*, vol. 15, no. 3, pp. 161–166, 2019.

[12] Y. Miyata, Y. Obata, Y. Mochizuki et al., "Periodontal disease in patients receiving dialysis," *International Journal of Molecular Sciences*, vol. 20, no. 15, p. 3805, 2019.

[13] B. S. Park, M. Seong, J. Ko et al., "Differences of connectivity between ESRD patients with PD and HD," *Brain Behav*, vol. 10, no. 8, Article ID e01708, 2020.

[14] G. Fiori, F. Fuiano, A. Scorza, S. Conforto, and S. A. Sciuto, "Non-invasive methods for PWV measurement in blood vessel stiffness assessment," *IEEE Rev Biomed Eng*, vol. 15, pp. 169–183, 2022.

[15] H. Moradi, E. Streja, and N. D. Vaziri, "ESRD-induced dyslipidemia-Should management of lipid disorders differ in dialysis patients?" *Seminars in Dialysis*, vol. 31, no. 4, pp. 398–405, 2018.

[16] L. Nardelli, A. Scalamogna, M. Gallieni, E. Favi, P. Messa, and G. Castellano, "Urgent-start PD: a viable approach," *Giornale Italiano di Nefrologia*, vol. 38, no. 6, 2021.

[17] Q. Zhu, J. W. Han, and L. Y. Wu, "Effect of low-calcium hemodialysis and low-calcium peritoneal dialysis on calcium and phosphorus metabolism and carotid artery calcification in uremic patients," *Chinese Journal of Physicians*, vol. 24, no. 04, pp. 598–600, 2022.

[18] L. H. Yang, W. Jin, and X. Q. Ruan, "Clinical hemodialysis online blood volume monitoring with dry weight adjustment and care," *Zhejiang Medicine*, vol. 36, no. 09, pp. 821–823, 2014.

[19] Z. An, D. Wang, and J. Zhu, "Acute physiology and chronic health status scoring system II and nutritional risk screening-2002 in critically ill patients," *Chinese Journal of Clinical Health Care*, vol. 17, no. 6, pp. 570–573, 2014.

[20] X. J. Wang, *Observation on the Effect of Fu Ren Fang on Dialysis Adequacy in Long-Term Abdominal Dialysis Patients: 2016 Annual Meeting of the Renal Disease Committee of the Chinese Society of Integrative Medicine*, 2016.

[21] H. Zhang, C. Liu, and Q. Li, "Study on the effect of yielding kidney, removing blood stasis and reducing turbidity formula on TGF-β_1/smad signaling pathway in renal fibrosis in peritoneal dialysis patients," *Journal of Modern Traditional Chinese and Western Medicine*, vol. 28, no. 32, pp. 3545–3548, 2019.

[22] L. Jiao and Y. Deng, "Clinical observation on the intervention of the formula of strengthening the spleen, benefiting the kidney and activating blood in patients on maintenance peritoneal dialysis," *Chinese Journal of Integrated Chinese and Western Medicine and Nephrology*, vol. 19, no. 10, pp. 889–891, 2018.

[23] L. F. Meng, X. C. Chun, and Z. H. Tao, *Clinical Study on Antagonizing Peritoneal Fibrosis in Peritoneal Dialysis Patients by Strengthening the Spleen, Removing Phlegm and Eliminating Stasis*, 2014.

[24] Y. B. Suo and C. Chen, *Observation on the Efficacy of Yi Qi and Jian Spleen Formula on Malnutrition in Maintenance Peritoneal Dialysis Patients: 2018 Annual Meeting of the Renal Disease Committee of the Chinese Society of Integrative Medicine*, 2018.

[25] L. F. Meng, W. Shi, and J. M. Fan, *Study on the Effect and Mechanism of Jianshuanyiqi Formula to Improve Peritoneal Injury Induced by Microinflammatory State in Rats on Peritoneal Dialysis: 2018 Annual Meeting of the Renal Diseases Committee of the Chinese Society of Integrative Medicine*, 2018.

[26] S. Du, *Study on the Mechanism of Regulating PI3K/Akt/mTOR Signaling Pathway to Prevent Peritoneal Fibrosis in PD Rats Based on the Principle of the Spleen Dominates the Abdomen*, Guangxi University of Traditional Chinese Medicine, Nanning, China, 2018.

[27] A. Catalano, F. Bellone, N. Morabito, and F. Corica, "Sclerostin and vascular pathophysiology," *International Journal of Molecular Sciences*, vol. 21, no. 13, p. 4779, 2020.

[28] B. L. Langdahl, L. C. Hofbauer, and J. C. Forfar, "Cardiovascular safety and sclerostin inhibition," *Journal of Clinical Endocrinology and Metabolism*, vol. 106, no. 7, pp. 1845–1853, 2021.

[29] J. S. Wang, C. M. Mazur, and M. N. Wein, "Sclerostin and osteocalcin: candidate bone-produced hormones," *Frontiers in Endocrinology*, vol. 12, Article ID 584147, 2021.

[30] A. C. Reaves and D. E. Weiner, "The ESRD quality incentive program: everything can Be improved," *American Journal of Kidney Diseases*, vol. 78, no. 6, pp. 907–910, 2021.

[31] A. Sabatino, G. Piotti, C. Cosola, I. Gandolfini, J. Kooman, and E. Fiaccadori, "Dietary protein and nutritional supplements in conventional hemodialysis," *Seminars in Dialysis*, vol. 31, no. 6, pp. 583–591, 2018.

[32] M. Salani, S. Roy, and W. H. t. Fissell, "Innovations in wearable and implantable Artificial kidneys," *American Journal of Kidney Diseases*, vol. 72, no. 5, pp. 745–751, 2018.

[33] S. Voora and D. B. Adey, "Management of kidney transplant recipients by general nephrologists: core curriculum 2019," *American Journal of Kidney Diseases*, vol. 73, no. 6, pp. 866–879, 2019.

[34] M. De Luca, O. Iacono, V. Valente et al., "Can pulse wave velocity (PWV) alone express arterial stiffness? A neglected tool for vascular function assessment," *Reviews in Clinical & Basic Pharmacology*, 2021.

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Retraction

Retracted: Effects of Apatinib Mesylate Monotherapy on the Incidence of Adverse Reactions and Immune Function in Patients with Breast Cancer after Radical Mastectomy

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Lin and M. Zang, "Effects of Apatinib Mesylate Monotherapy on the Incidence of Adverse Reactions and Immune Function in Patients with Breast Cancer after Radical Mastectomy," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 4022282, 6 pages, 2022.

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Research Article

Effects of Apatinib Mesylate Monotherapy on the Incidence of Adverse Reactions and Immune Function in Patients with Breast Cancer after Radical Mastectomy

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Objective. To assess the effects of monotherapy with apatinib mesylate on the incidence of adverse events and immune function in breast cancer patients after a radical mastectomy. *Methods*. Between December 2018 and August 2020, 90 patients with breast cancer scheduled for a radical mastectomy in People's Liberation Army Navy 971 Hospital were randomly recruited and assigned at a ratio of 1 : 1 to receive either conventional treatment (conventional group) or apatinib mesylate after radical mastectomy (study group). The primary endpoint was disease control rate (DCR), and the secondary endpoints were adverse events and the immune function of the patients. *Results*. Monotherapy with apatinib mesylate was associated with a higher DCR (86.67%) versus conventional postoperative treatment (42.23%). All patients in the study group had documented adverse events, including 2 (4.45%) cases of headache, 3 (6.67%) cases of dizziness, 9 (20.00%) cases of hypertension, 6 (13.34%) cases of hand-foot syndrome, 3 (6.67%) cases of thrombocytopenia, 1 (2.23%) case of tinnitus, 7 (15.56%) cases of fatigue, 2 (4.45%) cases of anemia, 2 (4.45%) cases of oral pain, and 10 (22.23%) cases of leukopenia. There were 23 cases of intermittent discontinuation due to adverse events during treatment, 15 cases of dose reduction, and 3 cases of discontinuation due to adverse events. The difference in preoperative and postoperative T-cell subsets and natural killer (NK) cells between the two groups did not come up to the statistical standard ($P > 0.05$). Monotherapy with apatinib mesylate resulted in significantly lower levels of CD4+, CD4+/CD8+, and NK cells and higher CD8+ levels versus conventional treatment at 1 week and 4 weeks postoperatively ($P < 0.05$). *Conclusion*. Apatinib mesylate monotherapy after radical mastectomy yields a high DCR, a lower incidence of adverse events, and improved immune recovery. Clinical trials are, however, required prior to clinical promotion.

1. Introduction

Breast cancer is a disease in which the epithelial cells of the breast proliferate uncontrollably under the action of various carcinogenic factors, and it is one of the common malignant tumors in women [1]. The incidence of breast cancer has been on the rise due to environmental factors and the increasing pressure of life, and cervical cancer and breast cancer are the two latent culprits of cancer death in women, which seriously jeopardizes the health and life safety of women [2, 3]. The exact cause of breast cancer is poorly understood, although many signalling pathways and genetics have been identified [4]. Surgery is the preferred clinical treatment, with radical mastectomy being a standard radical mastectomy involving the removal of the entire affected breast and a 5 cm width of skin around the cancerous tumour, the fatty tissue surrounding the breast, the large and small chest muscles and their fascia, and all fatty tissue and lymph nodes in the axilla and subclavian area. Longitudinal, transverse, or shuttle-shaped incisions are acceptable, but the skin is generally excised no less than 3 CM from the tumor margin, with the surgical range extending from the clavicle to the superior rectus abdominis, outward to the anterior border of the latissimus dorsi muscle, and inward to

the parasternal or midline sternum. This treatment is dictated by the physiological anatomical basis of the breast [4, 5].

Despite a progressive decline in breast cancer recurrence and mortality due to the constant advancement of treatment techniques and the comprehensive application of systemic therapies, recurrence, and metastasis of breast cancer are still frequently seen in many patients [6]. Currently, radical surgery is the protocol of choice for the treatment of breast cancer, and aggressive postoperative chemotherapy is essential to prevent tumor recurrence and metastasis. Apatinib mesylate is an oral antiangiogenic targeted drug that blocks VEGFR-2 to suppress the proliferation of vascular endothelial cells by reducing the activation of mitogenic protein kinase (MAPK) to achieve antitumor effects [7–9]. In addition, Traditional Chinese medicine (TCM) treatment can be used as an adjuvant treatment for breast cancer to reduce the side effects and adverse effects of radiotherapy, chemotherapy, and endocrine therapy, thereby regulating the immune function and physical condition of patients [10]. In TCM, the cause of breast cancer is an internal injury to emotions, phlegm and blood stasis, and deficiency of righteousness, with the corresponding treatment methods including soothing the liver and relieving stagnation, resolving phlegm and dissipating blood stasis, regulating qi and blood, and nourishing the liver and kidney [11]. At present, the main treatment for breast cancer in TCM is compound decoctions, such as Tiaoshen Gongjian Decoction, Zigen Muli Decoction, and Qiyi Decoction [12]. Qiyi Decoction is mainly composed of Astragalus, Radix Angelicae Sinensis, and Rhizoma Atractylodis Macrocephalae and is effective in tonifying Qi and nourishing blood, resolving blood stasis and removing toxins, as well as strengthening the spleen and soothing the liver [13]. In view of the lack of reports, the aim of this study was to assess the effect of monotherapy with Apatinib Mesylate on the incidence of adverse events and immune function after radical mastectomy in breast cancer patients with the aid of the TCM Qiyi Decoction.

2. Materials and Methods

2.1. Baseline Data. Between December 2018 and August 2020, 90 breast cancer patients scheduled for radical mastectomy at People's Liberation Army Navy 971 Hospital were recruited and allocated to either the conventional group ($n = 45$) or the study group ($n = 45$) using the two-colour method. This study was approved for execution by the Ethics Committee (Approval No. 20180915). Patients and their families were informed and signed consent forms.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria

(i) With a history of pathologically confirmed breast cancer [14]

(ii) All treated with radical breast cancer

(iii) Patients were informed of this study and provided written informed consent

2.2.2. Exclusion Criteria

(i) With abnormalities in the liver, kidney function, blood, and urine

(ii) With severe acute myocardial infarction and pulmonary heart disease

(iii) With consciousness or combined with mental illness

2.3. Methods. Qiyi decoction comprised 60 g of Astragalus, 30 g of Codonopsis, 15 g of Yujin, 15 g of Angelica, 30 g of Eclipta, 20 g of Atractylodes, 15 g of Paeonia lactiflora, 10 g of Chonglou, 30 g of Salvia, 10 g of Coix Seed, and 60 g of Liao JIangshi. The above herbs were decocted with water and administered twice daily for both groups [12].

Patients in the conventional group were treated with conventional treatment after radical mastectomy: 1250 mg/m^2 of Capecitabine (Jiangsu Hengrui Pharmaceutical Co., Ltd., State Drug Administration: H20133365) was administered orally, twice a day in the morning and evening, with the total daily dose controlled within 2500 mg/m^2.

All patients in the study group were treated with apatinib mesylate monotherapy after radical mastectomy: referring to the recommendations of the National Comprehensive Cancer Network (NCCN) guidelines, all patients were administered orally 500 mg of apatinib mesylate (Jiangsu Hengrui Pharmaceutical Co., Ltd., State Drug Administration: H20140103) once a day, without co-administration with other antitumor drugs. The drug was discontinued until the progression of the disease or the development of adverse events due to intolerance.

The blood pressure, blood routine, urine routine, and ECG of the patients were monitored, adverse events that occurred after drug administration were also recorded, and the short-term treatment efficacy was evaluated after 4 weeks of medication.

2.4. Outcome Measures

(i) Disease control rate (DCR): the DCR of the two groups was evaluated as per the Evaluation Criteria for Treatment Efficacy of Solid Tumors [15], which can be divided into partial remission, stable disease, and disease progression, and DCR = (partial remission cases + stable disease cases)/total number of cases × 100%.

(ii) Adverse events including headache, dizziness, hypertension, and hand-foot syndrome during the treatment of patients in the study group were recorded.

(iii) Immune function: 5 mL of fasting venous blood was collected before, 1 week after surgery and 4 weeks after surgery, respectively, and centrifuged at 3000r/

min for 15 min to isolate the supernatant which was stored for assay. T-lymphocyte subsets and NK cells (monoclonal antibody from BD, USA) were determined by flow cytometry.

2.5. Statistical Analysis. GraphPad Prism 8 software was used for image rendering, and SPSS22.0 software was used for data analyses. The count data were expressed as (n (%)) and processed by the Chi-square test, and the measurement data were expressed as ($\overline{x} \pm s$) and processed using the t-test. Differences were considered statistically significant at $P < 0.05$.

3. Results

3.1. Baseline Data. The baseline features of the patients in the conventional group (aged 23–82 years, mean age 45.23 ± 3.79 years, 23 cases in TNM stage II, 22 cases in TNM stage III, 19 cases of undergraduate and above, 15 cases of high schools/junior colleges, 8 cases of junior high schools, and 3 cases of elementary schools and below in terms of education level) were comparable with those of the study group (aged 22–79 years, mean age 45.17 ± 4.02 years, 24 cases in TNM stage II, 21 cases in TNM stage III, 20 cases of undergraduate and above, 16 cases of high schools/junior colleges, 7 cases of junior high schools, and 2 cases of elementary schools and below in terms of education level) ($P > 0.05$) (Table 1).

3.2. Disease Control Rate. Monotherapy with apatinib mesylate was associated with a higher DCR (86.67%) versus conventional postoperative treatment (42.23%) (Table 2).

3.3. Adverse Events. All patients in the study group had documented adverse events, including 2 (4.45%) cases of headache, 3 (6.67%) cases of dizziness, 9 (20.00%) cases of hypertension, 6 (13.34%) cases of hand-foot syndrome, 3 (6.67%) cases of thrombocytopenia, 1 (2.23%) case of tinnitus, 7 (15.56%) cases of fatigue, 2 (4.45%) cases of anemia, 2 (4.45%) cases of oral pain, and 10 (22.23%) cases of leukopenia. There were 23 cases of intermittent discontinuation due to adverse events during treatment, 15 cases of dose reduction, and 3 cases of discontinuation due to adverse events (Table 3).

3.4. Immune Function. No statistically significant difference was found in preoperative and postoperative T-cell subsets and natural killer (NK) cells between the two groups ($P > 0.05$). Monotherapy with apatinib mesylate resulted in significantly lower levels of CD4+, CD4+/CD8+, and NK cells and higher CD8+ levels versus conventional treatment at 1 week and 4 weeks postoperatively ($P < 0.05$). (Table 4).

4. Discussion

In recent years, the incidence of breast cancer has been increasing due to environmental factors and the increase in life stress, which poses a serious threat to women's health [16]. The exact etiology of breast cancer is still poorly understood [17]. Although radical mastectomy is effective in the removal of the tumor lesion, the recurrence or metastasis rate of breast cancer remains high, so aggressive postoperative chemotherapy is usually adopted as countermeasure [4, 18]. There exist a large number of abnormal blood vessels around the tumor for the nutrition supply of the tumor, and vascular endothelial growth factor (VEGF) is closely related to neovascularization [19]. Previous research has shown that apatinib, an independently developed anticancer drug in China, competitively binds to the tyrosine ATP-binding site in the receptor cell and exerts an inhibitory effect on tumor angiogenesis. It is an oral antiangiogenesis-targeting drug that blocks VEGFR-2, thereby reducing the activation of mitogenic protein kinase (MAPK) and plays an antitumor role in inhibiting the proliferation of vascular endothelial cells in a variety of solid malignancies [20–24].

Here, monotherapy with apatinib mesylate was associated with a higher DCR (86.67%) versus conventional postoperative treatment (42.23%). All patients in the study group had documented adverse events, including 2 (4.45%) cases of headache, 3 (6.67%) cases of dizziness, 9 (20.00%) cases of hypertension, 6 (13.34%) cases of hand-foot syndrome, 3 (6.67%) cases of thrombocytopenia, 1 (2.23%) case of tinnitus, 7 (15.56%) cases of fatigue, 2 (4.45%) cases of anemia, 2 (4.45%) cases of oral pain, and 10 (22.23%) cases of leukopenia. There were 23 cases of intermittent discontinuation due to adverse events during treatment, 15 cases of dose reduction, and 3 cases of discontinuation due to adverse events. In this study, although the lesions showed a mild tendency of enlargement during the short discontinuation of the drug, the efficacy was enhanced again after retreatment with apatinib. Therefore, in this study, patients who developed adverse events were given an exploratory dosing frequency of 1-2 d active interruption after every 5 d of continuous dosing. After the administration of symptomatic treatment, most of them were found to be tolerable and controllable, and the adverse reactions arising from the administration of the drug were significantly lower than those of other chemotherapeutic agents. The reason may be attributed to the occurrence of multidrug resistance (MDR) associated with the ATP-binding cassette protein (ABC) transporter on the cell membrane surface [19]. ABC protein family excretes chemotherapeutic drugs from cells, thus attenuating the cytotoxic effects of the drugs; apatinib can increase the accumulation of adriamycin and rhodamine 123 in breast cancer resistance protein (BCRP, ABCG2) high expression cells, thereby significantly increasing the cytotoxicity of ABCB1 and ABCG2 substrates, and also reverses MDR by downregulating ABCB1 or ABCG2 expression to reverse MDR and further enhance drug sensitivity in ABCB1 or ABCG2 high-expressing resistant cell lines, which is consistent with the results of the present study [25]. Thus, apatinib mesylate is considered an ideal clinical treatment for patients with breast cancer after radical mastectomy, with controlled adverse events, and shows great potential as an alternative after the failure of other chemotherapy regimens.

Table 1: Comparison of baseline data ($\overline{x} \pm s$).

Groups	n	Age	Mean age	TNM stage		Education level			
				II	III	Undergraduate and above	High schools/ junior colleges	Junior high schools	Elementary schools and below
Conventional group	45	23–82	45.23 ± 3.79	23	22	19	15	8	3
Study group	45	22–79	45.17 ± 4.02	24	21	20	16	7	2
t	—	—		—	—	—	—	—	—
P	—	—		—	—	—	—	—	—

Table 2: Comparison of disease control rate (%).

Groups	n	Partial remission	Stable disease	Progressive disease	Disease control rate
Conventional group	45	11	8	26	19 (42.23)
Study group	45	22	17	6	39 (86.67)
X^2	—	—	—	—	19.397
P	—	—	—	—	<0.001

Table 3: Comparison of adverse events (%).

Groups	n	Headache	Dizziness	Hypertension	Hand-foot syndrome	Thrombocytopenia
Study group	45	2 (4.45)	3 (6.67)	9 (20.00)	6 (13.34)	3 (6.67)
Groups	*n*	*Tinnitus*	*Fatigue*	*Anemia*	*Oral pain*	*Leukopenia*
Study group	45	1 (2.23)	7 (15.56)	2 (4.45)	2 (4.45)	10 (22.23)

Table 4: Comparison of T-cell subsets and NK cells ($\overline{x} \pm s$).

Groups	Timepoints	Conventional group ($n = 45$)	Study group ($n = 45$)	t	P
$CD4^+$	Preoperatively	80.45 ± 5.28	80.39 ± 6.01	0.050	0.960
	1 week postoperatively	58.35 ± 5.12	69.13 ± 6.21	8.985	<0.001
	4 weeks postoperatively	69.88 ± 5.35	80.02 ± 5.98*	8.477	<0.001
$CD8^+$	Preoperatively	25.88 ± 3.63	25.92 ± 3.45	0.054	0.957
	1 week postoperatively	40.25 ± 3.02	35.13 ± 2.68	8.506	<0.001
	4 weeks postoperatively	35.12 ± 3.44	30.08 ± 3.18*	7.217	<0.001
$CD4^+/CD8^+$	Preoperatively	1.86 ± 0.24	1.88 ± 0.17	0.456	0.650
	1 week postoperatively	0.88 ± 0.02	1.24 ± 0.17	14.108	<0.001
	4 weeks postoperatively	1.23 ± 0.28	1.72 ± 0.35*	7.334	<0.001
NK	Preoperatively	18.24 ± 3.03	18.21 ± 3.14	0.046	0.963
	1 week postoperatively	12.24 ± 2.15	14.96 ± 2.14	6.015	<0.001
	4 weeks postoperatively	15.02 ± 2.16	18.08 ± 2.58*	6.101	<0.001

Note. * indicates no statistically significant differences at 4 weeks postoperatively ($P > 0.05$).

It has been reported that cellular immunity is the main antitumor immunity, dominated by T-lymphocyte subsets, NK cells. CD4+ and CD8+ regulate the body's cellular immunity, and the T-lymphocyte subsets and cells of breast cancer patients are lower than those of the healthy population. Herein, no statistically significant difference was found in preoperative and postoperative T-cell subsets and natural killer (NK) cells between the two groups ($P > 0.05$). Monotherapy with apatinib mesylate resulted in significantly lower levels of CD4+, CD4+/CD8+, and NK cells and higher CD8+ levels versus conventional treatment at 1 week and 4 weeks postoperatively ($P < 0.05$). Prior studies found that a high CD8+ expression level suppresses the body's immune response, while a lower CD4+/CD8+ ratio indicates aggravation of the disease and poor prognosis [26]. NK cells are the most representative immune cells in the body's antitumor defense function with a broad-spectrum tumor cell killing function [27]. The results of the present study indicate that monotherapy with apatinib mesylate inhibits cellular immune function and better protects immune function, which is consistent with the results of previous studies.

Apatinib mesylate can control tumor growth by blocking the blood supply of patients' tumors with promising

therapeutic effects [21]. However, complications such as bleeding, perforation, rupture, and high blood pressure may occur during the administration of apatinib mesylate. To this end, traditional Chinese medicine was used herein as an adjuvant treatment [28]. Traditional Chinese medicine treatment is performed as per the characteristics of etiology and pathogenesis and the complexity of the disease, and syndrome differentiation and treatment were conducted [29]. The determinants of the disease are internal causes, and exogenous pathogens are the conditions for the onset. In TCM, breast cancer develops due to dysfunction of viscera, abnormal Qi and blood flow or congenital insufficiency, and depletion of viscera [30]. Thus, it is important to maintain the righteous qi and enhance the Qi of the spleen and stomach [31]. In addition to TCM decoctions with anti-tumour effects, external TCM treatments such as acupuncture, moxibustion, blood cupping, and external application of Chinese herbs are also available [32].

The limitations of this study are the unknown mechanism of TCM treatment and the absence of long-term follow-up, which will be conducted in future studies to provide more reliable data for breast cancer treatment.

5. Conclusion

Apatinib mesylate monotherapy after radical mastectomy is associated with high DCR, a lower incidence of adverse events in patients, and improved immune recovery. Clinical trials are, however, required prior to clinical promotion.

Data Availability

All data generated or analyzed during this study are included in this published article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] X. Yang, H. Wang, and B. Jiao, "Mammary gland stem cells and their application in breast cancer," *Oncotarget*, vol. 8, no. 6, pp. 10675–10691, 2017.

[2] D. L. Monticciolo, M. S. Newell, L. Moy, B. Niell, B. Monsees, and E. A. Sickles, "Breast cancer screening in women at higher-than-average risk: recommendations from the ACR," *Journal of American College Radiology*, vol. 15, pp. 408–414, 2018.

[3] S. R. Oakes, D. Gallego-Ortega, and C. J. Ormandy, "The mammary cellular hierarchy and breast cancer," *Cellular Molecular Life Science*, vol. 71, no. 22, pp. 4301–24, 2014.

[4] H. Ellis, "The story of mastectomy," *Journal of Perioperative Practice*, vol. 29, no. 12, pp. 413–415, 2019.

[5] M. Plesca, C. Bordea, B. El Houcheimi, E. Ichim, and A. Blidaru, "Evolution of radical mastectomy for breast cancer," *Jounal of Medicine and Life*, vol. 9, 2016.

[6] M. D. Freeman, J. M. Gopman, and C. A. Salzberg, "The evolution of mastectomy surgical technique: from mutilation to medicine," *Gland Surgery*, vol. 7, 2018.

[7] S. Zhao, S. Ren, T. Jiang et al., "Low-dose apatinib optimizes tumor microenvironment and potentiates antitumor effect of PD-1/PD-L1 blockade in lung cancer," *Cancer Immunology Research*, vol. 7, no. 4, pp. 630–643, 2019.

[8] C. Xie, X. Zhou, C. Liang et al., "Apatinib triggers autophagic and apoptotic cell death via VEGFR2/STAT3/PD-L1 and ROS/Nrf2/p62 signaling in lung cancer," *Journal of Experimental and Clinical Cancer Research*, vol. 40, no. 1, p. 266, 2021.

[9] Q. Zheng, Y. Ma, F. Shen et al., "Case of bullous pemphigoid induced by apatinib mesylate," *British Journal of Clinical Pharmacology*, vol. 87, no. 4, pp. 2158-2159, 2021.

[10] J. Sun and H. Situ, "Advances in adjuvant therapy of traditional Chinese medicine after breast cancer surgery," *Chinese Medicine Information*, vol. 27, no. 6, pp. 97–99, 2010.

[11] N. Lin, H. Zhu, H. Situ, and J. Lin, "An example of commonly used drug pairs in professor lin yi's "treatment of breast cancer from liuyu"," *China Medical Herald*, vol. 17, no. 31, 2020.

[12] K. Jia, "Treatment of cancer syndrome in traditional Chinese medicine," *Shaanxi Traditional Chinese Medicine*, vol. 8, 1989.

[13] Y. Cui, J. Mi, Y. Feng et al., "Efficacy and mechanism of Huangqi Sijunzi Decoction in the treatment of breast cancer-related fatigue: based on 94 clinical randomized controlled trials and network pharmacology," *Journal of Southern Medical University*, vol. 42, no. 5, p. 9, 2022.

[14] S. Yadav and F. J. Couch, "Germline genetic testing for breast cancer risk: the past, present, and future," *American Society of Clinical Oncology Educational Book*, vol. 39, pp. 61–74, 2019.

[15] Y. Liu and H. Deng, "Research progress on unconventional response of solid tumor immunotherapy and its efficacy evaluation criteria," *China Journal of Oncology Biotherapy*, vol. 27, no. 6, pp. 698–704, 2020.

[16] C. C. Wang, "Metabolic stress adaptations underlie mammary gland morphogenesis and breast cancer progression," *Cells*, vol. 10, no. 10, p. 2641, 2021.

[17] W. Chen, W. Wei, L. Yu et al., "Mammary development and breast cancer: a notch perspective," *Journal of Mammary Gland Biology and Neoplasia*, vol. 26, no. 3, pp. 309–320, 2021.

[18] V. Jossa, F. Olivier, E. Lifrange et al., "From modified radical mastectomy to infra-radical mastectomy: a phase I study for surgical de-escalation focusing on pathological analyses," *Gland Surgery*, vol. 10, no. 6, pp. 1931–1940, 2021.

[19] S. Wu, L. Zhang, H. Li, J. Xu, C. Jiang, and T. Sun, "Combined use of apatinib mesylate and vinorelbine versus vinorelbine alone in recurrent or metastatic triple-negative breast cancer: study protocol for a randomized controlled clinical trial," *Trials*, vol. 21, no. 1, p. 420, 2020.

[20] Z. Liu, J. Shan, Q. Yu et al., "Real-world data on apatinib efficacy—results of a retrospective study in metastatic breast cancer patients pretreated with multiline treatment," *Frontiers in Oncology*, vol. 11, Article ID 643654, 2021.

[21] H. M. Lü, M. W. Zhang, L. M. Niu, H. A. Zeng, and M. Yan, "Clinical observation of apatinib mesylate for the treatment of multi-drug resistant advanced breast cancer," *Zhonghua Yixue Zazhi*, vol. 98, no. 16, pp. 1246–1249, 2018.

[22] Y. Lin, Z. Wu, J. Zhang et al., "Apatinib for metastatic breast cancer in non-clinical trial setting: satisfying efficacy regardless of previous anti-angiogenic treatment," *Tumour Biol*, vol. 39, no. 6, Article ID 101042831771103, 2017.

[23] L. Danni, Z. Lingyun, W. Jian et al., "Significant response to apatinib monotherapy in heavily pretreated advanced HER2-positive breast cancer: a case report and literature review," *Cancer Biology and Therapy*, vol. 21, no. 7, pp. 590–596, 2020.

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Retraction

Retracted: Efficacy of Laparoscopic Radical Resection Combined with Neoadjuvant Chemotherapy and Its Impact on Long-Term Prognosis of Patients with Colorectal Cancer

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Huang, X. Xu, J. Shao, W. Hong, and W. Yu, "Efficacy of Laparoscopic Radical Resection Combined with Neoadjuvant Chemotherapy and Its Impact on Long-Term Prognosis of Patients with Colorectal Cancer," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 4774531, 7 pages, 2022.

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Research Article

Efficacy of Laparoscopic Radical Resection Combined with Neoadjuvant Chemotherapy and Its Impact on Long-Term Prognosis of Patients with Colorectal Cancer

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Objective. The aim of the study is to examine the efficacy of laparoscopic radical resection of colorectal cancer combined with neoadjuvant chemotherapy and its impact on the overall prognosis of patients with colorectal cancer (CC). *Methods*. A total of 80 CC patients hospitalized and treated at our hospital between November 2019 and June 2021 were selected at random as research subjects and divided equally into two groups: the surgical group ($n = 40$) and the combination group ($n = 40$). Patients in the surgical group were treated with laparoscopic radical resection, while patients in the combination group received laparoscopic radical resection combined with neoadjuvant chemotherapy. The two groups were compared in terms of surgery-related indicators, tumor markers (serum carcinoembryonic antigen (CEA), glycoprotein 199 (CA199), vascular endothelial growth factor (VEGF), and matrix metalloproteinase 9 (MMP9)), postoperative complications, and 1–3 years postoperative survival rate and recurrence rate. *Results*. The surgical duration of the combination group was significantly shorter than the surgical group ($P < 0.05$). No significant differences were found in intraoperative blood loss, time to get out of bed, exhaust time, or hospital stay between the two groups ($P < 0.05$). In the combination group, serum tumor markers (carcinoembryonic antigen (CEA), carbohydrate antigen 199 (CA199), vascular endothelial growth factor (VEGF), and matrix metalloproteinase 9 (MMP9)) were markedly lower than those in the surgical group ($P < 0.05$). The combination group exhibited fewer postoperative complications than those in the operation group ($P < 0.05$). In the combination group, the 1–3 years postoperative survival rate was higher, while the 1–3 years postoperative recurrence rate was considerably lower than that in the surgical group ($P < 0.05$). *Conclusion*. CC patients benefit well from laparoscopic radical resection coupled with neoadjuvant chemotherapy. The approach is efficient in lowering blood tumor markers in patients and lowering the risk of surgery-related complications. It has the potential to enhance patients' long-term prognoses, allowing them to live longer and lower their chance of recurrence.

1. Introduction

Colorectal cancer (CC) is a common malignant tumor disease of the gastrointestinal tract, which mostly occurs in middle-aged females [1]. Incidence of the disease has been trending towards younger ages [2]. CC does not always exhibit obvious symptoms (involving hematochezia, diarrhea, constipation, and localized abdominal pain) in its early stage, while the disease progresses to advanced stages with systemic symptoms such as anaemia and weight loss [3]. CC is characterized by a high mortality rate. According to clinically related statistical studies, CC is second only to gastric cancer and esophageal cancer among digestive system malignant tumors in terms of the incidence and mortality [4]. Currently, the surgery is the mainstay of clinical treatment for CC. Besides, radiotherapy, chemotherapy, and targeted therapy are on the list of major interventions, among which chemotherapy offers definite efficacy on tumors, yet with more adverse reactions, including nausea, vomiting, diarrhoea, oral mucositis, and neurotoxicity, which limit its clinical application and reduce the quality of life of CC patients [5]. Therefore, it is a medical challenge to find safe and effective drugs to alleviate the adverse effects of chemotherapy, improve the immunity of

patients, and avoid recurrence and metastasis rates after surgery [6]. Chinese medicine is highly effective against tumors which can effectively prolong the survival of patients, improve their quality of life, and reduce the adverse effects of chemotherapy [7]. According to traditional Chinese medicine, the main pathogenesis of colorectal cancer is phlegm and blood stasis, qi stagnation, qi and blood weakness, spleen and stomach weakness, spleen dysfunction, endogenous phlegm, blocked blood circulation, vein stasis, qi stagnation, and blood stasis. When phlegm and blood compete with each other and coagulate in the intestinal tract, cancer will occur.

In recent years, the clinical curative rate among colorectal cancer patients has considerably improved on account of the development and advancement of medical technology and medical equipment in China. Despite this, Ma Xin have demonstrated that, while surgical therapy has a considerable clinical impact on colorectal cancer patients, the long-term prognosis for the majority of patients remains dismal [8]. CC patients are commonly treated with perioperative adjuvant therapy in the form of neoadjuvant chemotherapy, which can effectively reduce the tumor staging and progression grading of patients, which can further improve the curative rate and the long-term prognosis of patients [9]. The objective of this study was to investigate the efficacy of laparoscopic radical resection of colorectal cancer combined with neoadjuvant chemotherapy and its influence on long-term prognosis in 80 CC patients treated in our hospital. There is a reference to a clinical research study.

2. Materials and Methods

2.1. General Data. 80 CC patients hospitalized and treated at our facility between November 2019 and June 2021 were chosen as research subjects randomly, and they were allocated into the surgical and combination group, with 40 cases in each group. The randomization was carried out using an online web-based randomization tool (freely available at http://www.randomizer.org/). For concealment of allocation, the randomization procedure and assignment were managed by an independent research assistant who was not involved in screening or evaluation of the participants. A total of 27 males and 13 females participated in the surgical group, ranging in age from 39 to 72, with an average age of (54.77 ± 8.96) years.

2.1.1. Tumor Type. 16 cases of colon cancer and 24 cases of rectal cancer were detected.

2.1.2. Clinical Stage. 11 cases of stage II, 21 cases of stage III, and 8 cases of stage IV were detected.

2.1.3. Pathological Type. 9 cases with high differentiation, 22 cases with moderate differentiation, and 9 cases with low differentiation were detected. In the combination group, there were 28 males and 12 females, aged 40–4 years, with an average age of (54.92 ± 8.89) years.

2.1.4. Tumor Type. 15 cases of colon cancer and 25 cases of rectal cancer were detected.

2.1.5. Clinical Stage. 13 cases of stage II, 19 cases of stage III, and 8 cases of stage IV were detected.

2.1.6. Pathological Type. 8 cases of high differentiation, 23 cases of moderate differentiation, and 9 cases of poor differentiation were detected.

Informed consent was obtained from patients and signed prior to enrolment in the study. The study protocol was approved by the hospital ethics committee. Ethics number: SHI-EW20190902. All processes were in accordance with the Declaration of Helsinki ethical guidelines for clinical research.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria. The inclusion criteria were as follows:

(i) Those who were diagnosed with CC based on clinically relevant examination results

(ii) Those who did not have any contraindications to surgery

(iii) Those who and whose families were informed and volunteered to participate in this study

2.2.2. Exclusion Criteria. The exclusion criteria were as follows:

(i) Those with psychiatric disorders

(ii) Those who are unable to undergo surgery or are allergic to any of the drugs used in this study

(iii) Those with poor compliance and who cannot cooperate effectively with the research team

2.3. Methods. Patients in both the groups were given conventional treatment interventions on admission, which included interventions for the underlying disease and nutritional support for the patient's body.

(i) Patients in the surgical group underwent laparoscopic radical resection of colorectal cancer: the patients received general anesthesia with conventional tracheal intubation and CO_2 pneumoperitoneum was established. An abdominal puncture of 10 millimeters, two punctures of 5 millimeters each in the left and right upper abdomen, and a laparoscope, which was used to view the intra-abdominal lesions. Based on the location and size of the patient's lesions, the patient underwent a radical colorectal resection. Dissociation of the colorectum, removal of regional lymph nodes, and stapler anastomosis were performed in the course of the operation. The patient's abdominal cavity was then flushed with irrigation fluid, and a silicone tube was

routinely inserted for drainage. During the operation, the principle of no tumor should be strictly adhered to. Extracted tissue specimens were ligated by the specimen bag and removed from the small incision for pathological examination. The patients received adjuvant chemotherapy one month following surgery, for a total of 10 cycles of chemotherapy [8].

(ii) The patients in the combination group received neoadjuvant chemotherapy based on the treatment given to the observation group: the combination group patients' reference standards and particular operation procedures were consistent with those of the surgery group patients. Before surgery, individuals in the combination group received three rounds of neoadjuvant chemotherapy (FOLFOX4 regimen). The treatment plan specifically included the following measures:

The patient received oxaliplatin injection on the 1st day (Jiangsu Hengrui Medicine Co., Ltd., approved by National Medicines Co., Ltd., H20000337), at a dose of 130 mg/m^2 according to the body surface area, and for three to five hours; infusion of leucovorin calcium for 1 and 2 days (Chongqing Yaoyou Pharmaceutical Co., Ltd., Chinese medicine Zhunzi H2000615), the dosage is 200 mg/m^2 based on the area of the body, continuous infusion for over 3 hours; intravenous infusion on the 1st and 2nd day 5-fluorouracil injection (Shanghai Xudong Haipu Pharmaceutical Co., Ltd., H31020593), the dose is 500 mg/m^2 of body surface area, and it is administered intravenously through an infusion pump at a rate of 5 mL/h for 24 hours; adverse reactions that may occur during chemotherapy need to be closely monitored [10]. After three cycles of chemotherapy, a laparoscopic radical resection of colorectal cancer was performed.

Both groups were treated with the Chinese herbal medicine *Angelica sinensis* blood tonic soup in this basis. The recipe is as follows: 12 g of *Angelica sinensis* and 60 g of *Astragalus membranaceus*. 200 ml of the decoction was boiled and divided into 2 doses in the morning and evening after meals. 1 dose was taken daily. Patients start taking it 5 d before surgery and take it until the 7th postoperative day.

2.4. Observation Indicators. The observation indicators were as follows:

(1) Surgery-related indicators: The surgery-related indicators in this study were listed as follows: operation time, intraoperative blood loss, time to get out of bed, exhaustion, and hospital stay. These surgical indicators were recorded by our hospital's relevant medical staff.

(2) Serum tumor markers: 5 ml of venous blood was drawn from the two groups of patients before and after surgery, and the supernatant was collected following centrifugation. ELISA was used to detect CEA and carbohydrates. The levels of CA199, VEGF, and MMP9 were determined strictly according to the instructions provided with the kit.

(3) Postoperative complications: Postoperative complications may include infection of the incision, anastomotic bleeding, intestinal obstruction, and anastomotic leakage.

(4) The 1–3-year postoperative survival rate and the recurrence rate: The relevant medical staff after the operation will conduct a three-year follow-up visit to the patients, a telephone follow-up every six months, and a door-to-door follow-up once every year. As part of the door-to-door follow-up, the relevant medical staff of our hospital recorded the 1–3-year postoperative survival rate and recurrence rate of patients.

2.5. Statistical Methods. SPSS 22.0 software was used for the data analysis. The measurement data were expressed as ($\overline{x} \pm s$), and independent t-test samples were conducted and the enumeration data were expressed as the number of cases (%). The χ^2 test was performed. $P < 0.05$ indicates a statistical significance.

3. Results

3.1. General Data. As for general data, there was no substantial difference between the two groups of patients ($P < 0.05$). See Table 1.

3.2. Comparison of Surgical Indicators. There were no significant differences in intraoperative blood loss, time spent getting out of bed, exhaust time, or hospital stay between the combination and surgical group ($P < 0.05$). See Table 2.

3.3. Evaluation of Serum Tumor Markers. Serum tumor markers CEA, CA199, VEGF, and matrix MMP9 were significantly decreased in the combination group after treatment compared to the surgical group before treatment (Table 3, $P < 0.05$).

3.4. Comparison of Postoperative Complications. Postoperative complications were considerably fewer in the combination group than those in the surgical group. ($P < 0.05$). See Table 4.

3.5. Comparison of 1–3-Year Postoperative Survival Rate and Recurrence Rate. The 1–3-year postoperative survival rate was significantly higher in the combined group than in the surgical group ($P < 0.05$); the 1–3-year postoperative recurrence rate was significantly lower in the combined group than in the surgical group ($P < 0.05$). See Table 5.

4. Discussion

Colorectal cancer is a common malignant tumor disease of the gastrointestinal tract with a high mortality, recurrence and metastasis rate; therefore, its early detection and

Table 1: Comparison of general data between the groups [$\overline{x} \pm s, n$ (%)].

	Surgical group ($n = 40$)	Combination group ($n = 40$)	t/x^2	P
Gender			0.058	0.809
Male	27	28		
Female	13	12		
Age (years)	39–72	40–74		
Average age (years)	54.77 ± 8.96	54.92 ± 8.89	-0.075	0.94
Tumor type			0.053	0.818
Colon cancer	16	15		
Rectal cancer	24	25		
Clinical stage			0.267	0.606
Stage II	11	13		
Stage III	21	19		
Stage IV	8	8		
Pathological type			0.081	0.776
Highly differentiated	9	8		
Moderately differentiated	22	23		
Poorly differentiated	9	9		

Table 2: Comparison of surgical indicators ($\overline{x} \pm s$).

Item	Surgical group ($n = 40$)	Combination group ($n = 40$)	t	P
Surgical duration (min)	144.62 ± 40.26	125.28 ± 35.85	2.269	0.026
Intraoperative blood loss (mL)	102.29 ± 30.76	104.61 ± 29.54	−0.344	0.732
Time to get out of bed (d)	2.46 ± 0.53	2.57 ± 0.49	−0.964	0.338
Exhaust time (d)	2.77 ± 0.62	2.74 ± 0.70	0.203	0.84
Hospital stay (d)	11.58 ± 3.24	12.19 ± 3.37	−0.825	0.412

Table 3: Evaluation of serum tumor markers ($\overline{x} \pm s$).

Item	Time	Surgical group ($n = 40$)	Combination group ($n = 40$)	t	P
CEA (ng/ml)	Preoperation	28.47 ± 7.36	29.48 ± 8.26	−0.577	0.566
	Postoperation	14.55 ± 4.14	8.87 ± 2.11	7.731	<0.001
CA199 (kU/L)	Preoperation	48.28 ± 14.29	50.45 ± 15.23	−0.657	0.513
	Postoperation	33.41 ± 9.58	19.66 ± 6.32	7.61	<0.001
VEGF (ng/L)	Preoperation	660.27 ± 143.52	657.35 ± 138.87	0.092	0.927
	Postoperation	509.67 ± 95.28	442.89 ± 84.53	3.316	0.001
MMP9 (ng/L)	Preoperation	568.74 ± 164.62	580.74 ± 156.11	−0.335	0.739
	Postoperation	411.53 ± 85.39	348.96 ± 78.44	3.413	0.001

Table 4: Comparison of postoperative complications [n (%)].

t	Surgical group ($n = 40$)	Combination group ($n = 40$)	x^2	P
Wound infection	4	1		
Anastomic bleeding	2	1		
Intestinal obstruction	2	0		
Anastomic leakage	2	1		
Overall incidence (%)	10 (25%)	3 (8%)	4.501	0.034

Table 5: Comparison of 1–3-year postoperative survival and recurrence rate [n (%)].

	Surgical group ($n = 40$)	Combination group ($n = 40$)	x^2	P
Survival rate (%)				
1 year	32 (80%)	39 (98%)	16.547	<0.001
2 years	27 (68%)	34 (85%)	8.038	0.005
3 years	21 (53%)	30 (75%)	10.503	0.001
Recurrence rate (%)				
1 year	2 (5%)	0 (0%)	5.128	0.024
2 years	5 (13%)	1 (3%)	6.793	0.009
3 years	9 (23%)	3 (8%)	8.589	0.003

treatment is crucial [11]. According to epidemiological studies, colorectal cancer is the fourth most common malignancy among males and the third most common among females. In recent years, the incidence and death rate of colorectal cancer has been increasing in line with the work pressure and irregular diet of people. Surgical intervention is the favoured treatment for this disease, with laparoscopic radical colorectal cancer being the predominant option, offering effective inhibition of tumor progression and prolonged survival of patients [12]. However, surgery and anesthesia are stressors that can induce disruption of the intestinal barrier in patients, and intestinal flora is closely associated with the development of colorectal cancer [13]. According to scholars such as Li Jinjin, surgery alone cannot entirely eradicate cancer cells in the patient's body, resulting in a relatively high recurrence rate of the disease following surgery. [14]. Neoadjuvant chemotherapy is a systemic chemotherapy given to patients before laparoscopic surgery [15]. Clinical research has confirmed that preoperative neoadjuvant chemotherapy can reduce the tumor mass in the human body, as well as kill the tumors that cannot be observed with the naked eye. Wang Lan et al. [16] and others have demonstrated that the combination of these two treatments can effectively control the recurrence rate of the patients, which renders a good prognosis of the patients. Zhang Qi et al. [17] and other studies have informed us that neoadjuvant chemotherapy in patients before laparoscopic radical resection of colorectal cancer will result in significant intraoperative blood loss, which will adversely affect the field of vision during surgery, and thus, lead to increased rates of abdominal pain and other adverse conditions. Colorectal cancer, belonging to the category of "dirty poison," "accumulation," and "intestinal mushroom" in Chinese medicine, is located in the large intestine and related to the spleen and stomach. Patients with colorectal cancer are physically weak, the spleen and stomach fail to transport and transform, and the conduction function of the large intestine decreases, which leads to the accumulation of cancerous tumors due to internal stasis and toxins. In modern Chinese medicine, colorectal cancer is classified into 4 stages and 7 types of symptoms. In this study, *Angelica sinensis* is used to tonify the blood, invigorate the blood, remove phlegm, and eliminate blood stasis and Huangqi is used to tonify the spleen, benefit the qi, and nourish the blood source. In this recipe, *Astragalus membranaceus* is reused to give full play to its effect of tonifying spleen and lung qi, so as to breed the source of blood. Combined with *Angelica sinensis*, it has the effect of nourishing the blood. Yang-sheng causes yin to grow long, both blood and qi to flourish, and it has the effect of invigorating qi and generating blood.

According to the results of this study, the operation time of the patients in the combination group was significantly less than that of the patients in the operation group; no significant differences were found in intraoperative blood loss, recovery time, and exhaust time. Collectively, the neoadjuvant chemotherapy will not affect intraoperative blood loss and other related indicators between the two groups. However, the operation time for the combination group was shorter than the surgical group, which may be due to the fact that the combination group received chemotherapy before surgery. Chemotherapy can induce tumor shrinkage in patients, thereby reducing the time required for surgery [18]. In recent years, the detection of serum tumor markers in CC patients carries considerable implications for the diagnosis, assessment of therapeutic efficacy, and prognostic outcome of oncological disease in clinic. CEA and CA199 are frequently used as clinical markers for the assessment of oncological disease, and their levels may be utilized to identify the tumor staging as well as the prognosis of the patients [19, 20]. In this study, the postoperative levels of CEA and CA199 were significantly lower in the combined group than in the surgical group, suggesting that preoperative neoadjuvant chemotherapy could be effective in improving the serum levels of CC patients, which in turn improved the prognosis of the patients. VEGF is a prerequisite for tumor growth and differentiation, and elevated levels of the protein will also contribute to angiogenesis in patients. MMP9 is known to breakdown extracellular matrix, allowing it to disrupt the basement membrane and matrix of nearby cells immediately close to the patient's body lesion, which increases tumor cell infiltration and exerts an undesirable influence on tumor progression and metastasis. [21]. MMP9 can also promote the expression of VEGF in the body, which further promotes the growth and spread of the tumor in the patient's body [22, 23]. According to the results of this study, the postoperative levels of VEGF and MMP9 in the combination group were significantly lower than those in the surgical group, indicating that neoadjuvant chemotherapy interventions could significantly inhibit the expression of VEGF, MMP9, and other cytokines, which could increase tumor growth in patients with reduced ability, resulting in further improvements in patients' outcome. The long-term prognosis of patients following laparoscopic radical resection of colorectal cancer is not ideal because the operation cannot eradicate all cancer-related factors in the body. The results of this study showed that the incidence of postoperative complications was much lower in the combination group than in the surgical group. Furthermore, the 1–3-year postoperative survival rate was considerably higher in the combination group than the surgical group. The 1–3-year postoperative recurrence rate in the combination group was much lower than in the surgical group, suggesting that preoperative neoadjuvant chemotherapy treatment can effectively minimize the frequency of surgical problems, increase long-term survival, and prevent cancer recurrence. A possible explanation may lie in the fact that neoadjuvant chemotherapy can help patients reduce the number of primary lesions, which in turn promotes the de-escalation and downstaging of colorectal cancer, thus improving the complete response rate of patients to treatment. Positive for this, patients are at reduced risk of postoperative complications and long-term disease recurrence [24, 25].

However, the following issues stand out: small sample size, short observation period, and no long-term follow-up. It is expected that in future, more investigators could cooperate with patients to conduct clinical studies with larger samples, thus providing more clinical evidences for the research and application of such a method.

In conclusion, laparoscopic colorectal cancer radical resection coupled with neoadjuvant chemotherapy has a considerable effect on CC patients. The approach is known to lessen the probability of postoperative problems in addition to lowering the level of blood tumor markers in patients. This approach has a beneficial influence on patients' long-term prognosis, enhancing long-term survival rates, and lowering the likelihood of illness recurrence.

Data Availability

All data generated or analysed during this study are included in this published article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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References

[1] H. Ogasawara, H. Morohashi, Y. Sakamoto et al., "Short-term results of robot-assisted surgery in patients undergoing neoadjuvant chemotherapy for rectal cancer," *Gan To Kagaku Ryoho*, vol. 48, no. 3, pp. 407–409, 2021.

[2] K. Yamada, T. Ioka, N. Suzuki et al., "A resected case of advanced lower rectal cancer with neoadjuvant chemotherapy by FOLFOXIRI plus cetuximab," *Gan To Kagaku Ryoho*, vol. 48, no. 13, pp. 2067–2069, 2021.

[3] G. D'Ambrosio, A. M. Paganini, A. Balla et al., "Quality of life in non-early rectal cancer treated by neoadjuvant radiochemotherapy and endoluminal loco-regional resection (ELRR) by transanal endoscopic microsurgery (TEM) versus laparoscopic total mesorectal excision," *Surgical Endoscopy*, vol. 30, no. 2, pp. 504–511, 2016.

[4] J. W. Niu, W. Ning, Z. Z. Liu, D. P. Pei, F. Q. Meng, and L. Zhou, "Prognosis comparisons of laparoscopy versus open surgery for rectal cancer patients after preoperative chemoradiotherapy: a meta-analysis," *Oncology Research and Treatment*, vol. 44, no. 5, pp. 261–268, 2021.

[5] C. Huang, W. Xiong, and S. Wu, "A randomized controlled study of modified Fuzheng Yiliu decoction combined with XELOX regimen for adjuvant chemotherapy in the treatment of colon cancer," *China Journal of Integrative Medicine*, pp. 1–7, 2022.

[6] D. Liu, "Effect of Tongma Decoction combined with acupoint injection on peripheral neurotoxicity associated with oxaliplatin chemotherapy for colorectal cancer and its impact on patients' quality of life," *Clinical Medicine Research and Practice*, vol. 7, no. 18, pp. 128–130, 2022.

[7] M. Tang, Y. Yang, and Z. Song, "Study on the targets and pathways of Sijunzi decoction in the treatment of colorectal cancer based on network pharmacology," *International Journal of Translation & Community Medicine*, vol. 44, no. 02, pp. 206–211, 2022.

[8] T. Konishi, E. Shinozaki, K. Murofushi et al., "Phase II trial of neoadjuvant chemotherapy, chemoradiotherapy, and laparoscopic surgery with selective lateral node dissection for poor-risk low rectal cancer," *Annals of Surgical Oncology*, vol. 26, no. 8, pp. 2507–2513, 2019.

[9] Y. Ozato, M. Tei, T. Sueda et al., "pCR achievement in two cases treated with XELOXIRI as neoadjuvant chemotherapy for locally advanced rectal cancer," *Gan To Kagaku Ryoho*, vol. 47, no. 3, pp. 484–486, 2020.

[10] F. Landi, E. Espin, V. Rodrigues et al., "Pathologic response grade after long-course neoadjuvant chemoradiation does not influence morbidity in locally advanced mid-low rectal cancer resected by laparoscopy," *International Journal of Colorectal Disease*, vol. 32, no. 2, pp. 255–264, 2017.

[11] T. Hata, H. Takahashi, D. Sakai et al., "Neoadjuvant CapeOx therapy followed by sphincter-preserving surgery for lower rectal cancer," *Surgery Today*, vol. 47, no. 11, pp. 1372–1377, 2017.

[12] L. Zhang and N. Wang, "Analysis of the application effect of Guben Xiaozheng decoction in patients with colorectal cancer after postoperative chemotherapy," *China Journal of Anorectal Diseases*, vol. 42, no. 02, pp. 14–16, 2022.

[13] M. J. van Harten, E. B. Greenwood, S. Bedrikovetski et al., "Minimally invasive surgery in elderly patients with rectal cancer: an analysis of the bi-national colorectal cancer audit (BCCA)," *European Journal of Surgical Oncology*, vol. 46, no. 9, pp. 1649–1655, 2020.

[14] R. Yang, W. Qu, Z. He, J. Chen, Z. Wang, and Y. Huang, "Laparoscopic surgery after neoadjuvant therapy in elderly patients with rectal cancer," *Journal of Buon*, vol. 22, no. 4, pp. 869–874, 2017.

[15] S. Wei, J. Xi, S. Cao et al., "Laparoscopic radical resection combined with neoadjuvant chemotherapy in treatment of colorectal cancer: clinical efficacy and postoperative complications," *American Journal of Translational Research*, vol. 13, no. 12, pp. 13974–13980, 2021.

[16] A. Taibi, R. Lo Dico, R. Kaci, A. L. Naneix, M. Mathonnet, and M. Pocard, "Impact of preoperative chemotherapy on the histological response of patients with peritoneal metastases from colorectal cancer according to peritoneal regression grading score (PRGS) and TRG," *Surgical Oncology*, vol. 33, pp. 158–163, 2020.

[17] S. Zhang, D. Yan, Q. Sun et al., "FLOT neoadjuvant chemotherapy followed by laparoscopic D2 gastrectomy in the treatment of locally resectable advanced gastric cancer," *Canadian Journal of Gastroenterology and Hepatology*, vol. 2020, pp. 1–8, 2020.

[18] Y. Aisu, S. Kato, Y. Kadokawa et al., "Feasibility of extended dissection of lateral pelvic lymph nodes during laparoscopic total mesorectal excision in patients with locally advanced lower rectal cancer: a single-center pilot study after neoadjuvant chemotherapy," *Medical Science Monitor*, vol. 24, pp. 3966–3977, 2018.

[19] L. Yang, W. Ma, M. Wang, R. Zhang, T. Bi, and S. Zhou, "Efficacy of intestinal obstruction stent combined with laparoscopic surgery and neoadjuvant chemotherapy in patients with obstructive colorectal cancer," *Oncology Letters*, vol. 18, no. 2, pp. 1931–1937, 2019.

[20] J. G. Han, Z. J. Wang, W. G. Zeng et al., "Efficacy and safety of self-expanding metallic stent placement followed by neoadjuvant chemotherapy and scheduled surgery for treatment of obstructing left-sided colonic cancer," *BMC Cancer*, vol. 20, no. 1, p. 57, 2020.

[21] C. L. Stewart, S. Warner, K. Ito et al., "Cytoreduction for colorectal metastases: liver, lung, peritoneum, lymph nodes, bone, brain. when does it palliate, prolong survival, and

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Retraction

Retracted: Clinical Efficacy and Safety of Ibuprofen plus Traction, Reposition, and Hip Spica Cast in the Treatment of Developmental Dysplasia of the Hip

Evidence-Based Complementary and Alternative Medicine

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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] D. Feng, Z. Liu, H. Chen, and H. Wang, "Clinical Efficacy and Safety of Ibuprofen plus Traction, Reposition, and Hip Spica Cast in the Treatment of Developmental Dysplasia of the Hip," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 1213133, 6 pages, 2022.

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Research Article

Clinical Efficacy and Safety of Ibuprofen plus Traction, Reposition, and Hip Spica Cast in the Treatment of Developmental Dysplasia of the Hip

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Objective. To assess the clinical efficacy and safety of ibuprofen plus traction, reposition, and hip spica cast in the treatment of developmental dysplasia of the hip (DDH). *Methods*. Between January 2019 and July 2020, 60 children with DDH treaded in department of orthopedics of our institution were assessed for eligibility and recruited. They were assigned at a ratio of 1 : 1 to receive either traction + reposition + hip spica cast plus analgesia pump (observation group) or traction + reposition + hip spica cast plus analgesia pump and oral ibuprofen (control group). The outcome measures included clinical efficacy, pain scores, unexpected pain calls, the dosage of analgesia pump, and adverse events. *Results*. The two groups had similar clinical efficacy ($P > 0.05$). The patients given oral ibuprofen were associated with significantly lower pain scores at 24 h and 72 h postoperatively versus those without oral ibuprofen ($P < 0.05$). Analgesics with oral ibuprofen resulted in fewer unexpected pain calls versus analgesics without oral ibuprofen within 72 h postoperatively ($P < 0.05$). The application of oral ibuprofen in the analgesia pump showed great improvement in lowering the dosage of analgesia pump versus the absence of ibuprofen ($P < 0.05$). The incidence of adverse events was similar between the two groups of patients ($P > 0.05$). *Conclusion*. Traction + reposition + hip spica cast plus analgesia pump and oral ibuprofen effectively mitigated postoperative pain in children with DDH and reduces analgesic drug dosage with a high safety profile.

1. Introduction

Developmental dysplasia of the hip (DDH) is a serious congenital disorder of the skeletal system that results from developmental malformation of the hip joint due to abnormality of the femoral head to the acetabulum within the joint capsule and is associated with severe pain and dysfunction [1, 2]. The DDH refers specifically to abnormalities in the shape, size, orientation, or histology of the femoral head and acetabulum. It is classified into hip dysplasia, hip subluxation, and hip dislocation according to the severity of the lesion. In China, the DDH has a prevalence of up to 0.08%–0.27%, with a predominance of females. A large body of evidence suggests that better outcomes are associated with a younger age of treatment [3, 4]. Infants and young children are the susceptible population of the disease. At present, conservative abduction braces are the main treatments, of which the Pavlik sling is the most commonly used. Studies have shown that the abduction brace represented by the Pavlik sling has drawbacks, including that the Pavlik sling has a low cure rate for children older than 4 months or Graf IV, which can lead to necrosis of the femoral head, posterior acetabular wall injury, and sciatic nerve and complications such as paralysis or hip dislocation, brachial plexus injury, and skin injury Willey et al. [5].

Traditional Chinese medicine classifies it as "bone arthralgia," "rheumatic arthralgia," and "joint running." "Su Wen·Bi Lun" states "three qi of wind, cold, dampness intermingle, and all the five internal organs would be affected." Traditional Chinese medicine manipulation can directly act on the muscles and bones of the affected part, which can enhance muscle tension and stability, improve joint

movement, local microcirculation, and improve tissue metabolism, exerting good efficacy and safety for conservative treatment of early hip dysplasia [6, 7].

Traction + reposition + hip spica cast is a common clinical treatment for DDH. The osteotomy of the acetabulum and femur frequently required in surgery is frequently associated with intense postoperative pain. Research has demonstrated moderate to severe postoperative pain in approximately 35% of cases and inadequate postoperative analgesia in 70% of cases. The postoperative pain decreases the treatment satisfaction of patients and families and limits postoperative functional recovery, leading to delayed recovery and discharge. The postoperative pain results in a state of stress that suppresses the immune function, and persistent pain inflicts irreversible damage to the physiological functions of the child, which requires timely and effective analgesia [8, 9]. Thus, perioperative analgesic management is of great clinical significance. The clinical difficulties in expression of the severity of pain and the effectiveness of analgesic treatment in children complicate pain assessment and management. The poor progression of analgesic treatment in children is attributed to the high risk of adverse events and toxic reactions to analgesic drugs due to the underdeveloped physiological functions of children [10]. Ibuprofen is a nonsteroidal anti-inflammatory analgesic frequently used for postoperative analgesia in clinical practice. Studies have revealed a similar or improved analgesic effect of ibuprofen combined with or without other analgesics versus other analgesics in adult patients postoperatively. For pediatric and adolescent patients with moderate to severe pain, ibuprofen has also been documented with similar or better analgesic effects [11, 12]. However, postoperative pain relief with ibuprofen for pediatric patients is marginally explored. In accordance, 60 patients with DDH treated in our institution between January 2019 and July 2020 were recruited to assess the clinical efficacy and safety of ibuprofen plus traction + reposition + hip spica cast in the treatment of DDH to provide a clinical reference.

2. Materials and Methods

2.1. Baseline Data. Before enrollment, the investigators obtained the informed consent from the patients. The protocol was approved by the hospital ethics committee (SH-WU20190102). All procedures were in line with guidelines of the Declaration of Helsinki.

Between January 2019 and July 2020, 60 children with DDH treaded in our institution were assessed for eligibility and recruited. They were assigned (1 : 1) to receive either traction + reposition + hip spica cast plus analgesia pump (observation group) or traction + reposition + hip spica cast plus analgesia pump and oral ibuprofen (control group) (Table 1). Randomization was performed using an online web-based randomizer (http://www.randomizer.org/). For the blindness of the study, randomization procedures and assignments were conducted by independent assistants who were not involved in screening or evaluating participants.

2.2. Inclusion and Exclusion Criteria. Inclusion criteria were as follows: children with a clinical diagnosis of developmental dysplasia of the hip, with X-ray manifestations of hip subluxation or complete dislocation, and with traction + reposition + hip spica cast. Exclusion criteria were as follows: children with allergies to opioid analgesics and nonsteroidal drugs, whose parents were not cooperative, and with significant abnormalities in routine examinations and tests on admission.

2.3. Methods. Procedure: all children were subjected to skin traction after admission, with an average traction duration of 2–9 days, and the skin traction was released 1 day before surgery. After general anesthesia, the surgeon moved the affected hip to feel the tension of the adductor muscles and performed a trial hip repositioning. The effectiveness of hip repositioning was evaluated intraoperatively by hip arthrography, using an average dose of 1.35 (0.8–1.5) ml of contrast agent Uvexan (Bayer Healthcare Guangzhou Branch, Guangzhou, China), with a needle entry point 2 cm below the adductor tendon of the hip joint. The effectiveness of hip repositioning was evaluated by using Bowen's standard chart after imaging: the proximal femoral epiphysis was below the Hilgenreiner line (H line), 2/3 of the horizontal radius of the femoral head was within the Perkin line, and the femoral head was located below the outer edge of the glenoid hip after repositioning. In the case of unsuccessful repositioning or poor repositioning suggested by hip arthrography, simple incisional repositioning was performed through a small anterior incision. A 2-3 cm surgical incision was made 1-2 cm below the anterior superior iliac spine in the direction of the dermatome, the subcutaneous tissues were separated to the deep fascia, accessed along the space between the broad fascial tensor and sutures, the rectus femoris muscle was cut at the anterior inferior iliac spine and reflexed to expose the joint capsule, the iliopsoas tendon was cut, and the joint capsule was incised obliquely from superior to inferior to the transverse acetabular ligament. The intraarticular fatty tissue and round ligaments were removed, the hip joint was repositioned by flexion and abduction, and the joint capsule was sutured. The rectus femoris muscle was reconstructed and the incision was closed layer by layer. All procedures were performed by 2 senior surgeons. Postoperatively, all cases were immobilized in a hip spica cast after successful repositioning for 5–14 weeks. The hip spica brace was worn all day for 14 weeks after removal of the hip spica cast and then changed to half-day wear until 1 year [13].

On the basis of the treatment of the two groups, modified Gancao Fuzi decoction was given: cassia twig 20 g, Paofu tablet 10 g (fried first), *Atractylodes* 10 g, and honey-fried licorice root 10 g. It was added or subtracted according to the symptoms; for those with severe pain, red peony 10 g and salvia 10 g were added; for those with yin deficiency and fire, *Dendrobium* 10 g and *Ophiopogon japonicus* 15 g were added; for those with qi deficiency, 10 g of *Astragalus* and 10 g of *Codonopsis* were added. The abovementioned traditional Chinese medicines are uniformly decocted by the

Table 1: Comparison of the baseline data (n (%)).

	Observation group ($n = 30$)	Control group ($n = 30$)	t or x^2	P value
Gender			0.073	0.787
Male	11	10		
Female	19	20		
Mean age (year)	7.61 ± 1.41	7.53 ± 1.42	0.219	0.827
Mean body mass (kg)	20.12 ± 3.55	20.24 ± 3.38	−0.134	0.894
Mean height (cm)	110.54 ± 15.73	109.98 ± 15.59	0.138	0.891
Duration of disease (month)	62.72 ± 19.87	62.50 ± 19.71	0.043	0.966

$^{\#}P < 0.05$.

decoction room of the hospital, one dose per day; it is decocted in 400 ml of water and taken twice in the morning and evening. The course of treatment is 4 weeks.

2.4. Outcome Measures. ① Clinical efficacy: Excellent: the function and shape of the affected part were completely restored with anatomical repositioning or close to anatomical repositioning. Good: the functional repositioning was achieved, and the function and shape were basically restored. Poor: the function repositioning was failed, with obvious deformity in shape and significantly compromised function. Total clinical efficacy = (excellent + good)/total number of cases × 100%. ② Pain score: Children's Hospital of Eastern Ontario Pain Scale (CHEOPS) was used for pain assessment: the total score was 10 points, with 0–3 points for no pain or mild pain, 4–7 points for moderate pain, and 8–10 points for severe pain. Higher scores indicated more intense pain. ③ Unexpected pain calls: the number of unexpected pain calls was recorded for both groups within 72 h after surgery. ④ Analgesia pump dosage: the analgesia pump was removed at 48 h postoperatively in both groups, and the dosage of analgesia pump medication was recorded by our medical staff after removal. ⑤ Adverse events: the adverse events that occurred during treatment were recorded including vomiting, urinary retention, and respiratory depression.

2.5. Statistical Analysis. SPSS 22.0 was used for data analyses, and GraphPad Prism 8 was used for image rendering. The measurement data were expressed as ($\overline{x} \pm s$) and processed using the independent sample t-test. Normally distributed measurement data are represented by mean plus and minus standard deviation ($\overline{x} \pm s$); the mean comparison between the two groups was first performed by the F-test for homogeneity of variance, the independent samples t-test for homogeneity of variance, and the independent samples t-test for heterogeneity of variance; the paired samples t-test was used for comparison within the group before and after treatment. The count data were expressed as the number of cases (rate) and analysed using the chi-square test. Differences were considered statistically significant at $P < 0.05$.

3. Results

3.1. Clinical Efficacy. The two groups had similar clinical efficacy ($P > 0.05$) (Table 2).

Table 2: Comparison of clinical efficacy (n (%)).

	Observation group ($n = 30$)	Control group ($n = 30$)	x^2	P
Excellent	11	14	—	—
Good	19	16	—	—
Poor	0	0	—	—
Efficacy	30 (100%)	30 (100%)	—	—

$^{\#}P < 0.05$.

3.2. Pain Scores. The patients given oral ibuprofen were associated with significantly lower pain scores at 24 h and 72 h postoperatively versus those without oral ibuprofen ($P < 0.05$) (Figure 1).

3.3. Unexpected Pain Calls. Analgesics with oral ibuprofen resulted in fewer unexpected pain calls versus analgesics without oral ibuprofen within 72 h postoperatively ($P < 0.05$) (Figure 2).

3.4. Dosage of Analgesia Pump. The application of oral ibuprofen in the analgesia pump showed great improvement in lowering the dosage of analgesia pump versus the absence of ibuprofen ($P < 0.05$) (Figure 3).

3.5. Incidence of Adverse Events. The incidence of adverse events was similar between the two groups of patients ($P > 0.05$) (Table 3).

4. Discussion

The pathological changes of DDH involve structures such as the acetabulum, femoral head, joint capsule, surrounding muscles, and ligaments, and the specific pathogenesis remains yet unclear. Studies have shown that the traditional swaddling position forces the baby's hip joint to be in a straight position, which makes the acetabulum and femoral head mismatch during the development of the acetabulum and eventually progresses to DDH. Another study shows that some women need to use relaxin to relax the pelvic ligaments during childbirth, but relaxin can enter the fetus through the placental barrier, which may lead to relaxation of the ligaments around the acetabulum and become a potential risk of DDH in infants and young children. Adductor tension contracture is an important pathological change in children with DDH aged 0–6 months, and most

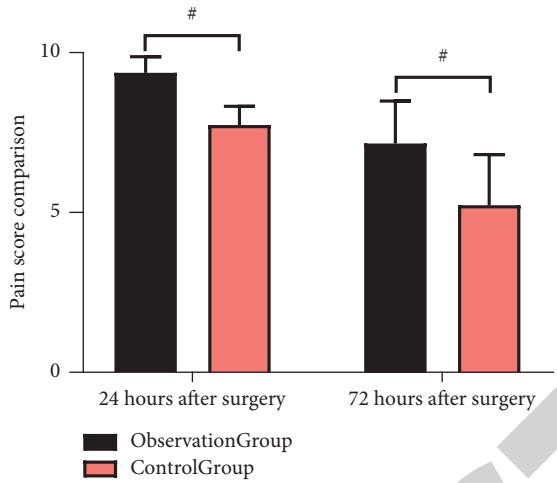

Figure 1: Comparison of pain scores ($\overline{x} \pm s$). The patients given oral ibuprofen were associated with significantly lower pain scores at 24 h and 72 h postoperatively versus those without oral ibuprofen.

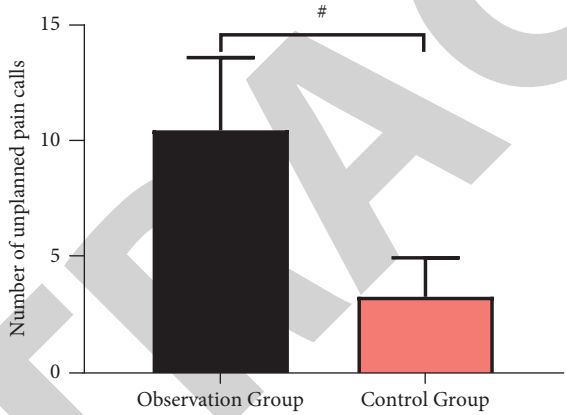

Figure 2: Comparison of unexpected pain calls ($\overline{x} \pm s$). Analgesics with oral ibuprofen resulted in fewer unexpected pain calls versus analgesics without oral ibuprofen within 72 h, postoperatively.

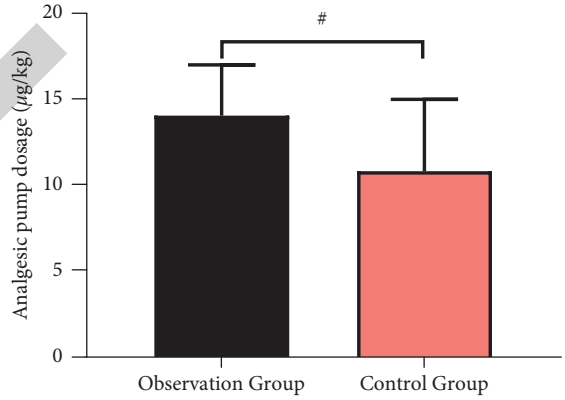

Figure 3: Comparison of dosage of analgesia pump ($\overline{x} \pm s$). The application of oral ibuprofen in the analgesia pump showed great improvement in lowering the dosage of analgesia pump versus the absence of ibuprofen.

hips can be reduced after release of the adductor muscle [14, 15].

The prevalence of developmental dysplasia of the hip varies between different geographic regions and races, and the prevalence in China is about 1–3 per 1,000, with the incidence in girls being about 3–6 times higher than that in boys [16]. Currently, multiple factors such as the child's body mass, breech pregnancy, foot deformity, family history of

Table 3: Comparison of the incidence of adverse events (n (%)).

	Observation group ($n = 30$)	Control group ($n = 30$)	x^2	P
Vomiting	3	2	—	—
Urinary retention	2	2	—	—
Respiratory depression	1	1	—	—
Incidence of adverse events	6 (20%)	5 (17%)	0.111	0.739

$^{\#}P < 0.05$.

hip dysplasia, and skeletal muscle deformity are considered to be strongly associated with the development of hip dysplasia. Children with congenital dysplasia benefit from early diagnosis and reasonable treatment to achieve a favorable prognosis [17, 18], but there are still some cases with delayed diagnosis or poor conservative treatment efficacy that require surgical treatment. Surgical treatment is mainly to restore the concentric relationship between the femoral head and the acetabulum, whilst avoiding femoral head necrosis and reoperation [19, 20]. Traction + reposition + hip spica cast is a common clinical treatment for DDH. Traction is simple, effective, and time-efficient [21], repositioning aids in the hip repair and restoration [22], and hip spica cast contributes to the recovery of the child's organism and shortens the hospital stay with lower costs [23, 24].

The related pathological changes of hip dislocation are mentioned in the literature of traditional Chinese medicine, and DDH is called "hipbone displacement." "The Essentials of the Bone-Setting Heart Method" states "for people with hip bone displacement, the buttocks would move obliquely," which points out the clinical characteristics of hip dislocation. "Prescriptions for Universal Relief" proposed to judge whether hip dislocation occurs by comparing the length of both the lower limbs.

Intraoperative osteotomies of the acetabulum and femur are associated with intense postoperative pain, which inhibits the body's immune function and elicits irreversible damage. Therefore, perioperative analgesic treatment is of great clinical importance. In the choice of the analgesic method, it has been found that single analgesic methods are insufficient for satisfactory results, which are attributable to the inadequacy of pharmacological analgesia by one mechanism of action alone to deal with postoperative pain originating from different signaling pathways transduction. Ibuprofen inhibits cyclooxygenase and reduces the synthesis of prostaglandins and activation of peripheral receptors to exert analgesic and anti-inflammatory effects, but it is prone to platelet inhibition and other adverse reactions. Analgesia pump drugs are opioids that bind to μ receptors in the brain and K receptors in the spinal cord to achieve analgesia, but they may generate adverse events such as respiratory depression, nausea and vomiting, urinary retention, and drug dependence in children, especially in pediatric patients with immature liver enzyme systems, resulting in difficulties in the clinical selection of drug doses [25, 26]. The combination of these two drugs may provide a complementary and synergistic effect, resulting in optimal analgesia for pediatric patients.

Here, the eligible patients given oral ibuprofen were associated with significantly lower pain scores at 24 h and 72 h postoperatively and fewer unexpected pain calls within 72 h, postoperatively versus those without oral ibuprofen, suggesting that the combined ibuprofen analgesia was effective in mitigating the pain of the children and reducing the number of severe pain episodes. Moreover, the application of oral ibuprofen in the analgesia pump showed great improvement in lowering the dosage of the analgesia pump versus the absence of ibuprofen, indicating that ibuprofen can effectively reduce the amount of opioid medication to attenuate the damage to the children. Furthermore, the similar incidence of adverse events between the two groups herein highlighted the safety profile of ibuprofen in postoperative analgesia.

To sum up, traction + reposition + hip spica cast plus analgesia pump and oral ibuprofen effectively mitigated postoperative pain in children with DDH and reduced analgesic drug dosage with a high safety profile.

Data Availability

The data generated or analysed during this study are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

Dachang Feng drafted and revised the manuscript. Dachang Feng, Zhaofa Liu, and Haitao Chen are in charge of data collection. Huanhuan Wang conceived and designed this article and in charge of syntax modification and revise of the manuscript. All the authors have read and agreed to the final version manuscript.

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References

[1] C. A. Barrera, S. A. Cohen, W. N. Sankar, V. M. Ho-Fung, R. W. Sze, and J. C. Nguyen, "Imaging of developmental dysplasia of the hip: ultrasound, radiography and magnetic resonance imaging," *Pediatric Radiology*, vol. 49, no. 12, pp. 1652–1668, 2019.

[2] D. Dibello, L. Odoni, F. Pederiva, and V. Di Carlo, "MRI in postreduction evaluation of developmental dysplasia of the hip: our experience," *Journal of Pediatric Orthopaedics*, vol. 39, no. 9, pp. 449–452, 2019.

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Retraction

Retracted: Analysis of the Influencing Factors of Sentinel Lymph Node Metastasis in Breast Cancer

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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] W. Lyu, Y. Guo, H. Peng, N. Xie, and H. Gao, "Analysis of the Influencing Factors of Sentinel Lymph Node Metastasis in Breast Cancer," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 5775971, 6 pages, 2022.

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Research Article

Analysis of the Influencing Factors of Sentinel Lymph Node Metastasis in Breast Cancer

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Objective. To analyze and discuss the influencing factors of sentinel lymph node metastasis in breast cancer. *Methods*. A total of 469 breast cancer patients admitted in the Department of Pathology of Guangdong Women and Children Hospital from October 2016 to December 2021 were retrospectively analyzed. The general information, immunohistochemical expression, tumor molecular subtype, tumor size, histological grade, pathological type, and tumor location were collected and the relationship with sentinel lymph node metastasis was analyzed. *Results*. For patients with different age, Ki-67 and Human epidermal growth factor receptor-2 (HER-2) immunohistochemical expression level (invasive cancer), molecular subtype (invasive cancer), tumor size, histological grade (invasive cancer) and pathological type. The results of multivariate logistic regression analysis showed that the age was less than or equal to 40 years; the molecular subtype was Luminal B and HER-2 overexpression (invasive cancer); tumor was larger; the histological grade (invasive cancer) was higher; the pathological type was invasive carcinoma, there were independent risk factors for sentinel lymph node metastasis in breast cancer. The sentinel lymph node metastasis rates of invasive lobular carcinoma, invasive micropapillary carcinoma, and metaplastic carcinoma (all met the criteria for squamous cell carcinoma and histological grade III) were higher than 50% in special invasive carcinomas. *Conclusion*. Age, expression level of Ki 67 and HER-2, molecular typing, tumor volume and histological grade are all high-risk factors related to sentinel lymph node metastasis of breast cancer. When one or more of the above factors are involved in an examination, pathologists should be more cautious in making a sentinel lymph node frozen diagnosis. By standardizing the sampling and increasing the number of frozen sections (slicing more frozen tissue layers), the section quality can be improved. This may be conducive to reducing the false negative rate and reducing the pain and risk of secondary surgery.

1. Introduction

Globally, breast cancer is the most common female malignancy, accounting for approximately one quarter of all cancers, and the incidence remains high [1, 2]. Compared with Europe and the United States, the incidence of the disease has increased in China, especially in rural areas [3–6]. However, due to advances in cancer screening and treatment, breast cancer mortality has declined significantly in recent years [7–9]. At present, the treatment of breast cancer mainly includes surgery, radiotherapy and chemotherapy, endocrine therapy, targeted therapy, and immunotherapy. Although the treatment methods are constantly enriched and the survival rate has improved, the associated adverse reactions still compromise the quality of life of patients. A number of studies have shown that the combination of traditional Chinese and Western medicine in the treatment of breast cancer can reduce the adverse reactions of radiotherapy and chemotherapy, enhance the body's immunity, effectively prevent the recurrence and metastasis of breast cancer, significantly improve the quality of life of patients, and prolong the survival time of patients. However, there is currently no unified standard for TCM syndrome types of breast cancer, and its application has not been popularized [10].

Originating from the study of penile cancer, the sentinel lymph node (Sentinel lymph node, SLN) refers to the lymph nodes that first metastasize to the tumor, which can be one or a group of lymph nodes. In sentinel lymph node biopsy (SLNB), the lymph nodes are marked with tracers, and after

excision, a pathological examination is performed [11]. When the pathological result of SLNB is negative, dissection of the axillary lymph nodes may not need to be performed to avoid metastasis. It can reduce trauma and significantly improve the quality of life after surgery [12–14]. When the results are positive, axillary lymph node dissection may be necessary.

The pathological diagnosis of SLNB is performed by intraoperative frozen section examination of the sentinel lymph nodes. Due to the limitations of frozen tablets, even with standardized procedures, misdiagnosis still exists, especially for sentinel lymph node micrometastases [15]. Patients may bear the pain and risk of a second surgery. This study analyzed the influencing factors of sentinel lymph node metastasis in breast cancer patients. In the event that there are one or more high-risk factors, pathologists should be more cautious when making a sentinel lymph node frozen diagnosis to reduce the false-negative rate of pathology.

2. Methods and materials

2.1. Baseline Data. The data of the cases of breast cancer diagnosed by the Department of Pathology of Guangdong Women and Children Hospital from October 2016 to December 2021 were reviewed.

2.2. Inclusion Criteria. All punctured or minimally invasive surgeries were treated with immunohistochemical estrogen receptor (ER), progesterone receptor (PR), Ki-67, and human epidermal growth factor receptor-2 (HER-2). All cases underwent intraoperative sentinel lymph node frozen section examination after confirmation. All cases were primary breast tumors, and none of the patients received neoadjuvant therapy.

2.3. Data Collection Method. The patient's age, immunohistochemical expression, tumor molecular subtype, tumor size, histological grade, pathological type, tumor location, and other clinical and pathological data were queried and collected through the pathological diagnosis system and electronic medical record system. Four hundred and sixty-nine cases of standardized breast cancer were included.

2.4. Statistical Analysis. All data were processed by SPSS 19.0 software. According to the nature of the data and the purpose of the study, chi square analysis and multivariate logistic regression analysis were performed. P values<0.05 were deemed as significant.

3. Results

3.1. Sentinel Lymph Node Metastasis of Breast Cancer. A total of 469 cases of breast cancer were included, including 41 cases (8.74%) of breast carcinoma in situ, no cancer metastasis in sentinel lymph nodes (0.00%); There were 428 cases of breast invasive carcinoma (91.26%) and 139 cases of sentinel lymph node metastasis (32.48%).

3.2. Univariate Analysis of Sentinel Lymph Node Metastasis. The results indicated that there were significant differences in sentinel lymph node metastasis rates among breast cancer patients of different ages, Ki-67 and HER-2 immunohistochemical expression levels (invasive carcinoma), molecular subtypes (invasive carcinoma), tumor size, histological grade (invasive carcinoma) and pathological types ($P < 0.05$) as shown Table 1.

3.3. Multivariate Logistic Regression Analysis of Influencing Factors of Sentinel Lymph Node Metastasis. Using sentinel lymph node metastasis as a dependent variable, age, Ki-67 (IHC), HER-2 (IHC), molecular subtype, tumor size, histological grade, and pathological type as independent variables, multivariate logistic regression analysis was performed. See Table 2 for assignment of independent variables. The results indicated that age ≤40, molecular subtypes of luminal B and HER-2 overexpression (infiltrating carcinoma), the larger the tumor, the higher the histological grade (infiltrating carcinoma), and the pathological type of infiltrating carcinoma were independent risk factors for sentinel lymph node metastasis of breast cancer ($P < 0.05$). See Table 3.

3.4. Sentinel Lymph Node Metastasis of Special Invasive Carcinoma. The sentinel lymph node metastasis rate of invasive lobular carcinoma, invasive micropapillary carcinoma, and metaplastic carcinoma (all conform to squamous cell carcinoma, histological grade III) in special invasive carcinoma was higher than 50%. See Table 4.

4. Discussion

Sentinel lymph node metastasis is related to surgical method choice and prognosis [11, 12]. Intraoperative frozen section examination can determine the status of sentinel lymph nodes, but due to limitations, there is a false negative rate of about 10% [18]. If the associated high-risk factors are noted, better preparation for frozen collection and frozen section may reduce the false-negative rate of pathology.

This study suggested that when the patient was less than or equal to 40 years old, the immunohistochemical expression level of Ki-67 and HER-2 was higher (invasive cancer), the molecular subtype was Luminal B and HER-2 overexpression (invasive cancer), the tumor was larger, histological grade (invasive cancer) was higher, and the pathological type included invasive lobular carcinoma, invasive micropapillary carcinoma, metaplastic carcinoma. We should consider these to be high-risk factors for sentinel lymph node metastasis.

In this study, in the age ≤40 group, the sentinel lymph node metastasis rate was about 40.54%, and in the age>40 groups was about 27.59%. Patients aged less than or equal to 40 were defined as young breast cancer patients [16] and had more adverse prognostic factors compared with middle-aged and elderly patients, including larger lesions, poor differentiation, HER-2 overexpression, triple negative type and vascular invasion are more common, have higher

Table 1: Univariate analysis (n (%)).

Interfering factors	n	No metastasis	With metastasis	$\chi 2$	P
Age					
≤40	74	44 (59.46)	30 (40.54)	5.01	0.03
>40	395	286 (72.41)	109 (27.59)		
Ki-67					
≤30%	196	153 (78.06)	43 (21.94)	24.93	≤0.01
30%~60%	114	76 (66.67)	38 (33.33)		
>60%+	118	60 (50.85)	58 (49.15)		
HER-2					
Negative	196	151 (77.04)	45 (22.96)	19.52	≤0.01
Unsure	172	109 (63.37)	63 (36.63)		
Positive	60	29 (48.33)	31 (51.67)		
Molecular subtype					
Luminal A	161	124 (77.02)	37 (22.98)	21.90	≤0.01
Luminal B	166	95 (57.23)	71 (42.77)		
HER-2expression	48	27 (56.25)	21 (43.75)		
Sanyin type	53	43 (81.13)	10 (18.87)		
Size of tumor					
≤2 cm	234	176 (75.21)	58 (24.79)	7.26	0.03
2~5 cm	219	146 (66.67)	73 (33.33)		
>5 cm	16	8 (50.00)	8 (50.00)		
Histological grade					
I	93	87 (93.55)	6 (6.45)	39.90	≤0.01
II	251	158 (62.95)	93 (37.05)		
III	84	44 (52.38)	40 (47.62)		
Pathological type					
Carcinoma in situ	41	41 (100.00)	0 (0.00)	22.11	≤0.01
Nonspecific	369	238 (64.50)	131 (35.50)		
Specific	59	36 (61.02)	23 (38.98)		
Region					
Outer upper quadrant	201	136 (67.66)	65 (32.34)	6.41	0.17
Outer lower quadrant	77	58 (75.32)	19 (24.68)		
Inner upper quadrant	97	74 (76.29)	23 (23.71)		
Inner lower quadrant	36	27 (75.00)	9 (25.00)		
Posterior papilla	58	35 (60.34)	23 (39.66)		

Note. The pathological molecular subtypes and histological grades of breast cancer are only analyzed for the components of invasive breast cancer. Because no sentinel lymph node metastasis occurred in breast carcinoma in situ, in order to eliminate its interference, factors such as "Ki-67 (IHC)," HER-2 (IHC) "only analyzed cases of invasive breast cancer.

Table 2: Assignment of multivariate logistic regression analysis.

Factors	Evaluation
Age	≤40 = 1; >40 = 2
Ki-67 (IHC)	≤30% = 1; 30~60% = 2; >60%+ = 3
HER-2 (IHC)	Negative = 1; Unsure = 2; Positive = 3
Molecular subtype	Luminal A = 1; luminal B = 2; HER-2+ = 3; sanyin type = 4
Size of tumor	≤2 cm = 1; 2~5 cm = 2; >5 cm = 3
Histological grading	I = 1; II = 2; III = 3
Pathological type	Carcinoma in situ = 1; nonspecific = 2; special = 3

Table 3: Multivariate logistic regression analysis.

Influential factors	B	SE	Wald $\chi 2$	P	OR	95% CI
Age	0.760	0.227	11.256	0.001	2.139	(1.372, 3.336)
Ki-67 (IHC)	0.226	0.133	2.895	0.089	1.254	(0.966, 1.626)
HER-2 (IHC)	−0.052	0.132	0.156	0.693	0.949	(0.734, 1.229)
Molecular subtype	−0.290	0.099	8.624	0.003	0.748	(0.616, 0.908)
Tumor size	−0.554	0.140	15.724	≤0.001	0.575	(0.437, 0.756)
Histological grading	0.279	0.134	4.364	0.037	1.322	(1.017, 1.717)
Pathological type	0.332	0.134	6.117	0.013	1.394	(1.071, 1.814)

Table 4: Sentinel lymph node metastasis of special invasive carcinoma (n (%)).

Special invasive carcinoma	n	No metastasis	Metastasis
Invasive lobular carcinoma	10	3 (30.00)	7 (70.00)
Tubular carcinoma	5	5 (100.00)	0 (0.00)
Cribriform carcinoma	2	2 (100.00)	0 (0.00)
Mucinous carcinoma	20	19 (95.00)	1 (5.00)
Invasive micropapillary carcinoma	15	4 (26.67)	11 (73.33)
Carcinoma with apocrine differentiation	5	3 (60.00)	2 (40.00)
Metaplastic carcinoma	2	0 (0.00)	2 (100.00)

Note: the tumors in the table are sorted according to the catalog of breast tumors.

histological grades, are more prone to lymph node metastases, and have more metastases [17, 18]. Presumably, young breast cancer patients have high levels of endogenous estrogen in the blood. They tend to develop rapidly after developing breast cancer, the disease is mostly in the advanced stage, and it is more likely to have axillary lymph node metastasis, blood or bone metastasis in the early stage [19]. In addition, young breast cancer patients are at reproductive age, their clinical symptoms are not typical, and the physiological hyperplasia and development of the breast make the tumor difficult to discover on their own. Together, the late treatment, the dense breast gland tissue, and the low sensitivity of B-ultrasound and mammography are also the influencing factors.

Ki-67 is a nuclear protein that is expressed in various stages of cell proliferation (G1, S, G2, M), but not in cell quiescence (G0). Therefore, Ki-67 can detect the proliferation activity of normal tissue and tumor tissue. The higher the Ki-67 index, the more aggressive the breast cancer and the worse the prognosis [18, 20]. HER-2 is a tyrosine kinase transmembrane protein involved in the regulation of multiple intracellular signaling pathways and is associated with breast cancer cell proliferation and apoptosis. HER-2 positive with obvious nuclear atypia, poor tumor differentiation, and high number of lymph node metastases, are associated with poor prognosis of patients [18, 21]. Our findings were similar to the above findings.

According to St Gallen [22], breast cancer is divided into four molecular subtypes, including ① luminal A: ER positive, HER-2 negative, Ki67 < 14%, or Ki67 at 14%–19% and PR>20%; ② luminal B: ER positive, HER-2 negative, Ki67 > 20%, or Ki67 at 14%–19% and PR negative or PR<20%, or ER positive, HER-2 positive; ③ HER-2 overexpression: ER negative, PR negative, and HER-2 positive; ④ triple negative: ER negative, PR negative, HER-2 negative. In this study, the molecular subtypes Luminal B and HER-2 overexpressed sentinel lymph node metastasis rates were higher (42.77% and 43.75%, respectively), compared with Luminal A (22.98%) and triple negative (18.87%). Similar to the findings of Wang Kanghan [23], this may be related to the higher expression levels of Ki67 or HER-2 in the molecular subtype Luminal B and HER-2 overexpression. Relevant studies [24, 25]showed that breast cancer tumor size was positively correlated with lymph node metastasis, which may be because the larger the tumor size, the more likely it is to have invasive cancer and the greater the possibility of invading vessels. Some patients received neoadjuvant therapy before surgery, which affected the actual size of the tumor and lymph node status, so these cases were excluded from this study. The results of this study showed that with the enlargement of the tumor, the rate of sentinel lymph node metastasis increased.

Breast cancer was histologically graded by assessing the degree of tubular and glandular differentiation, nuclear pleomorphism, and mitotic counts in invasive carcinomas. With these indicators, the histological grade of breast cancer is significantly correlated with the prognosis of patients [26, 27]. The severity of tumor differentiation, nuclear atypia, mitotic figures, and lymph node metastasis rates varies from grade I to grade III in histological grades. This study showed that the sentinel lymph node metastasis rate of breast cancer histological grade I was 6.45%, that of grade II was 37.05%, and that of grade III was 47.62%.

Invasive lobular carcinoma accounts for approximately 5–15 percent of invasive breast cancers, and studies showed that there were more lymph node metastases than nonspecialized invasive carcinomas [28]. This may be related to the loss of E-cadherin expression in invasive lobular carcinoma. E-cadherin is a cadherin, which can maintain intercellular adhesion and cell polarity. When the tumor tissue lacks or expresses low E-cadherin, it indicates aggressive [29]. Invasive micropapillary carcinoma accounts for approximately 3–8 percent of invasive breast cancers [30] and has a high rate of axillary lymph node metastasis [31]. Under electron microscopy, invasive micropapillary carcinoma cells have abnormally abundant filaments in the cytoplasm, which are highly mobile and invasive. In addition, cancer cells have been observed to contact the vascular endothelium through microvilli, which may be involved in tumor metastasis [32]. Metaplastic carcinomas are a group of tumors characterized by tumor epithelial differentiation to squamous and/or mesenchymal elements. Two cases of metaplastic carcinoma in this study all met the criteria for squamous cell carcinoma and histological grade III. Sentinel lymph node metastasis was observed in both cases.

There are still several limitations in this study. First, this study is a retrospective research analysis, and the retrospective study itself has certain defects; second, the sample size of this study is too small, it lacks representativeness, and the results might lack generalizability, which may bias the conclusion.

5. Conclusion

Age, expression level of Ki 67 and HER-2, molecular typing, tumor volume, and histological grade are all high-risk

factors related to sentinel lymph node metastasis of breast cancer. When one or more of the above factors are involved in an examination, pathologists should be more cautious in making a sentinel lymph node frozen diagnosis. By standardizing the sampling and increasing the number of frozen sections (slicing more frozen tissue layers), the section quality can be improved. This may be conducive to reducing the false negative rate and reducing the pain and risk of secondary surgery.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Acknowledgments

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References

[1] S. Jin, D. Liang, lidaojuan et al., "Study on the global prevalence of female breast cancer," *Chinese Journal of oncology*, vol. 26, no. 9, pp. 683–690, 2017.

[2] F. Bray, J. Ferlay, I. Soerjomataram, R. L. Siegel, L. A. Torre, and A. Jemal, "Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries," *CA: A Cancer Journal for Clinicians*, vol. 68, no. 6, pp. 394–424, 2018.

[3] J. Ferlay, M. Colombet, I. Soerjomataram et al., "Cancer incidence and mortality patterns in Europe: estimates for 40 countries and 25 major cancers in 2018," *European Journal of Cancer*, vol. 103, pp. 356–387, 2018.

[4] R. L. Siegel, K. D. Miller, H. E. Fuchs, and A. Jemal, "Cancer statistics, 2022," *CA: A Cancer Journal for Clinicians*, vol. 72, no. 1, pp. 7–33, 2022.

[5] C. E. Desantis, J. Ma, M. M. Gaudet et al., "Breast cancer statistics, 2019," *CA: A Cancer Journal for Clinicians*, vol. 69, pp. 1–14, 2019.

[6] HemingyanzhubiqiZhongyuan et al., "Analysis on the incidence and death trend of female breast cancer in China from 2005–2013," *Chinese Journal of disease control*, vol. 23, no. 1, pp. 10–14, 2019.

[7] C. E. DeSantis, J. Ma, A. Goding Sauer, L. A. Newman, and A. Jemal, "Breast cancer statistics, 2017, racial disparity in mortality by state," *CA: A Cancer Journal for Clinicians*, vol. 67, no. 6, pp. 439–448, 2017.

[8] G. Carioli, M. Malvezzi, T. Rodriguez, P. Bertuccio, E. Negri, and C. La Vecchia, "Trends and predictions to 2020 in breast cancer mortality in Europe," *The Breast*, vol. 36, pp. 89–95, 2017.

[9] G. Carioli, M. Malvezzi, T. Rodriguez, P. Bertuccio, E. Negri, and C. La Vecchia, "Trends and predictions to 2020 in breast cancer mortality: americas and Australasia," *The Breast*, vol. 37, pp. 163–169, 2018.

[10] M. J. Heins, K. M. de Ligt, J. Verloop et al., "Adverse health effects after breast cancer up to 14 years after diagnosis," *The Breast*, vol. 61, pp. 22–28, 2022.

[11] "Breast surgery group, branch of surgery, Chinese Medical Association Clinical practice guide for sentinel lymph node biopsy in early breast cancer in China (2022)," *Chinese Journal of Practical Surgery*, vol. 42, no. 2, pp. 137–145, 2022.

[12] J. Tang, S. Ding, Y. Wu et al., "The diagnostic value of SLNB in patients with axillary lymph node metastasis of early breast cancer and its effect on reducing postoperative complications and improving patients' quality of life," *Journal of Hunan Normal University (Medical Edition)*, vol. 18, no. 6, pp. 141–144, 2021.

[13] G. Manca, D. Rubello, E. Tardelli et al., "Sentinel lymph node biopsy in breast cancer: indications, contraindications, and controversies[J]," *Clinical Nuclear Medicine*, vol. 41, no. 2, pp. 126–133, 2016.

[14] P. Veronesi and G. Corso, "Standard and controversies in sentinel node in breast cancer patients," *The Breast*, vol. 48, no. 1, pp. S53–S56, 2019.

[15] J. Boniface, J. Frisell, L. Bergkvist, and Y. Andersson, "Breast-conserving surgery followed by whole-breast irradiation offers survival benefits over mastectomy without irradiation," *British Journal of Surgery*, vol. 105, no. 12, pp. 1607–1614, 2018.

[16] S. Paluch-Shimon, O. Pagani, A. H. Partridge et al., "ESO-ESMO 3rd international consensus guidelines for breast cancer in young women (BCY3)," *Breast*, vol. 35, pp. 203–217, 2017.

[17] B. Radecka and M. Litwiniuk, "Breast cancer in young women," *Ginekologia Polska*, vol. 87, no. 9, pp. 659–663, 2016.

[18] C. Cuilifang, H. Chang et al., "Clinicopathological characteristics of invasive ductal carcinoma and its molecular subtypes in young women," *Journal of diagnostic pathology*, vol. 28, no. 7, pp. 562–571, 2021.

[19] D. Germain, "Estrogen carcinogenesis in breast cancer," *Endocrinology and Metabolism Clinics of North America*, vol. 40, no. 3, pp. 473–484, 2011.

[20] F. Petrelli, G. Viale, M. Cabiddu, and S. Barni, "Prognostic value of different cut-off levels of Ki-67 in breast cancer: a systematic review and meta-analysis of 64, 196 patients," *Breast Cancer Research and Treatment*, vol. 153, no. 3, pp. 477–491, 2015.

[21] H. Abdel-Razeq, H. Almasri, F. Abdel Rahman et al., "Clinicopathological characteristics and treatment outcomes of breast cancer among adolescents and young adults in A developing country," *Cancer Management and Research*, vol. 11, pp. 9891–9897, 2019.

[22] A. Goldhirsch, E. P. Winer, A. S. Coates et al., "Panel members personalizing the treatment of women with early breast cancer: highlights of the St gallen international expert consensus on the primary therapy of early breast cancer 2013," *Annals of Oncology*, vol. 24, no. 9, pp. 2206–2223, 2013.

[23] K. Wang and L. Y. Guochenxu, "Qian Jun Study on axillary lymph node metastasis and its correlation with prognosis in patients with different molecular types of breast cancer [j]," *Journal of Gannan Medical College*, vol. 40, no. 2, pp. 169–172, 2020.

[24] J. Ding, L. Jiang, and W. Wu, "Predictive value of clinicopathological characteristics for sentinel lymph node metastasis in early breast cancer," *Medical Science Monitor*, vol. 23, pp. 4102–4108, 2017.

[25] "Guobin Analysis of related factors of axillary lymph node metastasis in patients with breast cancer," *Journal of Bengbu Medical College*, vol. 46, no. 2, pp. 206–213, 2021.

[26] E. A. Rakha, J. S. Reis-Filho, F. Baehner et al., "Breast cancer prognostic classification in the molecular era: the role of

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Evidence-Based Complementary and Alternative Medicine
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Retraction

Retracted: Analysis of the Effect of Fast Recovery Surgery Concept on Perioperative Nursing Care of Patients with Radical Resection of Cervical Cancer and Its Influence on Psychological Status

Evidence-Based Complementary and Alternative Medicine

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References

[1] Y. Lu, L. Xu, X. Lin, X. Qi, L. Xia, and Y. Wang, "Analysis of the Effect of Fast Recovery Surgery Concept on Perioperative Nursing Care of Patients with Radical Resection of Cervical Cancer and Its Influence on Psychological Status," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2023159, 6 pages, 2022.

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Research Article

Analysis of the Effect of Fast Recovery Surgery Concept on Perioperative Nursing Care of Patients with Radical Resection of Cervical Cancer and Its Influence on Psychological Status

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Objective. To explore the applied effect of fast-track surgery concept in the perioperative nursing of patients undergoing radical cervical cancer surgery and its influence on mental state. *Methods*. The clinical data of 110 patients undergoing radical cervical cancer surgery in our hospital from May 2015 to May 2017 were retrospectively analyzed, and they were randomly divided into a research group ($n = 55$) and a reference group ($n = 55$). The reference group received routine clinical nursing, and the research group received fast-track surgical nursing. Then, we compared their nursing effect and influence on the mental state of patients in the two groups. *Results*. The Karnofsky performance status (KPS) scores of patients in the two groups after intervention were significantly lower than those before the intervention ($P < 0.001$), and after intervention, patients in the research group had significantly lower KPS scores as compared to patients in the reference group ($P < 0.001$). There was a significant decrease in the self-rating anxiety scale (SAS) scores and self-rating depression scale (SDS) scores of patients in the two groups after intervention in comparison with before intervention ($P < 0.001$), and patients in the research group after intervention had significantly lower SAS and SDS scores compared to the reference group ($P < 0.001$). Patients in the research group spent short time on expelling gas, eating, and getting out of bed as compared to the reference group ($P < 0.001$); after intervention, compared to patients in the reference group, patients in the research group had significantly higher scores in cognitive function, emotional function, social function, and physical function ($P < 0.05$). There was no significant difference in IgA, IgM, and IgG levels before intervention ($P > 0.05$). After intervention, the IgA, IgM, and IgG levels of patients in the two groups were all lower than before intervention, and patients in the research group had significantly higher IgA, IgM, and IgG levels as compared to the reference group ($P < 0.001$); the complication rate of patients in the research group was significantly lower than that in the reference group ($P < 0.05$). *Conclusion*. The fast-track surgery concept effectively helps improve the negative emotion of patients, shorten recovery time, improve quality of life, and reduce the impact on immune function in the radical cervical cancer surgery, and it is worthy of promotion and application, with a high safety.

1. Introduction

Cervical cancer is a common gynecological malignant tumor, with insidious symptoms in the early stage and abnormal vaginal bleeding in the late stage. Therefore, regular physical examination and vaccination can effectively prevent and control the occurrence of cervical cancer [1]. The latest data released by the WHO [2] shows that there are about 570,000 patients with cervical cancer worldwide, with an increase of 2.3–3.4% by year, and a mortality of 54.29%. The Yellow Emperor's Classic of Internal Medicine attributed cervical cancer to the categories of "vaginal sore" and "qi deficiency." Traditional medicine believes that the occurrence of this disease is mostly related to the internal injury of the emotions, eating disorders, early marriage, and unclean and multiple sexual intercourse. These factors act on the body, causing dysfunction of the liver, spleen, and kidneys, disharmony of qi and blood, damage to Chong and Ren, and

missed pulses, leading to damp-heat, phlegm-dampness, and stasis toxin that invade the uterus. In addition to oral administration of medicines, the treatments also included vaginal administration, traditional Chinese medicine retention enema, traditional Chinese medicine injection, acupuncture, and other methods. According to the pathogenesis and etiology of traditional Chinese medicine, the treatment is mostly based on strengthening the righteousness and eliminating the pathogens to prolong the life of the patient.

More importantly, since the first licensed vaccine for prevention of morbidity and mortality attributable to human papillomavirus (HPV)-associated disease, it has presented the potential to eliminate cervical cancer less than 4 new cases per 100000 women years. HPV is one of the most common sexually transmitted infections and a well-established cause of cervical cancer, and the total burden of cervical cancers attributable to HPV is substantial.

At present, surgery is still an effective measure to treat cervical cancer. Radical cervical cancer surgery is suitable for patients in the early stages I-II, and its advantage is to help young patients preserve ovary and vaginal function [3, 4]. Despite the remarkable effectiveness, it is associated with complications such as urinary retention, anemia, intestinal obstruction, lower extremity edema, and ureteral leakage, resulting in the irritability and anxiety of patients after operation, affecting the prognosis. All these might be attributed to the fact that general surgery gives rise to a certain immunosuppressive effect on patients after surgery. With the continuous development of medical technology, the requirements for surgical treatment have increased as well. Therefore, it is particularly important to reduce the damage and improve the postoperative negative emotion on the basis of ensuring the treatment effect. Effective nursing plan is capable of improving the perioperative indexes of patients with cervical cancer, reducing the mental burden and clinical complications, and accelerating their recovery [5]. Fast-track surgery is a perioperative nursing concept that integrates multiple disciplines through continuous optimization of nursing procedures, the decrease in surgical trauma and the improvement of quality of life. In this study, the major objective was to analyze the impact of routine clinical nursing and fast-track surgical nursing on the perioperative period of patients undergoing radical cervical cancer surgery.

2. Materials and Methods

2.1. General Materials. The clinical data of 110 patients who underwent radical cervical cancer surgery in our hospital from May 2015 to May 2017 were retrospectively analyzed, and patients were randomly divided into a research group ($n = 55$) and a reference group ($n = 55$). The average age of patients in the research group was (47.52 ± 4.52) years old. According to the diagnostic criteria of TNM Classification of Malignant Tumors [6], the research group consisted of 19 patients at stage Ia and 36 patients at stage Ib, and they were 16 patients with squamous cell carcinoma, 21 patients with adenocarcinoma, and 18 patients with adenosquamous carcinoma in term of tumor type. In the reference group, there were 21 patients at stage Ia and 34 patients at stage Ib, with the average age of (47.49 ± 4.51) years old, and they were 14 patients with squamous cell carcinoma, 23 patients with adenocarcinoma and 18 patients with adenosquamous carcinoma in term of tumor type.

2.2. Inclusion Criteria. The inclusion criteria were as follows: patients who met the clinical diagnostic criteria of cervical cancer, patients who had clear awareness and could follow our instruction, patients aging 23–67 years old, and this study was approved by the ethics committee, and patients and their families signed an informed consent letter given that they had known the aim and procedure of this study.

2.3. Exclusion Criteria. The exclusion criteria were as follows: patients with other cancer, patients with coagulation dysfunction or systemic immune diseases, patients with palliative surgery, and patients with a history of pelvic surgery.

3. Methods

The reference group received routine perioperative nursing, and we formulated specific nursing plans based on the specific causes, conditions, and nursing results of patients, including clinical health education, medication guidance, hospitalization environment, and daily diet intervention. The research group received fast-track surgical nursing, and we made a personalized nursing plan on the basis of the specific condition of patients. This plan was drafted according to the Expert Consensus and Path Management Guide for Fast-track Surgery (2016version) [7], including the measures such as psychological counseling, preoperative preparation, intraoperative nursing, and postoperative recovery instruction, which minimized intraoperative risks and increased the success rate. Based on the consensus of experts, our department initially formulated the enhanced recovery nursing plan for radical cervical cancer, and the primary nurses checked if the above plan had been completely performed. Psychological counseling: we communicated with patients before operation, discovered their mental problems in time, and then patiently helped eliminate their inner tension and fear, so that patients followed the surgical treatment. Intestinal preparation: we instructed patients to fast for 6 hours before operation and drank 350 ml of 12.5% glucose at 2 hours before operation. Intraoperative nursing: we strictly controlled the infusion rate, kept patients warm, and then removed the abdominal drainage tube after operation. Postoperative nursing: patients were gradually back to a normal diet within 3-4 days after operation, and we encouraged patients to get out of bed, relax leg once every 20 minutes after operation, turn over once every 2 hours, and walk properly with the assistance of nurses after 6 hours of getting out of bed. On the first day after surgery, patients excised on your own and adjusted the amount of exercise appropriately. On the third day after surgery, nurses helped clamp the urinary tube and

open it at regular intervals. On the 6–8th day after surgery, nurses removed the urinary tube and kept patients warm. In accordance with the postoperative recovery of patients, we made a specific discharge plan and informed them and their family members of the precautions after discharge.

3.1. Observation Indexes. Referring to the Karnofsky performance status (KPS) scale [8], the systemic symptoms and signs of patients in the two groups before and after intervention were assessed, with a full score of 10 points. The score was directly proportional to the severity of the systemic symptoms of patients.

Referring to the self-rating depression scale (SDS) [9] and self-rating anxiety scale (SAS) [10], the degree of depression and anxiety before and after intervention were evaluated, with a full score of 100 points for each scale. The degree of depression and anxiety was directly proportional to the scores.

The first time to expel gas, eating time, and time to get out of bed between the two groups were recorded.

The quality of life of patients in the two groups after intervention was evaluated according to the quality of life (QOL) for patients with cancer [11] including cognitive function, emotional function, social function, and physical function, with a full score of 100 for each factor. The score was directly proportional to the quality of life of patients.

3 ml of fasting venous blood of patients before and after intervention was collected, centrifuged to obtain serum, and immunoglobulin A (IgA), immunoglobulin M (IgM), and immunoglobulin G (IgG) were detected by the turbidimetric inhibition immunoassay.

Complications incidence of patients in the two groups were recorded and counted.

3.2. Statistical Methods. SPSS 20.0 software was used to statistically analyze and process all the data in this study. The enumeration data were expressed by (n (%)), using the x^2 test, and the measurement data were expressed by ($x \pm s$), using the t-test. $P < 0.05$ meant that the difference was statistically significant.

4. Results

4.1. Baseline Data. There was no significant difference in the baseline characteristics of patients in the two groups ($P > 0.05$), and they were comparable.

4.2. Comparison of KPS Scores before and after Intervention. The KPS scores of patients in the two groups after intervention were significantly lower than those before intervention ($P < 0.001$), and patients in the research group after intervention had significantly lower KPS scores as compared to patients in the reference group ($P < 0.001$), as shown in Figure 1.

4.3. Comparison of SAS and SDS Scores before and after Intervention. After intervention, the SAS and SDS scores of patients in the two groups were significantly lower than those before intervention ($P < 0.05$), and patients in the research group had significantly lower SAS and SDS scores as compared to patients in the reference group ($P < 0.05$), as given in Table 1.

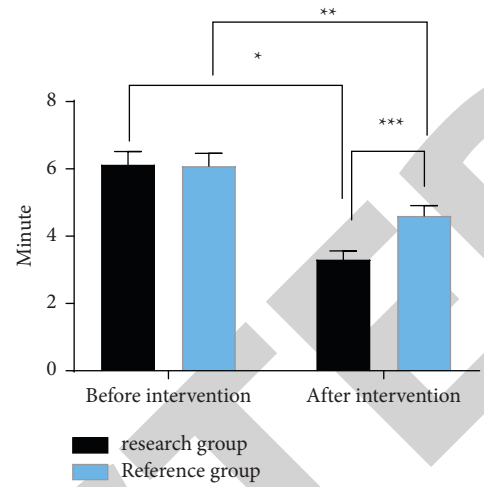

Figure 1: Comparison of KPS scores before and after intervention ($x \pm s$, scores). The X-axis indicates before and after intervention, and the Y-axis indicates KPS (scores). The KPS scores of patients in the research group before and after intervention were (5.84 ± 0.56) and (3.12 ± 0.37), respectively. The KPS scores of patients in the reference group before and after intervention were (5.81 ± 0.54) and (4.39 ± 0.43), respectively. *Significant difference in the KPS scores of the research group before and after intervention ($t = 30.054$, $P < 0.001$). **KPS scores of the reference group before and after intervention are significantly different ($t = 15.256$, $P < 0.001$). ***KPS scores of patients in the two groups after intervention are significantly different ($t = 16.603$, $P < 0.001$).

4.4. Comparison of Various Recovery Indexes. Patients in the research group spent shorter time on first expelling gas, eating, and getting out of bed as compared to patients in the reference group ($P < 0.001$), as shown in Figure 2.

4.5. Comparison of QOL Scores after Intervention. The scores of cognitive function, emotional function, social function, and physical function of patients in the research group after intervention were significantly higher than those in the reference group ($P < 0.001$), as given in Table 2.

4.6. Comparison of Various Immune Indexes before and after Intervention. There was no significant difference in the levels of IgA, IgM, and IgG between the two groups before intervention ($P > 0.05$). After intervention, the levels of IgA, IgM, and IgG in the two groups all decreased, and patients in the research group had significantly higher levels of IgA, IgM, and IgG as compared to the reference group ($P < 0.05$), as given in Table 3.

4.7. Comparison of Postoperative Complications. Patients in the research group had significantly lower total incidence of complications compared to patients in the reference group ($P < 0.05$), as given in Table 4.

Table 1: Comparison of SAS and SDS scores before and after intervention ($x \pm s$, scores).

Indexes	Time	Research group ($n = 55$)	Reference group ($n = 55$)
SAS scores	Before intervention	67.25 ± 5.63	67.28 ± 5.59
	After intervention	57.36 ± 3.21	63.75 ± 3.52*
SDS scores	Before intervention	66.42 ± 3.47	66.39 ± 3.52
	After intervention	56.31 ± 4.26	62.19 ± 3.48*

The SAS and SDS scores of patients in the two groups after intervention were significantly lower than those before intervention. *Comparison of the research group and the reference group after intervention ($P < 0.05$).

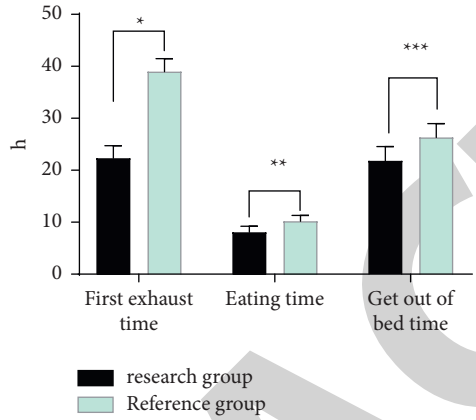

Figure 2: Comparison of various recovery indexes after operation ($x \pm s$). The X-axis represents the first time to expel gas, eating time, and the time to get out of bed, and the Y-axis represents the recovery time, h. The first time to expel gas, eating time, and time to get out of bed in the research group were (20.58 ± 3.44) h, (7.26 ± 1.64) h, and (19.87 ± 3.88) h, respectively, and the first flatulence time, eating time, and time to get out of bed in the reference group were (37.23 ± 3.51) h, (9.41 ± 1.57) h, and (24.46 ± 3.74) h, respectively. *Significant difference in the first time to expel gas between the two groups ($t = 25.125$, $P < 0.001$). **Significant difference in the eating time between the two groups ($t = 7.023$, $P < 0.001$). ***Significant difference in the time to get out of bed between the two groups ($t = 6.317$, $P < 0.001$).

Table 2: Comparison of QOL scores after intervention ($x \pm s$, scores).

Group	n	Cognitive function	Emotional function	Social function	Physical function
Research group	55	51.69 ± 8.35	64.02 ± 7.44	40.17 ± 7.67	31.56 ± 6.85
Reference group	55	47.23 ± 8.17	55.28 ± 7.36	33.56 ± 7.73	22.69 ± 6.74
t		2.831	6.194	4.502	6.845
P		0.006	<0.001	<0.001	<0.001

Table 3: Comparison of various immune indexes before and after intervention ($x \pm s$, g/L).

Indexes	Time	Research group ($n = 55$)	Reference group ($n = 55$)
IgA	Before intervention	2.57 ± 0.38	2.54 ± 0.41
	After intervention	2.42 ± 0.32*	1.94 ± 0.28
IgM	Before intervention	1.91 ± 0.26	1.88 ± 0.27
	After intervention	1.64 ± 0.34*	1.32 ± 0.22
IgG	Before intervention	10.59 ± 2.13	10.61 ± 2.15
	After intervention	9.85 ± 2.02*	8.04 ± 2.26

*Comparison with the reference group after intervention ($P < 0.05$).

5. Discussion

In the early stage, the hidden symptoms of cervical cancer result in the continuous increase in prevalence and mortality. Surgical treatment plays a critical role in the treatment of cervical cancer, but the trauma caused by surgery remains an inescapable issue in the medical field [12]. Trauma reduces the immunity of patients, induces a variety of diseases, and then affects the prognosis. Some scholars believe that the application of effective clinical nursing pathways in the perioperative period of radical cervical cancer can greatly reduce the occurrence of trauma and postoperative complications and improve the quality of life [13]. The concept of fast-track surgery has been widely used in developed regions such as Europe and the United States and gradually accepted by Chinese doctors. This concept was first applied to gastrointestinal surgery, with remarkable results, and gradually applied to other types of surgery [14, 15].

Table 4: Comparison of postoperative complications (n (%)).

Group	n	Infection	Urinary retention	Pain	Total incidence
Research group	55	1 (1.82%)	0 (0.00%)	2 (3.64%)	5.45% (3/55)
Reference group	55	4 (7.27%)	2 (3.64%)	4 (7.27%)	18.18% (10/55)
X^2					4.274
P					0.039

This study found that after patients in the research group receiving the fast-track surgical nursing spent significantly shorter time on expelling gas, eating, and getting out of bed as compared to patients in the reference group, suggesting that this nursing plan is beneficial to the postoperative recovery of patients with cervical cancer. In the meantime, fast-track surgical nursing, a comprehensive nursing model that integrates multiple disciplines, emphasizes patient-centered care and formulates a specific nursing plan in the physical and psychological aspects according to their conditions to reduce negative emotion and improve their treatment confidence [16]. This study discovered that the SAS and SDS scores of patients in the research group after intervention were significantly lower than those in the reference group. Hoffman et al. [17] pointed out that fast-track surgical nursing were applied to the modified radical mastectomy for breast cancer, and the SAS score of patients after intervention was significantly lower than that of the control group (58.03 ± 3.16) vs. (64.13 ± 3.25), indicating that in the implementation of fast-track surgical nursing. This might be because we accurately acquired the mental state of patients through active communication with them and promptly helped them effectively relieve their depression, anxiety, and other negative emotions. Radical cervical cancer surgery damages the tissues of patients, resulting in the decrease in immunity after surgery. The function of the immune system is to defend against the invasion of external organisms including viruses and bacteria and suppress rebellious cells such as cancer cells. The immune system or cells mainly rely on innate immunity, specific immunity, and humoral immunity to kill or eliminate pathogens in the body [18].

Promisingly, in this study, it was confirmed that the IgA, IgM, and IgG levels of patients in the research group after intervention were significantly higher than those in the reference group, indicating that the implementation of fast-track surgical nursing reduced the damage and the impact on internal immune cells to improve surgical safety. Conversely, routine perioperative clinical nursing forbidding food and drink affected the intestinal function of patients, which resulted in imbalance of gut flora and an increase in the probability of complications, and also caused electrolyte disorders in the body and affecting the prognosis [19]. This study confirmed that the concept of fast-track surgery, a reliable clinical nursing measure, reduced the incidence of postoperative complications in patients. The limitations of this study were small size samples, lack of the long-term prognosis, and the influence of subjective factors in the implementation of nursing plan.

In conclusion, fast-track surgical nursing intervention improves the negative emotion of patients, speeds up their recovery, and reduces damage to the immune cells, with good safety and efficacy profiles. It is worthy of promotion and application.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

Yun Lu and Luxi Xu contributed equally to this study.

Acknowledgments

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References

[1] Z. Wang, J. Huang, A. Zeng, M. Wu, and X. Wang, "Vaginoplasty with acellular dermal matrix after radical resection for carcinoma of the uterine cervix," *Journal of Investigative Surgery*, vol. 32, no. 2, pp. 180–185, 2019.

[2] K. Shimizu, T. Kawaoka, and Y. Ohtake, "Precocious solitary cervical metastasis from endometrial cancer presenting as cervical radicular pain," *World neurosurgery*, vol. 118, pp. 162–167, 2018.

[3] K. Ntzeros, N. Thomakos, I. Papapanagiotou, and A. Rodolakis, "The potential of less radical surgery without parametrectomy [J]," *Journal of Experimental Therapeutics and Oncology*, vol. 12, no. 4, pp. 261–266, 2018.

[4] P. Rema, A. P. Mathew, S. Suchetha, and I. Ahmed, "Salvage surgery for cervical cancer recurrences," *Indian journal of surgical oncology*, vol. 8, no. 2, pp. 146–149, 2017.

[5] S. Mönig, M. Chevallay, N. Niclauss et al., "Early esophageal cancer: the significance of surgery, endoscopy, and chemoradiation," *Annals of the New York Academy of Sciences*, vol. 1434, no. 1, pp. 115–123, 2018.

[6] E. Krzywinska and C. Stockmann, "Hypoxia, metabolism and immune cell function," *Biomedicines*, vol. 6, no. 2, p. 56, 2018.

[7] Y. Wang, F. T. Liu, Y. X. Wang et al., "Autophagic modulation by trehalose reduces accumulation of TDP-43 in a cell model of amyotrophic lateral sclerosis via TFEB activation," *Neurotoxicity Research*, vol. 34, no. 1, pp. 109–120, 2018.

[8] K. J. Steinthorsdottir, H. N. Awada, H. Abildstrøm, N. Kroman, H. Kehlet, and E. Kvanner Aasvang, "Dexamethasone dose and early postoperative recovery after mastectomy," *Anesthesiology*, vol. 132, no. 4, pp. 678–691, 2020.

[9] R. Willebrand and M. Kleinewietfeld, "The role of salt for immune cell function and disease," *Immunology*, vol. 154, no. 3, pp. 346–353, 2018.

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Evidence-Based Complementary and Alternative Medicine
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Retraction

Retracted: Efficacy of Neoadjuvant Chemotherapy plus Limb-Sparing Surgery for Osteosarcoma and Its Impact on Long-Term Quality of Life

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References

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Research Article

Efficacy of Neoadjuvant Chemotherapy plus Limb-Sparing Surgery for Osteosarcoma and Its Impact on Long-Term Quality of Life

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Purpose. To assess the efficacy of neoadjuvant chemotherapy plus limb-sparing surgery for osteosarcoma and its impact on long-term quality of life. *Methods*. Between August 2016 and December 2018, 90 patients with osteosarcoma treated in Nanchong Central Hospital were recruited and divided at a ratio of 1 : 1 to receive limb-sparing surgery (control group) or limb-sparing surgery plus neoadjuvant chemotherapy (study group) by random number table methods. The clinical endpoints were clinical efficacy and long-term quality of life. *Results*. Limb-sparing surgery plus neoadjuvant chemotherapy was associated with a significantly higher efficacy versus limb-sparing surgery alone. Limb-sparing surgery plus neoadjuvant chemotherapy resulted in a significantly higher Enneking score and a higher good function rating of patients versus limb-sparing surgery. The two groups showed a high but similar 1-year survival rate. Patients given limb-sparing surgery plus neoadjuvant chemotherapy showed significantly higher 2-year and 3-year survival and a longer mean survival versus those receiving limb-sparing surgery alone. Limb-sparing surgery plus neoadjuvant chemotherapy resulted in significantly higher scores of role emotional, mental health, physical function, and social function and a lower bodily pain score than limb-sparing surgery alone. Limb-sparing surgery plus neoadjuvant chemotherapy was associated with significantly lower fatigue, nausea and vomiting, dyspnea, constipation, and diarrhea scores and a significantly higher health status score versus monotherapy of limb-sparing surgery. *Conclusion*. Neoadjuvant chemotherapy plus limb-sparing surgery improves the postoperative limb function and long-term quality of life of patients with osteosarcoma, which shows great potential for clinical promotion.

1. Introduction

Osteosarcoma is a common malignant bone tumor with an annual incidence of about 4-5 per one million people as reported by epidemiological statistics [1, 2]. The main clinical symptoms are skeletal and joint pain with progressive exacerbation, accompanied by local masses and venous rage. The male-to-female incidence ratio of osteosarcoma is approximately 3 : 2, with approximately 60% of patients with osteosarcoma being under 25 years of age [3, 4]. The most involved body parts are the distal femur, proximal tibia, and the medullary end of the proximal humerus. Clinical reports indicate that osteosarcoma is associated with complications such as pain, tissue remission, limited joint motion, and muscle atrophy, which may severely compromise prognosis and threaten patients' lives. The mortality of the disease remains at a high level despite early and timely treatment [5]. Pathological findings show that osteosarcoma is highly malignant, and the closer the tumor site is to the trunk, the poorer the long-term survival of patients [6].

Radical surgery is indicated for the treatment of osteosarcoma, and limb-sparing surgery is currently considered

a promising treatment method. Limb-preserving surgery [7] is a highly specialized procedure that requires extensive tumor resection as per the principles of the surgical management of bone tumors, and postoperative consolidation chemotherapy or radiotherapy is mostly adopted to control tumor metastasis and improve patient survival [8, 9]. Most osteosarcomas of the extremities can be surgically saved. Generally, after neoadjuvant chemotherapy, surgery is performed to save limbs. The 5-year survival rate of common osteosarcoma can reach about 65%. The key technique of limb salvage for osteosarcoma is to ensure clean surgical resection and limb preservation. General surgical methods include prosthesis replacement, allogeneic bone replacement, and reconstruction. Neoadjuvant chemotherapy [10] is a systemic chemotherapeutic approach to minimize tumor size and eliminate invisible metastatic cells to facilitate subsequent treatment [11]. It has been suggested that neoadjuvant chemotherapy combined with limb-sparing surgery is the ideal approach for osteosarcoma [12]. Limb-sparing surgery is a procedure for complete tumor removal without amputation, which is mostly followed by continuous chemotherapy to achieve a satisfactory outcome [13]. Neoadjuvant chemotherapy is systemic chemotherapy administered prior to surgery and provides a favorable foundation for surgery [14]. Neoadjuvant chemotherapy plus surgery is an emerging and effective strategy for the treatment of various cancers, which effectively improves patient prognosis and survival rates [15]. However, there is insufficient clinical evidence for the enrichments in the prognosis and 5-year survival by the combination of neoadjuvant chemotherapy plus limb-sparing surgery. Accordingly, this study was conducted to assess the efficacy of neoadjuvant chemotherapy plus limb-sparing surgery for osteosarcoma and its impact on long-term quality of life, so as to provide relevant references for clinical research.

2. Materials and Methods

2.1. Research Subjects. In this prospective, randomized, controlled, single-blinded trial, 90 patients with osteosarcoma treated in Nanchong Central Hospital between August 2016 and December 2018 were recruited and divided at a ratio of 1 : 1 to receive limb-sparing surgery (control group) or limb-sparing surgery plus neoadjuvant chemotherapy (study group) by random number table methods. Both patients and family members voluntarily signed the consent form. This study was ethically approved by the Ethical Committee of Nanchong Central Hospital (No. 2016/12-335).

2.2. Inclusion and Exclusion Criteria. Inclusion criteria: patients aged 18–70 years, with a diagnosis of osteosarcoma of limbs confirmed by imaging and pathological examination, with stage IIA-IIB (Enneking stage), and with an expected survival of more than one year were included.

Exclusion criteria: patients with heart, liver, kidney, and other vital organ insufficiencies, with relevant contraindications to treatment, and with metastases by the time of diagnosis were excluded.

2.3. Treatment Methods. Patients in the control group were treated with limb-sparing surgery and given conventional adjuvant chemotherapy postoperatively.

Limb-sparing surgery: complete extraperitoneal resection (incision margin at least 5 cm from the tumor) [9] was performed, and the necrosis rate of the resected tumor was assessed postoperatively. Patients with a necrosis rate ≥90% were treated with the same chemotherapy regimen and dose of postoperative adjuvant chemotherapy, and patients with a necrosis rate <90% were treated with salvage chemotherapy at an appropriate dose. The duration of postoperative conventional adjuvant chemotherapy was 4 cycles.

Patients in the study group were treated with neoadjuvant chemotherapy plus limb-sparing surgery as follows: after diagnosis, adequate hydration and diuresis were performed 1 day before chemotherapy. The patients received neoadjuvant chemotherapy using the epirubicin (EPI) + cisplatin (DDP) + methotrexate (MTX) + ifosfamide (IFO) regimen. They received 90 mg/m^2 of EPI on days 1–3, 100 mg/m^2 of DDP on day 1, and 10 mg/m^2 of MTX on days 4–10. Each drip was completed within 6 h, followed by 1 dose (15000 mg/m^2) of calcium folinic acid through intravenous injection every 6 h for a total of 12 doses. On days 15–19, IFO 2000 mg/m^2 was administered intravenously, and the drip was completed within 6 h, followed by an additional intravenous dose of a-mercapto ethane sulfonic acid sodium salt 400 mg every 6 h for 3 times, as shown in Figure 1. A total of 2 cycles of chemotherapy were administered with 21 days as 1 cycle. After the completion of chemotherapy, limb-sparing surgery was performed, and the surgical procedures were the same as those in the control group. Postoperative chemotherapy was administered in 4 cycles, similar to preoperative chemotherapy.

2.4. Outcome Measures

(1) Clinical efficacy: the clinical efficacy was evaluated according to the neoadjuvant chemotherapy efficacy assessment criteria, which were classified as complete response (CR), partial response (PR), and progressive disease (PD). CR: patients' symptoms were significantly reduced or disappeared. PR: patients' symptoms were reduced. PD: patients' clinical symptoms were unrelieved.

(2) Limb function: six months after treatment, the postoperative functional assessment criteria of Enneking limb musculoskeletal system tumor surgical reconstruction were used to evaluate the limb activity function of the two groups, respectively. The evaluation was performed with regard to six aspects, namely, muscle strength, psychological tolerance, joint mobility, pain, limb stability, and living ability, with 5 points for each item. The postoperative functional assessment grading standard was divided into four levels: excellent, good, moderate, and poor, with ≥24 points as excellent, 18–23 points as good, 12–17 points as moderate, and ≤12 points as poor.

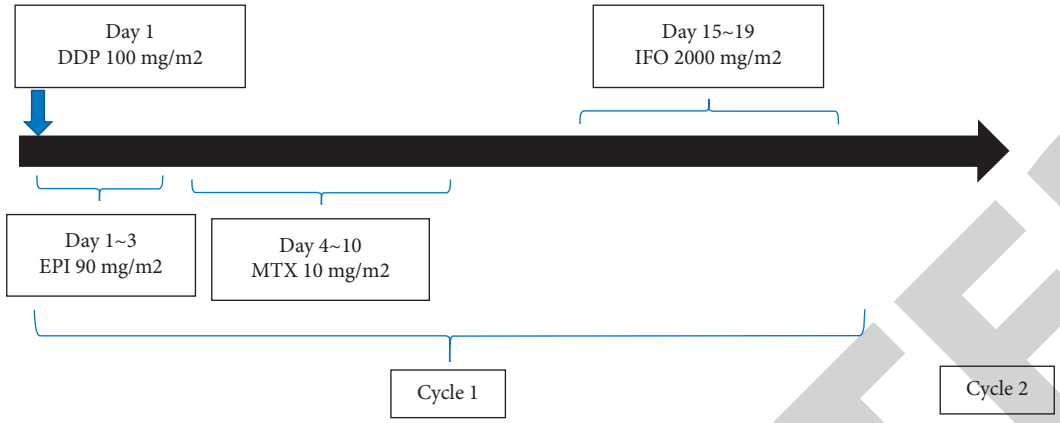

Figure 1: Flowchart of neoadjuvant chemotherapy.

(3) Survival: patients were followed up at home or by telephone for 3 years, and the survival of the two groups was recorded and compared separately.

(4) Quality of life: six months after treatment, the MOS 36-item short-form health survey (SF-36) health measurement scale was used to assess the patients' quality of life, and the modified quality of life measurement scale for cancer patients (EortcQLQC.30) was used to assess the symptoms and health status of the two groups.

2.5. Statistical Analysis. SPSS 22.0 was used for data analyses, and GraphPad Prism 8 was used for image rendering. The measurement data were expressed as ($\bar{x} \pm s$) and processed using the *t*-test. The count data were expressed as the number of cases (rate) and analyzed using the chi-square test. Differences were considered statistically significant at $P < 0.05$.

3. Results

3.1. Baseline Data. In the control group, there were 27 males and 18 females, aged between 19 and 45 (29.88 ± 5.23) years old, with a Karnofsky Performance Scale (KPS) score of 71.62 ± 5.33 points and a maximum tumor diameter of 6.02 ± 1.74 cm. There were 19 cases of the femur, 16 cases of the tibia, and 10 cases of the humerus in terms of tumor sites. In the study group, there were 25 males and 20 females, aged between 20 and 43 (29.94 ± 5.82) years old, with a KPS score of 72.01 ± 4.96 points and a maximum tumor diameter of 5.74 ± 1.93 cm. There were 21 cases of the femur, 15 cases of the tibia, and 9 cases of the humerus in terms of tumor sites. The baseline data of the two groups were comparable (all $P > 0.05$) (Table 1).

3.2. Clinical Efficacy. In the control group, there were 14 (31.11%) cases of CR, 21 (46.67%) cases of PR, and 10 (22.22%) cases of PD, with the efficacy of 77.78%. In the study group, there were 21 (46.67%) cases of CR, 22 (48.89%) cases of PR, and 2 (4.44%) cases of PD. Limb-sparing surgery plus neoadjuvant chemotherapy was associated with a significantly higher efficacy versus limb-sparing surgery alone ($P < 0.05$) (Table 2).

3.3. Limb Function. Limb-sparing surgery plus neoadjuvant chemotherapy resulted in a significantly higher Enneking score (25.98 ± 3.17 vs. 24.23 ± 2.81) and a higher good function rating result (82.22%, including 21 cases of excellent, 16 cases of good, 5 cases of moderate, and 3 cases of poor) versus limb-sparing surgery (57.78%, including 15 cases of excellent, 11 cases of good, 9 cases of moderate, and 10 cases of poor) ($P < 0.05$) (Table 3).

3.4. Survival. The two groups showed a high but similar 1-year survival rate ($P > 0.05$). Patients given limb-sparing surgery plus neoadjuvant chemotherapy showed significantly higher 2-year and 3-year survival and a longer mean survival (91.11%, 84.44%, 33.72 ± 1.08) versus those receiving limb-sparing surgery alone (80.00%, 60.00%, 29.56 ± 0.88) ($P < 0.05$) (Table 4).

3.5. Quality of Life. Limb-sparing surgery plus neoadjuvant chemotherapy resulted in significantly higher scores of role emotional, mental health, physical function, and social function and a lower bodily pain score (86.88 ± 7.23, 81.08 ± 5.49, 75.31 ± 6.17, 86.94 ± 3.23, and 62.18 ± 6.77) versus limb-sparing surgery (80.17 ± 6.06, 77.23 ± 5.17, 51.57 ± 6.13, 49.29 ± 8.19, and 70.11 ± 5.84) ($P < 0.05$) (Figure 2). Limb-sparing surgery plus neoadjuvant chemotherapy was associated with significantly lower fatigue, nausea and vomiting, dyspnea, constipation, and diarrhea scores (42.27 ± 4.17, 25.26 ± 3.68, 27.54 ± 3.92, 35.57 ± 2.88, and 25.18 ± 5.07) versus limb-sparing surgery (54.84 ± 4.68, 39.85 ± 4.54, 39.01 ± 4.08, 57.68 ± 5.14, and 39.28 ± 4.17) ($P < 0.05$), and combined therapy also resulted in a significantly higher health status score (67.21 ± 2.34) versus monotherapy (56.88 ± 2.73) ($P < 0.05$) (Table 5).

4. Discussion

The results of the present study showed a significantly higher clinical efficacy achieved by limb-sparing surgery plus neoadjuvant chemotherapy (95.56%) versus limb-sparing surgery alone (77.78%). Small metastatic lesions can be mostly unobservable to naked eyes or even imaging, so

Table 1: Comparison of baseline data ($\overline{x} \pm s$).

	Control group	Study group	t/χ^2	P
Gender (male/female)	27/18	25/20	0.182	0.670
Age (years)	29.88 ± 5.23	29.94 ± 5.82	0.51	0.959
KPS scores	71.62 ± 5.33	72.01 ± 4.96	0.359	0.720
Maximum tumor diameter (cm)	6.02 ± 1.74	5.74 ± 1.93	0.723	0.472
Tumor site			0.185	0.912
Femur	19	21		
Tibia	16	15		
Humerus	10	9		

Table 2: Comparison of clinical efficacy (%).

Groups	n	CR	PR	PD	Efficacy
Control group	45	14 (31.11)	21 (46.67)	10 (22.22)	35 (77.78)
Study group	45	21 (46.67)	22 (48.89)	2 (4.44)	43 (95.56)
χ^2	—		6.154		
P	—		0.013		

Table 3: Comparison of limb function.

Groups	n	Enneking scores ($\overline{x} \pm s$)	Good function rating (n, %)
Control group	45	24.23 ± 2.81	26 (57.78)
Study group	45	25.98 ± 3.17	37 (82.22)
t/χ^2	—	2.771	6.402
P	—	0.007	0.011

Table 4: Comparison of survival.

Groups	n	1-year survival (n, %)	2-year survival (n, %)	3-year survival (n, %)	Mean survival ($\overline{x} \pm s$, month)
Control group	45	41 (91.11)	36 (80.00)	27 (60.00)	29.56 ± 0.88
Study group	45	44 (97.78)	41 (91.11)	38 (84.44)	33.72 ± 1.08
t/χ^2	—	1.906	3.552	6.702	20.031
P	—	0.167	0.049	0.010	<0.001

radical surgery may fail to achieve a satisfactory therapeutic effect. The application of neoadjuvant chemotherapy plays an important role in improving the therapeutic effect and prolonging the survival of patients [16]. The reason for a higher efficacy after combined therapy herein may be that cisplatin is a broad-spectrum anticancer chemotherapeutic agent, which, similar to ifosfamide, acts nonspecifically on the cell division cycle and effectively impedes DNA replication and the expansion and cross-linking of tumor cells to kill cancer cells. Methotrexate is an antifolate antitumor drug that prevents tumor cell synthesis mainly by blocking dihydrofolate reductase inhibition, thereby inhibiting tumor cell growth and regeneration [17].

Osteosarcoma is a relatively drug-resistant tumor, and the effect of single-drug therapy is modest. The combination of antitumor drugs is to kill tumor cells in each cycle, improve the therapeutic effect of patients, and reduce the occurrence of drug resistance [18]. Patients in the present study were required to continue treatment with a chemotherapy regimen after surgical treatment, and the chemotherapy regimen was adjusted according to patients' clinical symptoms to reduce the risk of recurrence and metastasis, which was in line with the findings of Luo et al.[19]. Moreover, in the present study, limb-sparing surgery plus neoadjuvant chemotherapy resulted in significantly higher Enneking scores, good function rating results, 2-year and 3-year survival, mean survival, and quality of life versus limb-sparing surgery alone, suggesting that the use of neoadjuvant chemotherapy combined with limb-sparing surgery was effective in improving patients' limb movement function, survival outcomes, and long-term quality of life. The reason may be that epirubicin directly infiltrates into DNA bases, causing DNA strands to protrude into tumor cells, disrupting the synthesis of DNA and RNA in tumor cells and the structure and function of tumor cell membranes; neoadjuvant chemotherapy reduces the difficulty of surgery and facilitates the successful preservation of limbs [20], thereby enhancing the long-term survival rate and quality of life of patients. However, there are still some shortcomings and deficiencies in this study. The small sample size may compromise the objectivity of the results and conclusions, and only one chemotherapy regimen was proposed in this study, which requires further investigation by future studies.

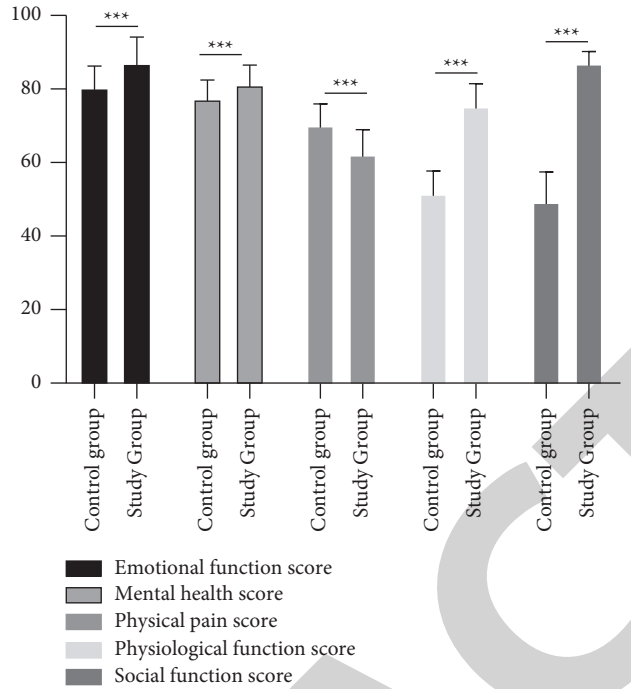

Figure 2: Comparison of SF-36 scores. ***Difference between the two groups is statistically significant ($P < 0.001$).

Table 5: Comparison of symptoms and health status ($\overline{x} \pm s$).

Groups		Control group ($n = 45$)	Study group ($n = 45$)	t	P
Symptoms	Fatigue	54.84 ± 4.68	42.27 ± 4.17	13.452	<0.001
	Nausea and vomiting	39.85 ± 4.54	25.26 ± 3.68	16.747	<0.001
	Pain	25.84 ± 3.54	25.68 ± 4.11	0.198	0.843
	Difficulty in breathing	39.01 ± 4.08	27.54 ± 3.92	13.599	<0.001
	Loss of appetite	38.27 ± 3.65	38.44 ± 3.47	0.226	0.822
	Constipation	57.68 ± 5.14	35.57 ± 2.88	25.173	<0.001
	Diarrhea	39.28 ± 4.17	25.18 ± 5.07	14.408	<0.001
Health status		56.88 ± 2.73	67.21 ± 2.34	19.272	<0.001

5. Conclusion

Neoadjuvant chemotherapy plus limb-sparing surgery improves the postoperative limb function and long-term quality of life of patients with osteosarcoma, which shows great potential for clinical promotion.

Data Availability

The data generated or analyzed during this study are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

Shixia Jing and Fengling Ding contributed equally to this work.

References

[1] J. Ritter and S. S. Bielack, "Osteosarcoma," *Annals of Oncology*, vol. 21, no. 7, 2010.

[2] M. Kansara, M. W. Teng, M. J. Smyth, and D. M. Thomas, "Translational biology of osteosarcoma," *Nature Reviews Cancer*, vol. 14, no. 11, pp. 722–735, 2014.

[3] C. Chen, L. Xie, T. Ren, Y. Huang, J. Xu, and W. Guo, "Immunotherapy for osteosarcoma: fundamental mechanism, rationale, and recent breakthroughs," *Cancer Letters*, vol. 500, pp. 1–10, 2021.

[4] A. Biazzo and M. De Paolis, "Multidisciplinary approach to osteosarcoma," *Acta Orthopaedica Belgica*, vol. 82, no. 4, pp. 690–698, 2016.

[5] F. Sadoughi, P. Maleki Dana, Z. Asemi, and B. Yousefi, "DNA damage response and repair in osteosarcoma: defects, regulation and therapeutic implications," *DNA Repair*, vol. 102, Article ID 103105, 2021.

[6] K. Yamada and S. Matsumori, "Osteosarcoma," *Nihon Rinsho*, vol. 28, pp. 1180-1181, 1970.

[7] G. R. Schirò, S. Sessa, A. Piccioli, and G. Maccauro, "Primary amputation vs. limb salvage in mangled extremity: a

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Retraction

Retracted: Influence of Self-Practice Oriented Teaching plus Psychological Intervention on Blood Glucose Level and Psychological State in Patients with Type 2 Diabetes Mellitus on Insulin Therapy

Evidence-Based Complementary and Alternative Medicine

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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] X. Li, J. Ge, and L. He, "Influence of Self-Practice Oriented Teaching plus Psychological Intervention on Blood Glucose Level and Psychological State in Patients with Type 2 Diabetes Mellitus on Insulin Therapy," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 5606697, 7 pages, 2022.

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Research Article

Influence of Self-Practice Oriented Teaching plus Psychological Intervention on Blood Glucose Level and Psychological State in Patients with Type 2 Diabetes Mellitus on Insulin Therapy

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Background. The study aimed to examine the effect of self-practice oriented teaching plus psychological intervention on blood glucose level and psychological status of type 2 diabetic patients on first insulin therapy. *Methods*. A total of 80 patients with type 2 diabetes admitted from April 2020 to November 2020 were assessed for eligibility and included. They were then assigned to a control group and an observation group via the random number table method, with 40 cases in each group. In addition to insulin injection treatment in both groups prior to intervention, the control group received health education and psychological intervention, whereas the observation group adopted a self-practice oriented teaching strategy plus psychological intervention. Insulin injections, nursing satisfaction, blood glucose level, and disease awareness were compared between the two groups. The Exercise of Self-Care Agency (ESCA) scale was used to assess the patients' self-care ability, the Generic Quality of Life Inventory-74 (GQOLI-74) scale was used to assess their quality of life, and the emotional state of patients was evaluated by the Hospital Anxiety and Depression (HAD) scale. *Results*. Patients in the observation group outperformed the control group in terms of insulin injection after intervention ($P < 0.05$). Significantly higher nursing satisfaction and ESCA scores were observed after intervention ($P < 0.05$). Self-practice oriented teaching plus psychological intervention resulted in remarkably lower post-intervention glycemic indexes ($P < 0.001$). Markedly higher disease knowledge scores and GQOLI-74 scores were witnessed in the observation group in contrast to those of the control group ($P < 0.001$). The observation group patients showed lower HAD scores than those of the control group ($P < 0.001$). *Conclusion*. Self-practice oriented teaching plus psychological intervention could effectively alleviate the negative emotions of type 2 diabetic patients on first insulin therapy, stabilize glycemic indexes, and improve quality of life, demonstrating good potential for clinical promotion.

1. Introduction

Type 2 diabetes (T2DM), also known as noninsulin-dependent diabetes mellitus, is characterized by clinical symptoms such as polyphagia, polyuria, and weight loss [1, 2]. Currently, its pathogenesis has not yet been elucidated, but its occurrence is considered to be associated with environmental and genetic factors [3, 4]. T2DM is a group of endocrine diseases characterized by increased blood glucose levels caused by insulin resistance or insufficient insulin secretion. Improper treatment or disease progression will cause damage to the eyes, kidneys, blood vessels, nerves, heart, and other tissues, resulting in multiple complications such as diabetic retinopathy and diabetic nephropathy and diabetic vasculopathy, thereby gravely compromising the quality of life [5–7]. Clinical therapy has mostly focused on insulin injection in recent years, with the goal of blood glucose control, physical recovery promotion, and quality of life enhancement. However, it has been established that long-term insulin injection treatment may result in various issues, and patients are predisposed to psychological and physiological pressures due to their unfamiliarity with insulin treatment, which degrades treatment compliance and therapeutic impact [8–10].

In Chinese traditional medicine (TCM), the ancient term "excessive thirst" refers to a combination of symptoms characterized by excessive drinking, polyuria, polyphagia,

fatigue, sweet urination, and wasting, which is basically consistent with diabetes in modern clinical medicine [11]. Currently, TCM treatment offers benefits and good therapeutic effects in the treatment of diabetes mellitus and relevant complications and is widely used in clinical practice. To address the etiology and pathogenesis of diabetes mellitus, the prevailing treatments include Yuye decoction, Xiaoke formula, and Qiwei Baizhu powder. In addition, acupuncture and physiotherapy are also effective in the treatment of diabetic complications [12–14]. Relevant research has shown that well-designed health education and nursing interventions can successfully improve patients' participation in treatment and reduce their negative emotions, hence enhancing the treatment impact. Accordingly, the combination of self-practice oriented teaching with psychological intervention has been extensively applied in clinical practice and has achieved promising efficacy [15, 16]. To examine the effect of self-practice oriented teaching plus psychological intervention on the blood glucose level and psychological status of tT2DM on first insulin therapy, patients with T2DM admitted from April 2020 to November 2020 were recruited for analysis.

2. Materials and Methods

2.1. General Information. The study comprised 80 patients with type 2 diabetes who were hospitalized between April 2020 and November 2020 and randomized them to a control group and an observation group using the random number table approach, with 40 cases in each group. Patients in the control group were aged 23–75 years, and those in the observation group were aged 24–73 years. The two groups showed no great disparity in baseline profiles ($P > 0.05$). Before enrollment, undersigned informed consent was obtained from the patients. The study protocol was approved by the hospital's ethics committee (JX-XBE20200412), and all procedures were conducted in accordance with the Declaration of Helsinki's ethical guidelines for clinical research.

2.2. Inclusion Criteria. The following patients were included: ①patients who met the diagnostic criteria for type 2 diabetes mellitus; ②patients who received insulin therapy for the first time. ③This study was ratified by the ethics committee of our hospital, and the patients and their family members signed the informed consent form after being fully informed of the purpose and process of the study.

2.3. Exclusion Criteria. The following patients were excluded: ① patients with malignant tumors; ② patients with cognitive disorders; ③ patients with systemic infections.

2.4. Methods. Before the intervention, both groups were given insulin injections.

On this basis, health promotion and psychological interventions were introduced in the control group. ① Patients were given the precautions of insulin therapy, and instructions for insulin injection were provided through live demonstration. ② Patients were lectured about knowledge of type 2 diabetes to deepen their awareness of the disease. ③ A reasonable psychological nursing program was formulated after a scientific assessment of the psychological state of patients. ④ Nursing staff should actively communicate with patients, and regular psychological counseling was provided to avoid the recurrence of psychological disorders in patients. ⑤ Timely feedback from patients was carried out, and nursing staff as actively communicated with taciturn patients to reduce their psychological pressure and enhance treatment confidence. ⑥ Prompt psychological guidance was provided to eliminate the negative emotions of the patients such as impatience and anxiety during the nursing process. ⑦ Soothing music was played to relieve patients' physical and mental stress, with language guidance to help them relax.

The observation group adopted a self-practice-oriented teaching method plus psychological intervention. ① Patients were given lectures in groups in a spacious room, and knowledge of insulin injection, injection models, and procedures was provided by nursing staff in detail. ② The insulin injection steps were detailed to the patients by nursing staff, followed by patients' practice, and experience sharing was encouraged among the patients. ③ After patients had mastered insulin injection, they were allowed to perform the injection by themselves under the real-time supervision of nursing staff. ④ An assessment was performed once every 7d to assess the patients' proficiency in insulin injection and their grasp of disease knowledge. ⑤ Patients were given regular instruction on diabetes-related topics by nursing staff, which was combined with online videos for detailed instructions on insulin injection. ⑥ Psychological care intervention was identical to that of the control group.

2.5. Observation Indicators

(1) The insulin injection before and after the intervention was compared between the two groups, including alternates of the injection site, standardized insulin injection, the incidence of adverse reactions at the injection site, and the disposable rate of needles used.

(2) The patients' nursing satisfaction was investigated by using the "Patient Clinical Satisfaction Questionnaire" developed by our department, with domains of the nursing attitude, nursing quality, and treatment effect. The questionnaire had a total score of 100 points, and a higher point indicates higher nursing satisfaction.

(3) The Exercise of Self-Care Agency (ESCA) scale [17] was used to assess the patients' self-care ability after the intervention, which includes self-concept, self-responsibility, self-care skills, and health knowledge level, with a total score of 4 for each item. The higher the score, the better the patient's self-care ability.

Table 1: Comparison of general information between the two groups of patients.

	Observation group ($n = 40$)	Control group ($n = 40$)	x^2 or t	P
Age (year)	50.15 ± 13.49	53.05 ± 13.38	0.965	0.337
Gender			0.219	0.639
Male	25 (51.11)	27 (46.67)		
Female	15 (48.89)	13 (53.33)		
BMI (kg/m^2)	25.23 ± 1.59	25.51 ± 1.61	0.783	0.436
Course of disease	5.44 ± 2.18	5.45 ± 2.15	0.021	0.984
Education level				
Primary school and below	16 (40.00)	18 (45.00)	0.205	0.651
Middle school	15 (37.50)	11 (27.50)	0.912	0.340
High school and junior college	6 (15.00)	7 (17.50)	0.092	0.762
Junior college and above	3 (7.50)	4 (10.00)	0.157	0.692
Smoking			0.213	0.644
Yes	24 (44.44)	26 (46.67)		
No	16 (55.56)	14 (53.33)		
Drinking			0.053	0.818
Yes	25 (48.89)	24 (53.33)		
No	15 (51.11)	16 (46.67)		
Medical payment methods			0.556	0.456
Medical insurance	37 (92.50)	35 (87.50)		
Self-pay	3 (7.50)	5 (12.50)		

(4) Fasting blood glucose (FPG), postprandial blood glucose, and glycosylated hemoglobin (HbAlc) were compared between the two groups. Before and after treatment, 9 mL of morning fasting venous blood was collected from patients and centrifuged to obtain the serum, which was then stored at −20°C. The levels of postprandial blood glucose, FPG, and HbAlc were determined using the rate method (Beckman fully automated biochemistry analyzer from Beckman Kulk, USA).

(5) A self-developed "Disease Knowledge Awareness" questionnaire from our department was used to survey the patients before and after the intervention, with a total score of 5 for each stage. The higher the score, the better the patient's understanding of the disease. The quality of life of patients in both groups before and after the intervention was evaluated with reference to the Generic Quality of Life Inventory-74 (GQOLI-74) scale [18], which has a total score of 100. Higher scores indicate better quality of life for patients.

(6) The Hospital Anxiety and Depression (HAD) [19] scale was used to assess patients' emotional status before and after the intervention, with a total score of 42. The higher the score, the more severe the patient's anxiety and depression.

2.6. Statistical Analysis. The data processing software selected in this research was SPSS20.0, and GraphPad Prism 7 (GraphPad Software, San Diego, USA) was used to plot the graphics. The counting data were expressed by (n (%)) and analyzed using the chi-square test, and the measurement data were expressed by ($\overline{x} \pm s$) and analyzed by the t-test. $P < 0.05$ indicates that the difference is statistically significant.

3. Results

3.1. Comparison of General Information. General information such as age, gender, BMI, illness course, education level, smoking, drinking, and medical payment method did not differ significantly between the two groups ($P > 0.05$) (Table 1).

3.2. Comparison of Insulin Injection. In terms of insulin injection after the intervention, the observation group outperformed the control group ($P < 0.05$) (Table 2).

3.3. Comparison of Nursing Satisfaction. As shown in Table 3, total nurse satisfaction after the intervention was considerably greater in the observation group than in the control group ($P < 0.05$).

3.4. Comparison of ESCA Scores. After the intervention, the observation group had higher ESCA ratings than the control group ($P < 0.05$) (Table 4).

3.5. Comparison of Glycemic Indexes. Self-practice oriented teaching plus psychological intervention resulted in remarkably lower postintervention glycemic indexes ($P < 0.05$) (Table 5).

3.6. Comparison of Knowledge of Disease Scores. Following intervention, the observation group showed significantly higher illness knowledge ratings than the control group ($P < 0.05$) (Table 6).

Table 2: Comparison of insulin injection between the two groups of patients (n (%)).

Groups	n	Alternate of the injection site (%)	Standardized insulin injection (%)	Incidence of adverse reactions at the injection site (%)	Disposable rate of needles used (%)
Observation group	40	100.00% (40/40)	97.50% (39/40)	5.00% (2/40)	100.00% (40/40)
Control group	40	77.50% (31/40)	72.50% (29/40)	25.00% (10/40)	75.00% (30/40)
x^2		10.141	9.804	6.275	11.429
P		<0.05	<0.05	<0.05	<0.05

Table 3: Comparison of nursing satisfaction between the two groups (n (%)).

Groups	n	Satisfied	Moderately satisfied	Dissatisfied	Total satisfaction rate
Observation group	40	77.50% (31/40)	17.50% (7/40)	5.00% (2/40)	95.00% (38/40)
Control group	40	55.00% (22/40)	15.00% (6/40)	30.00% (12/40)	70.00% (28/40)
x^2					8.658
P					<0.05

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

Groups	n	Self-concept	Self-responsibility	Self-care skills	Health knowledge level
Observation group	40	2.73 ± 0.82	2.35 ± 0.64	2.75 ± 0.47	3.16 ± 0.36
Control group	40	1.31 ± 0.55	1.13 ± 0.33	1.25 ± 0.15	1.49 ± 0.67
t		9.096	10.716	19.229	13.887
P		<0.001	<0.001	<0.001	<0.001

Table 5: Comparison of the glycemic indexes between the two groups ($\overline{x} \pm s$).

Groups	n	FPG (mmol/L)		Postprandial blood glucose (mmol/L)		HbAlc (%)	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Observation group	40	13.11 ± 2.87	6.75 ± 1.65	15.02 ± 2.31	9.51 ± 1.52	8.27 ± 1.53	6.23 ± 0.51
Control group	40	13.05 ± 2.94	8.59 ± 2.02	15.03 ± 2.32	12.83 ± 1.97	8.29 ± 1.59	7.39 ± 1.15
t		0.092	4.462	0.019	8.439	0.057	5.832
P		0.927	<0.001	0.985	<0.001	0.954	<0.001

Table 6: Comparison of knowledge of disease scores between two groups.

Groups	n	Before intervention	After intervention
Observation group	40	1.15 ± 0.27	4.01 ± 0.59
Control group	40	1.17 ± 0.31	2.95 ± 0.44
t		0.308	9.109
P		0.759	<0.001

3.7. Comparison of GQOLI-74 Scores. Following intervention, the observation group had significantly higher GQOLI-74 ratings than the control group ($P < 0.05$) (Figure 1).

3.8. Comparison of HAD Scores. Following intervention, lower HAD scores were observed in the observation group than in the control group ($P < 0.05$) (Figure 2).

4. Discussion

According to traditional Chinese medicine, T2DM is classified as " excessive thirst." Su Wen — Theory of Strange Diseases states that one of the causes of " excessive thirst" is the long-term addiction to fatty, sweet, and thick flavors, which generates internal dampness and heat, resulting in the depletion of fluids. Another ancient Chinese medical source [20] illustrated that the absence of water is the basic pathogenesis of excessive thirst and kidney deficiency. Tong et al. [21] considered kidney deficiency, internal obstruction of blood stasis, and internal stagnation of phlegm as the basic pathogenesis of excessive thirst, Zhang [22] concluded that the disease is attributable to the deficiency of both the spleen and kidney and internal obstruction of blood stasis and phlegm condensation, and Feng et al. [23] identified the deficiency of the spleen and the kidney combined with dampness, heat, and blood stasis as the basic pathogenesis of excessive thirst. It is evident that despite the divergence of

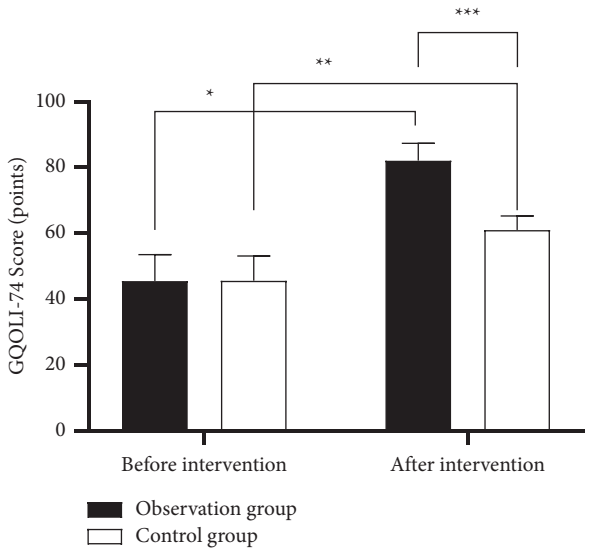

Figure 1: Comparison of the GQOLI-74 scores between the two groups ($\overline{x} \pm s$). Note: abscissa indicates preintervention and postintervention, and ordinate indicates GQOLI-74 scores and points. The GQOLI-74 scores before and after the intervention for patients in the observation group were (45.57 ± 7.98) and (82.15 ± 5.21), respectively. The GQOLI-74 scores of patients in the control group before and after the intervention were (45.66 ± 7.45) and (61.02 ± 4.28), respectively. The symbol * indicates a significant difference in the GQOLI-74 scores before and after the intervention in the observation group ($t = 24.276$, $P < 0.001$). The symbol ** indicates a significant difference in the GQOLI-74 scores before and after the intervention in the control group ($t = 11.307$, $P < 0.001$). The symbol *** indicates a significant difference in the GQOLI-74 scores between the two groups of patients after the intervention ($t = 19.819$, $P < 0.001$).

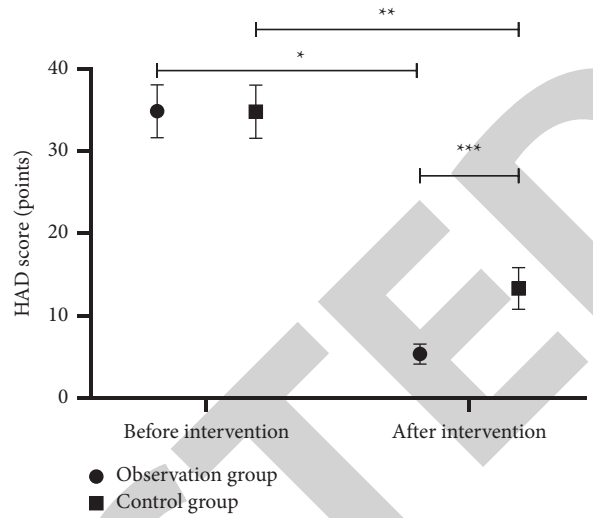

Figure 2: Comparison of the HAD scores between the two groups ($\overline{x} \pm s$). Note: abscissa indicates before and after the intervention, and coordinate indicates HAD scores and points. The HAD scores of patients in the observation group before and after the intervention were (34.87 ± 3.21) and (5.34 ± 1.21), respectively. The HAD scores of patients in the control group before and after the intervention were (34.81 ± 3.23) and (13.32 ± 2.53) points, respectively. The symbol *indicates a significant difference in the HAD scores of patients in the observation group before and after the intervention ($t = 54.443$, $P < 0.001$). The symbol** indicates a significant difference in the HAD scores of patients in the control group before and after the intervention ($t = 33.126$, $P < 0.001$). The symbol *** indicates a significant difference in the HAD scores between the two groups of patients after the intervention ($t = 17.996$, $P < 0.001$).

medical opinions on the pathogenesis of excessive thirst, they all adopt deficiency and specimen as the major cause of the disease, with the two deficiencies of the posterior spleen and Earth and the congenital kidney as the basic symptoms. TCM shows great potential in postponing the development of diabetes with its multitarget and multiorgan effects.

Currently, no sustainable treatment regimens are available for T2DM, and the prevention of disease development in clinical practice predominantly relies on insulin regulation [24, 25]. However, patients who receive insulin therapy for the first time are susceptible to a variety of negative emotions due to the unfamiliarity with this treatment modality [26, 27]. Prolonged exposure to adverse emotions has implications on the hypothalamus and leads to lower secretion of B-cell insulin, which may elevate the patient's blood glucose level and further aggravate the condition [28, 29]. As a consequence, timely relief of patients' negative emotions is of great importance to their prognosis.

According to prior research, type 2 diabetes patients are less competent in self-management, which is mostly ascribed to reduced treatment compliance caused by unpleasant feelings towards long-term medication. Furthermore, a lack of knowledge and good living habits constitute a more challenging condition for glycemic control [30]. The traditional education method, with its insufficient instruction time and forms, fails to provide adequate outcomes and fulfill therapeutic demands [31]. The self-practice-oriented teaching method, in conjunction with psychological therapies, successfully increases patients' comprehension of the disease and efficiently relieves patients' psychological stress, which provides rehabilitation benefits. Herein, the insulin injection in the observation group was significantly better than that in the control group after the intervention ($P < 0.05$), and the total nursing satisfaction in the observation group was significantly higher than that in the control group ($P < 0.05$), indicating that self-practice oriented teaching plus psychological intervention could substantially improve patients' insulin injection proficiency and facilitate a harmonious nurse-patient relationship. The self-practice-oriented teaching method enables patients to fully grasp the knowledge and key points of insulin therapy. Moreover, experience sharing between patients was encouraged. Psychological intervention is patient-centered and establishes suitable care protocols to fulfill patients' psychological demands, which can eventually improve patients' satisfaction and the therapeutic result. The scientific assessment of the psychological state of type 2 diabetic patients and the popularization of relevant knowledge contribute to *t* a better disease understanding, which enhances their treatment compliance and builds up their confidence against the

disease for robust recovery. The results of the present study showed that the ESCA scores in the observation group were significantly higher than those in the control group after the intervention ($P < 0.05$), and the glycemic indexes in the observation group were significantly lower than those in the control group after the intervention ($P < 0.05$), indicating that the self-practice-oriented teaching method combined with psychological intervention prominently strengthened the patients' self-care ability, which is conducive to blood glucose management [32]. Moreover, the observation group obtained significantly higher scores in disease knowledge than the control group after the intervention ($P < 0.05$), suggesting that the self-practice-oriented teaching method ensured a solid grasp of relevant disease knowledge and facilitated their treatment confidence compared with conventional teaching modes. The results of this study also demonstrated lower HAD scores in the observation group than those in the control group after the intervention ($P < 0.05$), which are consistent with the findings of Mccarron et al. [33] who stated that "after the nursing intervention, the HAD score of patients in the study group was (4.83 ± 1.15), which was significantly lower than that of the control group (15.25 ± 2.46) ($P < 0.05$)," indicating that the self-practice-oriented teaching method combined with psychological interventions better addresses clinical nursing needs and further eliminates patients' negative emotions.

There are still some limitations in this study. 1. Only 80 patients from April 2020 to November 2020 were included in this study, which is a small sample size, and follow-up of long-term efficacy was absent. 2. The lack of stratified observation due to the high age of the study cases may have biased the results. Further large-sample, prospective studies are necessary to better observe the clinical efficacy and safety of the self-practice-oriented teaching method as well as its long-term efficacy.

Self-practice oriented teaching plus psychological intervention could effectively alleviate the negative emotions of type 2 diabetic patients on first insulin therapy, stabilize glycemic indexes, and improve quality of life, demonstrating good potential for clinical promotion.

Data Availability

The datasets used during the present study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] E. Y. Fai Wan, E. Yeetak Yu, W. Y. Chin et al., "Age-specific associations of glycated haemoglobin variability with cardiovascular disease and mortality in patients with type 2 diabetes mellitus: a10-year cohort study," *Diabetes, Obesity and Metabolism*, vol. 22, no. 8, pp. 1316–1327, 2020.

[2] P. Andre, G. Proctor, B. Driollet et al., "The role of overweight in the association between the Mediterranean diet and the risk of type 2 diabetes mellitus: a mediation analysis among 21 585 UK biobank participants," *International Journal of Epidemiology: Official Journal of the International Epidemiological Association*, vol. 49, no. 5, pp. 1582–1590, 2020.

[3] L. Gao, P. Zhang, J. Weng et al., "Patient characteristics and 6-month dose of basal insulin associated with HbA1c achievement <7.0% in Chinese people with type 2 diabetes: results from the observational registry of basal insulin treatment (ORBIT)," *Journal of Diabetes*, vol. 12, no. 9, pp. 668–676, 2020.

[4] M. O. Germoush, H. A. Elgebaly, S. Hassan, E. M. Kamel, M. Bin-Jumah, and A. M. Mahmoud, "Consumption of terpenoids-rich padina pavonia extract attenuates hyperglycemia, insulin resistance and oxidative stress, and upregulates PPAR gamma in a rat model of type 2 diabetes," *Progress in Artificial Intelligence*, vol. 9, no. 1, 2020.

[5] S.-M. Chen, H.-S. Lin, J. J. Atherton, R. J. MacIsaac, and C. J. Wu, "Effect of a mindfulness programme for long-term care residents with type 2 diabetes: a cluster randomised controlled trial measuring outcomes of glycaemic control, relocation stress and depression," *International Journal of Older People Nursing*, vol. 15, no. 3, p. e12312, 2020.

[6] M. H. Zafarmand, P. Tajik, R. Spijker, and C. Agyemang, "Gene-environment interaction on the risk of type 2 diabetes among ethnic minority populations living in Europe and North America: a systematic review," *Current Diabetes Reviews*, vol. 16, no. 5, pp. 457–470, 2020.

[7] F. Koutny, D. Weghuber, E. Bollow et al., "Prevalence of prediabetes and type 2 diabetes in children with obesity and increased transaminases in European German-speaking countries. Analysis of the APV initiative," *Pediatric obesity*, vol. 15, no. 4, p. e12601, 2020.

[8] P. Qin, Y. Lou, L. Cao et al., "Dose-response associations between serum creatinine and type 2 diabetes mellitus risk: a Chinese cohort study and meta-analysis of cohort studies," *Journal of Diabetes*, vol. 12, no. 8, pp. 594–604, 2020.

[9] S. Imai, Y. Saito, S. Kajiyama et al., "Late-night-dinner deteriorates postprandial glucose and insulin whereas consuming dinner dividedly ameliorates them in patients with type 2 diabetes: a randomized crossover clinical trial," *Asia Pacific Journal of Clinical Nutrition*, vol. 29, no. 1, pp. 68–76, 2020.

[10] C. L. Han and C. Z. Qu, "Cardiovascular risk and safety evaluation of a dual peroxisome proliferator-activated receptor-alpha/gamma agonist, aleglitazar, in patients with type 2 diabetes: a meta-analysis," *Journal of Cardiovascular Pharmacology*, vol. 75, no. 4, pp. 351–357, 2020.

[11] Y. Yang, L. Tao, and S. Wenjun, "Progress in the treatment of type 2 diabetes mellitus with Yu-Yi Tang based on the theory of "deficiency of both Qi and Yin"," *Chinese Journal of Traditional Chinese Medicine*, pp. 1–12, 2022.

[12] H. Zhu, W. Fang, and H. Wang, "Correlation analysis of TCM evidence and laboratory indices in patients with diabetic foot ulcers," *Liaoning Journal of Traditional Chinese Medicine*, pp. 1–12, 2022.

[13] J. Fan and F. Yuan, "Effects of Hanazi Dihuang Tang combined with benadryl on renal function, TCM symptoms and microcirculatory indexes in patients with diabetic nephropathy," *Health Care Medicine Research and Practice*, vol. 19, no. 04, pp. 32–37, 2022.

[14] Z. Lv, "The efficacy of adding flavor of Zhenwu Tang in the treatment of diabetic nephropathy and the effect on the Chinese medicine evidence score and renal function," *Medical Theory and Practice*, vol. 35, no. 08, pp. 1320–1322, 2022.

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Retraction

Retracted: Clinical Effect of Standardized Dietary Avoidance Therapy on Children with Milk Protein Allergy and Its Effect on Intestinal Flora

Evidence-Based Complementary and Alternative Medicine

Received 20 June 2023; Accepted 20 June 2023; Published 21 June 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.

References

[1] W. Hao, C. Zhu, Y. Chen, H. Li, S. Zhu, and X. Wang, "Clinical Effect of Standardized Dietary Avoidance Therapy on Children with Milk Protein Allergy and Its Effect on Intestinal Flora," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 3362374, 6 pages, 2022.

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Research Article

Clinical Effect of Standardized Dietary Avoidance Therapy on Children with Milk Protein Allergy and Its Effect on Intestinal Flora

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Objective. The aim of this study is to analyze the clinical effect of standardized dietary avoidance therapy on children with cow milk protein allergy (CMPA) and its effect on the intestinal flora. *Methods*. The clinical data of 200 children with CMPA from our hospital from February 2020 to May 2021 were collected, and they were divided into a study group ($n = 100$) and a routine group ($n = 100$) based on different intervention modalities. The routine group received routine treatment, whereas the standardized dietary avoidance therapy was used in the study group. The clinical effects and related intestinal microflora indexes of the two groups were analyzed and compared. *Results*. There was no significant difference in the incidence of related symptoms between the two groups before intervention ($P > 0.05$), and the conditions of the two groups were improved after intervention. The incidences of skin (2%), digestive tract (3.00%), and respiratory tract (1.00%) in the study group were significantly lower than those in the routine group (14.00%, 18.00%, and 11.00%) ($P > 0.05$). The time taken for complete remission of symptoms and milk tolerance months in the study group (41.23 ± 23.68, 13.28 ± 6.17) were significantly shorter than those in the routine group (145.14 ± 66.74, 16.17 ± 8.05) ($P > 0.05$). The values of height, weight, and head circumference (HC) of children in the study group (79.88 ± 2.18, 11.09 ± 1.34, 47.88 ± 0.63) were higher than those in the routine group (76.21 ± 2.34, 9.81 ± 1.18, 45.98 ± 0.59) ($P > 0.05$). The levels of *Lactobacillus* and *Enterococcus* (9.95 ± 0.89, 11.31 ± 1.05) in the study group were higher than those in the routine group (9.11 ± 0.74, 10.38 ± 0.94), and the levels of yeast-like fungi in the study group (3.08 ± 0.24) were lower than those of the routine group (3.82 ± 0.31) ($P > 0.05$). *Conclusion*. The standardized dietary avoidance therapy is remarkable in the treatment of CMPA, in which the children were able to tolerate ordinary milk earlier, and the intestinal flora was significantly improved, thereby promoting the growth and development of children. It therefore merits clinical promotion.

1. Introduction

Cow milk protein allergy (CMPA) [1], an abnormal immunological reaction to cow's milk protein, is the most common allergic disease in infants [2]. According to statistics, the global incidence of CMPA in infants and young children is 1.9% to 4.9% [3], and the incidence of CMPA in infants and young children under 2 years old in China is about 2% to 3% [1], and it has shown a rising trend in recent years. The cow's milk protein is the main source of dietary protein for infants, so cow's milk is a major food allergen in children under 3 years of age. The clinical symptoms of CMPA are not typical and may affect different systems of the body, the severity of clinical symptoms varies and may include vomiting, regurgitation, diarrhea, hematochezia, colic, rash and urticaria, and gastrointestinal bleeding [4, 5]

and even anaphylactic shock caused by consuming milk protein. Vitamin D is an indispensable nutrient for the growth and development of infants and children, and evidence shows that it is closely related to the occurrence of allergic diseases. Studies have shown that genetic polymorphisms of vitamin D receptors that regulate vitamin D levels in the body are associated with allergic diseases such as childhood asthma and CMPA [6, 7].

Due to the immature gastrointestinal barrier function, loose intestinal wall structure, high mucosal permeability, the underdeveloped adaptive immune system of the small intestine, and uncleared intestinal flora of infants, they are prone to an immune inflammatory reaction in the gastrointestinal mucosa, leading to similar gastrointestinal symptoms [8]. In addition, poor parental diets can lead to nutritional deficiencies and imbalances in infants, potentially slowing down the child's growth. Infants are vulnerable to developmental retardation and immune function declines as symptoms progress [9, 10]. As a result, long-term follow-up of children is required to understand the prognosis. As such, the incidence of diagnostic failure and misdiagnosis of enteropathy, dietary protein-mediated enterocolitis, and dietary protein-mediated colitis overlap with eosinophilic gastroenteritis and inflammatory bowel disease, which can be reduced via surveillance. In addition, the height, weight, and head circumference (HC) of the child are also regularly measured to assess the child's growth and development [11].

The symptoms of milk protein allergy involve multiple systems and are not specific. Diagnosis needs to be differentiated from certain diseases, such as lactose intolerance, congenital or acquired immunodeficiency, gastrointestinal vascular malformations, peptic ulcers, invasive bacterial infections, parasitic infections, gastroesophageal reflux, and congenital genetic metabolic diseases. [12, 13]. Without proper diagnosis and treatment, about half of children will develop allergies to various foods, which can affect their quality of life. Probiotics have been used in clinical treatment in the past, yet it has not achieved promising outcomes in the treatment of most children with CMPA as evidenced by prior studies. Dietary avoidance is the primary treatment principle for food allergy, and standardized dietary avoidance therapy is food avoidance therapy fed with extensively hydrolyzed formula or amino acid formula powder [14]. Additionally, previous studies have suggested that changes in intestinal flora are closely related to food allergy and interact with the host to form a symbiotic unity, which plays a key role in many diseases [15]. To this end, this study aimed to analyze the clinical effect of standardized dietary avoidance in the treatment of children with CMPA and its effect on the intestinal flora to provide an insight into the treatment for children with CMPA and various food allergies.

2. Materials and Methods

2.1. Research Subjects. The clinical data of 200 cases of children with CMPA treated in our hospital from February 2020 to May 2021 were collected; there were 102 males and 98 females, aged 1–5 months, with an average age of 2.33 ± 0.62 months. They were assigned into a study group ($n = 100$) and routine group ($n = 100$) based on different intervention modalities. The routine group received routine treatment, and the standardized dietary avoidance therapy was used in the study group. Before enrollment, approval has been obtained from the patients' family members. The study protocol was reviewed and granted by the hospital ethics committee (QS-20200214), and all procedures were in compliance with the Declaration of Helsinki.

2.2. Inclusion, Exclusion, and Termination Criteria. Inclusion criteria are as follows: (1)those in line with the diagnostic criteria for milk protein allergy in *Evidence-Based Recommendations for the Diagnosis and Treatment of Milk Protein Allergy in Infants and Young Children in China* [16] and the milk avoidance and oral challenge test (OFC) were positive [17]; (2) those who met the standard of diagnosis and treatment in the *Guidelines for Diarrhea in Traditional Chinese Medicine* [18] issued by the Pediatric Branch of the Chinese Society of Traditional Chinese Medicine in 2008; (3) children aged $\geq$ 1 month and $\leq$ 12 months; and (4) those whose family members of the children were informed of the study and signed the consent form voluntarily.

Exclusion criteria are as follows: (1) those with gastrointestinal or respiratory infections and organic diseases; (2) those with congenital and hereditary diseases; and (3) those who dropped out of the study.

Termination criteria are as follows: (1) those who experienced serious adverse reactions or complications during the study, or the condition worsened; (2) those who quit the study voluntarily; and (3) those who received other treatment methods during the research period. The terminated case would not be included in the statistical analysis.

2.3. Methods. Children in the routine group received routine treatment and were given an amino acid formula powder or an extensively hydrolyzed formula powder until the clinical symptoms disappeared for 2 weeks, and then were continued to be fed with an ordinary formula. They were fed with amino acid formula powder or extensively hydrolyzed formula powder again if symptoms appeared.

Children in the study group received the standardized dietary avoidance therapy and were given an amino acid formula powder or an extensively hydrolyzed formula powder for at least 6 months, or 9–12 months of age. At the age of 6 months, complementary foods were gradually added according to the principle of from less to more, from thin to thick, and from single to mixed, and attention should be paid to avoid milk protein.

2.4. Evaluation Criteria. The evaluation criteria are as follows:

(1) Symptoms mitigation: the occurrence of skin, digestive tract, and respiratory symptoms before and after the intervention was recorded in the two groups, and the mitigation of clinical symptoms was evaluated and compared.

(2) Clinical efficacy: the complete remission time of symptoms and milk tolerance months of the two groups were recorded and compared. The children were followed up, and the growth and development of the two groups were recorded and compared after 9 months of follow-up, including height, weight, HC, etc. The higher the height and weight, the better the nutritional status of the child.

(3) Intestinal flora index: real-time fluorescence quantitative PCR method was used to detect the intestinal flora in the feces of the children before and after treatment, including *Lactobacillus*, *Enterococcus*, and yeast-like fungi.

2.5. Statistical Analysis. All data analyses were done using SPSS 22.0. Counting data (n (%)) and measurement data ($\overline{x} \pm s$)were analyzed via the chi-square test and the t-test, respectively; statistical difference was assumed at $P > 0.05$.

3. Results

3.1. Patient Characteristics. One hundred children in the routine group aged 1–5 months, with a height of 48–65 cm, a weight of 4.6–7.5 kg, and included 50 males and 50 females, with an average disease course of 2.42 ± 0.79 months; 100 children in the study group aged 1–5 months, with a height of 48–65 cm, weight of 4.5–7.5 kg, and included 52 males and 48 females, with an average disease course of 2.14 ± 1.17 months. The baseline data were balanced in the two groups (Table 1).

3.2. Symptoms of Mitigation. There was no significant difference in the incidence of related symptoms between the two groups before intervention ($P > 0.05$), and the conditions of the two groups were improved after the intervention. The incidences of skin (2%), digestive tract (3.00%), and respiratory tract symptoms (1.00%) in the study group were significantly lower than those in the routine group (14.00%, 18.00%, and 11.00%) ($P > 0.05$) (Table 2).

3.3. Clinical Efficacy

3.3.1. Time Taken for Symptom Relief and Milk Tolerance. The time taken for complete remission of symptoms and milk tolerance months in the study group (41.23 ± 23.68 and 13.28 ± 6.17) was significantly shorter than that in the routine group (145.14 ± 66.74 and 16.17 ± 8.05) ($P > 0.05$) (Table 3).

3.3.2. Growth and Development Condition. The values of height, weight, and head circumference (HC) of children in the study group (79.88 ± 2.18, 11.09 ± 1.34, and 47.88 ± 0.63) were higher than those in the routine group (76.21 ± 2.34, 9.81 ± 1.18, and 45.98 ± 0.59) ($P < 0.05$)(Table 4).

3.4. Intestinal Flora Index. The levels of *Lactobacillus* and *Enterococcus* (9.95 ± 0.89 and 11.31 ± 1.05) in the study group were higher than those in the routine group (9.11 ± 0.74 and 10.38 ± 0.94), and the levels of yeast-like fungi in the study group (3.08 ± 0.24) were lower than those of the routine group (3.82 ± 0.31) ($P < 0.05$) (Table 5).

4. Discussion

The clinical symptoms of CMPA in infants are varying, and the allergic symptoms may appear in different organ systems at different stages. For instance, respiratory symptoms are mostly manifested as repeated rubbing of the eyes and nose, and chronic cough, while gastrointestinal symptoms are abdominal pain and diarrhea [19]. The main allergens in milk are whey protein and casein [20]. Because children's immune tolerance has not yet been established, the intestinal flora is unstable, and parents do not understand the cause, children's allergies are more likely to worsen. Dietary avoidance is widely used clinically, but avoiding allergens alone cannot meet the high nutritional needs of children's growth and development.

Milk protein allergy is classified as "diarrhea in children" in traditional Chinese medicine. "Children's diarrhea" is caused by the deficiency of the spleen as the internal cause, which is caused by resensing and exogenous pathogens, which is consistent with the theory of the pathogenesis of CMPA in Western medicine. Due to the delicate viscera of children, the spleen is often deficient which is the source of qi and blood transport and transformation. Children with weak spleen and stomach, improper feeding, and overeating can easily cause damaged stomach qi, diarrhea, and vomiting. Traditional Chinese medicine believes that wind, cold, summer heat, and dampness are the main external causes, and the internal causes are the inabilities of the spleen and stomach to transport and transform [20]. Although both western medicine and traditional Chinese medicine are effective in treatment, they still have certain limitations. Therefore, it is necessary to find a way to effectively treat CMPA while ensuring the nutrition of children.

The results showed that the symptoms of the two groups were improved after the intervention. The incidences of skin (2%), digestive tract (3.00%), and respiratory tract (1.00%) in the study group were significantly lower than those in the routine group (14.00%, 18.00%, and 11.00%). The reason is that the standardized dietary avoidance therapy can provide partial or low levels of immunogenic proteins to meet the needs of children's rapid growth and development and gradually make children develop immune tolerance to dietary proteins [21]. In addition, it can also increase the abundance of intestinal flora and reduce the permeability of intestinal dietary proteins, thereby improving the clinical symptoms of milk protein allergy such as diarrhea, cough, wheezing, and rash. The results of this study also showed that the time taken for complete remission of symptoms and milk tolerance months in the study group (41.23 ± 23.68, 13.28 ± 6.17) was significantly shorter than that in the routine group (145.14 ± 66.74 and 16.17 ± 8.05), and the values of height, weight, and head circumference (HC) of children in the study group (79.88 ± 2.18, 11.09 ± 1.34, and 47.88 ± 0.63) were higher than those in the routine group (76.21 ± 2.34, 9.81 ± 1.18, 45.98 ± 0.59). All these are attributable to the

Table 1: Comparison of general data of two groups ($\overline{x} \pm s$).

Groups	n	Gender		Age (months)		Height (cm)		Weight (kg)	
		Male	Female	Range	Average	Range	Average	Range	Average
Routine group	100	50	50	1–5	2.18 ± 0.87	48–65	58.65 ± 3.24	4.6–7.5	5.98 ± 1.23
Study group	100	52	48	1–5	2.47 ± 0.96	48–65	57.99 ± 3.65	4.5–7.5	6.13 ± 1.08
T	—	—	—	—	1.467	—	1.352	—	0.916
P	—	—	—	—	0.144	—	0.178	—	0.361

Table 2: Comparison of the incidence of related symptoms in the two groups before and after intervention (%).

Groups	n	Before intervention			After intervention		
		Skin	Digestive tract	Respiratory tract	Skin	Digestive tract	Respiratory tract
Routine group	100	45 (45.00)	32 (32.00)	27 (27.00)	14 (14.00)*	18 (18.00)*	11 (11.00)*
Study group	100	47 (47.00)	35 (35.00)	24 (24.00)	2 (2.00)*	3 (3.00)*	1 (1.00)*
χ^2	201	0.081	0.202	0.230	9.783	11.971	8.865
P	—	0.777	0.653	0.632	0.002	0.001	0.003

*There is a statistically significant difference in the same group before and after the intervention, $P > 0.05$.

Table 3: Comparison of symptom relief and milk tolerance between the two groups ($\overline{x} \pm s$).

Groups	n	Time to complete symptom relief (d)	Milk tolerance age (month)
Routine group	100	145.14 ± 66.74	16.17 ± 8.05
Study group	100	41.23 ± 23.68	13.28 ± 6.17
t	—	14.673	2.849
P	—	<0.001	0.005

Table 4: Comparison of growth and development between the two groups after 9-month follow-up ($\overline{x} \pm s$).

Groups	n	Height (cm)	Weight (kg)	HC (cm)
Routine group	100	76.21 ± 2.34	9.81 ± 1.18	45.98 ± 0.59
Study group	100	79.88 ± 2.18	11.09 ± 1.34	47.88 ± 0.63
t	—	11.475	7.169	22.013
P	—	<0.001	<0.001	<0.001

Table 5: Comparison of intestinal flora indexes between the two groups ($\overline{x} \pm s$).

Groups	n	Before intervention			After intervention		
		Lactobacillus	*Enterococcus*	Yeast-like fungi	*Lactobacillus*	*Enterococcus*	Yeast-like fungi
Routine group	100	8.53 ± 0.52	9.11 ± 0.82	4.29 ± 0.63	9.11 ± 0.74	10.38 ± 0.94	3.82 ± 0.31
Study group	100	8.49 ± 0.61	9.18 ± 0.64	4.21 ± 0.70	9.95 ± 0.89	11.31 ± 1.05	3.08 ± 0.24
t	—	0.499	0.673	0.849	7.257	6.599	18.575
P	—	0.618	0.502	0.397	<0.001	<0.001	<0.001

*There is a statistically significant difference in the same group before and after the intervention, $P < 0.05$.

fact that standardized dietary avoidance therapy can significantly improve the growth and development of infants with CMPA and reduce or even prevent the occurrence of malnutrition [22]. Western medicine believes that milk protein allergy can lead to a vicious cycle, and one tissue can involve multiple organs. Therefore, early blocking of the allergic process can prevent allergic symptoms from developing from the skin and gastrointestinal tract to the respiratory system. Diet avoidance therapy blocks allergens at the root of the diet, which may be accountable for the prominent outcomes [23].

Milk protein allergy can be divided into IgE-mediated, non-IgE-mediated and mixed types. IgE-mediated milk protein allergy may be more quickly and easily tolerated, but the main manifestation of gastrointestinal symptoms is usually non-IgE-mediated or mixed types. The standardized dietary avoidance therapy has the same mechanism as the establishment of oral immune tolerance, and both are treated with a deeply hydrolyzed formula powder or an amino acid formula powder. It can induce immune tolerance in children, that is, inhibit the proliferation and activation of B lymphocytes, reduce the secretion of immunoglobulin IgE,

and reduce the inhibitory effect, increased secretion of plasma immunoglobulin IgA, immunoglobulin IgG1, and immunoglobulin IgG4, thereby reducing allergic symptoms [24, 25]. In addition, the extensively hydrolyzed formula (eHF) is to hydrolyze casein, whey, and lactoglobulin into molecular weights without changing their nutritional value by hydrolyzing casein, whey, and lactoglobulin by related enzymes. Short peptides or free amino acids less than 3000 Da make sustainable protein available to the intestinal tract and are safe to eat. However, the amino acid formula powder has no antigenicity and is generally used for the treatment of infants with severe food allergies. It provides adequate nutrition to ensure the growth and development of children while building tolerance. The findings of this study showed that the standardized dietary avoidance therapy resulted in earlier milk tolerance, as well as better development and growth in children with CMPA, which is similar to the findings of previous studies [26,27].

Notably, we found in the present study that the levels of *Lactobacillus* and *Enterococcus* (9.95 ± 0.89 and 11.31 ± 1.05) in the study group were higher than those in the routine group (9.11 ± 0.74 and 10.38 ± 0.94), and the levels of yeast-like fungi in the study group (3.08 ± 0.24)) were lower than those of the routine group (3.82 ± 0.31). It is known that intestinal flora is closely related to allergic diseases. The intestinal tract of newly born children is temporarily sterile and the immune system is not fully developed. One of the reasons for infant milk protein allergy may be the imbalance of intestinal microflora abundance, resulting in changes in the physical and chemical properties of relevant immune cells, thereby increasing intestinal permeability and leading to disorders of the human immune system. Our research results found that the standardized diet avoidance therapy has a good therapeutic effect on promoting the growth of normal dominant bacteria in the body, effectively inhibiting the growth of pathogenic bacteria, and regulating the stability of intestinal flora.

Although our study leads the way in the treatment of CMPA, the limitations merit attention. First, the small sample would possibly bias our results toward the null. Second, the short observation duration could compromise our findings. Therefore, more studies are needed to elucidate clinical outcomes.

In summary, the standardized dietary avoidance therapy is remarkable in the treatment of CMPA, in which the children were able to tolerate ordinary milk earlier, and the intestinal flora was significantly improved, thereby promoting the growth and development of children. It therefore merits clinical promotion

Data Availability

All data generated or analyzed during this study are included in this article.

Conflicts of Interest

All authors declare that they have no conflicts of interest.

Acknowledgments

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References

[1] W. Manuyakorn and P. Tanpowpong, "Cow milk protein allergy and other common food allergies and intolerances," *Paediatrics and International Child Health*, vol. 39, no. 1, pp. 32–40, 2019.

[2] A. D. Burris, J. Burris, and K. M. Järvinen, "Cow's milk protein allergy in term and preterm infants: clinical manifestations, immunologic pathophysiology, and management strategies," *NeoReviews*, vol. 21, no. 12, pp. e795–e808, 2020.

[3] A. Shah and J. Mandke, "Neonatal appendicitis with cow milk protein allergy," *Indian Pediatrics*, vol. 57, no. 4, pp. 365-366, 2020.

[4] S. Aktaş, E. Ergenekon, S. Unal, C. Turkyilmaz, I. M. Hirfanoglu, and Y. Atalay, "Different presentations of cow's milk protein allergy during neonatal period," *Turkish Journal of Pediatrics*, vol. 59, no. 3, pp. 322–328, 2017.

[5] A. Giannetti, G. Toschi Vespasiani, G. Ricci, A. Miniaci, E. di Palmo, and A. Pession, "Cow's milk protein allergy as a model of food allergies," *Nutrients*, vol. 13, no. 5, p. 1525, 2021.

[6] Ye Zhang, Y. Guo, J. Ma, X. Z. Lu, and X. Q. Luo, "Association of FokI rs2228570 and TMPRSS6 rs855791 polymorphisms with cow's milk protein allergy in children," *Chinese Journal of Contemporary Pediatrics*, vol. 20, no. 8, pp. 641–646, 2018.

[7] S. Albas, E. M. Koc, S. A. Nemli et al., "Vitamin D levels and vitamin D receptor (VDR) gene polymorphisms in inactive hepatitis B virus carriers," *J Coll Physicians Surg Pak*, vol. 30, no. 4, pp. 393–398, 2021.

[8] J. Matthai, M. Sathiasekharan, U. Poddar et al., "Guidelines on diagnosis and management of cow's milk protein allergy," *Indian Pediatrics*, vol. 57, no. 8, pp. 723–729, 2020.

[9] Y. Vandenplas, "Prevention and management of cow's milk allergy in non-exclusively breastfed infants," *Nutrients*, vol. 9, no. 7, p. 731, 2017.

[10] Y. Vandenplas, B. Al-Hussaini, K. Al-Mannaei et al., "Prevention of allergic sensitization and treatment of cow's milk protein allergy in early life: the middle-east step-down consensus," *Nutrients*, vol. 11, no. 7, p. 1444, 2019.

[11] J. A. Vanderhoof and R. E. Kleinman, "Iron requirements for infants with cow milk protein allergy," *The Journal of Pediatrics*, vol. 167, no. 4, pp. S36–S39, 2015.

[12] S. Salvatore, M. Agosti, M. E. Baldassarre et al., "Cow's milk allergy or gastroesophageal reflux disease-can we solve the dilemma in infants?" *Nutrients*, vol. 13, no. 2, p. 297, 2021.

[13] S. Kipfer and R. D. Goldman, "Formula choices in infants with cow's milk allergy," *Canadian Family Physician*, vol. 67, no. 3, pp. 180–182, 2021.

[14] R. Meyer, M. Groetch, and C. Venter, "When should infants with cow's milk protein allergy use an amino acid formula? A practical guide," *Journal of Allergy and Clinical Immunology: In Practice*, vol. 6, no. 2, pp. 383–399, 2018.

[15] C. Dupont, A. Bocquet, D. Tome et al., "Hydrolyzed rice protein-based formulas, a vegetal alternative in cow's milk allergy," *Nutrients*, vol. 12, no. 9, p. 2654, 2020.

[16] Y. Hu and H. Li, "Evidence-based recommendations for the diagnosis and treatment of milk protein allergy in Chinese infants and young children," *Chinese Journal of Pediatrics*, vol. 51, no. 03, pp. 183–186, 2013.

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Retraction

Retracted: Changes of Serum D-Dimer, NT-proBNP, and Troponin I Levels in Patients with Acute Aortic Dissection and the Clinical Significance

Evidence-Based Complementary and Alternative Medicine

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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] Z. Xu, M. Wei, X. Guo et al., "Changes of Serum D-Dimer, NT-proBNP, and Troponin I Levels in Patients with Acute Aortic Dissection and the Clinical Significance," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 8309505, 5 pages, 2022.

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Research Article

Changes of Serum D-Dimer, NT-proBNP, and Troponin I Levels in Patients with Acute Aortic Dissection and the Clinical Significance

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Objective. To investigate the changes in blood D-dimer (D-D), high-sensitivity troponin I (hs-cTnI), and N-terminal B-type brain natriuretic peptide (NT-proBNP) levels in patients with acute aortic dissection (AAD) and its clinical significance. *Methods*. Forty patients with AAD diagnosed in our hospital from January 2018 to December 2019 were selected as the observation group, and 40 patients with chest pain and non-AAD treated in our hospital during the same period were included in the control group. The patients were subdivided into a death group and a survival group as per the prognosis. The clinical symptoms and signs of the two groups of patients upon admission were observed, and the levels of D-D, hs-cTnI, and NT-proBNP were determined. The differences in clinical data, plasma D-D, hs-cTnI, and NT-proBNP levels between the two groups of patients were analyzed. *Results*. The clinical data and physical signs were homogeneous between the two groups ($P > 0.05$), while a significant elevation in the level of hs-cTnI in the control group was observed 24 h after admission ($P < 0.05$). The observation group showed significantly higher levels of D-D, NT-proBNP, and hs-cTnI than the control group ($P < 0.05$). The prevalence and surgical cure rate of Stanford A in the survival group were significantly lower in contrast with the death group, with an obvious higher intervention cure rate in the survival group. Higher D-dimer and NT-proBNP levels were identified at 24 h after admission versus upon admission, and the death group had a greater increase of D-dimer and NT-proBNP levels. *Conclusion*. Clinical symptoms and signs are insufficient to constitute a diagnosis of AAD, whereas the elevated expression levels of D-D, hs-cTnI, and NT-proBNP demonstrated great potential for the diagnosis and prognosis of AAD.

1. Introduction

Acute aortic dissection (AAD) is a cardiovascular emergency caused by cystic degeneration of the middle aorta and is a potentially lethal disease wherein blood enters the middle aorta through the rupture of the aortic intima, forming a stripped hematoma [1]. The findings of a 15-year cross-sectional study from 2001 to 2015 suggested that the incidence of AAD was about 3/100,000, with the 24-hour mortality rate of approximately 50%, and the death rate rose with the delay of admission [2]. Ineffective treatment of AAD is associated with a mortality rate of about 1% within 1~2 h of onset and more than 50% within 1 week, while timely treatment provides significant prognosis and survival benefits [3]. AAD is characterized by a high mortality rate and rapid progress, and early diagnosis and treatment is conducive to improve the prognosis of patients. There is no specific discussion on AAD in traditional Chinese medicine, but it has been classified as a blood stagnation in the chest in prior research. AAD pain is attributed to Blood-Qi delay and obstruction, constriction of blood vessels and veins, weakening of Blood-Qi, and local stagnation, resulting in poor blood flow [4].

Currently, AAD is diagnosed using CT angiography, magnetic resonance angiography, direct digital silhouetted blood tube angiography, and transesophageal

ultrasonography [5]. However, the diagnosis or prognosis of AAD patients remains unsatisfactory despite the advance of the aforementioned methods, which is ascribed to the critical condition of patients during AAD onset that requires urgent and rapid diagnostic management, intolerability of patients, and longtime detection [6]. To this end, laboratory examination is considered a contributory adjuvant.

D-D is the product of cross-linked fibrinogen degradation by fibrinolytic enzyme and directly reflects the fibrinolytic activity and coagulation function in vivo, and it is an ideal marker of hyperfibrinolytic and hypercoagulable state in vivo [7]. NT-proBNP is a kind of neurohormone sensitive to capacity and is synthesized and secreted by the heart, reflecting changes in intracardial pressure and chamber wall tension [8]. hs-cTnI is a myocardial contractile regulatory protein and is a sensitive indicator for the early diagnosis of minimal myocardial injury [9]. D-Dimer (D-D), N-terminal b-type natriuretic peptide precursor (NT-proBNP), and cardiac troponin I (hs-cTnI) play a positive role in the diagnosis and prognosis evaluation of AAD patients. Accordingly, the present study retrospectively analyzed the correlation between AAD and the above three indicators, so as to provide reference for the diagnosis and differentiation of AAD.

2. Materials and Methods

2.1. Subjects. In this retrospective study, forty patients with AAD diagnosed in our hospital from January 2018 to December 2019 were selected as the observation group, and 40 patients with chest pain and non-AAD treated in our hospital during the same period were included in the control group. In the control group, 17 cases were diagnosed with ST-segment elevation myocardial infarction, 11 cases were diagnosed with unstable angina pectoris, 6 cases were diagnosed with pulmonary embolism, and 6 cases were diagnosed with digestive tract diseases.

2.2. Selection Criteria. Eligibility criteria were as follows: patients with a diagnosis confirmed by CT and MRI [10] after admission without prior heparin and low molecular weight heparin use for anticoagulation therapy were included.

Exclusion criteria were as follows: patients with venous thromboembolism, liver and kidney disease, malignant tumor, connective tissue disease, thyroid dysfunction, acute and chronic infection, and New York Heart Association (NYHA) heart function grade IV [11] and patients who underwent surgery and trauma within 6 months were excluded.

2.3. Observation Indicators

2.3.1. Symptoms and Signs. The occurrence of sudden chest pain, back pain, abdominal pain, syncope, shock, no pulse in the upper finger artery, and asymmetry in upper extremity blood pressure were observed on admission.

2.3.2. D-D, hs-cTnI, and NT-proBNP Level Determination. Two tubes of anticoagulant blood (2 mL) and anticoagulant blood (2 mL) plus sodium citrate were collected from the cubital vein. The former was used for hs-cTnI and NT-proBNP measurement by using electrochemiluminescence analysis, and the latter was used for D-D determination using immunoturbidimetry. The time-resolved fluorescence immunoassay analyzer was the AQT90 analyzer provided by the Danish Radiometer Company, and hs-cTnI kit was purchased from Shanghai Panke Biotechnology Co. Ltd. NT-proBNP kit was purchased from Bosa (Tianjin) Biotechnology Co. Ltd. The D-D kit was purchased from Cyber Biotechnology Co. Ltd. All operations are carried out in strict accordance with the instructions.

2.3.3. The Correlation between Prognosis and the Expression of D-D, hs-cTnI, and NT-proBNP. According to the clinical prognosis of patients, the patients were divided into death group and survival group. The differences in clinical data, D-D, hs-cTnI, and NT-proBNP levels of the two groups were compared.

2.4. Statistical Analysis. In this study, the statistical analysis was done using SPSS25.0 software. Normally distributed data were presented as mean ± standard deviations, and inter-group differences were determined by using the *t*-test. Categorical data were expressed as (*n* (%)) and analyzed using the chi-square test. The statistical standard was set at a P value of less than 0.05.

3. Results

3.1. Patient Characteristics. The observation group includes 26 males and 14 females, aged from 38 to 86 years, with a mean age of (59.05 ± 11.3) years old. There were 18 cases of type A and 22 cases of type B in terms of Stanford types, 28 cases of hypertension, 11 cases of drinking history, 7 cases of diabetes, 16 cases of smoking history, 23 cases of thoracic, abdominal, and iliac aorta involvement, 8 cases of thoracic aorta involvement, and 9 cases of thoracic and abdominal aorta involvement. The control group consists of 24 males and 16 females, with an average age of (62.9 ± 11.1) years. There were 17 cases of acute myocardial infarction, 6 cases of pericarditis, 6 cases of esophageal and gastric diseases, 3 cases of pulmonary embolism, 5 cases of nerve root pain, 3 cases of musculoskeletal diseases, 26 cases of hypertension, 13 cases of drinking history, 9 cases of diabetes, and 14 cases of smoking history. Patient characteristics between the two groups were comparable ($P > 0.05$) (Table 1).

3.2. Symptoms and Signs. The chi-square test revealed no statistically significant difference in the incidence of sudden chest pain, back pain, abdominal pain, syncope, shock, no pulse in the upper finger artery, and asymmetry of upper limb blood pressure between the two groups ($P > 0.05$) (Table 2).

Table 1: Comparison of general information.

	Observation group	Control group	χ^2/t	P
n	40	40		
Gender (male/female)	26/14	24/16	0.213	0.664
Age	59.05 ± 11.32	62.91 ± 11.14	1.537	0.128
Hypertension (yes/no)	28	26	0.228	0.633
Smoking (yes/no)	16	14	0.213	0.644
Drinking (yes/no)	11	13	0.238	0.626
Diabetes (yes/no)	7	9	0.313	0.576

Table 2: Comparison of symptoms and signs.

	n	Chest pain	Back pain	Abdominal pain	Syncope	Shock	No arteries in the upper extremities	Asymmetry of upper extremity blood pressure
Observation group	40	38	25	7	8	8	2	2
Control group	40	35	19	5	6	5	0	0
χ^2		1.409	1.818	0.392	0.346	0.827	2.051	2.051
P		0.235	0.178	0.531	0.556	0.363	0.152	0.152

3.3. D-D, hs-cTnI, and NT-proBNP Levels. At 24 h after admission, the D-D and NT-proBNP levels of the two groups showed significant elevation, while the hs-cTnI levels exhibited no significant change ($P > 0.05$), and a pronounced increase in the level of hs-cTnI in control group was observed ($P < 0.05$). The observation group showed significantly higher levels of D-D, NT-proBNP, and hs-cTnI than the control group ($P < 0.05$) (Table 3).

3.4. Analysis of Patient Prognosis and Clinical Data. Of all eligible patients, 31 patients survived and 9 died. The difference in the gender ratio, hypertension, alcohol history, diabetes incidence, and smoking rate between the survival and death group did not come up to the statistical standard ($P > 0.05$). The prevalence and surgical cure rate of Stanford A in the survival group were significantly lower in contrast with the death group, and an obvious higher intervention cure rate was observed in the survival group ($P < 0.05$) (Table 4).

3.5. D-D and NT-proBNP Levels in the Survival Group and Death Group. Higher D-dimer and NT-proBNP levels were identified at 24 h after admission versus upon admission, and the death group had a greater increase in D-dimer and NT-proBNP levels (Table 5).

4. Discussion

In this study, the incidence of sudden chest pain, back pain, abdominal pain, syncope, shock, and upper limb blood pressure asymmetry was similar between the two groups. AAD is associated with compromised quality of life and negative effects on physical functioning [12]. The typical clinical manifestation of AAD includes sudden severe pain in the chest, back, and upper abdomen, which is similar to that of acute coronary syndrome [13]. In the event of reinvolvement of the coronary arteries, the insufficiency of acute myocardial blood supply and electrocardiographic changes resemble those of acute myocardial infarction and are therefore prone to misdiagnosis. In view of this, early differential diagnosis and treatment are of paramount significance to improve the prognosis of patients [14]. Typical symptoms of AAD include severe chest pain, low blood pressure, or syncope [15]. The results of this study demonstrated that clinical symptoms and physical signs are premature for the differential diagnosis of AAD. Imaging studies provide a solid foundation for diagnosing AAD and monitoring patients with higher odds of aortic disease.

The results showed that D-D, NT-proBNP, and hs-cTnI in patients with AAD substantially increased with time, with more pronounced alterations in the death group versus the survival group. D-D is a special degradation product of cross-linked fibrin. The increase of D-D level is attributed to the interaction of multiple fibrinolytic activating factors, which indicates secondary fibrinolytic activity and reflects the state of hypercoagulability and fibrinolysis in the body. It is known that exposure of tissue factor in the arterial smooth muscle layer of patients with AAD activates the exogenous coagulation pathway and increases the level of peripheral blood D-D [16]. The severity of the tear is directionally proportional to the activity of the coagulation system and the subsequent fibrinolytic process, as well as to D-D and FDP levels. Thus, timely effective treatment measures are strongly encouraged after diagnosis [17]. A meta-analysis enrolling 16 studies to evaluate the diagnostic value of DD in AAD has proved that the sensitivity of the combination detection of was 0.96 (95% CI 0.91~0.98), the specificity of the combination was 0.70 (95% CI 0.57~0.81), and the combined DOR was 56.57 (95% CI 25.11~127.44). The combined +LR was 3.25 (95% CI 2.18~4.85), the combined −LR was 0.06 (95% CI 0.03~0.12), and the AUC was 0.94 (95% CI 0.91~0.95). D-Dimer yields excellent diagnostic value and high

Table 3: Comparison of D-D, hs-cTnI, and NT-proBNP levels.

	n	D-Dimer (ug/ml)		NT-proBNP (ng/ml)		hs-cTnI (ng/ml)	
		On admission	24 h after admission	On admission	24 h after admission	0.01 ± 0.01	0.02 ± 0.01
Observation group	40	1.45 ± 0.32	6.72 ± 0.79	593.88 ± 242.67	882.72 ± 260.76	0.37 ± 0.23	1.62 ± 0.25
Control group	40	0.60 ± 0.22	2.15 ± 0.57	127.16 ± 58.95	263.02 ± 58.94	−10.004	−41.331
t		13.673	29.603	11.820	14.660	0.01 ± 0.01	0.02 ± 0.01
P		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Table 4: Analysis of patient prognosis and clinical data.

	Survival group	Death group	$\chi 2/t$	P
n	31	9		
Gender (male/female)	16/15	5/4	0.043	0.835
Stanford typing (A/B)	20/11	6/3	0.014	0.905
Treatment			0.140	0.932
Drug	10	3		
Surgery	5	1		
Intervention	16	5		
Hypertension (yes/no)	22/9	6/3	0.061	0.804
Smoking (yes/no)	12/19	4/5	0.096	0.757
Drinking (yes/no)	8/23	3/6	0.198	0.636
Diabetes (yes/no)	6/25	1/8	0.328	0.567

Table 5: Comparison of D-D and NT-proBNP levels between survival group and death group.

	n	D-Dimer (ug/ml)		NT-proBNP (ng/ml)	
		On admission	24 h after admission	On admission	24 h after admission
Survival group	31	1.36 ± 0.27	6.55 ± 0.68	507.33 ± 202.10	788.67 ± 205.86
Death group	9	1.75 ± 0.33	7.33 ± 0.90	891.98 ± 70.13	1206.28 ± 142.20
t		−3.581	−2.830	−5.569	−5.685
P		<0.001	0.007	<0.001	<0.001

sensitivity for AAD [18]. NT-proBNP is a biologically active substance produced by decomposition of NT-proBNP of amino acid residues synthesized by cardiomyocytes in blood circulation. NT-proBNP mainly exists in ventricular myocytes. When ventricular wall tension and ventricular dilatation increase, the amount of BNP released from cardiomyocytes into the blood increases correspondingly, showing a positive correlation [19]. A meta-analysis showed that elevated NT-proBNP levels at admission were associated with an increased risk of short-term death from AAD [20]. Moreover, the death group herein exhibited a remarkably higher NT-proBNP level versus the survival group. TnI is a biomarker that features the advantage of long half-life, good vitro stability, short detection time, and rapid data acquisition over other biological indicators of myocardial injury. Most of the cardiac TnI is fixed on myofibrils in the form of binding proteins. When cardiomyocytes are damaged, free TnI will first enter the extracellular blood circulation [21]. A higher concentration suggests a more severe myocardial damage. The elevated aortic dissection TnI is presumably ascribed to aortic valve edema and thickening, aortic valve insufficiency, insufficient coronary blood supply, and even myocardial infarction [22].

Taken together, hs-cTnI is insufficient for AAD diagnosis. This bias may stem from the nature of this retrospective and single-center study and limited sample size.

5. Conclusion

Clinical symptoms and signs are insufficient to constitute a diagnosis of AAD, whereas the elevated expression levels of D-D, hs-cTnI, and NT-proBNP demonstrated great potential for the diagnosis and prognosis of AAD.

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.

Acknowledgments

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References

[1] J. Gawinecka, F. Schönrath, and A. von Eckardstein, "Acute aortic dissection: pathogenesis, risk factors and diagnosis," *Swiss Medical Weekly*, vol. 147, Article ID w14489, 2017.

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Retraction

Retracted: Effect of Shenqi Fuzheng Injection on Leukopenia and T-cell Subsets in Patients with Non-small Cell Lung Cancer Undergoing Radiotherapy

Evidence-Based Complementary and Alternative Medicine

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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.

References

[1] C. Wu, Y. Liang, and F. Fu, "Effect of Shenqi Fuzheng Injection on Leukopenia and T-cell Subsets in Patients with Non-small Cell Lung Cancer Undergoing Radiotherapy," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2832739, 6 pages, 2022.

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Research Article

Effect of Shenqi Fuzheng Injection on Leukopenia and T-cell Subsets in Patients with Non-small Cell Lung Cancer Undergoing Radiotherapy

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Purpose. The aim of this study is to evaluate the effect of Shenqi fuzheng injection on leukopenia and T-cell subsets in patients with non-small cell lung cancer (NSCLC) undergoing radiotherapy. *Methods*. A total of 124 patients with advanced NSCLC treated in the oncology department of our hospital from January 2017 to January 2019 were included and assigned at a ratio of 1 : 1 to receive conventional radiotherapy (control group, $n = 62$) or conventional radiotherapy plus Shenqi Fuzheng injection (study group, $n = 62$) via the random number table method. *Results*. The study group showed a significantly higher objective response rate (ORR) and a lower incidence of leukopenia versus the control group ($P < 0.05$). After the treatment, Shenqi Fuzheng injection resulted in significantly lower levels of carcinoembryonic antigen (CEA) and neuron-specific enolase (NSE) in the study group versus conventional treatment given to the control group. After the treatment, the control group showed significantly decreased ratios of CD3+ T cells, CD4+ T cells, and CD4+/CD8+, and an increased ratio of CD8+ T cells, and significant differences when compared with the study group. The T-cell subsets of the patients in the study group showed no significant changes than those between the treatment. The median OS was 20.0 months in the control group and 23.5 months in the study group. The differences between the two groups in terms of OS did not come up to the statistical standard. *Conclusion*. Shenqi Fuzheng injection for NSCLC patients undergoing radiotherapy elevates the number of white blood cells, regulates T-cell immune function, reduces tumor markers, and enhances clinical efficacy. Further clinical trials are, however, required prior to clinical promotion.

1. Introduction

Lung cancer is a common malignant tumor with a high prevalence and mortality, and its symptoms include cough, sputum, hemoptysis, and chest pain [1]. In 2020, the number of new cancer cases worldwide was 19,292,789, of which 4,568,754 (about 4.56 million) were new cases of cancer in China, accounting for 23.7% of the world's total. The increase in the incidence of lung cancer is closely related to environmental pollution, population aging, and unhealthy lifestyles [2]. Mortality from lung cancer is mainly attributed to distant metastasis despite surgical resection with curative intent. Moreover, due to the insidious symptoms at the early stage, lung cancer patients are mostly diagnosed at the advanced stage [3], where conservative treatments such as radiotherapy and chemotherapy are mainly adopted for disease control. However, chemoradiotherapy causes collateral damage to the adjacent normal tissues and results in reduced therapeutic effects [4]. Thus, there exists a need to explore effective treatment methods to prolong patient survival and enhance the quality of life. NSCLC is a common type of lung cancer, and chemotherapy based on cytotoxic drugs is a common treatment for patients with advanced lung cancer. However, chemotherapy seriously affects the immunity of the body and their quality of life and is prone to drug resistance.

According to traditional Chinese medicine (TCM), lung cancer is mainly caused by stagnation of qi and blood in the lung promoted by internal deficiency of positive qi and external invasion of evil toxins. In advanced cancer patients,

the deficiency of positive qi and the prevailing evil toxins may lead to insufficient body resistance against the evil qi and further depletion of positive qi, resulting in disease aggravation [5, 6]. Therefore, maintenance of positive qi and a combination of tumor cell killing with immunity reinforcement is the key to treatment [7]. The application of traditional Chinese medicine in lung cancer has been widely reported, and the adjuvant therapy of traditional Chinese medicine plays the role in relieving postoperative adverse reactions and enhancing the immune function of the body. Studies have shown that the combination of Sun-Bai-Pi extract and cisplatin can produce a synergistic effect, improve the killing effect of chemotherapy drugs on lung cancer cells, and promote the rapid clearance of tumor cells. The effects of single traditional Chinese medicines such as tanshinone, cinnamaldehyde, and puerarin in inducing tumor cell apoptosis have also been confirmed [8]. Shenqi Fuzheng injection is a classic TCM preparation, mainly containing Astragali Radix and Codonopsis Radix, both of which are tonic medicines that benefit the spleen and lung meridians, nourish the middle Jiao, activate the body's positive qi, improve the patient's immunity, and alleviate the adverse consequences of radiotherapy [9]. Astragali Radix is the root of *Astragalus membranaceus* (Fisch.) Bunge and is sweet in taste with mild heat. It nourishes the spleen and lung meridians, improves the body's immune function, and regulates the balance of qi and blood in the internal organs of the body tonifying the qi, strengthening the spleen, enhancing the Yang, and reducing swelling [10, 11]. Relevant research proved that ginseng polysaccharide, which is rich in Codonopsis Radix, exhibits low toxicity and strong pharmacological activity with anticancer effects [12]. The present study was undertaken to evaluate the effect of Shenqi fuzheng injection on leukopenia and T-cell subsets in patients with non-small cell lung cancer (NSCLC) undergoing radiotherapy, so as to provide a reference for further research on the clinical indications of Shenqi Fuzheng injection and to reveal its pharmacological mechanism of action.

2. Materials and Methods

2.1. Participants. A total of 124 patients with advanced NSCLC treated in the oncology department of our hospital from January 2017 to January 2019 were included and assigned at a ratio of 1 : 1 to receive conventional radiotherapy (control group, $n = 62$) or conventional radiotherapy plus Shenqi Fuzheng injection (study group, $n = 62$) via the random number table method. The study was approved by the ethics committee of Central South University Xiangya School of Medicine Affiliated Haikou Hospital and followed the Declaration of Helsinki ethical guidelines for clinical trials [13]. Undersigned informed consent was obtained from the participants and their families for this study.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria. Patients who were aged 18–80 years, who were pathologically diagnosed with non-small cell lung cancer with clinical stage IIIB-IV, without surgical indication, with at least one measurable lesion, with an expected survival of ≥3 months, with no previous radiation therapy and tolerance to chemotherapy were included.

2.2.2. Exclusion Criteria. Patients with malignant neoplastic diseases at other sites, with active infectious disease or presence of acute inflammatory disease requiring systemic treatment, who were pregnant or lactating women, with childbirth plans during the study period, with communication difficulties that prevent timely follow-up, and with other diseases such as severe liver, kidney, and other organ dysfunction were excluded.

2.3. Treatment Methods. All patients received three-dimensional conformal radiotherapy with the Novalis Tx (NTX) linear accelerator. The target areas of radiotherapy included the primary foci, the ipsilateral lung hilum, and the involved lymphatic drainage area. Patients received radical prescription doses within 6~7 weeks, totaling 60–70 Gy, 2 Gy/dose. The maximum dose for the spinal cord was within 45 Gy, the average dose for the esophagus was within 34 Gy, and the maximum dose for the brachial plexus was within 66 Gy. Patients in the study group received 250 mL of Shenqi Fuzheng injection (Lizhu Group Limin Pharmaceutical Factory, approval number: Z19990065) on day 1 of radiotherapy through intravenous infusion daily, with a course of 21 d for a total of 2 courses.

2.4. Outcome Measures

2.4.1. Clinical Efficacy. At 4 weeks after radiotherapy, the Response Evaluation Criteria in Solid Tumors (RECIST) [14] was used to classify the outcome into complete remission (CR), partial remission (PR), stable disease (SD), and progressive disease (PD).

PR indicates the complete disappearance of lesions on imaging. CR indicates a reduction of >50% of the lesions on imaging without the appearance of new lesions. SD indicates a reduction of 25–50% of the lesions on imaging without the appearance of new lesions. PD indicates a reduction of less than 25% of the lesions on imaging or the appearance of new lesions. Objective Remission Rate (ORR) = PR + CR/total cases*100%.

2.4.2. Leukocyte Count. On day 7 after radiotherapy, patients underwent routine blood tests. According to the WHO myelosuppression criteria [15], leukopenia was classified into grades 0 to IV, with grade 0 for leukocytes ≥4.0 × 109/L, grade I for leukocytes (3.0–3.9) × 109/L, grade II for leukocytes (2.0–2.9) × 109/L, grade III for leukocytes (1.0–1.9) × 109/L, and grade IV for leukocytes ≤1.0 × 109/L.

2.4.3. Tumor Markers. Fasting venous blood was collected from patients before and after treatment, and the levels of carcinoembryonic antigen (CEA) and neuron-specific enolase (NSE) were determined by electrochemiluminescence.

2.4.4. Peripheral Blood T-cell Subsets. Fasting venous blood was collected from patients before and after treatment, respectively, and the ratios of circulating CD3+ T cells, CD4+ T cells, and CD8+ T cells were determined by flow cytometry, and the CD4+/CD8+ were calculated.

2.4.5. Long-Term Therapeutic Effects. Patients were followed up for 3 years after surgery, starting from the 2nd month after discharge with a follow-up visit every 2 months. Adverse reactions and survival status during the follow-up period were recorded.

2.5. Statistical Analysis. SPSS 22.0 was used for data organization and statistical analyses, and *R* language was used to plot the graphics. The measurement data were tested for normality, and non-normal data were converted to normal data by using Box-Cox Transformation. The measurement data are expressed as mean ± standard deviation ($\overline{x} \pm s$) and analyzed using the *t*-test. Count data are expressed as rates (%) and analyzed using the chi-square test. Survival data were tested using the K–M test and survival curves were plotted. The difference was considered statistically significant with $\alpha = 0.05$ as the limit of significance.

3. Results

3.1. Patient Characteristics. The patient characteristics between the two groups, such as gender, age, KPS score, pathological type, and TNM stage, were not statistically significant and were comparable (all $P < 0.05$). (Table 1).

3.2. Clinical Efficacy. In the control group, there were 16 cases of CR, 18 cases of PR, 24 cases of SD, and 4 cases of PD, with an ORR of 54.84% (34/62). In the study group, there were 24 cases of CR, 22 cases of PR, 14 cases of SD, and 2 cases of PD, with an ORR of 74.19% (46/62). The ORR of the study group was significantly higher than that of the control group ($\chi^2 = 5.073$, $P = 0.024$). (Table 2).

3.3. Leukocyte Count. In the control group, there were 22 cases of grade 0, 28 cases of grade I, 11 cases of grade II, 1 case of grade III, and 0 cases of grade IV, and the incidence of leukopenia was 64.52% (40/62). In the study group, there were 38 cases of grade 0, 18 cases of grade I, 6 cases of grade II, 0 cases of grade III, and 0 cases of grade IV, and the incidence of leukopenia was 38.71% (24/62). Patients in the study group showed a significantly lower incidence of leukopenia versus those in the control group ($\chi 2 = 8.267$, $P = 0.004$). (Table 3).

3.4. Tumor Marker Levels. Before the treatment, there was no significant difference in the levels of CEA and NSE between the two groups ($P > 0.05$). After the treatment, patients receiving Shenqi Fuzheng injection in the study group were associated with significantly lower levels of CES and NSE versus those in the control group ($P < 0.05$). (Table 4).

3.5. T-cell Subsets. Before the treatment, the differences in the ratio of CD3+ T cells, the ratio of CD4+ T cells, the ratio of CD8+ T cells, and the CD4+/CD8+ ratio between the two groups were not statistically significant (all $P > 0.05$). After the treatment, the control group showed significantly decreased ratios of CD3+ T cells, CD4+ T cells, and CD4+/CD8+, and an increased ratio of CD8+ T cells, and significant differences when compared with the study group (all $P < 0.05$). The T-cell subsets of the patients in the study group showed no significant changes than those between the treatment ($P > 0.05$). (Table 5).

3.6. Overall Survival. The median OS was 20.0 months (95% CI: 18, 24) in the control group and 23.5 months (95% CI: 19.0, 30.0) in the study group. The differences between the two groups in terms of OS did not come up to the statistical standard (Table 6 and Figure 1).

4. Discussion

Lung cancer is a malignant tumor with high prevalence, and the long-term survival of patients remains poor despite the continuous improvement of treatment protocols [16]. In recent years, the role of TCM in adjuvant therapy against cancer has received increasing recognition [17].

Leukopenia is a common complication of chemoradiotherapy and may lead to serious complications such as secondary infections [18]. The results of the present study demonstrated that Shenqi Fuzheng injection could significantly alleviate serum leukopenia in lung cancer patients under radiotherapy. Oncogenesis impairs the function of the hematopoietic system, and myelosuppression occurs during chemoradiotherapy, which compromises the therapeutic effect and even threatens the life of the patient [19]. It has been reported that Shenqi Fuzheng injection plus granulocyte colony-stimulating factor was effective in managing leukopenia in acute leukemia by mitigating oxidative stress and improving survival quality [20]. In addition, a relevant study confirmed that Shenqi Fuzheng injection could significantly reverse patients' qi deficiency, enhance immune function, improve treatment effect and quality of life, and prolong their survival time [21]. CEA and NSE are common markers of NSCLS and play an important role in tumor diagnosis, clinical treatment, and prognostic assessment, and an increase in their expression levels suggests a poor prognosis [22]. In the present study, patients in the study group showed significantly lower levels of CEA and NSE, suggesting that Shenqi Fuzheng injection improved the prognosis of patients, which may be attributed to the fact that *Astragali radix* and *Codonopsis radix* enhanced the sensitivity of tumor cells to radiotherapy, which indirectly boosted the effectiveness of radiotherapy. Using proteomics and phosphorylation modification omics and other technologies, the tumor suppressor effect of some traditional Chinese medicine components was revealed. The researchers conducted quantitative proteomics and phosphorylation modification group of non-small cell lung cancer A549 cell line treated with ginsenoside extract. Through scientific

Table 1: Patient characteristics.

	Control group ($n = 62$)	Study group ($n = 62$)	t/χ^2	P value
Gender			0.308	0.579
Male	40	37		
Female	22	25		
Age	67.15 ± 13.21	65.18 ± 15.43	0.764	0.447
KPS score			0.175	0.676
≥80 points	34	36		
<80 points	18	16		
Pathological type			0.831	0.660
Squamous cell carcinoma	22	20		
Adenocarcinoma	30	28		
Others	10	14		
TNM stage			0.314	0.575
III	21	24		
IV	41	38		

Table 2: Clinical efficacy (n, %).

	n	CR	PR	SD	PD	ORR
Control group	62	16 (25.81)	18 (29.03)	24 (38.71)	4 (6.45)	34 (54.84)
Study group	62	24 (38.71)	22 (35.48)	14 (22.58)	2 (3.23)	46 (74.19)
χ^2						5.073
P value						0.024

Table 3: Leukocyte count (n, %).

	n	Grade 0	Grade I	Grade II	Grade III	Grade IV	Total incidence
Control group	62	22	28	11	1	0	40 (64.52)
Study group	62	38	18	6	0	0	24 (38.71)
χ^2							8.267
P value							0.004

Table 4: Tumor marker levels ($\overline{x} \pm s$, ng/mL).

	n	CEA		NSE	
		Before	After	Before	After
Control group	62	51.93 ± 7.21	46.44 ± 6.36	27.14 ± 4.55	23.45 ± 4.16
Study group	62	50.81 ± 9.13	41.15 ± 7.43	26.16 ± 5.02	21.03 ± 4.08
t value		0.758	4.259	1.139	3.270
P value		0.450	<0.001	0.257	0.001

Table 5: T-cell subsets ($\overline{x} \pm s$).

	n	CD3+T (%)		CD4+T (%)		CD8+T (%)		CD4+/CD8+	
		Before	After	Before	After	Before	After	Before	After
Control group	62	56.11 ± 10.14	50.15 ± 8.24#	33.15 ± 7.24	28.45 ± 6.31#	24.15 ± 4.31	27.49 ± 5.40#	1.51 ± 0.35	1.26 ± 0.28#
Study group	62	55.72 ± 11.53	54.48 ± 9.25	32.81 ± 7.37	31.83 ± 7.17	25.33 ± 5.02	24.15 ± 4.92	1.53 ± 0.31	1.48 ± 0.29
t value		0.200	2.752	0.259	2.786	1.404	3.600	0.337	4.297
P value		0.842	0.007	0.780	0.006	0.162	<0.001	0.737	<0.001

#indicates $P < 0.05$ when compared to the same group before treatment.

analysis, it was found that Ras protein plays a regulatory role in multiple functional pathways, indicating that it is likely to be the target protein of a certain component of ginsenosides [23]. In addition, it was verified that bruceine D (Bruceine D), by targeting ICAT, blocked the interaction between ICAT and β-catenin, promoted the degradation of β-catenin in liver cancer cells, and then down-regulated HIF-1α and its downstream glucose metabolism expression of related genes in hypoxic liver cancer cells, and ultimately inhibited the energy metabolism of liver cancer cells and the growth of

Table 6: Overall survival.

	n	Median survival	95%CI
Control group	62	20.0	18.0 ~ 24.0
Study group	62	23.5	19.0 ~ 30.0
HR		1.396	0.938 ~ 2.077
P value		0.089	

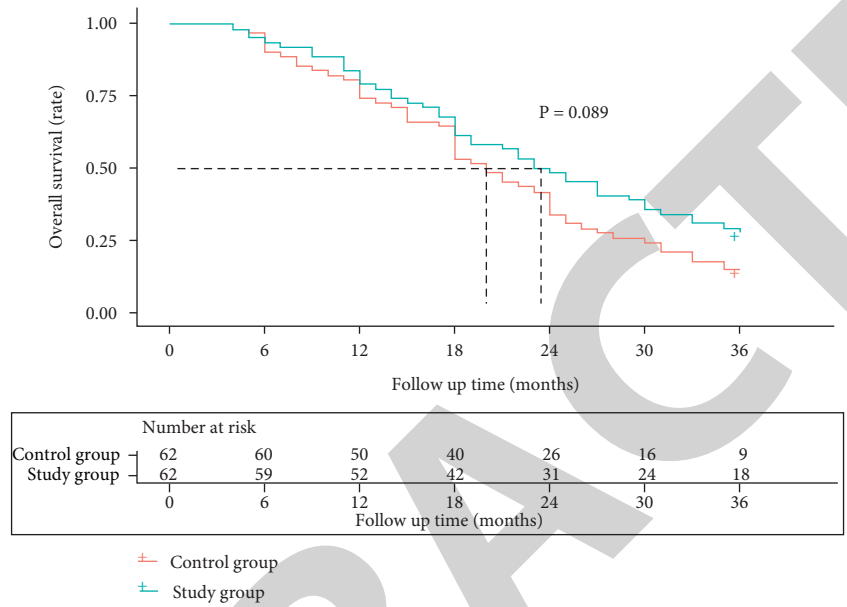

Figure 1: Overall survival.

tumors in vivo. However, the composition of traditional Chinese medicine prescriptions is complex, and there are few related proteomic studies [24].

Chemotherapy and radiotherapy can render tumor cells visible to the immune system but also lower the number of immune cells and impair the immunity of the body. T lymphocyte subsets, including CD4+ T lymphocytes and CD8+ T lymphocytes, play a dominant role in the cellular immune response. CD4+ T lymphocytes are helper T cells with antitumor effects and CD8+ T lymphocytes are cytotoxic T cells whose increase facilitates continued tumor growth and promotes tumor cell proliferation, both of which collectively maintain immune function. CD4+/CD8+ downregulation is associated with reduced immunity [25]. It has been found that radiotherapy-induced reduction in T lymphocytes, especially CD4+ T cells, is associated with a poor prognosis of cancer. Clinical studies have shown that Shenqi Fuzheng injection stimulates bone marrow hematopoiesis, enhances body immunity, potentiates efficiency, and reduces toxicity in anticancer treatment [26]. In the present study, the CD3+ T cells, CD4+ T cells, CD5+ T cells, and CD4+/CD8+ ratio in the study group were significantly higher than those in the control group, indicating that Shenqi Fuzheng injection enhanced the immune function of lung cancer patients under radiotherapy. However, the specific mechanism is not analyzed and discussed in this paper. Most of the references in this article are clinical studies, lacking evidence support from basic studies.

5. Conclusion

Shenqi Fuzheng injection for NSCLC patients undergoing radiotherapy elevates the number of white blood cells, regulates T-cell immune function, reduces tumor markers, and enhances clinical efficacy. Further clinical trials are, however, required prior to clinical promotion.

Data Availability

All data generated or analyzed during this study are included in this published article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] F. Nasim, B. F. Sabath, and G. A. Eapen, "Lung cancer," *Medical Clinics of North America*, vol. 103, no. 3, pp. 463–473, 2019.

[2] H. Hoy, T. Lynch, and M. Beck, "Surgical treatment of lung cancer," *Critical Care Nursing Clinics of North America*, vol. 31, no. 3, pp. 303–313, 2019.

[3] R. Shintani, A. Sekine, K. Murohashi et al., "Successful treatment of chylothorax and chylopericardium by radiotherapy in lung cancer," *Internal Medicine*, vol. 61, no. 13, 2022.

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Retraction

Retracted: Effects of Staged Nursing Care on Neuroendoscopic Transsphenoidal Pituitary Adenoma Resection and Postoperative Complications

Evidence-Based Complementary and Alternative Medicine

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References

[1] Y. Fei, J. Zhang, and Y. Gu, "Effects of Staged Nursing Care on Neuroendoscopic Transsphenoidal Pituitary Adenoma Resection and Postoperative Complications," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2171529, 7 pages, 2022.

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Research Article

Effects of Staged Nursing Care on Neuroendoscopic Transsphenoidal Pituitary Adenoma Resection and Postoperative Complications

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Objective. The purpose of this study was to determine whether staged nursing had an impact on the outcome of neuroendoscopic transsphenoidal pituitary tumor resection and postoperative complications. *Methods*. As research participants, we chose 88 individuals with pituitary adenomas who were treated at our institution between February 2020 and November 2021; all patients received endoscopic transsphenoidal pituitary adenoma excision. The patients were randomly divided into two groups: the routine group ($n = 44$) and the stage group ($n = 44$). Patients in the routine group received care according to the routine nursing mode, and patients in the stage group received care according to the stage nursing mode. The staged nursing interventions included preoperative, intraoperative, and postoperative nursing. Postoperative recovery-related indicators such as the self-rating anxiety scale (SAS) and a self-rating depression scale (SDS), contentment, comfort, and postoperative complications were compared between the two groups. *Results*. The postoperative recovery-related indexes of patients in the stage group were significantly lower than those in the routine group ($P < 0.05$); the SAS and SDS scores in the stage group after treatment were significantly lower than those in the routine group ($P < 0.05$); patients in the stage group were significantly more satisfied with their treatment after treatment than those in the routine group ($P < 0.05$); patients in the stage group were significantly more comfortable after treatment than those in the routine group ($P < 0.05$); a significantly lower incidence of postoperative complications was observed in the stage group compared to the routine group ($P < 0.05$). *Conclusion*. Patients with neuroendoscopic transsphenoidal pituitary tumor excision benefit greatly from staged nursing. The nursing approach may successfully assure the procedure's smooth completion, boost patients' postoperative recovery, and reduce patients' worry, despair, and other unpleasant feelings. The nursing approach may successfully increase clinical satisfaction and comfort of patients by minimizing the likelihood of postoperative problems, and it is well-suited for practical use.

1. Introduction

A pituitary adenoma is one of the most common intracranial benign tumors. Statistics show that its incidence is second only to glioblastoma and meningioma among intracranial tumors [1]. Among them, the prolactin-type pituitary adenoma with the highest incidence accounts for about 80% to 85%. Although pituitary adenoma is a benign tumor, clinical symptoms often seriously affect the quality of life of patients. Female patients manifested lactation, amenorrhea, and infertility; male patients manifested impotence, low libido, infertility, etc., and overgrown tumors could cause mass effects [2, 3]. A pituitary tumor is a benign tumor that is regularly discovered in the brain. This problem tends to occur in the anterior section of the pituitary gland in the sella area, and clinical investigations have shown that this disease predominantly affects young and middle-aged people. A pituitary tumor is associated with abnormal quantities of sex hormone, surrounding tissue compression, recurrent headaches, vision loss, and other compression symptoms that have adverse impacts on a patient's quality of life.

Presently, pituitary tumors are mainly treated surgically. Due to the rapid development of minimally invasive techniques and surgical instruments in China [4], the application of neuro endoscopy in transsphenoidal surgery has also increased. When compared with traditional craniotomies,

neuroendoscopic transsphenoidal surgery causes less trauma to the patient's body, so postoperative recovery is more rapid, making it a more suitable procedure for elderly or frail patients [5].

In addition, there are promising treatment methods in traditional Chinese medicine (TCM), such as traditional Chinese medicine prescriptions. TCM etiology and pathogenesis of pituitary tumors are ascribed to the deficiency of kidney essence, dystrophy of the brain and marrow, mutual formation of phlegm and blood stasis, and accumulation of evil toxins. At present, the commonly used Chuening recipe treats the disease from the kidney, phlegm, and blood stasis. It can not only reduce serum prolactin and restore it to a nearly normal level but also reduce or even remove the tumor of pituitary adenoma with fewer side effects [6, 7]. Furthermore, studies have indicated that good postoperative treatment for pituitary tumors contributes immensely to disease recovery and improves the 'patient's prognosis.

During the last two decades, with the improvement of 'people's quality of life in China, nursing work has gradually evolved to become more refined, meticulous, and excellent. Staged nursing is an emerging nursing model that has many unique, creative, and holistic characteristics. This allows patients to face the follow-up treatment calmly, which is crucial to improving the prognosis of patients [8]. This study aimed to examine the effect of staged nursing on neuroendoscopic transsphenoidal pituitary tumor resection and postoperative complications.

2. Data and Methods

2.1. Participants. A total of 88 patients with pituitary tumors treated at our hospital from February 2020 to November 2021 were chosen as research subjects, and the patients were divided into two categories: routine group ($n = 44$) and stage group ($n = 44$). The randomization was carried out using an online web-based randomization tool (freely available at https://www.randomizer.org/). For concealment of allocation, the randomization procedure and assignment were managed by an independent research assistant who was not involved in the screening or evaluation of the participants. In the routine group, there were 26 males and 18 females; their ages varied from 30 to 52 years, with an average age of (41.28 ± 5.73) years; the disease duration ranged from 2 to 7 months, with an average disease duration of (4.23 ± 1.12) months. There were 28 males and 16 females in the phase group; the age ranged from 31 to 53 years, with an average age of (41.37 ± 5.82) years. The disease duration ranged from 1 to 7 months, with an average disease duration of (4.31 ± 1.20) months.

Before the commencement, the informed consent of the patients was obtained. This study protocol was approved by the hospital ethics committee (QW-LJH20200213). All procedures were in strict accordance with the guidelines of the Declaration of Helsinki.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria. Patients who met the following criteria were included in this study:

(i) Patients who were clinically diagnosed with pituitary adenoma.

(ii) Patients who showed various symptoms including decreased vision, fatigue, headaches, and nausea.

2.2.2. Exclusion Criteria. The following patients were excluded from the study:

(i) Patients with other severe organ diseases were excluded from the study.

(ii) Patients with poor compliance and poor cooperation were excluded from this study.

(iii) Patients with infections, cardiovascular diseases, and other related diseases, with other serious medical diseases, coagulation disorders, or an abnormal mental status that prevented normal communications.

3. Methods

(1) All patients in the routine group received routine nursing services: this included meal planning, oral care, physical sign monitoring, and health education.

(2) A staged nursing model was used to intervene with patients in the stage group. Its characteristics are that nursing is divided into stages, such as preoperative, intraoperative, and postoperative, and different nursing interventions are carried out at each stage.

3.1. Preoperative. Nursing staff should reduce patients' blood vessel diameters before surgery for patients with nasal blood vessels [9, 10], and if the patient has symptoms such as cold and runny nose before surgery, these symptoms should be controlled, and the patient's condition stabilized before surgery. When the patient is sent to the operating room, the operating room's temperature and humidity should be adjusted in time, and the nurses should be kept as silent as possible during the operation. The nursing staff must test all the instruments used before the operation and ensure that the instruments used during the procedure are in a sterile state when they are used [11].

Nurses should also provide appropriate psychological care to patients before surgery. In spite of the fact that pituitary tumor disease has no major impact on the prognosis of patients, patients remain prone to anxiety, tension, and other negative emotions that affect their sleep quality, such as preoperative panic and fear for the safety of surgery, which will adversely affect their quality of sleep. Therefore, the nursing staff should provide a certain level of psychological counseling to the patient before the operation, explain to the patient the reliability of the operation and the dangers associated with pituitary tumor disease, and allow the patient to maintain a positive preoperative attitude. This will facilitate the patient's cooperation during the operation [12].

3.2. Interoperative. During the course of the operation, in addition to the cooperation of the equipment nurses, the circuit nurses must also be cooperative. During preoperative

inspections, roving nurses should be present. As soon as the patient enters the operating room, the nursing staff should assist the anesthesiologist in performing general anesthesia and tracheal intubation and monitoring the patient's vital signs. After anesthesia, the nursing staff should pay attention to protecting the patient's eye mask and may apply appropriate eye ointment to the patient's eye corner. It is necessary to arrange the patient's surgical position appropriately to ensure a smooth operation. Diabetes insipidus is one of the most common complications associated with pituitary surgery. The nurses should assist patients to indwell a suitable urinary catheter and carefully record the patient's urine output during surgery, which can serve as a reference for doctors' treatment in the future [13].

An important aspect of surgical care is that the handwashing nurse should be familiar with the steps of the procedure and be able to fully cooperate with the surgeon. During the hemostasis packing gauze after the operation, nurses should pay particular attention to prevent the occurrence of subcutaneous hematoma of the nasal mucosa.

3.3. Postoperative. It is important that the nursing staff turn the patient's head to the side before he or she awakens from general anesthesia, to prevent airway obstruction caused by vomiting. As soon as the patient awakens from general anesthesia, help him or her to assume a semirecumbent position and raise his or her head, which can effectively prevent cerebral edema by improving intracranial venous return [14]. Nursing staff should also monitor the patient's body for signs of complications after the operation. Patients should be told that if they find themselves with a large amount of clear liquid in the nasal cavity again, they should seek medical attention at the earliest opportunity and return to the hospital for regular reexaminations to understand how the tumor has changed.

3.4. Outcomes

3.4.1. Indicators of Postoperative Recovery. Postoperative hepatic portal exhaust time, bowel sound recovery time, and hospitalization time are among these indicators. Each of these indicators was tracked by the hospital's medical staff [15, 16].

3.4.2. SAS and SDS Scores. Both scales have 20 items each with a total score of 100, with 50–70 being mild anxiety/depression, 71–90 being moderate anxiety/depression, and >90 being severe anxiety/depression. The score is proportional to the degree of anxiety/depression, i.e., the higher the score, the higher the degree of anxiety/depression of the patient.

3.4.3. Contentment. The "Satisfaction Questionnaire" created by the hospital is used to assess the patient's satisfaction. It contains 20 questions. Patients are graded based on their satisfaction with the hospital's various services. Five points are awarded for each question, and the total score is divided as follows: <70 points indicate dissatisfied, 70–89 points indicate satisfied, and ≥90 points indicate very satisfied.

3.4.4. Comfort. The patient's comfort was evaluated using a simplified comfort scale. The scale consists of four dimensions: psychology, physiology, social culture, and environment on a scale of 100 points, ≥90 points are very comfortable; 60–90 points are general comfort; <60 points are discomfort.

3.4.5. Postoperative Complications. Diabetes insipidus, cerebrospinal fluid rhinorrhea, decreased vision, and infection are possible complications of surgery.

3.5. Statistical Analysis. SPSS 20.0 software was used as the data analysis software, measurement data were expressed as $(\overline{x} \pm s)$, and independent t-test samples were used to examine the difference; enumeration data were expressed as the number of cases (%), and the test was used to analyze the difference. Statistical significance was set at a P value of less than 0.05.

4. Results

4.1. General Data. In terms of overall baseline data, there was no significant difference between the two patient groups ($P > 0.05$), Table 1.

4.2. Comparison of Indices Related to Postoperative Recovery. Patients in the stage group spent considerably less time than those in the routine group to attain postoperative recovery-related indicators ($P < 0.05$), Table 2.

4.3. Anxiety (SAS) Depression (SDS) Score Comparison. After therapy, patients in the stage group had substantially lower SAS and SDS levels than those in the routine group ($P < 0.05$), Table 3.

4.4. Satisfaction Comparison. After therapy, there was a substantial difference in patient satisfaction between the stage group and the regular group ($P < 0.05$), Table 4.

4.5. Comparison of Comfort. Those in the stage group reported considerably higher levels of satisfaction after therapy than patients in the routine group ($P < 0.05$), Table 5.

4.6. Comparison of Postoperative Complications. Postoperative complications were much fewer in the stage group ($P < 0.05$), Table 6.

5. Discussion

The pituitary tumor is a benign intracranial tumor that is more common in young and middle-aged people; pituitary tumors impact patients' fertility, work, life, and studies to varying degrees. Neuroendoscopic transsphenoidal excision is now one of the most often used treatments for pituitary

Table 1: Comparison of general data.

	Routine group ($n = 44$)	Stage group ($n = 44$)	t/x^2	P
Gender			0.192	0.661
Male	26	28		
Female	18	16		
Age (years)	30–52	31–53		
Average age (years)	41.28 ± 5.73	41.37 ± 5.82	−0.073	0.942
Disease duration (months)	2–7	1–7		
Average disease duration (months)	4.23 ± 1.12	4.31 ± 1.20	−0.323	0.747

Table 2: Comparison of postoperative recovery-index indicators ($\overline{x} \pm s$).

Group (number of cases)	Postoperative hillar exhaust time (h)	Bowel sounds recovery time (h)	Length of hospital stay (d)
Routine group ($n = 44$)	23.66 ± 2.06	16.38 ± 2.42	8.34 ± 2.06
Stage group ($n = 44$)	16.31 ± 1.47	11.21 ± 1.05	5.18 ± 1.05
t	19.265	13.0	9.066
P	<0.001	<0.001	<0.001

Table 3: Anxiety (SAS) depression (SDS) score comparison ($\overline{x} \pm s$).

Group	Number of cases	SAS (points)		SDS (min)	
		Before nursing	After nursing	Before nursing	After nursing
Routine group	44	69.35 ± 2.36	58.63 ± 2.57	64.34 ± 3.21	55.62 ± 5.78
Stage group	44	69.41 ± 2.29	48.42 ± 2.67	64.40 ± 3.25	46.51 ± 5.49
t	—	−0.121	18.275	−0.087	7.58
P	—	0.904	<0.001	0.931	<0.001

Table 4: Satisfaction comparison [n(%)].

Group	Number of cases	Dissatisfied	Satisfied	Very satisfied	Total satisfaction rate
Routine group	44	15	16	13	29 (66%)
Stage group	44	3	17	24	41 (93%)
x^2	—	—	—	—	10.057
P	—	—	—	—	0.002

Table 5: Comparison of comfort [n(%)].

Group	Number of cases	Very comfortable	General comfort	Uncomfortable	Total comfort
Routine group	44	11	18	14	30 (68%)
Stage group	44	22	19	3	41 (93%)
x^2	—	—	—	—	8.822
P	—	—	—	—	0.003

Table 6: Comparison of postoperative complications [n(%)].

Group	Number of cases	Diabetes insipidus	Cerebrospinal fluid rhinorrhea	Vision loss	Infection	Overall incidence (%)
Routine group	44	3	2	2	3	10 (23%)
Stage group	44	1	0	0	1	2 (5%)
x^2	—	—	—	—	—	6.175
P	—	—	—	—	—	0.013

tumors. This approach has several advantages, including reduced stress on the patient's body, faster recuperation following surgery, and increased patient comfort [17]. Scholars have found that patients with pituitary tumors treated surgically may face a number of postoperative problems, and these issues will have a significant impact on patients' postoperative rehabilitation.

In traditional Chinese medicine, there is no clear record of this disease, but according to clinical observations, the disease is located in the brain, and in traditional Chinese medicine, "brain tumor" can be manifested as such symptoms. At present, the methods of differentiating and treating this disease are inconsistent, and the representative one is Professor Zhang Qiujuan who treats pituitary tumors from

phlegm, blood stasis, and the kidney. Chui Ning Fang is a clinical protocol for the treatment of pituitary tumors, and its prescription has also achieved wide recognition from the majority of doctors and patients [18]. In addition, people's expectations for nursing services have risen in recent years as the quality of life has improved [19]. Some experts believe that early implementation of scientific rehabilitation nursing plans after cancer surgery can improve blood circulation and neurotrophic state, reduce postoperative swelling, and improve the state of limb dysfunction [20]. Taking targeted rehabilitation nursing measures is conducive to promoting the recovery of limb function after cancer surgery and to the gradual improvement of the quality of life. It can also promote patients to take staged functional exercise in the early stage, which can promote functional recovery and improve exercise endurance and the quality of life, and the outcome is remarkable [21, 22]. The Chinese medicine nursing program emphasizes the guiding ideology of the holistic view of traditional Chinese medicine and nursing based on syndrome differentiation and always guides the clinical practice with the holistic view of traditional Chinese medicine. The methods of "different nursing for the same disease" and "same nursing for different diseases" are adopted to carry out syndrome-differentiated nursing from the aspects of daily life, diet, emotion, medication, and nursing [23]. Despite the fact that routine nursing interventions such as diet and psychology are included in the routine nursing of neuroendoscopic transsphenoidal pituitary tumor resection, the effect of routine nursing is relatively low due to the insufficient understanding of the time when the patient requires nursing [24].

A staged nursing intervention was used in this trial and has the benefit of allowing matching symptomatic nursing measures for patients' psyche and physiology in various clinical phases. Patients are more prone to suffer fear and anxiety before surgery due to their hazy comprehension of sickness and operation [25], psychological support is therefore necessary at this time. Early on, the nursing staff should pay more attention to the nutritional supplement of the patient's body. After the patient has undergone surgery, if the procedure has been successful, the nursing staff should concentrate on patient observation and preventative measures [26]. This study found that the recovery-related indicators of patients in the staged nursing group were significantly lower than those in the routine group, which indicated that staged nursing could be an effective tool for promoting the postoperative recovery of patients undergoing pituitary tumor resection. Possibly, this is due to the staged nursing preparing the patient's intraoperative posture before surgery, which may result in a reduction of the patient's negative emotions caused by postural discomfort, as well as a reduction of postoperative vomiting; therefore, it is capable of promoting the recovery of patients following surgery.

It has been shown that patients with pituitary tumors are frequently influenced by variables such as sickness, surgery, and strange surroundings in the hospital, which can cause psychological discomfort such as worry and panic, impacting the patient's follow-up therapy [27]. It has been demonstrated by Wang Qin et al. that staged nursing mode intervention can effectively improve the negative emotions of patients and thereby enable them to maintain a positive treatment attitude [28]. According to the results of this study, the SAS and SDS scores of the patients in the stage group after treatment were significantly lower than those of the patients in the routine group, indicating that the staged nursing model intervention could effectively reduce anxiety and depression among patients undergoing pituitary aneurysmectomy. It may be the case that staged nursing mode intervention provides more comprehensive psychological counseling and knowledge explanations to the patients before surgery, facilitating their understanding of their diseases and the operation, thereby alleviating their anxiety [29].

Furthermore, the results of this study revealed that patients in the stage group were significantly more satisfied and comfortable after treatment than those in the routine group, indicating that staged care could significantly improve patient comfort and satisfaction following pituitary tumor resection. The reason for this could be that nurses who practice staged nursing show complete respect and understanding, pay close attention to the physical and psychological changes of patients, and help patients solve the problems they encounter appropriately; as a result, the body and mind reached a state of comfort, which greatly improved the patient's level of satisfaction and comfort [30]. A primary focus of nursing is the management of postoperative complications resulting from pituitary tumors, which not only requires nurses to master the knowledge, skills, and procedures of routine nursing but also requires them to comprehend the pathogenesis and clinical manifestations of postoperative complications [31]. As a result of this complete understanding, the nursing staff will be able to closely observe the occurrence of various complications in the body of the patient following surgery. After neuroendoscopic transsphenoidal pituitary tumor resection, the most commonly reported postoperative complications are diabetes insipidus, rhinorrhea caused by cerebrospinal fluid, impaired vision, infection, etc. It is anticipated that these complications will adversely affect the subsequent rehabilitation of patients [32]. The results of this study demonstrated that the incidence of postoperative complications in patients in the stage group was significantly lower than that in the routine group. This confirms that staged care can effectively reduce the incidence of postoperative complications in patients undergoing pituitary tumor resection. Presumably, this is due to the fact that staged care will employ strict aseptic procedures and will actively take measures such as anti-infection measures and cooling during the surgery, which further reduces the incidence of postoperative complications in patients [33].

The staged nursing path helps reduce the psychological stress of patients. Surgery, as an invasive treatment, is an extremely major source of stress for patients with bad psychological emotions, which can cause different degrees of tension, anxiety, and restlessness in patients undergoing surgery. Patients maintain a good psychological condition before surgery, reduce stress response, and facilitate

postoperative recovery. Therefore, the use of staged care, through prehospital assessment to understand the needs of patients, and individualized preoperative health education and psychological care can alleviate the patient's negative psychological emotions and improve the patient's confidence in treatment.

However, there is a limitation in generalizing to disease due to the results of the small number of participants. In addition, the intervention time might not be enough. Thus, further studies are suggested to secure a larger population of subjects with a longer intervention time to counter the limitations.

In summary, staged nursing has a significant effect on patients undergoing neuroendoscopic transsphenoidal pituitary tumor resections. The nursing procedure for this procedure can ensure a smooth completion of the operation, promote the postoperative recovery of patients, and reduce anxiety and depression among patients. In addition, it is guaranteed to reduce the probability of postoperative complications for patients, and its nursing method can also be effectively used to improve the clinical satisfaction and comfort of patients, so its use in clinical practice is highly recommendable.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

Yaya Fei and Jiajia Zhang equally contributed to this article.

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References

[1] Y. Pang, Z. Tan, W. Mo et al., "A pilot study of combined optical coherence tomography and diffusion tensor imaging method for evaluating microstructural change in the visual pathway of pituitary adenoma patients," *BMC Ophthalmology*, vol. 22, no. 1, 2022.

[2] A. F. Daly, "Comment on "Persistent remission of acromegaly in a patient with GH-secreting pituitary adenoma: effect of treatment with pasireotide long-acting release and consequence of treatment withdrawal"," *Journal of Clinical Pharmacy and Therapeutics*, 2022.

[3] R. Wang, C. Zhou, A. I. McCormack, and A. N. Mamelak, "Editorial: refractory pituitary adenoma—current challenges and emerging treatments," *Frontiers in Endocrinology*, vol. 13, Article ID 868174, 2022.

[4] S. Ahn, J. S. Park, D. H. Kim, S. W. Kim, and S. S. Jeun, "Surgical experience in prevention of postoperative CSF leaks using abdominal fat grafts in endoscopic endonasal transsphenoidal surgery for pituitary adenomas," *Journal of Neurological Surgery Part B*, vol. 82, no. 5, pp. 522–527, 2021.

[5] J. Bajaj and P. S. Chandra, "Recent developments in endoscopic endonasal approach for pituitary adenomas," *Neurology India*, vol. 68, pp. S79–S84, 2020.

[6] Y. Zhou and Q. Zhang, "Treatment of 30 cases of pituitary prolactin-type pituitary tumor with Chuining recipe," *Henan Zhongzhong*, vol. 37, no. 12, pp. 2162–2164, 2017.

[7] J. Duan, Q. Zhang, and C. Xu, "Preliminary study on the regulatory effect of "Cuining prescription" on the level of endogenous differential miRNA in PRL-type pituitary tumors," *World Journal of Integrative Medicine*, vol. 13, no. 6, pp. 802–805, 2018.

[8] W. F. Wang, L. H. Yang, L. Han, M. J. Li, and J. Q. Xiao, "Efficacy of transsphenoidal surgery for pituitary tumor: a protocol for systematic review," *Medicine (Baltimore)*, vol. 98, no. 6, Article ID e14434, 2019.

[9] Y. Esquenazi, W. I. Essayed, H. Singh et al., "Endoscopic endonasal versus microscopic transsphenoidal surgery for recurrent and/or residual pituitary adenomas," *World Neurosurgery*, vol. 101, pp. 186–195, 2017.

[10] N. Yayoshi, Y. Hamamoto, H. Oda et al., "Successful treatment of feline hyperadrenocorticism with pituitary macroadenoma using radiation therapy: a case study," *Journal of Veterinary Medical Science*, vol. 84, no. 7, pp. 898–904, 2022.

[11] H. Sawada, A. Mori, P. Lee, S. Sugihara, H. Oda, and T. Sako, "Pituitary size alteration and adverse effects of radiation therapy performed in 9 dogs with pituitary-dependent hypercortisolism," *Research in Veterinary Science*, vol. 118, pp. 19–26, 2018.

[12] M. J. Ramirez-Expósito, J. M. Martinez-Martos, V. Canton-Habas, and M. D. P. Carrera-Gonzalez, "Moderate beer consumption modifies tumoral growth parameters and pyrrolidone carboxypeptidase type-I and type-II specific activities in the hypothalamus-pituitary-mammary gland Axis in an animal model of breast cancer," *Nutrition and Cancer*, vol. 73, no. 11-12, pp. 2695–2707, 2021.

[13] H. Koundal, M. Dhandapani, P. Thakur et al., "Effectiveness of dietary diabetes insipidus bundle on the severity of postoperative fluid imbalance in pituitary region tumours: a randomized controlled trial," *Journal of Advanced Nursing*, vol. 77, no. 9, pp. 3911–3920, 2021.

[14] C. C. Ko, C. H. Chang, T. Y. Chen et al., "Correction to: solid tumor size for prediction of recurrence in large and giant nonfunctioning pituitary adenomas," *Neurosurgical Review*, vol. 45, no. 2, 2022.

[15] C. Li, "The application of traditional Chinese medicine emotional nursing in patients with acute and chronic renal failure treated with maintenance hemodialysis," *Bright Chinese Medicine*, vol. 35, no. 20, pp. 3289–3291, 2020.

[16] W. Huang and F. Zheng, "Analysis of the effect of syndrome differentiation and diet therapy in clinical nursing of patients with chronic renal failure," *Clinical Research in Traditional Chinese Medicine*, vol. 12, no. 30, pp. 21-22, 2020.

[17] J. A. Gondim, J. P. Almeida, L. A. F. de Albuquerque, E. Gomes, M. Schops, and J. I. Mota, "Endoscopic endonasal transsphenoidal surgery in elderly patients with pituitary adenomas," *Journal of Neurosurgery*, vol. 123, no. 1, pp. 31–38, 2015.

[18] S. Yang, W. Cao, and J. Duan, "Analysis of prescription rules for the treatment of prolactin-type pituitary adenoma with the method of resolving phlegm and removing blood stasis," *Journal of Yunnan University of Traditional Chinese Medicine*, vol. 42, no. 4, pp. 88–93, 2019.

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Retraction

Retracted: Effectiveness of Comprehensive Nursing in Hemodialysis of Patients with Chronic Renal Failure and the Impact on Their Quality of Life

Evidence-Based Complementary and Alternative Medicine

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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] Q. Wen, S. Yao, and B. Yao, "Effectiveness of Comprehensive Nursing in Hemodialysis of Patients with Chronic Renal Failure and the Impact on Their Quality of Life," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 1399650, 6 pages, 2022.

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Research Article

Effectiveness of Comprehensive Nursing in Hemodialysis of Patients with Chronic Renal Failure and the Impact on Their Quality of Life

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Objective. To assess the effectiveness of comprehensive nursing in patients with chronic renal failure undergoing hemodialysis and the impact on their quality of life. *Methods*. The present study included 86 patients undergoing hemodialysis for chronic renal failure from January 2020 to October 2021 and randomly assigned them to receive either normal nursing or comprehensive nursing, with 43 cases in each group. Outcome measures included psychological status, treatment compliance, quality of life, and complications of the eligible patients. *Results*. After the intervention, comprehensive nursing resulted in lower Self-Rating Anxiety Scale (SAS) scores and Self-Rating Depression Scale (SDS) scores and higher quality of life scores for patients versus routine nursing ($P < 0.05$). Comprehensive nursing was associated with a significantly higher overall patient compliance rate versus routine nursing ($P < 0.05$). Patients receiving comprehensive nursing had a lower risk of developing complications versus those given routine nursing ($P < 0.05$). *Conclusion*. Comprehensive care increases treatment compliance and self-care capacity of patients undergoing hemodialysis for chronic renal failure, improves their quality of life, and lowers the risk of complications, indicating a high potential for clinical advancement.

1. Introduction

Chronic renal failure [1] is secondary to the continuous progression of various chronic kidney diseases and is characterized by renal insufficiency, metabolite retention, dysregulation of the internal environment, and functional imbalance of systems. Clinical statistics show that the annual incidence of chronic renal failure is about 0.3%, which exhibits an increasing trend in recent years, and the incidence of chronic kidney disease in Chinese adults is about 10.8% [2, 3]. Patients with chronic renal failure have exceedingly complicated clinical symptoms that may be split into two categories: metabolic abnormalities and systemic multisystem symptoms. The majority of individuals with stages I–III are asymptomatic or present moderate symptoms such as fatigue, anorexia, and mild anemia. Disease progression is associated with more severe symptoms such as heart failure, hyperkalemia, gastrointestinal bleeding, and neurological disorders, posing a great threat to the health of patients [4]. Evidence has confirmed the association of the occurrence of chronic renal failure with primary glomerular disease, diabetic nephropathy, immune disease kidney damage, and drug-related kidney damage; besides, the disease progression is accelerated in the presence of infection, insufficient blood circulation, and the use of nephrotoxic drugs [5]. Hemodialysis [6] is a renal replacement therapy for acute and chronic renal failure, which effectively removes metabolites and toxic substances from the body, maintains the balance of water electrolytes and acidity [7, 8], discharges excess water from the body, and substantially improves prognosis [9]. According to the findings of relevant research, hemodialysis alleviated patients' symptoms and improved their quality of life within 6 weeks of therapy. Nonetheless, the condition is prone to recurrence, whereas

long-term hemodialysis is associated with physical discomfort. Patients with chronic renal failure are predisposed to negative emotions such as anxiety and depression, which compromise treatment compliance and treatment effect. Clinical treatment of the disease highlights the treatment of the primary cause, avoidance of risk factors, prevention of complications, and substitution therapy, and the formulation of treatment protocols entails the integration of factors such as primary illness and symptoms. Moreover, the recurrence of the disease causes inconvenience to patients and their families and further triggers negative emotions such as anxiety [10, 11]. According to traditional Chinese medicine (TCM), chronic renal failure belongs to the categories of "edema," "exertional labor," and "retention of urine." The long duration and the slow recovery of chronic renal failure impose a large financial burden on patients and severely compromise their quality of life [12]. Clinical findings indicate that effective care methods could reduce medical costs and improve patient satisfaction [13]. In China, the TCM care guideline for chronic renal failure was developed by the State Administration of Traditional Chinese Medicine in 2015 [14, 15]. Furthermore, research suggests that competent nursing care during hemodialysis aids disease recovery and improves patient prognosis [14, 15]. Comprehensive nursing systematizes nursing procedures, coordinates standardized nursing plans and nurse training programs, and integrates the advantages of accountable care and group nursing to ensure the quality of care [16]. As a result, from January 2020 to October 2021, patients undergoing hemodialysis for chronic renal failure in our hospital were recruited to analyze the effectiveness of comprehensive nursing in hemodialysis of patients with chronic renal failure and the influence on their quality of life.

2. Materials and Methods

2.1. Participants. A total of 86 patients undergoing hemodialysis for chronic renal failure in our hospital from January 2020 to October 2021 were recruited and assigned to receive routine nursing (control group) or comprehensive nursing (observation group) via the random number table method, with 43 cases in each group. Informed consent was obtained from patients and signed prior to enrollment in this study. The study protocol was approved by the hospital ethics committee, with an ethical number of JX-JUE20200104. All procedures complied with the Declaration of Helsinki's ethical guidelines for clinical research.

2.2. Inclusion and Exclusion Criteria. Inclusion criteria: patients with diagnosis of chronic renal failure confirmed by relevant examinations, who received hemodialysis for ≥3 months, and who provided written informed consent were included.

Exclusion criteria: patients with infections, cardiovascular diseases, and other related diseases, with other serious medical diseases, with coagulation disorders, or with an abnormal mental status that prevented normal communications were excluded.

2.3. Treatment Methods. All patients were treated with hemodialysis. Hemodialysis was performed under systemic heparinization using a polysulfone membrane high-flux dialyzer from B. Braun Avitum AG [17] with a dialysate flow of 500 ml/min and a blood flow of 200–300 ml/min. The duration of hemodialysis was 4 h each and was performed thrice a week.

The control group received routine nursing, including pre-dialysis preparation, weight measurement, basic health education, close monitoring of vital signs and conditions, dialysis machine management, and prevention of dialysis complications [18].

The observation group received comprehensive nursing. (1) Health education: The patients were educated about the knowledge of chronic renal failure and hemodialysis, treatment methods, and possible complications. (2) Dietary guidance: The nutritional indices, renal function, water, and electrolytes were analyzed, and the nutritional status of the patients was evaluated according to their condition. Patients were instructed to follow a diet high in protein, low in salt, and low in phosphorus foods during treatment and were prohibited from any potassium-containing foods. Patients and their families were informed of the causes and consequences of malnutrition, with emphasis on the importance of reasonable intake of energy, water, protein, sodium, potassium, and phosphorus. (3) Dialysis care: Prior to dialysis, the nursing staff informed the patients of the dialysis process and precautions, as well as the potential issues of dialysis. Patients' vital signs were continuously monitored throughout dialysis, and the functioning of the dialysis equipment, as well as the condition of the dialysis catheter, dialysis fluid, and blood, was meticulously documented. The doctor was timely informed in terms of abnormalities of the patients. After dialysis, the puncture site was disinfected with 75% alcohol and warmed with hot towels to prevent adverse reactions such as swelling and pain. (4) Psychological intervention: The nursing staff relieved patients' negative emotions through positive psychological guidance, emotional reassurance, and other nursing measures to enhance their treatment compliance and confidence. (5) Daily care: Daily plans were developed based on the patients' actual postoperative conditions, such as out-of-bed activities and nutrition instructions. Both groups were intervened for 3 months.

2.4. Outcome Measures

(1) Negative emotions: Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS) [19, 20] were used to assess the emotional status of patients. Both scales have 20 items each with a total score of 100, with 50–70 for mild anxiety/depression, 71–90 for moderate anxiety/depression, and >90 for severe anxiety/depression. The higher the score, the higher the degree of anxiety/depression of the patient.

(2) Compliance: The "Exercise Adherence Scale" created by our hospital was used for the compliance evaluation, which was divided into full compliance,

partial compliance, and noncompliance. The total score of the scale was 10 points, with ≥8 for complete compliance, 6–8 for partial compliance, and <6 for noncompliance. The total compliance rate was calculated and compared between the two groups. Total compliance rate = (complete compliance + partial compliance)/total number of cases × 100%.

(3) Quality of life: The MOS 36-item short-form health survey (SF-36) [21] was used to assess the quality of life of patients, which included five domains of physical function, emotional function, role function, social function, and cognitive function, with a total score of 100 points for each domain. Higher scores indicated higher quality of life for patients.

(4) Complications: The occurrence of complications, such as bleeding, infection, hypotension, nausea and vomiting, and cardiac arrhythmias, was meticulously documented for all patients, and the total incidence of complications was computed and compared individually for the two groups.

2.5. Statistical Analysis. SPSS22.0 was used for data analyses. The measurement data were expressed as ($\overline{x} \pm s$) and analyzed using the independent sample t-test. The count data were expressed as cases (%) and analyzed using the chi-square test. $P < 0.05$ was used as a cutoff for statistical significance.

3. Result

3.1. Patient Characteristics. In the observation group, there were 43 patients, 25 males and 18 females, aged 38–69 (50.04 ± 5.17) years, with 12 cases of diabetic nephropathy, 17 cases of chronic glomerulonephritis, and 14 cases of hypertensive nephropathy. In the control group, there were 43 patients, 24 males, and 19 females, aged 35–70 (49.79 ± 5.08) years, with 13 cases of diabetic nephropathy, 17 cases of chronic glomerulonephritis, and 13 cases of hypertensive nephropathy. The duration of disease in the control group was (2.42 ± 0.79) years and in the observation group was (2.14 ± 1.17) years. The patient characteristics of the two groups were comparable ($P > 0.05$) (Table 1).

3.2. Negative Emotions. Prior to the nursing care, the difference in negative emotions between the two groups was not statistically significant ($P > 0.05$). After the intervention, comprehensive nursing resulted in lower SAS scores and SDS scores (40.17 ± 3.18, 45.85 ± 3.26) versus routine nursing (51.01 ± 3.45, 57.08 ± 4.32) ($P < 0.05$) (Table 2).

3.3. Treatment Compliance. The number of completely and partially complying patients in the observation group (19, 23) was substantially greater than in the control group (13, 19), whereas the number of noncompliant patients (1) was significantly lower than that in the control group (11). Comprehensive nursing was associated with a significantly higher overall patient compliance rate versus routine nursing ($P < 0.05$) (Table 3).

3.4. Quality of Life. Prior to the intervention, there was no statistically significant difference in the two groups' quality of life scores ($P > 0.05$). Comprehensive nursing resulted in considerably superior quality of life ratings, including physical function, emotional function, role function, social function, and cognitive function scores after nursing (69.47 ± 6.11, 74.36 ± 5.94, 68.96 ± 6.03, 65.24 ± 6.14, 72.87 ± 5.91) versus routine nursing (57.57 ± 6.17, 64.56 ± 4.99, 55.56 ± 6.23, 57.98 ± 5.96, 60.58 ± 5.48) ($P < 0.05$) (Table 4).

3.5. Complications. In the observation group, there were 0 (0.00%) cases of bleeding, 1 (2.33%) case of infection, 1 (2.33%) case of hypotension, 2 (4.65%) cases of nausea and vomiting, and 0 (0.00%) cases of cardiac arrhythmia. In the control group, there were 2 (4.65%) cases of bleeding, 4 (9.30%) cases of infection, 3 (6.98%) cases of hypotension, 5 (11.63%) cases of nausea and vomiting, and 2 (4.65%) cases of arrhythmia. Comprehensive nursing was associated with a lower complication rate (9.30%) versus routine nursing (37.21%) ($P < 0.05$) (Table 5).

4. Discussion

Chronic renal failure is a clinical syndrome caused by various chronic kidney diseases [22] and is characterized by an imbalance of water, electrolytes, and acidolysis. Disease progression may lead to complete loss of renal function and uremia [23]. Hemodialysis is the preferred treatment for chronic renal failure and is effective in improving patient prognoses [24]. However, the prolonged duration of hemodialysis is associated with increased stress and complications in patients during treatment, resulting in a compromised prognosis [25]. To the best of our knowledge, specific drugs for chronic renal failure are still not available in modern medicine even in the early and middle stages of the disease. Therefore, great attempts have been devoted in recent years to seek breakthroughs in TCM treatment methods. Modern pharmacological studies of TCM have demonstrated that Radix Codonopsis and Radix Astragali could regulate immunity, reduce urinary protein, and protect the kidney [26, 27]; salvia and Angelica could inhibit fibroblast proliferation and modify renal capillary permeability in the treatment of membranous nephropathy [28, 29]; the active ingredients of earthworm [30] could prevent platelet aggregation, inhibit vasoconverting enzyme activity and renal interstitial fibrosis, and protect renal function. Relevant clinical research has shown that effective nursing care during hemodialysis for patients with chronic renal failure could reduce complications and improve patients' quality of life and prognosis [31].

The TCM care protocol for chronic renal failure emphasizes the holistic view of TCM and the guiding ideology of evidence-based care, whereby "different care for the same disease" and "same care for different

Table 1: Patient characteristics ($\overline{x} \pm s$, %).

Group	n	Gender		Age		Underlying disease		
		Male	Female	Range	Mean	Diabetic nephropathy	Chronic glomerulonephritis	Hypertensive nephropathy
Observation	43	25	18	38–69	50.04 ± 5.17	12 (27.91)	17 (39.53)	14 (32.56)
Control	43	24	19	35–70	49.79 ± 5.08	13 (30.23)	17 (39.53)	13 (30.23)
t-value	—	0.047		—	0.226	0.056	0.000	0.054
P-value	—	0.828		—	0.822	0.812	1.000	0.816

Table 2: SAS and SDS scores ($\overline{x} \pm s$).

Group	n	Before intervention (point)		After intervention (point)	
		SAS	SDS	SAS	SDS
Observation	43	68.94 ± 2.96	69.98 ± 2.36	40.17 ± 3.18*	45.85 ± 3.26*
Control	43	69.05 ± 2.82	69.74 ± 2.44	51.01 ± 3.45*	57.08 ± 4.32*
t-value	—	0.176	0.4 64	15.150	13.607
P-value	—	0.861	0.644	<0.001	<0.001

Note. * indicates a significant difference between pre- and posttreatment data in the same group.

Table 3: Treatment compliance (%).

Group	n	Full compliance	Partial compliance	Noncompliance	Compliance rate
Observation	43	19 (44.19)	23 (53.49)	1 (2.33)	42 (97.67)
Control	43	13 (30.23)	19 (44.19)	11 (25.58)	32 (74.42)
x^2	—	9.685			
P	—	0.002			

Table 4: Quality of life ($\overline{x} \pm s$).

Time	Domains	Observation ($n = 43$)	Control ($n = 43$)	t-value	P-value
Before nursing	Physical function	45.56 ± 5.23	45.87 ± 5.65	0.264	0.792
	Emotional function	53.41 ± 5.45	53.26 ± 5.24	0.101	0.897
	Role function	48.51 ± 5.54	48.17 ± 5.74	0.274	0.781
	Social function	50.15 ± 5.96	50.44 ± 5.11	0.242	0.809
	Cognitive function	54.92 ± 5.27	55.03 ± 5.08	0.099	0.921
After nursing	Physical function	69.47 ± 6.11*	57.57 ± 6.17*	8.987	<0.001
	Emotional function	74.36 ± 5.94*	64.56 ± 4.99*	8.284	<0.001
	Role function	68.96 ± 6.03*	55.56 ± 6.23*	10.135	<0.001
	Social function	65.24 ± 6.14*	57.98 ± 5.96*	5.564	<0.001
	Cognitive function	72.87 ± 5.91*	60.58 ± 5.48*	9.999	<0.001

Note. * indicates a significant difference between pre- and posttreatment data in the same group.

Table 5: Complications (%).

Groups	n	Bleeding	Infection	Hypotension	Nausea and vomiting	Cardiac arrhythmia	Total incidence
Observation	43	0 (0.00)	1 (2.33)	1 (2.33)	2 (4.65)	0 (0.00)	4 (9.30)
Control	43	2 (4.65)	4 (9.30)	3 (6.98)	5 (11.63)	2 (4.65)	16 (37.21)
x^2	—	9.382					
P-value	—	0.002					

diseases" are incorporated to provide patients with evidence-based care in terms of daily living, diet, mood, and medication care [32]. For example, moxibustion stimulates acupuncture points or painful areas through the warmth and medicinal effects of moxa to warm the meridians, disperse cold, support Yang, consolidate detachment, and tonify kidney energy. Ear acupressure with Vaccariae Semen applied to acupuncture points on the auricle ameliorates lumbar and knee weakness through meridian stimulation and adjusts the qi and blood functions of the internal organs [33]. As a result, from January 2020 to October 2021, patients with chronic renal failure undergoing hemodialysis in our hospital were recruited to analyze the effectiveness of comprehensive nursing in hemodialysis of patients with chronic renal failure and the influence on their quality of life.

The results of the present study showed that comprehensive care resulted in significantly lower SAS and SDS

scores versus routine care. Negative emotions during the long duration of hemodialysis in patients may undermine patient compliance and reduce dialysis outcomes, while previous conventional hemodialysis care is less targeted to the nursing of patients' negative emotions [34]. Comprehensive care strengthens patients' understanding of kidney disease and dialysis treatment, and targeted psychological interventions mitigate the negative emotions of patients, thereby increasing treatment compliance. The results showed that patients in the observation group had a higher overall compliance rate (97.67%) than that of the control group (74.42%), and the quality of life scores of the observation group were higher than those of the control group. Comprehensive care is designed to improve patients' disease awareness and increase their treatment proactiveness to enhance the therapeutic and nursing effects. With the aforementioned results of this study, the application of comprehensive nursing care to patients with chronic renal failure during hemodialysis could effectively mitigate the negative emotions of patients, thereby increasing their treatment compliance and improving their quality of life. Nevertheless, relevant clinical data show that maintenance hemodialysis prolongs the survival time of patients with renal failure by more than 15–20 years, but its extended treatment duration and susceptibility to recurrent episodes are associated with physical discomfort and complications, posing a serious threat to patient prognosis and quality of life. The results herein showed that patients in the observation group had a lower overall incidence of complications (9.30%) than the control group (37.21%), suggesting that the application of comprehensive care for patients with chronic renal failure during hemodialysis could effectively lower the risk of complications in patients. The reason for this is because comprehensive care offers patients integrated treatment including basic evaluation, psychological care, health education, skincare, and nutritional care. Comprehensive nursing for hemodialysis patients has been indicated to be advantageous in increasing patient compliance and clinical outcomes, improving quality of life, and extending patient longevity, which is consistent with the current study's findings.

According to the current treatment status, the combination of TCM care may be contributory to better efficacy, such as TCM enema, acupressure, TCM ionization, and topical application. Future studies with a larger sample size and integration of TCM nursing will be conducted to reinforce the current conclusion.

5. Conclusion

Comprehensive care increases treatment compliance and self-care capacity of patients undergoing hemodialysis for chronic renal failure, improves their quality of life, and lowers the risk of complications, indicating a high potential for clinical advancement.

Data Availability

All data generated or analyzed during this study are included in this published article.

Conflicts of Interest

All authors declared that they have no conflicts of interest.

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References

[1] V. V. Borisov and E. M. Shilov, "Chronic renal failure," *Urologiia*, vol. 1, pp. 11–18, 2017.

[2] C. Wanner and M. Ketteler, "[Chronic renal failure]," *Deutsche Medizinische Wochenschrift*, vol. 136, no. 31-32, pp. 1591–1593, 2011.

[3] H. R. Jacobson, "Chronic renal failure: pathophysiology," *The Lancet*, vol. 338, no. 8764, pp. 419–423, 1991.

[4] E. Olsen and G. van Galen, "Chronic renal failure-causes, clinical findings, treatments and prognosis," *Veterinary Clinics of North America: Equine Practice*, vol. 38, no. 1, pp. 25–46, 2022.

[5] N. S. Koushik, S. F. McArthur, and A. D. Baird, "Adult chronic kidney disease: neurocognition in chronic renal failure," *Neuropsychology Review*, vol. 20, no. 1, pp. 33–51, 2010.

[6] L. Zazzeroni, G. Pasquinelli, E. Nanni, V. Cremonini, and I. Rubbi, "Comparison of quality of life in patients undergoing hemodialysis and peritoneal dialysis: a systematic review and meta-analysis," *Kidney & Blood Pressure Research*, vol. 42, no. 4, pp. 717–727, 2017.

[7] W. Fadili, A. Adnouni, and I. Laouad, "Hemodialysis safety: evaluation of clinical practice," *Saudi Journal of Kidney Diseases and Transplantation*, vol. 27, no. 3, pp. 553–556, 2016.

[8] A. Pierratos, "New approaches to hemodialysis," *Annual Review of Medicine*, vol. 55, no. 1, pp. 179–189, 2004.

[9] P. A. McFarlane, "Nocturnal hemodialysis: effects on solute clearance, quality of life, and patient survival," *Current Opinion in Nephrology and Hypertension*, vol. 20, no. 2, pp. 182–188, 2011.

[10] W. Sui, "Application of Chinese medicine characteristic care in patients with chronic renal failure," *Medical Equipment*, vol. 35, no. 03, pp. 150–152, 2022.

[11] Z. Simin, "Effects of extended care services with Chinese medicine characteristics on renal function and nutritional status of patients with chronic renal failure," *Chinese Traditional Medicine Modern Distance Education*, vol. 20, no. 11, pp. 148-149, 2022.

[12] L. Liu Yuan, "The effect of Chinese medicine evidence-based care program on the nursing effect of hemodialysis patients with chronic renal failure," *Famous Medicine*, vol. 08, pp. 123-124, 2021.

[13] T. Hui, "The role and effect of Chinese medicine nursing program on chronic renal failure," *Journal of Practical Chinese Internal Medicine*, vol. 35, no. 05, pp. 83–85, 2021.

[14] K. L. P. Ponce, L. M. Tejada-Tayabas, Y. C. Gonzalez, O. H. Haro, M. L. Zuniga, and A. C. A. Moran, "Nursing care for renal patients on hemodialysis: challenges, dilemmas and satisfactions," *Revista da Escola de Enfermagem da USP*, vol. 53, Article ID e03502, 2019.

[15] A. d. F. Lucena, C. Z. Magro, M. CdC. Proenca, A. U. B. Pires, V. M. Moraes, and G. B. Aliti, "Validation of the nursing interventions and activities for patients on hemodialytic

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Retraction

Retracted: Effect of Comprehensive Nursing Approach in Perioperative Stage of Patients with Hepatocellular Carcinoma Interventional Therapy

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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, G. Yang, L. Zhang, and J. Ye, "Effect of Comprehensive Nursing Approach in Perioperative Stage of Patients with Hepatocellular Carcinoma Interventional Therapy," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 6862463, 8 pages, 2022.

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Research Article

Effect of Comprehensive Nursing Approach in Perioperative Stage of Patients with Hepatocellular Carcinoma Interventional Therapy

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Objective. To examine the efficacy of a complete nursing strategy during the perioperative phase for patients undergoing interventional treatment for hepatocellular cancer. *Methods*. Sixty patients who were diagnosed with liver cancer and underwent interventional therapy in our hospital between February 2019 and December 2021 were recruited in this trial. All study subjects were numbered according to the time when the patients first came to our hospital, and were equally divided into a comprehensive group and a conventional group based on the odd and even number of the last number, with 30 cases in each group. Those in the conventional group received conventional nursing care, whereas patients in the comprehensive group received comprehensive nursing care. Before and after the nursing intervention, the quality of life, pain, and patient satisfaction in both groups were compared. *Results*. The quality of survival scores, including physical, emotional, role, social, and cognitive function scores of patients in the comprehensive group, were significantly higher than those in the conventional group ($P < 0.05$); there was no statistically significant difference in numeric rating scales (NRS) scores between the two groups compared before treatment ($P > 0.05$). After treatment, the NRS scores of patients in the study group were significantly lower than those of patients in the control group ($P < 0.05$); before the intervention, the difference between the emotional state scores of patients in the two groups was not significant and not statistically significant ($P > 0.05$), while the emotional state of patients in both groups improved after the intervention, and the Self-Rating Anxiety Scale (SAS) and the Self-Rating Depression Scale (SDS) scores of patients in the comprehensive group were lower than those in the conventional group ($P < 0.05$); the total incidence of adverse reactions in the comprehensive group (10.00%) was significantly lower than that in the conventional group (46.67%) ($P < 0.05$); and the total satisfaction of patients in the comprehensive group (93.33%) was significantly higher than that of patients in the conventional group (73.33%) ($P < 0.05$). *Conclusion*. The intervention of a comprehensive nursing approach in the perioperative period for patients with liver cancer is remarkable as it can relieve patients' psychological burden and pain, ensure a smooth operation, improve patients' postoperative quality of life, and also help to reduce the risk of postoperative adverse reactions, effectively enhancing patients' satisfaction, and thus deserves to be promoted in clinical practice.

1. Introduction

Liver cancer [1], a malignant tumor occurring in the liver, is one of the most common malignant tumors in China, with a higher occurrence in the middle-aged population and a male to female ratio of about 3.5 : 1. Liver cancer is categorized as primary and secondary [2, 3], in which primary liver malignancies originate from the epithelial or mesenchymal tissues of the liver and are highly prevalent and dangerous malignancies in China; secondary or "metastatic liver cancer" refers to the invasion of malignant tumors from many organs throughout the body to the liver, most often from the stomach, bile ducts, pancreas, and, ovaries, uterus, lung, breast, and other organs. According to relevant epidemiological statistics, in 2015, 370,000 new cases of liver cancer occurred in China, ranking fourth in the new incidence rate

of all malignant tumors, including the third in men and the seventh in women; 326,000 deaths occurred, ranking second in the mortality rate of all malignant tumors, including the second in men and the third in women [4, 5]. Epidemiological and experimental studies indicate that hepatitis B virus (HBV) and hepatitis C virus (HCV) infection, aflatoxins, drinking water contamination, alcohol, cirrhosis, sex hormones, nitrosamines, and trace elements are associated with the development of hepatocellular carcinoma [6].

Although the genesis and specific molecular processes of primary liver cancer remain unknown, the disease is thought to be a complicated process involving various causes and phases, including alcohol usage, viral hepatitis, moldy food ingestion, and genetics. Secondary liver cancer can be caused by different channels, such as blood, lymphatic migration, or direct penetration of the liver. Its symptoms are often asymptomatic in the early stage but more obvious in the middle and late stages, with common clinical manifestations such as liver pain, abdominal edema, anorexia, weakness, emaciation, progressive hepatomegaly, or epigastric mass. Years of clinical treatment data suggest that early-stage hepatocellular carcinoma is curable. However, therapy of medium and late-stage hepatocellular carcinoma is complex, with significant disparities in success. The key to improving efficacy is to provide tailored and complete therapy based on the stage of liver cancer. Liver cancer has become one of the most threatening diseases to society and human health, causing great pain and anxiety. Its clinical treatment methods include surgery, hepatic artery ligation, hepatic artery chemoembolization, radiofrequency, cryotherapy, laser, microwave, chemotherapy, and radiotherapy. According to the NCCN's American Cancer Treatment Guidelines, interventional therapy has been acknowledged as the preferred treatment for advanced liver cancer [7].

Interventional Treatment of Hepatocellular Carcinoma (ITHC) [8] is a treatment modality for liver cancer where local drug infusion, tumor vascular embolization, argon helium cryoablation, and other means are used to focus on killing tumor cells to minimize tumor load, i.e., to reduce the number and volume of malignant tumors. Previous studies suggested that interventional treatment for liver cancer combined with CIK cell adoptive immunotherapy and tumor angiogenic drugs achieved good clinical results, effectively improving patients' quality of life, prolonging survival, and reversing the stage of liver cancer in some patients [9, 10]. This method, however, is linked with adverse outcomes such as easy bleeding after surgery, liver discomfort induced by chemotherapy medicines, heat absorption caused by tissue necrosis, and other dangerous issues. As a result, careful care is still required to address these problems [11]. In view of the shortcomings of interventional therapy, in recent years, research on adjuvant chemotherapy with traditional Chinese medicine has been confirmed to play a role in reducing toxicity and enhancing efficacy in the treatment process of patients [12]. In addition, acupuncture, external application of traditional Chinese medicine, and traditional Chinese medicine decoction have also witnessed good efficiency.

Nevertheless, with the development of the modern medical model, the theoretical system of modern nursing has deepened the connotation of nursing service and expanded the scope of nursing service. Under the new historical conditions, traditional Chinese medicine nursing has played a certain advantage. People have a new understanding of traditional Chinese medicine nursing technology and can rationally apply it to emergency treatment and psychological nursing of emergency patients. Therefore, traditional Chinese medicine nursing contributes greatly to the recovery of patients after surgery [13, 14]. Accordingly, this study was undertaken to examine and evaluate the influence of comprehensive nursing on perioperative patient satisfaction with liver cancer intervention, as well as to give appropriate references for future investigations.

2. Materials and Methods

2.1. Subjects of the Study. The participants included 60 patients who were diagnosed with liver cancer and underwent interventional therapy in our institution between February 2019 and December 2021, with 47 male patients and 13 female patients ranging in age from 39 to 84 years. All patients were numbered according to their first visit to our hospital and were equally divided into a comprehensive group and a conventional group according to their last number, both odd and even. Patients in both groups were treated with hepatocellular carcinoma intervention, with conventional nursing care for patients in the conventional group and comprehensive nursing care for patients in the comprehensive group. Thirty patients were enrolled in each group. Participants were randomly and equally allocated into two groups (placebo followed by ashwagandha or ashwagandha followed by placebo) using a randomization calculator (https://www.randomization.com).

The informed consent of the patients has been obtained prior to the commencement of the study. The study protocol was reviewed and approved by the hospital ethics committee (201902330), and all procedures were performed in compliance with the ethical guidelines in the Declaration of Helsinki.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion criteria. ① Patients were examined accordingly and met the diagnostic criteria of liver cancer; ② patients had relevant treatment indications; and ③ patients and their families were informed of this study and voluntarily signed the consent form.

2.2.2. Exclusion criteria. ① Combined with severe cardiopulmonary, hepatic and renal insufficiency; ② combined with psychiatric disease or unconsciousness; and ③ combined with coagulation dysfunction.

2.3. Methods. All patients were treated with hepatic artery interventional chemoembolization, the Seldinger method: after puncturing the right femoral artery for hepatic

arteriography, a catheter was delivered into the hepatic segmental artery; chemoembolization was then performed with cisplatin, doxorubicin, mitomycin, and 5-fluorouracil; after the procedure, symptomatic treatment with antibiotics was administered under the premise of protecting the liver.

Patients in the conventional group were given conventional nursing modalities for intervention, including preoperative condition monitoring, control of blood pressure and blood glucose levels, assurance of stable vital functions, enhancement of nutrition and liver protection, monitoring of bleeding at the puncture site, explanation of the interventional procedure, preventive measures, complications, and patient predictability treatment measures.

Patients in the comprehensive group were given a comprehensive nursing modality [15] for intervention, as follows: ① Preoperative care: when patients were admitted, the hospital ward environment and work schedule were introduced to remove unfamiliarity and close the distance between nurses and patients; on-site lectures were provided to patients to alleviate their negative psychology such as fear, nervousness, and anxiety; and the benefits, principles, and priorities of interventional procedures were explained in detail. Explanation of successful treatment cases can enhance patients' confidence in nursing care so that they can actively and effectively cooperate with nursing care with an optimistic attitude; creating a warm and comfortable hospital environment for patients, keeping the ward quiet, and not disturbing patients' rest; in preoperative preparation, interventional devices and medications and iodine allergy tests were performed, patients fasted for 6 hours before surgery, protective medications were routinely given 30 minutes before surgery, blood pressure was monitored regularly, and blood pressure management was performed promptly in hypertensive patients. ② Intraoperative care: during the intervention, medical and nursing staff communicated more with patients to reduce their tension and avoid vasospasm, thereby guaranteeing the smooth performance of the interventive procedure and shortening the duration of the intervention. During the injection of contrast agent, medical staff closely monitored the patient's reaction and checked for palpitations, shortness of breath, chest tightness, and other symptoms; if the patient had reactions such as nausea and vomiting when injecting chemotherapy drugs, they immediately cleaned up the vomit and turned the patient's head and neck sideways to avoid accidental aspiration of the vomit. ③ Postoperative nursing: patients should rest in bed for 24 hours after surgery, in a supine position, with sandbag compression at the injection site for 6 hours and limbs braked in extension at the injection site for 6 hours to avoid bending and pressure; patients should be helped to move their bodies slightly to avoid prolonged local pressure to increase their comfort; patients will have fever after interventional treatment, which usually lasts for about a week. Generally speaking, no special treatment is needed for body temperature below 38.5°C, which can be reduced by rubbing with warm water; if the fever is higher than 38.5°C, diclofenac sodium 1/2 anal plug or physical cooling can be given. Due to the side effects of chemotherapy, patients may experience nausea, vomiting, and loss of appetite after treatment, so the gastrointestinal tract should be well cared for; patients can resume a normal diet after 3 days, with attention to eating more fresh vegetables, fruits with high vitamin content, and high-calorie foods, appropriately limiting the intake of high-fat foods, and drinking more water to promote the excretion of the contrast agent; keeping the bowels open and advising patients to avoid violent coughing and straining to defecate to prevent bleeding. After liver cancer intervention, swelling and pain at the liver site may occur to varying degrees, usually within 1-2 hours after the procedure, but will gradually ease within 35 days. If it does not remit, the cause should be promptly explained and the site, nature, degree, and duration of abdominal pain should be closely monitored and alerted; for ruptured hepatocellular carcinoma bleeding, equivalent treatment should be given to alleviate the patient's concern; patients with pain can be given appropriate relief measures, including distraction and instruction in relaxation techniques for mild pain, intravenous flurbiprofen for moderate pain, and intramuscular pethidine hydrochloride for severe pain. ④ Health guidance: after surgery, patients should be actively communicated with and guided to establish confidence in overcoming the disease; scientific daily life and medication plans should be formulated, and family members should be instructed to urge patients to correct bad habits; diet plans should be formulated for patients according to their dietary habits, and they should be encouraged to eat more foods with high calorie, vitamin, and protein content, as these will meet nutritional needs and improve resilience; communication with family members, explaining to them the role of family members in care, allowing them to participate in treatment to relieve patients' mental burden, etc.

2.4. Evaluation Criteria

(i) Quality of life: the Quality of Life Rating Scale (SF-36) [16] was used to assess patients' quality of life, which was divided into five following dimensions: physical function, emotional function, role function, social function, and cognitive function, with the total score of each dimension being 100, and the score was proportional to patients' quality of life, i.e., higher scores indicated a higher quality of life.

(ii) Pain condition: the Numeric Rating Scales (NRS) score was used to assess the patient's pain, the NRS score divided the pain into 10 levels, i.e., out of 10 points, where 0 points indicated no pain, 1–3 points indicated mild pain, 4–6 points indicated moderate pain, and 7–10 points indicated severe pain, with the score proportional to the patient's pain level, i.e., the higher the score, the more painful the patient was.

(iii) Emotional status: the Self-Rating Anxiety Scale (SAS) and the Self-Rating Depression Scale (SDS) [17, 18] were used to assess the emotional status of patients. Both scales have 20 items each, with a total score of 100, where 50–70 is mild anxiety/depression, 71–90 is moderate anxiety/depression, and >90 is severe anxiety/depression, with scores

proportional to the degree of anxiety/depression, i.e., higher scores indicate higher levels of anxiety/depression.

(iv) Adverse reactions: the occurrence of adverse reactions, including fever, bleeding, urinary retention, gastrointestinal reactions, and liver and kidney function impairment, was recorded, and the total incidence of adverse reactions was calculated separately for the two groups and compared between groups.

(v) Satisfaction: our hospital's self-developed Nursing Satisfaction Questionnaire (including the attitude, efficiency, and disease explanation of the medical staff) was used and divided into four options (very satisfied, satisfied, less satisfied, and dissatisfied) to understand the satisfaction of patients in both groups, so that the results could be used to analyze which of the two treatment modalities was more efficacious.

2.5. Statistical Analysis. The GraphPad Prism 8 software was used for graphics rendering, and SPSS 22.0 software was used for data analysis. The measurement data were expressed as $(\overline{x} \pm s)$ and tested by the independent sample t-test. The count data were expressed as the number of cases (%) and tested by the chi-square test. $P < 0.05$ indicated that the comparison was statistically significant.

3. Results

3.1. Baseline Data. The conventional group included 30 patients, 21 males and 9 females, with 24 instances of primary liver cancer and 6 cases of secondary liver cancer; the comprehensive group had 30 patients, 26 males and 4 females, with 18 cases of primary liver cancer and 12 cases of secondary liver cancer. The differences in general data between the two groups were not statistically significant ($P > 0.05$), Table 1.

3.2. Quality of Life. Patients in the comprehensive group had considerably superior quality of life, including physical, emotional, role, social, and cognitive function scores, than those in the conventional group ($P < 0.05$) (Table 2)

3.3. Pain Conditions. The difference in NRS scores between the two groups before treatment was not statistically significant ($P > 0.05$), and after treatment, the NRS scores of patients in the study group (2.99 ± 0.97) were significantly lower than those of patients in the control group (4.85 ± 1.11) ($P < 0.05$). Figure 1.

3.4. Emotional State. Prior to the intervention, the difference in emotional state between the two groups was not statistically significant ($P > 0.05$). Both groups' emotional states improved after the intervention, and the SAS and SDS scores of the patients in the comprehensive group were lower than those of the conventional group ($P < 0.05$). Table 3.

3.5. Adverse Reactions. In the comprehensive group, there was 1 (3.33%) case of fever, 0 (0.00%) cases of bleeding, 1 (3.33%) case of urinary retention, 1 (3.33%) case of gastrointestinal reaction, and 0 (0.00%) cases of hepatic and renal impairment, all of which were lower than those of the conventional group (5 (16.67%) cases of fever, 3 (10.00%) cases of bleeding, 3 (10.00%) cases of urinary retention, 2 (6.67%) cases of gastrointestinal reaction, and 1 (3.33%) cases of hepatic and renal impairment). The overall incidence of adverse reactions in the comprehensive group (10.00%) was significantly lower than that in the conventional group (46.67%) ($P < 0.05$). Table 4.

3.6. Satisfaction. The results showed that 10 (33.33%) patients in the conventional group were "very satisfied," 12 (40.00%) were "satisfied," 6 (20.00%) were "less satisfied," and 2 (6.67%) were "dissatisfied"; 13 (43.33%) patients in the comprehensive group were "very satisfied," 15 (50.00%) were "satisfied," 1 (3.33%) was "less satisfied," and 1 (3.33%) was "dissatisfied"; the total satisfaction of patients in the comprehensive group (93.33%) was significantly higher than that of patients in the conventional group (73.33%) ($P < 0.05$). Figure 2:

4. Discussion

Interventional treatment of hepatocellular carcinoma is a therapy to inject antitumor drugs into the focal tissue through the arterial puncture, which has become increasingly common in clinical practice in recent years, characterized by low trauma and ease of use. It is now a novel pathway for the treatment and prognosis improvement of liver cancer due to the gradual recognition of its therapeutic efficacy and advantageous nature [19]. This method not only shrinks the tumor and improves clinical symptoms but also allows repeat treatment and, most importantly, improves the quality of life and survival of patients. However, scientific nursing interventions are necessary during interventional nursing care for a variety of reasons, including poor patient understanding, which can play a significant role in improving the quality of life and prolonging the life expectancy of patients [20]. With the development of modern medical model, the theoretical system of modern nursing has deepened the connotation of nursing service and expanded the scope of nursing service. The Chinese medicine nursing program emphasizes the guiding ideology of the holistic view of traditional Chinese medicine and nursing based on syndrome differentiation and always guides the clinical practice with the holistic view of traditional Chinese medicine. The methods of "same disease, different care" and "different disease, same care" are adopted to carry out syndrome differentiation and nursing from the aspects of daily life, diet, emotion, medication, and nursing [21].

Based on the holistic care model, patient-centered and guided by the modern nursing concept, comprehensive perioperative nursing interventions are systematically applied in clinical nursing to guide and improve the quality of life of patients in all social, psychological, and physical

Table 1: Comparison of baseline data ($\overline{x} \pm s$).

Group	Case number	Gender		Age (year)		Hospitalization duration (d)		Pathology type	
		Male	Female	Scope	Average	Scope	Average	Primary	Secondary
Conventional group	30	21	9	39–84	63.97 ± 10.56	6–25	12.13 ± 4.81	24	6
Comprehensive group	30	26	4	50–79	66.47 ± 8.05	6–22	11.37 ± 3.99	18	12
t	—	—	—	—	1.066	—	0.620	—	—
P	—	—	—	—	0.295	—	0.540	—	—

Table 2: Comparison of quality of life ($\overline{x} \pm s$).

Group	Case number	Physical function	Emotional functioning	Role function	Social function	Cognitive functioning
Conventional group	30	68.17 ± 10.56	68.74 ± 11.56	67.17 ± 9.34	69.24 ± 9.58	66.73 ± 10.21
Comprehensive group	30	84.68 ± 9.25	86.74 ± 9.17	84.45 ± 9.52	83.42 ± 10.41	84.45 ± 9.94
T	—	9.408	9.759	10.365	8.019	9.948
P	—	<0.001	<0.001	<0.001	<0.001	<0.001

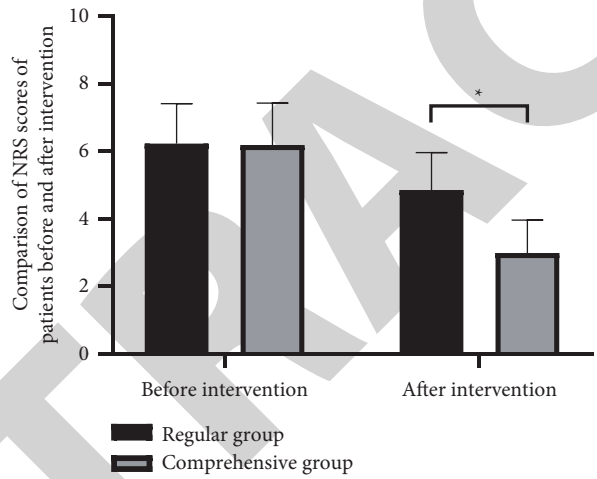

Figure 1: Comparison of NRS scores. Note: *indicates a difference between the two groups ($P < 0.05$).

Table 3: Comparison of SAS and SDS scores ($\overline{x} \pm s$).

Group	Case number	Before intervention		After intervention	
		SAS	SDS	SAS	SDS
Conventional group	30	69.45 ± 2.15	70.41 ± 2.08	50.48 ± 3.14*	52.17 ± 3.26*
Comprehensive group	30	69.17 ± 1.99	70.94 ± 2.21	42.17 ± 2.65*	40.08 ± 2.19*
t	—	0.765	1.397	16.180	24.626
P	—	0.446	0.165	<0.001	<0.001

Note. *indicates the difference was significant before and after the intervention within the group ($P < 0.05$).

Table 4: Comparison of the occurrence of adverse reactions (%).

Group	Case number	Fever	Hemorrhage	Urinary retention	Gastrointestinal reaction	Liver and kidney function impairment	Total incidence
Conventional group	30	5 (16.67)	3 (10.00)	3 (10.00)	2 (6.67)	1 (3.33)	14 (46.67)
Comprehensive group	30	1 (3.33)	0 (0.00)	1 (3.33)	1 (3.33)	0 (0.00)	3 (10.00)
x^2	—					9.932	
P	—					0.002	

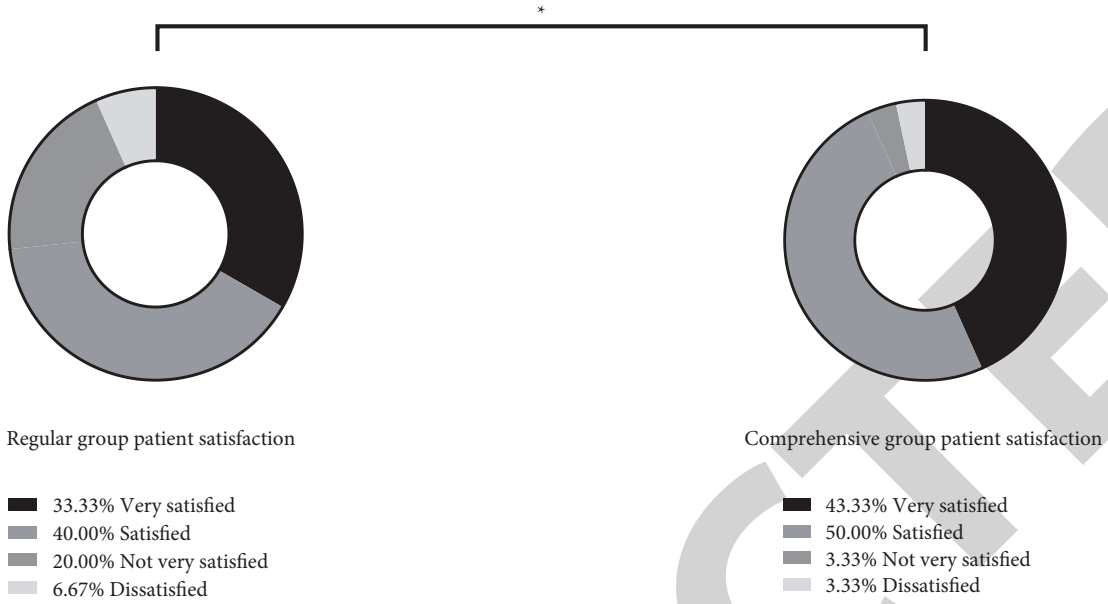

Figure 2: Comparison of patient satisfaction. Note: *indicates a difference between the two groups ($P < 0.05$).

senses. In view of this, 60 patients with liver cancer were randomly selected for this study, with the aim of investigating and studying the effect of using a comprehensive nursing approach on patient satisfaction during the perioperative period of liver cancer intervention. The results showed that the emotional states of patients in both groups improved after the intervention, and the SAS and SDS scores of patients in the comprehensive group were lower than those in the conventional group, indicating that the application of comprehensive nursing in the interventional treatment of liver cancer has an exact effect in calming patients' emotions, reducing the influence of patients' bad emotions on the surgery and ensuring a smooth operation. One possible explanation is that most patients with liver cancer have mental health issues or poor cognitive ability related to the disease due to fear of the disease, whereas proper cognitive guidance and psychotherapy can help patients relieve negative emotions and boost their confidence in overcoming the disease, allowing them to form correct and scientific disease cognition, and be willing to actively participate in treatment. As a systematic, holistic, scientific, complete, and continuous nursing procedure, comprehensive nursing requires the patient-centered establishment of a good nurse-patient relationship, i.e., warm preoperative reception of the patient [22], preoperative psychological guidance, enhanced preoperative preparation, and surgical information training, which deepens the patient's understanding of surgery, reduces anxiety, and builds trust in nursing care for the health care provider, leading to active surgery. In other words, it provides patients with care measures that correspond to their physical, mental, and medical conditions from the time they are admitted to the hospital until they are discharged, so that they receive comprehensive nursing services and are treated and cared for in a state of physical and mental comfort, which not only enhances the nursing effect but also emphasizes the importance of family members [23, 24], requiring them to participate in nursing care and provide patients with caring feelings, resulting in psychological improvement and accelerated recovery, which in turn leads to a reduction in the occurrence of adverse events during hospitalization and a shorter hospital stay.

In this study, the pain in both groups was relieved after treatment, in which the NRS scores of patients in the study group were significantly lower than those in the control group, and the overall incidence of adverse reactions in the comprehensive group (10.00%) was significantly lower than that in the conventional group (46.67%). Although interventional therapy is less invasive, in the case of artificially invasive procedures, patients are infused with large amounts of chemotherapeutic drugs during embolization, making it prone to a certain degree of postoperative side effects and complications, and even adversely affecting the therapeutic outcome [25, 26]. Conventional nursing care, albeit effective, lacks target and comfort to a certain extent, leading to lower satisfaction. Comprehensive nursing care can help patients to undergo various preoperative examinations in a controlled manner and make adequate preoperative preparations; cooperate with physicians to complete various procedures during surgery; promptly detect patient discomfort and handle it accordingly during the confirmation observation period; and pay close attention to patient care after surgery, including postoperative signs, treatment positions, oral care, skin care, and flexible diet, and help patients actively prevent and manage related complications [27]. For example, the toxic side effects of chemotherapy drugs can cause gastrointestinal discomfort, and chemoembolization can easily induce pain and bleeding at the puncture site, while comprehensive care can further enhance the nursing care for complications such as gastrointestinal discomfort and pain and bleeding at the

puncture site. Therefore, it can be concluded that comprehensive nursing, through close monitoring of postoperative conditions and complication prevention, reduces the occurrence of related adverse effects, accelerates patients' postoperative recovery, and can also improve their postoperative quality of life. The results of this study showed that patients in the comprehensive group had significantly higher survival quality scores, including scores of physical function, emotional function, role function, social function, and cognitive function, than those in the conventional group, indicating that comprehensive perioperative nursing interventions help patients with liver cancer interventions improve their quality of life. The following are attributable: physical pain, organ damage, and negative emotions caused by liver cancer itself may increase the risk of surgery or aggravate the degree of side effects.Furthermore, due to the technical characteristics of hepatic artery interventional embolization and the patient's physical condition, multiple chemotherapies or multiple radiotherapy sessions often occur after surgery, resulting in a variety of negative emotions for patients and a significant decrease in the quality of their lives. In contrast, comprehensive perioperative nursing interventions can improve the survival quality of patients in many aspects, including physiological and psychological aspects, as they require relatively complete nursing care for patients during clinical care, i.e., preoperatively, intraoperatively, and postoperatively, which means focusing on psychological care, creating a comfortable and quiet sleeping environment and hospital environment, maintaining appropriate temperature and humidity in the ward, and directing patients' attention away from pain. Combined with the results of the analysis of patients' emotional and painful situations in this study, the comprehensive perioperative nursing intervention not only met the patients' need for love and belonging, eliminating their negative emotions but also enhanced their confidence in treatment, making them willing to cooperate with healthcare professionals to effectively improve their quality of life. This is consistent with the findings of Xiaoli et al. that "comprehensive perioperative nursing care improves patients' psychological ability and self-care, followed by improved quality of life" [28]. Overall, comprehensive nursing care applied to the perioperative period of patients with liver cancer intervention can effectively improve patients' quality of life, reduce the occurrence of pain and adverse reactions, improve patients' emotions and mentality, and thus effectively enhance their satisfaction, which is consistent with the findings of the previous study that the total satisfaction of patients in the comprehensive group (93.33%) is significantly higher than that of patients in the control group (73.33%). Therefore, comprehensive nursing for interventional patients with liver cancer produces a high satisfaction profile.

The limitations of this study need to be addressed. First, this pilot study might not have a sufficient total sample size to confirm the efficacy. Future studies should endeavor to recruit larger sample sizes to compare and verify the treatment effects. Second, we did not conduct a long-term observation. Whether it has a long-standing efficacy of action will need to be investigated in the future.

In conclusion, comprehensive nursing intervention in the perioperative period for patients with liver cancer is effective in reducing patients' psychological burden and pain, ensuring smooth surgery, improving patients' postoperative quality of life, and assisting in the reduction of the risk of postoperative adverse reactions, which can effectively elevate patients' satisfaction and is thus worthy of promotion in clinical practice.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

All authors equally contributed to this article.

References

[1] D. Anwanwan, S. K. Singh, S. Singh, V. Saikam, and R. Singh, "Challenges in liver cancer and possible treatment approaches," *Biochimica et Biophysica Acta (BBA)—Reviews on Cancer*, vol. 1873, no. 1, Article ID 188314, 2020.

[2] T. Yamashita and S. Kaneko, "Liver cancer," *Rinsho Byori*, vol. 64, no. 7, pp. 787–796, 2016.

[3] L. Gravitz, "Liver cancer," *Nature*, vol. 516, no. 7529, 2014.

[4] L. Li and H. Wang, "Heterogeneity of liver cancer and personalized therapy," *Cancer Letters*, vol. 379, no. 2, pp. 191–197, 2016.

[5] J. Bruix, K. H. Han, G. Gores, J. M. Llovet, and V. Mazzaferro, "Liver cancer: approaching a personalized care," *Journal of Hepatology*, vol. 62, no. 1, pp. S144–S156, 2015.

[6] L. An, H. M. Zeng, R. S. Zheng et al., "Liver cancer epidemiology in China, 2015," *Zhonghua Zhongliu Zazhi*, vol. 41, no. 10, pp. 721–727, 2019.

[7] Y. Chang, S. W. Jeong, J. Young Jang, and Y. Jae Kim, "Recent updates of transarterial chemoembolilzation in hepatocellular carcinoma," *International Journal of Molecular Sciences*, vol. 21, no. 21, 2020.

[8] M. M. Kirstein and T. C. Wirth, "Multimodal treatment of hepatocellular carcinoma," *Internist*, vol. 61, no. 2, pp. 164–169, 2020.

[9] F. Boyvat, "Interventional radiologic treatment of hepatocellular carcinoma," *Exp Clin Transplant*, vol. 15, pp. 25–30, 2017.

[10] J. M. Llovet, T. De Baere, L. Kulik et al., "Locoregional therapies in the era of molecular and immune treatments for hepatocellular carcinoma," *Nature Reviews Gastroenterology & Hepatology*, vol. 18, no. 5, pp. 293–313, 2021.

[11] T. E. Jabbour, S. M. Lagana, and H. Lee, "Update on hepatocellular carcinoma: pathologists' review," *World Journal of Gastroenterology*, vol. 25, no. 14, pp. 1653–1665, 2019.

[12] X. Wang and X. U. Yang, "Study on the influence of traditional Chinese medicine nursing after interventional surgery for liver cancer," *China Modern Distance Education of Traditional Chinese Medicine*, vol. 16, no. 11, pp. 139-140, 2018.

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Retraction

Retracted: External Application of Traditional Chinese Medicine in the Prevention and Treatment of Nausea and Vomiting Caused by Chemotherapy of Non-Small-Cell Lung Cancer: A RCT Study

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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.-J. Zhou, L. Tang, Y.-J. Fu, C.-Q. Yang, and J. Shi, "External Application of Traditional Chinese Medicine in the Prevention and Treatment of Nausea and Vomiting Caused by Chemotherapy of Non-Small-Cell Lung Cancer: A RCT Study," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 6992673, 6 pages, 2022.

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Research Article

External Application of Traditional Chinese Medicine in the Prevention and Treatment of Nausea and Vomiting Caused by Chemotherapy of Non-Small-Cell Lung Cancer: A RCT Study

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Objective. To investigate the external application of traditional Chinese medicine in the prevention and treatment of nausea and vomiting caused by chemotherapy of non-small-cell lung cancer. *Methods*. This is a prospective trial. A total of 114 patients with non-small-cell lung cancer who were hospitalized in our hospital from October 2020 to March 2022 were selected and randomly divided into the research group and the control group at the ratio of 1 : 1. The control group received chemotherapy + tropisetron 4 mg intravenous drip 30 minutes before chemotherapy./day × 3 days. The research group received chemotherapy + intravenous infusion of tropisetron 4 mg 30 minutes before chemotherapy, once a day for 3 days + external application of traditional Chinese medicine for 5 days. The therapeutic effects of the two groups of patients were compared. *Results*. After treatment, the serum creatinine, urea nitrogen, and endogenous creatinine in the research group were better than those in the control group ($t = 15.943$, 12.005, and 13.325; $P = 0.001$, 0.005, and 0.005). After treatment, ALT and TBIL in the research group were superior to those in the control group ($t = 11.583$, 10.012, and 9.426; $P = 0.001$, 0.002, and 0.001). After treatment, the physiological status, social/family status, emotional status, and family status of the research group were significantly better than those in the control group ($t = 16.274$, 5.379, 5.142, and 8.153; $P = 0.005$, 0.000, 0.002, and 0.001). After treatment, the ECOG score and KPS score (82.46 ± 4.61) of the research group were significantly different from those of the control group ($t = 11.913$ and 9.357; $P = 0.035$ and 0.001). The effective rate ($\chi^2 = 11.724$; $P = 0.000$) of the research group was higher but the incidence of adverse reaction ($\chi^2 = 4.294$; $P = 0.001$) was lower than that of the control group. *Conclusion*. External application of traditional Chinese medicine can significantly reduce nausea and vomiting caused by chemotherapy of non-small-cell lung cancer and can improve the patient's body and quality of life, which is worthy of clinical research and promotion.

1. Introduction

In recent years, the mortality and disability rate of malignant tumors has remained high, which seriously threatens human health. Lung cancer including non-small-cell lung cancer (NSCLC) is the second most common cancer and the leading cause of cancer death in the USA. Approximately 247,270 new cases of lung cancer are estimated to occur in 2020, with 130,340 male cases and 116,930 female cases. The greatest risk factor for development of lung cancer is tobacco use. Secondhand smoking has also been shown to increase the risk of lung cancer by as much as 26% [1]. Other risk factors for lung cancer include asbestos exposure, family history of lung cancer, and exposure to toxic substances, including polycyclic aromatic hydrocarbons, heavy metals, and radon gas. According to the latest statistics, the death of malignant tumors accounts for 23.91% of all deaths among residents. At present, chemotherapeutic drugs can effectively control the growth of tumor cells. Chemotherapy is still an effective means of modern medicine for the treatment of malignant tumors. However, while killing tumor cells, chemotherapeutic drugs often cause different degrees of nausea and vomiting and other gastrointestinal toxic reactions. Patients are unable to eat, and some even give up chemotherapy for

fear of gastrointestinal reactions [1–3]. This study externally applied self-made chemotherapy antiemetic patches, such as Zhongwan, Neiguan, Zusanli, Yongquan, and other acupoints to prevent and treat nausea and vomiting. This operation is easy for patients to accept and clinical implementation with simple and convenient operation profile. This article discusses the value of external application of traditional Chinese medicine in the prevention and treatment of nausea and vomiting caused by chemotherapy of non-small-cell lung cancer.

2. Materials and Methods

2.1. Participants. This is a prospective trial. A total of 114 patients with non-small-cell lung cancer who were hospitalized in our hospital from October 2020 to March 2022 were enrolled as per the inclusion criteria. The eligible participants were randomly divided into the research group and the control group with 57 cases in each group at the ratio of 1 : 1. All patients in this study gave informed consent, and the patients themselves or their family members signed the relevant consent forms. The baseline data of the included subjects are detailed in Table 1. This study has been reviewed and approved by the Medical Ethics Committee of the Hainan Provincial People's Hospital (no. #1733119, clinical study registration number: ChiCTR2300061257).

2.1.1. Inclusion Criteria. Inclusion criteria were as follows: ① age from 18 to 80 years; ② patients with malignant tumors diagnosed by pathology and those with gastrointestinal reactions such as vomiting and nausea after one-stage chemotherapy; ③ patients without contraindications to chemotherapy and with KPS score greater than 70 points; ④ blood routine and liver and kidney function are basically normal; ⑤ those who are informed and willing to receive treatment.

2.1.2. Exclusion Criteria. Exclusion criteria were as follows: ① patients with mental illness; ② vomiting caused by other reasons other than chemotherapy; ③ pregnant or breast-feeding women; ④ patients with severe heart, liver, and kidney dysfunction or abnormal bone marrow function.

2.2. Methods

2.2.1. Control Group. The control group was given chemotherapy + tropisetron 4 mg intravenous infusion 30 minutes before chemotherapy 1 time/day for 3 days.

2.2.2. Research Group. The research group was administered chemotherapy + intravenous infusion of tropisetron 4 mg 30 minutes before chemotherapy, once a day for 3 days + external application of traditional Chinese medicine for 5 days. The external application of traditional Chinese medicine on the acupoints of Zhongwan, Guanyuan, Zusanli (double), and Yongquan (double) was started from 2 days before the application of chemotherapy drugs to the third day of chemotherapy, once a day for 4 hours each time. Among them, the external medicine was composed of Pinellia, tangerine peel, Poria, Atractylodes, Kou Ren, cooked aconite, cinnamon, dried ginger, Evodia, and cloves in equal proportions. We form a bolus weighing about 3 g and fix the bolus on the selected acupoint with a 6×6 nonwoven blank sticker. The acupoints were applied externally from 1 day before the application of chemotherapy drugs to the 4th day of chemotherapy, once a day for 4 hours each time.

2.3. Observation Indicators

2.3.1. Efficacy. (1) Main efficacy indicators were the frequency, degree, and duration of nausea and vomiting. (2) Secondary efficacy indicators were nausea and vomiting interval, chemotherapy drug dose reduction, the proportion of interruption or withdrawal, and quality of life score.

2.3.2. Safety. (1) Records of adverse reactions included the following: constipation, dizziness, headache, abdominal distension, and diarrhea. (2) Blood routine, urine routine, stool routine, liver and kidney function, and electrocardiogram.

2.3.3. Antiemetic Efficacy. Complete control (CR) (no vomiting), partial control (PR) (vomiting 1 to 2 times/d), mild control (MR) (vomiting 3 to 5 times/d), and no control (F) (vomiting > 5 times/d) were observed. The total effective control rate was CR + PR. Complete remission rate refers to the ratio of cases with normal eating and no nausea and vomiting to the total number of cases. Effective rate refers to the proportion of cases with no nausea and mild nausea, no effect on eating, complete relief of vomiting, and partial relief to the total number of patients.

Nausea and vomiting index evaluation: according to the anticancer drug toxicity standard prepared by the World Health Organization, ① 0 degree denotes no nausea and vomiting; ② I degree denotes nausea and no vomiting; ③ II degree denotes nausea with mild vomiting; ④ III degree denotes severe vomiting; and ⑤ M degree denotes vomiting is difficult to control. Nausea profile (NP) assessment: NP is divided into 3 parts of symptoms: ① physical discomfort: dizziness, weakness, fatigue, sweating, and other accompanying symptoms; ② gastrointestinal reactions: evaluation of the manifestation and degree of nausea, vomiting, and stomach discomfort; and ③ emotional discomfort: assessment of nervousness, anxiety, disappointment, fear, and other negative emotions. The higher the score, the more severe the above symptoms.

The American Cancer Quality of Life Scale (FACT-L4.0) was used to evaluate the impact of treatment regimens on the quality of life of patients.

Scoring and evaluation were performed according to the Eastern Cooperative Oncology Group Physical Condition Scale (ECOG) and KPS. By comparing the changes of ECOG/KPS values before and after treatment, the influence

Table 1: Basic profiles of patients.

General	Research group	Control group	t value/χ^2 value	P value
Number of cases	57	57		
Age	59.38 ± 1.29	60.15 ± 2.03	1.812	0.074
Sex			0.202	0.653
Male	28	27		
Female	29	30		
Nation			2.124	0.000
Han nationality	54	55		
Others	3	2		
Smoking history			0.521	0.000
None	10	7		
Less than 10 years	25	24		
10+ years	22	26		
Drinking history			0.142	0.003
None	21	23		
Less than 10 years	24	24		
10+ years	12	10		

of the treatment plan on the patient's physical state was evaluated.

2.4. Statistical Analysis. The data analysis was done with SPSS21.0 software package; the count was tested by the χ^2 test and expressed as %, and the measurement was tested by the t-test and expressed as $\overline{x} \pm s$. $P < 0.05$ indicated that the difference is of statistical significance.

3. Results

3.1. Comparison of Renal Function between the Two Groups before and after Treatment. There was no significant difference in renal function between the two groups before treatment. After treatment, the serum creatinine in the study group was 564.14 ± 93.22 and in the control group was 235.84 ± 65.15; the urea nitrogen level in the study group was 24.33 ± 8.14 and in the control group was 15.12 ± 8.41; the endogenous creatinine level in the study group was 15.34 ± 8.22 and in the control group was 23.41 ± 10.82; the differences were significant ($t = 15.943$, 12.005, and 13.325; $P = 0.001$, 0.005, and 0.005) (Table 2).

3.2. Comparison of Liver Function between the Two Groups before and after Treatment. Before treatment, there was no significant difference in the liver function between the two groups. After treatment, ALT level was 30.92 ± 11.18, AST level was 34.17 ± 9.19, and TBIL level was 21.28 ± 6.16 in the study group. In the control group, ALT level was 38.58 ± 12.16, AST level was 41.19 ± 8.43, and TBIL level was 26.05 ± 9.83, and the differences were significant ($t = 11.583$, 10.012, and 9.426; $P = 0.001$, 0.002, and 0.001) (Table 3).

3.3. Comparison of Quality of Life before and after Treatment between the Two Groups. Before treatment, the physiological status (25.50 ± 3.50), social/family status (28.40 ± 1.10), emotional status (27.26 ± 2.20), and family status (30.40 ± 1.10) of the research group were comparable to the control group's physiological status (26.61 ± 2.11), social/family status (28.51 ± 2.2), emotional status (27.43 ± 1.21), and family status (30.41 ± 0.11), and the differences were insignificant ($t = 7.943$, 9.536, and 6.451; $P = 0.564$, 0.826, 0.624, and 0.150). After treatment, the physiological status (16.40 ± 1.20), social/family status (17.60 ± 0.40), emotional status (18.94 ± 1.60), and family status (20.50 ± 1.10) of the research group were better than the control group's physiological status (20.21 ± 6.41), social/family status (20.11 ± 1.51), emotional status (20.85 ± 1.31), and family status (22.81 ± 1.21), and the differences were significant ($t = 16.274$, 5.379, 5.142, and 8.153; $P = 0.005$, 0.000, 0.002, and 0.001) (see Table 4 for details).

3.4. Comparison of Physical Condition Scores between the Two Groups before and after Treatment. Before treatment, the ECOG score (3.59 ± 0.12) and KPS score (60.25 ± 4.32) in the research group were comparable to the ECOG score (3.13 ± 0.14) and KPS score (60.72 ± 4.38) in the control group ($t = 9.548$ and 8.736, $P = 0.682$ and 0.748). After treatment, the ECOG score (1.47 ± 0.52) and KPS score (82.46 ± 4.61) of the research group were significantly different from the ECOG score (2.16 ± 0.89) and KPS score (78.24 ± 4.56) of the control group ($t = 11.913$ and 9.357; $P = 0.035$ and 0.001) (Table 5).

3.5. Comparison of Antiemetic Efficacy between the Two Groups of Patients. The effective rate of the research group was significantly better than that of the control group (73.68% (42/57) vs 52.63% (30/57)), with a significant difference ($\chi^2 = 11.724$, $P = 0.000$). The total effective rate of the research group was significantly better than that of the control group (91.23% (52/57) vs 80.70% (46/57)), with a significant difference ($\chi^2 = 9.458$, $P = 0.015$) (Table 6).

3.6. Comparison of the Incidence of Adverse Reactions between the Two Groups of Patients after Treatment. The incidence of adverse reactions in the research group was lower than that in the control group (31.58% (18/57) vs 47.37% (27/57)), with a significant difference ($X^2 = 4.294$, $P = 0.001$) (Table 7).

Table 2: Comparison of renal function in the two groups before and after treatment ($\overline{x} \pm s$).

Group	Case	Serum creatinine (μmol/L)		Urea nitrogen (mmol/L)		Endogenous creatinine (ml/min)	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Control group	57	945.63 ± 129.81	564.14 ± 93.22	47.13 ± 11.52	24.33 ± 8.14	10.51 ± 6.93	15.34 ± 8.22
Research group	57	953.81 ± 133.63	235.84 ± 65.15	48.64 ± 10.42	15.12 ± 8.41	11.12 ± 5.83	23.41 ± 10.82
t		2.019	15.943	1.631	12.055	1.461	13.325
P		0.245	0.001	0.031	0.005	0.102	0.005

Table 3: Comparison of the liver function between the two groups before and after treatment ($\overline{x} \pm s$).

Group	Case	ALT (U/L)		AST (U/L)		TBIL (μmol/L)	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Control group	57	95.31 ± 32.06	38.58 ± 12.16	72.38 ± 11.43	41.19 ± 8.43	38.18 ± 11.93	26.05 ± 9.83
Research group	57	93.74 ± 37.91	30.92 ± 11.18	75.12 ± 12.16	34.17 ± 9.19	37.26 ± 12.17	21.28 ± 6.16
t		2.354	11.853	1.557	10.012	1.570	9.426

Table 4: Comparison of quality of life before and after treatment in the two groups ($\overline{x} \pm s$).

Group	Physiological condition		Social/family status		Emotional status		Family status	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Research group	25.50 ± 3.50	16.40 ± 1.20	28.40 ± 1.10	17.60 ± 0.40	27.26 ± 2.20	18.94 ± 1.60	30.40 ± 1.10	20.50 ± 1.10
Control group	26.61 ± 2.11	20.21 ± 6.41	28.51 ± 2.2	20.11 ± 1.51	27.43 ± 1.21	20.85 ± 1.31	30.41 ± 0.11	22.81 ± 1.21
T	7.943	16.274	9.538	5.379	6.451	5.142	10.221	8.153
p	0.564	0.005	0.826	0.000	0.624	0.002	0.150	0.001

Table 5: Comparison of physical conditions before and after treatment in the two groups (points, $\overline{x} \pm s$).

Group	ECOG score		KPS score	
	Before treatment	After treatment	Before treatment	After treatment
Research group ($n = 57$)	3.59 ± 0.12	1.47 ± 0.52	60.25 ± 4.32	82.46 ± 4.61
Control group ($n = 57$)	3.13 ± 0.14	2.16 ± 0.89	60.72 ± 4.38	78.24 ± 4.56
T	9.548	11.913	8.736	9.357
P	0.682	0.035	0.748	0.001

Table 6: Comparison of antiemetic efficacy between the two groups of patients (cases, %).

Group	Complete control (CR)	Partial control (PR)	Slight control (SR)	No control (F)	Obvious efficiency	Total effective control rate
Research group ($n = 57$)	20 (35.09)	22 (38.60)	10 (17.54)	5 (8.77)	42 (73.68)	52 (91.23)
Control group ($n = 57$)	12 (21.05)	18 (31.58)	16 (28.07)	11 (19.30)	30 (52.63)	46 (80.70)
χ^2		—			11.724	9.458
P		—			0.000	0.015

4. Discussion

Lung cancer remains the leading cause of cancer-related death in many countries, as many patients are diagnosed at an advanced stage (III or IV). Surgery alone leads to poor overall survival in hospitalized patients with stage III NSCLC, most of whom have tiny distant metastases. Due to the dismal 5-year survival rate of patients with stage IIIA-N2 NSCLC who underwent surgical resection alone, treatment of advanced NSCLC should control local and microscopic systemic disease [4, 5]. One way to improve surgical outcomes is to give chemotherapy before or after surgery. Over the past two decades, many clinical studies have focused on developing optimal adjuvant or neoadjuvant chemotherapy regimens and/or radiotherapy for advanced lung cancer that can be combined with surgery. Treatment options for NSCLC are largely based on the stage of the cancer. However, other factors, such as a person's health, lung

Table 7: Comparison of adverse reactions (cases).

Group	Case	Constipation	Dizziness/headache	Bloating/diarrhea	Incidence (%)
Research group	57	8	10	9	47.37
Control group	57	5	8	5	31.58
X^2	—		4.294		
P	—		0.001		

function, and cancer characteristics, are also taken into account. The therapeutic goals of NSCLC are to prolong survival and control disease-related symptoms [6–8]. For patients who are not candidates for molecularly targeted therapy, similar survival outcomes can be achieved with various platinum doublets and these are recommended by current National Comprehensive Cancer Network (NCCN) guidelines. In addition, the most commonly used chemotherapeutic agents have different toxicity profiles and thus toxicity profiles are involved in determining treatment selection, patient tolerance to chemotherapy, and treatment success rates [9]. Although most cancer patients prefer to take an active or shared role in decision-making, no clear clinical guidelines have been published on how to obtain and integrate their preferences for side effects in treatment decisions.

In cancer patients, chemotherapy-induced nausea and vomiting (CINV) is a common adverse effect that affects not only quality of life but also treatment outcomes. The main cause of nausea and vomiting during chemotherapy is that chemotherapy drugs stimulate the gastrointestinal mucosa. When chemotherapy drugs accumulate in the intestinal cavity of patients, they stimulate enterochromaffin cells to release neurotransmitters such as serotonin, which combine with serotonin at the vagus nerve terminals in the abdominal cavity. Subsequently, it generates nerve impulses and stimulates the emesis center on the dorsolateral side of the reticular structure of the medulla oblongata in the brainstem, causing vomiting. It is important to address these issues from both preventive and therapeutic perspectives so that patients can adhere to their treatment regimen. Nausea and vomiting are divided into 5 different types, and the main drug options for prevention and treatment include 5-HT3 receptor antagonists, NK1 receptor antagonists, and corticosteroids. Other drugs used (but to a lesser extent) include dopamine antagonists, benzodiazepines, cannabinoids, and olanzapine [10, 11]. In addition, those patients who express interest in alternative or nondrug therapies may also have options. Risk factors for developing nausea and vomiting can be classified as patient-related or treatment-related factors.

Nausea and vomiting are the most common side effects of chemotherapy drugs, which may lead to dehydration, electrolyte disturbances, and malnutrition, and negatively affect patients' treatment compliance. 70% to 80% of cancer patients will develop CINV without appropriate antiemetic intervention. Therefore, effective management of chemotherapy-induced nausea and vomiting (CINV) is beneficial to patient compliance and quality of life [12]. For CINV, antiemetics divided into the following classes are recommended as follows: 5-HT3 serotonin receptor antagonists, tachykinin NK1 receptor antagonists, steroids, olanzapine, dopamine receptor antagonists, and benzodiazepines class of drugs. However, full control of CINV remains unresolved. In addition, the expensive cost and side effects of antiemetics, including constipation, headache, and hiccups, also indicate that CINV still needs better treatments [13]. Acupuncture, acupressure, massage, and moxibustion are all safe medical procedures with minimal side effects for CINV. The National Institutes of Health (NIH) consensus statement recommends acupoint stimulation as a complementary intervention for CINV prevention. The Society for Oncology Nursing also considers acupoint stimulation as a promising intervention for the treatment of CINV [14]. A previous systematic review showed that acupoint stimulation reduces the incidence of acute vomiting. In this study, the effective rate of the research group was 73.68% (42/57), which was significantly better than that of the control group, 52.63% (30/57). The total effective rate of the study group was 91.23% (52/57), which was significantly better than that of the control group, 80.70% (46/57). Data show that external application of traditional Chinese medicine on acupoints can reduce the incidence of nausea and vomiting in patients undergoing chemotherapy. Physiologically, the spleen and stomach are the foundation of essence. However, chemotherapy drugs are classified as "drug poisons" and "drug evils," which lead to the disharmony of the stomach and the upward reversal of stomach qi, resulting in a series of gastrointestinal reactions such as nausea, vomiting, and loss of appetite in patients after chemotherapy [8]. "Medical Origins" mentions "the external TCM application blocks its qi, enables the medicinal properties enter its internal organs from the pores, pass through the meridians, between the skin, muscles, and bones, via pasting it with ointment." The external application of traditional Chinese medicine uses meridians and acupoints as carriers and channels, so that the medicine directly acts on the relevant organs, and stimulates the effect of the medicine through the sensitivity and amplification effect of the meridians and acupoints on the medicine.

The limitations of this study need to be addressed. First, this pilot study might not have sufficient total sample size to obtain reliable results. Future studies should endeavor to recruit larger sample sizes to further verify the treatment effects.

To sum up, external application of traditional Chinese medicine can significantly reduce nausea and vomiting caused by chemotherapy of non-small-cell lung cancer and can improve the body and quality of life of patients, which is worthy of clinical research and promotion.

Data Availability

All data generated or analysed during this study are included within this article.

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Retraction

Retracted: Ultrasound Comparative Analysis of Coronary Arteries before and after Immune Blocking Therapy with Gamma Globulin in Children with Kawasaki Disease

Evidence-Based Complementary and Alternative Medicine

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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] Y. Yu, J. Hu, Q. Xia et al., "Ultrasound Comparative Analysis of Coronary Arteries before and after Immune Blocking Therapy with Gamma Globulin in Children with Kawasaki Disease," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2900378, 6 pages, 2022.

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Research Article

Ultrasound Comparative Analysis of Coronary Arteries before and after Immune Blocking Therapy with Gamma Globulin in Children with Kawasaki Disease

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Objective. To investigate the ultrasound characteristics and clinical efficacy of coronary arteries before and after immune blocking therapy with gamma globulin in children with Kawasaki disease. *Methods*. A total of 64 children with Kawasaki disease who were treated in our hospital from January 2018 to October 2021 were selected. All the children were given immune blocking therapy with gamma globulin on the basis of conventional treatment. The disappearance time of related symptoms and signs (fever, mucosal congestion, cervical lymphadenopathy, and swelling of the hands and feet) in children were counted. The white blood cell count (WBC), platelet count (PLT), C-reactive protein (CRP), and procalcitonin (PCT) levels of the children before and after treatment were compared, and the characteristics of coronary echocardiography before and after treatment were observed for analysis and discussion, to carefully observe whether the coronary artery involvement of the children was improved. *Results*. The inner diameter of the left and right coronary arteries significantly decreased ($P < 0.05$), and the levels of leukocytes, platelets, CRP, erythrocyte sedimentation rate, vascular endothelial growth factor (VEGF), and endostatin were significantly decreased compared with those before treatment, with a statistical difference ($P < 0.05$). *Conclusion*. The effect of gamma globulin in the treatment of Kawasaki disease is remarkable, which can improve the blood indexes, VEGF, and endostatin levels in children, significantly reduce coronary dilatation, and reduce the incidence of coronary artery disease. Echocardiography is of high value in the examination of children with Kawasaki disease, which can accurately detect the size, location, and inner diameter of coronary artery lesions, and can effectively evaluate the treatment effect on children.

1. Introduction

Kawasaki disease (KD) is a common acute fever disease in pediatrics [1]. The main pathological characteristics are systemic arteritis and arteriolitis, and the most serious harm is cardiovascular damage [2, 3]. It has been shown that the incidence is slightly higher in Asian children than in Europe and the United States and is common not only in children aged 6 months to 5 years but also in school-aged children and rarely in adults, with a male to female ratio of approximately 1.62 : 1 [4]. It is mainly manifested as coronary artery lesions, including coronary artery dilatation and coronary aneurysm, which is the most important factor affecting the prognosis of children. Clinical manifestations include rash, fever, rigid edema of the hands and feet, and ocular conjunctival congestion [5]. KD is a self-limiting disease. Although the prognosis is good, if the correct and effective treatment measures are not received in the early stage, it can affect the small and medium arteries of the whole body, easily induce coronary artery damage, and even induce myocardial infarction and sudden death in severe cases, which seriously threatens the safety and quality of life of children [6, 7].

As an immunoglobulin, gamma globulin is mostly used for the treatment of infectious diseases clinically [8]. It can block the Fc receptors on the surface of platelets, mononuclear phagocytes, and vascular endothelial cells and reduce the vascular immune inflammatory response [9, 10]. Immunoglobulin contains various antibodies required by the body to enhance the immune function and prevent infection. It has been widely used in the clinical treatment of KD, and its clinical efficacy is certain, as it can rapidly reduce fever, eliminate acute symptoms, and reduce the incidence of coronary artery lesions [11, 12]. In this study, we observed the characteristics of coronary ultrasound before and after gamma globulin immunoblockade treatment in children with KD, which provides a clinical reference for gamma globulin treatment of KD to inhibit the aggravation of coronary artery damage.

2. Materials and Methods

2.1. Research Objects. A prospective analysis was performed on 64 children with KD who were treated in our hospital from January 2018 to October 2021. All the children were given gamma globulin immunosuppressive therapy on the basis of conventional treatment. There were 40 males and 24 females; the age ranged from 72 days to 15 years, with an average of (3.04 ± 0.34) years.

2.1.1. Inclusion Criteria. The inclusion criteria were as follows: patients met the clinical diagnostic criteria for Kawasaki disease in the 2017 edition of "Diagnosis, Treatment, and Long-Term Management of Kawasaki Disease: A Scientific Statement for Health Professionals From the American Heart Association" [13], patients did not received relevant treatment before admission, patients had complete clinical data and could cooperate with the whole process of treatment and examination, and patients with no history of hypersensitivity to gamma globulin drugs.

2.1.2. Exclusion Criteria. The exclusion criteria were as follows: patients with congenital heart disease, patients with a history of aspirin or intravenous immunoglobulin therapy, and patients with mental system disease. The above studies were conducted with the informed consent of the families of the children and were approved by the ethics committee of our hospital.

2.2. Methods. After admission, all the children received the same routine treatment plan, such as atomization of phlegm, physical cooling, routine use of antibiotics, and nutritional support. On this basis, the treatment was treated by intravenous infusion of gamma globulin (manufacturing company: Guizhou Taibang Biological Products Co., Ltd., Chinese medicine Zhunzi: S20023034, specification: 50 mL: 2.5 g/piece), according to 2 g/kg single dose, intravenous infusion, slowly completed within 10–12 h; if the reaction is poor, the drug can be repeated once on the second day, repeat twice at most; aspirin (Shaanxi Yishengtang Pharmaceutical Co., Ltd., Chinese medicine Zhunzi: H61023268) was taken orally, once a day, 30–50 mg/kg each time. After 3 days of administration, if the child was antipyretic, the dosage was reduced to 4 mg/kg until the coronary artery lesions and erythrocyte sedimentation rate returned to normal.

2.3. Evaluation Indicators and Judgment Criteria. (1) Time to disappearance of symptoms and signs and length of hospital stay: during the whole treatment process, the time to disappearance of signs and symptoms, such as fever, mucosal congestion, cervical lymphadenopathy, and swelling of the hands and feet, and hospitalization time of the children were counted. (2) The levels of serum-related indexes were compared before and after treatment. First, 5.0 ml of peripheral venous blood was drawn and centrifuged at 3000 r/min for 5 min by the Beckman Microfuge 20 medical centrifuge. The upper serum was taken and stored in a refrigerator at −20°C. The Beckman Coulter dxh 600 blood routine tester was used to measure the blood routine-related indicators of the children before and after treatment for 2 weeks, including C-reactive protein (CRP), platelets, white blood cells, erythrocyte sedimentation rate, and other indicators. VEGF and endostatin were detected by ELISA. (3) The incidence of coronary artery disease (CAL) was detected by echocardiography. The diagnostic criteria of Kawasaki disease complicated with coronary artery disease are as follows: (i) coronary artery aneurysm (CAA), coronary artery dilation of different shapes, coronary artery diameter 4–7 mm; (ii) giant coronary artery aneurysm (GCAA), coronary artery diameter ≥ 8 mm; and (iii) Coronary artery dilatation, coronary artery ≥ 2.5 mm in younger than 3 years old, coronary artery ≥ 3.0 mm in ≥ 3 years old and < 9 years old, coronary artery ≥ 3.2 mm in ≥ 9 years old and < 14 years old, and 33.5 mm in those aged 14 and older.

2.4. Statistical Methods. SPSS 24.0 was used for the statistical analysis of the data. The measurement data were analyzed by the *t*-test of the opposite samples, represented by $(\overline{x} \pm s)$, and the enumeration data were represented by the chi-square test, which was represented by the percentage, and $P < 0.05$ indicated that the difference was statistically significant.

3. Results

3.1. Disappearance Time of Symptoms and Signs and Length of Hospital Stay. The time when the symptoms and signs disappeared and the length of hospital stay are given in Table 1.

3.2. Serum-Related Index Levels before and after Treatment in Children. Leukocyte level in the child after gamma globulin treatment was $8.24 \pm 2.75 \times 10^9$/L compared to $17.14 \pm 4.78 \times 10^9$/L before treatment. Platelet level in the child after gamma globulin treatment was $230.84 \pm 54.81 \times 10^9$/L compared to $380.23 \pm 109.73 \times 10^9$/L before treatment; CRP levels were 70.33 ± 8.66 mg/L before

Table 1: Disappearance time of symptoms and signs and length of hospital stay.

Cases	Antipyretic time	Cervical lymphadenopathy resolution time	Mucous membrane hyperemia disappearance time	Hand and foot swelling subsides time	Hospital stay
76	3.79 ± 0.51	6.81 ± 1.65	4.03 ± 0.77	4.19 ± 1.25	8.67 ± 0.76

Table 2: Comparison of serum-related indexes before and after treatment in children.

	Leukocyte ($\times 10^9$/L)	Platelets ($\times 10^9$/L)	CRP (mg/L)	ESR (mm/h)
Before treatment	17.14 ± 4.78	380.23 ± 109.73	70.33 ± 8.66	99.06 ± 10.24
After treatment	8.24 ± 2.75	230.84 ± 54.81	20.15 ± 6.05	32.41 ± 4.52
t	14.07	10.618	41.41	51.91
P	< 0.001	< 0.001	< 0.001	< 0.001

treatment and 70.33 ± 8.66 mg/L after treatment; ESR levels were 99.06 ± 10.24 mm/h before treatment and 99.06 ± 10.24 mm/h after treatment; the serum levels of the relevant indicators decreased in all children after gamma globulin treatment ($P < 0.001$) (Table 2).

3.3. Comparison of VEGF and Endostatin Levels before and after Treatment in Children. After gamma globulin treatment, VEGF levels were 41.73 ± 6.31 pg/L and endothelial inhibitory hormone levels were 16.53 ± 1.47 ng/L. Before treatment, VEGF levels were 198.47 ± 17.36 pg/L and endothelial inhibitory hormone levels were 40.62 ± 2.13 ng/L.

Before treatment, VEGF levels were 198.47 ± 17.36 pg/L and endothelial inhibitory hormone levels were 40.62 ± 2.13 ng/L. VEGF and endothelial inhibitory hormone levels decreased significantly after treatment in children ($P < 0.001$). After gamma globulin treatment, VEGF and endostatin were significantly lower than those before treatment (Table 3).

Table 3: Comparison of VEGF and endostatin levels before and after treatment in children.

	VEGF (pg/L)	Endostatin (ng/L)
Before treatment	198.47 ± 17.36	40.62 ± 2.13
After treatment	41.73 ± 6.31	16.53 ± 1.47
t	73.976	81.148
P	< 0.001	< 0.001

3.4. Changes of Coronary Artery Diameter in Children before and after Treatment. After gamma globulin treatment, the internal diameter of the left coronary artery was 2.70 ± 0.86 mm and that of the right coronary artery was 2.90 ± 0.35 mm. After treatment, the internal diameter of the left coronary artery was 4.30 ± 1.13 mm and that of the right coronary artery was 3.10 ± 1.02 mm. The coronary artery internal diameter of the children improved significantly after treatment ($P < 0.001$) (Table 4) (Figure 1).

4. Discussion

KD, also known as cutaneous mucosal lymph node syndrome, is an acute systemic vasculitis and a common autoimmune disease in pediatrics [14]. The incidence of KD is increasing year by year, often impairing cardiac function in children and leading to coronary heart disease, and is gradually attracting widespread medical attention [15]. Although the pathogenesis has not been elucidated, genetic studies have identified several susceptibility genes for KD and its sequelae in different ethnic groups, including FCGR2A and CD40 [16]. Recent studies have found [17] that KD may be induced by the entry of one or more pathogenic microorganisms into the organism and is a systemic vascular inflammatory disease characterized by immune activation or immune dysfunction. Gamma globulin contains multiple antibodies in serum of healthy individuals and is a passive immunotherapy [18, 19]. It has a neutralizing effect on autoantibodies, can relieve the effect of microbial toxins and vascular inflammation, reduce the level of inflammatory factors, promote the negative feedback of immune regulatory cells, improve cellular immunity and humoral disorders, and control the deterioration of symptoms. The application of high-dose gamma globulin in the acute phase can block all immune responses that cause vascular damage and reduce platelet aggregation, thereby reducing coronary artery damage to a certain extent, that is, reducing coronary artery dilatation. Reducing the rate of change and giving gamma globulin therapy to children with KD in a timely manner to prevent complications such as myocardial infarction and impaired coronary artery function in children with KD significantly improves the safety and health of children [20, 21].

The results of this study showed that after the children received intravenous gamma globulin, the inner diameter of the left and right coronary arteries was significantly reduced ($P < 0.05$), and the levels of white blood cells, platelets, CRP, ESR, VEGF, and endostatin were significantly decreased compared with those before treatment ($P < 0.05$). The mechanism of action may be the more types and components of antibodies contained in gamma globulin, the more IVIG can inhibit the activity of FC receptors on lymphocytes, monocytes, macrophages, and other immune cell walls. (1) The more types and components of antibodies contained in gamma globulin, the more obvious the inhibitory effect of IVIG on the FC receptor activity of lymphocytes, mononuclear macrophages, and other immune cell walls, thus weakening the activation of a large number of immune cells, which can inhibit the

Table 4: Changes of coronary artery diameter before and after treatment in children.

	Inner diameter of the left coronary artery (mm)	Inner diameter of the right coronary artery (mm)
Before treatment	4.30 ± 1.13	3.10 ± 1.02
After treatment	2.70 ± 0.86	2.90 ± 0.35
t	9.823	1.263
P	< 0.001	< 0.001

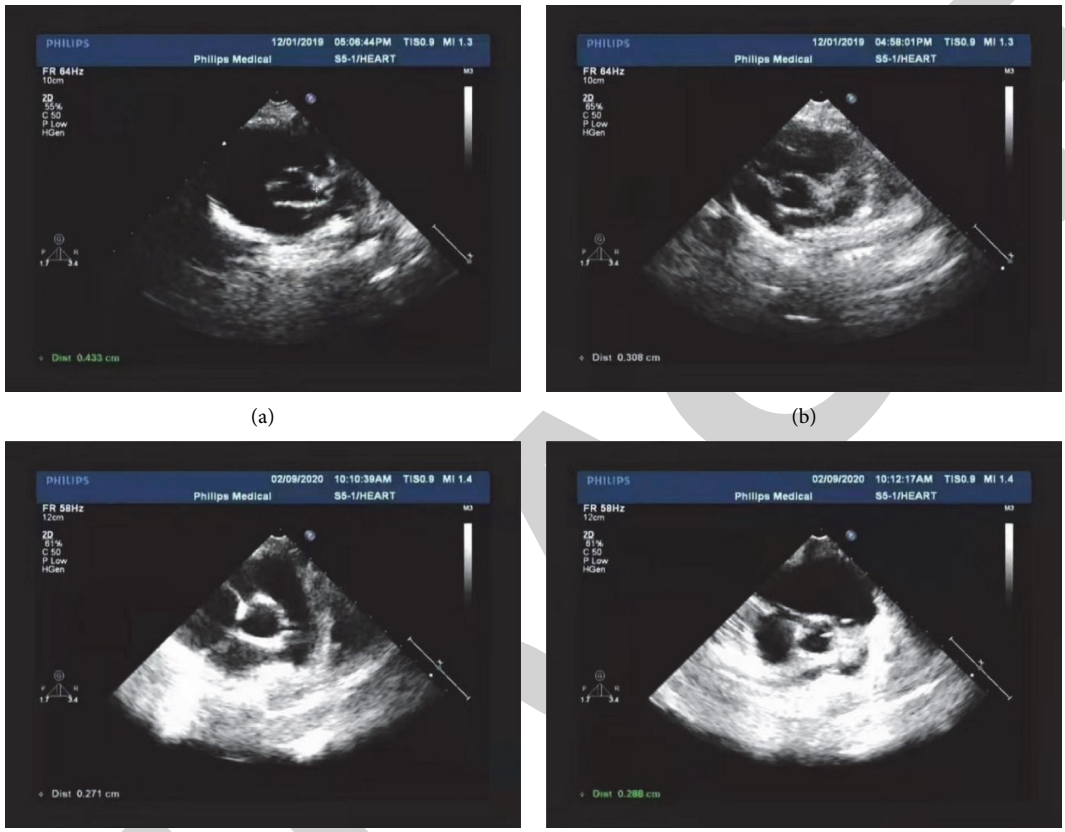

Figure 1: Changes in the inner diameter of the left and right coronary arteries before and after treatment. (a) The ultrasound results of the left coronary artery and (b) the right coronary artery before treatment. (c) The ultrasound results of the left coronary artery and (d) the right coronary artery three months after gamma globulin immunoblocking therapy.

inflammatory response, effectively relieve the toxic reactions in children, reduce the stimulation of inflammatory factors to the endovascular cortex, and reduce the occurrence of coronary artery lesions by improving the level of immune factors in children in the short term [22]; (2) activation of platelet-derived growth factors and their vascular pathways, reducing the degree of endothelial damage and thus the degree of vascular immune damage; (3) inhibition of B cell lymphocyte activity, resistance to toxin damage to children's vascular cells, and competitive binding requiring relevant receptors on the vessel wall, leading to massive immune complex deposition; (4) reduction of platelet levels, reducing the risk of thrombosis, which can effectively improve coronary artery dilation and reduce damage to the coronary arteries, thus reducing the incidence of coronary artery disease.

When gamma globulin preparations are injected, allergic-like reactions may occur, with side effects such as anaphylaxis in severe cases, which may be caused by the presence of traces of IgG aggregates in the preparations, which activate complement and cause basophils to release bioactive substances, such as histamine, or by the formation of immune complexes between antigens in the body and antibodies in the preparations during infection, which activate complement [23–25]. In addition to Western medicine, Kawasaki disease is classified in Chinese medicine as a warm and hot disease, and therefore, Chinese medicine treatment focuses on clearing heat and detoxifying toxins and promoting blood circulation [26]. Kawasaki disease is an external or warm-heat toxin that enters through the nose and mouth, manifesting itself as a transmigration process of the defense (wei), vital energy (qi), nutrient (ying), and

blood (xue), with the lung and stomach being the main organs affected, and the liver and kidneys may be involved [27]. The treatment is based on clearing heat and detoxification, activating blood circulation and resolving blood stasis, paying attention to nourishing the stomach and nourishing fluid, and protecting the heart [26,2 8]. In the treatment of KD, Chinese medicine is mainly based on the differentiation of Wei-Qi and Ying-Blood. The treatment can be carried out with Yin Qiao San, Qing Ying Tang, or Bamboo Leaf and Gypsum Tang [28]. As blood stasis is always present in Chuan teratology, blood stasis activators such as *Salvia miltiorrhiza* and Radix Paeoniae should be used throughout the treatment to control the abnormal increase of platelets, reduce platelet aggregation, lower blood viscosity, prevent coronary aneurysm, and shorten the course of treatment [28, 29].

5. Conclusion

To sum up, gamma globulin has a significant effect in the treatment of KD, which can improve the levels of white blood cells, platelets, CRP, ESR, VEGF, and endostatin in children and helps to inhibit the inflammatory response and significantly reduce coronary artery dilation. Echocardiography is of high value in the examination of children with KD. It can accurately detect the size, location, and inner diameter of coronary artery lesions and can effectively evaluate the therapeutic effect on children.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] C. Butters, N. Curtis, and D. P. Burgner, "Kawasaki disease fact check: myths, misconceptions and mysteries," *Journal of Paediatrics and Child Health*, vol. 56, no. 9, pp. 1343–1345, 2020.

[2] L. D. Frenkel, F. Gomez, and J. A. Bellanti, "COVID-19 in children: pathogenesis and current status," *Allergy and Asthma Proceedings*, vol. 42, no. 1, pp. 8–15, 2021.

[3] K. Iio, K. Uda, H. Hataya et al., "Kawasaki disease or Kawasaki-like disease: influence of SARS-CoV-2 infections in Japan," *Acta Paediatrica*, vol. 110, no. 2, pp. 600-601, 2021.

[4] R. Uehara and E. D. Belay, "Epidemiology of Kawasaki disease in asia, Europe, and the United States," *Journal of Epidemiology*, vol. 22, no. 2, pp. 79–85, 2012.

[5] M. S. Lo, "A framework for understanding Kawasaki disease pathogenesis," *Clinical Immunology*, vol. 214, Article ID 108385, 2020.

[6] Y. H. Loke, C. I. Berul, and A. S. Harahsheh, "Multisystem inflammatory syndrome in children: is there a linkage to Kawasaki disease?" *Trends in Cardiovascular Medicine*, vol. 30, no. 7, pp. 389–396, 2020.

[7] K. A. Morishita and R. D. Goldman, "Kawasaki disease recognition and treatment," *Canadian Family Physician*, vol. 66, no. 8, pp. 577–579, 2020.

[8] J. A. Dougherty and R. L. Yarsley, "Intravenous immune globulin (IVIG) for treatment of autoimmune heparin-induced thrombocytopenia: a systematic review," *The Annals of Pharmacotherapy*, vol. 55, no. 2, pp. 198–215, 2021.

[9] C. Galeotti, S. V. Kaveri, and J. Bayry, "IVIG-mediated effector functions in autoimmune and inflammatory diseases," *International Immunology*, vol. 29, no. 11, pp. 491–498, 2017.

[10] S. Graeter, C. Schneider, D. Verschoor et al., "Enhanced pro-apoptotic effects of Fe (II)-Modified IVIG on human neutrophils," *Frontiers in Immunology*, vol. 11, 2020.

[11] S. Graeter, H. U. Simon, and S. von Gunten, "Granulocyte death mediated by specific antibodies in intravenous immunoglobulin (IVIG)," *Pharmacological Research*, vol. 154, Article ID 104168, 2020.

[12] T. J. Legler, "RhIg for the prevention Rh immunization and IVIg for the treatment of affected neonates," *Transfusion and Apheresis Science*, vol. 59, no. 5, Article ID 102950, 2020.

[13] B. W. McCrindle, A. H. Rowley, J. W. Newburger et al., "Diagnosis, treatment, and long-term management of Kawasaki disease: a scientific statement for health Professionals from the American heart association," *Circulation*, vol. 135, no. 17, pp. e927–e999, 2017.

[14] S. Singh, A. K. Jindal, and R. K. Pilania, "Diagnosis of Kawasaki disease," *International Journal of Rheumatic Diseases*, vol. 21, no. 1, pp. 36–44, 2018.

[15] E. Whittaker, A. Bamford, J. Kenny et al., "Clinical characteristics of 58 children with a pediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2," *JAMA*, vol. 324, no. 3, pp. 259–269, 2020.

[16] K. Elakabawi, J. Lin, F. Jiao, N. Guo, and Z. Yuan, "Kawasaki disease: global burden and genetic background," *Cardiol Res*, vol. 11, no. 1, pp. 9–14, 2020.

[17] J. Kabeerdoss, R. K. Pilania, R. Karkhele, T. S. Kumar, D. Danda, and S. Singh, "Severe COVID-19, multisystem inflammatory syndrome in children, and Kawasaki disease: immunological mechanisms, clinical manifestations and management," *Rheumatology International*, vol. 41, no. 1, pp. 19–32, 2021.

[18] M. S. Lo and J. W. Newburger, "Role of intravenous immunoglobulin in the treatment of Kawasaki disease," *International Journal of Rheumatic Diseases*, vol. 21, no. 1, pp. 64–69, 2018.

[19] M. B. Madsen, H. Bergsten, and A. Norrby-Teglund, "Treatment of necrotizing soft tissue infections: IVIG," *Advances in Experimental Medicine & Biology*, vol. 1294, pp. 105–125, 2020.

[20] P. Moradimajd, H. Samaee, S. Sedigh-Maroufi, M. Kourosh-Aami, and M. Mohsenzadegan, "Administration of intravenous immunoglobulin in the treatment of COVID-19: a review of available evidence," *Journal of Medical Virology*, vol. 93, no. 5, pp. 2675–2682, 2021.

[21] T. E. Warkentin, "High-dose intravenous immunoglobulin for the treatment and prevention of heparin-induced thrombocytopenia: a review," *Expert Review of Hematology*, vol. 12, no. 8, pp. 685–698, 2019.

[22] B. W. McCrindle and B. Cifra, "The role of echocardiography in Kawasaki disease," *International Journal of Rheumatic Diseases*, vol. 21, no. 1, pp. 50–55, 2018.

[23] Y. Guo, X. Tian, X. Wang, and Z. Xiao, "Adverse effects of immunoglobulin therapy," *Frontiers in Immunology*, vol. 9, 2018.

[24] A. Durandy, S. V. Kaveri, T. W. Kuijpers et al., "Intravenous immunoglobulins-understanding properties and

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Retraction

Retracted: Application Effect and Accuracy Analysis of Electrochemiluminescence Immunoassay and Enzyme-Linked Immunosorbent Assay in the Serological Test of Hepatitis B Virus

Evidence-Based Complementary and Alternative Medicine

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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] Y. Lian, H. Fu, X. Xu, and C. Ju, "Application Effect and Accuracy Analysis of Electrochemiluminescence Immunoassay and Enzyme-Linked Immunosorbent Assay in the Serological Test of Hepatitis B Virus," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 9371497, 7 pages, 2022.

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Research Article

Application Effect and Accuracy Analysis of Electrochemiluminescence Immunoassay and Enzyme-Linked Immunosorbent Assay in the Serological Test of Hepatitis B Virus

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Objective. To explore the validity and accuracy of electrochemiluminescence immunoassay (ECLIA) and enzyme-linked immunosorbent assay (ELISA) in the serological detection of the hepatitis B virus. *Methods*. From 6 February 2019 to 1 March 2020, 96 patients diagnosed with hepatitis B virus infection in our hospital were recruited and assigned at a ratio of 1 : 1 to experimental groups A (GA) and B (GB), with 48 cases in each group, and the five major serological indicators of hepatitis B were tested and analyzed using ECLIA and ELISA. In addition, 50 suspected patients were selected for two tests, respectively, to compare the accuracy of the two test methods. *Results*. ECLIA was associated with significantly higher expression levels and higher detection rates of HBeAg, HBeAb, HBsAg, and HBsAb versus ELISA ($P < 0.05$), and the difference in the expression and detection rates of HBcAb levels between the two groups did not come up to the statistical standard ($P > 0.05$). ECLIA yielded significantly higher sensitivity and specificity than ELISA ($P < 0.05$), while the two methods showed comparable detection accuracy ($P > 0.05$). *Conclusion*. Despite the inconsistent results of the latest studies on the serological detection of hepatitis B by the two techniques, ECLIA is consistently superior to ELISA and provides better diagnostic benefits and merits promotion.

1. Introduction

Hepatitis B is a hepatic disease caused by the hepatitis B virus (HBV) [1]. According to the World Health Organization (WHO), there are about 257 million chronic HBV infections worldwide, with 68% in Africa and the Western Pacific, and about 887,000 deaths from HBV infection each year [2]. The hepatitis B virus enters the body, invades the liver, and replicates in large numbers, causing abnormalities in immune function [3]. Immune cells attack hepatocytes infected with the hepatitis B virus, causing degeneration, edema, and necrosis, resulting in a decrease in liver function and liver disease and digestive symptoms such as jaundice, fatigue, nausea, loss of appetite, and abdominal distension [4]. The disease deteriorates after serious damage to the liver causing liver fibrosis, cirrhosis, and even hepatocellular carcinoma. Some cases may develop serious complications, such as upper gastrointestinal bleeding and hepatic encephalopathy, which endanger patients' lives [5, 6]. It has been shown that entecavir is an antifibrotic and antiviral agent that postpones and reverses the progression of liver disease, but long-term use of entecavir is associated with adverse effects and compromises the therapeutic effect [7]. According to traditional Chinese medicine (TCM), the basic pathogenesis of hepatitis B is "dampness, heat, stasis, and toxicity." Hypersplenism induces congestion and enlargement of the spleen, which can be classified as "accumulation" and subdivided into the blood or Qi accumulation. Clinical TCM treatment mostly adopts Qi and Blood enhancement therapy. However, the efficiency leaves much to be desired. Therefore, early diagnosis with reliable diagnostic tools is of major significance for the treatment and prognosis of the disease.

Currently, the clinical diagnosis of hepatitis B mostly uses hepatitis B virus serum markers, anti-HBc, anti-HBe, HBeAg, anti-HBs, and HBsAg. HBV status and infectivity are determined based on the diagnostic results. There are two serological assays commonly used in clinical practice: electrochemiluminescence immunoassay (ECLIA) and enzyme-linked immunosorbent assay (ELISA). During ECLIA, the concentration of a test substance in a chemistry detection system under certain conditions is linearly quantified with the chemiluminescence intensity of the system, and the amount of the test substance is determined by using the instrument to measure the chemiluminescence intensity of the system [8]. During ELISA, the test specimen is reacted with an enzyme-labeled antigen or antibody; the antigen or antibody is added to the surface of the solid phase carrier with an enzymatic reaction substrate, which turns into a colored product under the catalysis of enzymes, the amount of which is directly related to the amount of the test substance in the specimen. Qualitative or quantitative analysis is performed according to the shade of the color reaction [9]. ELISA is widely used in the primary care system with extensive applicability and low cost, However, the lack of quantitative analysis, especially when serum specimens are too mobile and highly susceptible to false negatives, has led to a general consensus in recent years on the feasibility of ECLIA superseding ELISA as the recommended diagnostic method [10]. Currently, there is a paucity of clinical studies related to the detection of serological markers of hepatitis B virus infection by two different immunoassays.

To this end, 96 patients diagnosed with hepatitis B virus infection in our hospital from February 6, 2019, to March 1, 2020, were recruited to retrospectively analyze the effectiveness and accuracy of ECLIA and ELISA in hepatitis B virus serological tests, so as to explore a more efficient diagnostic modality for clinical purposes.

2. Materials and Methods

2.1. Baseline Data. From 6 February 2019 to 1 March 2020, 96 patients diagnosed with hepatitis B virus infection in our hospital were recruited and assigned at a ratio of 1 : 1 to experimental groups A (GA) and B (GB), with 48 cases in each group, and the five major serological indicators of hepatitis B were tested and analyzed using ECLIA and ELISA. The randomization was carried out using an online web-based randomization tool (freely available at http://www.randomizer.org/). For concealment of allocation, the randomization procedure and assignment were managed by an independent research assistant who was not involved in the screening or evaluation of the participants. In addition, 50 suspected patients were selected as experimental group C (GC) for two tests, respectively, to compare the accuracy of the two test methods. Informed consent was obtained from patients and signed prior to enrollment in this study. The study protocol was approved by the hospital ethics committee. Ethics number: SH-YUX20190206. All processes were in accordance with the Declaration of Helsinki ethical guidelines for clinical research.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria

For GA and GB:

(1) Patients with a pathologically confirmed diagnosis of hepatitis B [11].
(2) Patients without other viral infections.
(3) Patients without other liver diseases (e.g., liver injury, autoimmune hepatitis, etc.).
(4) Patients with complete clinical data.

For GC: Suspected of having hepatitis B.

2.2.2. Exclusion Criteria

(1) Patients with poor adherence or psychiatric disorders.
(2) Patients with concurrent malignancies.
(3) Patients with a long history of alcohol abuse.
(4) Pregnant or lactating women.

2.3. Assay Method

(1) For 96 confirmed patients, 5 ml of morning fasting venous blood was collected from all patients in the experimental groups was centrifuged at maximum speed for 10 minutes and the supernatant was retained and stored at −20°C for processing.

Experimental group A: Patient sera were tested using ECLIA. The sera were placed in polystyrene tubes with hepatitis B virus antigen and then labeled with diluted 30% hydrogen peroxide (H_2O_2). The tubes were incubated at 37°C for 120 minutes and then immunocoated, followed by rinsing off the plate five times with buffer. After adding 100 μl of H_2O_2 and an equal amount of luminescence reagent (luminol) again, the samples were assayed by chemiluminescence.

Experiment Group B: Patient sera were tested using ELISA. The reagents were incubated with the microtiter plate at room temperature (approximately 20°C) for 30 minutes and then the serum samples were loaded into the microtiter wells and set up as blank control, positive control, and negative control. The plates were covered with sealing film and incubated in a water bath at 37°C for 60 minutes and then washed 5 times. The procedure was repeated once and the termination solution was loaded onto the plate, followed by an assessment of assay results.

(2) After the ECLIA and ELISA serological tests, fluorescence quantitative polymerase chain reaction (PCR) analysis and liver histopathological examination were used to confirm the diagnosis of the 50 suspected participants, so as to compare the accuracy of the two test methods and the detection rate of serological indicators.

Table 1: The reference value range of five serological indexes of hepatitis B.

Serological indicators	Reference value (more than this value is positive)
HBeAg	≥ 0.05 NCU/Ml
HBeAb	≥ 2.00 NCU/mL
HBsAg	≥ 10.00 mU/mL
HBsAb	≥ 0.20 ng/mL
HBcAb	≥ 1.50 NCU/mL

2.4. Observations. The serum test markers of both groups were recorded, and the positive detection rate was calculated to compare the two methods.

The reference standards for the five indicators were as follows (Table 1) [12, 13]:

(1) Hepatitis B e antigen (HBeAg): HBeAg is considered positive with a concentration of ≥ 0.05 NCU/mL. The presence of HBeAg indicates active HBV replication and high infectivity.

(2) Hepatitis B e antibody (HBeAb): HBeAb ≥ 2.0 NCU/mL is considered positive. The disappearance of HBeAg and the production of HBeAb is called "serological conversion" when HBV is mostly in a low replication state and the infectiousness is reduced.

(3) Hepatitis B surface antigen (HBsAg): HBsAg is considered positive with a concentration of ≥ 10.0 mU/mL. HBsAg only turns positive two weeks after HBV infection, and a positive reaction indicates current HBV infection.

(4) Hepatitis B surface antibody (HBsAb): HBsAb is positive with a concentration of ≥ 0.2 n/mL. Positive HBsAb indicates that the body is immune to HBV, while some patients do not always produce anti-HBs.

A positive HBsAg and HBsAb may simultaneously occur in variant strains of infection, where the HBsAb produced by the original HBV does not remove the HBsAg of the mutant strain.

(5) Hepatitis B core antibody (HBcAb): HBcAb is considered positive with a concentration of ≥ 1.5 NCU/mL. HBcAb is a total antibody, including HBcAbIgM and HBcAbIgG, but it is mainly an HBcAbIgG antibody. Antibodies to HBcAbIgM are observed in both acute hepatitis and acute attacks of chronic hepatitis. If both HBcAbIgM and HBcAbIgG are positive, it is indicative of an acute attack of chronic hepatitis B.

2.5. Statistical Analysis. The experimental data were processed using SPSS 22.0 statistical software. The Shapiro–Wilk line normal distribution test was used for measurement data. Normally distributed measures were expressed as mean plus or minus standard deviation ($n = 2(\mu_\alpha + \mu_\beta)^2 p(1-p)/\delta^2$). Comparisons of means between two groups were first performed with the chi-squared *F*-test. The variance chi-square was tested by independent samples *t*-test, the variance nonchi-square was tested by independent samples *t*' test, and the within-group prepost comparison was tested by paired samples *t*-test. The count data were expressed as (*n* (%)), and the chi-square test was used to compare the differences between groups. Differences were considered statistically significant when $P < 0.05$.

Table 2: Comparison of key baseline data between the two groups ($\overline{x} \pm s$).

Groups	*n*	Gender		Age (years-old)	BMI
		Male	Female		
EA	48	26	22	47.87 ± 6.26	24.74 ± 1.66
EB	48	20	28	44.22 ± 8.68	24.93 ± 1.57
X^2/t		0.032		0.824	0.525
p		0.846		0.126	0.557

3. Results

3.1. Patient Characteristics. There were 26 males and 22 females in the GA group, aged 47.87 ± 6.26 years, with a BMI of 24.74 ± 1.66. There were 20 males and 28 females in the GB group, aged 44.22 ± 8.68 years, with a BMI of 24.93 ± 1.57. The patient characteristics between the two groups were comparable ($P > 0.05$). (Table 2).

3.2. Comparison of the Five Serum Indicators Tested by ECLIA and ELISA. In GA patients, the HBeAg level was 0.11 ± 0.04 NCU/mL, HBeAb level was 2.84 ± 0.52 NCU/mL, HBsAg level was 10.78 ± 1.67 mU/mL, HBsAb level was 0.34 ± 0.08 ng/mL, and HBcAb level was 1.71 ± 0.13 NCU/mL by chemiluminescence/mL. In GB patients, the HBeAg level was 0.09 ± 0.02 NCU/mL, HBeAb level was 2.19 ± 0.49 NCU/mL, HBsAg level was 9.86 ± 1.58 mU/mL, HBsAb level was 0.33 ± 0.07 ng/mL, and HBcAb level was 1.69 ± 0.11 NCU/mL by chemiluminescence/mL. HBeAg, HBeAb, HBsAg, and HBsAb levels discovered by the two tests were therefore statistically significant ($P < 0.05$); however, the difference in HBcAb levels between the two groups was not ($P > 0.05$) Table 3.

3.3. Comparison of the Positive Detection Rates of the Five Serum Indicators Tested by ECLIA and ELISA [n(%)]. The positive detection rate of HBeAg in GA patients was 100%, of HBeAb was 91.67%, of HBsAg was 96.33%, of HBsAb was 89.58% and of HBcAb was 93.75%. The positive detection rate of HBeAg in GB patients was 83.33%, of HBeAb was 77.08%, of HBsAg was 81.25%, of HBsAb was 75.00%, and of HBcAb was 87.50%. ECLIA was associated with significantly higher positive detection rates for HBeAg, HBeAb, HBsAg, and HBsAb versus ELISA ($P < 0.05$), while the difference in positive detection rates for HBcAb was not statistically significant ($P > 0.05$). (Table 4).

3.4. Comparison of Diagnostic Efficacy between ECLIA and ELISA. After histopathological examination of the liver and quantitative PCR analysis, 28 of the 50 suspected hepatitis B

Table 3: Comparison of the five serum indicators tested by ECLIA and ELISA ($\overline{x} \pm s$).

Methods	Serological indicators				
	HBeAg (NCU/mL)	HBeAb (NCU/mL)	HBsAg (mU/mL)	HBsAb (ng/mL)	HBcAb (NCU/mL)
GA (ECLIA)	0.12 ± 0.04	2.84 ± 0.52	10.78 ± 1.67	0.36 ± 0.08	1.71 ± 0.13
GB (ELISA)	0.09 ± 0.02	2.19 ± 0.49	9.86 ± 1.58	0.30 ± 0.05	1.69 ± 0.11
T	6.254	14.967	6.331	11.151	1.471
p	< 0.05	< 0.05	< 0.05	< 0.05	0.084

Table 4: Comparison of the positive detection rates of the five serum indicators tested by ECLIA and ELISA [n (%)].

Methods	n	Serological indicators				
		HBeAg	HBeAb	HBsAg	HBsAb	HBcAb
GA (ECLIA)	48	48 (100.00)	44 (91.67)	46 (96.33)	43 (89.58)	45 (93.75)
GB (ELISA)	48	40 (83.33)	37 (77.08)	39 (81.25)	36 (75.00)	42 (87.50)
X^2		5.912	5.887	6.024	5.545	1.283
p		0.011	0.014	0.009	0.021	0.256

Table 5: Comparison of diagnostic efficacy between ECLIA and ELISA [n (%)].

Methods	n	Accuracy ($n = 50$)	Sensitivity ($n = 28$)	Specificity ($n = 22$)
GA (ECLIA)	50	48 (96.00)	28 (100.00)	21 (95.45)
GB (ELISA)	50	45 (90.00)	25 (89.29)	18 (81.82)
X^2		0.457	1.582	1.338
p		0.365	0.047	0.31

patients were diagnosed. Their sera were tested by ECLIA and ELISA and the results showed the accuracy, sensitivity, and specificity were 96.00%, 100.00%, and 95.45% for ECLIA, and 90.00%, 89.29%, and 81.82% for ELISA. There was no significant difference in accuracy between these two procedures ($P > 0.05$); however, ECLIA had better sensitivity and specificity than ELISA ($P < 0.05$). (Table 5).

4. Discussion

HBV can be transmitted through mother-to-child, blood and blood products, broken skin mucous membranes, and sexual contact [14]. Due to viral, host, and environmental variables, HBV infection is associated with various clinical presentations [15]. With prolonged disease, chronic hepatitis B will develop intrahepatic complications such as cirrhosis and even hepatocellular carcinoma [16]. Furthermore, individuals with substantially reduced liver function are predisposed to major extrahepatic consequences including infections, upper gastrointestinal hemorrhage, hepatic encephalopathy, and hepatorenal syndrome [17]. In addition, hepatitis B may also be misdiagnosed with other liver diseases, such as Wilson disease and alcoholic liver disease [18, 19]. Currently, drug injections are mostly used to treat hepatitis B with the aim of enhancing the therapeutic effect in terms of leukocytes, antivirals, and antiplatelets [20]. Although surgical intervention is available for the progression of hepatitis B to cirrhosis, patients are highly susceptible to complications and immune function abnormalities [21]. The insights gained from the introduction of TCM treatment for hepatitis B have been widely accepted in terms of clinical efficacy [22]. According to TCM theory, hepatitis B is attributed to the long-term effects of exertion, diet, and emotions, resulting in internal dampness, liver qi stagnation, and prolonged depression that damages the spleen [23, 24]. The pathological factors of this disease include epidemic toxicity, qi stagnation, fatigue, and blood and water dampness. The overall pathogenesis is qi deficiency and blood stasis, which requires treatment to strengthen the spleen, invigorate qi, resolve blood stasis, activate blood circulation, and soften hardness and disperse nodules [25].

Currently, enzyme-linked immunosorbent assay and electrochemiluminescence immunoassay techniques are effective and widely used clinically in hepatitis B virological testing. ECLIA and ELISA are both biological tests, differing only in the index system used. ECLIA is quantitative by photon counting, while ELISA is different by color shades [26] Enzyme-linked immunosorbent assay features low cost, easy operation, low sensitivity and is suitable for preliminary qualitative diagnosis of diseases; therefore, it is widely used for large volume sample detection, but the quantitative analysis is insufficient and only qualitative analysis is available [27]. Additionally, the antibody and antigen reagents produced by different manufacturers vary largely, and the operation is susceptible to the impact of relevant factors (e.g., repeated washing of plates), which increases the contamination of the sample and results in a predisposition to inaccurate results such as false positives or false negatives, compromising the sensitivity of the test and preventing a dynamic diagnosis of hepatitis B virus infection [28]. ECLIA is a sensitive method for the detection of antigens and antibodies to viruses and is considered an alternative to radioimmunoassay and ELISA for the detection of antibodies and antigens in vivo due to its high sensitivity, simplicity and speed of analysis, short detection time, and

wide diagnostic range [29]. It is based on the principle that under certain conditions, the concentration of antibodies and antigens in the specimen is linearly quantified with the luminescence intensity of the chemical formula. The luminescence intensity of the system is measured using the instrument to directly determine the content of antigens and antibodies [30]. Herein, the five major serum indicators of hepatitis B patients were tested separately using these two methods. The results showed that the levels of HBeAg, HBeAb, HBsAg, and HBsAb detected by the two tests were statistically significant ($P < 0.05$), but the difference in HBcAb levels between the two groups was not significant ($P > 0.05$).

Hepatitis B surface antigen is a marker of hepatitis B virus infection [31]. Positive results are detectable in serum at 2–6 months of infection with hepatitis B virus and 2 to 8 weeks before the elevation of alanine aminotransferase, which is indicative of acute hepatitis B, chronic hepatitis B patients, or pathogens carriers [32]. Most patients with acute hepatitis B may show negative results in the early course of the disease, and patients with chronic hepatitis B or virus carriers persist with positive surface antigen [33]. Positive hepatitis B surface antibodies are immunological and protective antibodies against the hepatitis B virus that suggest either a past viral infection that was eradicated or immunization against hepatitis B that created protective antibodies [34]. The higher the titer of hepatitis B surface antibody in the serum, the more protective it is. However, a small number of people who are positive for hepatitis B surface antibody develop hepatitis B, which may be ascribed to infection with a different hepatitis B virus subtype or a mutation of the hepatitis B virus [35]. A positive e antigen test results in a highly infectious hepatitis B that is actively multiplying in the body. A positive e antibody suggests that the patient is less infectious or in remission. Although there are some cases with e antibody positive results yet their disease persists, most typically owing to infection with a mutant hepatitis B virus [36, 37]. HBcAg is generally not detectable in the serum, while HBcAb can be detected. High titers of core antibodies indicate that the hepatitis B virus is replicating and infectious and persists for years to decades, while low titers of core antibodies indicate the previous infection with the hepatitis B virus [38].

When the hepatitis B virus enters the body, the body produces corresponding antibodies to the hepatitis B virus antigens, namely hepatitis B surface antibodies, hepatitis B e antibodies, and hepatitis B core antibodies, which bind to the corresponding antigens of the hepatitis B virus in the blood [39]. The body's immune system is then activated, particularly the T cells, which attack the hepatitis B virus. The hepatitis B core antigens made by the hepatitis B virus bind to cell membrane lipoproteins as hepatitis B virus-sensitized human T cells, and while these antigens and hepatocyte endotoxins are eliminated, the hepatocytes are similarly damaged and the corresponding clinical manifestations occur [40]. In the present study, the HBeAg, HBeAb, HBsAg, and HBsAb positive detection rates were significantly higher in ECLIA than in ELISA ($P < 0.05$), but the difference in HBcAb positive detection rates between the two groups was not statistically significant ($P > 0.05$). The study by Hang showed that the ECLIA group had a higher rate of HBeAb, HBeAg, and HBsAg positivity than the ELISA group ($P < 0.05$), while there was no statistically significant difference in the rate of HBsAb and HBcAb positivity between the two groups ($P > 0.05$) [41]. At this stage, the results of these two methods for serological detection of hepatitis B are incompatible, as in the study by Yao, there was no statistical difference in the hepatitis B virus serum HBsAg, HBsAb ($P > 0.05$), HBeAg, and HBcAb detected by the two assays, while there was a statistical difference in the HBeAb results ($P < 0.05$) [42]. Overall, the higher ECLIA detection rate is most probably attributable to the rapid disappearance of electromagnets from the fully automated ECLIA instrument, which facilitates the separation of free and compound antibodies, reduces false-negative results caused by free antibodies, and improves the specificity of the ECLIA assay [43]. The results herein showed that the sensitivity and specificity of ECLIA were higher than ELISA ($P < 0.05$), but the accuracy of the two methods was not significantly different ($P > 0.05$). ELISA is a relatively new clinical test that effectively combines the merits of both electrochemiluminescence and immunoassay methods. It allows the labeling of antibodies with the aid of electrochemiluminescent agents and the accurate separation of antigens and antibodies, thereby considerably improving the disease detection rate of hepatitis B. The electrochemiluminescence immunoassay technique has unique repeatability, and its effective use of electromagnets automates the test operation, thus avoiding possible human errors and greatly improving the accuracy of the test operation, as well as averting false-positive detection due to hemolysis and contamination that may be caused by improper specimen handling, thereby further enhancing the accuracy of the detection of serologically relevant indicators [44, 45].

The current experiment, however, has certain drawbacks. Firstly, the small sample size of this study may result in bias. Second, the devices with different versions made by different manufacturers differ, which may also be attributed to potential errors. In addition, this did not expand over time to examine the influence of various diagnostic methods on prognosis and quality of life.

5. Conclusion

Despite the inconsistent results of the latest studies on the serological detection of hepatitis B by the two techniques, ECLIA is consistently superior to ELISA and provides better diagnostic benefits and merits promotion.

Data Availability

The original contributions presented in the study are included in the article materials. Further inquiries can be directed to the corresponding author.

Consent

All authors have read and approved this manuscript to be considered for publication.

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. All authors declared that they have no conflicts of interest.

References

[1] P. Ocama, C. K. Opio, and W. M. Lee, "Hepatitis B virus infection: current status," *The American Journal of Medicine*, vol. 118, no. 12, Article ID 1413.e22, 2005.

[2] L. A. O. Ingasia, E. G. Kostaki, D. Paraskevis, and A. Kramvis, "Global and regional dispersal patterns of hepatitis B virus genotype E from and in Africa: a full-genome molecular analysis," *PLoS One*, vol. 15, no. 10, Article ID e0240375, 2020.

[3] C. Seeger and W. S. Mason, "Molecular biology of hepatitis B virus infection," *Virology*, vol. 479-480, pp. 672–686, 2015.

[4] C. S. Guy, P. M. Mulrooney-Cousins, N. D. Churchill, and T. I. Michalak, "Intrahepatic expression of genes affiliated with innate and adaptive immune responses immediately after invasion and during acute infection with woodchuck hepadnavirus," *Journal of Virology*, vol. 82, no. 17, pp. 8579–8591, 2008.

[5] M. F. Yuen, C. K. Hui, C. C. Cheng, C. H. Wu, Y. P. Lai, and C. L. Lai, "Long-term follow-up of interferon alfa treatment in Chinese patients with chronic hepatitis B infection: the effect on hepatitis B e antigen seroconversion and the development of cirrhosis-related complications," *Hepatology*, vol. 34, no. 1, pp. 139–145, 2001.

[6] L. S. Y. Tang, E. Covert, E. Wilson, and S. Kottilil, "Chronic hepatitis B infection: a review," *JAMA*, vol. 319, no. 17, pp. 1802–1813, 2018.

[7] L. N. Shen, J. Liu, and J. Xu, "Effect of Gu's spleen beneficial qi soft liver formula combined with entecavir on the efficacy and intestinal flora and intestinal mucosal barrier function in patients with compensated hepatitis B cirrhosis," *Chinese Journal of Integrative Medicine and Digestion*, vol. 30, no. 4, pp. 255–259, 2022.

[8] H. Kim, A. R. Shin, H. H. Chung et al., "Recent trends in hepatitis B virus infection in the general Korean population," *The Korean Journal of Internal Medicine*, vol. 28, no. 4, p. 413, 2013.

[9] J. E. Butler, "Enzyme-linked immunosorbent assay," *Journal of Immunoassay*, vol. 21, no. 2-3, pp. 165–209, 2000.

[10] S. Sakamoto, W. Putalun, S. Vimolmangkang et al., "Enzyme-linked immunosorbent assay for the quantitative/qualitative analysis of plant secondary metabolites," *Journal of Natural Medicines*, vol. 72, no. 1, pp. 32–42, 2018.

[11] P. Sandhu, M. Haque, T. Humphries-Bickley, S. Ravi, and J. Song, "Hepatitis B virus immunopathology, model systems, and current therapies," *Frontiers in Immunology*, vol. 8, p. 436, 2017.

[12] J. E. Song and D. Y. Kim, "Diagnosis of hepatitis B," *Annals of Translational Medicine*, vol. 4, no. 18, p. 338, 2016.

[13] J. Zhou, L. Song, H. Zhao et al., "Serum hepatitis B core antibody as a biomarker of hepatic inflammation in chronic hepatitis B patients with normal alanine aminotransferase," *Scientific Reports*, vol. 7, no. 1, pp. 2747–2750, 2017.

[14] D. H. Crawford, *Viruses: A Very Short Introduction*, Oxford University Press, Oxford, UK, 2018.

[15] N. M. Araujo, R. Waizbort, and A. Kay, "Hepatitis B virus infection from an evolutionary point of view: how viral, host, and environmental factors shape genotypes and subgenotypes," *Infection, Genetics and Evolution*, vol. 11, no. 6, pp. 1199–1207, 2011.

[16] J. H. Kao, "Hepatitis B vaccination and prevention of hepatocellular carcinoma," *Best Practice & Research Clinical Gastroenterology*, vol. 29, no. 6, pp. 907–917, 2015.

[17] S. Maqsood, A. Saleem, A. Iqbal, and J. A. Butt, "Precipitating factors of hepatic encephalopathy: experience at Pakistan institute of medical sciences islamabad," *Journal of Ayub Medical College, Abbottabad*, vol. 18, no. 4, pp. 58–62, 2006.

[18] M. Patil, K. A. Sheth, A. C. Krishnamurthy, and H. Devarbhavi, "A review and current perspective on Wilson disease," *Journal of clinical and experimental hepatology*, vol. 3, no. 4, pp. 321–336, 2013.

[19] L. Wang, W. Xu, X. Li et al., "Long-term prognosis of patients with hepatitis B virus–related acute-on-chronic liver failure: a retrospective study," *BMC Gastroenterology*, vol. 22, no. 1, pp. 162–169, 2022.

[20] W.-L. Chen, F. Liang, and Y.-C. Zhang, "Efficacy of combining hepatic fibrosis with entecavir in the treatment of hepatitis B and its effect on IL-6 and TNF-α," *Chinese Journal of Traditional Chinese Medicine*, pp. 1–10, 2022.

[21] X. Zhang, R. Guo, and Y. Zhang, "Effect of warming yang, relieving dampness and resolving blood stasis on early serum endotoxin and inflammatory factors in patients with hepatitis B-related chronic plus acute liver failure," *Chinese Traditional Chinese Medicine Emergency*, vol. 31, no. 01, pp. 38–41, 2022.

[22] Q. Zhang and F. Hong, "Exploration of clinical efficacy of the formula of dredging the liver, strengthening the spleen and invigorating blood on hepatitis B cirrhosis," *Chinese Continuing Medical Education*, vol. 13, no. 30, pp. 172–175, 2021.

[23] S. H. Yu, P. U. H. Zeng, and W. H. Gao, "Effect of yiqi, huayu and detoxification formula on hepatitis B virus x protein in HBV-associated hepatocellular carcinoma," *Jilin TCM*, vol. 41, no. 10, pp. 1354–1358, 2021.

[24] C. Zheng, "Clinical observation on the treatment of liver fibrosis in slow hepatitis b with the combination of huohovenor tang plus formula and entecavir," *Fujian University of Traditional Chinese Medicine*, 2021.

[25] Y. Ni, "Clinical study on the treatment of chronic hepatitis b combined with nonalcoholic fatty liver disease in spleen deficiency and phlegm-dampness type with Hai Zhu Yi liver plus flavor formula," *Hubei University of Traditional Chinese Medicine*, 2021.

[26] N. Afsarimanesh, S. C. Mukhopadhyay, and M. Kruger, *Electrochemical Biosensor: Point-of-Care for Early Detection of Bone Loss*, Springer, Berlin, Germany, 2019.

[27] H. F. Löhr, S. Krug, W. Herr et al., "Quantitative and functional analysis of core-specific T-helper cell and CTL activities in acute and chronic hepatitis B," *Liver*, vol. 18, no. 6, pp. 405–413, 2008.

[28] J. Tate and G. Ward, "Interferences in immunoassay," *Clinical Biochemist Reviews*, vol. 25, no. 2, p. 105, 2004.

[29] H. Yohans, "Detection of microbial antigens by using immunodiagnostic techniques for the diagnosis of microbial diseases: a review," *Journal of Immunology Research & Reports*, vol. 104, pp. 1–9, 2021.

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Retraction

Retracted: Research Progress on the Mechanism of Right Heart-Related Pulmonary Edema

Evidence-Based Complementary and Alternative Medicine

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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] Y. Li, X. Wang, R. Zong, F. Wu, and H. Lin, "Research Progress on the Mechanism of Right Heart-Related Pulmonary Edema," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 8947780, 10 pages, 2022.

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Review Article

Research Progress on the Mechanism of Right Heart-Related Pulmonary Edema

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Objective. To investigate the mechanisms underlying the development of right heart-associated PE. *Background.* Right heart-related pulmonary edema (PE) refers to PE resulting from impaired right heart function caused by primary or secondary factors, which is common in critically ill patients. Although the clinical manifestations of different types of right heart-related PE are similar, the pathophysiological changes and treatment methods are significantly different. According to the hemodynamic mechanism, right heart-related PE is primarily classified into two types. One is the increase of right heart flow, including extravascular compression, intravascular compression, cardiac compression, and cardiac decompression. The other type is the abnormal distribution of pulmonary circulation, including obstruction, resistance, pleural decompression, or negative pressure. With the development of hemodynamic monitoring, hemodynamic data not only help us understand the specific pathogenesis of right heart-related PE but also assist us in determining the direction of therapy and enabling individualized treatment. *Summary.* This article presents a review on right heart-associated PE, with a perspective of hemodynamic analysis, and emphasizes the importance of right heart function in the management of circulation. Understanding the mechanism of right heart-associated PE will not only aid in better monitoring right heart function but also help intensivists make a more accurate identification of various types of PE in the clinic.

1. Introduction

Acute pulmonary edema (PE) refers to fluids infiltrating from the pulmonary capillaries into the pulmonary interstitium and alveoli, which affects gas exchange and causes cough, foamy sputum, dyspnea, hypoxemia, and other syndromes [1]. It is one of the common critical illnesses. Based on the mechanism of occurrence, PE is divided into two categories. One is cardiogenic PE (CPE), also known as hydrostatic PE, which is often caused by various reasons for acute decompensated heart disease causes [2]. It is the serious stage of heart exhaustion. The other category is noncardiogenic PE, which is caused by other diseases such as acute lung injury, sepsis, allergies, and high-altitude hypoxia, which increases capillary permeability, resulting in PE [3].

With further understanding of hemodynamics, we have gradually realized that right heart-related PE is as common as PE associated with the left heart [4]. Right heart failure occurs when the right ventricular function is decompensated. With a sharp decrease in stroke volume, pulmonary artery resistance increases, thereby promoting the occurrence of PE. A mismatch between right- and left-sided filling pressures result in hemodynamic abnormalities, and the PE will be further aggravated. Earlier, our understanding of the right heart was derived from the invasive monitoring of the pulmonary artery catheter, and its clinical application was limited [5]. In recent years, noninvasive monitoring of hemodynamics, such as by ultrasound, has been increasingly applied in clinical practice [6, 7]. In December 2017, the collaborative group of severe hemodynamic therapy

published an expert consensus on the management of severe right cardiac function [8], which clearly indicated that the right heart is a status of the theory of critical care medicine and critical care hemodynamics and that the understanding of the right heart is a part of the diagnosis and treatment of critical care disease. Hemodynamics is concerned with the movement of blood. The movement of blood is spread throughout the body, linking the body's tissue cells and organs together like a network. The pattern of blood movement in the body is different from the general fluid dynamics, which is influenced by various factors such as physiology and pathology. As our understanding of hemodynamics has improved, our assessment of right heart function has become more refined, and we have gained further insight into the relationship between the right heart and CPE. Hemodynamic parameters such as blood pressure, cardiac output, and arterial oxygen content directly reflect the changes that occur in a specific part of the body and their degree, thereby hinting at the treatment method to be used and allowing optimization of the entire treatment process. In hemodynamic therapy, the direction of the treatment strategy and the quantitative adjustment of the treatment method are integrated throughout the treatment process. This process also facilitates a new understanding of the disease process, which is timelier in detecting the cause of PE and more responsive to the actual needs of the organism.

2. Classification and Mechanism of Right Heart-Related Pulmonary Edema

According to the hemodynamic mechanism, PE associated with the right heart is primarily divided into two categories. One is the increase of right heart flow, including extravascular compression, intravascular compression, cardiac compression, and cardiac decompression. The other is the abnormal distribution of pulmonary blood flow, including obstruction, resistance, pleural decompression, or negative pressure. Using such classification, the direction of treatment is determined, and simple symptomatic treatment is avoided. Quantitative adjustments make the implementation of treatment methods more accurate due to the mastery of the intensity of treatment. This review is intended to discuss the pathogenesis of right heart-associated PE in two major categories and summarize the key points (Table 1), with an anticipation of providing new ideas for the treatment of right heart-associated PE.

2.1. Increased Right Heart Flow

2.1.1. Extravascular Compression. Peripheral venous contraction is caused by various reasons, and hence, the amount of blood returning to the heart is increased significantly in a short time, which is often accompanied by increased cardiac afterload. Left ventricular dysfunction is more likely to occur. It primarily refers to exercise-induced PE (EIPE), which is closely related to activities such as swimming, marathon, and extreme sports [9–11]. The primary pathophysiology of EIPE is arterial and venous vasoconstriction, which results in the centripetal distribution of blood flow and increased cardiac load before and after. Swimming-induced PE (SIPE), also known as immersion PE, occurs in people that practice water sports such as swimming and snorkeling, and hence, its name was first reported in divers in 1981 [12]. Regarding its pathogenesis, when the body is in the water, the peripheral volume of blood vessel pressure increases, leading to the redistribution of blood in the chest cavity, venous reflux, and increased biventricular preload. Especially for triathletes, the tight neoprene diving suits further aggravate this redistribution, which may cause obvious hemodynamic changes. When people are immersed in motionless water, their central venous pressure increases by 12–18 mmHg and their stroke output becomes>25% [13]. Exercise in cold water can increase the average pulmonary arterial pressure and pulmonary artery wedge pressure, resulting in PE. Some studies have demonstrated that increased hydrostatic pressure can cause microscopic fracture of the blood-gas barrier membrane, which is known as capillary stress failure, and thus patients with SIPE will present hemoptysis [14, 15]. When a patient has SIPE, he/she must get out of the water immediately, remove the tight diving suit or swimsuit, and move into a warm environment. Supportive therapies may be administered on a case-by-case basis, including oxygen, diuretics, and beta-2 receptor agonists. Vasodilators such as sildenafil and dihydropyridine calcium channel blockers can prevent SIPE [16].

In the case of high-altitude PE (HAPE), the person's pulmonary arterial pressure and pulmonary blood volume increase rapidly due to hypoxia when he/she rapidly moves from plains to plateau, and then the liquid in the capillary seeps into the pulmonary interstitium and alveolus, causing PE. Pulmonary hypertension is characterized by a rapid increase after entering the plateau for several hours. The mean pulmonary arterial pressure of patients with HAPE is between 36 and 51 mmHg, whereas the pulmonary capillary pressure is between 20 and 26 mmHg. Endothelin-1 has a powerful function of constricting pulmonary vessels, and high levels of endothelin-1 have been shown in patients susceptible to HAPE. Under the induction of a plateau environment, an elevated plasma endothelin-1level is directly related to pulmonary hypertension [17]. Some studies have also suggested that the increase in oxidative stress-free radicals can reduce the synthesis and release of NO in the lungs in the case of hypoxia, and NO can dilate pulmonary blood vessels and cause hypoxia, thereby strengthening pulmonary vasoconstriction [18, 19]. HAPE is associated with extravascular compression, but not primary.

Extravascular compression is also related to neuroendocrinology, including various sympathetic catecholamine storms, application of various vasopressor drugs, and endocrine tumors [20, 21]. Neurogenic PE (NPE) is a potential complication of diseases of the central nervous system such as cerebral hemorrhage, uncontrolled seizures, coma, brain tumors, and neurosurgery [22]. Its etiology is presumed to be an intense discharge due to a wide range of central nervous system diseases [23]. Pheochromocytoma can cause life-related PE, which can be rapidly fatal but is clinically uncommon. It has been reported that cardiogenic shock and

Table 1: Key points of the category of right heart-associated PE.

Increased right heart flow	
Extravascular compression	Peripheral venous contraction is caused by various reasons.
Intravascular compression	The relative or absolute overload of blood vessel volume.
Cardiac pressurization	The left heart function is weakened or the enhancement of right cardiac systolic activity.
Cardiac decompression	The decompression of the pericardium or pleural cavity.
Abnormal pulmonary circulation	
Obstructive factors	Pulmonary embolism
Resistance factors	Pulmonary arterial hypertension
Pleural cavity decompression or negative pressure	The negative pressure in the pleural cavity restores the lung recruitment and expansional state.

myocardial infarction cannot be ruled out in patients with acute PE. These patients are often treated with high-dose myocardial inotropic drugs and intra-aortic balloon counter pulsation. To exclude abdominal aortic aneurysm, abdominal CT revealed the presence of a 6-cm mass in the right adrenal gland. After reducing the dosage of positive inotropic drugs, the levels of 24 h urine catecholamine and norepinephrine remained elevated, thus confirming pheochromocytoma. After tumor resection and drug control for a week, the cardiac function gradually returned to normal. Therefore, it is necessary to consider the possibility of pheochromocytoma when PE and shock are difficult to explain [24]. The hemodynamic mechanism of NPE is primarily pulmonary circulation overload and pulmonary vasoconstriction. Intracranial pressure increases sharply after central nervous system damage, and then the cerebral blood flow decreases. Simultaneously, due to hypothalamus dysfunction, the inhibitory effect of the nuclear level before the eye and the "edema center" of the hypothalamic tail is decreased, and both can result in sympathetic nervous excitement. Catecholamine levels in the circulating blood increase suddenly, causing vasoconstriction of the systemic circulation and pulmonary circulation. Increased blood pressure in systemic circulation can cause a large amount of blood flow from the systemic circulation to the pulmonary circulation, which causes an increase in pulmonary vascular volume. When a large amount of blood from the pulmonary circulation enters into the low-pressure area, the pulmonary vascular hydrostatic pressure increases and NPE develops [2]. Furthermore, evidence suggests that NPE can be reduced or avoided by the administration of both sympathetic blockers and adrenaline receptor blockers.

2.1.2. Intravascular Compression. Intravascular compression refers to the relative or absolute overload of blood vessel volume. When rapid capacity load occurs, the proximal cardiac artery and vein short-circuit causes a significant increase in the right cardiac load, which occurs more frequently in people with left cardiac dysfunction. Clinically, fluid overload PE could be easily detected in patients with hypoxia, pneumonia, anemia, cardiac or renal insufficiency, anesthesia, cardiac surgery, and low plasma protein. When the infusion is excessive and very rapid, it can easily induce PE. Moreover, when a large amount of fluid input is used to maintain effective blood volume of patients with shock and severe trauma in the ICU, the combination of powerful vasoconstrictor drugs such as norepinephrine can promote more systemic blood into the lower pressure of pulmonary circulation, increasing pulmonary capillary pressure. The fluid leaks out into the alveoli, and PE develops [25]. Studies have found that several cases of CPE also contain water and sodium retention and fluid overload caused by abnormal fluid distribution [26]. Regarding the mechanism of occurrence, pulmonary capillary wedge pressure increases in both CPE and pure liquid overload PE; however, the occurrence of PE is related to the increased rate of pulmonary capillary hydrostatic pressure. Due to the continuous progression of heart failure, CPE occurs, and thus pulmonary capillary hydrostatic pressure in patients with CPE is often higher than that in patients with liquid overload PE.

For evaluating the circulatory function in this type of PE, ultrasound can be used to monitor the diameter of the inferior vena cava, and respiratory variability can be used to assess fluid reactivity and volume load status; however, this indicator is more susceptible to right heart function, pulmonary circulation resistance, and right heart preload. It should be combined with clinical comprehensive judgment [27]. Due to a variety of factors, central venous pressure as an indicator of early cardiac preload assessment is often unable to accurately reflect the cardiac preload. Pulmonary wedge pressure is considered to be the gold standard for the diagnosis of acute PE. When pulmonary wedge pressure is > 18 mmHg, it indicates that PE is caused by excessive volume overload. The pulmonary thermodilution method consists of injecting ice-cold physiological saline into the central vein, detecting it using a thermistor at the end of the aorta (femoral or radial artery) catheter, and plotting a thermodilution curve. When edema is present in the lungs, the arterial thermosensitive probe monitors increased thermal dilution (fluid warming); this indicator loss can be used to quantify extravascular lung water. Ultrasonic cardiac output monitor is a noninvasive cardiac output monitoring technology that can judge the capacity load indirectly. Regarding its principle, when patients passively lift their legs, the return blood volume changes, which cause changes in blood flow velocity in the outflow tract of the left ventricle. If the stroke volume increases at this time, the patient's fluid capacity is insufficient, and vice versa [28].

2.1.3. Cardiac Pressurization. Ventricular interaction is one of the important mechanisms and bases of hemodynamic changes and corresponding adjustments. The management

of hemodynamics requires a complete understanding of ventricular interactions. Regardless of the adjustment of volume, cardiac function, or post load, it is important to consider the interaction between the left and right ventricles and the effect of the corresponding treatment on the two ventricles. Both the left and right ventricles are interdependent and interact. Changes in volume and pressure of one side of the ventricle or changes in myocardial hardness and contractile force of one side of the ventricle will affect the other ventricle. The prominent effect of right-sided heart failure on left-sided heart function is that the left heart filling is affected, and the left ventricular diastole is limited. The left ventricular filling pressure is increased, leading to the increase of pulmonary water outside the blood vessels, resulting in PE. The right heart function plays a vital role in the formation mechanism of PE, which can limit the left heart diastole through the interaction between the left and right ventricles. When the change of right heart flow exceeds the matching range of pulmonary circulation and left heart adaptability, PE increases.

Cardiac vasopressor PE can be divided into two conditions. First, the left heart function is weakened by left heart infarction or left heart stress cardiomyopathy, due to which the left and right heart functions do not match. The second condition is the enhancement of right cardiac systolic activity, which often occurs in left cardiac dysfunction, due to which the left and right cardiac functions do not match. Furthermore, close attention should be paid to the shunt between the right and left heart. In addition to congenital heart disease, new left-to-right shunt should be excluded from severe diseases. For instance, if patients with myocardial infarction are complicated with ventricular septal perforation, a new left-to-right shunt will cause a sudden increase in the volume load of the right heart, which causes PE. Through cardiac ultrasound, we can correctly evaluate the functions of the left and right heart, thereby maintaining appropriate preload status, avoiding insufficient capacity, inhibiting the high blood pressure that has satisfied perfusion under the sufficient cardiac output, controlling the ventricular rate in a stable range, and maintaining the circulation of the left and right heart and lungs in a relatively stable state.

2.1.4. Cardiac Decompression. Cardiac decompression refers to the decompression of the pericardium or pleural cavity, resulting in increased pulmonary blood flow, causing PE. PE is more likely to occur in patients with left heart obstruction due to a rapid reduction of pericardial pressure and an increase in short-term cardiac blood volume and right cardiac output [29]. When patients, whose blood flow is blocked have pericardial effusion, pulmonary vein blood flow is also blocked. The volume of blood flowing back to the right heart is also reduced when the fluid is accumulated. The volume of blood, that is, injected into the pulmonary artery by the right heart is also reduced. At this time, although the pulmonary vein hardly returns the blood to the left atrium and the lungs are congested, the volume of blood injected by the right heart into the pulmonary arteries decreases. This does not cause pulmonary congestion and edema. When effusion draws out excessive blood very rapidly, the heart press against pressure removes. Blood is highly circumfluent. The blood that shoots into the pulmonary artery is a short time increase, and pulmonary organization has a lot of blood siltation in a short time, which brings about acute PE. Clinical management principles include sedation, oxygen, reduction of venous reflux, and rapid diuretics at this time. If the duration of the cardiac tamponade is longer, the myocardium has different degrees of injury, i.e., atrophy. Extraction of excessive fluid to remove the cardiac tamponade can result in acute expansion of the heart or a rapid increase in the amount of blood flowing back. Left atrial pressure increases, and pulmonary capillary pressure increases. Plasma penetrates into the tissue gap or alveolus, which causes acute PE.

2.2. Abnormal Pulmonary Circulation

2.2.1. Obstructive Factors. Due to a few reports on PE occurring after pulmonary embolism, the clinical understanding is insufficient. The presence of edema may mask the timely diagnosis and management of pulmonary embolism. Pulmonary embolism results in decreased pulmonary circulation area and overperfusion in nonembodied areas, which may be one of the primary factors of PE. In animal experiments, embolization or balloon blockade of pulmonary vessels could induce leakage of nonembodied areas and PE [30]. Similar changes occur in patients with clinical pulmonary embolism [31]. Hultgren proposed the perfusion mechanism, which is used to elucidate the hemodynamics of HAPE, which can also be used to explain the occurrence of pulmonary embolism-associated PE. Yuceoglu, who investigated lung embolism-related PE, found that 51% of patients with pulmonary embolism developed PE [32]. The majority of these patients had a coronary heart disease basis, and those without coronary heart disease had less probability to develop PE. This indicates that this type of perfusional PE is more likely to occur in patients with left ventricular diastolic or systolic dysfunction. However, PE in the normal perfusion area can still occur in some patients with pulmonary embolism, who have no previous history of heart disease and no clinical left heart disorder [33]. These patients can be easily misdiagnosed with PE, ignoring the potential real cause. Cardiopulmonary ultrasound can rapidly identify such patients [34].

2.2.2. Resistance Factors. Several factors under pathophysiological conditions can lead to changes in pulmonary circulatory resistance, resulting in a redistribution of pulmonary blood flow and imbalance of pulmonary circulatory blood flow and pressure distribution, thereby causing regional over perfusion and increased heterogeneity of lung water. Hypoxia-induced HAPE, which is characterized by pulmonary vasoconstriction, is a typical representative of PE associated with acute pulmonary circulation resistance changes. Although most studies suggest that HAPE is associated with damaged endothelium and alveolar epithelium

caused by inflammatory responses under hypoxic conditions, which involve several pathways and mediators, including hypoxia-inducible factor, vascular endothelial growth factor, endothelin-1, and inducible nitric oxide synthase, and also involving sodium channels that regulate water transport, Na-K-ATPase, and aquaporin, pulmonary hemodynamic changes and higher hydrostatic pressure play a vital role in the acute and rapid progression of HAPE [35–38]. The initial alveolar protein and red blood cells appear before the inflammatory mediators in the early stage of HAPE, suggesting that the initial movement is the mechanical damage (stress) of the pulmonary capillary bed caused by the change in pulmonary circulation pressure. Visscher proposed that pulmonary vasculature show heterogeneity shrinkage during hypoxia [39]. This change reduces blood flow in the vasoconstriction area, whereas the non-vasoconstriction area is subjected to relatively large blood flow and pressure, which causes damage of mechanical stress and induction of HAPE. Pulmonary artery catheter and isotope-labeled transferrin were used to examine patients with HAPE. Pulmonary arterial pressure, capillary pressure, and transcapillary leakage were significantly increased in the early stage of hypoxic exposure, suggesting that the early increase of lung water and the increase of hydrostatic pressure in such patients are highly closely related [17]. Due to body position and gravity, the pulmonary blood flow of the body exhibits an inhomogeneous distribution, and hypoxia can aggravate the spatial heterogeneity of pulmonary blood flow, which leads to higher pulmonary circulation resistance, higher pulmonary arterial pressure, and higher pulmonary capillary embedding. The occurrence of HAPE is closely related to this change, and the heterogeneity is related to the distribution of vascular smooth muscle, the response of smooth muscle to hypoxia, and the presence of nonmacular arterioles [40, 41].

Monitoring of pulmonary arterial pressure in HAPE-susceptible populations by echocardiography revealed that pulmonary arterial pressure was more vulnerable to escalation in these populations in high-altitude areas than in no susceptible populations, and plate cycling exercise also induced similar changes, which indicated that individual pulmonary artery contractility was the major factor leading to the occurrence of HAPE [42, 43]. This type of patient with hypoxia or high-altitude intolerance can be identified early by exercise load ultrasound. The primary cause of HAPE is hypoxia, which can result in left ventricular diastolic or systolic functional disorder. Left heart functional changes can also trigger pressure-related pulmonary water increase, although studies have demonstrated that no correlation exists between the increased blood flow of the tricuspid valve related to hypoxia or exercise and the changes in E/A, and there was no obvious change in E/E′ under hypoxia or exercise. However, using heart ultrasound, studies have also shown that blood flow velocity across the tricuspid valve increases with the increase in altitude. The ratio of early blood flow velocity to late blood flow velocity (E/A) was significantly lower. The ratio of early and late mitral annulus velocity (Em/Am) was also significantly reduced under tissue Doppler. The increase in trans-tricuspid blood velocity negatively correlated with the decrease in E/A and Em/Am [44]. The left heart's diastolic function was changed, and its degree was closely related to the degree of pulmonary hypertension. With the increase of pulmonary arterial pressure, the pressure of the right heart and interventricular septum has an impact on the diastole of the left heart. Patients with HAPE with different involvement degrees manifest different diastolic function states of the left heart, depending on the degree of right heart involvement caused by pulmonary vasoconstriction.

Pulmonary resection is another common cause of increased pulmonary circulation resistance. The associated PE is termed postpneumonectomy PE (PPE), which was first proposed by Gibbon in 1942. Because of its rapid progression, it often requires mechanical ventilation treatment, and it is difficult to distinguish from ALI or ARDS in clinical practice. The overall incidence of PPE is approximately 7%, and the mortality rate is approximately 12%. One-third of patients can have clinical symptoms within 24 h after surgery, and most patients have dyspnea within 3 days after surgery [45]. The incidence of PPE in patients with overall pneumonectomy is significantly higher than that in patients with partial pneumonectomy. The reduction of the total volume of pulmonary capillaries, pulmonary perfusion, and the increase in pulmonary capillary filtration pressure after pneumonectomy are the key factors leading to its occurrence. Ischemia or reperfusion injury, inflammatory response, endothelial injury, lung overexpansion, and impaired lymphatic drainage are also involved in the pathophysiological process [46, 47]. Intraoperative volume overload, preoperative radiation therapy, infusion of fresh frozen plasma, and intraoperative high-pressure mechanical ventilation are the independent risk factors for PPE [48]. For patients after pneumonectomy, any factor that causes an increase in intrathoracic negative pressure can promote the occurrence of PPE. Deslauriers found that 85% of patients with PPE did not undergo postoperative thoracic closed drainage with water-sealed bottles, and patients who received drainage with a three-chamber balanced drainage system did not experience PP. Alvarez also found similar phenomena [45]. Animal studies have confirmed that intrathoracic pressure suction after pneumonectomy can significantly increase the incidence of PPE, and the occurrence of such PE can be reduced by balanced drainage [49]. These phenomena indicate that in the case of pulmonary overperfusion after pneumonectomy, excessive negative pressure in the chest can increase the trans vascular flow, aggravating the leakage of water across capillaries and causing PE. This necessitates attention to not only the relatively reasonable drainage in the chest but also the factors related to the increase of negative pressure in the chest.

2.2.3. Pleural Cavity Decompression or Negative Pressure. Due to factors such as fluid, gas, and mediastinal or subdiaphragmatic abscess, the pleural cavity can be compressed or incompletely inflated in varying degrees. When these factors are removed, the negative pressure in the pleural cavity restores the lung recruitment and expansion state.

There may be PE characterized by hypoxia and dyspnea, which is termedre expansion PE (REPE). The description of REPE appeared more than 150 years earlier. It occurs during drainage of the pleural effusion or pneumothorax or within 24 h. It also occurs in the postresection of thoracic and abdominal cavity lesions and in lung re-expansion during chest surgery, which often occurs on the decompression side. It mostly occurs in the decompression side and rarely occurs in the contralateral or bilateral lung. The overall morbidity and mortality are quite different. The general incidence rate is within 1%, and the mortality rate is 0.1%–20% [50]. The exact pathophysiological mechanism under lying REPE has not been completely elucidated, and it is generally believed to be associated with an excessively rapid decrease of intrapleural pressure, reduction of surface-active substances, release of inflammatory mediators, and generation of oxygen free radicals. Although several studies have suggested that the occurrence of REPE is related to hypoxia and inflammation-related media, an analysis of alveolar fluid components shows that this type of PE is not associated with the increase of inflammation permeability because of the protein component in comparison with plasma [51]. Furthermore, studies show that its occurrence is closely related to hemodynamic changes. First, the characteristics of blood flow in REPE are not changed. In the process of re-expansion, the compressed collapsed lung tissue presents different hypoxia states and vasomotor states; hence, they present low perfusion area and high perfusion area, which has become one of the primary reasons for the increase of pressure pulmonary water [52]. Another cause of the generation of REPE is the rapid change of intrapleural pressure. The rapid decrease of pleural pressure during drainage often indicates that there may be poor lung compliance, visceral pleural compression, and other factors, due to which the lungs cannot undergo full expansion. Excessive transpulmonary pressure and trans vascular pressure, especially for lung tissues with poor compliance, lead to an increase in lung water associated with hydrostatic pressure. When the intrapleural pressure decreases rapidly over −20 cm H_2O, REPE is easily triggered [53]. The British Thoracic Society recommends that the intrapleural pressure for chest drainage should not exceed −20 cm H_2O. For patients with REPE, intrapleural fluid or gas is timely administered to reopen the pleural cavity, improving the intrapleural pressure. Partial recovery of atelectasis can rapidly relieve the symptoms of such patients. It further indicates the change of pressure factor plays a role in the occurrence of REPE [51]. Moreover, the increased pleural pressure caused by pleural cavity occupancy may affect the diastolic and systolic function of the left and right ventricles. When the intrapleural pressure is lowered, the diastolic limitation of the heart is relieved and both the blood flow to the heart and the cardiac output are increased [54]. When the diastolic and systolic function of the left heart has obvious obstacles and the left heart cannot withstand the increase of blood flow to the heart, it will aggravate the occurrence of PE [55]. Furthermore, intrathoracic pressure and lung volume have a significant impact on venous return and systolic function. The increase of intrapleural pressure reduces left ventricular transmural pressure, thereby reducing the left ventricular ejection pressure and its upstream pressure. With the decrease of pleural pressure, there is an increase of left ventricular transmural pressure and blood pressure after thoracic drainage. In particular, left ventricular afterload is significantly increased in the case of significantly increased intrathoracic negative pressure, resulting in decreased left ventricular function and PE, especially in patients with left ventricular lesions [56]. This suggests the need to perform echocardiography to identify left cardiac function during pleural decompression in high-risk patients to determine the potential risk for REPE.

Another type of hemodynamically altered PE, which is closely related to changes in intrathoracic negative pressure, is negative pressure PE (NPPE) which occurs in various causes of excessive intrathoracic negative pressure. This PE is common in obstruction of the airway which a variety of causes result in, also known as post obstructive PE, such as spasms after extubating, the conjugate neck, epiglottis, airway inhalation of foreign bodies, secretion, serious hiccup, laryngitis, upper airway, and mediastinal tumor, Ludwig angina, obstructive sleep apnea, severe asthma, tracheal intubation or laryngeal mask bite, and so on. In 1977, Oswalt first described NPPE as a serious complication of airway obstruction [57], which can lead to pulmonary capillary rupture and pulmonary hemorrhage in more severe cases [58]. Forced inhalation to overcome airway resistance can produce a negative intrathoracic pressure of up to −140 cm H_2O, causing a significant increase in blood flow from the venous return to the right heart, whereas the backload of the left heart is significantly increased due to increased cross-wall pressure. The reduction of cardiac output and the increase of pulmonary venous pressure lead to a significant increase in the hydrostatic pressure of pulmonary circulation. Moreover, the negative pressure in the chest can be transmitted to the lung tissue, causing an increase in the gradient of trans vascular hydrostatic pressure, which causes the water inside the blood vessels to enter into the alveolar cavity. In addition, hypoxia induces sympathetic reflex and causes peripheral vascular contraction, and the blood flow from the systemic circulation to the pulmonary circulation is redistributed. Hypoxia also leads to heterogeneous contraction of pulmonary vessels, which further causes overperfusion of increased blood flow, resulting in NPPE occurrence. The occurrence of NPPE is closely related to the degree of intrathoracic negative pressure and the body's reactivity and sympathetic activation, which explains why NPPE is more likely to occur in healthy men [59].

3. Treatment of Pulmonary Oedema

3.1. Clinical Treatment. The most common symptom of pulmonary edema is dyspnoea, and patients with cardiogenic pulmonary edema present irritability, choking, and cyanosis, and in severe cases, coma, along with the corresponding clinical manifestations of the primary disease [60]. Dyspnoea, seated breathing, irritability, and asphyxia are the typical symptoms of pulmonary edema and may be

accompanied by other symptoms, such as coughing in the early stages of cardiogenic pulmonary edema, coughing up pink frothy sputum in severe cases and increased or normal blood pressure in the early stages, which may cause cardiogenic shock [61]. The principles of treatment for pulmonary edema are correction of the primary cause of pulmonary edema, and respiratory support to improve patient oxygenation [62]. Non-invasive positive pressure ventilation is the first line of treatment to improve cardiogenic pulmonary edema and correct hypoxemia; in patients, who are already mechanically ventilated, a lung-protective ventilation strategy needs to be implemented to avoid further damage to alveolar epithelial cells and vascular endothelial cells from mechanical ventilation [63]. Due to the drastic individual differences, there is no unifying medication. Apart from the commonly used over-the-counter drugs, the most appropriate medication should be selected under the guidance of a doctor with full consideration of individual conditions. Diuretics and vasodilators should be applied to reduce the anterior-posterior cardiac load and pulmonary capillary pressure, thereby reducing the patient's pulmonary edema; doctors should apply appropriate cardiac strengthening drugs to enhance the patient's myocardial contractility; antibiotic therapy should be reasonably applied to control infection, and glucocorticoids to inhibit the inflammatory response and promote the reduction of edema [64–66].

3.2. The Use of Chinese Medicine in the Treatment of Pulmonary Oedema. The treatment of pulmonary edema is fast with Western medicine and has a high success rate of resuscitation, but timely treatment with traditional Chinese medicine (TCM) can significantly shorten the course of the disease [67]. According to anatomy, the etiology of pulmonary edema can be divided into two categories: cardiac and noncardiac, and therefore the TCM treatment of pulmonary edema is carried out from these two aspects [68]. As far as cardiogenic acute pulmonary edema is concerned, its onset is rapid, and the TCM syndrome differentiation is that qi is deprived of yang, and phlegm is forced into the lung [69]. According to reports, the combination of ginseng and aconite can promote blood circulation, improve microcirculation disorders, expand and strengthen the heart, and improve symptoms of heart failure; cinnamon contains cinnamon oil, which has central and terminal vasodilator effects and can enhance blood circulation [70]; Helizao Xiefei Decoction has the functions of purging the lung and relieving asthma, eliminating phlegm, strengthening the heart, reducing the blood return to the heart and improving the pulmonary ventilation function [71]. Traditional Chinese medicines such as astragalus, poria, atractylodes, psyllium, coix seed, gourd, and atractylodes can play a certain role in relieving acute symptoms of pulmonary edema (such as chest tightness, cough, and asthma) [72, 73]. Modern pharmacological experimental studies have found that these diuretics can reduce the resistance of the arteries and veins, allowing a venous return to flow smoothly and reducing pulmonary hypertension, so that the patient's edema, coughing, chest tightness, and a series of other clinical symptoms can be relieved [74]. During acute attacks, the effect is more rapid if Chinese medicine for the spleen is used together with diuretic western medicine [75]. However, strengthening the spleen tends to damage the kidneys, i.e., too many diuretic Chinese and Western medicines can easily lead to damage to the patient's positive energy, fatigue, and depression. Therefore, while strengthening the spleen and diuresis, TCM practitioners should also tonify the patient's kidney essence [76]. For those, who favor kidney yin deficiency, use Liou Wei Di Huang Wan and Er Zhi Wan to tonify kidney yin; for those, who favor yang deficiency, use Gui Bai Di Huang Wan or Jin Kui Kidney Qi Wan to warm up kidney yang [77–79].

4. Conclusions

PE is a serious stage of acute and chronic heart failure, and it is generally described as the inevitable result of increased left ventricular filling pressure. When the cardiac afterload increases or the left ventricular function is impaired, the left ventricular discharge decreases, and the left ventricular end-diastolic pressure increases. The left atrial pressure then increases, which elevates the pulmonary capillary hydrostatic pressure. Hence, it is basically stated that PE is caused by the mismatch of the stroke volume of the left and right ventricles. According to the Frank–Starling law, one of the important factors in the development of PE is that the capillary hydrostatic pressure of the pulmonary circulation is significantly increased. The capillary hydrostatic pressure is primarily maintained by the pressure generated by the right heart, so the right heart plays a vital role in the development of PE. Normal pulmonary circulation is a system of high flow, low resistance, and low pressure under normal conditions. Any factor that causes abnormal pulmonary circulation will cause a mismatch between the right heart and pulmonary circulation flow, resulting in PE. Therefore, the right heart plays an important role in the development of PE.

Data Availability

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

Authors' Contributions

Yiran Li and Xiaoqiang Wang contributed equally to this article.

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References

[1] M. Bhattacharya, R. H. Kallet, L. B. Ware, and M. A. Matthay, "Negative-pressure pulmonary edema," *Chest*, vol. 150, no. 4, pp. 927–933, 2016.

[2] K. M. Busl and T. P. Bleck, "Neurogenic pulmonary edema," *Critical Care Medicine*, vol. 43, no. 8, pp. 1710–1715, 2015.

[3] P. Wilmshurst, "Immersion pulmonary edema," *Chest*, vol. 159, no. 5, pp. 1711-1712, 2021.

[4] Y. Li, Y. Zhang, and Y. Zhang, "Research advances in pathogenesis and prophylactic measures of acute high altitude illness," *Respiratory Medicine*, vol. 145, pp. 145–152, 2018.

[5] P. Woods and J. Alcock, "High-altitude pulmonary edema," *Evolution, Medicine, and Public Health*, vol. 9, no. 1, pp. 118-119, 2021.

[6] M. Jia, J. Yang, F. Peng, Y. Wang, G. Liao, and Y. Gao, "Analysis of volume management by comparing between critical care ultrasound examination and pulse indicator cardiac output in patients with septic shock," *Journal of Pakistan Medical Association*, vol. 70, no. 9, pp. 51–56, 2020.

[7] U. Mayr, M. Lukas, L. Habenicht et al., "B-lines scores derived from lung ultrasound provide accurate prediction of extravascular lung water index: an observational study in critically ill patients," *Journal of Intensive Care Medicine*, vol. 37, no. 1, pp. 21–31, 2020.

[8] X. T. Wang, D. W. Liu, H. M. Zhang et al., "Expert's consensus on the management of the right heart function in critically ill patients," *Zhonghua Nei Ke Za Zhi*, vol. 56, no. 12, pp. 962–973, 2017.

[9] A. M. Bernheim, S. Kiencke, M. Fischler et al., "Acute changes in pulmonary artery pressures due to exercise and exposure to high altitude do not cause left ventricular diastolic dysfunction," *Chest*, vol. 132, no. 2, pp. 380–387, 2007.

[10] J. L. G. Ma and M. J. Dutch, "Extreme sports: extreme physiology. Exercise-induced pulmonary edema," *Emergency Medicine Australasia*, vol. 25, no. 4, pp. 368–371, 2013.

[11] R. Miyazawa, Y. Morita, Y. Okajima, M. Matsusako, and Y. Kurihara, "Marathon-induced pulmonary edema of a patient with transient dyspnea," *Japanese Journal of Radiology*, vol. 33, no. 10, pp. 675–677, 2015.

[12] H. Yamanashi, J. Koyamatsu, M. Nobuyoshi, K. Murase, and T. Maeda, "Exercise-induced pulmonary edema in a triathlon," *Case Reports in Medicine*, vol. 2015, Article ID 968152, 4 pages, 2015.

[13] H. Grünig, P. T. Nikolaidis, R. E. Moon, and B. Knechtle, "Diagnosis of swimming induced pulmonary edema-A review," *Frontiers in Physiology*, vol. 8, p. 652, 2017.

[14] J. B. West and O. Mathieu-Costello, "Stress failure of pulmonary capillaries as a limiting factor for maximal exercise," *European Journal of Applied Physiology and Occupational Physiology*, vol. 70, no. 2, pp. 99–108, 1995.

[15] J. B. West and O. Mathieu-Costello, "Stress failure of pulmonary capillaries in the intensive care setting," *Schweizerische Medizinische Wochenschrift*, vol. 122, no. 20, pp. 751–757, 1992.

[16] S. D. Martina, J. J. Freiberger, D. F. Peacher et al., "Sildenafil: possible prophylaxis against swimming-induced pulmonary edema," *Medicine and Science in Sports and Exercise*, vol. 49, no. 9, pp. 1755–1757, 2017.

[17] M. Maggiorini, C. Mélot, S. Pierre et al., "High-altitude pulmonary edema is initially caused by an increase in capillary pressure," *Circulation*, vol. 103, no. 16, pp. 2078–2083, 2001.

[18] T. Busch, P. Bärtsch, D. Pappert et al., "Hypoxia decreases exhaled nitric oxide in mountaineers susceptible to high-altitude pulmonary edema," *American Journal of Respiratory and Critical Care Medicine*, vol. 163, no. 2, pp. 368–373, 2001.

[19] H. Duplain, C. Sartori, M. Lepori et al., "Exhaled nitric oxide in high-altitude pulmonary edema: role in the regulation of pulmonary vascular tone and evidence for a role against inflammation," *American Journal of Respiratory and Critical Care Medicine*, vol. 162, no. 1, pp. 221–224, 2000.

[20] C. Jiang, H. Qian, S. Luo et al., "Vasopressors induce passive pulmonary hypertension by blood redistribution from systemic to pulmonary circulation," *Basic Research in Cardiology*, vol. 112, no. 3, p. 21, 2017.

[21] V. Krishnamoorthy, D. B. Hiller, R. Ripper et al., "Epinephrine induces rapid deterioration in pulmonary oxygen exchange in intact, anesthetized rats: a flow and pulmonary capillary pressure-dependent phenomenon," *Anesthesiology*, vol. 117, no. 4, pp. 745–754, 2012.

[22] A. M. Pyeron, "Respiratory failure in the neurological patient: the diagnosis of neurogenic pulmonary edema," *Journal of Neuroscience Nursing*, vol. 33, no. 4, pp. 203–207, 2001.

[23] J. Zhao, N. X. Xuan, W. Cui, and B. P. Tian, "Neurogenic pulmonary edema following acute stroke: the progress and perspective," *Biomedicine and Pharmacotherapy*, vol. 130, Article ID 110478, 2020.

[24] J. Kaye, S. Edlin, I. Thompson, and P. J. Leedman, "Pheochromocytoma presenting as life-threatening pulmonary edema," *Endocrine*, vol. 15, no. 2, pp. 203-204, 2001.

[25] R. E. Fromm, J. Varon, and L. R. Gibbs, "Congestive heart failure and pulmonary edema for the emergency physician," *Journal of Emergency Medicine*, vol. 13, no. 1, pp. 71–87, 1995.

[26] G. Cotter, M. Metra, O. Milo-Cotter, H. C. Dittrich, and M. Gheorghiade, "Fluid overload in acute heart failure--redistribution and other mechanisms beyond fluid accumulation," *European Journal of Heart Failure*, vol. 10, no. 2, pp. 165–169, 2008.

[27] E. Long, E. Oakley, T. Duke, and F. E. Babl, "Does respiratory variation in inferior vena cava diameter predict fluid responsiveness: a systematic review and meta-analysis," *Shock*, vol. 47, no. 5, pp. 550–559, 2017.

[28] R. Phillips, P. Lichtenthal, J. Sloniger, D. Burstow, M. West, and J. Copeland, "Noninvasive cardiac output measurement in heart failure subjects on circulatory support," *Anesthesia and Analgesia*, vol. 108, no. 3, pp. 881–886, 2009.

[29] W. H. Vandyke, J. Cure, C. S. Chakko, and M. Gheorghiade, "Pulmonary edema after pericardiocentesis for cardiac tamponade," *New England Journal of Medicine*, vol. 309, no. 10, pp. 595-596, 1983.

[30] K. Ohkuda, K. Nakahara, W. J. Weidner, A. Binder, and N. C. Staub, "Lung fluid exchange after uneven pulmonary artery obstruction in sheep," *Circulation Research*, vol. 43, no. 2, pp. 152–161, 1978.

[31] T. M. Hyers, A. A. Fowler, and A. B. Wicks, "Focal pulmonary edema after massive pulmonary embolism," *American Review of Respiratory Disease*, vol. 123, no. 2, pp. 232-233, 1981.

[32] Y. Z. Yuceoglu, S. Rubler, K. P. Eshwar, V. Tchertkoff, and A. Grishman, "Pulmonary edema associated with pulmonary embolism: a clinicopathological study," *Angiology*, vol. 22, no. 9, pp. 501–510, 1971.

[33] R. L. Jobe and M. B. Forman, "Focal pulmonary embolism presenting as diffuse pulmonary edema," *Chest*, vol. 103, no. 2, pp. 644–646, 1993.

[34] G. Famularo, G. Minisola, G. C. Nicotra, and C. De Simone, "Massive pulmonary embolism masquerading as pulmonary edema," *The American Journal of Emergency Medicine*, vol. 25, no. 9, pp. 1086.e1–2, 2007.

[35] P. Alam, G. Agarwal, R. Kumar et al., "Susceptibility to high-altitude pulmonary edema is associated with circulating miRNA levels under hypobaric hypoxia conditions," *American Journal of Physiology—Lung Cellular and Molecular Physiology*, vol. 319, no. 2, pp. L360–L368, 2020.

[36] H. Kanipakam, K. Sharma, T. Thinlas, G. Mohammad, and M. A. Q. Pasha, "Structural and functional alterations of nitric oxide synthase 3 due to missense variants associate with high-altitude pulmonary edema through dynamic study," *Journal of Biomolecular Structure and Dynamics*, vol. 39, no. 1, pp. 294–309, 2021.

[37] H. F. Zong, G. Guo, J. Liu, C. Z. Yang, and L. L. Bao, "Influence of alveolar fluid on aquaporins and Na+/K+-ATPase and its possible theoretical or clinical significance," *American Journal of Perinatology*, 2021.

[38] M. Khan, S. Bordes, I. Murray, and S. Sharma, "Physiology, pulmonary vasoconstriction," *Journal*, 2021.

[39] M. B. Visscher, "Studies on embolization of lung vessels," *Respiration*, vol. 19, no. 4, pp. 334–340, 1962.

[40] S. R. Hopkins, J. Garg, D. S. Bolar, J. Balouch, and D. L. Levin, "Pulmonary blood flow heterogeneity during hypoxia and high-altitude pulmonary edema," *American Journal of Respiratory and Critical Care Medicine*, vol. 171, no. 1, pp. 83–87, 2005.

[41] E. R. Swenson, "Early hours in the development of high-altitude pulmonary edema- time course and mechanisms," *Journal of Applied Physiology*, vol. 128, no. 6, pp. 1539–1546, 2020.

[42] C. A. Eichstaedt, N. Benjamin, and E. Grünig, "Genetics of pulmonary hypertension and high-altitude pulmonary edema," *Journal of Applied Physiology*, vol. 128, no. 5, pp. 1432–1438, 2020.

[43] E. Grünig, D. Mereles, W. Hildebrandt et al., "Stress Doppler echocardiography for identification of susceptibility to high altitude pulmonary edema," *Journal of the American College of Cardiology*, vol. 35, no. 4, pp. 980–987, 2000.

[44] Y. Allemann, M. Rotter, D. Hutter et al., "Impact of acute hypoxic pulmonary hypertension on LV diastolic function in healthy mountaineers at high altitude," *American Journal of Physiology—Heart and Circulatory Physiology*, vol. 286, no. 3, pp. H856–H862, 2004.

[45] P. J. Villeneuve and S. Sundaresan, "Complications of pulmonary resection: postpneumonectomy pulmonary edema and postpneumonectomy syndrome," *Thoracic Surgery Clinics*, vol. 16, no. 3, pp. 223–234, 2006.

[46] M. Gojkovic, G. S. Darmasaputra, P. Veliça, H. Rundqvist, and R. S. Johnson, "Deregulated hypoxic response in myeloid cells: a model for high-altitude pulmonary edema (HAPE)," *Acta Physiologica*, vol. 229, no. 2, Article ID e13461, 2020.

[47] R. Sharma Kandel, R. Mishra, J. Gautam, A. Alaref, A. Hassan, and N. Jahan, "Patchy vasoconstriction versus inflammation: a debate in the pathogenesis of high altitude pulmonary edema," *Cureus*, vol. 12, no. 9, Article ID e10371, 2020.

[48] P. Bauer, "Postpneumonectomy pulmonary edema revisited," *European Respiratory Journal*, vol. 15, no. 4, pp. 629-630, 2000.

[49] J. M. Alvarez, J. Tan, N. Kejriwal et al., "Idiopathic postpneumonectomy pulmonary edema: hyperinflation of the remaining lung is a potential etiologic factor, but the condition can be averted by balanced pleural drainage," *The Journal of Thoracic and Cardiovascular Surgery*, vol. 133, no. 6, pp. 1439–1447, 2007.

[50] N. Sunderland, R. Maweni, S. Akunuri, and E. Karnovitch, "Re-expansion pulmonary oedema: a novel emergency therapeutic option," *BMJ Case Reports*, vol. 2016, Article ID bcr2016215076, 7 pages, 2016.

[51] R. D. Sue, M. A. Matthay, and L. B. Ware, "Hydrostatic mechanisms may contribute to the pathogenesis of human re-expansion pulmonary edema," *Intensive Care Medicine*, vol. 30, no. 10, pp. 1921–1926, 2004.

[52] K. G. S. Bharathy, S. Kumar, V. Pandey, P. K. Sinha, S. V. Sasturkar, and V. Pamecha, "Re-expansion pulmonary oedema: an unusual and unsettling complication," *ANZ Journal of Surgery*, vol. 87, no. 7-8, pp. 638-639, 2017.

[53] W. C. Miller, R. Toon, H. Palat, and J. Lacroix, "Experimental pulmonary edema following re-expansion of pneumothorax," *American Review of Respiratory Disease*, vol. 108, no. 3, pp. 654–656, 1973.

[54] H. C. Tan, K. H. Mak, A. Johan, Y. Wang, and S. Poh, "Cardiac output increases prior to development of pulmonary edema after re-expansion of spontaneous pneumothorax," *Respiratory Medicine*, vol. 96, no. 6, pp. 461–465, 2002.

[55] M. Chowdhary, E. W. Peng, and P. K. Sarkar, "The risk of fatal re-expansion pulmonary oedema in poor left ventricular reserve," *Interactive Cardiovascular and Thoracic Surgery*, vol. 9, no. 2, pp. 350-351, 2009.

[56] C. M. Mokotedi and M. Balik, "Is the mechanism of re-expansion pulmonary oedema in a heart-lung interaction," *BMJ Case Reports*, vol. 2017, Article ID bcr2017219340, 6 pages, 2017.

[57] C. E. Oswalt, G. A. Gates, and M. G. Holmstrom, "Pulmonary edema as a complication of acute airway obstruction," *JAMA*, vol. 238, no. 17, pp. 1833–1835, 1977.

[58] D. R. Schwartz, A. Maroo, A. Malhotra, and H. Kesselman, "Negative pressure pulmonary hemorrhage," *Chest*, vol. 115, no. 4, pp. 1194–1197, 1999.

[59] A. Udeshi, S. M. Cantie, and E. Pierre, "Postobstructive pulmonary edema," *Journal of Critical Care*, vol. 25, no. 3, pp. 538.e1–538.e5, 2010.

[60] G. Zhang, X. Han, S. Ouyang, and T. Li, "The symptoms and causes of tracheobronchial diseases," *In Airway Stenting in Interventional Radiology*, pp. 15–24, Springer, Berlin, Germany, 2019.

[61] L. Dobbe, R. Rahman, M. Elmassry, P. Paz, and K. Nugent, "Cardiogenic pulmonary edema," *The American Journal of the Medical Sciences*, vol. 358, no. 6, pp. 389–397, 2019.

[62] S. M. Ayres, "Mechanisms and consequences of pulmonary edema: cardiac lung, shock lung, and principles of ventilatory therapy in adult respiratory distress syndrome," *American Heart Journal*, vol. 103, no. 1, pp. 97–112, 1982.

[63] L. Rose, "Management of critically ill patients receiving noninvasive and invasive mechanical ventilation in the emergency department," *Open Access Emergency Medicine: OAEM*, vol. 4, pp. 5–15, 2012.

[64] D. H. Ingbar, "Cardiogenic pulmonary edema: mechanisms and treatment-an intensivist's view," *Current Opinion in Critical Care*, vol. 25, no. 4, pp. 371–378, 2019.

[65] D. Tavianto, R. W. Sudjud, P. C. Barliana, and I. Wijaya, "Anesthetic management of patient with preeclampsia, pulmonary edema, and peripartum cardiomyopathy in pregnancy undergoing caesarean section: a case report," *Journal of Health and Medical Sciences*, vol. 4, 2021.

[66] R. G. Brower, L. B. Ware, Y. Berthiaume, and M. A. Matthay, "Treatment of ARDS," *Chest*, vol. 120, no. 4, pp. 1347–1367, 2001.

[67] A. Dong, R. Jin, and A. Ma, "Analysis of nursing effect of clinical nursing combined with traditional Chinese and western medicine treatment on chronic congestive heart

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Retraction

Retracted: Correlation of Serum Chemokine (C-C Motif) Ligand 21 and Heat Shock Protein 90 with Preeclampsia

Evidence-Based Complementary and Alternative Medicine

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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] W. Yang, X. Yang, S. Zhang, L. Zhang, W. Wang, and L. Wang, "Correlation of Serum Chemokine (C-C Motif) Ligand 21 and Heat Shock Protein 90 with Preeclampsia," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2156424, 5 pages, 2022.

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Research Article

Correlation of Serum Chemokine (C-C Motif) Ligand 21 and Heat Shock Protein 90 with Preeclampsia

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Objective. The study aimed to explore the correlation of serum chemokine (C-C motif) ligand 21 (CCL21) and heat shock protein 90 (Hsp90) with preeclampsia (PE). *Methods.* Between June 2021 and June 2022, 50 pregnant women with PE were included in the PE group, and 50 healthy pregnant women were included in the control group. The serum levels of CCL21 and Hsp90 were compared between the two groups. *Results.* PE patients showed significantly higher levels of CCL21 and Hsp90 than healthy pregnant women ($P < 0.05$). Correlation analysis showed a positive correlation between CCL21 and Hsp90 levels ($r > 0$, ($P < 0.05$)). Binary logistic regression analysis suggested that high expression of CCL21 and Hsp90 were influencing factors for PE (OR >1, ($P < 0.05$)). The area under the receiver operating characteristic (AUC) curves of Hsp90 and CCL21 levels for predicting PE were 0.895 and 0.864, respectively, suggesting a good predictive value. *Conclusion.* Serum CCL21 and Hsp90 show great potential as disease markers for PE prediction. Further trials are, however, required prior to clinical promotion.

1. Introduction

Preeclampsia (PE) is a severe hypertensive disorder of pregnancy, which is manifested by hypertension, edema, proteinuria, and dysfunction of the heart and other organs, and is a major cause of maternal mortality [1]. The pathogenesis of PE is closely associated with placental ischemia and vascular endothelial damage. PE develops with abnormal trophoblast function in the mother, impaired physiological processes in the intrauterine spiral arteries, and damaged vascular endothelial cells [2]. In recent years, the prevalence of adverse pregnancies has been increasing, with hypertension, obesity, and higher age as potential influencing factors for adverse pregnancies [3]. The treatment of PE mainly focuses on the regulation of maternal blood pressure, blood circulation improvement, and complication prevention, and commonly used drugs include magnesium sulfate and nifedipine [4]. PE belongs to the category of "epilepsy" in traditional Chinese medicine (TCM) and is caused by spleen deficiency, kidney yang deficiency, essence and blood deficiency, and liver yang hyperactivity. In TCM, PE is mostly treated by "tonic for deficiencies and elimination for excesses" to manage disease development and improve patient prognosis [5, 6].

Heat shock proteins (Hsps) are a class of cellular chaperone proteins that are produced by biological cells following stressor stimulation [7]. Clinical research has found that the level of heat shock proteins in the body of patients with cardiovascular disease is closely related to the severity of the disease [8]. Hsp90 plays an important role in cell growth and development, differentiation, and protection of cells under stressful conditions [9]. As small molecules secreted proteins, chemokines enable cells to undergo chemotactic movements to participate in inflammatory and immune responses [10]. Chemokine (C-C motif) ligand 21 (CCL21) is secreted by activated T-lymphocytes and endothelial cells and is involved in humoral immunity to promote inflammatory responses [11].

Currently, PE management emphasizes early diagnosis and symptomatic treatment, and screening for high-risk factors and establishing accurate prediction methods

contribute positively to the prognosis of PE [12, 13]. Thus, the present study was undertaken to explore the correlation of serum CCL21 and Hsp90 with PE.

2. Materials and Methods

2.1. Patient Characteristics. Between June 2021 and June 2022, 50 pregnant women with PE were included in the PE group, and 50 healthy pregnant women were included in the control group. All patients provided written informed consent, and the experiment was undertaken as per the Declaration of Helsinki ethical guidelines for clinical research (ethical approval number: XD-GXQ20200703). The patient characteristics of the two groups were comparable ($P > 0.05$) (Table 1).

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria. Patients with a singleton pregnancy, without a history of chronic medical conditions, with confirmed PE as per the American College of Obstetricians and Gynecologists (ACOG) guidelines [10], with normal prepregnancy blood pressure, 24 h proteinuria ≥300 mg, protein/creatinine ≥0.3 mg/dL, urinary protein ≥++, and proteinuria (−), and with thrombocytopenia, renal insufficiency, impaired liver function, pulmonary edema, and new onset headache were included.

2.2.2. Exclusion Criteria. Patients with medical or surgical diseases, with multiple pregnancies or fetal developmental malformations, who underwent artificial insemination or in vitro fertilization, without blood sample cryopreservation in early pregnancy, or who were lost during maternity examination were excluded.

2.3. Determination of CCL21 and Hsp90 Levels. 3–5 mL of maternal peripheral blood was collected at 11–13 weeks of gestation and stored in a −80°C refrigerator for the following assays. The expression levels of CCL21 and Hsp90 in peripheral blood of pregnant women in early pregnancy were determined by quantitative real-time fluorescence PCR (qRT-PCR). The assay instrument is the American Bio-tech automatic enzyme standard instrument with a detection wavelength of 450 nm, and the kit is produced by Shanghai Enzyme Link Biological Co. Ltd.

2.4. Statistical Analysis. SPSS 23.0 software was used for data analyses. Count data were expressed as n (%) and analyzed using the chi-square test. The correlation of serum CCL21 and Hsp90 was analyzed by bivariate Pearson linear correlation analysis. The analysis of the effect of CCL21 and Hsp90 on PE was performed by the logistic regression analysis test and the receiver operating curve (ROC) was plotted to test the value of CCL21 and Hsp90 for predicting PE. $P < 0.05$ was used as a cutoff value for statistical significance.

3. Results

3.1. Serum Levels of CCL21 and Hsp90. PE patients showed significantly higher serum levels of CCL21 and Hsp90 than healthy pregnant women ($P < 0.05$) (Table 2).

3.2. Correlation between CCL21 and Hsp90. Bivariate Pearson linear correlation analysis demonstrated a positive correlation between serum CCL21 and Hsp90 levels in PE patients ($r = 0.510$, $P < 0.001$). (Figure 1).

3.3. Effect of Serum CCL21 and Hsp90 on PE. The baseline data and serum CCL21 and Hsp90 were used as covariates, PE was the dependent variable (1 = combined, 0 = uncombined), and a multiple regression model was established after binary logistic regression analysis. After preliminary binary regression analysis and calibration for mutual effects between individual data, serum CCL21 and Hsp90 overexpression were indicated as influential factors for PE (OR > 1, $P < 0.05$). (Table 3).

3.4. Predictive Value of Serum CCL21 and Hsp90 for PE. CCL21 and Hsp90 levels were used as test variables for all participants and whether PE was combined or not was used as a status variable (1 = combined, 0 = not combined). The ROC curve (Figure 2) analysis showed that the AUCs of serum CCL21 and Hsp90 levels for predicting PE risk were 0.895 and 0.864, respectively. The corresponding optimal threshold, specificity, sensitivity, and Jorden index for each index are shown in Table 4.

4. Discussion

Without proper treatment, PE may lead to maternal hypertension, proteinuria, hepatic, and renal insufficiency that eventually cause intrauterine hypoxia and growth restriction in the fetus and increase the risk of cardiovascular disease [14]. The complex etiology of PE involves immune system dysfunction, inflammatory cytokines, and hormonal abnormalities, in which the activation of significant numbers of inflammatory cells in vivo damages the vascular endothelium, leading to abnormal vascular remodeling and the development of PE [15]. The current treatment for PE focuses on regulating blood pressure, improving blood circulation, and preventing complications. Nifedipine extended-release tablets dilate systemic blood vessels and relax smooth muscle by inhibiting calcium ion inward flow and also prevent preterm abortion [16]. Magnesium sulfate prevents preterm labor by antagonizing calcium ions to inhibit uterine contractions, and magnesium ions act directly on vascular smooth muscle to normalize the blood pressure [17].

In TCM, the etiology of PE is attributed to internal movement of liver wind, phlegm, and fire, deficiency of kidney essence, loss of nourishment of the heart and liver, hyperactivity of liver yang into the fire, internal heat from yin deficiency, scorching of fluid into phlegm, mutual knotting of phlegm and heat, deficiency of the spleen and

Table 1: Patient characteristics.

	PE	Control	t/Z	P value
n	50	50		
Age (years)	30.24 ± 4.17	29.68 ± 3.41	1.452	0.2122
BMI (kg/m^2)	21.66 ± 3.11	21.22 ± 2.67	0.947	0.4523
Gestational week (weeks)	38.68 (37.74~39.41)	39.43 (38.86~40.05)	3.327	<0.001
Proteinuria (g/24 h)	0.42 ± 0.34	0.00	5.328	<0.001
Systolic blood pressure (mmHg)	141.5 (131.32~143.82)	127.00 (112.00~124.00)	6.424	<0.001
Diastolic blood pressure (mmHg)	95.52 (91.35~104.45)	78.00 (73.00~83.00)	6.657	<0.001

Table 2: Serum levels of CCL21 and Hsp90 ($\overline{x} \pm s$).

Group	n	Hsp90	CCL21
PE	50	94.56 ± 29.30	289.15 ± 54.32
Control	50	24.65 ± 15.11	168.45 ± 31.23
χ^2/t		9.8762	18.820
P value		<0.001	<0.001

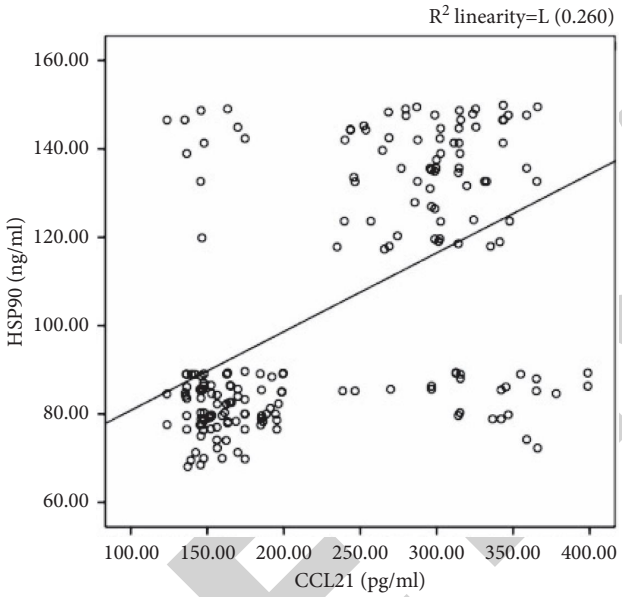

Figure 1: Correlation between CCL21 and Hsp90.

Table 3: Effect of serum CCL21 and Hsp90 on PE.

Variables	B	S.E	Wals	P	OR value
Constants	8.237	1.536	56.324	<0.001	0.000
Age	0.378	0.584	0.713	0.654	1.433
CCL21	1.146	0.016	60.423	<0.001	1.212
Hsp90	3.023	0.687	53.412	<0.001	1.847

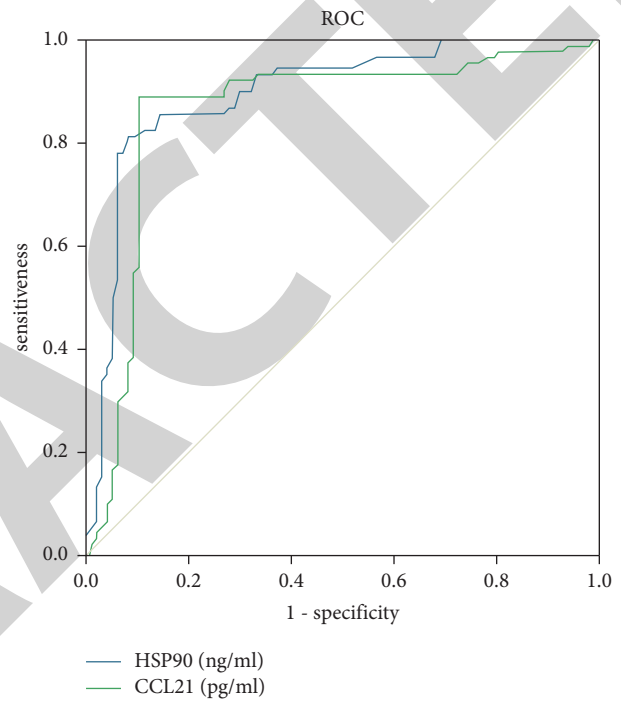

Figure 2: ROC curves of serum CCL21 and Hsp90 for predicting PE.

Table 4: Predictive value of serum CCL21 and Hsp90 for PE.

Indices	CCL21	Hsp90
AUC	0.864	0.895
95%CI	0.808~0.918	0.843~0.942
Standard error	0.031	0.027
P value	<0.001	<0.001
Optimal threshold	301.203 pg/mL	137.256 ng/mL
Specificity	0.958	0.976
Sensitivity	0.892	0.873
Jorden index	0.845	0.844

dampness, and heat from depression. Qiju Dihuang decoction is commonly used clinically to treat PE by nourishing yin, calming the wind, pacifying the liver, and subduing yang [18, 19]. Because the inflammatory response in the early stages of PE elicits alterations in the levels of numerous serum markers before the emergence of clinical symptoms, the screening for early predictors of PE development and early intervention in the treatment of PE is of great importance [20].

The results of the present study showed that PE patients had significantly higher serum levels of CCL21 and Hsp90, suggesting the association of the abnormal expression of CCL21 and Hsp90 with PE development. CCL21 is mainly distributed in the peripheral immune organs and tissues and chemotaxis of various immune cells. Numerous related reports have shown that CCL21 contributes to the production of a large number of inflammatory cells such as a tumor necrosis factor and interleukin-8, thereby triggering

inflammatory responses and aggravating the disease [21]. Hsp90, a marker of PE, is usually considered an intracellular protein with molecular chaperone and cytoprotective functions that protects cells from apoptosis, and elevation in its level indicates a risk of the nonphysiological state that triggers an immune response [22]. Studies have confirmed that Hsp90 functions as a proangiogenic agent, especially during embryogenesis, and binds to VEGFR-1 and displaces VEGF, prompting VEGFR-2 activation and intermolecular transphosphorylation and causing endothelial dysfunction after amplified angiogenesis, which is a common manifestation of PE [23]. In addition, clinical studies have revealed that Hsp family analogs exert a variety of biological functions such as molecular chaperones, antioxidant, anti-apoptotic, proliferation-promoting, and stress-tolerant cells by binding to substrate proteins [24]. All these results are similar to the results of the present study and reinforce the credibility of our conclusions.

Logistic regression analysis showed that high expressions of serum CCL21 and Hsp90 were influencing factors of PE, and the ROC curve found that the AUCs of CCL21 and Hsp90 for predicting PE were 0.897 and 0.862, respectively, suggesting a favorable predictive value. This result also supported our hypothesis. Thus, CCL21 and Hsp90 may be involved in the development of PE and show good potential to assess the disease conditions of PE. In addition, correlation analysis revealed a positive correlation between CCL21 and Hsp90 levels, suggesting that serum CCL21 and Hsp90 in PE patients interact with each other and participate in the pathogenesis of PE.

Immunologically, the embryo must rely on the immune tolerance balance between the mother and the fetus to attach to the uterus and survive until delivery, and disruption of this balance results in pathological pregnancy [25]. A large body of evidence suggests an association between the development of PE and an imbalance of maternal immune tolerance. Hsp plays a key role in the regulation of tumor cell differentiation and apoptosis [26]. Hsp90 is one of the most active molecular chaperone proteins in cells and is involved in responses in multiple signaling pathways that affect cell growth and development, differentiation, and protein synthesis [27, 28]. The limitations of the present study lie in the small sample size and the absence of long-term follow-up. Future multicenter studies with a larger sample size will be conducted to provide more reliable clinical data.

5. Conclusion

Serum CCL21 and Hsp90 show great potential as disease markers for PE prediction. Further trials are, however, required prior to clinical promotion.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] Y. P. Chen, L. C. Luo, and Y. F. Ye, "Exploration of factors associated with the occurrence of preeclampsia during pregnancy and the relationship with pregnancy outcome," *China Maternal and Child Health*, vol. 37, no. 8, pp. 1469–1472, 2022.

[2] H. Wang, D. Liang, and C. F. Su, "Association of monogenic hypertension-related pathogenic genes with preeclampsia," *Chinese Journal of Hypertension*, vol. 30, no. 3, pp. 236–243, 2022.

[3] J. Wei, Y. Wang, and G. L. Liu, "Analysis of risk factors for recurrence of preeclampsia," *Chinese Journal of Obstetrics and Gynecology*, vol. 23, no. 2, pp. 167–170, 2022.

[4] C. Han, C. Wang, Y. Chen et al., "Placenta-derived extracellular vesicles induce preeclampsia in mouse models," *Haematological*, vol. 105, no. 6, pp. 1686–1694, 2020.

[5] H. Yu, K. Fang, and Y. Zhang, "The predictive value of early pregnancy immune biomarkers in peripheral blood of pregnant women for preeclampsia," *Chinese Sex Science*, vol. 29, no. 05, pp. 72–77, 2020.

[6] C.-L. Ren, X.-G. Tang, and Y.-F. Zhang, "Association of serum TLR4 and MFG-E8 with the expression and occurrence of early kidney injury in patients with pre-eclampsia," *Chinese Experimental Diagnostics*, vol. 24, no. 11, pp. 1770–1773, 2020.

[7] K. Chai, X. Ning, T. T. T. Nguyễn et al., "Heat shock protein 90 inhibitors augment endogenous wild-type p53 expression but down-regulate the adenovirally-induced expression by inhibiting a proteasome activity," *Oncotarget*, vol. 9, no. 40, pp. 26130–26143, 2018.

[8] C. H. Jia, J. P. Jiang, and H. B. Zang, "Expression of heat shock protein 70 in essential hypertension and its relationship with inflammatory factors and blood pressure," *Modern Biomedical Progress*, vol. 20, no. 9, pp. 1673–1676, 2020.

[9] L. Yao, S. Ohlson, and B. W. Dymock, "Design and synthesis of triple inhibitors of janus kinase (JAK), histone deacetylase (HDAC) and Heat Shock Protein 90 (HSP90)," *Bioorganic and Medicinal Chemistry Letters*, vol. 28, no. 8, pp. 1357–1362, 2018.

[10] Y. Chen, Z. Shao, E. Jiang et al., "CCL21/CCR7 interaction promotes EMT and enhances the stemness of OSCC via a JAK2/STAT3 signaling pathway," *Journal of Cellular Physiology*, vol. 235, no. 9, pp. 5995–6009, 2020.

[11] H. Luo, J. Su, R. Sun et al., "Coexpression of IL7 and CCL21 increases efficacy of CAR-T cells in solid tumors without requiring preconditioned lymphodepletion," *Clinical Cancer Research*, vol. 26, no. 20, pp. 5494–5505, 2020.

[12] L. Mo and P. Zhong, "Study on the relationship between gut flora differences and the development of pre-eclampsia in early and mid-pregnancy," *Chinese general medicine*, vol. 25, no. 20, pp. 2489–2492, 2022.

[13] W. Q. Zhang, C. H. F. Yao, and S. N. A. Hu, "Research progress on maternal peripheral blood circulating miRNAs and preeclampsia," *Journal of North China University of Technology (Medical Edition)*, vol. 24, no. 3, pp. 241–248, 2022.

[14] G. Hypertension and Preeclampsia, "ACOG practice bulletin summary, number 222," *Obstetrics and Gynecology*, vol. 135, no. 6, pp. 1492–1495, 2020.

[15] C. Wang, B. L. Li, and X. J. Wang, "Analysis of complement-related factor levels in peripheral blood of pregnant women with preeclampsia and the factors affecting them," *Clinical Medicine Research and Practice*, vol. 7, no. 14, pp. 16–18, 2022.

[16] B. R. Zhang, S. Q. Jing, and X. D. Zheng, "The value of hypermethylated SIM2 gene in the diagnosis and assessment

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Retraction

Retracted: Value of 3D Printed PLGA Scaffolds for Cartilage Defects in Terms of Repair

Evidence-Based Complementary and Alternative Medicine

Received 26 September 2023; Accepted 26 September 2023; Published 27 September 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.

References

[1] L. Fan, W. Teng, J. He et al., "Value of 3D Printed PLGA Scaffolds for Cartilage Defects in Terms of Repair," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 3561430, 6 pages, 2022.

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Evidence-Based Complementary and Alternative Medicine
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Research Article

Value of 3D Printed PLGA Scaffolds for Cartilage Defects in Terms of Repair

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Objective. To examine the poly (lactic-co-glycolic acid) and sodium alginate (SA) scaffolds produced by 3D printing technology, access the healing morphology of bones following PLGA/SA implantation within rat cartilage, and examine osteogenesis-related factors in rat serum to determine the efficacy of PLGA/SA scaffolds in healing animal cartilage injuries. To identify the potential of this material to repair a tissue engineering osteochondral injury. *Methods*. Polylactic acid-glycolic acid copolymer and sodium alginate were used as raw materials to create PLGA/SA scaffolds. We observed the scaffold's macrostructure and microstructure, and the scaffold's microstructure was observed through a scanning electron microscope (SEM). The mechanical toughness of a stent was assessed using a biomechanical device. Hematoxylin-eosin staining revealed immune rejection after embedding the scaffolds under the skin of SD rats. The CCK-8 cell proliferation test kit was used to measure cell proliferation. An experimental model of cartilage injury in the knee joint was created in rats. Rats were used to establish an experimental model of cartilage damage in the knee joint. 120 female rats aged 5 weeks were chosen at random from the pool and divided into the experimental and control groups. They were all completely anesthetized with an anesthetic before having the lateral skin of the knee articular cartilage incised. Implanted PLGA/SA scaffolds were not used in the control group and only in the experiment group. Both groups of rats had their muscles and skin sutured and covered in plaster bandages. On the third, seventh, fourteenth, twenty-first, twenty-eighth, and thirty-fifth days after the procedure, the two groups of rats were divided into groups. At various stages, bone tissue, blood samples, and cartilage were examined and evaluated. Immunohistochemistry was used to identify the local bone morphogenetic protein-2 (BMP2). *Results*. (1) PLGA/SA was successfully used to build an artificial cartilage scaffold. (2) Macroscopic and SEM observation results showed the material had increased density and numerous microvoids on the surface. (3) The result of the biomechanical test showed that the PLGA/SA scaffold had superior biomechanical characteristics. (4) The stent did not exhibit any noticeable immunological rejection, according to the results of the subcutaneous embedding experiment performed on rats. (5) The CCK-8 data demonstrated that as the cell development time rose, the number of cells gradually increased. However, there was not statistically significant difference between the growth of the cells in the scaffold extract and the control group ($P > 0.05$). (6) A successful rat model based on a cartilage defect of the medial knee joint has been built. (7) Observations of specimens revealed that the experimental group's bone tissue score was higher than that of the control group. (8) Using immunohistochemistry, it was found that the experimental group's BMP2 expression was higher on the 7th, 14th, and 28th days than it was in the control group ($P < 0.05$). *Conclusion*. Strong mechanical and biological properties are present in stable, biodegradable PLGA/SA scaffolds that mimic cartilage. We demonstrated that the cartilage biomimetic PLGA/SA scaffold may repair cartilage and prevent negative reactions such as osteoarthritis in rat knee cartilage, making it suitable as a cartilage scaffolding material for tissue engineering. The PLGA/SA scaffold was also able to promote BMP2 expression in the bone healing zone when inserted into a knee cartilage lesion. Improved cartilage damage is the outcome of BMP2's promotion of bone formation and restriction of bone resorption in the bone healing zone.

1. Introduction

Common causes of articular cartilage (AC) injuries include sports-related injuries, accidents, and joint conditions [1]. The quality of life for the patient is decreased by the severe knee pain, edema, and joint stiffness caused by AC injuries. Furthermore, cartilage's capacity for self-repair is significantly diminished since it lacks lymphatic circulation, nerve tissue, and a blood supply when wounded [2, 3]. Osteoarthritis will occur from prolonged cartilage damage because it will influence the subchondral bone [4]. This makes it very challenging to cure cartilage damage [5]. Currently, a variety of therapies are used in clinical settings, such as chondrocyte transplantation, autologous and allogeneic cartilage transplantation, and periosteal stimulation. However, these therapies are expensive and have a poor success rate, making them unsuitable for patient needs [6, 7]. As a result, we are constantly searching for a better options. Alginate offers the stability, solubility, viscosity, and safety parameters needed to be utilized as an excipient in medicinal compositions, according to scientific investigations. It has been utilized in tissue engineering as a natural polysaccharide produced from brown algae, such as kelp, as a cartilage substitute [8, 9]. Studies have demonstrated that sodium alginate makes a great natural scaffold. Because of its intrinsic biocompatibility and gel-like characteristics, sodium alginate can maintain chondrocyte form. A sodium alginate scaffold can be used to cure cartilage damage, as demonstrated by Schoolten et al. in their research [10]. Acid saline gel has been utilized successfully to regenerate cartilage from dental pulp stem cells (HDPSCs) and has been shown to be efficient [11]. Interestingly, Mata et al. discovered that sheep and rabbits could promote chondrogenesis using biphasic sodium alginate scaffolds [12]. We use both natural and biodegradable components because using simply natural materials cannot guarantee the scaffold's internal stability. The four most popular 3D printing technologies currently used in clinical settings are low-temperature deposition manufacturing (LDM), light-curing stereolithography (SLA), fused deposition modeling (FDM), and selective laser sintering (SLS) [13]. LDM 3D printing technology was selected for this study.

The composition ratio of PGA and PLA can be used to calculate the degradation rate of PLGA, which is created when polyglycolic acid and PLA are polymerized. Because of their outstanding biocompatibility, degradability, and superior mechanical qualities, PLGAs are frequently utilized in scaffold construction and have received FDA approval for clinical applications. However, because PLGA is hydrophobic and lacks sites for cell identification and attachment, this interferes with the material's affinity, and as a result, the adhesion and development of cells on the surface. This problem has led to attempts to include PLGA into various organic and inorganic materials to enhance the performance of composite scaffolds [14, 15]. The mechanical strength and strain tolerance of a bioactive scaffold created using LDM 3D printing ensure that the microscopic structure of the organism will not be harmed in the interest of reproducibility [16]. Therefore, we anticipate that the capabilities of PLGA and SA will be complemented by their combination, with PLGA acting as the scaffold's main component to give strong mechanical strength and biocompatibility. The two together offer more hydrophilic sites for cell attachment and improve the composite scaffold's mechanical strength, while silicon encourages the production of cartilage matrix to create a scaffold material that is better suited for the use of cartilage tissue engineering using LDM [17]. The purpose of this study is to determine whether cartilage damage in rats may be effectively treated with PLGA/SA.

2. Materials and Methods

2.1. Main Materials and Reagents. The main materials and reagents are given in Table 1.

2.2. Laboratory Animals. Complete medium for lab rats (Shandong Qingdao Laboratory Animal Co. Ltd.) was made up of the following ingredients: DMEM High Glucose Basal Medium (Gibco, USA), 10% fetal bovine serum (Gibco, USA), and 1% double antibody (Gibco, USA). The Cangzhou Central Hospital Ethics Committee gave its approval to the study protocol prior to enrollment. Approval number: HS-DJS20200224.

2.3. Experimental Methods

2.3.1. Preparation of Bioactive Scaffolds. A 3D bionic printer was used to fabricate PLGA/SA scaffolds. Until all of the particles were dissolved, we continuously mixed 10 g of PLGA powder and 2.5 g of SA powder for 18 hours at 25°C. The acquisition of PLGA/SA scaffold material was the last stage. A PLGA/SA 3D printed bone scaffold was produced using a 3D bionic printer A that was outfitted with an ink cartridge that allowed molten materials to be sprayed in the 3D direction in accordance with predefined specifications.

2.3.2. Animal Surgery Procedure. 120 healthy adult rats were used for the study, and they were randomly split into two groups: an experimental group and a control group (Table 1). To produce anesthesia, an intramuscular injection of 2 percent pentobarbital sodium (0.3 ml/100 g) was given to the experimental group. The skin and subcutaneous tissue were incised sequentially from the medial incision of both lower extremities' knee joints, exposing the joint capsule, entering the joint cavity, and fully exposing the trochlea of the femur. On both femurs, a drill was used to create a 4 mm long, full-thickness bone defect that reached the medullary cavity in the proximal third of the trochlea. When the cartilage defect model was finished, the sterilized PLGA/SA scaffold was pressed and implanted, whereas the blank group was simply sutured. We gave the experimental animals complete reign to go about after they were woken from anesthesia. Penicillin was administered to prevent infection, the femur was bandaged, and erythromycin ointment was applied to the incision for three days following surgery (see Table2).

Table 1: Main materials and reagents.

Reagent name	Origin and company name
Polyglycolic acid	Beijing Chemical Reagent Co. Ltd., China
Polyglycolic acid	Beijing Chemical Reagent Co. Ltd., China
Polyglycolic acid	Nanjing Jiancheng Biological Company, China
Pentobarbital sodium injection	Beijing Chemical Reagent Co. Ltd., China
HE dye kit	Nanjing Jiancheng Biological Company, China
Anhydrous ethanol	Nanjing Jiancheng Biological Company, China
Penicillin injection powder	Nanjing Jiancheng Biological Company, China

Table 2: Grouping of experimental animals.

	Experimental group (PLGA/SA scaffold group)	Blank group (no stent implantation group)
3 days after surgery	10	10
7 days after surgery	10	10
14 days after surgery	10	10
21 days after surgery	10	10
2 to 8 days after surgery	10	10
3 to 5 days after surgery	10	10

2.3.3. Specimen Collection. The rats were sacrificed by blood draw from the abdominal aorta on days 3, 7, 14, 21, 28, and 35 following intraperitoneal anesthesia. The femurs of 10 rats from each group—10 from the experimental group and 10 from the control group—were removed, and the bone density of each group's femurs was assessed. All of the rats' blood was collected, and samples were examined.

2.3.4. Bone Tissue Score. O'Driscoll's histological scoring system was used to assess the results of cartilage repair. The evaluation takes into account the structural makeup of the cells, their morphology, and the degree of degeneration and fusion of the repaired tissue with the surrounding tissue.

2.3.5. Immunohistochemical Detection of BMP2. We immersed sections of dewaxed paraffin in water. The nuclei were dehydrated, mounted, and seen under a microscope after being counterstained with hematoxylin; images were then gathered and evaluated. The cumulative optical density (COD) and the tissue pixel area (AREA) for the image were calculated using at least five fields of view at 200× that were randomly chosen in each sector. The average optical density (AOD) value was then determined using the formula AOD = COD/AREA; the higher the AOD value, the stronger the positive expression.

2.4. Statistical Analysis. SPSS22.0 was used for the statistical analysis, which included the following data analysis: measurement data were expressed as mean ± standard deviation, and a *t*-test was conducted; count data were expressed as a percentage, and a chi-square test was performed. The cutoff for statistical significance was 0.05.

3. Results

3.1. An Overview of the Conditions for Sampling Experimental Animals. The experimental animals all grew healthily, despite an infection that claimed the lives of two rats, and all of the experimental animals grew well. No evident inflammatory secretions, synovial hyperplasia, or tissue adhesion between the synovium and surrounding tissues were present.

3.2. Specimen Collection and Observation. GraphPad Prism 5 was used to analyze the data and determine how well each experimental group's subchondral bone growth was measured by the bone volume fraction (Table 3). At 21 and 35 days, the experimental group's cartilage growth was substantially faster than that of the control group, and the PLGA/SA stent group's bone volume percentage was significantly larger than that of the control group ($P < 0.05$).

3.3. Histological Scoring. To evaluate and compare the repair effectiveness of cartilage defects between the two groups, a histological grading method was employed. 14 days following the procedure, the experimental group scored 8.6 ± 2.2, whereas the control group scored 7.6 ± 1.7. Statistical analysis revealed that the experimental group outperformed the control group by a statistically significant margin ($P < 0.05$). There was a statistically significant difference between the experimental and control groups at 28 and 35 days following surgery, with the experimental group scoring higher than the control group ($P < 0.05$) (Table 4).

3.4. Results of BMP2-Positive Rate. Figure 1 shows immunohistochemical staining images (positive rate analysis results of BMP2), which show that the local BMP2 levels had increased in both the experimental and blank groups and that the experimental group had been statistically and significantly superior to the control group on the 7th, 21st, and 35th days ($P < 0.05$). Figure 2 shows how PLGA mediates the action of bone morphogenetic proteins.

Table 3: Evaluation of the growth of subchondral bone in each experimental group.

	Experimental group (PLGA/SA scaffold group)	Blank group (no stent implantation group)
3 days after surgery	0.329213	0.249217
7 days after surgery	0.369251	0.289311
14 days after surgery	0.390928	0.352201
21 days after surgery	0.429224	0.375234
2 to 8 days after surgery	0.599286	0.413352
3 to 5 days after surgery	0.619262	0.476624

Table 4: Histological score statistics.

Group/time	3 days	14 days	21 days	28 days	35 days
Blank group	7.3 ± 1.4	$7.6 \pm 1.7^*$	8.2 ± 1.2	$8.3 \pm 1.5^*$	$8.5 \pm 2.4^*$
Experimental group	7.3 ± 2.1	$8.6 \pm 2.2^*$	8.6 ± 2.4	$9.1 \pm 1.1^*$	$10.6 \pm 2.1^*$

*Statistically significant difference.

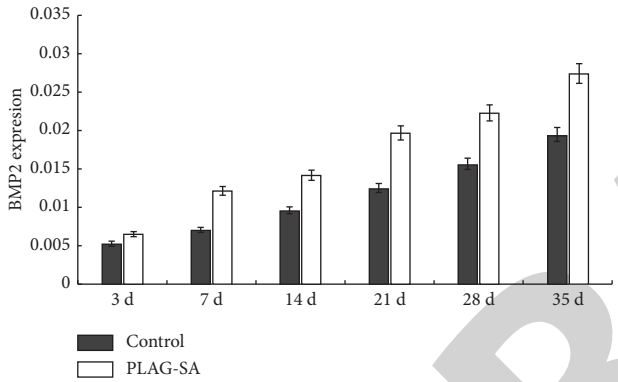

Figure 1: Immunohistochemical BMP2-positive rate results.

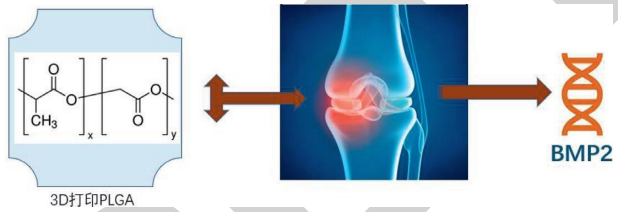

Figure 2: PLGA mediates bone morphogenetic proteins.

4. Discussion

The ability of cartilage to repair itself once it has been injured is quite limited due to the lack of blood supply to the cartilage itself, which makes cartilage defects a prevalent clinical problem. Since the concept of tissue engineering was created, more and more study has been focused on using these approaches to address the issue of cartilage defects [18]. Bone development is one of the more significant therapeutic applications of 3D printing technology [19]. In addition to providing quick turnaround times, high repeatability, accuracy, level of control, and the capacity to create personalized scaffolds, 3D printing also has the ability to alter the composition of scaffolds to enhance their performance [20]. The ideal scaffold material is one of the most important elements in tissue engineering to enable tissue regeneration. The following characteristics should be present in scaffolds that can support tissue engineering applications: (1) it has excellent hydrophilic properties and biocompatibility; (2) it has a regular three-dimensional high porosity structure with interconnected pores, which facilitates cell migration on the scaffold, extracellular nutrient exchange and transport of cellular waste, etc.; (3) the material is degradable and the rate is easily controlled; (4) its mechanical properties are sufficient to support the skeleton. Skeletal support for cell growth and tissue generation can be provided by the scaffold material's three-dimensional spatial structure and superior mechanical strength. The scaffold's hydrophilic properties and biocompatibility promote cell colonization and growth, while its high porosity promotes oxygen and nutrient delivery, cell movement, and angiogenesis [21, 22].

In our study, this method was used to create porous PLGA/SA scaffolds that integrated the benefits of both PLGA and SA [23, 24]. The bone tissue composition research revealed that the PLGA/SA scaffolds had excellent biocompatibility, biodegradability, and bone induction characteristics. Furthermore, it might increase cell adhesion to the scaffold surface as well as proliferation. Seven days after surgery, the scaffold started to break down, releasing nutrients for bone development. As early as day 14, the bone tissue strength of the experimental group was significantly higher than that of the control group. The difference was much more pronounced on day 28, showing that PLGA/SA promoted bone tissue to a relatively high level of strength; this is crucial for lowering the risk of early fractures. The synthetic polymer PLGA may be the main cause because it has good plasticity and biocompatibility, and because it can be combined with other materials to enhance the "discrete and reinforcing" effect of silicon particles and boost their own particle strength, thereby increasing the composite's mechanical strength [25]. More research suggests that the material has a positive osteogenic effect. The experiment's findings revealed considerable variations in BMP2's positive indications, which are a measure of quick bone remodeling. Since it is a potent inducer of osteoblast proliferation and differentiation [26], the bone morphogenetic protein 2

(BMP2) is crucial in promoting vascularization [27]. The technique has gradually been used for spinal fusion and the treatment of clinical bone tissue defects [28].

At this time, bone formation was more active in the experimental group than in the control group, showing that the PLGA-SA scaffold can activate BMP2 to promote bone factor (Figure 2) and improve cartilage injuries. This cytokine, like the majority of cytokines, has a very short half-life in the body, which is a typical drawback of cytokines. In order to achieve long-term improvements in nerve repair, it is therefore still challenging for contemporary researchers to connect tissue engineering scaffolds and release them over a protracted period of time [29]. We draw the conclusion that 3D-printed PLGA/SA scaffolds can successfully promote cartilage repair and have a significant impact on cartilage repair based on the findings discussed above.

There are still several issues to be resolved even though this experiment offers some reference values for the repair of cartilage defects by 3D-printed PLGA scaffolds: (1) future in vitro degradation experiments must investigate the two scaffolds' in vitro degradation rate and nature of the degradation products; (2) more animal studies are required to determine how the two scaffolds affect cartilage repair.

5. Conclusion

This research demonstrates that the improved performance of bioengineered PLGA/SA scaffolds as cartilage scaffolds, which can both increase cartilage osteogenic activity and decrease bone absorption. Calcium and phosphorus are released during the scaffold's degradation, and they later convert into raw materials. The PLGA/SA scaffold can also regulate BMP2, an essential protein involved in bone healing to promote osteogenesis. This highlights how important this scaffold is for treating cartilage damage and how it can help individuals with cartilage injury function better while also making following rehabilitative therapy less challenging.

Data Availability

No data were used to support this study.

Conflicts of Interest

All the authors declare that they have no conflicts of interest.

Authors' Contributions

The manuscript was written and revised by Longkun Fan. Data collection was handled by Wei Teng, Jinqiu He, Dongni Wang, Chunhui Liu, Yujia Zhao, and Limin Zhang. The final manuscript has been read and approved by all writers.

References

[1] R. F. Loeser, "Age-related changes in the musculoskeletal system and the development of osteoarthritis," *Clinics in Geriatric Medicine*, vol. 26, no. 3, pp. 371–386, 2010.

[2] D. Correa and S. A. Lietman, "Articular cartilage repair: current needs, methods and research directions," *Seminars in Cell & Developmental Biology*, vol. 62, pp. 67–77, 2017.

[3] R. J. Williams Iii and R. H. Brophy, "Cartilage repair procedures: clinical approach and decision making," *Instructional Course Lectures*, vol. 57, pp. 553–561, 2008.

[4] E. Dall'ara, C. Ohman, M. Baleani, and M. Viceconti, "Reduced tissue hardness of trabecular bone is associated with severe osteoarthritis," *Journal of Biomechanics*, vol. 44, no. 8, pp. 1593–1598, 2011.

[5] E. B. Hunziker, T. M. Quinn, and H. J. Hauselmann, "Quantitative structural organization of normal adult human articular cartilage," *Osteoarthritis and Cartilage*, vol. 10, no. 7, pp. 564–572, 2002.

[6] L. Hangody and P. Fules, "Autologous osteochondral mosaicplasty for the treatment of full-thickness defects of weight-bearing joints: ten years of experimental and clinical experience," *Journal of Bone and Joint Surgery American Volume*, vol. 85, no. 2, pp. 25–32, 2003.

[7] D. Dore, S. Quinn, C. Ding, T. Winzenberg, F. Cicuttini, and G. Jones, "Subchondral bone and cartilage damage: a prospective study in older adults," *Arthritis & Rheumatism*, vol. 62, no. 7, pp. 1967–1973, 2010.

[8] F. Wang, Z. Ying, X. Duan et al., "Histomorphometric analysis of adult articular calcified cartilage zone," *Journal of Structural Biology*, vol. 168, no. 3, pp. 359–365, 2009.

[9] A. R. Poole, T. Kojima, T. Yasuda, F. Mwale, M. Kobayashi, and S. Laverty, "Composition and structure of articular cartilage: a template for tissue repair," *Clinical Orthopaedics and Related Research*, vol. 391, no. 391, pp. S26–S33, 2001.

[10] P. M. Scholten, K. W. Ng, K. Joh et al., "A semi-degradable composite scaffold for articular cartilage defects," *Journal of Biomedical Materials Research, Part A*, vol. 97, no. 1, pp. 8–15, 2011.

[11] S. Tomkoria, K. Masuda, and J. Mao, "Nanomechanical properties of alginate-recovered chondrocyte matrices for cartilage regeneration," *Proceedings of the Institution of Mechanical Engineers-Part H: Journal of Engineering in Medicine*, vol. 221, no. 5, pp. 467–473, 2007.

[12] M. Mata, L. Milian, M. Oliver et al., "*In vivo* articular cartilage regeneration using human dental pulp stem cells cultured in an alginate scaffold: a preliminary study," *Stem Cells International*, vol. 2017, Article ID 8309256, 9 pages, 2017.

[13] C. Wang, H. Yue, W. Huang et al., "Cryogenic 3D printing of heterogeneous scaffolds with gradient mechanical strengths and spatial delivery of osteogenic peptide/TGF-beta1 for osteochondral tissue regeneration," *Biofabrication*, vol. 12, 2020.

[14] Y. He, *Preparation and Performance Characterization of Novel 3D Printed PLGA/COLI Porous Composite Scaffolds*, Shenzhen University, Shenzhen, China, 2018.

[15] B. Zhang, *Experimental Study on PLGA/ACECM Tissue Engineered Cartilage Scaffolds Prepared by 3D Printing to Repair Cartilage Defects in Rabbits*, Southwest Medical University, Luzhou, China, 2019.

[16] L. Peterson, H. S. Vasiliadis, M. Brittberg, and A. Lindahl, "Autologous chondrocyte implantation: a long-term follow-up," *The American Journal of Sports Medicine*, vol. 38, no. 6, pp. 1117–1124, 2010.

[17] G. Cai, *Preparation and Performance Characterization of Novel 3D Printed PLGA/MSNs Porous Composite Scaffolds*, Shenzhen University, Shenzhen, China, 2019.

[18] Y. Shen, *Construction and Efficacy Evaluation of Cartilage Tissue Engineering Biomimetic Scaffolds with Inflammation-*

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Retraction

Retracted: Effect of Calcium Carbonate Preparation on Malnutrition in Preschool Children

Evidence-Based Complementary and Alternative Medicine

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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] F. Zhang and P. Guo, "Effect of Calcium Carbonate Preparation on Malnutrition in Preschool Children," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 4025972, 5 pages, 2022.

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Research Article

Effect of Calcium Carbonate Preparation on Malnutrition in Preschool Children

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Objective. To analyze the effect of calcium carbonate preparations on malnutrition in preschool children. *Methods*. A total of 100 preschool malnourished children treated in our hospital from February 2020 to February 2021 were recruited and assigned to a calcium carbonate preparation group or calcium lactate preparation group via the random number table method, with 50 cases in each group. Outcome measures included bone content, malnutrition symptom scores, nutritional indices, urine calcium, patient compliance, and treatment satisfaction. *Results*. After treatment, the calcium carbonate preparation group showed higher content of right heel bone and bone density versus the calcium lactate preparation group ($P < 0.05$). After treatment, children given calcium carbonate preparation were associated with lower scores of malnutrition symptoms and higher serum calcium, ferritin, transferrin, prealbumin, and albumin levels versus those receiving calcium lactate preparation ($P < 0.05$). Children in the calcium carbonate preparation group showed higher urine calcium levels than those in the calcium lactate preparation group after treatment ($t = 17.640$, 45.131, 18.168, 19.565, $P < 0.05$). A higher compliance (96.00%) and treatment satisfaction (98.00%) of children in the calcium carbonate preparation group was observed versus those in the calcium lactate preparation group (62.00%, 66.00%) ($Z = 3.521$, $Z = 3.447$, $P < 0.05$). *Conclusion*. The calcium carbonate preparations show more enrichment in the amelioration of malnutrition in preschool children versus calcium lactate preparations.

1. Introduction

Children with a body mass lower than 90% of the standard body mass of children of the same height, age, and gender are diagnosed with malnutrition, the etiology of which is associated with diverse factors such as dietary habits, improper feeding, and related diseases [1]. The growth and development of children impose a very high demand for nutritional intake, especially during infancy and early childhood, when breastfeeding practices, poor dietary habits, and lack of knowledge about child feeding are associated with unbalanced absorption of nutritional elements [2]. At present, malnutrition in children in China is mainly mild and moderate. Under normal physiological conditions, insufficient energy and protein for the body to maintain the basal metabolism will result in consequential alterations in the levels and composition of various hormones, such as decreased insulin levels, causing complications such as hypoproteinemia, hypoglycemia, and acidosis [3]. Modern medicine mainly adopts the combination of nutritional therapy and etiological treatment, but the long duration of nutritional supplementation poses excessive economic pressure on the families of children. In recent years, traditional Chinese medicine (TCM) such as herbal medicine, pediatric Tuina, and acupuncture, gained considerable benefits in malnutrition [4, 5]. Calcium plays a vital role in the growth and development of children, and its content is associated with the peak bone mass in adulthood [6]. A large body of evidence in developed countries has suggested calcium supplementation for children from 7 years old to preadolescence [7], whereas there is a dearth of studies in China for calcium supplementation in children [8].

To this end, the present study recruited 100 preschool children with malnutrition treated in our hospital from February 2020 to February 2021 to assess the efficacy of calcium carbonate preparations on malnutrition in preschool children.

2. Materials and Methods

2.1. Participants

2.1.1. Patient Characteristics. A total of 100 preschool malnourished children treated in our hospital from February 2020 to February 2021 were recruited and assigned to a calcium carbonate preparation group or calcium lactate preparation group via the random number table method, with 50 cases in each group. In the calcium carbonate preparation group, there were 23 females and 27 males, aged 3–6 (4.02 ± 1.02) years; there were 22 cases of 98~106 cm, 28 cases of 107~114 cm, 21 cases of 13~16 kg, and 29 cases of 17~19 kg. In the calcium lactate preparation group, there were 24 females and 26 males, aged 3–6 (4.05 ± 1.01) years; there were 21 cases of 98~106 cm, 29 cases of 107~114 cm, 20 cases of 13~16 kg, and 30 cases of 17~19 kg. The two groups showed comparable patient characteristics ($P > 0.05$). Undersigned informed consent was obtained from the patients prior to enrollment in this study. The study protocol was approved by the hospital ethics committee (ethics approval number QS-SEX20200217), and all processes complied with the Declaration of Helsinki ethical guidelines for clinical research.

2.1.2. Inclusion and Exclusion Criteria. Inclusion criteria: patients with complete medical records and good compliance were included.

Exclusion criteria: patients with inherited metabolic diseases, endocrine diseases, or fractures and other diseases that have adverse effects on bone were excluded.

2.2. Method

2.2.1. Calcium Lactate Preparation Group. The children received 45–65 mg/kg or 250–500 mg of calcium lactate tablets through oral administration twice or thrice daily with a maximum dose controlled at 2000–2500 mg/d, and additionally, vitamin D was given orally to enhance calcium absorption. The duration of treatment was 6 months.

2.2.2. Calcium Carbonate Preparation Group. The children received one calcium carbonate chewable tablet (elemental calcium 300 mg + vitamin D3 60IU) after breakfast daily, with an interval of 1d after 6 d of treatment. The duration of treatment was 6 months.

2.3. Outcome Measures. All children were followed up for 6 months.

(1) Bone content. A quantitative ultrasound bone measuring instrument was used to measure the bone content and bone density of the right heel of the children.

(2) Malnutrition symptom scores [9]. A self-made malnutrition symptom scale was employed to evaluate the malnutrition, with a total score of 0–10 points. A higher score indicates more severe malnutrition.

(3) Nutritional indices. The methyl thymol blue colorimetric method (Magnesium test kit, BIOLAB, GL1937) was used to determine the serum calcium content, and the radioimmunoassay was used to determine the ferritin, transferrin, prealbumin, and albumin content.

(4) Urinary calcium. The urinary calcium was measured before treatment and at 15 days, 1 month, 3 months, and 6 months after treatment.

(5) Compliance. The children were rated into four levels of compliance, namely, complete compliance, partial compliance, and complete noncompliance.

(6) Parent satisfaction. A self-made satisfaction questionnaire was used to evaluate the satisfaction of the children, and the scale has a total score of 10 points, with a score 0~6 points for dissatisfied, 7~8 for satisfied, and 9~10 for highly satisfied.

2.4. Statistical Analysis. All data analyses were done by SPSS21.0. The counting data were expressed as a rate and examined using χ^2 test or rank sum test. The measurement data were expressed as $(x \pm s)$, and analyzed using the t-test or F test. The statistical significance was assumed at $\alpha = 0.05$.

3. Results

3.1. Bone Content. Before treatment, the difference in right heel bone content and bone density between the two groups of children did not come up to the statistical standard ($P > 0.05$). After treatment, the right heel bone content and bone density of the two groups of children were increased ($P < 0.05$), with higher outcomes in the calcium carbonate preparation group ($P < 0.05$). (Table 1).

3.2. Malnutrition Symptom Scores and Nutritional Indicators. There were no significant differences in malnutrition symptom ratings, blood calcium, ferritin, transferrin, prealbumin, and albumin levels between the two groups of children before treatment ($P > 0.05$). The scores of malnutrition symptoms in both groups of children decreased after treatment, and the calcium carbonate preparation group showed higher serum calcium, ferritin, transferrin, prealbumin, and albumin levels ($P < 0.05$). (Table 2).

3.3. Urinary Calcium. Prior to calcium supplementation, there was no significant difference in urine calcium between the two groups ($t = 1.816$, $P > 0.05$). The urine calcium of the two groups of children was decreased after treatment ($P < 0.05$). The urine calcium of children in the calcium carbonate preparation group was greater after one month of calcium

Table 1: Comparison of bone content ($\overline{x} \pm s$).

Groups	n	Time	Right heel bone content (g)	Bone density (g/cm^3)
Calcium carbonate preparation group	50	Before supplementation	1552.44 ± 21.96	1.25 ± 0.24
		After supplementation	1554.35 ± 23.01	12.20 ± 2.35
Calcium lactate preparation group	50	Before supplementation	1552.81 ± 21.37	1.24 ± 0.22
		After supplementation	1553.11 ± 22.20	6.32 ± 1.25

Table 2: Malnutrition symptom score and nutritional index comparison ($\overline{x} \pm s$).

Groups	n	Time	Malnutrition symptom score (point)	Serum calcium (ng/ml)	Ferritin (mmol/L)
Calcium carbonate preparation group	50	Before supplementation	8.62 ± 1.31	2.05 ± 0.30	20.32 ± 3.45
		After supplementation	2.40 ± 0.44	12.10 ± 0.11	51.01 ± 12.30
Calcium lactate preparation group	50	Before supplementation	8.32 ± 1.24	2.01 ± 0.31	20.36 ± 3.85
		After supplementation	4.95 ± 0.84	7.32 ± 1.45	36.11 ± 6.01

supplementation than after 15 days of calcium supplementation ($P < 0.05$), then it progressively reduced at 1 month, 3 months, and 6 months ($P < 0.05$). At 15 days, 1 month, 3 months, and 6 months after treatment, the urine calcium of the children in the calcium carbonate preparation group was higher than that in the calcium lactate preparation group ($t = 17.640$, 45.131, 18.168, 19.565, $P < 0.05$). (Table 3).

3.4. Compliance. The calcium carbonate preparation group exhibited markedly higher compliance versus the calcium lactate preparation group (96.00% (48/50) vs 62.00% (31/50)) ($Z = 3.521$, $P < 0.05$, Table 4).

3.5. Patient Satisfaction. The parents in the calcium carbonate preparation group were more satisfied with the treatment than those in the calcium lactate preparation group [98.00% (49/50) vs 66.00% (33/50)] ($Z = 3.447$, $P < 0.05$). (Table 5).

4. Discussion

Bone mass refers to the amount of mineral deposits in the bones, which accumulate mainly in childhood and adolescence [9]. Studies have shown that the optimal peak bone mass in adults is directly subjected to calcium intake. There, osteoporosis in adults, characterized by the degeneration of bone tissue microstructure, may result from inadequate calcium intake during childhood [10–12]. In recent years, bone mineral studies in children and adolescents have captured tremendous attention. In the assessment of calcium nutrition in children, bone mineral is the main reference index, with the radius, humerus, ulna, and lumbar spine as the main measurement sites, and quantitative ultrasound as the main measurement approach. It is widely recognized given its merits of being nonradioactive, simple operation, and low cost. A prior study reported that bone density, bone structure, and bone elasticity had a direct impact on ultrasound bone mass [13]. The results of the present study showed that after treatment, the right heel bone content and bone density of the children in the calcium carbonate preparation group were higher than those in the calcium lactate preparation group, indicating that calcium supplementation enhances the children's calcaneal bone mass.

Most of the calcium in the blood exists in the plasma in the form of diffusive calcium and nondiffusive calcium, which maintain a dynamic balance under physiological conditions [14]. For the assessment of calcium nutrition, serum calcium serves as a reference index excluding the influence of endocrine diseases and other diseases. Iron is of diverse and extensive significance to the life activities of the body, and insufficient iron is associated with anemia, seriously undermining the health of children [15]. Iron-deficiency anemia is underlined among pediatric diseases [16].

Studies have shown [17, 18] that iron metabolism and calcium intake are not directly correlated. Moreover, it has been reported [19, 20] that circulating iron decreased in 3 ~6-year-old children after calcium supplementation at 130 mg/d for 2 months. Ferritin sensitively reflects the iron storage profile in the body, and it presents a declining trend in the early stage of iron deficiency [21]. The results of the current study showed lower malnutrition symptom scores and higher serum calcium, ferritin, transferrin, prealbumin, and albumin levels in the calcium carbonate preparation group versus those in the calcium lactate preparation group, indicating that calcium supplementation provides desirable calcium nutrition status for the children.

Under normal circumstances, the amount of calcium in the urine of children is 40 mg/d and continues to increase with age, reaching 80 mg/d in adolescence [22]. The current study showed that the urinary calcium of the two groups of children after treatment was decreased, and the calcium carbonate preparation group exhibited higher urine calcium than the calcium lactate preparation group, suggesting that the urine calcium in children increased with the increase of calcium intake. Hence, urinary calcium shows good potential as a reference index for calcium nutrition. To the best of our knowledge, dietary intervention and intake of foods rich in calcium, such as dairy products, facilitate calcium

Table 3: Comparison of malnutrition symptom scores and nutritional indicators ($\overline{x} \pm s$).

Groups	n	Time	Transferrin (mg/L)	Prealbumin (mg/L)	Albumin (g/L)
Calcium carbonate preparation group	50	Before supplementation	134.23 ± 12.72	229.23 ± 9.40	28.85 ± 2.13
		After supplementation	174.14 ± 19.46	267.57 ± 14.04	35.32 ± 2.84
Calcium lactate preparation group	50	Before supplementation	134.52 ± 12.80	229.73 ± 9.70	28.95 ± 2.02
		After supplementation	152.85 ± 15.23	240.54 ± 10.06	31.43 ± 2.14

Table 4: Comparison of urinary calcium (mmol/L, $\overline{x} \pm s$).

Groups	n	Before supplementation	15d after supplementation	1 month after supplementation	3 months after supplementation	6 months after supplementation
Calcium carbonate preparation group	50	1.50 ± 0.23	0.30 ± 0.09	1.64 ± 0.23	1.31 ± 0.22	1.24 ± 0.20
Calcium lactate preparation group	50	1.58 ± 0.21	0.07 ± 0.02	0.15 ± 0.04	0.64 ± 0.14	0.58 ± 0.13
t		1.816	17.640	45.131	18.168	19.565
P		0.072	<0.001	<0.001	<0.001	<0.001

Table 5: Comparison of compliance (n (%)).

Groups	n	Complete compliance	Partial compliance	Complete noncompliance	Compliance rate
Calcium carbonate preparation group	50	20 (40.00)	28 (56.00)	2 (4.00)	48 (96.00)
Calcium lactate preparation group	50	11 (22.00)	20 (40.00)	19 (38.00)	31 (62.00)
Z					3.521
P					<0.001

Table 6: Comparison of parents' satisfaction (n (%)).

Groups	n	Highly satisfied	Relatively satisfied	Unsatisfied	Satisfaction rate
Calcium carbonate preparation group	50	23 (46.00)	26 (52.00)	1 (2.00)	49 (98.00)
Calcium lactate preparation group	50	13 (26.00)	20 (40.00)	17 (34.00)	33 (66.00)
Z					3.447
P					0.001

intake. Furthermore, calcium carbonate preparations are considered promising calcium agents by various research [23, 24]. The present study showed that children in the calcium carbonate preparation group showed higher compliance and treatment satisfaction than those in the calcium lactate preparation group. The reason may be that preschool children prefer chewable tablets such as calcium carbonate, which also have a lower frequency of medication.

This study provides some basis for calcium supplementation in preschool malnourished children, and TCM may potentiate the efficacy, as the unique advantages of TCM have been gradually recognized in recent years [25]. Childhood malnutrition belongs to the category of "Gan syndrome" in TCM and is caused by damage to the spleen and stomach and depletion of qi and fluids [26]. In TCM practice, this disease is mostly seen as a deficiency syndrome. The disease is mainly located in the spleen and stomach, and the commonly used treatment modalities include acupuncture, Tuina, navel patching, auricular acupuncture, food therapy, and herbal medicine [27]. Future studies will be conducted on the basis of the present study in combination with TCM treatment to improve the efficacy.

5. Conclusion

The calcium carbonate preparations show more enrichment in the amelioration of malnutrition in preschool children versus calcium lactate preparations.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

References

[1] H. Y. Yan, S. Q. Li, and R. F. Wang, "Risk factors of malnutrition in preschool children and the effect of nutritional guidance application," *Anhui Medicine*, vol. 43, no. 03, pp. 322–325, 2022.

[2] X. Y. Ding, Z. Y. Yang, and L. Y. Zhao, "Relationship between dietary patterns and malnutrition in Chinese children aged 2 to 5 years[J]," *China Public Health*, vol. 37, no. 05, pp. 865–870, 2021.

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Retraction

Retracted: The Potential Mechanism of HDAC1-Catalyzed Histone Crotonylation of Caspase-1 in Nonsmall Cell Lung Cancer

Evidence-Based Complementary and Alternative Medicine

Received 5 December 2023; Accepted 5 December 2023; Published 6 December 2023

This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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] C. Jiang, J. Liao, F. Yang, T. Jiang, D. Zhang, and Y. Xin, "The Potential Mechanism of HDAC1-Catalyzed Histone Crotonylation of Caspase-1 in Nonsmall Cell Lung Cancer," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 5049116, 8 pages, 2022.

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Research Article

The Potential Mechanism of HDAC1-Catalyzed Histone Crotonylation of Caspase-1 in Nonsmall Cell Lung Cancer

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Nonsmall cell lung cancer (NSCLC) is a predominant subtype of lung cancer and accounts for over 80% of all lung cancer cases. The resistance to pemetrexed (PEM) is frequently occurred and severely affects the NSCLC therapy. Proteomic analysis of histones indicated that the histone deacetylase 1 (HDAC1) complex could hydrolyze lysine crotonylation on histone3 (H3K18cr), affecting epigenetic regulation in cancers. However, the effect of HDAC1-mediated H3K18cr on the PEM resistance of NSCLC is still unclear. Here, we aimed to explore the function of HDAC1-mediated H3K18cr in NSCLC PEM resistance. The expression of HDAC1 was upregulated in clinical NSCLC tissues and cell lines and correlated with the poor prognosis of NSCLC samples. We constructed the PEM-resistant NSCLC cell lines, and the depletion of HDAC1 remarkably reduced the viability of the cells. The proliferation of PEM-resistant NSCLC cells was decreased by HDAC1 knockdown, and the IC50 of PEM was repressed by the silencing of HDAC1 in the cells. Mechanically, we identified the enrichment of HDAC1 on the promoter of caspase-1 in PEM-resistant NSCLC cells. The depletion of HDAC1 inhibited the enrichment of histone H3K18cr and RNA polymerase II (RNA pol II) on the caspase-1 promoter in the cells. The expression of caspase-1 was suppressed by HDAC1 knockdown. The knockdown of HDAC1 reduced proliferation of PEM-resistant NSCLC cells, in which caspase-1 or GSDMD depletion reversed the effect. Clinically, the HDAC1 expression was negatively associated with caspase-1 and GSDMD in clinical NSCLC tissues, while caspase-1 and GSDMD expression was positively correlated in the samples. Therefore, we concluded that HDAC1-catalyzed histone crotonylation of caspase-1 modulates PEM sensitivity of NSCLC by targeting GSDMD.

1. Introduction

Lung cancer is one of the most frequently occurred malignant cancer types and ranks the leading cause of cancer-related mortality globally [1, 2]. Nonsmall cell lung cancer (NSCLC) that is composed of adenocarcinoma, squamous cell carcinoma, and large-cell carcinoma is a predominant subtype of lung cancer and accounts for over 80% of all lung cancer cases [3]. Despite the rapid development of surgical techniques, chemical-therapy, and radio-therapy manners, the incidence of lung cancers has continuously increased in recent years [4]. Besides, the development of therapeutic resistance to chemical agents remarkably impeded the treatment and prognosis of NSCLC, comparing with the small lung cancer [5]. Alimta (also known as pemetrexed) is a multitargeted antifolate agent that has been proved to exhibit effective single-agent activity in patients with NSCLC [6–9] and is widely studied as the synergetic agent for NSCLC therapy in various clinical studies [10–13]. However, the resistance to pemetrexed is frequently occurred in multiple cancers and severely affects the NSCLC therapy [14–16]. Therefore, exploring the mechanisms underlying the pemetrexed resistance is an important issue for NSCLC treatment.

The mechanisms of cancer cell drug resistance are complicated, involving abnormal cell apoptosis, DNA damage repair, aberrant cell metabolism, cancer cell stemness, and so on [17]. Caspase-1, a prototypical member of inflammatory caspases, is mainly triggered by 4

inflammasome factors, such as AIM2, NLRP1, NLRP3, and NLRC4 inflammasomes. Caspase-1 is involved in programmed cell differentiation, survival, and death [18]. It has been reported that caspase-1/GSDMD axis-mediated cell pyroptosis promotes the cisplatin resistance of NSCLC cells [18]. Caspase-1 activation in inflammasomes induces pyroptosis by GSDMD [19, 20]. Activated caspase-1 catalyzes GSDMD and induces its cleavage to GSDMD-N and GSDMD-C fragments [21, 22]. The GSDMD-N subsequently binds to the cell membrane and causes membrane perforation, which consequently leads to pyroptosis and the release of inflammatory factors into the extracellular environment [21]. Moreover, a previous study has indicated that inhibition of caspase-1 notably improved the viability of lung cancer cells [23].

In recent years, histone crotonylation has gradually draw attention in the cancer research area. Like acetylation, crotonylation can affect the structure of chromatin, as well as modulate gene expression [24]. Studies have demonstrated that abnormal lysine crotonylation is correlated with development of multiple cancers, including lung cancer [25]. Proteomic analysis of histones indicated that the histone deacetylase 1 (HDAC1) complex could hydrolyze lysine crotonylation on histone3 (H3K18cr), and depletion of HDAC1 increases the histone crotonylation level in ES cells [26].

Several studies have indicated that HDAC1 is overexpressed in lung cancer [27, 28]. A meta-analysis suggested that mRNA or the protein level of HDAC1 was notably correlated with the differentiation grade of lung cancer and negatively correlated with the survival rate of lung cancer patients [29]. HDAC1 could be regarded as a diagnostic and prognostic biomarker of lung cancer [29, 30]. Inhibition of HDAC1 suppressed the invasion of NSCLC cells and caused cell apoptosis [31]. HDAC1 epigenetically modulated the MAPK signaling axis to promote lung cancer progression [32]. A growing number of studies have shown the prospect of developing HDAC inhibitors for lung cancer therapy. A peptide inhibitor derived from the substrate of HDAC1 exerted excellent antiproliferation effects on cancer stem cells [33]. Besides, HDAC1 is also associated with treatment sensitivity of cancer cells. Inhibition of HDAC1 improved the sensitivity of NSCLC cells to gefitinib [34]. Targeting HDAC1 could reverse the cisplatin resistance in NSCLC cells [35].

In this study, we evaluated the expression of caspase-1 in patients with NSCLC and determined its function in pemetrexed resistance of NSCLC cells. We explored the mechanisms involving HDAC1-modulated histone crotonylation of caspase-1 and presented this regulatory axis as a promising target for NSCLC treatment.

2. Materials and Methods

2.1. Patient Samples. Patients ($n = 38$) diagnosed with NSCLC and hospitalized at our hospital were recruited in this work. Tumor sections and adjacent nontumor sections were resected during surgery and stored in liquid nitrogen immediately. None of the recruited patients received chemotherapy or radio-therapy before the surgery. This study was approved by the Ethics Committee of Guizhou Aerospace Hospital, No.79419–1. All patients have signed the written informed consent.

2.2. Cell Lines. NSCLC cell lines A549, H1299, H460, MES-1, H226, and H661 and normal human bronchial epithelial cell lines BEAS-2B and 16HBE were obtained from Procell (Wuhan, China). The NSCLC cell lines and 16HBE were maintained in the RPMI-1640 medium (Thermo, USA), and the BEAS-2B cell line was maintained in DMEM that contains 10% fetal bovine serum (FBS; Thermo, USA) at 37°C in an incubator with 5% CO_2.

2.3. Cell Transfection. The siRNAs and vectors were designed and synthesized by RiboBio (Guangzhou, China). Cells were seeded into a 6-well plate and transfected with indicated oligonucleotides for 24 hours, after which cells were treated with Alimta for indicted time and collected for the following experiments.

2.4. Cell Viability. The viability of NSCLC cells was measured using the MTT assay. In brief, cells that transfected with pcDNA-caspase-1 were seeded into 96-well plates at a density of 10,000 cells per well, followed by treatment with Alimta at different doses for 24 hours. Then, the MTT agent (0.5 mg/ml; Sigma, USA) was added into each well and incubated for another 4 hours. The medium was removed, and 150 μl dimethyl sulfoxide (DMSO) was added to each well to incubate for 10 minutes at room temperature. The absorbance values at 490 nm were detected using a microplate reader (Thermo, USA). For depiction of the cell growth curve, cells were transfected with indicated oligonucleotides or cotreated with Alimta at 100 nm for 0, 24, 48, and 72 hours, respectively.

2.5. Colony Formation Assay. NSCLC cells were suspended as single cells, seeded in a 6-well plate (1,500 cells/well), and treated with pcDNA-caspase-1 and Alimta at 100 nm. After incubation for 14 days, the visible colonies were fixed in methanol, dyed with 0.1% crystal violet (Sigma, USA), and captured by a digital camera (Olympus, Germany).

2.6. Quantitative PCR (qPCR) Assay. Total RNA was extracted from tissues and cells using the TRIzol reagent (Thermo, USA) and reverse-transcribed to cDNA using a PrimeScript RT-PCR kit (Takara, Japan) as per manufacturer's description. The qPCR assay was performed using a SYBR Premix Ex Taq II kit (Takara, Japan). The levels of GSDMD, HDAC1, and caspase-1 were calculated following the $2^{-\Delta Ct}$ method and normalized to GAPDH.

2.7. Chromatin Immunoprecipitation (ChIP) Assay. NSCLC cells were transfected with pcDNA-HDAC1 for 48 hours and fixed with formaldehyde for 10 minutes to obtain DNA-protein crosslinks. Cells were then lysed and sonicated to obtain DNA fragments of about 200 bp. The fragments

were then hatched with specific antibodies against RNA polymerase II or H3K18Cr or immunoglobulin *G* (IgG) overnight at 4°C. The precipitated DNA level was measured by qPCR.

2.8. Statistics. Data in this work were shown as the mean ± SD and were analyzed using Graph Prism 7.0 software. Statistical differences between two or more groups were analyzed using Student's *t*-test or one-way analysis of variance (ANOVA) followed by Tukey's multiple-comparison post hoc test or Dunnett. Correlation among GSDMD, HDAC1, and caspase-1 was analyzed by Pearson correlation analysis. $P < 0.05$ was set to be statistically significant.

3. Results

3.1. The Expression of HDAC1 Is Upregulated in Clinical NSCLC Tissues and Correlated with Poor Prognosis. In order to analyze the correlation of HDAC1 with NSCLC, the expression of HDAC1 was detected in clinical NSCLC samples. We observed that the expression of HDAC1 was upregulated in clinical NSCLC tissues relative to the adjacent normal tissues ($n = 38$) (Figure 1(a)). Significantly, the elevation of NSCLC was correlated with poor prognosis of NSCLC samples (Figure 1(b)). Meanwhile, we validated the enhanced expression of HDAC1 in NSCLC cell lines, including A549, H1299, H460, MES-1, H226, and H661, by comparing with that of normal human bronchial epithelial cell lines BEAS-2B and 16HBE (Figure 1(c)).

3.2. HDAC1 Contributes to PEM Resistance of NSCLC Cells. Next, we were interested in the effect of HDAC1 on PEM resistance of NSCLC cells. To this end, we constructed the PEM-resistant A549 and H1299 cell lines, and the cells were transfected with HDAC1 siRNAs. The effectiveness of HDAC1 depletion by siRNAs was confirmed in the cells (Figure 2(a)). The depletion of HDAC1 remarkably reduced the viability of PEM-resistant A549 and H1299 cells (Figure 2(b)). The proliferation of PEM-resistant A549 and H1299 cells was decreased by HDAC1 knockdown (Figure 2(c)). Significantly, the IC50 of PEM was repressed by the silencing of HDAC1 in the cells (Figure 2(d)).

3.3. HDAC1 Epigenetically Promotes Caspase-1 Expression by Regulating Histone Crotonylation in NSCLC Cells. We then explored the mechanism by which HDAC1 regulates NSCLC. We identified that the enrichment of HDAC1 on the promoter of caspase-1 in PEM-resistant A549 and H1299 cells (Figure 3(a)). The depletion of HDAC1 inhibited the enrichment of histone H3 lysine 18 crotonylation (H3K18cr) and RNA polymerase II (RNA pol II) on the caspase-1 promoter in PEM-resistant A549 and H1299 cells (Figures 3(b) and 3(c)). The expression of caspase-1 was suppressed by HDAC1 knockdown in PEM-resistant A549 and H1299 cells (Figure 3(d)).

3.4. HDAC1 Enhances PEM Resistance of NSCLC Cells by Caspase-1/GSDMD Axis. We then validated the effect of HDAC1/caspase-1/GSDMD axis on NSCLC cells *in vitro*. We observed that the PEM-resistant A549 and H1299 cell viability was suppressed by HDAC1 silencing, while the depletion of caspase-1 or GSDMD could rescue the phenotype (Figure 4(a)). Meanwhile, the knockdown of HDAC1 reduced proliferation of PEM-resistant A549 and H1299 cells, in which caspase-1 or GSDMD depletion reversed the effect (Figure 4(b)).

3.5. The Clinical Association of HDAC1, Caspase-1, and GSDMD in NSCLC Tissues. Next, we evaluated the correlation of HDAC1, caspase-1, and GSDMD in clinical NSCLC tissues. We validated that the expression of caspase-1 and GSDMD was downregulated in NSCLC tissues (Figures 5(a) and 5(b)). The HDAC1 expression was negatively associated with caspase-1 and GSDMD in clinical NSCLC tissues, while caspase-1 and GSDMD expression was positively correlated in the samples (Figure 5(c)).

4. Discussion

NSCLC serves as a predominant subtype of lung cancer and accounts for over 80% of all lung cancer cases, in which PEM resistance significantly limits the NSCLC therapy. HDAC1 regulates histone H3K18cr in cancer development. Nevertheless, the function of HDAC1-mediated H3K18cr on PEM resistance of NSCLC is still unclear. In this study, we indicated the function of HDAC1-mediated H3K18cr in NSCLC PEM resistance.

HDAC1 plays crucial roles in cancer progression. It has been reported that HDAC1 regulates the hepatocyte marker P21 to modulate pediatric liver cancer development [36]. HDAC1 triggers HIF1α/VEGFA signaling in colorectal cancer [37]. HDAC1 promotes migration and proliferation of breast cancer cells by upregulating interleukin-8 [38]. Meanwhile, HDAC1 is involved in the NSCLC development. It has been reported that exosome-derived miR-2682-5p inhibits migration and viability of NSCLC cells by HDAC1-mediated ADH1A [39]. Daxx represses hypoxia-induced metastasis of lung cancer by targeting HDAC1/Slug signaling [40]. HDAC1 depletion attenuates NSCLC progression [31]. Meanwhile, histone crotonylation has been identified in cancer development [41, 42]. However, the effect of HDAC1-mediated H3K18cr on NSCLC remains unclear. In the current work, our data showed that the expression of HDAC1 was upregulated in clinical NSCLC tissues and cell lines and correlated with poor prognosis of NSCLC samples. We constructed the PEM-resistant NSCLC cell lines, and the depletion of HDAC1 remarkably reduced the viability of the cells. The proliferation of PEM-resistant NSCLC cells was decreased by HDAC1 knockdown, and the IC50 of PEM was repressed by the silencing of HDAC1 in the cells. Our data indicate new evidence of the function of HDAC1 in the regulation of PEM sensitivity of NSCLC.

Caspase-1/GSDMD signaling widely participates in cancer development. It has been reported that human myeloid-

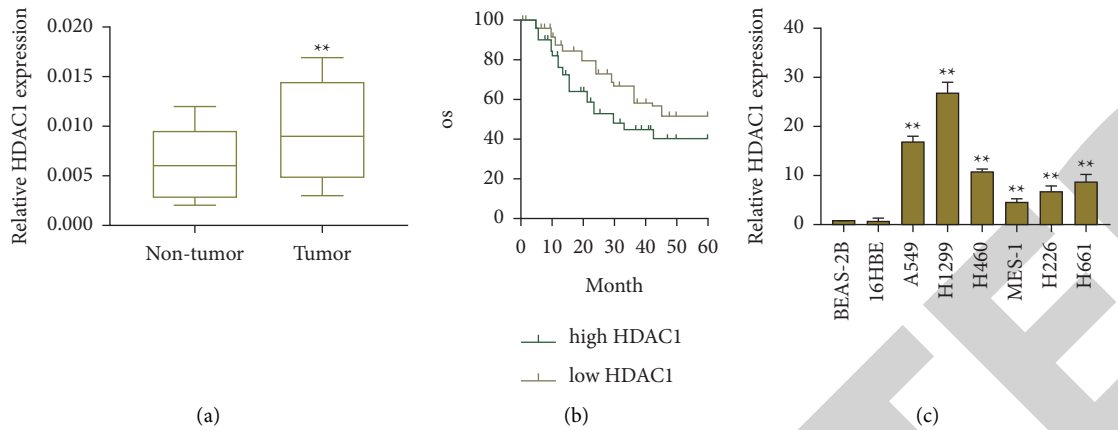


Figure 1: The expression of HDAC1 is upregulated in clinical NSCLC tissues and correlated with poor prognosis. (a) The expression of HDAC1 was determined by qPCR in clinical NSCLC tissues ($n = 38$). (b) The correlation of HDAC1 expression with prognosis of NSCLC patients was analyzed. (c) The expression of HDAC1 was measured in the indicated cells using qPCR. $^{**}P < 0.01$.

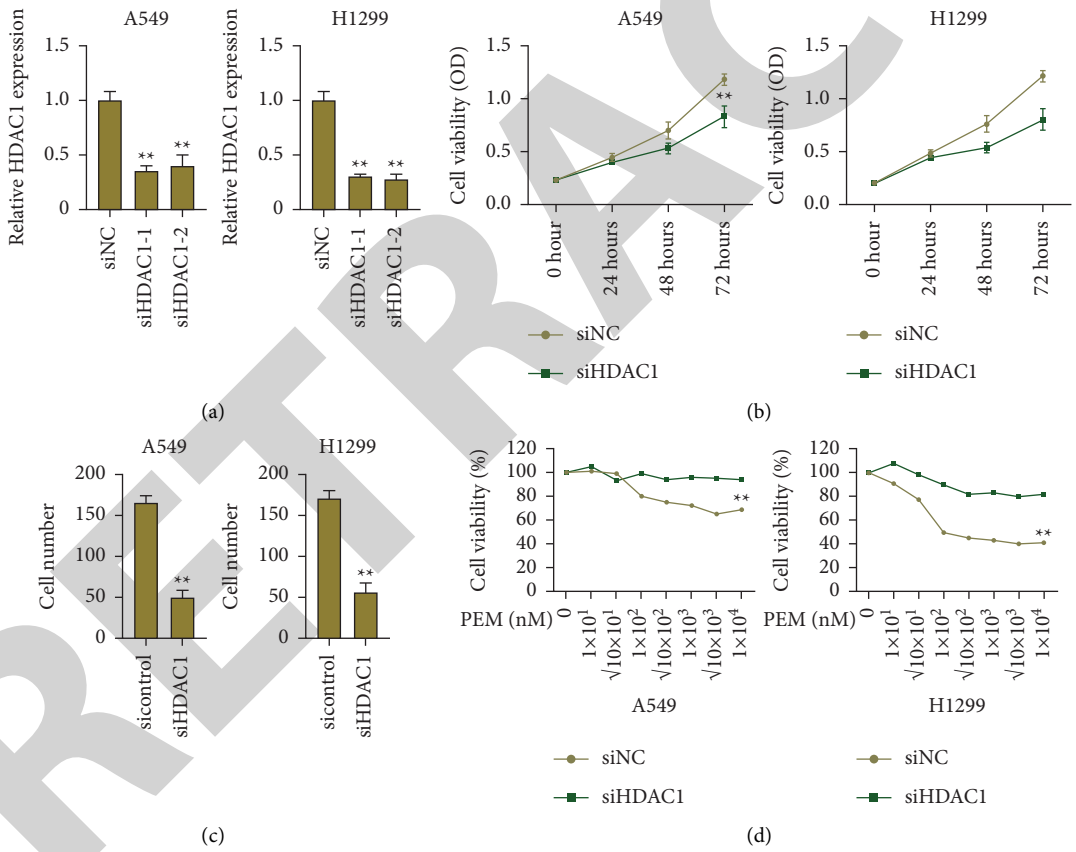


Figure 2: HDAC1 contributes to PEM resistance of NSCLC cells. (a-d) The PEM-resistant A549 and H1299 cells were established and were transfected with HDAC1 siRNAs. (a) The expression of HDAC1 was examined by qPCR in the cells. (b) The cell viability was detected by MTT assays. (c) The cell proliferation was analyzed by colony formation assays. (d) MTT assays of PEM-resistant A549 and H1299 cells treated with the indicated concentrations of PEM for 3 days. $^{**}P < 0.01$.

derived suppressor cell-derived caspase-1 is able to regulate proliferation of T cell-independent tumor [43]. Moreover, it has been reported that polyphyllin VI promotes caspase-1-regulated pyroptosis by inducing ROS/NF-κB/NLRP3/GSDMD signaling in NSCLC [22]. Ophiopogonin B attenuates cisplatin resistance of NSCLC cells by regulating caspase-1/GSDMD axis [18]. In this work, we found the enrichment of HDAC1 on the promoter of caspase-1 in PEM-resistant NSCLC cells. The depletion of HDAC1 inhibited the enrichment of histone H3K18cr and RNA polymerase II (RNA pol II) on the caspase-1 promoter in the cells. The expression of caspase-1 was suppressed by HDAC1 knockdown. The knockdown of

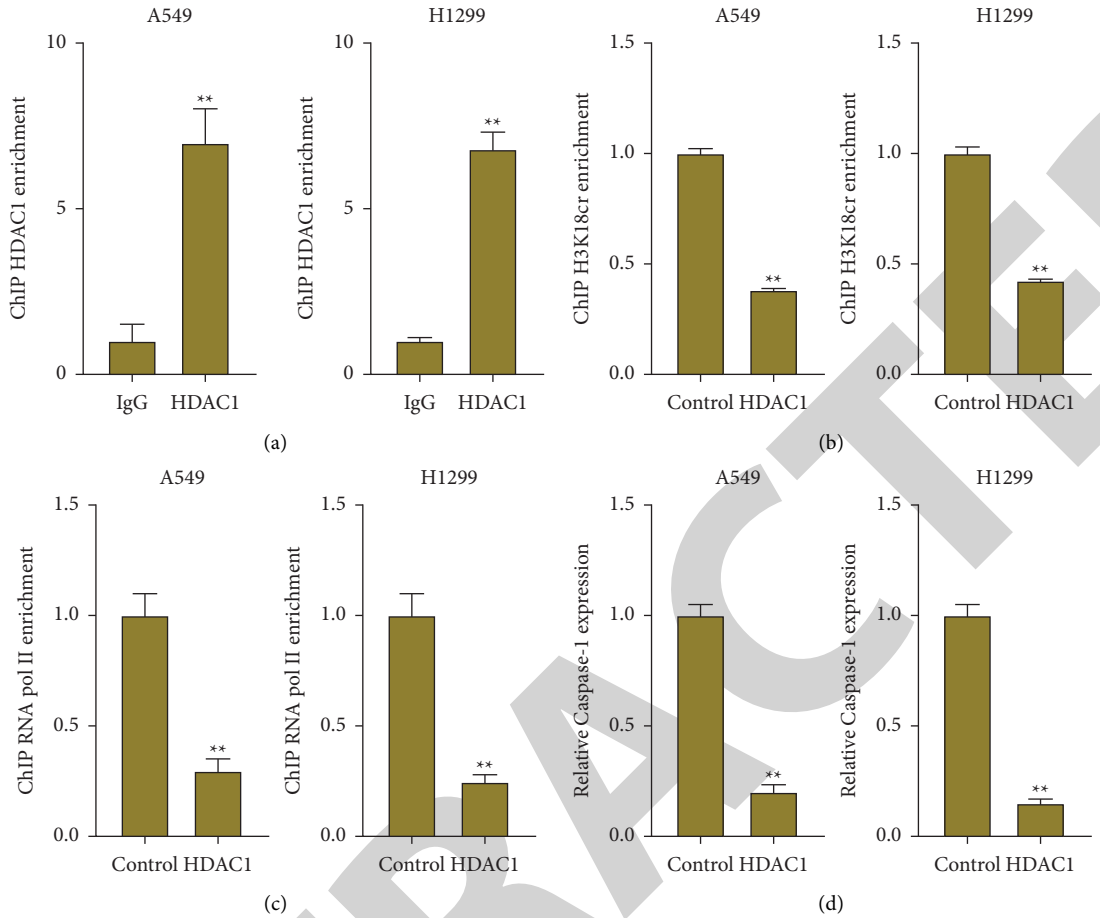
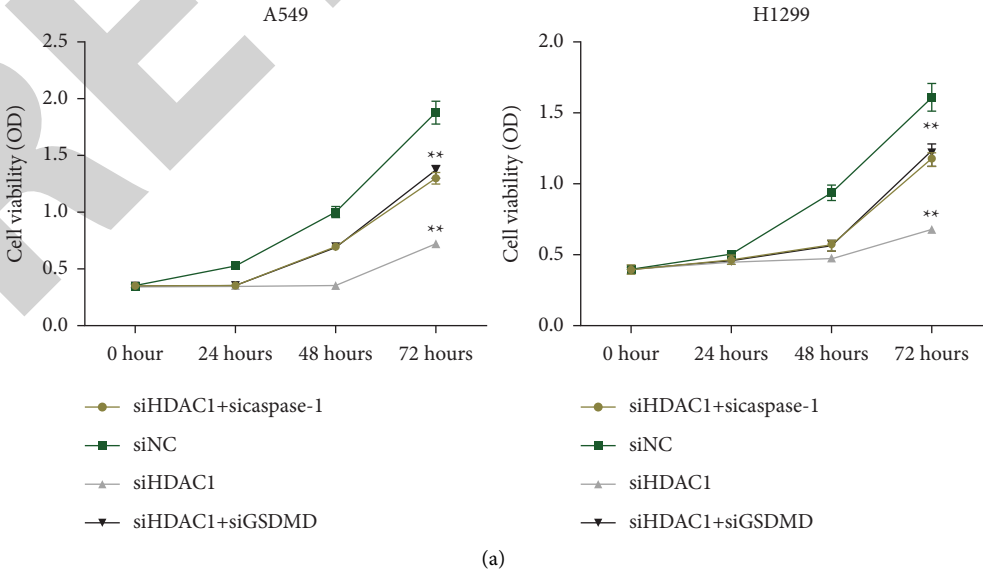


Figure 3: HDAC1 epigenetically promotes Caspase-1 expression by regulating histone crotonylation in NSCLC cells. (a) The enrichment of HDAC1 on caspase-1 promoter was detected by ChIP-qPCR in PEM-resistant A549 and H1299 cells. (b-d) The PEM-resistant A549 and H1299 cells were transfected with HDAC1 overexpressing plasmid. (b) and (c) The enrichment of histone H3 lysine 18 crotonylation (H3K18cr) and RNA polymerase II (RNA pol II) on caspase-1 promoter was measured by ChIP-qPCR. (d) The expression of Caspase-1 was determined by qPCR in the cells. $^{**}P < 0.01$.



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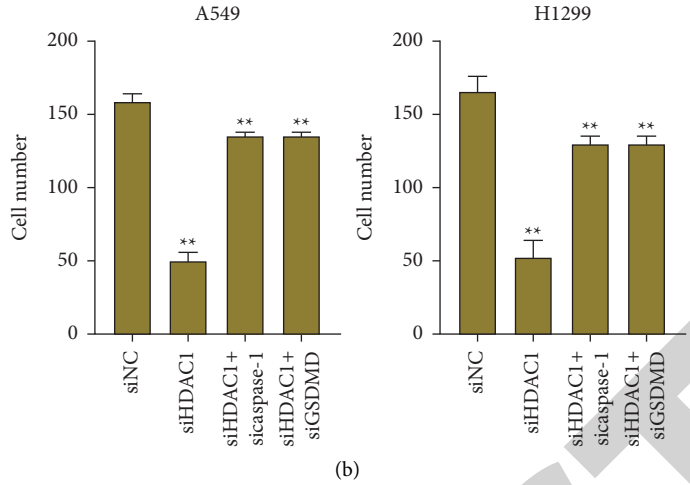

Figure 4: HDAC1 enhances PEM resistance of NSCLC cells by Caspase-1/GSDMD axis. (a and b) The PEM-resistant A549 and H1299 cells were transfected with HDAC1 siRNA and Caspase-1/GSDMD siRNA. (a) The cell viability was detected by MTT assays. (b) The cell proliferation was analyzed by colony formation assays. $^{**}P < 0.01$.

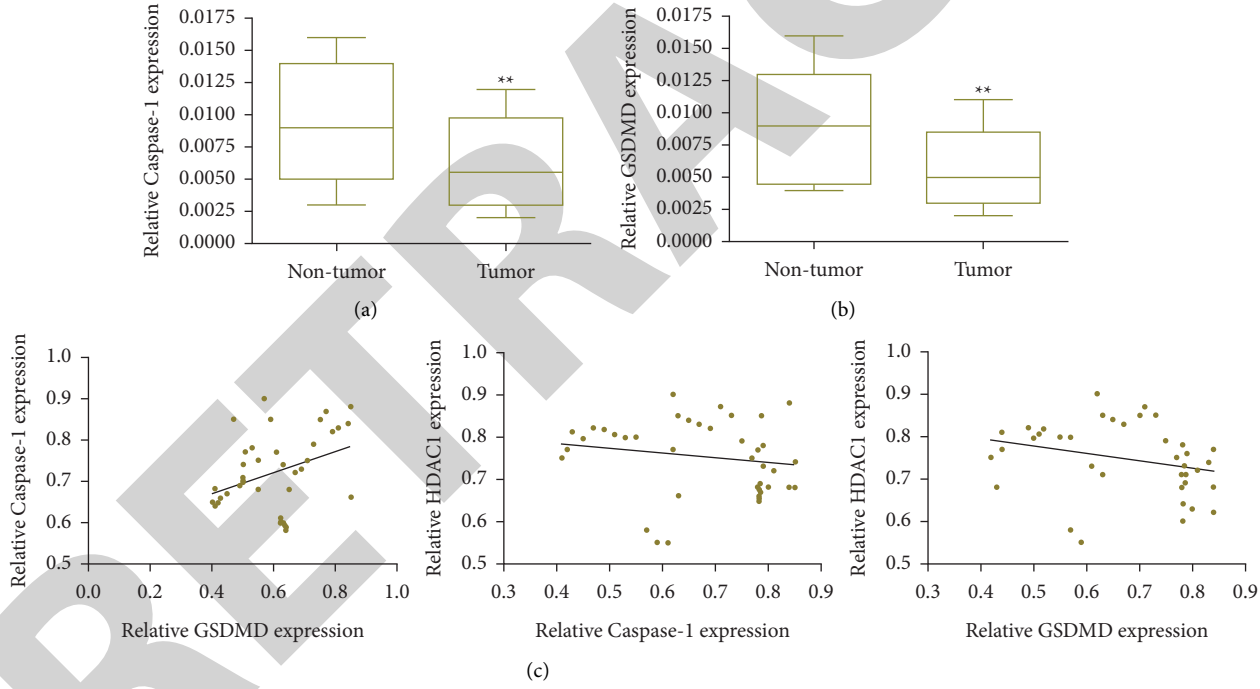

Figure 5: The clinical association of HDAC1, Caspase-1, and GSDMD in NSCLC tissues. (a) and (b) The expression of Caspase-1 and GSDMD was determined by qPCR in clinical NSCLC tissues ($n = 38$). (c) The expression correlation of HDAC1, Caspase-1, and GSDMD was analyzed in clinical NSCLC tissues ($n = 38$). $^{**}P < 0.01$.

HDAC1 reduced proliferation of PEM-resistant NSCLC cells, in which caspase-1 or GSDMD depletion reversed the effect. Clinically, the HDAC1 expression was negatively associated with caspase-1 and GSDMD in clinical NSCLC tissues, while caspase-1 and GSDMD expression was positively correlated in the samples. Our data indicate a new mechanism of HDAC1-mediated H3K18cr in the epigenetic regulation during NSCLC progression.

Consequently, we concluded that HDAC1-catalyzed histone crotonylation of caspase-1 modulates PEM sensitivity of NSCLC by targeting GSDMD.

Data Availability

The datasets used during the present study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interests.

Acknowledgments

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References

[1] M. Alexander, S. Y. Kim, and H. Cheng, "Update 2020: management of non-small cell lung cancer," *Lung*, vol. 198, no. 6, pp. 897–907, 2020.

[2] F. Nasim, B. F. Sabath, and G. A. Eapen, "Lung cancer," *Medical Clinics of North America*, vol. 103, no. 3, pp. 463–473, 2019.

[3] N. Duma, R. Santana-Davila, and J. R. Molina, "Non-small cell lung cancer: epidemiology, screening, diagnosis, and treatment," *Mayo Clinic Proceedings*, vol. 94, no. 8, pp. 1623–1640, 2019.

[4] F. R. Hirsch, G. V. Scagliotti, J. L. Mulshine et al., "Lung cancer: current therapies and new targeted treatments," *The Lancet*, vol. 389, no. 10066, pp. 299–311, 2017.

[5] M. B. Schabath and M. L. Cote, "Cancer progress and priorities: lung cancer," *Cancer Epidemiology, Biomarkers & Prevention*, vol. 28, no. 10, pp. 1563–1579, 2019.

[6] T. Le Chevalier, "The emerging role of pemetrexed (Alimta) and gemcitabine in non-small cell lung cancer," *Seminars in Oncology*, vol. 30, pp. 37–44, 2003.

[7] S. Novello and T. le Chevalier, "ALIMTA (pemetrexed disodium, LY231514, MTA): clinical experience in non-small cell lung cancer," *Lung Cancer*, vol. 34, pp. S107–S109, 2001.

[8] T. Li, S. Pan, S. Gao et al., "Diselenide-Pemetrexed assemblies for combined cancer immuno-radio-and chemotherapies," *Angewandte Chemie*, vol. 132, no. 7, pp. 2722–2726, 2020.

[9] C. S. Lu, C. W. Lin, Y. H. Chang et al., "Antimetabolite pemetrexed primes a favorable tumor microenvironment for immune checkpoint blockade therapy," *Journal for immunotherapy of cancer*, vol. 8, no. 2, Article ID e001392, 2020.

[10] Y. Yang, Z. Wang, J. Fang et al., "Efficacy and safety of sintilimab plus pemetrexed and platinum as first-line treatment for locally advanced or metastatic nonsquamous NSCLC: a randomized, double-blind, phase 3 study (oncology pRogram by InnovENT anti-PD-1-11)," *Journal of Thoracic Oncology*, vol. 15, no. 10, pp. 1636–1646, 2020.

[11] I. Okamoto, H. Nokihara, S. Nomura et al., "Comparison of carboplatin plus pemetrexed followed by maintenance pemetrexed with docetaxel monotherapy in elderly patients with advanced nonsquamous non-small cell lung cancer: a phase 3 randomized clinical trial," *JAMA Oncology*, vol. 6, no. 5, Article ID e196828, 2020.

[12] K. Morimoto, T. Yamada, T. Yokoi et al., "Clinical impact of pembrolizumab combined with chemotherapy in elderly patients with advanced non-small-cell lung cancer," *Lung Cancer*, vol. 161, pp. 26–33, 2021.

[13] E. B. Garon, J. Aerts, J. S. Kim et al., "Safety of pemetrexed plus platinum in combination with pembrolizumab for metastatic nonsquamous non-small cell lung cancer: a post hoc analysis of KEYNOTE-189," *Lung Cancer*, vol. 155, pp. 53–60, 2021.

[14] J. Chen, Z. Wang, S. Gao et al., "Human drug efflux transporter ABCC5 confers acquired resistance to pemetrexed in breast cancer," *Cancer Cell International*, vol. 21, no. 1, 2021.

[15] H. T. Shen, P. J. Chien, S. H. Chen et al., "Bmi1-mediated pemetrexed resistance in non-small cell lung cancer cells is associated with increased sp1 activation and cancer stemness," *Cancers*, vol. 12, 2020.

[16] J. Liang, T. Lu, Z. Chen, C. Zhan, and Q. Wang, "Mechanisms of resistance to pemetrexed in non-small cell lung cancer," *Translational Lung Cancer Research*, vol. 8, no. 6, pp. 1107–1118, 2019.

[17] M. Nagasaka and S. M. Gadgeel, "Role of chemotherapy and targeted therapy in early-stage non-small cell lung cancer," *Expert Review of Anticancer Therapy*, vol. 18, no. 1, pp. 63–70, 2018.

[18] Z. Cheng, Z. Li, L. Gu et al., "Ophiopogonin B alleviates cisplatin resistance of lung cancer cells by inducing Caspase-1/GSDMD dependent pyroptosis," *Journal of Cancer*, vol. 13, no. 2, pp. 715–727, 2022.

[19] B. E. Burdette, A. N. Esparza, H. Zhu, and S. Wang, "Gasdermin D in pyroptosis," *Acta Pharmaceutica Sinica B*, vol. 11, no. 9, pp. 2768–2782, 2021.

[20] J. Gao, X. Qiu, G. Xi et al., "Downregulation of GSDMD attenuates tumor proliferation via the intrinsic mitochondrial apoptotic pathway and inhibition of EGFR/Akt signaling and predicts a good prognosis in non-small cell lung cancer," *Oncology Reports*, vol. 40, no. 4, pp. 1971–1984, 2018.

[21] H. Yan, B. Luo, X. Wu et al., "Cisplatin induces pyroptosis via activation of MEG3/NLRP3/caspase-1/GSDMD pathway in triple-negative breast cancer," *International Journal of Biological Sciences*, vol. 17, no. 10, pp. 2606–2621, 2021.

[22] J. F. Teng, Q. B. Mei, X. G. Zhou et al., "Polyphyllin vi induces caspase-1-mediated pyroptosis via the induction of ros/nf-κb/nlrp3/gsdmd signal axis in non-small cell lung cancer," *Cancers*, vol. 12, 2020.

[23] R. Yuan, W. Zhao, Q. Q. Wang et al., "Cucurbitacin B inhibits non-small cell lung cancer in vivo and in vitro by triggering TLR4/NLRP3/GSDMD-dependent pyroptosis," *Pharmacological Research*, vol. 170, Article ID 105748, 2021.

[24] M. Tan, H. Luo, S. Lee et al., "Identification of 67 histone marks and histone lysine crotonylation as a new type of histone modification," *Cell*, vol. 146, no. 6, pp. 1016–1028, 2011.

[25] J. Wan, H. Liu, and L. Ming, "Lysine crotonylation is involved in hepatocellular carcinoma progression," *Biomedicine & Pharmacotherapy*, vol. 111, pp. 976–982, 2019.

[26] R. D. W. Kelly, A. Chandru, P. J. Watson et al., "Histone deacetylase (HDAC) 1 and 2 complexes regulate both histone acetylation and crotonylation in vivo," *Scientific Reports*, vol. 8, Article ID 14690, 2018.

[27] H. Sasaki, S. Moriyama, Y. Nakashima et al., "Histone deacetylase 1 mRNA expression in lung cancer," *Lung Cancer*, vol. 46, no. 2, pp. 171–178, 2004.

[28] T. Ma, B. Yan, Y. Hu, and Q. Zhang, "HOXA10 promotion of HDAC1 underpins the development of lung adenocarcinoma through the DNMT1-KLF4 axis," *Journal of Experimental & Clinical Cancer Research*, vol. 40, no. 1, 2021.

[29] L. L. Cao, X. Song, L. Pei, L. Liu, H. Wang, and M. Jia, "Histone deacetylase HDAC1 expression correlates with the progression and prognosis of lung cancer: a meta-analysis," *Medicine (Baltimore)*, vol. 96, no. 31, Article ID e7663, 2017.

[30] L. L. Zhang, Q. Li, D. S. Zhong, W. J. Zhang, X. J. Sun, and Y. Zhu, "MCM5 aggravates the HDAC1-mediated malignant progression of lung cancer," *Frontiers in Cell and Developmental Biology*, vol. 9, Article ID 669132, 2021.

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Retraction

Retracted: A Study of Heat Shock Protein 90 and Serum CCL21 Expression in Pregnant Women with Preeclampsia

Evidence-Based Complementary and Alternative Medicine

Received 20 June 2023; Accepted 20 June 2023; Published 21 June 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.

References

[1] W. Yang, X. Yang, S. Zhang, L. Zhang, W. Wang, and L. Wang, "A Study of Heat Shock Protein 90 and Serum CCL21 Expression in Pregnant Women with Preeclampsia," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 1601431, 5 pages, 2022.

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Research Article

A Study of Heat Shock Protein 90 and Serum CCL21 Expression in Pregnant Women with Preeclampsia

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Objective. The purpose of the study was to determine the significance of heat shock protein 90 (HSP 90) and serum chemokine ligand 21 (CCL-21) in pregnant women with preeclampsia (PE). *Methods.* From June 2021 to June 2022, the study enrolled 100 women undergoing obstetric examinations and delivering in our hospital; 50 PE patients undergoing routine obstetric examinations and delivering during the same period were enrolled in the research group; according to the severity, they were divided into mild PE and severe PE groups, while 50 healthy pregnant women undergoing obstetric examinations and delivering in our hospital during the same period were enrolled in the control group. In a subsequent analysis, serum levels of CCL-21 and HSP90 were compared between the two groups, and the correlation among CCL-21, HSP 90, and PE severity was analyzed. *Results.* An overall total of 50 patients with PE were enrolled in the study, which included 32 patients with mild PE and 18 patients with severe PE. Patients with severe PE had lower mean arterial pressure (MAP), HSP 90, and CCL21 index levels than those with mild PE; MAP, HSP 90, and CCL21 in the severe PE group were higher than those in the mild PE group, but the difference was not statistically significant; In the research group, MAP was weakly correlated with HSP90 concentration and CCL21 concentration, with correlation coefficients of 0.33 and 0.30, respectively, and the correlation analysis was significant. *Conclusion.* Patients with PE showed significantly increased serum concentrations of HSP90 and CCL-21, but a significant difference did not exist between mild and severe PE. In addition, there was a weak relationship between HSP90 and CCL-21 concentrations in PE patients and MAP, suggesting that HSP90 and CCL-21 play an instrumental role in the pathogenesis of PE, although more studies are needed to clarify the exact mechanisms.

1. Introduction

Preeclampsia (PE) is a common pregnancy-specific disease with potentially adverse outcomes for mothers and newborns, affecting approximately 3–5% of pregnant women [1]. Recent guidelines define PE as recurrent hypertension after 20 weeks of gestation with the following symptoms: urinary protein >300 mg/day; organ dysfunction (including renal insufficiency, liver dysfunction, and neurological or hematological complications); uterine complications including placental dysfunction (leading to fetal growth restriction). At present, anticoagulant drugs such as aspirin and low molecular weight heparin are widely used at home and abroad for the prevention of PE. The treatment of PE commonly relied on magnesium sulfate combined with labetalol and other antihypertensive drugs. Although effective in reducing the probability of its toxicity, the use of antihypertensive drugs during pregnancy poses certain risks to maternal and infant health [2]. Traditional Chinese medicine (TCM) classifies PE into the category of "sub-swollen" and "sub-halo" and believes that the location is mostly in the kidney and also in the liver and spleen and is attributable to qi stagnation and blood stasis. Medicines for calming the liver and suppressing wind, tonifying qi and strengthening the spleen, promoting blood circulation, and removing blood stasis are used for prevention and treatment. However, most TCM only evaluates the efficacy of the drug without clarifying its underlying mechanism of action.

Though great strides have been made in detecting and treating PE as early as possible, its prognosis still remains a

significant issue in perinatal medicine [3]. As of now, little is known about the pathogenesis of PE, but it is closely associated with a number of factors, such as placental ischemia and vascular endothelial injury [4]. In the body, heat shock proteins (HSPs) are closely related to many cellular active factors, and they are important in the regulation of many physiological functions, such as cell proliferation, body development, and immunity; for example, when the body is under stress, heat shock proteins may be able to maintain cellular homeostasis [5, 6]. Heat shock protein 90, also called HSP90, is a protein that has been found to promote the folding and maturation of several client proteins through the ATP cycle with the participation of cochaperone proteins and then accurately control various biological processes such as gene expression, cell cycle, and proliferation [7]. Consequently, HSP90 is an important component of the cellular signal transduction network, which plays an important role in maintaining the homeostasis of the cellular environment. A chemokine can be defined as a class of small cytokines or signaling molecules secreted by cells that have the ability to stimulate chemotaxis in nearby cells. As a member of the CC chemokine subfamily, CCL21 is highly expressed in the T-cell region of high endothelial venules and lymph nodes of secondary lymphoid tissue in humans; there is an expression of its receptor CCR7 in naive T-cells, B cells, DC cells, and numerous tumor cells [8, 9]. In spite of their involvement in many functions of the body, HSP90 and CCL21 do not show any signs of expression during PE.

To investigate the mechanism of PE, this study included PE patients and compared the differences in their expression of HSP90 and CCL21 to the expression of these molecules in healthy pregnant women.

2. Materials and Methods

2.1. General Data. This paper is an exploratory study aimed at discovering the regularities and hypothesizing the related mechanisms. A total of 50 PE patients who underwent routine obstetric examinations and gave birth at our hospital between June 2021 and June 2022 were selected for the research group. Meanwhile, 50 healthy pregnant women with normal gestational age, pregnancy, and body mass index (BMI) were selected as the control group. Prior to the commencement of this study, all subjects signed an informed consent form voluntarily, and Shijiazhuang Obstetrics and Gynecology Hospital's Ethics Committee reviewed the consent form and approved it (No. 2019–22/254).

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria. All patients who met the following criteria were included in this study:

(i) Patients in the PE group who had been diagnosed with PE.

(ii) Patients who had a singleton pregnancy.

(iii) Patients whose results of HIV testing and other infectious diseases were negative.

(iv) Patients who were aged less than 35 years of age.

2.2.2. Exclusion Criteria. The following patients were excluded from the study:

(i) Patients had severe renal disease, gastrointestinal disease, coronary heart disease, mental illness, or alcoholism;

(ii) Patients had recently experienced trauma or surgery (within one month);

(iii) Patients previously had a cesarean section;

(iv) Patients had no other health records except for those related to gestational diabetes mellitus.

2.3. The Diagnostic Criteria. The criteria for preeclampsia: the first occurrence of systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥90 mmHg after 20 weeks of pregnancy, and proteinuria, that is, urine protein ≥0.3 g/24 h. At least one of the following criteria can be diagnosed as severe preeclampsia: two systolic blood pressure ≥160 mmHg or diastolic blood pressure ≥110 mmHg for patients on bed rest 6 hours apart; proteinuria: ≥5 g/24 h or twice urine protein at 4-hour interval; oliguria: 24-hour urine output <500 ml; brain or visual disturbances; pulmonary edema or cyanosis; epigastric or right upper quadrant pain; impaired liver function; platelets decreased; fetal growth restriction.

2.4. Observation Indicators. The patient's age, gestational age, parity, BMI, blood pressure, and other information were collected at the time of admission, fasting venous blood was collected in the morning upon admission, and enzyme-linked immunosorbent assay (ELISA) tests were used to determine the levels of HSP90 and CCL21 in peripheral blood. All ELISA kits were obtained by Thermo Fisher Scientific (US), with the cat no. BMS2090 of HSP90 and cat no. 88-58214-22 of CCL21.

2.5. Statistical Analysis. All data analysis were performed using SPSS 22.0, and graphs were visualized using *R* software. The measurements were expressed as (mean standard ± deviation), while the counts were expressed as a rate; a *t*-test and chi-square test were conducted to determine whether a statistical difference existed between the groups. Correlation analysis between measurement data was performed using individual correlation analysis. All outcomes were calculated at $\alpha = 0.05$ as the limit of statistical significance.

3. Results

3.1. General Data Comparison. The results of Table 1 indicate that there was no significant difference between the control and PE groups in terms of general characteristics such as age, gestational age, parity, and body mass index. Compared to the control group, the PE group had elevated systolic and diastolic blood pressures, and the difference was statistically significant (all $P < 0.05$).

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

	Control group ($n = 50$)	Research group ($n = 50$)	t/x^2	P
Age (years)	28.61 ± 5.85	29.48 ± 6.22	0.72	0.47
Gestational week	35.12 ± 3.56	34.11 ± 4.25	1.29	0.20
Parity (primi/parity)	24/26	29/21	1.00	0.31
SBP (mmHg)	118.85 ± 18.59	149.58 ± 22.54	7.44	<0.001
DBP (mmHg)	72.59 ± 14.52	101.25 ± 23.33	7.38	<0.001
Body mass index (kg/m2)	30.24 ± 5.26	31.08 ± 5.11	0.81	0.42

3.1.1. Comparative Analysis of the Expression Levels of MAP, HSP 90, and CCL21 between the Two Groups of Patients. As can be seen in Table 2, the MAP, HSP 90, and CCL21 levels in the research group showed an upward trend as compared to the control group (all $P < 0.05$).

3.2. Comparison of MAP, HSP 90, and CCL21 Expression Levels among Patients with Different Stages of PE. Table 3 shows a higher level of MAP, HSP 90, and CCL21 in the patients with severe PE as compared to those with mild PE, but the differences were not statistically significant (all $P > 0.05$).

3.3. Analysis of Correlation between HSP90, CCL21, and MAP in the Research Group. MAP levels in the research group were weakly correlated with HSP90 and CCL21 concentrations, with correlation coefficients of 0.33 and 0.30, respectively (all $P < 0.05$) (Figure 1).

Table 2: Comparison of the expression levels of MAP, HSP 90, and CCL21 in the two groups of patients.

	MAP	HSP 90	CCL21
Research group ($n = 32$)	128.59 ± 22.28	1.27 ± 0.34	139.86 ± 17.74
Control group ($n = 18$)	89.14 ± 13.47	0.92 ± 0.23	112.24 ± 13.47
t	10.71	6.03	8.77
P	<0.001	<0.001	<0.001

Table 3: Comparison of expression levels of MAP, HSP 90, and CCL21 in patients with different degrees of eclampsia.

	MAP	HSP 90	CCL21
Mild PE ($n = 32$)	121.63 ± 15.83	1.24 ± 0.31	136.21 ± 24.18
Severe PE ($n = 18$)	126.61 ± 10.93	1.41 ± 0.37	146.33 ± 26.70
t	1.183	1.725	1.368
P	0.243	0.089	0.178

4. Discussion

It is believed that PE is one of the main causes of maternal mortality worldwide, and the perinatal mortality rate for PE-affected pregnant women is five times higher than for normal pregnant women [10]. Although the exact cause of PE has not been fully elucidated, it is associated with abnormalities of the placenta during the first trimester of pregnancy. Cytotrophoblast cells invade the uterine spiral arteries during normal pregnancy, causing the arterioles to dilate [11]. However, in PE, the cytotrophoblast cells are unable to adequately invade the spiral arteries, resulting in a decreased placental blood flow and increased placental oxidative stress [12]. Since the symptoms of PE are atypical in the early stages, the study of serum markers may help to explain the pathogenesis of PE at the level of proteins, as well as provide a means of detecting, monitoring, and preventing it.

The results of this study showed that MAP, HSP90, and CCL21 in PE patients were significantly higher than those in normal pregnant women; HSP90 and CCL21 in the severe PE group were higher than those in the mild PE group, but the difference was not statistically significant. Both HSP90 and CCL21 concentrations were weakly correlated, with correlation coefficients of 0.33 and 0.30, respectively. HSP is a highly conserved molecule and a major molecular regulator whose expression is enhanced by various stress conditions and is involved in protein homeostasis [13]. As one of the main HSP proteins, HSP90 is a vital node of the cell signal transduction network, which is vital to maintaining the homeostasis of the intracellular environment [14]. The HSP90 receptor protein has been identified as closely related to apoptosis and signal transduction. In response to stimuli from the outside world, HSP plays an important role in stimulating or reactivating cell death [15, 16]. There is evidence that HSP90 is highly expressed in placental trophoblast cells, and it is speculated that this increase may be the result of secondary mechanisms, such as inflammation, but is not necessarily the cause of the symptoms of PE [17]. Chemokines are multiple-function mediators which are primarily involved in the mobilization of leukocytes to inflammatory tissues [18]. In the progression of tumors, CCL21 plays a dual role, promoting the immune response to the tumors while causing metastasis of tumor cells into lymph nodes that are overexpressed with SLC [19]. The lack of significant results in this study may be related to the small sample size. The research on the relationship between CCL21 and eclampsia has not been reported up to now, but it can be speculated that CCL21 may play a role in the pathogenesis of eclampsia. The results of Coşkun Güzel et al. showed that HSP90 was significantly elevated in the third trimester and may play a role in the pathogenesis of preeclampsia [17].

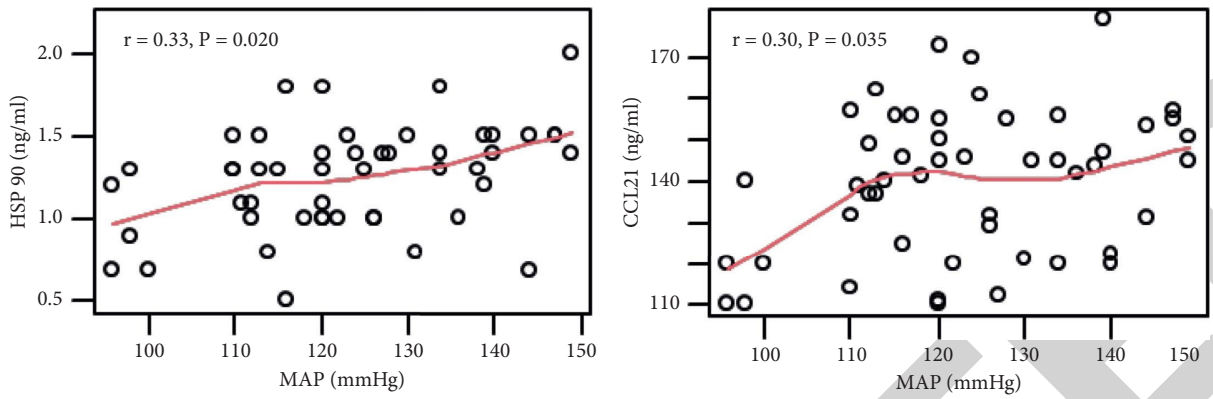

Figure 1: Correlation analysis of the MAP concentration with the concentrations of HSP90 and CCL21.

However, this study has the following limitations. First of all, this study is not a randomized controlled study, and the reliability is low. Secondly, this study is a clinical study, only the concentration and correlation of HSP90 and CCL21 were discussed, and the mechanism between them was not studied in depth.

5. Conclusion

In conclusion, serum concentrations of HSP90 and CCL21 were significantly higher in PE patients, but there was no significant difference between mild and severe PE. In addition, the concentrations of HSP90 and CCL21 in PE patients were weakly correlated with MAP, which suggests that they are associated with the pathogenesis of preeclampsia, but the specific mechanism remains to be determined.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] S. Rana, E. Lemoine, J. P. Granger, and S. A. Karumanchi, "Preeclampsia: pathophysiology, challenges, and perspectives," *Circulation Research*, vol. 124, no. 7, pp. 1094–1112, 2019.

[2] M. Döbert, A. N. Varouxaki, A. C. Mu et al., "Pravastatin versus placebo in pregnancies at high risk of term preeclampsia," *Circulation*, vol. 144, no. 9, pp. 670–679, 2021.

[3] A. A. F. El-Syed, "Preeclampsia: A review of the pathogenesis and possible management strategies based on its pathophysiological derangements," *Taiwanese Journal of Obstetrics and Gynecology*, vol. 56, pp. 593–598, 2017.

[4] T. Tomimatsu, K. Mimura, S. Matsuzaki, M. Endo, K. Kumasawa, and T. Kimura, "Preeclampsia: maternal systemic vascular disorder caused by generalized endothelial dysfunction due to placental antiangiogenic factors," *International Journal of Molecular Sciences*, vol. 20, no. 17, p. 4246, 2019.

[5] T. Zininga, L. Ramatsui, and A. Shonhai, "Heat shock proteins as immunomodulants," *Molecules*, vol. 23, no. 11, p. 2846, 2018.

[6] G. Morrow and R. M. Tanguay, "Small heat shock protein expression and functions during development," *The International Journal of Biochemistry and Cell Biology*, vol. 44, no. 10, pp. 1613–1621, 2012.

[7] A. D. Zuehlke, M. A. Moses, and L. Neckers, "Heat shock protein 90: its inhibition and function," *Philosophical Transactions of the Royal Society B: Biological Sciences*, vol. 373, no. 1738, Article ID 20160527, 2018.

[8] Y. Chen, Z. Shao, E. Jiang et al., "CCL21/CCR7 interaction promotes EMT and enhances the stemness of OSCC via a JAK2/STAT3 signaling pathway," *Journal of Cellular Physiology*, vol. 235, no. 9, pp. 5995–6009, 2020.

[9] M. S. Tanner, M. A. Davey, B. W. Mol, and D. L. Rolnik, "The evolution of the diagnostic criteria of preeclampsia-eclampsia," *American Journal of Obstetrics and Gynecology*, vol. 226, no. 2, pp. S835–S843, 2022.

[10] A. Malik, B. Jee, and S. K. Gupta, "Preeclampsia: disease biology and burden, its management strategies with reference to India," *Pregnancy Hypertension*, vol. 15, pp. 23–31, 2019.

[11] E. A. Phipps, R. Thadhani, T. Benzing, and S. A. Karumanchi, "Pre-eclampsia: pathogenesis, novel diagnostics and therapies," *Nature Reviews Nephrology*, vol. 15, no. 5, pp. 275–289, 2019.

[12] R. Hofmeyr, M. Matjila, and R. Dyer, "Preeclampsia in 2017: obstetric and anaesthesia management," *Best Practice & Research Clinical Anaesthesiology*, vol. 31, no. 1, pp. 125–138, 2017.

[13] J. Saini and P. K. Sharma, "Clinical, prognostic and therapeutic significance of heat shock proteins in cancer," *Current Drug Targets*, vol. 19, no. 13, pp. 1478–1490, 2018.

[14] K. Li, Y. Xue, A. Chen et al., "Heat shock protein 90 has roles in intracellular calcium homeostasis, protein tyrosine phosphorylation regulation, and progesterone-responsive sperm function in human sperm," *PLoS One*, vol. 9, no. 12, Article ID e115841, 2014.

[15] C. Prodromou, "Mechanisms of Hsp90 regulation," *Biochemical Journal*, vol. 473, no. 16, pp. 2439–2452, 2016.

[16] O. Genest, S. Wickner, and S. M. Doyle, "Hsp90 and Hsp70 chaperones: collaborators in protein remodeling," *Journal of Biological Chemistry*, vol. 294, no. 6, pp. 2109–2120, 2019.

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Retraction

Retracted: Clinical Efficacy of Levothyroxine Sodium plus I 131 in the Treatment of Patients with Thyroidectomy and Its Effect on the Levels of Thyroglobulin and Thyrotropin

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Pang, Y. Wang, and K. Cheng, "Clinical Efficacy of Levothyroxine Sodium plus I 131 in the Treatment of Patients with Thyroidectomy and Its Effect on the Levels of Thyroglobulin and Thyrotropin," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 9557061, 6 pages, 2022.

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Research Article

Clinical Efficacy of Levothyroxine Sodium plus I 131 in the Treatment of Patients with Thyroidectomy and Its Effect on the Levels of Thyroglobulin and Thyrotropin

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Objective. This study was to evaluate the clinical efficacy of levothyroxine sodium tablets combined with I 131 in the treatment of patients after thyroidectomy and the effect on thyroglobulin (Tg) and thyroid stimulating hormone (TSH) levels. *Methods*. 80 patients with differentiated thyroid cancer who required thyroidectomy after surgery between July 2019 and January 2021 were recruited for prospective study, 40 patients in the control group received levothyroxine sodium tablets, and 40 patients in the experimental group received levothyroxine sodium treatment plus I 131 treatment. Treatment effect, serum Tg and TSH levels, and relapse were measured. *Results*. The removal rate of residual thyroid tissue in the experimental group (87.50%) was significantly higher than that in the control group (57.50%) ($P < 0.05$). Levothyroxine sodium tablets plus I 131 was associated with a significantly higher efficacy versus levothyroxine sodium tablets ($P < 0.05$). There were no significant differences in the serum Tg levels between the two groups before treatment ($P > 0.05$). After treatment, the serum Tg levels in both groups were significantly decreased, and levothyroxine sodium tablets plus I 131 resulted in a significantly lower Tg level versus levothyroxine sodium tablets ($P < 0.05$). Before treatment, the two groups showed similar TSH levels ($P > 0.05$). After treatment, patients receiving levothyroxine sodium tablets plus I 131 had a significantly greater increase in the TSH levels versus levothyroxine sodium tablets ($P < 0.05$). The recurrence rate of the experimental group was lower than that of the control group ($P < 0.05$). *Conclusion*. Levothyroxine sodium tablets plus I 131 for post-operative patients with differentiated thyroid cancer enhance the removal rate of residual thyroid tissue, effectively reduce serum Tg level, and increase TSH level, with significant therapeutic effects, low recurrence rates, and a high safety profile.

1. Introduction

Thyroid cancer [1, 2] is the most common endocrine tumor accounting for about 1% of all malignant tumors in the body, and most thyroid cancers develop in one lobe of the thyroid gland, often as a single tumor [3]. The incidence of thyroid cancer has been increasing year by year worldwide, with a male to female ratio of about 1 : 3.2 [4]. The onset of the disease is related to region, race, and gender, and the first sign is enlarged lymph nodes in the neck in about 10% of cases. Thyroid cancer is classified into differentiated and undifferentiated types according to histology [5], and differentiated thyroid cancer accounts for about 95% of thyroid tumors, mainly including papillary thyroid carcinoma (PTC) and follicular thyroid carcinoma (FTC). PTC is slow growing, less malignant, and usually has a better prognosis, accounting for about 75% of all thyroid cancers. Related studies reported that the 5-year survival rate of patients could reach 90% after surgical treatment. FTC is pathologically characterized by the absence of gliosis in small follicles, and its malignancy is significantly higher than that of PTC. The mass grows relatively fast, and 1/3 of patients develop lung, bone, liver, and other organ metastasis, whereas lymph node metastasis is uncommon. PTC

accounts for about 16% of all thyroid cancers, and most cases are easily confused with FTC symptoms, making diagnosis and subsequent treatment difficult [6]. The main clinical treatment is a comprehensive treatment based on surgery, but surgical treatment is insufficient to obtain a complete cure. Thus, there exists a need to explore effective post-operative therapy to prolong patient survival. I 131 [7] is a radioisotope of elemental iodine, an artificial radionuclide (nuclear fission product) [8], which is currently the preferred option for the treatment of differentiated thyroid cancer after surgery as it effectively improves patient prognosis and prevents its metastasis and recurrence [9, 10]. Its use in high doses is predisposed to a variety of adverse effects, such as gastrointestinal reactions, transient myelosuppression, neck pain, and swelling [11]. I 131 is an isotope of iodine, and the maximum range of its β-ray emission is only 3.63 mm. It has a strong therapeutic effect on the thyroid and has little effect on the adjacent tissues and other organs of the thyroid. The half-life of I 131 is 8.3 days. Ionizing radiation is generated during decay, acting on local tissues, effectively destroying tumor tissue and removing residual thyroid tissue [12].

The main component of levothyroxine sodium tablets is levothyroxine sodium [13] which is currently mostly used in the treatment of non-toxic goiter [14], post-thyroidectomy suppressive therapy, and adjuvant therapy of hyperthyroidism [15]. The synthetic levothyroxine it contains is identical to the thyroxine naturally secreted by the thyroid gland and is converted to T3 in peripheral organs, which then exerts its specific effects by binding to T3 receptors [16]. The main component of levothyroxine sodium tablets is levothyroxine, and the binding rate to specific transporters is extremely high, about 99.97% [17]. The binding of this protein to hormones is not a covalent structure, so the plasma concentrations of bound and free hormones can be continuously and rapidly exchanged to maintain the physiological function of the thyroid, inhibit TSH secretion, reduce tumor cell adhesion, and promote the body's immunomodulatory effects [12, 13].

In the present study, the clinical effects of levothyroxine sodium tablets plus I 131 in the treatment of patients after thyroidectomy and the effects on thyroglobulin (Tg) and thyroid stimulating hormone (TSH) levels were investigated to provide a basis for clinical treatment.

2. Materials and Methods

2.1. Participants. Between July 2019 and January 2021, a total of 80 post-operative patients with differentiated thyroid cancer scheduled for a thyroidectomy were recruited and assigned, forty patients in the control group received levothyroxine sodium tablets, and 40 patients in the experimental group received levothyroxine sodium therapy plus I 131 therapy. In the experimental group, there were 16 males and 24 females, aged 23–74 years, mean age of 42.28 ± 6.17 years, BMI of 17–24 kg/m^2, mean BMI of 22.32 ± 0.95 kg/m^2, 29 cases of PTC, 9 cases of FTC, and 2 cases of mixed thyroid cancer. In the control group, there were 14 males and 26 females, aged 25–71 years, mean age of 42.37 ± 5.88 years, BMI of 17–24 kg/m^2, mean BMI of 22.12 ± 1.23 kg/m^2, 30 cases of PTC, 7 cases of FTC, and 3 cases of mixed thyroid cancer. The research was approved by the Ethics Committee of the Xijing Hospital, Air Force Medical University, No. 2987–177.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria. Inclusion criteria were as follows: (1) patients who met diagnostic criteria for differentiated thyroid cancer; (2) pre-operative thyroid function; (3) estimated residual thyroid tissue <1.0 g after thyroidectomy; and (4) were informed of the study and written informed consent was provided.

2.2.2. Exclusion Criteria. Exclusion criteria were as follows: (1) severe cardiac, hepatic, and renal insufficiency; (2) positive thyroglobulin antibody; (3) abnormal coagulation function or coagulation disorder; and (4) TSH level <30 mIU/L before I 131 ablation.

2.3. Treatment Methods. After total or near-total thyroidectomy, the control group received levothyroxine sodium tablets, and the experimental group received levothyroxine sodium tablets plus I 131.

Control group: 1 month after the operation, the patients took levothyroxine sodium tablets (approval number H20140052, Merck, Germany) 100 μg every day, and the dose was adjusted according to the actual thyroid function of the patients.

Experimental group: the patients were prohibited from thyroid hormone, iodine-containing diet, and iodine alcohol within 3-4 weeks after operation. Examinations such as neck ultrasonography and I 131 uptake rates for thyroid testing were performed. On the basis of the treatment plan of the control group, 3-4 weeks after the operation, I 131 (approval number H10983121, Chengdu China Qualcomm Isotope Co. Ltd.) was orally administered once when the surgical wound was healed. The dose was 3.7 GBq/d for patients without metastases and 5.55 GBq/d for patients with metastases. 131-iodine whole-body imaging was performed 5–7 days after dosing.

2.4. Outcome Measures

(1) Removal rate of residual thyroid tissue (this refers to post-operative medication): the condition of thyroid tissue after treatment was classified as complete removal, incomplete removal, and no change, and the removal rate was calculated. Complete removal: the patient was in good condition, with normal serum Tg levels and complete disappearance of the residual thyroid gland (131-iodine whole-body imaging). Incomplete removal: the patients were stable after I 131 treatment, with a decrease in serum Tg and a significant reduction in thyroid tissue (131-iodine whole-body imaging). No change: no significant changes in serum Tg levels and residual thyroid tissue after twice I 131 treatments (131-iodine whole-

body imaging). Removal rate = the number of complete removal cases/total number of cases × 100%.

(2) Treatment efficacy: the efficacy was divided into markedly effective, effective, and ineffective, and the total efficacy was calculated. Markedly effective: lymph node metastasis and other metastases completely disappeared, and no metastatic lymph nodes were visible. Effective: there was significant reduction and softening of the lymph node masses, regional fading, and enhanced mobility of the masses. Ineffective: the tumor volume increased, and the disease deteriorated. Total efficacy rate (%) = number of (markedly effective + effective) cases/total cases x 100%.

(3) Serum Tg level: the serum Tg levels of patients before and after treatment were recorded and compared.

(4) Serum TSH levels: the serum TSH levels of patients before and after treatment were recorded and compared.

(5) Recurrence rate: the recurrence of patients in both groups was recorded, and their recurrence rates were calculated separately and then compared and analyzed. Recurrence rate = number of recurrences 24 months after the end of treatment/total number of people

2.5. Statistical Analysis. Data analyses were performed using the SPSS22.0. The count data are expressed as (n (%)) and analyzed using the chi-square test, and the measurement data are expressed as (mean ± SD) and analyzed using Student's t-test. Differences were considered statistically significant at $P < 0.05$.

3. Results

3.1. General Data. There were no significant differences in terms of patient characteristics between the two groups ($P > 0.05$) (Table 1).

3.2. Residual Thyroid Tissue Removal Rate. In the experimental group, 35 (87.50%) cases received complete removal, 5 (12.50%) cases received incomplete removal, and 0 (0.00%) cases received no change, while in the control group, 23 (57.50%) cases received complete removal, 17 (42.50%) cases received incomplete removal, and 0 (0.00%) cases received no change. The removal rate of residual thyroid tissue in the experimental group (87.50%) was significantly higher than that in the control group (57.50%) ($P < 0.05$) (Table 2).

3.3. Treatment Efficacy. Levothyroxine sodium tablets plus I 131 was associated with a significantly higher efficacy (97.5%, including 21 (52.50%) cases of markedly effective, 18 (45.00%) cases of effective, and 1 (2.50%) case of ineffective) versus levothyroxine sodium tablets (80.00%, including 22 (55.00%) cases of markedly effective, 10 (25.00%) cases of effective, and 8 (20.00%) cases of ineffective) ($P < 0.05$) (Table 3).

3.4. Serum Tg Levels. There were no significant differences in the serum Tg levels between the two groups before treatment ($P > 0.05$). After treatment, the serum Tg levels in both groups were significantly decreased, and levothyroxine sodium tablets plus I 131 resulted in a significantly lower Tg level (39.88 ± 5.27) versus levothyroxine sodium tablets (62.28 ± 6.91) ($P < 0.05$) (Table 4).

3.5. Serum TSH Levels. Before treatment, the two groups showed similar TSH levels ($P > 0.05$). After treatment, patients receiving levothyroxine sodium tablets plus I 131 had a significantly greater increase in the TSH levels (1.33 ± 0.14) versus levothyroxine sodium tablets (0.19 ± 0.09) ($P < 0.05$) (Table 4).

3.6. Recurrence. The recurrence rate of the experimental group (0.00%) was lower than that of the control group (10.00%, including 1 case of 12-month recurrence, 1 case of 18-month recurrence, and 2 cases of 24-month recurrence) ($P < 0.05$) (Table 5).

4. Discussion

Thyroid cancer is one of the most common endocrine tumors with clinical symptoms of a hard, fixed, uneven surface mass in the thyroid gland [18]. Statistics show that the incidence of differentiated thyroid cancer is currently increasing year by year in clinical practice [19], which poses a threat to the health of patients.

Tg is a macromolecular glycoprotein that exists only in normal thyroid tissue and differentiated thyroid cancer cells. Since Tg gene transcription is not found in nonthyroid tissue, it can be used as a unique biochemical marker of thyroid tissue [20]. Because the body of the cured patient has no source of secreting Tg, the Tg level in the peripheral blood should be at a very low level. The change of Tg level can show the metastases of PTC in vivo, so Tg is used as a tumor marker for differentiated thyroid cancer, and it becomes an important indicator for the diagnosis of tumor remnants, recurrence, and metastasis. The increased level of TSH may be related to the occurrence of PTC and is one of the risk factors for the occurrence of PTC [21]. Stimulating thyroglobulin (sTg) is the serum Tg level measured when the TSH level rises above 30 mIU/L in the state of not taking or stopping thyroid hormone after PTC surgery, that is, a higher level of sTg often indicates the recurrence of metastatic lesions and residues [22].

The results of the present study showed that the removal rate of residual thyroid tissue in the experimental group (87.50%) was significantly higher than that in the control group (57.50%), indicating a better removal effect of the combination therapy of levothyroxine sodium tablets plus I 131. I 131 kills residual cancer lesions by radiating β-rays to reduce the metastatic rate of thyroid cancer, and

Table 1: Patient characteristics (mean ± SD).

Group	n	Gender		Age		BMI		Pathological types		
		Male	Female	Range	Mean	Range	Mean	PTC	FTC	Mixed
Experimental	40	16	24	23–74	42.28 ± 6.17	17–24	22.32 ± 0.95	29	9	2
Control	40	14	26	25–71	42.37 ± 5.88	17–24	22.12 ± 1.23	30	7	3
t	—	—	—	—	0.067	—	0.814	—	—	—
P value	—	—	—	—	0.947	—	0.418	—	—	—

Table 2: Residual thyroid tissue removal rate (%).

Group	n	Complete removal	Incomplete removal	No change	Removal rate
Experimental	40	35 (87.50)	5 (12.50)	0 (0.00)	35 (87.50)
Control	40	23 (57.50)	17 (42.50)	0 (0.00)	23 (57.50)
x^2	—	9.028			
P value	—	0.003			

Table 3: Treatment efficacy (%).

Group	n	Markedly effective	Effective	Ineffective	Treatment efficacy
Experimental	40	21 (52.50)	18 (45.00)	1 (2.50)	39 (97.50)
Control	40	22 (55.00)	10 (25.00)	8 (20.00)	32 (80.00)
x^2	—	6.135			
P value	—	0.013			

Table 4: Serum Tg levels and TSH levels (mean ± SD).

Group	n	Serum Tg levels		Serum TSH levels	
		Before treatment	After treatment	Before treatment	After treatment
Experimental	40	135.08 ± 15.21	39.88 ± 5.27*	0.12 ± 0.08	1.33 ± 0.14*
Control	40	134.99 ± 15.74	62.28 ± 6.91*	0.12 ± 0.04	0.19 ± 0.09*
t	—	0.026	16.302	0	43.321
P value	—	0.979	< 0.001	1	< 0.001

Note. * indicates statistically significant differences ($P < 0.05$) between pre and posttreatment in the same group.

Table 5: Disease recurrence (%).

Group	n	6-month recurrence	12-month recurrence	18-month recurrence	24-month recurrence	Total recurrence rate
Experimental	40	0(0.00)	0(0.00)	0(0.00)	0(0.00)	0(0.00)
Control	40	0(0.00)	1(2.50)	1(2.50)	2(5.00)	4(10.00)
x^2	—	4.211				
P value	—	0.040				

levothyroxine sodium tablets plus I 131 offer higher efficacy, improve the removal of residual thyroid tissue, provide favorable conditions for the treatment of metastatic lesions, and contribute to a better medical foundation for prognosis. Tg belongs to the glycoprotein produced by thyroid follicular cells, its expression level showed different degrees of elevation in patients with DTC, and the level of Tg decreased significantly after total thyroidectomy. Herein, the serum Tg levels in both groups were significantly decreased after treatment, and levothyroxine sodium tablets plus I 131 resulted in a significantly lower Tg level (39.88 ± 5.27) versus levothyroxine sodium tablets (62.28 ± 6.91), suggesting that levothyroxine sodium tablets plus I 131 reduced serum Tg levels by ensuring better residual thyroid tissue removal effects. Moreover, before treatment, the two groups showed similar TSH levels ($P > 0.05$), but after treatment, patients receiving levothyroxine sodium tablets plus I 131 had a significantly greater increase in the TSH levels (1.33 ± 0.14) versus levothyroxine sodium tablets (0.19 ± 0.09). The thyroid hormones in the patients' bodies were significantly decreased and TSH was significantly increased after surgery. Levothyroxine sodium tablets inhibit TSH secretion and maintain the physiological function of the thyroid gland, and its combination with I 131 effectively kills tumor tissue cells, with significant clinical benefits. Furthermore, the recurrence rate of the experimental group (0.00%) was lower than that of the control group, indicating that I 131 plus levothyroxine sodium tablets after surgery in patients with

differentiated thyroid cancer could effectively reduce the risk of post-operative recurrence and metastasis, which was similar to the results of the study by Dong et al. The limitation of this study lies in the small sample size, which will be expanded in future studies to provide more reliable data.

Thyroid cancer belongs to the category of gall tumors in traditional Chinese medicine. TCM believes that emotional factors are the main cause of the disease [23]. At present, TCM treatment of thyroid cancer mainly plays the following two roles: cooperate with surgery and radiotherapy and chemotherapy to reduce adverse reactions, improve physical strength, improve appetite, inhibit tumor development, control disease, etc. [23]. Although the application of traditional Chinese medicine alone cannot cure thyroid cancer or dissipate thyroid cancer, it can only be used as an adjuvant therapy to improve one's own immunity. Primary treatment for patients are surgery and chemoradiotherapy [24]. Before or after thyroid cancer surgery, most patients can use some traditional Chinese medicines to improve their immune function. Commonly used prescriptions include Yingliu mixture, and so on [25, 26], but it should be noted that the above prescriptions need to be used under the guidance of professional Chinese medicine practitioners. TCM treatment of thyroid cancer adopts the principle of strengthening the righteousness and eliminating pathogenic factors. Fuzheng uses methods such as strengthening the spleen, nourishing the kidney, and nourishing the liver to help patients restore state, promote immune function and endocrine function, and reduce adverse reactions caused by radiotherapy and chemotherapy [23, 24]. The method of expelling pathogenic factors combines promoting blood circulation, softening firmness, dispersing knots, clearing away heat, and detoxifying, and pharmacological experiments have proved that it has a certain anti-cancer effect. All in all, although not as effective as surgery, TCM has a great role to play in the adjuvant treatment, prevention, and prognosis of thyroid cancer.

5. Conclusion

Levothyroxine sodium tablets plus I 131 for post-operative patients with differentiated thyroid cancer enhance the removal rate of residual thyroid tissue, effectively reduces serum Tg level, and increase TSH level, with significant therapeutic effects, low recurrence rates, and a high safety profile. However, the age range of patients used as research samples is too large, and each age has different metabolic effects on drugs, which may cause more chance for treatment and prognosis. Therefore, follow-up experiments need to be further explored in a more precise age range.

Data Availability

The data generated or analyzed during this study are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

Ya-Ling Pang and Yan-Ping Wang contributed equally to this study.

References

[1] H. Yu, W. Zhang, C. Shen et al., "Liver dysfunction induced by Levothyroxine Sodium Tablets (Euthyrox®) in a hypothyroid patient with Hashimoto's thyroiditis: case report and literature review," *Endocrine Journal*, vol. 66, no. 9, pp. 769–775, 2019.

[2] L. J. DeGroot, "Thyroid carcinoma," *Medical Clinics of North America*, vol. 59, no. 5, pp. 1233–1246, 1975.

[3] S. Walsh, R. Prichard, and A. D. Hill, "Emerging therapies for thyroid carcinoma," *The Surgeon*, vol. 10, no. 1, pp. 53–58, 2012.

[4] A. V. Chintakuntlawar, R. L. Foote, J. L. Kasperbauer, and K. C. Bible, "Diagnosis and management of anaplastic thyroid cancer," *Endocrinology and Metabolism Clinics of North America*, vol. 48, no. 1, pp. 269–284, 2019.

[5] G. Tallini, "Poorly differentiated thyroid carcinoma. Are we there yet?" *Endocrine Pathology*, vol. 22, no. 4, pp. 190–194, 2011.

[6] J. Hu, I. J. Yuan, S. Mirshahidi, A. Simental, S. C. Lee, and X. Yuan, "Thyroid carcinoma: phenotypic features, underlying biology and potential relevance for targeting therapy," *International Journal of Molecular Sciences*, vol. 22, no. 4, p. 1950, 2021.

[7] Y. S. Lin, "[Postoperative treatment of differentiated thyroid carcinoma with radioiodine-131]," *Safflower Journal of Otolaryngology Head and Neck Surger*, vol. 54, no. 1, pp. 62–68, 2019.

[8] L. Buton, O. Morel, P. Gault, F. Illouz, P. Rodien, and V. Rohmer, "False-positive iodine-131 whole-body scan findings in patients with differentiated thyroid carcinoma: report of 11 cases and review of the literature," *Annales d'Endocrinologie*, vol. 74, pp. 221–230, 2013.

[9] F. A. Verburg, M. Schmidt, M. C. Kreissl et al., "[Procedural guideline for Iodine-131 whole-body scintigraphy in differentiated thyroid carcinoma (version 5)]," *Nuklearmedizin*, vol. 58, no. 3, pp. 228–241, 2019.

[10] M. C. Hung, "Initial activity-related long-term outcome of iodine-131 treatment for thyroidectomy patients with differentiated thyroid carcinoma," *Hellenic Journal of Nuclear Medicine*, vol. 23, no. 3, pp. 246–250, 2020.

[11] A. Fard-Esfahani, A. Emami-Ardekani, B. Fallahi et al., "Adverse effects of radioactive iodine-131 treatment for differentiated thyroid carcinoma," *Nuclear Medicine Communications*, vol. 35, no. 8, pp. 808–817, 2014.

[12] F. A. Verburg, F. Grunwald, M. Lassmann, H. Hanscheid, M. Luster, and M. Dietlein, "[Iodine-131 whole-body scintigraphy in differentiated thyroid carcinoma]," *Nuklearmedizin*, vol. 57, no. 4, pp. 124–136, 2018.

[13] V. A. Lewis, C. M. Morrow, J. A. Jacobsen, and W. E. Lloyd, "A pivotal field study to support the registration of levothyroxine sodium tablets for canine hypothyroidism," *Journal*

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Retraction

Retracted: A Study of the Relationship between Blood Glucose and Serum Insulin in Acute Cerebrovascular Disease

Evidence-Based Complementary and Alternative Medicine

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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. Zhao, S. Xiu, L. Sun, Z. Mu, and J. Fu, "A Study of the Relationship between Blood Glucose and Serum Insulin in Acute Cerebrovascular Disease," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 9041551, 6 pages, 2022.

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Research Article

A Study of the Relationship between Blood Glucose and Serum Insulin in Acute Cerebrovascular Disease

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Objective. The objective of this study was to examine the correlation between blood glucose and serum insulin with acute cerebrovascular disease. *Methods*. A total of 1548 patients with acute cerebrovascular illness and 364 patients with a normal physical examination who were admitted to our hospital (endocrinology department) between January 2017 and July 2020 were recruited. Patients with acute cerebrovascular illness were included in the experimental group, while healthy individuals after physical examinations were included in the control group. All patients' blood glucose and serum insulin levels were measured, and the association of blood glucose and serum insulin with acute cerebrovascular illness was investigated. *Results*. Acute cerebrovascular disease is associated with significantly higher blood glucose and serum insulin levels versus healthy status ($P < 0.05$). Blood glucose and serum insulin levels were observed to be significantly higher in the hemorrhagic stroke group than in the ischemic stroke or mild hemorrhagic group ($P < 0.05$). Severe ischemic strokes were associated with significantly higher blood glucose levels versus mild ischemic strokes ($P < 0.05$). There were no significant differences in serum insulin levels between the severe ischemic stroke group and the mild ischemic stroke group ($P > 0.05$). *Conclusion*. A rise in blood glucose and serum insulin levels is associated with the incidence and prognosis of acute cerebrovascular disease, and it is positively correlated with the severity of the acute cerebrovascular disease.

1. Introduction

Acute cerebrovascular disease is a common acute and critical disease in clinical medicine that causes severe damage to the brain, with high clinical mortality and disability rates [1]. Ischemic and hemorrhagic strokes are two types of acute cerebrovascular illnesses that result in coma and acute cerebrovascular events such as major cerebral infarction, vertebrobasilar artery blockage, cerebral embolism, cerebral hemorrhage, and subarachnoid hemorrhage [1]. Elderly people are more susceptible to the disease [2]. Under normal physiological conditions, the body has a complete blood coagulation system and anticoagulation and fibrinolytic systems, but if the body is in a state of reduced fibrinolysis and anticoagulation or hypercoagulation, it is prone to ischemic cerebrovascular disease and other thromboembolic diseases [3–5]. Therefore, anticoagulant drugs play an important role in acute ischemic cerebrovascular disease, among which aspirin is a common drug with antiplatelet aggregation efficacy and low cost, and is easily accepted by patients; however, its long-term application is associated with multiple adverse effects [6, 7]. Since acute ischemic cerebrovascular disease mostly occurs in middle-aged and elderly groups which generally present with different degrees of underlying pathologies such as gastric diseases, methods to reduce gastric irritation, and drug side effects and to effectively alleviate symptoms have become a hot issue of research [8, 9]. In recent years, the application value of traditional Chinese medicine (TCM) in acute ischemic cerebrovascular disease has received widespread attention, and

its treatment of the disease provides unique advantages [10, 11], such as Wuchong Tongluo decoction and Buyang Huanwu decoction.

In recent years, the prevention and treatment of stroke patients have been a key issue in clinical practice. Stroke provokes various degrees of a stress reaction in the acute phase, and the stress response stimulates the sympathetic nerves and the hypothalamic-pituitary-adrenal axis, causing a series of aberrant alterations (diagnosed as stress hyperglycemia in such cases) [12]. With the intensive study of glucose, several studies have shown that glycemic variability is independently associated with mortality in critically ill patients. Kulkarni et al [9] retrospectively analyzed the glycemic profiles of 290,966 patients in 176 intensive care units in Australia and New Zealand from 2007 to 2016 and revealed that patients in the highest quartile of glycemic variability were at 1.43 times greater risk of death than those in the lowest quartile of glycemic variability, and after correction of the model, glycemic variability remained independently associated with hospital mortality. It is speculated that there may be an association between blood glucose levels and stroke. Research on the relationship between serum insulin and cardiovascular diseases has been conducted extensively in recent years, but there is a dearth of information on the association between serum insulin and stroke disease [13], despite a neurotransmitter or modulatory role of insulin in the central nervous system as indicated by prior research [14]. To this end, this study included 1548 patients with acute cerebrovascular disease and 364 patients with normal physical examinations, to investigate the relationship between blood glucose and serum insulin levels and acute cerebrovascular disease in order to provide a corresponding clinical reference.

2. Materials and Methods

2.1. General Data. A total of 1548 patients with acute cerebrovascular illness and 364 patients with a normal physical examination who were admitted to our hospital (endocrinology department) between January 2017 and July 2020 were recruited. Patients with acute cerebrovascular illness were included in the experimental group, while healthy individuals after physical examinations were included in the control group. Patients with liver and kidney diseases, as well as diabetes, were excluded, and the diagnosis was confirmed by a hematologist.

There were 78 hemorrhagic strokes and 1470 ischemic strokes in the experimental group, 51 males and 27 females in the hemorrhagic stroke group and 1029 males and 441 females in the ischemic stroke group, with a mean age of 64.68 ± 3.42 years.

In total, there were 38 cases of severe hemorrhagic stroke and 40 cases of mild hemorrhagic stroke based on their unconscious condition, the size of the lesion (the amount of blood loss, the extent of the infarction, and midline symptoms (high fever and upper gastrointestinal bleeding).

There were 402 cases of severe ischemic strokes and 627 cases of mild ischemic strokes. In addition, 364 age-matched healthy participants were included in the control group. Of these, 246 were males and 118 were females, with a mean age of 64.71 ± 3.45 years. Informed consent was obtained from patients prior to enrollment in this study. The study protocol was approved by the hospital ethics committee (ethics number: SD-ERT20170102). This experiment was performed in accordance with the Declaration of Helsinki ethical guidelines for clinical research.

2.2. Evaluation Criteria. 5 ml of morning fasting venous blood was collected from the patients for the determination of fasting blood glucose (FBG) using the glucose oxidase peroxidase method with a radioimmunoassay kit provided by the Northern Institute of Biotechnology. The insulin was also determined by enzyme-linked immunosorbent assay (ELISA) using a Bio-RAD 550 enzyme marker and a kit from Bio-RAD, USA.

2.3. Grouping Methods. In accordance with the National Institutes of Health Stroke Scale (NIHSS) [15], patients were categorized according to the severity of clinical symptoms: grades 1 to 4 were classified as mild/moderate stroke, grades 5 to 15 are classified as moderate stroke, grades 15 to 20 as moderate to severe stroke, and grades 21 to 42 as severe stroke. Scores below 15 ($\leq$15) were included in the mild group, and scores above 15 (>15) were included in the severe group.

2.4. Statistical Methods. SPSS 22.0 software was used for data analyses. The measurement data were expressed as $(\overline{x} \pm s)$, and independent t-test samples were used. The enumeration data were expressed as the number of cases (%), and the X^2 test was used. Statistical significance was indicated by $P < 0.05$.

3. Results

3.1. Patient Characteristics. The patient characteristics between the two groups were comparable ($P > 0.05$) (Table 1).

3.2. Comparison of Blood Glucose and Serum Insulin Levels between the Experimental Group and the Control Group. Acute cerebrovascular disease is associated with significantly higher blood glucose and serum insulin levels versus healthy status ($P < 0.05$) (Table 2).

3.3. Comparison of Blood Glucose and Serum Insulin Levels between the Hemorrhagic Stroke and the Ischemic Stroke Groups. The hemorrhagic stroke group had significantly higher blood glucose and serum insulin levels than the ischemic stroke group ($P < 0.05$) (Table 3).

3.4. Comparison of Blood Glucose and Serum Insulin Levels in Hemorrhagic Stroke Group. Blood glucose and serum insulin levels were considerably higher in individuals with severe hemorrhagic stroke than in patients with moderate hemorrhagic stroke ($P < 0.05$) (Table 4).

Table 1: Patient characteristics [n(%)].

	Experimental group ($n = 1548$)	Control group ($n = 364$)	t/x^2	P
Gender			0.005	> 0.05
Male	1080	246		
Female	468	118		
Age (years)	($\overline{x} \pm s$)	($\overline{x} \pm s$)		
Mean age (years)	64.68 ± 3.42	64.71 ± 3.45	−0.177	> 0.05
Pathological type				
Hemorrhagic stroke	78			
Ischemic stroke	1470			
Order of severity				
Mildly hemorrhagic	40			
Severely hemorrhagic	38			
Mild ischemia	402			
Severe ischemia	627			

Table 2: Comparison of blood glucose and serum insulin levels between experimental and control groups ($\overline{x} \pm s$).

Group	Cases	Blood glucose (mol/L)	Serum insulin (U/L)
Experimental group	1548	8.16 ± 6.28	25.78 ± 9.89
Control group	364	5.85 ± 0.83	11.45 ± 4.37
t	—	8.04	29.543
P	—	< 0.05	< 0.05

Table 3: Comparison of blood glucose and serum insulin levels between the hemorrhagic stroke and the ischemic stroke groups ($\overline{x} \pm s$).

Group	Cases	Blood glucose (mol/L)	Serum insulin (U/L)
Hemorrhaging stroke group	78	10.77 ± 7.15	34.48 ± 9.47
Ischemic stroke group	1470	7.80 ± 6.43	21.88 ± 9.86
t	—	8.34	26.724
P	—	< 0.05	< 0.05

Table 4: Comparison of blood glucose and serum insulin levels in hemorrhagic stroke group ($\overline{x} \pm s$).

Group	Cases	Blood glucose (mol/L)	Serum insulin (U/L)
Mild hemorrhagic stroke group	40	9.88 ± 5.27	26.11 ± 11.13
Severe hemorrhagic stroke group	38	11.85 ± 8.30	41.68 ± 7.95
t	—	−4.24	26.72
P	—	< 0.05	< 0.05

3.5. Comparison of Blood Glucose and Serum Insulin Levels in Ischemic Stroke Group. Severe ischemic strokes were associated with significantly higher blood glucose levels versus mild ischemic strokes ($P < 0.05$). There were no significant differences in serum insulin levels between the severe ischemic stroke group and the mild ischemic stroke group ($P > 0.05$) (Table 5).

4. Discussion

Acute cerebrovascular disease is one of the most common acute and critical illnesses in clinical medicine, and its major cause is senile hypertension [16]. Cerebrovascular diseases are characterized by high morbidity and mortality, and despite significant advances in clinical treatment, the 1-year survival rate of patients with cerebral hemorrhage is only 46% and the 5-year survival rate is only 29% [17]. Cerebral hemorrhage causes varying degrees of neurological dysfunction, which requires long-term hospitalization and rehabilitation and thus imposes a heavy financial burden on families and society. Therefore, the improvement of the prognosis of patients with cerebral hemorrhage has gained worldwide research attention. In recent years, it was found that hypertension is closely associated with hyperinsulinemia, insulin resistance, and glucose metabolism disorders, and insulin is an important indicator of increased blood pressure in patients [18]. Hyperglycemia is common in patients with cerebral hemorrhage, and elevated blood glucose usually indicates a poor prognosis. Van den Berghe et al. [19] found that strict glycemic control reduced mortality in patients, but some subsequent studies yielded different findings. Finfer et al. [20] found no effect of intensive insulin therapy on mortality and a significantly increased risk of severe hypoglycemia. Some studies revealed significant differences in patient prognosis even with the same average blood glucose level, and recent studies have shown that glucose variability is an independent risk factor for poor patient prognosis. Glucose variability (GV) is a nonstationary state in which blood glucose levels fluctuate between peaks and troughs. Research has suggested that glycemic

Table 5: Comparison of blood glucose and serum insulin levels in ischemic stroke group ($\overline{x} \pm s$).

Group	Cases	Blood glucose (mol/L)	Serum insulin (U/L)
Mild ischemic stroke group	402	6.51 ± 3.22	21.68 ± 9.72
Severe ischemic stroke group	627	13.73 ± 12.92	22.58 ± 11.78
t	—	−12.304	−1.045
P	—	< 0.05	> 0.05

variability be a novel indicator of poor glycemic control, and there are several methods to quantify glycemic variability, including mean glycemic fluctuation, coefficient of fasting glycemic variability, maximum glycemic variability, mean absolute difference in day-to-day glucose, and hypoglycemic index. However, no universally recognized gold standard is available [21]. These indices require complex calculation methods, and high economic costs are associated with limited applications.

According to Li Guang et al. [22], insulin resistance and compensatory hyperinsulinemia are key causes of acute cerebrovascular disease. Insulin plays a role in metabolic regulation and has a direct influence on the growth of body cells [23]. It has been speculated that insulin receptor gene mutations may weaken or even eliminate insulin's effect on regulating the growth of body cells, resulting in pathological alterations in the basement membrane of blood vessel walls, which consequently renders the microvessels brittle and increases the body weight. Acute cerebrovascular illness patients are predisposed to vascular emboli or rupture [24]. due to the pathological basis [25]. Herein, the mean age of onset is approximately 65 years, and the majority of patients have a history of hypertension. The blood glucose and serum insulin levels of the patients with hemorrhagic stroke and those with ischemic stroke were significantly higher in the experimental group than those in the control group. The increase in pancreatic islet levels may be attributed to compensatory responses or to stress reactions after disease onset. The increased insulin level in vivo is positively correlated with the severity of acute cerebrovascular disease [26], indicating that the higher the insulin level in the patient, the worse the prognosis of the patient [27].

The increase of intracranial pressure in cases with acute cerebrovascular illness or lesions that damage the midline of the brain may impact the hypothalamus directly or indirectly and prompt the pituitary gland to produce and release hormones. Some cell breakdown products such as serotonin may trigger vasospasm in the body during cranial hemorrhage, exacerbating hypoxia, and ischemia of the hypothalamus and pituitary gland, resulting in the endocrine condition [28]. Zhang Tianli et al. [29] suggested that, in patients with acute cerebrovascular disease, the larger the lesion, the greater the cerebral edema and mass effect in the body, which also causes the displacement of body tissues, including the hypothalamus and pituitary glands [30].

In the present study, blood glucose and serum insulin levels were substantially higher in the group with severe hemorrhagic stroke than in the group with moderate hemorrhage. Blood insulin levels of patients with severe ischemic stroke and moderate ischemic stroke were significantly higher than those of individuals with mild ischemic stroke. The comparison of serum insulin levels in the ischemic stroke group did not show statistical significance, which is mostly attributed to the limited number of cases, and its relevance requires more data for verification [31].

Relevant clinical studies have demonstrated that hyperglycemia could exacerbate brain damage in patients with acute cerebrovascular disease.

(1) Due to the elevated blood glucose concentration in the patient, the ATP supply in the patient's body is insufficient under ischemia and hypoxia, resulting in a large amount of glucose via anaerobic glycolysis. This produces a severe lactate buildup that inhibits mitochondrial energy production in the patient's body, ultimately depleting the patient's body's energy supply and thus, exacerbating their brain injury [32];

(2) Changes in local cerebral blood flow in patients: hyperglycemia could increase the viscosity of the patient's blood and lead to a decrease in the deformability of red blood cells, thereby preventing the red blood cells from establishing an effective collateral circulation during cerebral infarction and resulting in reflex vasospasm in the body, which will aggravate cerebral ischemia, brain tissue edema, and enlarged necrotic areas in the brain, thereby increasing intracranial pressure [33];

(3) Intracellular $Ca2^{+}$ overload: the water and sodium retention, along with free radical damage in the body will aggravate the destruction of the body's inner membrane structure, thereby accelerating the necrosis process of the individual cells of the patient [34].

There are some limitations to this study. First, this study was conducted in a single center with a small sample size. Second, the possibility that differences in patient populations may have an impact on neurological outcomes cannot be excluded. Comorbidities such as diabetes mellitus were not examined herein. Third, blood glucose was collected based on clinical need, and data were not collected at equal intervals and frequencies. Fourth, due to the small sample size, no correction could be performed in the subgroup analysis. Future studies with large samples may correct patients for subgroup analysis to ensure the reliability of the results.

A rise in blood glucose and serum insulin levels is associated with the incidence and prognosis of acute cerebrovascular disease and is positively correlated with the severity of the acute cerebrovascular disease.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] M. F. Bellolio, R. M. Gilmore, and L. Ganti, "Insulin for glycaemic control in acute ischaemic stroke," *Cochrane Database of Systematic Reviews*, no. 1, Article ID Cd005346, 2014.

[2] G. Caccamo, F. Bonura, F. Bonura et al., "Insulin resistance and acute coronary syndrome," *Atherosclerosis*, vol. 211, no. 2, pp. 672–675, 2010.

[3] F. Dong, "Clinical observation on the treatment of acute ischemic cerebrovascular disease by adding and subtracting tonic yang and returning to five soup," *China Practical Medicine*, vol. 16, no. 22, pp. 170–172, 2021.

[4] M. Guo, H. Sun, and Y. Liu, "Treatment of 52 cases of shoulder-hand syndrome with blood activation and tranquilization soup plus rehabilitation training combined with western medicine," *Chinese Medicine Research*, vol. 34, no. 02, pp. 24–26, 2021.

[5] J. Xu, "Effect of huanglian wenzhi tang plus reduction on serum high-sensitivity C-reactive protein in patients with acute ischemic cerebrovascular disease," *Chinese Journal of Basic Chinese Medicine*, vol. 17, no. 08, pp. 894–909, 2011.

[6] J. P. Yang, L. Yuan, and Y. Wen, "Effect of Wu Worm Tongluo Tang supplemented with aspirin on neurological function and serum expression of MBP and H-FABP in patients with acute ischemic cerebrovascular disease," *Chinese Acute Care*, vol. 30, no. 07, pp. 1278–1281, 2021.

[7] R. Yu and Z. Wang, "Study on the application of daqintai tang in the treatment of progressive stroke," *World Abstract of the Latest Medical Information*, vol. 19, no. 76, pp. 71-72, 2019.

[8] Li C. Zhou and Bo Wang, "Clinical study of 168 cases of patients with yin-deficiency and wind-activated acute cerebrovascular disease treated with zhenhe liver and quenching wind soup," *China Rural Health*, vol. 11, no. 10, p. 25, 2019.

[9] H. Tang, "Clinical observation of 42 cases of acute ischemic cerebrovascular disease treated with combined traditional Chinese and Western medicine," *Hunan Journal of Traditional Chinese Medicine*, vol. 33, no. 08, pp. 46-47, 2017.

[10] C. Li, H. Fan, and J. Wang, "Efficacy of self-prepared lung clearing soup in the treatment of stroke-associated pneumonia," *Journal of Modern Traditional Chinese and Western Medicine*, vol. 25, no. 24, pp. 2714–2716, 2016.

[11] H. Wan, H. Xu, and Y. Jin, "Treatment of acute cerebrovascular disease with 36 cases of eruption by zhiyin descending and stopping eruption soup," *Shandong Journal of Traditional Chinese Medicine*, vol. 30, no. 04, pp. 226-227, 2011.

[12] J. de Sousa Parreira, A. P. Kallaur, M. F. Lehmann et al., "Tumor necrosis factor beta NcoI polymorphism (rs909253) is associated with inflammatory and metabolic markers in acute ischemic stroke," *Metabolic Brain Disease*, vol. 30, no. 1, pp. 159–167, 2015.

[13] F. Vancheri, M. Curcio, A. Burgio et al., "Impaired glucose metabolism in patients with acute stroke and no previous diagnosis of diabetes mellitus," *QJM: International Journal of Medicine*, vol. 98, no. 12, pp. 871–878, 2005.

[14] D. A. Godoy, R. Behrouz, and M. Di Napoli, "Glucose control in acute brain injury: does it matter?" *Current Opinion in Critical Care*, vol. 22, no. 2, pp. 120–127, 2016.

[15] Q. H. Liu, B. He, and Y. Wang, "Clinical study on the relationship between early fasting glucose levels and prognosis in patients with acute cerebrovascular disease," in *Proceedings of the Annual Academic Conference on Emergency Medicine in Zhejiang and Jiangsu Provinces*, Zhejiang, China, 2018.

[16] F. Hernández-Fernández, H. Sandoval Valencia, R. A. Barbella-Aponte et al., "Cerebrovascular disease in patients with COVID-19: neuroimaging, histological and clinical description," *Brain*, vol. 143, no. 10, pp. 3089–3103, 2020.

[17] Z.-Z. Geng, *Correlation between Blood Glucose Variability and Prognosis of Patients with Acute Severe Cerebrovascular Disease*, Hebei University, Baoding, China, 2019.

[18] M. M. d. A. Holanda, R. G. Filizola, M. J. C. Costa, R. V. C. Andrade, and J. A. G. Silva, "Plasma lipoprotein levels: a comparison between diabetic and non-diabetic patients with acute ischemic stroke," *Arquivos de Neuro-Psiquiatria*, vol. 62, no. 2a, pp. 233–236, 2004.

[19] G. van den Berghe, P. Wouters, F. Weekers et al., "Intensive insulin therapy in critically ill patients," *New England Journal of Medicine*, vol. 345, no. 19, pp. 1359–1367, 2001.

[20] NICE-SUGAR Study Investigators for the Australian and New Zealand Intensive Care Society Clinical Trials Group and the Canadian Critical Care Trials Group, S. Finfer, D. Chittock et al., "Intensive versus conventional glucose control in critically ill patients with traumatic brain injury: long-term follow-up of a subgroup of patients from the NICE-SUGAR study," *Intensive Care Medicine*, vol. 41, no. 6, pp. 1037–1047, 2015.

[21] Y. Cai, C. Wang, W. Di, W. Li, J. Liu, and S. Zhou, "Correlation between blood glucose variability and the risk of death in patients with severe acute stroke," *Revue Neurologique*, vol. 176, no. 7-8, pp. 582–586, 2020.

[22] M. Jernås, B. Olsson, K. Sjoholm et al., "Changes in adipose tissue gene expression and plasma levels of adipokines and acute-phase proteins in patients with critical illness," *Metabolism*, vol. 58, no. 1, pp. 102–108, 2009.

[23] M. Kofler, A. J. Schiefecker, R. Beer et al., "Enteral nutrition increases interstitial brain glucose levels in poor-grade subarachnoid hemorrhage patients," *Journal of Cerebral Blood Flow and Metabolism*, vol. 38, no. 3, pp. 518–527, 2018.

[24] A. Solini, P. Zamboni, A. Passaro, R. Fellin, and E. Ferrannini, "Acute vascular events and electrolytes variations in elderly patients," *Hormone and Metabolic Research*, vol. 38, no. 3, pp. 197–202, 2006.

[25] Y. Li, M. Li, M. Wang et al., "Acute cerebrovascular disease following COVID-19: a single center, retrospective, observational study," *Stroke and Vascular Neurology*, vol. 5, no. 3, pp. 279–284, 2020.

[26] V. L. Roger, A. S. Go, D. M. Lloyd-Jones et al., "Heart disease and stroke statistics—2011 update: a report from the American heart association," *Circulation*, vol. 123, no. 4, pp. e18–e209, 2011.

[27] L. Liberale, F. Carbone, M. Bertolotto et al., "Serum adiponectin levels predict acute coronary syndrome (ACS) in patients with severe carotid stenosis," *Vascular Pharmacology*, vol. 102, pp. 37–43, 2018.

[28] F. Meisner, D. Walcher, F. Gizard et al., "Effect of rosiglitazone treatment on plaque inflammation and collagen content in nondiabetic patients: data from a randomized

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Retraction

Retracted: Effectiveness of Super-selective Embolization for Parasagittal Meningiomas and Its Effect on the Level of Inflammatory Factors

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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] Z. Zheng, L. Jia, P. Zhang, Y. Tian, and X. Chen, "Effectiveness of Super-selective Embolization for Parasagittal Meningiomas and Its Effect on the Level of Inflammatory Factors," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 2466007, 6 pages, 2022.

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Research Article

Effectiveness of Super-selective Embolization for Parasagittal Meningiomas and Its Effect on the Level of Inflammatory Factors

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Objective. To evaluate the effectiveness of super-selective embolization for parasagittal meningiomas and its effect on the level of inflammatory factors. *Methods*. A total of 48 patients with parasagittal meningiomas diagnosed and treated in our hospital from September 2018 to March 2020 were randomly included and assigned to receive meningioma resection (control group) or meningioma resection plus super-selective embolization (study group), with 24 patients in each group. Outcome measures included clinical indices, tumor resection outcome, inflammatory factor levels, and follow-up results. *Results*. Patients in the study group had shorter operative time and less intraoperative bleeding volume than those in the control group ($P < 0.05$). The study group had more patients with Simpson I resection (87.50%) than the control group (62.50%) ($P < 0.05$). There was no statistically significant difference in the levels of inflammatory factors between the two groups of patients before treatment ($P > 0.05$). After treatment, the levels of interleukin (IL)-6, tumor necrosis factor (TNF)-α, and hypersensitive C-reactive protein (hs-CRP) in patients in the study group were significantly lower than those of the control group. The results of the three-month follow-up showed that one patient in the study group was reoperated for tumor recurrence and there was no death record, while three patients in the control group were reoperated for tumor recurrence and one patient died. The difference in the recurrence and mortality between the two groups did not come up to the statistical standard ($P > 0.05$). *Conclusion*. Super-selective embolization for parasagittal meningiomas contributes to reducing intraoperative bleeding, effectively improving tumor resection and surgical safety, and lowering inflammatory factor levels. Further trials are, however, required before clinical promotion.

1. Introduction

Meningioma [1] is the most common type of primary intracranial tumor of the central nervous system, accounting for about one-third of all tumors of the central nervous system. It is a brain tumor originating from the meninges and arachnoid capillary cells, mostly with benign development [2]. According to relevant epidemiological statistics, the annual prevalence of meningioma is 1~8/100000, ranking the second-highest among intracranial tumors. Its incidence increases with age and peaks at the age of 45 years, with a gender ratio of male to female being 1 : 2 [3]. Meningioma is usually asymptomatic in the early stage and mainly occurs in the convex surface of the cerebral hemisphere, skull base, and paracellular area, and about 50% is located near the sagittal sinus, more common in the convex surface of the brain next to the sickle, followed by the pterygoid crest, cerebellar nodes, odor, cerebellar pontocerebellar angle, and the canopy [4]. Parasagittal meningiomas [5] are usually adherent to the falx cerebri, and about 1/4 are bilateral lesions [6, 7]. Epilepsy is its initial symptom, with partial or grand mal seizures, and psychiatric disorders manifest as dementia and emotional indifference. In addition, patients are prone to personality changes, and paragangliomas located in the occipital lobe can cause visual field disturbances [8].

The clinical treatment is mainly surgical resection supplemented with radiation therapy [9]. However, due to the complexity and severity of the disease, lateral rupture of the sagittal sinus may occur during surgery may result in hemorrhage, or the tumor may form adhesion with the sagittal buccal cavity wall, resulting in incomplete removal of the

tumor and postoperative recurrence. [10]. Thus, patients are predisposed to postoperative complications such as hemiparesis and aphasia. Traditional Chinese medicine believes that the excess or deficiency of the seven emotions can lead to abnormal qi and blood circulation in the body and dysfunction of the viscera. The occurrence and development of some cancers are mostly related to emotional insufficiency. The formation of brain tumors is mainly caused by phlegm blocking meridians, stagnation of qi, and blood circulation for a long time. The treatment is mainly based on removing phlegm and softening the hard, promoting blood circulation, and clearing the meridians, supplemented by clearing away heat and detoxifying. Despite these treatments, surgical complications are unavoidable. Therefore, other methods are needed to assist surgical treatment [11].

To this end, preoperative embolization of tumors with abnormal blood supply is encouraged when necessary to reduce intraoperative bleeding and facilitate the surgery. Super-selective embolization of intratumoral vessels [12] refers to the delivery of a microcatheter into the blood supply artery of a meningioma patient, through which an embolic agent is injected to block the blood flow, prevent intraoperative bleeding, and soften the tumor, thereby reducing the difficulty of surgical resection and facilitating surgical resection [13, 14]. However, due to the paucity of related clinical studies, the clinical effectiveness of this procedure has not been fully clarified. In view of this, this study aims to evaluate the effectiveness of super-selective embolization for parasagittal meningiomas and its effect on the level of inflammatory factors, so as to provide clinical references for treatment.

2. Materials and Methods

2.1. Participants. A total of 48 patients with parasagittal meningiomas diagnosed and treated in our hospital from September 2018 to March 2020 were randomly included and assigned to receive meningioma resection (control group) or meningioma resection plus super-selective embolization (study group), with 24 patients in each group. The included patients were aged 22–75 years, with 19 males and 29 females. The randomization was carried out using an online web-based randomization tool (freely available at http://www.randomizer.org/). For concealment of allocation, the randomization procedure and assignment were managed by an independent research assistant who was not involved in the screening or evaluation of the participants.

This was a retrospective study supervised by the ethics committee of Cangzhou Central Hospital (No. ChiCTR2200077981) with no interference with the treatment process.

The original sample size calculation estimated that 24 patients in each group would be needed to detect a 3-point difference between groups in a two-sided significance test with a power of 0.8 and an alpha error level of 0.05.

2.2. Inclusion and Exclusion Criteria. Inclusion criteria: ① Patients who met the clinical diagnostic criteria and were diagnosed with parasagittal meningiomas by relevant imaging, with a tumor diameter of ≥ 5 cm, and who provided written informed consent were included. ② In line with the indications for surgery; ③ Positive by vascular ultrasound or intravenous contrast examination; ④ No severe cardiopulmonary failure, severe liver and kidney insufficiency, malignant tumor, and other diseases.

Exclusion criteria: ① Patients with endocrine disorders, coagulation disorders or hematologic disorders, or with relevant surgical contraindications were excluded. ② Discharge or death within 24 hours of admission; ③ Incomplete clinical medical records; a history of severe coagulation disorders and blood system-related diseases; ④ severe lower extremity deformities, arteriosclerosis, infectious diseases, and mental disorders.

2.3. Methods. Patients in the control group underwent meningioma resection. The surgical approach was determined based on a preoperative cranial CT scan. A unilateral craniotomy was performed with a bone flap reaching the midline of the head, and the dura mater was removed by electrocoagulation to reduce tumor blood flow. The tumor was first separated from the lateral wall of the superior sagittal buccal cavity and resected along the tumor-brain interface. The base of the tumor in the lateral wall of the superior sagittal sinus was subsequently cauterized, and the dura was repaired with periosteum or artificial membrane, followed by the closure of the skull [15].

Patients in the study group underwent meningioma resection preceded by super-selective embolization. The femoral artery was percutaneously punctured using the Seldinger technique followed by the placement of a 5F catheter. The enhanced contrast agent was then injected to monitor the donor artery, and a microcatheter was super-selectively inserted into the donor artery on fluoroscopy and embolized with polyvinyl alcohol pellets until the donor artery disappeared. one week after embolization, meningioma resection was then performed in the same manner as in the control group.

2.4. Evaluation Criteria. ① Clinical indices: clinical surgery-related indices, including operative time and intraoperative bleeding, were recorded and compared in detail for both groups.

② Tumor resection outcome: Simpson grading [16] was used to assess the tumor resection after surgery in both groups.

③ Inflammatory factors: 5 ml of fasting venous blood was collected from the two groups of patients before and after treatment and centrifuged at 3000 r/min for 15 min to obtain the serum. Serum levels of interleukin-6 (IL-6), tumor necrosis factor-α (TNF-α), and hypersensitive C-reactive protein (hs-CRP) were measured by enzyme-linked immunosorbent assay and compared, and the kits were purchased from Nanjing Jiancheng Institute of Biological Engineering.

④ Postoperative follow-up: a three-month postoperative follow-up was performed by outpatient follow-up. Contrast-

Table 1: Patient characteristics ($\bar{x} \pm s$).

Group	n	Gender		Age (years)		Maximum diameter of tumor (cm)		Education level	
		Male	Women	Scope	Average	Scope	Average	High school and below	Undergraduate and above
Control group	24	10	14	22–73	50.33 ± 6.12	5.1–7.7	5.84 ± 0.41	8	16
Study group	24	9	15	24–75	50.42 ± 5.97	5.0–7.6	5.93 ± 0.37	7	17
t-value	—	—	—	—	0.052	—	0.798	—	—
P-value	—	—	—	—	0.959	—	0.429	—	—

Table 2: Clinical surgical indicators ($\bar{x} \pm s$).

Group	N	Operative time (min)	Intraoperative bleeding volume (ml)
Control group	24	365.21 ± 39.87	472.52 ± 105.59
Study group	24	299.87 ± 25.96	315.69 ± 81.04
T value	—	6.728	5.772
P value	—	<0.001	<0.001

enhanced magnetic resonance imaging (MRI) was used to assess the presence of tumor recurrence, and the follow-up results of the two groups were compared.

2.5. Statistical Analysis. GraphPad Prism 8 software was used to visualize the data obtained in this study into matching images, and SPSS 22.0 software was used for data analyses. The measurement data were expressed as (mean-±standard deviation) and analyzed by an independent sample *t*-test. The count data were expressed as the number of cases (%) and analyzed by the chi-square test. Differences were suggested to be statistically significant at $P < 0.05$.

3. Results

3.1. Patient Characteristics. There were 24 patients in the control group, 10 males and 14 females, aged 22–73 (50.33 ± 6.12) years, with a maximum tumor diameter of 5.1–7.7 (5.84 ± 0.41) cm, the disease duration was (2.42 ± 0.79) years. 8 with an education level of high school or less, and 16 of undergraduate or above. In the study group, there were 24 patients, 9 males, and 15 females, aged 24–75 (50.42 ± 5.97) years, with a maximum tumor diameter of 5.0–7.6 (5.93 ± 0.37)cm, the disease duration was (2.14 ± 1.17) years. 7 with an education level of high school or less, and 17 of undergraduate or above. The patient characteristics of the two groups were comparable ($P > 0.05$). (Table 1).

3.2. Clinical Surgical Indicators. Patients in the study group had shorter operative time and less intraoperative bleeding (299.87 ± 25.96, 315.69 ± 81.04) compared to patients in the control group (365.21 ± 39.87, 472.52 ± 105.59) ($P < 0.05$). (Table 2).

3.3. Tumor Resection Outcome. The study group had more patients with Simpson I resection (87.50%) than the control group (62.50%) ($P < 0.05$). (Figure 1).

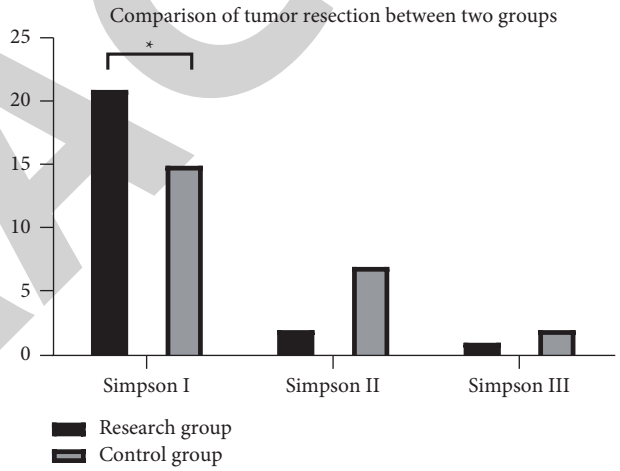

Figure 1: Tumor resection outcome.

3.4. Inflammatory Factors. There was no statistically significant difference in the inflammatory factor levels between the two groups of patients before treatment ($P > 0.05$). After treatment, the levels of IL-6, TNF-α, and hs-CRP in patients in the study group (80.45 ± 24.01, 132.54 ± 40.69, and 12.21 ± 1.07) were lower than those in patients in the control group (104.25 ± 23.62, 189.55 ± 43.58, and 20.17 ± 1.55) ($P < 0.05$). (Table 3).

3.5. Postoperative Follow-Up. The results of the three-month follow-up showed that one patient in the study group was reoperated for tumor recurrence and no patient died, while three patients in the control group were reoperated for tumor recurrence and one patient died. The difference in recurrence and mortality rate between the two groups was not statistically significant ($P > 0.05$). (Table 4).

4. Discussion

Meningiomas are one of the most common intracranial tumors, most of which occur in the sagittal sinus of the

Table 3: Levels of inflammatory factors ($\bar{x} \pm s$).

Time point	Inflammatory factors	Control group ($n = 24$)	Study group ($n = 24$)	*t-value*	*P -value*
Before treatment	IL-6 (pg/mL)	58.96 ± 10.24	59.23 ± 10.31	0.091	0.928
	TNF-α (pg/mL)	80.16 ± 11.54	80.33 ± 10.94	0.052	0.959
	hs-CRP (mg/L)	6.15 ± 1.21	6.16 ± 1.05	0.031	0.975
After treatment	IL-6 (pg/mL)	104.25 ± 23.62	80.45 ± 24.01	3.462	0.001
	TNF-α (pg/mL)	189.55 ± 43.58	132.54 ± 40.69	4.684	<0.001
	hs-CRP (mg/L)	20.17 ± 1.55	12.21 ± 1.07	20.704	<0.001

Table 4: Postoperative follow-up (%).

Group	n	Recurrence	Mortality
Control group	24	3 (12.50)	1 (4.17)
Study group	24	1 (4.17)	0 (0.00)
x^2	—	1.091	1.021
P-value	—	0.296	0.312

cerebral hemisphere. Meningiomas form the pedicle of the tumor by adhering to the dura mater, and the blood of the external carotid artery can supply blood to the tumor through this pedicle. Therefore, the blood circulation at the site of meningioma is rich, which makes the surrounding skull easily eroded, resulting in skull hyperplasia, tortuous and inflamed scalp veins, and in severe cases, skull necrosis or skull defect may occur. Parasagittal meningiomas grow slowly, and the early symptoms are not obvious. When patients have epilepsy, headache, or even hemiplegia or dementia, their intracranial mass is more obvious [17]. Compression of the tumor results in obstruction of the corresponding venous return, leading to the possibility of intracranial hypertension in the patient. Large parasagittal meningiomas have special growth sites and large tumor diameters, making it difficult to completely resection them, so they have a higher recurrence rate than other sites [18].

Meningiomas can be classified as "brain tumors" in traditional Chinese medicine. "Lingshu·All Diseases Beginning" states "The blood coagulation accumulates in but does not disperse, and the body fluid is astringent and seeps, and it does not go away, and it accumulates." The main pathogenesis of brain tumors is wind, phlegm, toxin, blood stasis, and deficiency, which is based on the loss of liver and kidney, phlegm turbidity obstructs the orifices, and poison and blood stasis are the targets. Physicians of the past dynasties have different opinions on the syndrome differentiation and treatment of the etiology and pathogenesis of brain tumors [19, 20]. Although Chinese medicine also has good effects, it is mostly used for postoperative recovery. Therefore, it is particularly important to improve the therapeutic effect of surgery.

Preoperative tumor embolization has become an important routine adjunct for intracranial high blood flow tumors, especially meningiomas [21] The expected outcome is complete occlusion of the tumor vascular system to induce ischemia, necrosis, and atrophy of the tumor, thereby facilitating its isolation from the surrounding tissue, reducing intraoperative bleeding, shortening operative time, improving tumor resection rate, and avoiding surgical complications. However, in conventional preoperative embolization, the embolization catheter can only reach the branch entrance of the external carotid artery, which suggests a high risk of surgical errors and may cause complications such as severe hemiparesis, aphasia, and coma. [22]. Super-selective embolization uses a microcatheter to avoid other normal arteries and protect the main trunk and major branches of the external carotid artery to reduce the incidence of complications such as local skin pain, numbness, fever, scalp necrosis, misembolization, and even cerebral infarction [23, 24]. Herein, 48 patients with parasagittal meningiomas were included in this study to evaluate the effectiveness of super-selective embolization for parasagittal meningiomas and its effect on the level of inflammatory factors.

The results of this study showed that super-selective embolization prior to meningioma resection achieved shorter operative time and less intraoperative bleeding, suggesting that super-selective embolization treatment was effective in controlling intraoperative bleeding and reducing the difficulty of surgery versus single meningioma resection. The explanation for this might be that meningioma angiography clarifies the diagnosis, establishes blood flow and anatomical position of the tumor, and improves the creation and implementation of the surgical plan. Selective embolization cuts off the blood supply to the tumor, minimizing bleeding while guaranteeing an unobstructed operational field and optimum tumor excision. Clinical studies have shown that the use of super-selective embolization for parasagittal meningiomas enables more complete resection of the lesion, prevents blood circulation to the meningioma [25], and boosts postoperative recovery, which is similar to the results of the present study. Here, the study group had more patients with Simpson I resection (87.50%) than the control group (62.50%). Previous studies suggest that if the superior sagittal buccal cavity is patent, Simpson grade II resection is available to avoid serious consequences such as venous cerebral infarction, cerebral hemorrhage, or death due to superior sagittal buccal lesions; if the tumor causes complete occlusion of the superior sagittal buccal cavity, the superior sagittal buccal cavity can be resected anatomically from the occlusion site to achieve Simpson I resection [26] The results of the current study suggest that preoperative super-selective embolization facilitates the successful implementation of Simpson I resection of tumors. The inflammatory response has been reported to be associated with tumor tissue infiltration. The tumor stroma contains tumor-associated macrophages that induce immune responses in the body and stimulates the growth of tumor cells. Herein, the levels of IL-6, TNF-α, and hs-CRP in the study group

were lower than those in the control group after treatment, suggesting that super-selective embolization for patients with parasagittal meningiomas could reduce the inflammatory response and avoid disease deterioration to ensure long-term efficacy. Hs-CRP is an acute-phase protein synthesized by the liver that sensitively reflects the magnitude of the inflammatory response, and TNF-α is an inflammatory reaction initiator that causes inflammatory damage and promotes the inflammatory response and the release of proinflammatory factors such as IL-6, and the proliferation of activated T cells further intensifies the inflammatory response. The results of this study are consistent with the findings of Vivian et al. which showed that super-selective embolization plus resection of meningioma reduced surgical trauma and inflammatory response and ameliorated the prognosis of patients. Furthermore, the results of the three-month follow-up showed that one patient in the study group was reoperated due to tumor recurrence and no patient died, while three patients in the control group were reoperated due to tumor recurrence and one patient died. However, the difference in recurrence and mortality rate between the two groups did not come up to the statistical standard ($P > 0.05$). The reason may be that compared with traditional surgery, super-selective embolization has a clear surgical field and can fully expose intracranial blood vessels, nerves, and tumors. The important brain tissue can greatly improve the success rate of surgery and reduce the occurrence of postoperative complications and recurrence.

This finding might be attributed to the study's small sample size and short follow-up period, as well as the distribution of tumor pathology types in both groups. To give more accurate results, future research with bigger sample size and long-term follow-up will be done.

5. Conclusion

The use of super-selective embolization for parasagittal meningiomas contributes to reducing intraoperative bleeding, effectively improving tumor resection and surgical safety, and lowering inflammatory factor levels. Further trials are, however, required before clinical promotion.

Data Availability

All data generated or analyzed during this study are included in this published article.

Consent

All authors have read and approved the manuscript to be considered for publication.

Conflicts of Interest

All authors declared that they have no conflicts of interest.

Authors' Contributions

Zhaoke Zheng drafted and revised the manuscript. Linwei Jia, Peihua Zhang, Yaohui Tian, and Xi Chen is in charge of data collection. Zhaoke Zheng conceived and designed this article, was in charge of syntax modification, and revised the manuscript. All the authors have read and agreed to the final version of the manuscript.

References

[1] I. Maggio, E. Franceschi, A. Tosoni et al., "Meningioma: not always a benign tumor. a review of advances in the treatment of meningiomas," *CNS Oncology*, vol. 10, no. 2, p. Cns72, 2021.

[2] F. Nassiri, J. Liu, V. Patil et al., "A clinically applicable integrative molecular classification of meningiomas," *Nature*, vol. 597, no. 7874, pp. 119–125, 2021.

[3] R. A. buerki, C. M. Horbinski, T. Kruser, P. M. Horowitz, C. D. James, and R. V. Lukas, "An overview of meningiomas," *Future Oncology*, vol. 14, no. 21, pp. 2161–2177, 2018.

[4] T. Mathiesen, "Parasagittal meningiomas," *Handbook of Clinical Neurology*, vol. 170, pp. 93–100, 2020.

[5] S. Spektor, E. Margolin, R. Eliashar, and S. Moscovici, "Purely endoscopic removal of a parasagittal/falx meningioma," *Acta Neurochir (Wien)*, vol. 158, no. 3, pp. 451–456, 2016.

[6] R. H. Gobbato Yamashita, I. S. Neville, M. J. Teixeira, and W. S. Paiva, "Letter to the editor regarding "predictors of nonroutine Discharge disposition among parasagittal/parafalcine meningioma patients"," *World Neurosurgery*, vol. 146, p. 428, 2021.

[7] R. W. Byard, "Parasagittal meningioma: a not so benign entity," *Medicine, Science & the Law*, vol. 57, no. 4, pp. 175–178, 2017.

[8] V. Chandra, N. Agarwal, G. A. Zenonos, X. Zhang, R. L. Hamilton, and P. A. Gardner, "Concomitant parasagittal meningioma and adjacent intracranial abscess of occult etiology," *Journal of Clinical Neuroscience*, vol. 72, pp. 474–480, 2020.

[9] R. A. Zabolotny, A. V. Fedyanin, U. A. Yulchiev, M. V. Galkin, and A. V. Kozlov, "[Comprehensive treatment of patients with parasagittal meningiomas]," *Voprosy neirokhirurgii imeni N.N. Burdenko*, vol. 83, no. 4, pp. 121–125, 2019.

[10] A. A. Essa and A. R. Hamdan, "Sphenoid meningioma enplaque with proptosis: surgical excision, reconstruction and outcome," *Clinical Neurology and Neurosurgery*, vol. 167, pp. 147–156, 2018.

[11] C. Xue, *Study on the Intervention Effect of Traditional Chinese Medicine Acupoint Massage on Deep Vein Thrombosis in Patients after Meningioma Surgery*, Qingdao University, Qingdao, China, 2019.

[12] U. Jensen-Kondering, M. Helle, T. Lindner, O. Jansen, and A. Nabavi, "Non-invasive qualitative and semiquantitative presurgical investigation of the feeding vasculature to intracranial meningiomas using super-selective arterial spin labeling," *PLoS One*, vol. 14, no. 4, Article ID e0215145, 2019.

[13] D. H. Yoo, C. H. Sohn, Y. D. Cho et al., "Superselective pseudocontinuous arterial spin labeling in patients with meningioma: utility in prediction of feeding arteries and preoperative embolization feasibility," *Journal of Neurosurgery*, pp. 1–7, 2020.

[14] T. Yamamoto, T. Ohshima, M. Nishihori et al., "Preoperative embolization of meningiomas with low-concentration n-butyl cyanoacrylate," *Nagoya Journal of Medical Science*, vol. 77, no. 3, pp. 347–353, 2015.

[15] L. Rebai, N. Mahfoudhi, N. Fitouhi, M. A. Daghmouri, and K. Bahri, "Intraoperative tranexamic acid use in patients undergoing excision of intracranial meningioma:

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Evidence-Based Complementary and Alternative Medicine
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Retraction

Retracted: Feasibility and Application of Cluster Nursing to the Care of Patients with Acute Oncology

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

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References

[1] J. Song and L. Fu, "Feasibility and Application of Cluster Nursing to the Care of Patients with Acute Oncology," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 8973449, 7 pages, 2022.

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Research Article

Feasibility and Application of Cluster Nursing to the Care of Patients with Acute Oncology

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Objective. To probe the utility of cluster nursing for the care of acute oncology clients. *Methods*. One hundred fourteen cases of acute oncology pioneers undergoing therapy in our clinic from April 2019 to February 2021 were randomly assigned into two consecutive arms, conventional care and cluster care, in accordance with the nursing modality. Complications, satisfaction, quality of survival, and negative emotions were compared across the two parties. *Results*. The comorbidity incidence rate of the subject matter in the research cohort was 7.02%, which was below the comorbidity rate of 17.54% in the reaction cohort ($P < 0.05$); the percentage of satisfaction in the research cohort was 96.49%, which was higher than the satisfaction rate of 78.95% in the reaction cohort ($P < 0.05$); aftercare, the quality of survival was significantly higher in both groups, and the SAS and SDS scores were significantly lower, with a more pronounced trend of change in the research cohort than in the reaction cohort ($P < 0.05$). *Conclusion*. Bundled care for casualty oncology is of major value, with a marked reduction in the incidence of postoperative complications, high quality of survival, an excellent prognosis and negative mood, high patient morale and satisfaction and compliance with curative treatment, and good support for subsequent care.

1. Introduction

Due to the particularity of the disease, long-term fear and stress in tumor patients will lead to depression and anxiety in the patients. In addition, due to the impact of tumor consumption on metabolism, patients will be accompanied by mental and consciousness disorders, and such people are more susceptible to susceptibility. Oncology surgery patients are usually treated with chemotherapy, in the process of chemotherapy through peripheral venous puncture central venous catheter (PICC) is more widely used, the pain caused by repeated puncture can be avoided, and at the same time can largely reduce the damage and stimulation of blood vessels [1]. Failure to do so can lead to a range of complications that can impact patient care and health status recovery [2]. To avoid complications during the indwelling of the PICC catheter and ensure the smooth progress of the treatment process, this study adopts the cluster nursing method, which has high application value in improving the prognosis of patients. It is an evidence-based nursing method. Effective collection can realize nurse-led and multidisciplinary team cooperation. The main concept of nursing is "all-around nursing," which is helpful to relieve patients' negative emotions and improve the safety of treatment [3]. The application of this nursing approach has prolonged the time of PICC catheter placement and improved the quality of survival. This nursing approach has matured in foreign studies, and although it started later in China, it has now been reported in emergency and malignant tumors [4].

In the current census, 114 emergency oncology patients treated in our institute from April 2019 to February 2021 were selectively selected to inspect the value of the application of clustering nursing, which is reported as follows.

2. Materials and Methods

2.1. General Materials. One hundred fourteen urgent oncology patients undergoing therapy in our clinic from April 2019 to February 2021 were selectively recruited. In the reference arm ($n = 57$), there were 32 males and 25 females,

mean age was 46.32 ± 4.07 years, mean disease duration was 2.65 ± 0.34 years, mean BMI was 22.35 ± 2.04 kg/m^2, and placement site: 3 left arms and 54 right arms; in the study group ($n = 57$), there were 33 males and 24 females, mean age was 46.33 ± 4.09 years, target age was 46.33 ± 4.09 years, mean disease duration was 2.64 ± 0.35 years, mean BMI was 22.32 ± 2.06 kg/m^2, and site of cannulation: 2 cases in the left arm and 55 cases in the right arm. The data were comparable ($P > 0.05$), the patients were aware of the exercise, and the study was approved by the institutional ethics committee.

2.1.1. Inclusion Criteria. (1) Pathologically diagnosed acute oncology patients; (2) patients requiring infusion or catheterization; (3) patients with no communication or functional impairment and consciousness; (4) adult recipients.

2.1.2. Exclusion Criteria. (1) Organ failure; (2) end-stage disease; (3) hypercoagulable blood or thrombosis history; (4) coinfectious disorders.

2.2. Methods

2.2.1. Routine Care. Nursing staff provided personal self-care guidance and health education to patients and dealt with adverse reactions such as allergies, infections, and blocked tubes in a timely manner during the care process.

2.2.2. Clustered Nursing. (1) Skills and knowledge training: the cluster nursing team is established, and the members of the team are trained in practical and theoretical knowledge. Only after passing the assessment (theoretical and practical assessment scores are higher than 80 points) can they take on nursing work. (2) Health education: the movement of the arm and trunk on the side where the tube is placed should not be too great, patients should wear loose clothing when lying in bed as far as possible and avoid pressure on the limb on the side where the tube is placed when asleep, patients should perform fist-clenching and fist-unclenching movements from time to time, and if the patch does not fit the skin, the nursing staff should be informed promptly for replacement. The nursing process should also observe the patient's mood fluctuation condition, take the initiative to ask about the situation and subjective feelings of the patient in a gentle tone, and give support and encouragement to the patient. (3) Aseptic operation: nursing staff should pay attention to hand hygiene, nursing and puncture utensils should be disinfected before use, an iodophor, cotton balls, and swabs should be disposable and used as they are opened. (4) Standardize the catheterization process: assess the patient with the aid of ultrasound and select the appropriate catheterization vessel according to the patient's specific condition; the diameter of the cathetezised vessel needs to meet the requirement of greater than two times the diameter of the catheter, and deliver the tube at the appropriate speed, with any resistance being dilated with sodium chloride injection to reduce the resistance, but it is worth noting that mandatory tube delivery or repeated pumping is strictly forbidden. (5) Develop standards for maintenance of the catheter: daily replacement of the positive pressure connector, routine disinfection of the catheter connection, and also observation of the catheter patency and flushing by choosing the pulsatile positive pressure flushing method. The catheter scale is observed in detail and recorded during care so that catheter displacement can be judged. The catheter patch should be changed at least once a week, and after this is done, the patch should be removed from top to bottom and the puncture site disinfected, then the tension-free patch should be placed on the punctured skin and fixed effectively to ensure it is airtight, and the maintenance date and person should be written on the patch. The date of maintenance and the person who maintains it are written on the film. (6) Posthospital follow-ups: nursing staff gave discharged patients an instruction manual and conducted regular 3-month telephone follow-up to understand the maintenance status of catheters outside the hospital, continue to promote nursing work, improve patients' professional identity with nursing staff, and improve nursing satisfaction and compliance.

2.3. Observation Indicators

2.3.1. Complications. All subjects received prognostic follow-up, and no patients were lost to follow-up. Patients were monitored for a 3-month prognosis after care, and catheter obstruction, venous thrombosis, phlebitis, and other conditions were recorded. Phlebitis was graded into 4 levels according to the severity of the patient, with no obvious symptoms as level 0, redness or pain at the puncture site as level 1, redness and pain at the puncture site as level 2, redness and palpable striated veins at the puncture site with obvious pain as level 3, and redness and palpable striated veins at the puncture site with obvious pain and overflowing pus as level 3. There was a positive correlation between the incidence of adverse reactions and patient prognosis.

2.3.2. Satisfaction. The hospital customized satisfactory scale was applied to assess patient satisfaction, with greater than 85 being very pleased, 65–85 being pleased, and less than 65 being dissatisfied [5]. Satisfaction = number of cases (very satisfied + satisfied)/total number of cases, multiplied by 100%.

2.3.3. Quality of Survival. The quality of life was assessed using the interview method, which contains 6 functions: environment, physical functioning, social relationships, psychological status, independence, and religion/spirituality, with a total score of 100 [6]. The score is positively correlated with the quality of survival.

2.3.4. SAS and SDS Scores. 53 is the upper limit of the normal score, >70 is severe anxiety and depression, 63–72 is moderate anxiety and depression, and 53–62 is mild anxiety and depression [7]. SAS and SDS scores were positively correlated with patients' unhealthy moods.

2.4. Statistical Methods. It collects the data into EXCEL spreadsheet, SPSS22.0 statistics software is used for data analysis to collect data to carry out the normal distribution test, such as data conform to a normal distribution, count data are described by composition ratio and rate of complications, degree of satisfaction analysis of differences between groups, chi-square test, measurement data to (mean ± standard deviation), *T*-test was used to analyze the difference between the quality of life and negative emotion groups and $P < 0.05$ indicates that the difference between groups is statistically significant. GraphPadPrism8 was used in the study.

(1) General Information of the Two Sets of Groups. The gender, age, disease duration, and BMI of the two cohorts were not statistically significant ($P > 0.05$), indicating that the two groups of data are comparable, and the research feasibility is high (see Table 1) (Table 1). *(2) Simplification Ratio of the Two Complication Arms.* The occurrence of complex complications in the studied cohort was 7.02%, which was lower than that of the complication in the controversial category of 17.54% ($P < 0.05$) (Table 2 and Figure 1). *(3) Comparison of Satisfactory Level of Satisfaction between the Two Sets of Groups.* The degree of dissatisfaction in the case of the target date was 96.49%, which was above the control group's satisfaction rate of 78.95% ($P < 0.05$) (Table 3 and Figure 2). *(4) Survival Quality Contrast between the Two Teams.* Aftercare, the overall quality of survival was markedly higher in both arms, and the trend was more pronounced in the target arms than in the base arms ($P < 0.05$) (Table 4 and Figure 3). *(5) Comparison of SAS and SDS Scores between the Two Sets of Groups.* Aftercare, SAS and SDS scores were significantly lower in both groups, and the trend of lowering SAS and SDS scores was more evident in the control cohort ($P < 0.05$) (Table 5 and Figure 4).

3. Discussion

The PICC method of intravenous drug delivery is often used clinically, which can reduce the degree of vascular irritation, the incidence of venous pressure is significantly reduced, the chance of drug extravasation is reduced, and there is little or no significant skin irritation or damage to the veins [8–10]. The PICC approach to intravenous drug delivery is becoming more widely used in malignancy treatment and has obvious advantages, but effective patient care is still required in the hope of ensuring chemotherapy continuity and reducing the impact on patient life safety [11–13]. Clustered care can standardize the steps of nursing operations and is a comprehensive nursing approach that can establish a good nurse-patient relationship and ideal patient care outcomes [14]. According to Tang [15], in the care of PICC tumor patients with tubes, adverse effects such as those caused by cluster care were substantially reduced, and the results of the two studies were highly similar.

Clustered care is a way of providing multiple elements of care in the same setting and, at the same time, is highly operational [16–18]. It is not just at the time of PICC placement, but throughout the entire care process after placement, so it needs to be applied with good rules of care, with clear goals and time characteristics [19]. All nursing staff need to have good nursing skills and undergo professional technical training before care, which guarantees the level and quality of care and enhances nursing safety and team care [20–22]. The results of this study showed that the satisfaction rate of the research group was 96.49%, which was 78.95% higher than that of the control group. Foreign scholars Liu et al. [23] researched the effect of cluster nursing in emergency tumors. The results showed that, after nursing, the patient satisfaction score was 95.37%. The results of this study are highly consistent with the results of foreign research. Therefore, this nursing method has high feasibility and has been well received by patients. The main guiding basis of cluster nursing is evidence-based medicine. Nursing staff can achieve good nursing through communication with patients, providing patients with more valuable nursing methods and achieving targeted nursing. For the improvement of patient outcomes, after nursing, the quality of life of patients was significantly improved, and the risk of infection was significantly reduced [24].

The results of this study showed that the satisfaction rate of the study group was 96.49%, which was higher than the satisfaction rate of the check group, which was 78.95%, so it was said that the nursing care method was all highly feasible and achieved the unanimous praise of the patients [23]. The main guiding basis of intensive care is evidence-based medicine, and nursing staff can achieve good care by communicating with patients, can provide patients with more valuable care, can achieve targeted care, and can improve patient outcomes by integrating various elements, and after care, the quality of patient survival is significantly improved and the risk of patient infection is significantly reduced [24]. Oncology via patients with high psychological stress and loss of confidence in life and the application of the PICC catheter approach to intravenous infusion, where foreign bodies are implanted in the patient's body, can lead to physical discomfort symptoms, which disturbs the patient's life and aggravates anxiety [25]. By providing health education and psychological intervention to the patients, the nursing staff helped to relieve the patients' anxiety and depression and speed up the time of disappearing symptoms.

Cluster nursing is of great significance to the rehabilitation of emergency tumor patients, which can improve the negative emotions and prognosis of patients, and the satisfaction of patients and their families is high. The research can verify the feasibility and safety of the nursing method from three aspects of nursing staff, family members, and patients and can establish a friendly nursing model. Therefore, it is of practical significance to apply cluster nursing in the rehabilitation of emergency tumor patients in this study. However, the research will be affected by some confounding factors, so it cannot represent all the research results, and the research is only conducted on some groups, so the research results may be biased to a certain extent. In addition, the research is a single-center study, so it cannot be representative of the overall population. The promotion of this nursing method has had a certain impact. Therefore, it is necessary to conduct a multicenter and large-sample study based on the cluster nursing model, to extend the study period and to analyze the long-term prognosis effect of this nursing method on patients.

Table 1: General profile of the two cohorts.

Group	Number of examples	Gender (m/f)	Age (years)	Duration of illness (years)	BMI (kg/m^2)
Control group	57	32/25	46.32 ± 4.07	2.65 ± 0.34	22.35 ± 2.04
Study group	57	33/24	46.33 ± 4.09	2.64 ± 0.35	22.32 ± 2.06
X^2/t	—	0.036	0.013	0.155	0.078
P	—	0.850	0.990	0.877	0.938

Table 2: Summary of complications in the two arms versus each other (cases, %).

Group	Number of examples	Catheter dislodged	Catheter blockage	Venous thrombosis	Local inflammatory skin reaction	Phlebitis	Incidence of complications
Control group	57	3 (5.26)	2 (3.51)	1 (1.75)	3 (5.26)	1 (1.75)	10 (17.54)
Study group	57	1 (1.75)	1 (1.75)	0 (0.00)	1 (1.75)	1 (1.75)	4 (7.02)
X^2	—	—	—	—	—	—	2.931
P	—	—	—	—	—	—	0.087

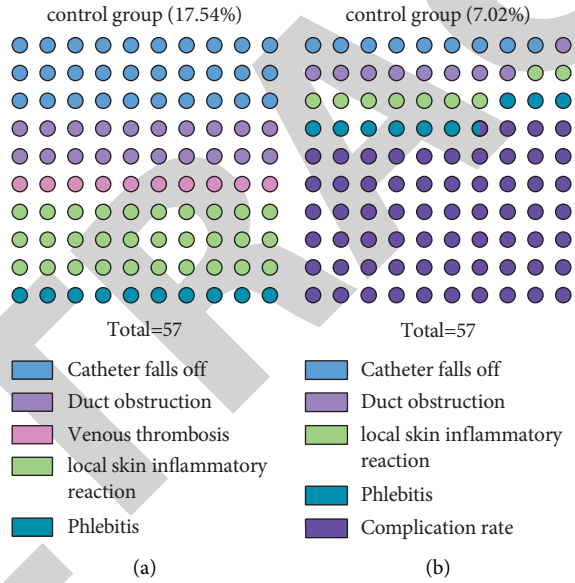

Figure 1: Concurrent illnesses in both sets of groups. *Note*. In the evaluation of complications such as catheter detachment, catheter obstruction, venous thrombosis, local inflammatory reaction of the skin, and phlebitis, the incidence of complications in the study group was lower than that in the control group, and the difference between the groups was statistically significant ($P < 0.05$).

Table 3: Contrast of contentment ratio between the two subgroups (cases, %).

Group	Number of examples	Very pleased	Satisfaction	Unsatisfactory	Satisfaction
Control group	57	31 (54.39)	14 (24.56)	12 (21.05)	45 (78.95)
Study group	57	43 (75.44)	12 (21.05)	2 (3.51)	55 (96.49)
X^2	—	—	—	—	8.143
P	—	—	—	—	0.004

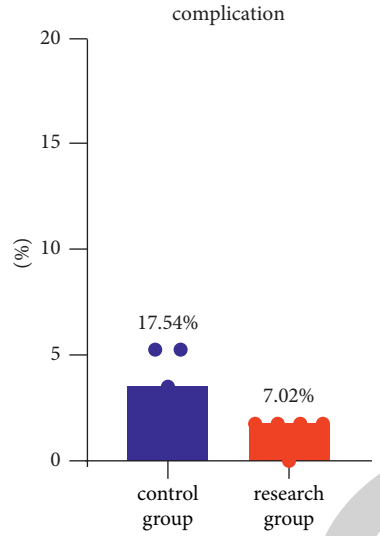

Figure 2: Satisfaction in both arms. *Note*. The research group was more satisfied than the control group, and the difference was statistically significant ($P < 0.05$).

Table 4: Quality of existence contrasted between the two arms ($\bar{x} \pm s$).

Group	Control group (minute)		Research group (minute)	
	Before nursing	After care	Before nursing	After care
Environment	12.14 ± 4.32	14.65 ± 5.42[a]	12.13 ± 4.35	18.48 ± 5.61[ab]
Physiological function	21.54 ± 6.71	24.62 ± 6.51[a]	21.52 ± 6.72	32.73 ± 8.61[ab]
Social relations	13.05 ± 4.17	16.22 ± 5.41[a]	13.29 ± 2.67	23.12 ± 6.35[ab]
Mental state	21.54 ± 6.52	25.43 ± 6.55[a]	21.73 ± 6.25	33.51 ± 8.24[ab]
Independence	15.52 ± 6.24	20.73 ± 6.67[a]	15.53 ± 6.21	30.91 ± 6.15[ab]
Religious/spiritual	20.12 ± 4.34	24.51 ± 4.72[a]	20.15 ± 4.33	28.63 ± 4.52[ab]

Note. [a]$P < 0.05$ means that there is statistical significance in the comparison within the group, and [ab]$P < 0.05$ means that the difference is statistically significant in the comparison between the groups.

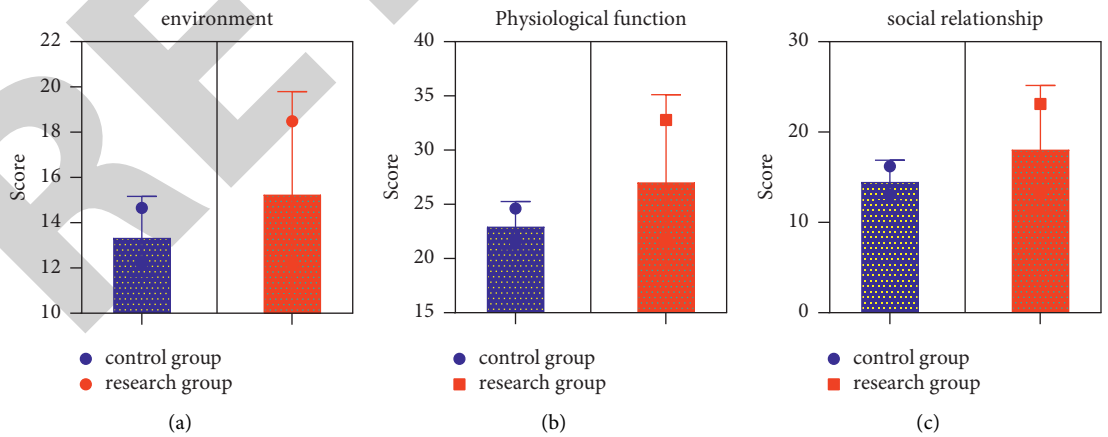

Figure 3: Continued.

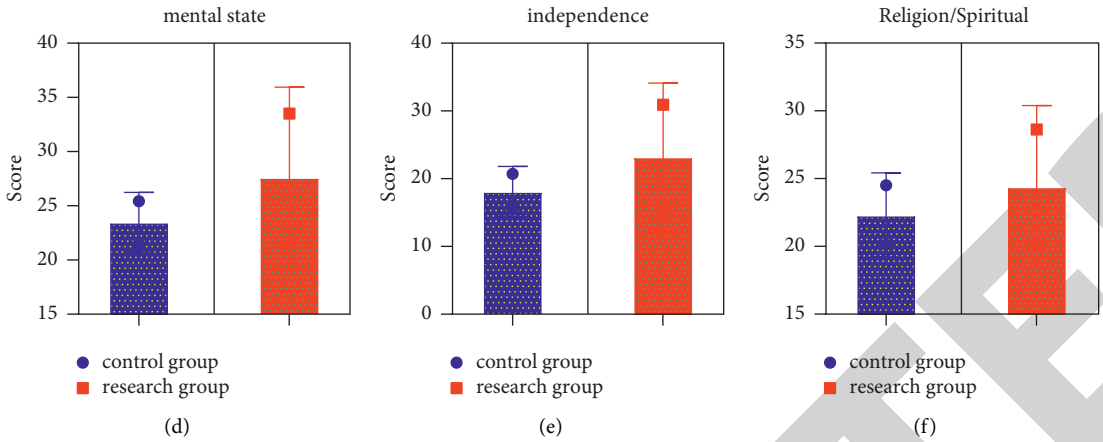

Figure 3: Quality of survival in the two sets of groups. *Note*. In the evaluation of survival functions such as environment, physiological function, social relationship, psychological state, independence, and religion/spirit, the study group had a higher quality of life score than the control group, and the difference was statistically significant ($P < 0.05$).

Table 5: Comparison of SAS and SDS scoring between the two sets of participants ($\overline{x} \pm s$).

Group	Number of examples	SAS score (minute)		SDS score (minute)	
		Number of examples	After care	Number of examples	After care
Control group	57	40.35 ± 6.85	32.57 ± 5.14[a]	40.68 ± 6.47	31.19 ± 5.23[ab]
Study group	57	40.36 ± 6.91	22.84 ± 4.21[a]	40.71 ± 6.42	21.76 ± 4.05[ab]
t	—	0.008	11.057	0.025	10.776
P	—	0.994	< 0.001	0.980	< 0.001

Note. [a]$P < 0.05$ means that there is statistical significance in the comparison within the group, and [ab]$P < 0.05$ means that the difference is statistically significant in the comparison between the groups.

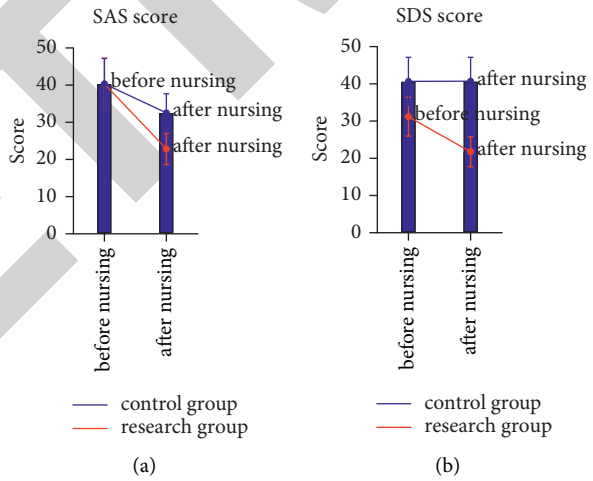

Figure 4: SAS and SDS scores for both sets of groups. *Note*. There was no significant difference in SAS and SDS scores between the two groups before nursing, the negative emotions in both groups were significantly improved after nursing, and the difference was statistically significant ($P < 0.05$).

4. Conclusion

Clustered care for emergency oncology patients is of great significance. The incidence of postoperative complications in patients is significantly reduced, the quality of survival is high, the prognosis and poor mood of patients can be effectively improved, and patient satisfaction and treatment compliance are high, which can provide good support for the next nursing work.

Data Availability

All data generated or analyzed during this study are included in this published article.

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Retraction

Retracted: Analysis of the Effect of Laparoscopic Cholecystectomy for Acute Cholecystitis after Percutaneous Transhepatic Gallbladder Puncture and Drainage

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References

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Research Article

Analysis of the Effect of Laparoscopic Cholecystectomy for Acute Cholecystitis after Percutaneous Transhepatic Gallbladder Puncture and Drainage

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Objective. To assess the effect of laparoscopic cholecystectomy for acute cholecystitis after percutaneous transhepatic gallbladder drainage (PTGBD). *Methods*. A total of 70 patients with acute cholecystitis diagnosed and treated in our hospital between April 2020 and November 2021 were recruited and assigned to receive either conventional treatment (conventional group) or PTGBD plus laparoscopic cholecystectomy (experimental group) according to the order of admission (with January 2021 as the cut-off time point), with 35 cases in each group. Outcome measures included treatment outcomes, surgical indices, and postoperative recovery. *Results*. Patients in the experimental group showed significantly less intraoperative hemorrhage volume and shorter operative time, time-lapse before passing gas, and hospital stay (83.15 ± 31.17, 32.54 ± 12.61, 23.02 ± 4.61, 7.98 ± 3.24) versus those in the conventional group (120.56 ± 30.55, 61.01 ± 15.54, 28.15 ± 5.91, 11.95 ± 4.15) ($P < 0.05$). The incidence of conversion to open surgery and postoperative drainage in the experimental group was significantly lower (2.86%, 5.71%) than that of the conventional group (25.71%, 45.71%) ($P < 0.05$). The differences in the postoperative body temperature of the two groups did not come up to statistical standard ($P > 0.05$). The experimental group had faster body temperature recovery and leukocyte recovery and better leukocyte levels (1.25 ± 0.56, 2.36 ± 0.48, 7.92 ± 1.36) than the conventional group (3.11 ± 1.05, 5.41 ± 0.63, 10.52 ± 2.78) ($P < 0.05$). There was 1 (2.86%) case of pneumothorax and 1 (2.86%) case of intestinal bleeding in the experimental group, and there were 2 (5.71%) cases of biliary leakage, 3 (8.57%) cases of pneumothorax, 4 (11.43%) cases of intestinal bleeding, 5.71% cases of incisional infection, 1 (2.86%) case of respiratory failure, and 1 (2.86%) case of liver damage in the conventional group. The experimental group showed a significantly lower incidence of complications (5.71%) versus the conventional group (37.14%) ($P < 0.05$). *Conclusion*. PTGBD plus laparoscopic cholecystectomy for acute cholecystitis effectively improves surgical safety, promotes patients' postoperative recovery, and reduces the incidence of conversion to open surgery and postoperative complications with a high safety profile. Further trials are, however, required prior to clinical promotion.

1. Introduction

Acute cholecystitis is a common acute gastrointestinal disorder caused by obstruction of the bile cyst duct and bacterial invasion. Clinical data show that its incidence is only second to acute appendicitis [1, 2]. Its main clinical manifestation is paroxysmal colic in the right upper abdomen with significant tenderness and abdominal stiffness, and the pain may extend to the right shoulder and back. Acute cholecystitis is an acute inflammatory disease with typical inflammatory manifestations of redness, swelling, pain, and dysfunction. Because the gallbladder is deep in the abdomen, local signs and symptoms, such as fever (mild to moderate) and rapid heartbeat, occur when gallbladder inflammation spreads to the peritoneum. However, the presence of chills or high fever is indicative of a serious condition [3, 4]. Relevant epidemiological statistics show that acute cholecystitis is commonly seen across all age groups with a higher incidence in women than in men (from 3 times that of men before the age of 50 years to 1.5 times

after 50-year-old). Acute cholecystitis is divided into acute calculous cholecystitis and acute noncalculous cholecystitis [5]. The onset of acute calculous cholecystitis may be attributed to bacterial infections during biliary arrest due to direct injury to the gallbladder mucosa. Acute noncalculous cholecystitis is mostly associated with severe infection or trauma, the etiology of which is still poorly understood and is mostly a local manifestation of systemic stress, i.e., severe systemic disease with severe gallbladder inflammation, mostly seen in the frail or elderly. Given the rapid onset of acute cholecystitis and its risk to *h* in severe cases, timely medical management, and hospitalization are required [6]. Currently, surgery is the mainstay of clinical treatment for acute cholecystitis to relieve the symptoms in a safe, simple, and effective manner. For elderly and frail patients, surgery should be performed with caution or elective surgery is indicated [7, 8]. Currently, laparoscopic cholecystectomy is the preferred surgical approach, in which three or four ports with a length of 0.5–1.5 cm are made in the right abdomen after the establishment of a pneumoperitoneum, followed by the opening of the triangle of Calot, severance of the cystic duct and the cystic artery, and removal of the entire gallbladder and the stones [9–11]. It is considered the gold standard for the treatment of gallstones, with significant advantages such as small trauma and rapid recovery [12]. Nevertheless, if the patient is ineligible for direct cholecystectomy, cholecystostomy or percutaneous transhepatic gallbladder drainage (PTGBD) can be performed to remove purulent bile and reduce gallbladder pressure, followed by selective cholecystectomy after stabilization of the disease. PTGBD allows rapid emptying of infected bile, reduces gallbladder tension, avoids bile duct wall rupture, decreases toxin absorption, relieves gallbladder obstruction, and controls disease progression [13]. It was found that PTGBD requires prudent use for patients with moderate acute cholecystitis due to the risk of organ damage, severe local inflammation, and the difficulty of surgical operation. In the present study, an attempt was made to assess the clinical effectiveness of laparoscopic cholecystectomy after percutaneous transhepatic gallbladder drainage (PTGBD) for acute cholecystitis so as to provide a reference for clinical treatment.

2. Materials and Methods

2.1. Participants. Seventy patients (32 males and 38 females, aged 25–85 years) with acute cholecystitis treated in our hospital from April 2020 to November 2021 were recruited and randomly divided into two groups of 35 patients each in order of admission (with January 2021 as the cut-off time point) to receive conventional treatment (conventional group) or PTGBD plus laparoscopic cholecystectomy (experimental group). All patients and their families gave informed and signed consent, and the study was approved by our ethics committee (Approval No.20201520).

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria.

(1) Patients who meet the clinical diagnostic criteria associated with acute cholecystitis [6].

(2) Patients who are conscious and not mentally impaired.

(3) Patients with an onset of more than 1 week.

(4) Patients with imaging showing local adhesions, including adhesions of the gallbladder to the colon or obscure triangles of the duodenum and Calot.

2.2.2. Exclusion Criteria

(1) Patients with contraindications to surgery or related treatment.

(2) Patients with coagulation disorders or haematological disorders.

(3) Patients with a perforated gallbladder, common bile duct stones, or atrophic cholecystitis.

(4) Patients with a history of upper abdominal surgery.

2.3. Treatment Methods. Patients in the conventional group received conventional treatment, including anti-infection, antispasmodic, analgesic, and comorbidity management, followed by laparoscopic cholecystectomy [14, 15]. After routine disinfection and draping, the patients received endotracheal intubation and general anesthesia. A CO2 pneumoperitoneum was then established with a pressure of 10–14 mm Hg. Using the conventional three or four-port laparoscopic method, laparoscopic instruments were placed through the trocars for gallbladder traction to separate the adhesions around the gallbladder and lift the hepatopancreatic ampulla. The triangle of Calot was cut open to identify the gallbladder access, common hepatic duct, and common bile duct, followed by the retrograde, antegrade, or combined dissection of the gallbladder. The gallbladder duct and gallbladder artery were severed after fixation using hemostatic clips, followed by hemostasis of the gallbladder using electrocautery, and removal of the resected gallbladder. A subhepatic drainage tube was placed for abdominal drainage and was removed 2–4 d postoperatively. In the event of serious injury to the surrounding organs that results in an unsuitable condition of the Calot's triangle for laparoscopic surgery, the patient was promptly converted to open surgery [16]. The patients received antibiotic treatment within 3–5 days after surgery.

Patients in the experimental group received PTGBD plus laparoscopic cholecystectomy. PTGBD was performed 40 days prior to laparoscopic cholecystectomy. After local disinfection and draping, the patient received local infiltration anesthesia with 2% lidocaine in the supine position. The condition of the gallbladder and its relationship with the surrounding organs were determined by a LOGIQE9 color Doppler ultrasound diagnostic instrument (GE, USA) using a C5-1 curved convex array probe with a probe frequency of 1–5 MHz to clarify the site of the gallbladder puncture. Cutaneous puncture was performed at the 8th or 9th intercostal space in the right axillary midline, and the puncture needle was passed through the liver tissue at the base and middle part (1/3) of the gallbladder to penetrate the gallbladder. After hollowing the needle, the purulent bile was

aspirated, and the needle was then withdrawn. Along the guidewire, 4–6 cm of the deep venous catheter in the gallbladder was discarded, the guidewire was pulled out, and the catheter was attached to the skin with a sterile bag for continued voiding. In the event of poor bile flow in the catheter, the inner wall of the catheter was rinsed with 5–10 ml of saline to clear the catheter. Holistic treatment was administered during surgery, including broad-spectrum antibiotics administration, correction of water-electrolyte and acid-base imbalance, and rehydration. Postoperatively, patients received anti-infection treatment, and laparoscopic cholecystectomy was performed after 40 days, which was similar to that of the conventional group.

The serum indicator used the reagents and instruments provided by the hospital.

2.4. Outcome Measures.

(1) *Surgical Indices*. The operation time, intraoperative hemorrhage volume, time-lapse before passing gas, and hospital stay of the two groups were recorded and compared.

(2) *Clinical Efficacy* [17]. The incidence of conversion to open surgery and postoperative drainage of the two groups were calculated and compared.

(3) *Postoperative Recovery* [18]. The body temperature recovery time, leukocyte recovery time, and postoperative leukocyte level of the two groups were recorded and compared.

(4) *Postoperative Complications* [19]. The occurrence of postoperative complications, including biliary leakage, pneumothorax, intestinal bleeding, incisional infection, respiratory failure, and liver damage, were recorded and compared between the two groups.

2.5. Statistical Analysis. The data obtained in this study were analyzed using the SPSS22.0 software. The measurement data are expressed as (mean ± standard deviation) and analyzed using the independent sample *t*-test. The count data are expressed as the number of cases (%) and tested with the chi-square test. The significance was considered statistically significant at a *P*value <less than 0.05.

3. Results

3.1. Baseline Patient Characteristics. There were 17 males and 18 females in the experimental group, aged 25–85 years, with a mean age of 60.08 ± 8.83 years, a BMI of 25.17 ± 3.63 kg/m^2, 11 cases of diabetes mellitus, and 18 cases of hypertension. There were 15 males and 20 females in the experimental group, aged 25–85 years, with a mean age of 60.13 ± 8.21 years, a BMI of 25.37 ± 3.31 kg/m^2, 9 cases of diabetes mellitus, and 21 cases of hypertension. The baseline patient characteristics of the two groups were comparable ($P > 0.05$) (Table 1).

3.2. Surgical Indices. Patients in the experimental group were associated with significantly less intraoperative hemorrhage volume and shorter operative time, time-lapse before passing gas, and hospital stay (83.15 ± 31.17, 32.54 ± 12.61, 23.02 ± 4.61, 7.98 ± 3.24) versus those in the conventional group (120.56 ± 30.55, 61.01 ± 15.54, 28.15 ± 5.91, 11.95 ± 4.15) ($P < 0.05$) (Table 2).

3.3. Clinical Efficacy. The incidence of conversion to open surgery and postoperative drainage in the experimental group was significantly lower (2.86%, 5.71%) than that of the conventional group (25.71%, 45.71%) ($P < 0.05$) (Table 3).

3.4. Postoperative Recovery. The differences in the postoperative body temperature of the two groups did not come up to the statistical standard ($P > 0.05$). The experimental group had faster body temperature recovery and leukocyte recovery and better leukocyte levels (1.25 ± 0.56, 2.36 ± 0.48, 7.92 ± 1.36) than the conventional group (3.11 ± 1.05, 5.41 ± 0.63, 10.52 ± 2.78) ($P < 0.05$) (Table 4).

3.5. Complications. In the experimental group, there was 1 (2.86%) case of pneumothorax and 1 (2.86%) case of intestinal bleeding. In the conventional group, there were 2 (5.71%) cases of biliary leakage, 3 (8.57%) cases of pneumothorax, 4 (11.43%) cases of intestinal bleeding, 5.71% cases of incisional infection, 1 (2.86%) case of respiratory failure, and 1 (2.86%) case of liver damage. The experimental group showed a significantly lower incidence of complications (5.71%) versus the conventional group (37.14%) ($P < 0.05$) (Table 5).

4. Discussion

Cholecystitis is the collective term for acute cholecystitis and chronic cholecystitis and refers to a process of acute or chronic inflammatory reaction in the gallbladder caused by gallbladder stones [20]. Cholecystitis is a common surgical disease with high prevalence and is divided into acute and chronic types according to its clinical manifestations. In the acute phase of cholecystitis, the symptoms of epigastric pain can be severe and the disease progresses rapidly, which requires urgent medical attention. Chronic cholecystitis often coexists with gallbladder stones and compromises the quality of life of patients despite mild symptoms [9]. Routine treatment of cholecystitis primarily focuses on aggressive prevention and treatment of bacterial infections and complications. In chronic cholecystitis, symptomatic antispasmodic, analgesic, and anti-inflammatory treatment, together with daily dietary care, deserve great attention [21]. In the case of acute cholecystitis, laparoscopic cholecystectomy is the main treatment for cholecystitis. However, the unclear anatomical plane of Calot's triangle in acute cholecystitis leads to difficulties in gallbladder separation, which prevents the direct implementation of laparoscopic cholecystectomy. Moreover, cholecystitis develops rapidly with severe complications, heavily compromising the health and safety of patients. Clinical treatment of acute cholecystitis targets symptom relief, elimination of infection, and drainage of stagnant bile, for which conservative therapy is mostly

Table 1: Baseline patient characteristics ($\overline{x} \pm s$).

Group	n	Gender		Age (year)		BMI (kg/m^2)	Underlying disease	
		Male	Female	Range	Mean		Diabetes mellitus	Hypertension
Experimental	35	17	18	25–85	60.08 ± 8.83	25.17 ± 3.63	11	18
Conventional	35	15	20	25–85	60.13 ± 8.21	25.37 ± 3.31	9	21
t	—	—	—	—	0.025	0.241	—	—
P value	—	—	—	—	0.980	0.810	—	—

Table 2: Surgical indices ($\overline{x} \pm s$).

Group	n	Operative time (min)	Intraoperative hemorrhage volume (ml)	Time-lapse before passing gas (h)	Hospital stay (d)
Experimental	35	83.15 ± 31.17	32.54 ± 12.61	23.02 ± 4.61	7.98 ± 3.24
Conventional	35	120.56 ± 30.55	61.01 ± 15.54	28.15 ± 5.91	11.95 ± 4.15
t	—	5.071	8.416	4.049	4.461
P value	—	<0.001	<0.001	<0.001	<0.001

Table 3: Conversion to open surgery and postoperative drainage (%).

Group	N	Conversion to open surgery		Postoperative drainage	
		n	Rate	n	Rate
Experimental	35	1	2.86	2	5.71
Conventional	35	9	25.71	16	45.71
x^2	—	7.467		14.658	
P value	—	0.006		<0.001	

Table 4: Postoperative recovery ($\overline{x} \pm s$).

Group	N	Recovery time		Postoperative level	
		Body temperature (d)	Leukocyte (d)	Body temperature (°)	Leukocyte (×10^9/L)
Experimental	35	1.25 ± 0.56	2.36 ± 0.48	37.88 ± 0.62	7.92 ± 1.36
Conventional	35	3.11 ± 1.05	5.41 ± 0.63	38.01 ± 0.74	10.52 ± 2.78
T	—	9.247	22.782	0.797	4.97
P value	—	<0.001	<0.001	0.428	<0.001

Table 5: Postoperative complications (%).

Group	N	Biliary leakage	Pneumothorax	Intestinal bleeding	Incisional infection	Respiratory failure	Liver damage	Total incidence
Experimental	35	0 (0.00)	1 (2.86)	1 (2.86)	0 (0.00)	0 (0.00)	0 (0.00)	2 (5.71)
Conventional	35	2 (5.71)	3 (8.57)	4 (11.43)	2 (5.71)	1 (2.86)	1 (2.86)	13 (37.14)
x^2	—				10.267			
P value	—				0.001			

adopted to stabilize patient condition prior to surgical interventions. However, as summarized by years of clinical practice, conservative therapy is considered unsatisfactory [22, 23]. PTGBD, as an alternative to cholecystostomy, facilitates decompression of the patient's gallbladder to achieve adequate drainage, relieve obstruction, and alleviate clinical symptoms [24]. It features multiple merits, such as simple operation, low price, high safety, and reliability, and it minimizes the trauma to the gallbladder wall with little impact on the patient's systemic condition.

The results of the present study showed that patients in the experimental group showed significantly less intraoperative hemorrhage volume and shorter operative time, time-lapse before passing gas, and hospital stay versus those in the conventional group, and the incidence of conversion to open surgery and postoperative drainage of the experimental group was significantly lower than that of the conventional group ($P < 0.05$), suggesting significant benefits of PTGBD following laparoscopic cholecystectomy for patients with acute cholecystitis. The reason may be that compared with direct surgery after conventional therapeutic intervention, PTGBD allows for a better surgical condition and reduces the operation time and intraoperative bleeding. Prior studies revealed that most patients had missed the optimal 72-hour surgery window by the time of admission, and intraoperative adhesions around the gallbladder and the Calot's triangle were observed, resulting in difficulty in dissection and separation under laparoscopy and a higher incidence of intraoperative conversion to open surgery. In the present study, PTGBD treatment significantly reduces

bile duct pressure and gallbladder edema, improves surgical outcomes, and reduces surgical risk. The results were in accordance with the previous research results. Moreover, the differences in the postoperative body temperature of the two groups did not come up to the statistical standard ($P > 0.05$), and the experimental group had faster body temperature recovery, leukocyte recovery, and better leukocyte levels than the conventional group ($P < 0.05$), which may be attributable to the fact that PTGBD promptly relieves biliary pressure in patients and significantly mitigates their clinical symptoms, and local anesthesia has little effect on the recovery of the patient [25]. Furthermore, the experimental group showed a significantly lower incidence of complications (5.71%) versus the conventional group (37.14%) ($P < 0.05$), indicating that PTGBD prior to laparoscopic cholecystectomy constitutes a viable alternative for the treatment of acute cholecystitis, which is attributable to the increased patient tolerance to surgery after the amelioration of patient conditions by performing PTGBD [13]. The results are in line with the findings of Tan et al. (2018), whose study demonstrated that PTGBD could lower the risk of postoperative complications in acute cholecystitis in the elderly, effectively shorten the operative time and postoperative hospital stay, and reduce intraoperative bleeding [26].

Chronic cholecystitis requires symptomatic antispasmodic, analgesic, and anti-inflammatory treatments, as well as attention to daily diet [27]. Antispasmodic and analgesic drugs, such as atropine or demerol, are available for severe upper abdominal pain in the acute phase [28]. Furthermore, timely antibacterial treatment, such as ampicillin, clindamycin, and aminoglycosides, is also required [29]. In addition, choleretic drugs, such as magnesium sulfate, are also encouraged to potentiate the treatment efficiency [30]. For patients with cholecystitis, anti-inflammatory and choleretic Chinese patent medicines, such as Jindan Tablets or Qinggan Lidan Oral Liquid can also be used daily to promote the discharge of bile and reduce the inflammation of the gallbladder [31]. In Chinese medicine, moxibustion and acupuncture are considered effective adjunctive treatments to invigorate the blood and alleviate the clinical symptoms of patients [32]. External drug treatment also contributes to the mitigation of the inflammation of the gallbladder to mitigate the symptoms [33].

However, there are several limitations to this study. Firstly, this study was conducted on a small group of patients from our hospital and might result in bias. Secondly, a follow-up trial was absent to determine prognosis and long-term effects. Future studies with a long-term follow-up and analysis of the molecular mechanisms will be conducted to provide more reliable data.

5. Conclusion

PTGBD plus laparoscopic cholecystectomy for acute cholecystitis effectively improves surgical safety, promotes patients' postoperative recovery, and reduces the incidence of conversion to open surgery and postoperative complications with a high safety profile. Further trials are, however, required prior to clinical promotion.

Data Availability

All the data used in this study are shown in figures and tables.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

References

[1] S. O. Lee and S. K. Yim, "Management of Acute Cholecystitis," *Korean Journal of Gastroenterology*, vol. 71, no. 5, pp. 264–268, 2018.

[2] V. Halpin, "Acute cholecystitis," *BMJ Clinical Evidence*, vol. 2014, 2014.

[3] M. Pisano, N. Allievi, K. Gurusamy et al., "2020 World society of emergency surgery updated guidelines for the diagnosis and treatment of acute calculus cholecystitis," *World Journal of Emergency Surgery*, vol. 15, no. 1, p. 61, 2020.

[4] K. Ukegjini and B. M. Schmied, "Diagnosis and treatment of acute cholecystitis," *Therapeutische Umschau. Revue Therapeutique*, vol. 77, no. 4, pp. 133–146, 2020.

[5] K. Walter, "Acute cholecystitis," *JAMA*, vol. 327, no. 15, p. 1514, 2022.

[6] J. R. Gallaher and A. Charles, "Acute cholecystitis: a review," *JAMA*, vol. 327, no. 10, pp. 965–975, 2022.

[7] C. N. Gutt, J. Encke, J. Koninger et al., "Acute cholecystitis: early versus delayed cholecystectomy, a multicenter randomized trial (ACDC study, NCT00447304)," *Annals of Surgery*, vol. 258, no. 3, pp. 385–393, 2013.

[8] C. P. Rice, K. B. Vaishnavi, C. Chao et al., "Operative complications and economic outcomes of cholecystectomy for acute cholecystitis," *World Journal of Gastroenterology*, vol. 25, no. 48, pp. 6916–6927, 2019.

[9] G. Wakabayashi, Y. Iwashita, T. Hibi et al., "Tokyo Guidelines 2018: surgical management of acute cholecystitis: safe steps in laparoscopic cholecystectomy for acute cholecystitis (with videos)," *Journal of Hepato-Biliary-Pancreatic Sciences*, vol. 25, no. 1, pp. 73–86, 2018.

[10] K. Okamoto, K. Suzuki, T. Takada et al., "Tokyo Guidelines 2018: flowchart for the management of acute cholecystitis," *Journal of Hepato-Biliary-Pancreatic Sciences*, vol. 25, no. 1, pp. 55–72, 2018.

[11] A. Thangavelu, S. Rosenbaum, and D. Thangavelu, "Timing of cholecystectomy in acute cholecystitis," *Journal of Emergency Medicine*, vol. 54, no. 6, pp. 892–897, 2018.

[12] S. I. Panin, V. P. Sazhin, E. M. Konovalov, and I. Podyablonskaya, "Effectiveness of laparoscopic cholecystectomy for acute cholecystitis," *Khirurgiia*, vol. 97, no. 9, pp. 40–47, 2021.

[13] J. Han, D. Xue, H. Tuo, Z. Liang, C. Wang, and Y. Peng, "Percutaneous transhepatic gallbladder drainaged with laparoscopic cholecystectomy versus emergency laparoscopic cholecystectomy for the treatment of moderate acute cholecystitis: a meta-analysis," *Journal of Laparoendoscopic & Advanced Surgical Techniques*, vol. 32, 2021.

[14] C. S. Loozen, J. E. Oor, B. van Ramshorst, H. C. van Santvoort, and D. Boerma, "Conservative treatment of acute cholecystitis: a systematic review and pooled analysis," *Surgical Endoscopy*, vol. 31, no. 2, pp. 504–515, 2017.

[15] R. Cirocchi, S. H. Kwan, G. Popivanov et al., "Routine drain or no drain after laparoscopic cholecystectomy for acute cholecystitis," *The Surgeon*, vol. 19, no. 3, pp. 167–174, 2021.

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Retraction

Retracted: Comparative Analysis of the Anesthesia Effect of Cisatracurium Besylate and Mivacurium Chloride Otolaryngology Surgery

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Huang and Q. Li, "Comparative Analysis of the Anesthesia Effect of Cisatracurium Besylate and Mivacurium Chloride Otolaryngology Surgery," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 6192409, 6 pages, 2022.

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Research Article

Comparative Analysis of the Anesthesia Effect of Cisatracurium Besylate and Mivacurium Chloride Otolaryngology Surgery

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Objective. The aim is to investigate and compare the anesthesia effect of cisatracurium besylate and mivacurium chloride otolaryngology surgery. *Materials and Methods*. 108 patients who underwent ENT surgery under general anesthesia in our hospital from November 2021 to March 2022 were recruited for retrospective analysis, in which patients in the experimental group A were anesthetized with cisatracurium besylate and patients in the experimental group B were anesthetized with mivacurium, and the anesthetic effects and recovery of the two groups were compared and analyzed. *Results*. There was no significant difference in mean arterial pressure, heart rate, and pulse oximetry levels between the two groups at the six time points of admission, anesthesia induction, intubation, end of operation, recovery of consciousness, and extubation (all $P > 0.05$). The train of four stimulation values at end of operation, recovery of consciousness, and extubation were significantly higher than those of the experimental group A (all $P > 0.05$). The recovery time of self-consciousness, extubation time, and eye-opening time of the experimental group B were significantly shorter than those of the experimental group A, and the occurrence of agitation was significantly less than that of the experimental group A (all $P > 0.05$). The total incidence of adverse conditions in the experimental group B was significantly lower than that in the experimental group A ($P > 0.05$). *Conclusion*. Compared with cisatracurium besylate in otolaryngology surgery, mivacurium chloride anesthesia offers a promising route with respect to less impact on hemodynamics, faster postoperative recovery, absence of the accumulation of neuromuscular blockade, less adverse reactions, and higher safety.

1. Introduction

Ear, nose, and throat surgery is one of the most common clinical procedures [1] and includes a variety of types, such as ear surgery, including otitis media surgery, hearing reconstruction surgery, and surgical treatment of vertigo; rhinologic surgery, including correction of nasal structures, turbinate hypertrophy surgery, sinusitis surgery, and nasal tumor surgery; and laryngeal surgery, including tonsil surgery, adenoid surgery, and hypopharyngeal tumor surgery. ENT surgery is characterized by relatively short duration and intense stimulation of the nerves and muscles of the patient's throat [2, 3]. Therefore, muscle relaxation and depth of anesthesia are highly demanded in otolaryngology surgery to ensure a quick anesthesia emergence after surgery. General anesthesia can be administered by tracheal intubation if the operation is difficult and if the intraoperative operation does not affect airway patency [4]; local anesthesia can be administered if the surgical site is superficial and the intraoperative operation does not affect airway patency. Local anesthesia is safer than general anesthesia or intravenous anesthesia [5].

There is convincing observational evidence supporting that among the anesthetic drugs, cisatracurium besylate has a significant muscle relaxant effect, and mivacurium chloride has fewer side effects. Cisatracurium besylate for injection, a white loose lump or powder with molecular formula of $C_{65}H_{82}N_2O_{18}S_2$, is a moderate-acting, nondepolarizing skeletal

muscle relaxant with an isoquinolinium benzyl ester structure and a neuromuscular blocker [6, 7]. Human clinical studies have shown that cisatracurium besylate binds to cholinergic receptors on the motor endplate to antagonize the action of acetylcholine, resulting in a competitive neuromuscular blockade [8, 9]. At present, it is predominantly used for surgery and other operations in intensive care treatment. Due to the characteristics of relaxing skeletal muscles and convenience to perform tracheal intubation and mechanical ventilation, it is thus used clinically as an adjuvant drug for general anesthesia or as a sedative in intensive care [10, 11]. Mivacurium chloride [12], a gray-white solid with a molecular formula of $C_{58}H_{80}C_{l2}N_2O_{14}$, is a short-acting benzylisoquinoline nondepolarizing muscle relaxant [13]. Clinically, it is majorly used in short-term surgical procedures and can be used as an adjuvant drug for general anesthesia during tracheal intubation and mechanical ventilation [14]. For example, mivacurium chloride is commonly used as the first-choice anesthetic in cystoscopic resection of bladder cancer [15]. Available findings indicate that it is the most effective and selective nondepolarizing inotropic drug available clinically, with the advantages of rapid onset of action, rapid recovery, few side effects, no drug accumulation, no adverse effects on the autonomic nervous system and cardiovascular system, and elimination half-life [16, 17]. However, there are few studies of clinical application of mivacurium chloride minor surgery, such as otolaryngology surgery, and there are also few related studies comparing the anesthetic effects of cisatracurium besylate and mivacurium chloride. To address the gap, this study was to investigate and compare the anesthesia effects of cisatracurium besylate and mivacurium chloride otolaryngology surgery, aiming to provide new ideas and routes for anesthesia.

2. Materials and Methods

2.1. General Information. A total of 108 patients who underwent otolaryngology surgery under general anesthesia in our hospital from November 2021 to March 2022 were retrospectively analyzed and were evenly allocated into an experimental group A and an experimental group B. This study has been reviewed and approved by the Medical Ethics Committee of the Second Affiliated Hospital of Jiaxing University, approval no. 9799/31.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria. Inclusion criteria are as follows: all were graded I-II by the American Society of Anesthesiologists (ASA); the preoperative acid-base balance and water and electrolyte stability; and the patients and their families were aware of the study and signed written consent form voluntarily.

2.2.2. Exclusion Criteria. Exclusion criteria are as follows: patients combined with abnormal heart, liver, and kidney functions; patients combined with blood diseases or coagulation disorders; and research related drug allergies.

3. Methods

Both groups of patients underwent routine anesthesia induction after entering the operating room. 1-2 μg/kg remifentanil (approval no. H20030200, Yichang Renfu Pharmaceutical Co., Ltd.), 1-2 mg/kg propofol (approval no. H20051843, Sichuan Guorui Pharmaceutical Co., Ltd.), and 0.05–0.10 mg/kg midazolam (approval no. H20113433, Jiangsu Enhua Pharmaceutical Co., Ltd.) were intravenously administered 30 min before operation. After the patient lost consciousness, the closed-loop muscle relaxant injection system was opened, and muscle relaxant drugs were given.

The patients in the experimental group A were anesthetized via cisatracurium besylate (approval no. H20060927, Dongying Pharmaceutical Co., Ltd.) with an induction dose of 0.15 mg/kg and a maintenance rate of 0.1 mg/(kg·h); patients in the experimental group B were given mivacurium chloride (approval no. H20100454, GlaxoSmithKline Manufacturing S.P.A) for anesthesia with an induction dose of 0.2 mg/kg and a maintenance rate of 0.15% mg/(kg h). Both groups were intubated through the orotracheal tube when the maximum inhibition was reached, and then, the anesthesia machine was connected and relevant parameters were adjusted. The respiratory rate was 12 times/min, the tidal volume was 8 ml/kg, and the inspiratory ratio was 1 : 2.

During the maintenance period, propofol + remifentanil + sevoflurane was given as follows: propofol 2 mg/kg was slowly pushed, and the bronchoscope was introduced when breathing and circulation were stable. During the operation, propofol was added intermittently depending on the patient's response, and anesthesia was maintained by inhalation of sevoflurane; the dosage of remifentanil was adjusted according to the hemodynamics and respiratory rate, with an increase or decrease of 0.025 μg/(kg·min) each time. Inhalation was stopped 20 minutes before the end of the operation, and no muscle relaxant antagonist was used after the operation.

3.1. Observation Indicators. ① Monitoring devices are used to continuously monitor and record mean arterial pressure (MAP), heart rate (HR), and pulse oximetry (SpO_2). The patients' hemodynamic parameters are monitored at admission, during induction of anesthesia, during intubation, at the end of the procedure, at recovery of consciousness, and at extubation.

② Train of four (TOF) stimulations: the TOF values of the above six time points in the two groups of patients were compared.

③ Recovery situation: the recovery time of self-consciousness, extubation time, and eye-opening time and the occurrence of agitation in the two groups from the beginning of surgical anesthesia to 1 hour after extubation were compared between the two groups.

④ Adverse reactions: the occurrence of adverse reactions in the two groups after operation, including residual muscle relaxation, hypotension, bronchospasm, skin

flushing, nausea, and vomiting, were observed and compared.

3.2. Statistical Analysis. The SPSS 22.0 software was used to process the data. The enumeration data (n (%)) and measurement data ($x \pm s$) were examined via the chi-square and t tests, respectively. $P < 0.05$ was considered statistically significant.

4. Results

4.1. General Information. In the experimental group A, there were 28 males and 26 females, aged 25–61 years, with an average of 40.28 ± 4.87 years, and a BMI of 22–25 kg/m^2, with an average of 23.84 ± 1.21 kg/m^2. In the experimental group B, there were 27 females, aged 23–64 years, with an average age of 40.88 ± 3.97 years, and a BMI of 22–26 kg/m^2, with an average of 23.98 ± 1.08 kg/m^2. The baseline data were comparable between the two groups of patients (Table 1).

4.2. Hemodynamics. There was no significant difference in MAP, HR, and SpO_2 levels between the two groups at the six time points of admission, anesthesia induction, intubation, end of operation, recovery of consciousness, and extubation (all $P < 0.05$) (Tables 2–4).

4.3. TOF Value. The TOF values were similar at the three time points of admission, anesthesia induction, and intubation between the two groups of patients (all $P > 0.05$); whereas, TOF values (36.81 ± 8.23, 79.87 ± 2.56, and 90.62 ± 6.29) at end of operation, recovery of consciousness, and extubation were significantly higher than those of the experimental group A (25.18 ± 4.07, 59.89 ± 5.02, and 80.86 ± 3.68) (all $P < 0.05$) (Table 5).

4.4. Recovery. The recovery time of self-consciousness, extubation time, and eye-opening time (4.87 ± 1.02, 7.68 ± 1.41, and 9.82 ± 1.65) of the experimental group B were significantly shorter than those of the experimental group A (12.18 ± 1.34, 20.85 ± 6.32, and 25.94 ± 5.65), and the occurrence of agitation (3.70%) was significantly less than that of the experimental group A (20.37%) (all $P < 0.05$) (Table 6).

4.5. Adverse Reactions. In the experimental group A, there were 2 cases (3.70%) of residual muscle relaxation, 1 case of hypotension (1.85%), 2 cases of skin flushing (3.70%), 4 cases of nausea and vomiting (7.41%), and 0 case of residual muscle relaxation (0.00%); in the experimental group B, 0 case of hypotension (0.00%), 0 cases of skin flushing (0.00%), and 1 case of nausea and vomiting (1.85%), and the total incidence of adverse conditions in the experimental group B (1.85%) was significantly lower than that in the experimental group A (16.67%) ($P < 0.05$) (Table 7).

5. Discussion

Anesthesia for ENT surgery is one of the keys to ensure successful surgery. Surgical anesthesia requires the selection of appropriate anesthetic methods and drugs [18–20]. As tracheal intubation and surgery are accompanied by varying degrees of anesthesia and muscle relaxation, the inevitable residual neuromuscular blockade after surgery possesses a challenge to surgical anesthesia. The choice of drug or method should take into account the patient's psychological and physiological status to ensure good anesthetic outcomes while controlling the magnitude of hemodynamic fluctuations [21].

Among the current clinical anesthetics, both cisatracurium besylate and mivacurium chloride are good choices, and each has its own advantages. For example, the former has a remarkable muscle relaxation effect [22], while the latter is associated with fewer side reactions [23]. Currently, it remains controversial which is more effective. In line with our hypotheses, we found that there was no significant difference in MAP, HR, and SpO_2 levels between the two groups at the six time points of admission, anesthesia induction, intubation, end of operation, recovery of consciousness, and extubation; and TOF values were similar at the three time points of admission, anesthesia induction, and intubation between the two groups of patients; whereas, TOF values at end of operation, recovery of consciousness, and extubation were significantly higher than those of the experimental group A. However, this interpretation is supported by the fact that the rapid onset of action of mivacurium chloride and the absence of significant neuromuscular blockade accumulation as demonstrated by monitoring with a muscle relaxation monitor facilitated a reduction in depth of anesthesia towards the end of the procedure [23]. Possible explanations are that this study required a closed-loop myorelaxant injection, which allows for effective individualization of dosing and helps to avoid drug wastage due to long-term myorelaxant use; mivacurium chloride is a synthetic diquaternary compound with two ester bonds and therefore has a rapid onset of action and a short duration of action with an elimination half-life of 2-3 minutes, consistent with previous studies [24].

Also, in keeping with our hypotheses, we found that the recovery time of self-consciousness, extubation time, and eye-opening time of the experimental group B were significantly shorter than those of the experimental group A, and the occurrence of agitation was significantly less than that of the experimental group A. This would suggest that the recovery of muscle contraction function in patients receiving mivacurium chloride after otolaryngology surgery was better than using cisatracurium besylate. It is assumed that cisatracurium besylate is a nondepolarizing muscle relaxant due to its similar metabolism and myorelaxant effect to atracurium, although it has fewer side effects on the human cardiovascular system but a higher muscle relaxant effect [25, 26]; mivacurium chloride is a diquaternary ammonium compound that can be synthesized as a substitute for succinylcholine. It is a short-acting benzylisoquinoline nondepolarizing muscarinic agent with short duration of action,

Table 1: Baseline data ($\overline{x} \pm s$).

Groups	n	Male	Female	Age (years)	Mean age (years)	BMI	Mean BMI
Experimental group A	54	28	26	25–61	40.28 ± 4.87	22–25	23.84 ± 1.21
Experimental group B	54	27	27	23–64	40.88 ± 3.97	22–26	23.98 ± 1.08
T	—	—	—	—	0.341	—	0.521
P	—	—	—	—	0.798	—	0.545

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

Groups	n	Upon admission			Anesthesia induction		
		MAP (mmHg)	HR (times/min)	SpO_2 (%)	MAP (mmHg)	HR (times/min)	SpO_2 (%)
Experimental group A	54	103.12 ± 9.38	82.38 ± 7.21	97.73 ± 11.11	100.98 ± 7.21	79.82 ± 8.41	98.21 ± 10.29
Experimental group B	54	102.61 ± 10.33	83.54 ± 9.12	96.74 ± 11.98	101.01 ± 12.04	80.18 ± 10.63	98.11 ± 10.82
t	—	0.496	0.274	0.297	0.473	0.288	0.354
P	—	0.684	0.688	0.754	0.692	0.726	0.594

Table 3: Comparison of hemodynamics between the two groups of patients ($\overline{x} \pm s$).

Groups	n	Intubation			End of operation		
		MAP (mmHg)	HR (times/min)	SpO_2 (%)	MAP (mmHg)	HR (times/min)	SpO_2 (%)
Experimental group A	54	115.41 ± 6.02	74.53 ± 6.21	99.65 ± 14.52	109.65 ± 9.11	70.41 ± 8.01	99.51 ± 10.02
Experimental group B	54	112.88 ± 9.63	75.42 ± 11.02	99.81 ± 10.32	105.12 ± 7.63	70.52 ± 9.45	99.98 ± 11.41
t	—	0.357	0.294	0.456	0.461	0.213	0.323
P	—	0.702	0.813	0.582	0.598	0.814	0.757

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

Groups	n	Recovery of consciousness			Extubation		
		MAP (mmHg)	HR (times/min)	SpO_2 (%)	MAP (mmHg)	HR (times/min)	SpO_2 (%)
Experimental group A	54	113.52 ± 8.09	82.63 ± 5.19	94.08 ± 17.62	117.62 ± 7.68	87.49 ± 3.92	95.01 ± 13.52
Experimental group B	54	114.17 ± 8.87	83.65 ± 7.62	98.46 ± 9.44	118.21 ± 10.39	86.69 ± 8.11	96.34 ± 9.61
t	—	0.024	0.276	0.268	0.703	0.058	0.123
P	—	0.997	0.683	0.759	0.484	0.996	0.624

Table 5: Comparison of TOF values between the two groups of patients ($\overline{x} \pm s$).

Groups	n	Upon admission	Anesthesia induction	Intubation	End of operation	Recovery of consciousness	Extubation
Experimental group A	54	99.36 ± 12.68	99.15 ± 10.68	0.00 ± 0.00	25.18 ± 4.07	59.89 ± 5.02	80.86 ± 3.68
Experimental group B	54	99.54 ± 12.05	99.24 ± 6.88	0.00 ± 0.00	36.81 ± 8.23	79.87 ± 2.56	90.62 ± 6.29
t	—	0.075	0.068	0.000	18.451	14.412	19.002
P	—	0.932	0.944	1.000	< 0.001	< 0.001	< 0.001

Table 6: Comparison of the recovery of the two groups of patients ($\overline{x} \pm s$, %).

Groups	n	Self-consciousness recovery time (min)	Extubation time (min)	Eye-opening time (min)	Cases of agitation occurs (n)
Experimental group A	54	12.18 ± 1.34	20.85 ± 6.32	25.94 ± 5.65	11 (20.37)
Experimental group B	54	4.87 ± 1.02	7.68 ± 1.41	9.82 ± 1.65	2 (3.70)
t	—	13.254	15.667	19.024	8.945
P	—	< 0.001	< 0.001	< 0.001	0.002

Table 7: Comparison of adverse reactions in the two groups of patients (%).

Groups	n	Muscle relaxation remnants	Low blood pressure	Flushing of the skin	Nausea and vomiting	Total incidence
Experimental group A	54	2 (3.70)	1 (1.85)	2 (3.70)	4 (7.41)	9 (16.67)
Experimental group B	54	0 (0.00)	0 (0.00)	0 (0.00)	1 (1.85)	1 (1.85)
t	—	8.804				
P	—	0.003				

rapid onset of action, rapid metabolism, no accumulation, and rapid recovery [27, 28]. It has relatively few autonomic and cardiovascular side effects. After discontinuation of the drug, the patient can regain muscle tone naturally within a short period of time [29].

As previously noted, both cisatracurium besylate and micuronium anesthesia will cause different degrees of damage to patients and lead to adverse reactions. The adverse effect profile of micuronium anesthesia is related to histamine release and dose, but can be reduced by splitting or adjusting the time of administration. It is also of interest that the treatment in the experimental group B was associated with lower incidence of adverse reactions. We suggest this is perhaps because the application of mivacurium chloride anesthesia can reduce the occurrence of residual muscle relaxation during the recovery period and after recovery, playing a positive role on both mental and physical recovery of patients after surgery, and the data support findings of the trail of Farhan et al. [30].

Adverse reactions that have been recorded with atracurium cisbenzoate include skin flushing or rash, bradycardia, hypotension, and bronchospasm. Allergic reactions of varying degrees of severity can be observed following the use of neuromuscular blocking agents [31]. In rare cases, severe allergic reactions have been reported when this product is combined with one or more anesthetic agents [32]. Myasthenia and/or myopathy have been reported in severely ill patients in intensive care units after prolonged use of muscle relaxants [33]. Most patients received concomitant steroid preparations, and these have occasionally been reported following the use of this product, but the causal relationship has not been established [34].

6. Conclusion

To sum up, compared with cisatracurium besylate in otolaryngology surgery, mivacurium chloride anesthesia offers a promising route with respect to less impact on hemodynamics, faster postoperative recovery, absence of the accumulation of neuromuscular blockade, less adverse reactions, and higher safety. Overall, it merits widespread clinical application. However, there are many limiting factors in the experiment. First, comparisons between multiple time points in our experiments required a one-way ANOVA. Second, many indicators are related to the follow-up time, and we need to conduct more in-depth analysis after follow-up investigations in follow-up studies.

Data Availability

The data generated or analyzed during this study are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] A. T. Waberski, A. G. Espinel, and S. K. Reddy, "Anesthesia safety in otolaryngology," *Otolaryngologic Clinics of North America*, vol. 52, no. 1, pp. 63–73, 2019.

[2] N. R. Kolia and L. X. Man, "Total intravenous anaesthesia versus inhaled anaesthesia for endoscopic sinus surgery: a meta-analysis of randomized controlled trials," *Rhinology*, vol. 57, no. 6, pp. 402–410, 2019.

[3] W. A. Wetsch, D. Beutner, K. J. Stuermer, and S. A. Padosch, "Specific aspects of anesthesiological management of laser surgery in otorhinolaryngology," *Anaesthesist, Der*, vol. 63, no. 6, pp. 519–530, 2014.

[4] P. Pelosi, M. Croci, I. Ravagnan et al., "The effects of body mass on lung volumes, respiratory mechanics, and gas exchange during general anesthesia," *Anesthesia & Analgesia*, vol. 87, no. 3, pp. 654–660, 1998.

[5] H. M. Sohn and J. H. Ryu, "Monitored anesthesia care in and outside the operating room," *Korean J Anesthesiol*, vol. 69, no. 4, pp. 319–326, 2016.

[6] J. J. Savarese, C. A. Lien, M. R. Belmont, and W. B. Wastila, "[The clinical pharmacology of new benzylisoquinoline-diester compounds, with special consideration of cisatracurium and mivacurium]," *Anaesthesist, Der*, vol. 46, no. 10, pp. 840–849, 1997.

[7] X. Huang, L. Chen, Y. Cai et al., "Abnormal cisatracurium pharmacodynamics and pharmacokinetics among patients with severe aortic regurgitation during anesthetic induction," *BMC Anesthesiology*, vol. 20, no. 1, p. 21, 2020.

[8] H. Mellinghoff, L. Radbruch, C. Diefenbach, and W. Buzello, "A comparison of cisatracurium and atracurium: onset of neuromuscular block after bolus injection and recovery after subsequent infusion," *Anesthesia & Analgesia*, vol. 83, no. 5, pp. 1072–1075, 1996.

[9] Y. J. Dong and X. Li, "Comparative study on the pharmacodynamics of cisatracurium: continuous infusion or intermittent bolus injection," *Contemporary Clinical Trials*, vol. 33, no. 3, pp. 482–485, 2012.

[10] C. Diefenbach and W. Buzello, "[New muscle relaxants]," *Anasthesiol Intensivmed Notfallmed Schmerzther*, vol. 31, no. 1, pp. 2–8, 1996.

[11] C. Xuan, N. Wu, Y. Li, X. Sun, Q. Zhang, and H. Ma, "Corrected QT interval prolongation during anesthetic induction for laryngeal mask airway insertion with or without

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Retraction

Retracted: High-Quality Nursing Combined with the Whole-Course Responsibility Nursing Intervention Reduces the Incidence of Complications in Severe Aneurysmal Subarachnoid Hemorrhage

Evidence-Based Complementary and Alternative Medicine

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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] X. Qian, L. Gong, F. Zhou, Y. Zhang, and H. Wang, "High-Quality Nursing Combined with the Whole-Course Responsibility Nursing Intervention Reduces the Incidence of Complications in Severe Aneurysmal Subarachnoid Hemorrhage," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 3252718, 7 pages, 2022.

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Research Article

High-Quality Nursing Combined with the Whole-Course Responsibility Nursing Intervention Reduces the Incidence of Complications in Severe Aneurysmal Subarachnoid Hemorrhage

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Objective. The aim of this study is to study the influence of whole-course responsibility nursing combined with high-quality nursing intervention on the level of life and complications of severe aneurysmal subarachnoid hemorrhage patients with postoperative coma. *Methods*. From December 2018 to December 2020, 90 severe aneurysmal subarachnoid hemorrhage patients with postoperative coma were selected and were divided into two groups, the experimental group and the control group, with 45 cases in each group. The control group adopted conventional nursing care, and the experimental group received whole-course responsibility nursing combined with high-quality nursing intervention. The nursing effect, degree of coma, coma recovery, and incidence of complications between all groups were compared. *Results*. Compared with the control group, the experimental group yielded more favorable achievement in terms of the nursing effect ($P < 0.05$). Superior levels of the Glasgow Coma Scale (GCS) score, Coma Recovery Scale-Revised (CRS-R) score, GQOLI-74 score, and BI score of the experimental group were obtained and compared with the control group (all $P < 0.05$). The experimental group witnessed a lower complication rate, as compared to the other group ($P < 0.05$). *Conclusion*. The whole-course responsibility nursing combined with high-quality nursing intervention is applied to severe aneurysmal subarachnoid hemorrhage patients with postoperative coma, which can substantially optimize the nursing efficiency, improve the degree of coma, help recover consciousness, ameliorate the mental state and the quality of life, and reduce the incidence of complications, which is worthy of clinical application.

1. Introduction

Aneurysmal subarachnoid hemorrhage (SAH), as a neurosurgery emergency and severe disease, poses a serious threat to human health with a very high disability rate and mortality rate. In a systematic evaluation and meta-analysis, the overall crude global incidence of aneurysmal SAH across all study periods was 7.9/100,000 person-years [1]. This disease occurs in elderly people, and its morbidity is also witnessing a gradual rise among young people. Surgical treatment is the mainstay for treating severe aneurysmal subarachnoid hemorrhage, but postoperative coma is rather frequent. The failure of regaining consciousness in time will increase the risk of disability and mortality [2–4]. Clinically, there are many causes of spontaneous subarachnoid hemorrhage, the most common being intracranial aneurysm rupture and arteriovenous malformation accounting for 57%, followed by hypertensive intracerebral hemorrhage [5]. However, after some patients died, the cause could not be found at autopsy, and it may be the rupture of aneurysm small arteriovenous malformation to form a thrombus without leaving traces [6]. Furthermore, most autopsies do not examine the venous system or the spinal subarachnoid space, both of which are causes of hemorrhage [7].

In recent years, the challenge of how to shorten the duration of coma after severe aneurysmal subarachnoid hemorrhage has become a hot research topic. Relevant studies have shown that through external stimulation, the excitability of the patient's cerebral cortex can be enhanced, so that the function of the patient's damaged nerve cells can

be restored and the state of consciousness can be improved, thus achieving the purpose of recovery. Patient's consciousness. The Total Responsible Care model further improves the quality of care by dividing nursing responsibilities and stratifying care according to the actual situation of the patient on the basis of the conventional nursing model. In addition, high-quality nursing interventions are an emerging nursing concept. The effective combination of society, psychology, and biology promotes the transformation of the nursing model and its clinical application is remarkable [8, 9]. In this study, we aim to explore the impact of whole-course responsibility nursing combined with high-quality nursing intervention on the level of life and related complications of severe aneurysmal subarachnoid hemorrhage patients with postoperative coma. The report is as follows.

2. Materials and Methods

2.1. General Information. Ninety patients with severe aneurysmal subarachnoid hemorrhage in postoperative coma who underwent treatment at our hospital from December 2018 to December 2020 were recruited and divided equally into two groups using the random number table method, the experimental group and the control group, with 45 cases in each group. The experiment was approved by the ethics committee.

2.2. Inclusion Criteria. The inclusion criteria were as follows: (1) diagnosis of severe aneurysmal subarachnoid hemorrhage [10]; (2) patients aged 18 to 70 years; (3) postoperative coma; and (4) patients and their families voluntarily signed an informed consent form after learning to be informed.

2.3. Exclusion Criteria. The exclusion criteria were as follows: (1) combined liver or renal failure; (2) combined cardiovascular disease; (3) combined ischemic stroke; (4) combined severe infection; and (5) pregnant or lactating women.

2.4. Methods. The control group adopted routine nursing intervention. Medical staff should carry out routine perioperative care, provide medication guidance and dietary guidance, ensure a comfortable and clean hospitalization environment, and conduct psychological interventions.

The experimental group adopted whole-course responsibility nursing combined with high-quality nursing intervention. The whole-course responsibility nursing model first required nursing grouping, so that the nursing staff could divide the labor, to carry out the nursing service more smoothly, and ensure a better quality of nursing. Meanwhile, it was necessary to optimize the hospital's traditional nursing model so that the whole-course responsibility nursing model was able to be fully applied and integrated into the nursing work. The nursing work must be carried out systematically and comprehensively, and the sense of responsibility of nursing staff must be enhanced [11–13]. Professional knowledge training for nursing staff was regularly carried out, to effectively improve nursing level of the nursing staff, cultivate the comprehensive level of the nursing staff, and ensure the proficiency and high-level professional skills of the nursing staff in the clinical nursing process. Moreover, it is also crucial to strengthen the professional training, focus on cultivating the risk awareness of nurses, lecture nursing risk cases to nurses, and organize medical staff to learn about risk prevention, which guarantees the calmness and expertness of the nursing staff in risk events, minimizes the damage caused by the risk events, and further improves their professional skills [14–16]. Medical staff needed to perform tactile and auditory wake-up interventions on the patients: according to the principle of "top to down and front to back," medical staff should appropriately stimulate the patients to wake-up their senses of touch, 30 minutes for 2 times. Because of actual condition of cases, medical staff should develop a targeted auditory wake-up plan for patients, including calling the patients' names beside the bed and reading books to the patients, 40 minutes for each time, once in the morning and once in the evening. Medical staff should also encourage the patients' family members to accompany the patients throughout the entire process and share interesting things with patients, to arouse their memories. By calling the patient's name, a stimulus can be formed to provide the patient with information coding, which in turn stimulates the human body's reflex mechanism, helps the patient regain memory traces, and promotes a membrane potential to generate action potentials [17].

2.5. Observation Indicators. The "Glasgow Coma Scale" [18] (GCS) was used to evaluate the degree of coma of the two groups of patients. The scale mainly includes language response, limb response, and eye-opening response. The higher the score, the less severe the patient's coma.

The "Coma Recovery Scale-Revised" [19] (CRS-R) can evaluate the state of consciousness of all groups of cases; the score was directly proportional to the state of consciousness of the patients.

The nursing influence of all groups of cases was observed. When patient's clinical symptoms were significantly improved, the nursing effect was regarded as markedly effective; when the clinical symptoms improved, the nursing effect was effective; when the clinical symptoms were not improved, the nursing effect was determined as ineffective.

The "General Quality of Life Inventory-74" (GQOLI-74) was used to assess level of life of the all patients between the intervention. The scale includes 4 aspects including psychological, physical, social function, and material life status; all scores are 100 points, the higher score, the better level of life of the patient.

The "Barthel index (BI) Rating Scale" [20] was used to evaluate ability of daily living of patients. The higher score, the better ability of daily living of subjects.

The complication rate of all groups of cases was compared. Complication rate = number of people with complications/total number of people in this group × 100%.

2.6. Statistical Analysis. SPSS20.0 was selected to process data in study, and GraphPad Prism 7 (San Diego, USA) was used to draw data. Using χ^2-tests, *t*-test, and normality test, $P < 0.05$ was considered to be significant.

3. Results

3.1. General Information Comparison. There were no differences in smoking, drinking, and place of residence between all groups of patients ($P > 0.05$), as shown in Table 1.

3.2. Comparison of GCS Scores between the Two Groups. A higher level of GCS score was obtained in the experimental group ($P < 0.05$). See Table 2.

3.3. Comparison of GCS-R Scores between the Two Groups. The CRS-R scores in the experimental group before and after intervention were (3.54 ± 1.17) and (20.25 ± 1.37) points, respectively, and the scores in the control group were (3.59 ± 1.18) and (17.14 ± 1.26) points, respectively. The experimental group witnessed a higher GCS-R score, as compared to the control group ($P < 0.05$). See Figure 1.

3.4. Comparison of the Nursing Effect between the Two Groups. In the experimental group, the markedly effective rate was 68.89% (31/45), the effective rate was 28.89% (13/45), the invalid rate was 2.22% (1/45), and the total effective rate was 97.78% (44/45); In the control group, the markedly effective rate was 51.11% (21/45), the effective rate was 35.56% (16/45), the invalid rate was 17.78% (8/45), and the total effective rate was 82.22% (37/45). The experimental group yielded a more favorable outcome in terms of the nursing effect ($P < 0.05$), as shown in Figure 2.

3.5. Comparison of GQOLI-74 Scores between the Two Groups. In comparison with the control group, results in Figure 3 presented a superior level of GQOLI-74 score in the experimental group ($P < 0.05$). The abscissa represented before and after intervention, and the ordinate represented GQOLI-74 scores. The GQOLI-74 scores in the experimental group before and after intervention were (46.44 ± 7.88) and (82.33 ± 4.98) points, respectively, and the scores in the control group were (46.72 ± 7.43) and (61.25 ± 4.22) points, respectively.

3.6. Comparison of BI Scores between the Two Groups. The abscissa represented before and after intervention, and the ordinate represented BI scores. The BI scores in the experimental group before and after intervention were (51.24 ± 2.34) and (88.25 ± 1.27) points, respectively, and the BI scores in the control group were (50.89 ± 2.56) and (69.77 ± 1.25) points, respectively. A superior level of the BI score of the experimental group was obtained compared with the control group ($P < 0.05$). See Figure 4.

3.7. Comparison of the Incidence of Complications between the Two Groups. In the experimental group, there were 0 (0.00%) intracranial infections, 1 (2.22%) stress injury, and 0 (0.00%) pulmonary infections, for an overall complication rate of 2.22%; in the control group, there was 1 (2.22%) intracranial infection, 6 (13.33%) stress injuries, and 5 (11.11%) pulmonary infections, for an overall complication rate of 26.67%. The overall complication rate was 26.67%. The experimental group showed a lower incidence of complications, as compared to the control group ($P < 0.05$), as shown in Table 3.

4. Discussion

Aneurysmal subarachnoid hemorrhage is classified as a critical disease with a high disability and fatality rate. Aneurysmal subarachnoid hemorrhage should generally require surgical removal of blood from the subarachnoid space and surgical removal of the aneurysm [21]. If the hemorrhage is more than 20 ml, the blood must be removed from the brain tissue to prevent pressure on the brain, especially if there is an aneurysm, to prevent re-rupture and cerebral hemorrhage [22]. At present, surgery is mainly used for treatment in clinical practice, which drives down the disability and fatality rate but tends to cause postoperative coma. As the patient's brain tissue and cranial nerves have been damaged, it is necessary to repair the damaged nerve cells, re-establish nerve function, and promote the patient's recovery. Conventional care is now the usual clinical choice to restore consciousness, but with less than satisfactory results [23–26].

The whole-course responsibility nursing can effectively alleviate the workload of nursing staff, and it has substantially changed the traditional nursing model. In the whole process of responsible nursing, nursing meetings should be held regularly to analyze the problems existing in the nursing process and pay close attention to the changes of the patient's condition. High-quality nursing is a patient-centered approach to nursing, which requires the development of appropriate nursing measures according to the patient's condition and the maintenance of a comfortable treatment environment. The tactile arousal intervention used in this study is a novel form of arousal. The principle of tactile arousal intervention is that extraperitoneal stimulation acts on the damaged brain tissue of patients, thereby promoting new neural pathways, helping patients establish new connections between neurons and synapses, repairing nerve function, promoting blood circulation, and restoring patients. Consciousness. Auditory wake-up intervention is also a new type of arousal. The main principle is to provide information coding for patients by calling to form stimulation, to stimulate the body's reflex mechanism, help patients form memory traces, and then promote membrane potential to produce action potential [27–29]. For patients with severe aneurysmal subarachnoid hemorrhage and postoperative coma, the application of whole-course responsibility nursing combined with high-quality nursing intervention can effectively improve the excitability of the patient's cerebral cortex. Tactile and auditory arousal can

Table 1: Comparison of general information between the two groups (n (%)).

	Experimental group ($n = 45$)	Control group ($n = 45$)	x^2 or t value	P
Age (years)	46.75 ± 3.32	46.69 ± 3.29	0.086	0.932
Gender			0.178	0.673
Male	23 (51.11)	21 (46.67)		
Female	22 (48.89)	24 (53.33)		
BMI (kg/m^2)	26.27 ± 1.59	25.89 ± 1.63	1.119	0.266
Smoking			0.045	0.832
Yes	20 (44.44)	21 (46.67)		
No	25 (55.56)	24 (53.33)		
Drinking			0.178	0.673
Yes	22 (48.89)	24 (53.33)		
No	23 (51.11)	21 (46.67)		
Place of residence			0.050	0.822
Urban	31 (68.89)	30 (66.67)		
Rural	14 (31.11)	15 (33.33)		

Table 2: Comparison of GCS scores between the two groups ($x \pm s$).

Group	No.	Limb response		Eye-opening response		Language response	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Experimental group	45	2.31 ± 0.47	4.73 ± 1.12	1.96 ± 0.24	3.51 ± 0.49	2.23 ± 0.76	4.13 ± 0.67
Control group	45	2.46 ± 0.42	3.17 ± 0.93	1.83 ± 0.37	2.18 ± 0.54	2.29 ± 0.77	3.12 ± 0.47
t value		1.596	7.188	1.977	12.236	0.372	8.279
P		0.114	<0.001	0.051	<0.001	0.711	<0.001

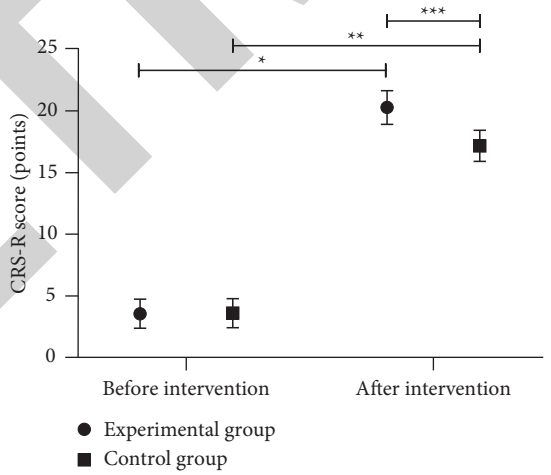

Figure 1: Comparison of GCS-R scores between the two groups ($\overline{x} \pm s$). The abscissa represented before and after intervention, and the ordinate represented CRS-R scores, points; The CRS-R scores in the experimental group before and after intervention were (3.54 ± 1.17) and (20.25 ± 1.37) points, respectively, and those in the control group were (3.59 ± 1.18) and (17.14 ± 1.26) points, respectively; *Significant difference in CRS-R score in the experimental group before and after intervention ($t = 62.219$, $P < 0.001$); **Ssignificant difference in CRS-R score in the control group before and after intervention ($t = 52.655$, $P < 0.001$); ***Ssignificant difference in CRS-R score between the two groups ($t = 11.208$, $P < 0.001$).

help to wake up the function of the cerebral cortex, restore the function of brain tissue, and substantially shorten the awakening time of patients. As severe aneurysmal subarachnoid hemorrhage patients with postoperative coma require a long-term in-bed period, they are highly susceptible to pressure injuries and pulmonary infections. Results of the study highlighted that the GCS score of the experimental group was higher ($P < 0.05$ [30], whose article

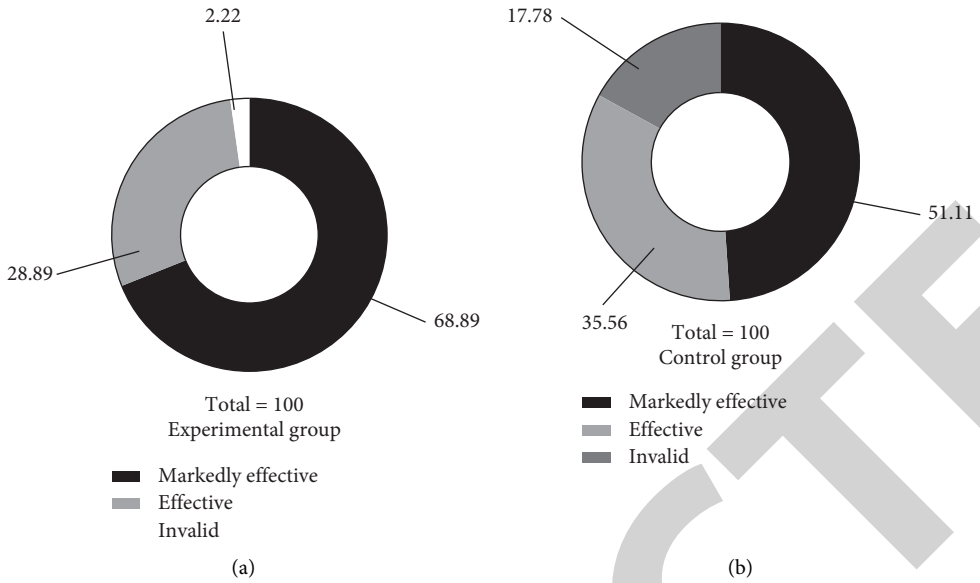

Figure 2: Comparison of nursing effect between the two groups (n (%)). (a) The nursing effect in the experimental group. (b) The nursing effect in the control group. In the experimental group, the markedly effective rate was 68.89% (31/45), the effective rate was 28.89% (13/45), the invalid rate was 2.22% (1/45), and the total effective rate was 97.78% (44/45); In the control group, the markedly effective rate was 51.11% (21/45), the effective rate was 35.56% (16/45), the invalid rate was 17.78% (8/45), and the total effective rate was 82.22% (37/45). After intervention, there was significant difference between the two groups ($x^2 = 6.049$, $P = 0.014$).

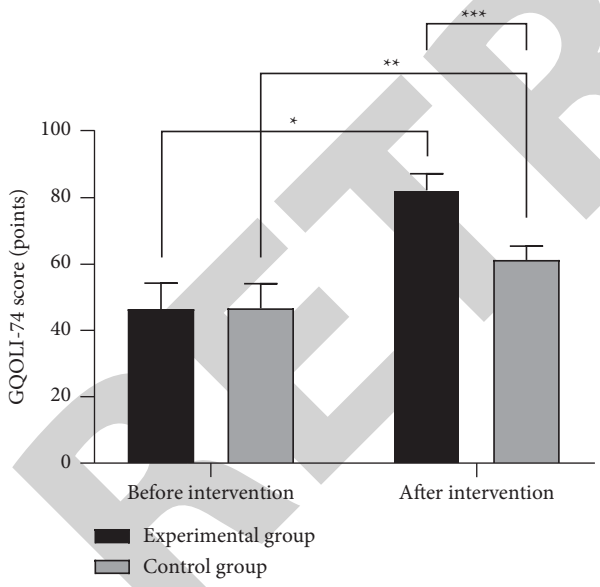

Figure 3: Comparison of GQOLI-74 scores between the two groups ($\overline{x} \pm s$). The abscissa represented before and after intervention, and the ordinate represented GQOLI-74 scores, points; The GQOLI-74 scores in the experimental group before and after intervention were (46.44 ± 7.88) and (82.33 ± 4.98) points, respectively, and those in the control group were (46.72 ± 7.43) and (61.25 ± 4.22) points, respectively; *Significant difference in GQOLI-74 score in the experimental group before and after intervention ($t = 25.828$, $P < 0.001$); **Significant difference in GQOLI-74 score in the control group before and after intervention ($t = 11.407$, $P < 0.001$); ***Significant difference in GQOLI-74 score between the two groups ($t = 21.663$, $P < 0.001$).

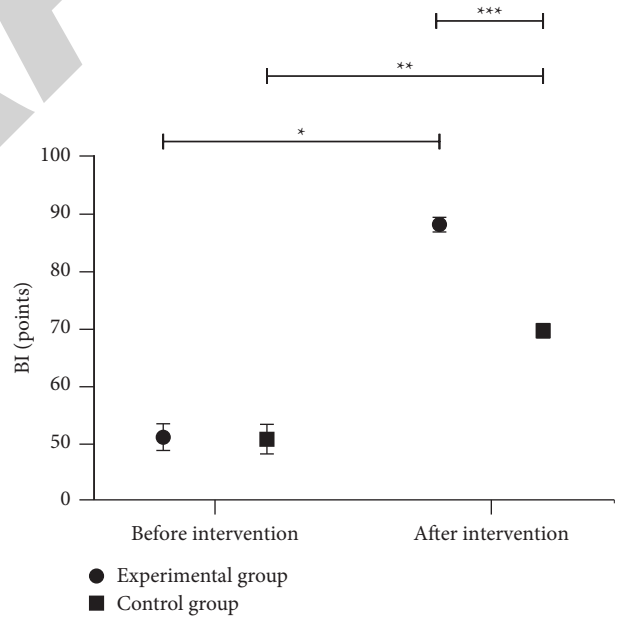

Figure 4: Comparison of BI scores between the two groups ($\overline{x} \pm s$). The abscissa represented before and after intervention, and the ordinate represented BI scores, points; The BI scores in the experimental group before and after intervention were (51.24 ± 2.34) and (88.25 ± 1.27) points, respectively, and those in the control group were (50.89 ± 2.56) and (69.77 ± 1.25) points, respectively; *Significant difference in BI score in the experimental group before and after intervention ($t = 93.250$, $P < 0.001$); **Significant difference in BI score in the control group before and after intervention ($t = 44.456$, $P < 0.001$); ***Significant difference in BI score between the two groups ($t = 69.568$, $P < 0.001$).

Table 3: Comparison of the incidence of complications between the two groups (n (%)).

Group	No.	Intracranial infection	Stress injury	Pulmonary infection	Incidence of complications
Experimental group	45	0 (0.00)	1 (2.22)	0 (0.00)	1 (2.22)
Control group	45	1 (2.22)	6 (13.33)	5 (11.11)	12 (26.67)
X^2 value					10.879
P					0.001

pointed out that "the observation group's limb response, eye-opening response, and language response were (4.64 ± 1.09), (3.49 ± 0.56) and (4.11 ± 0.64) points, respectively, and those in the control group were (3.14 ± 0.94), (2.49 ± 0.55) and (3.11 ± 0.54) points, respectively; the observation group showed higher levels of GCS scores compared with the other group ($P < 0.05$)," indicating that compared with conventional nursing, whole-course responsibility nursing combined with high-quality nursing intervention can effectively improve patient's coma degree, help patients regain consciousness, and restore the mental state.

In the treatment of subarachnoid hemorrhage in TCM, the acute phase can reduce the occurrence of cerebral oedema and avoid coma [31]. During psychiatric resuscitation, the use of TCM, acupuncture, and other conditions facilitates the recovery of neurological impairments, such as limb function and gastrointestinal function; while at the same time, it improves the patient's nutritional support, enhances immunity, and greatly assists the overall status of resuscitation [32]. Therefore, it is recommended that TCM treatment of subarachnoid hemorrhage be maintained throughout the treatment process, if necessary, to achieve better outcomes [33].

5. Conclusion

In conclusion, the whole-course responsibility nursing combined with high-quality nursing intervention applied to severe aneurysmal subarachnoid hemorrhage patients with postoperative coma can improve the patient's level of life and reduce the incidence of complications. It is worthy of practical application. [34].

Data Availability

The datasets used during the present study are available from the corresponding author upon reasonable request.

Disclosure

Xiaoli Qian and Lin Gong are equal contributors.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] N. Etminan, H. S. Chang, K. Hackenberg et al., "Worldwide incidence of aneurysmal subarachnoid hemorrhage according to region, time period, blood pressure, and smoking prevalence in the population: a systematic review and meta-analysis," *JAMA Neurology*, vol. 76, no. 5, p. 588, 2019.

[2] A. Dienel, R. Ammassam Veettil, S. H. Hong et al., "Microthrombi correlates with infarction and delayed neurological deficits after subarachnoid hemorrhage in mice," *Stroke: A Journal of Cerebral Circulation*, vol. 51, no. 7, pp. 2249–2254, 2020.

[3] H. Sakata, H. Endo, M. Fujimura, K. Niizuma, and T. Tominaga, "Symptomatic cerebral hyperperfusion after cerebral vasospasm associated with aneurysmal subarachnoid hemorrhage," *World neurosurgery*, vol. 137, pp. 137379–137383, 2020.

[4] I. Ng and R. Du, "Thirty-day readmissions in aneurysmal subarachnoid hemorrhage: a good metric for hospital quality?" *Journal of Neuroscience Research*, vol. 98, no. 1, pp. 219–226, 2020.

[5] W. T. Longstreth Jr., T. D. Koepsell, M. S. Yerby, and G. Van Belle, "Risk factors for subarachnoid hemorrhage," *Stroke*, vol. 16, no. 3, pp. 377–385, 1985.

[6] C. B. Sedzimir and J. Robinson, "Intracranial hemorrhage in children and adolescents," *Journal of Neurosurgery*, vol. 38, no. 3, pp. 269–281, 1973.

[7] J. P. Broderick, T. G. Brott, J. E. Duldner, T. Tomsick, and A. Leach, "Initial and recurrent bleeding are the major causes of death following subarachnoid hemorrhage," *Stroke*, vol. 25, no. 7, pp. 1342–1347, 1994.

[8] T. Shan, T. Zhang, W. Qian et al., "Effectiveness and feasibility of cilostazol in patients with aneurysmal subarachnoid hemorrhage: a systematic review and meta-analysis," *Journal of Neurology*, vol. 267, no. 6, pp. 1577–1584, 2020.

[9] C. Weigl, E. Bruendl, P. Schoedel et al., "III. Ventricle diameter increase during ventricular drainage challenge—a predictor of shunt dependency after subarachnoid hemorrhage," *Journal of Clinical Neuroscience: Official Journal of the Neurosurgical Society of Australasia*, vol. 72, pp. 72198–72201, 2020.

[10] F. Luo, L. Wu, Z. Zhang et al., "The dual-functional memantine nitrate MN-08 alleviates cerebral vasospasm and brain injury in experimental subarachnoid haemorrhage models," *British Journal of Pharmacology*, vol. 176, no. 17, pp. 3318–3335, 2019.

[11] F. Ikawa, N. Michihata, K. Iihara et al., "Risk management of aneurysmal subarachnoid hemorrhage by age and treatment method from a nationwide database in Japan," *World Neurosurgery*, vol. 134, pp. 134E55–E67, 2020.

[12] A. Giede-Jeppe, J. Reichl, M. I. Sprügel et al., "Neutrophil-to-lymphocyte ratio as an independent predictor for unfavorable functional outcome in aneurysmal subarachnoid hemorrhage," *Journal of Neurosurgery*, vol. 132, no. 2, pp. 400–407, 2020.

[13] Y. Akamatsu, V. Pagan, and K. Hanafy, "The role of TLR4 and HO-1 in neuroinflammation after subarachnoid hemorrhage," *Journal of Neuroscience Research*, vol. 98, no. 3, pp. 549–556, 2020.

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Retraction

Retracted: Impact of Systematic Holistic Nursing Combined with Narrative Nursing Intervention for Patients with Advanced Gastric Cancer on Complications and Negative Emotions

Evidence-Based Complementary and Alternative Medicine

Received 5 December 2023; Accepted 5 December 2023; Published 6 December 2023

This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Lu, L. Zhu, and C. Tan, "Impact of Systematic Holistic Nursing Combined with Narrative Nursing Intervention for Patients with Advanced Gastric Cancer on Complications and Negative Emotions," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 9148843, 7 pages, 2022.

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Research Article

Impact of Systematic Holistic Nursing Combined with Narrative Nursing Intervention for Patients with Advanced Gastric Cancer on Complications and Negative Emotions

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Objective. The aim of this study is to evaluate the influence of systemic holistic nursing combined with narrative nursing on the postoperative complications and negative emotions in patients with advanced gastric cancer. *Methods*. A total of 120 patients with advanced gastric cancer admitted to our hospital between February 2020 and February 2021 were recruited and assigned to receive systemic holistic nursing combined with narrative nursing (experimental group) or systemic holistic nursing (control group) according to order of admission, with 60 cases in each group. The outcome measures included the incidence of postoperative complications, negative emotion score, quality of life score, self-efficacy score, self-care ability score, and nursing satisfaction. *Results*. The experimental group had a significantly lower incidence of complications and lower negative emotion scores than the control group ($P < 0.001$). Systemic holistic nursing plus narrative nursing resulted in significantly higher life scores, self-efficacy scores, and self-care ability scores in the experimental group after nursing than in the control group ($P < 0.001$). Patients of the experimental groups were more satisfied with the nursing in contrast to those in the control group ($P < 0.001$). *Conclusion*. Systematic holistic nursing plus narrative nursing alleviates the negative emotions of patients, improves their self-efficacy scores, lowers the incidence of complications, and enhances quality of life.

1. Introduction

Gastric cancer is a common malignant tumor, with its incidence ranking first among gastrointestinal malignancies. The Cancer development is promoted by both genetic and environmental factors, and around 50% of cancer is provoked by environmental agents. The disease is not prevalent in the young population (under 45 years of age), with a prevalence of about 10%. Clinically, surgery and chemotherapy are the mainstays for treatment. However, surgery may trigger complications such as anastomotic fistula, lung infection, gastrointestinal dysfunction, and chemotherapy may result in liver, kidney, and other organ damage, critically hindering the quality of life of patients [1–3]. The middle-aged and elderly population are more susceptible to gastric cancer [4], and it has mostly developed to an the advanced stage at the time of diagnosis due to the insidiousness of early symptoms [5]. In addition to serious clinical stress responses, patients may also be subjected to obvious negative emotions and even depression and anxiety in severe cases [6, 7], which further undermines the efficacy of surgery and chemotherapy. Moreover, systemic chemotherapy outcomes are dismal, with a median survival of 6–11 months. To improve the clinical efficacy of patients with advanced gastric cancer and relieve their physical and psychological stress, comprehensive nursing is frequently applied in clinical practice for perioperative care, which lowers the incidence of postoperative complications but fails to alleviate patients' psychological stress. Thus, it is of great significance to explore high-quality nursing models centered on psychological intervention.

Systematic holistic nursing is the systematization and integration of comprehensive nursing interventions, which eliminates the triviality of traditional nursing and makes clinical nursing more scientific. Holistic nursing covers an aspect of the overall experience, both physically and emotionally, of the response and effects of the disease on the individuals and families. Moreover, this nursing model is carried out to mitigate the negative emotions of patients with a strong targeted effect. A prior study has revealed that systematic holistic nursing could improve cancer-related fatigue in cases with advanced gastric cancer undergoing chemotherapy [8]. However, its impact on postoperative complications is still unclear. Currently, as the psychological care in systemic holistic nursing is still confined to the shackles of conventional nursing, whether the introduction of more advanced psychological nursing can further enhance the effect of systemic holistic nursing remains elusive. Accordingly, narrative nursing is incorporated in this study. In narrative nursing, nurses help patients develop a positive life attitude and regain their self-value by storytelling to share the essence of nursing.

The results of the application of systematic holistic nursing specific intervention results for patients with advanced gastric cancer are as follows.

2. Materials and Methods

2.1. General Information. The medical data of 120 patients with advanced gastric cancer admitted to our hospital between February 2020 and February 2021 were retrospectively analyzed.

Inclusion criteria: patients who were diagnosed with gastric cancer by tumor marker detection and pathological examination [9], with the TNM staging of stage III or IV, who met the indications for gastric cancer surgery [7], with stable vital signs after the surgery, without a history of other tumors, with a Karnofsky score of >60 points [10], and who had a detailed understanding of the main objectives of the study and the specific implementation needs of the study and provided written informed consent were included.

Exclusion criteria: patients with mental problems that prevent communication, with other malignant tumors, abnormal blood systems, liver, kidney, heart, brain, and other organ disorders, with contraindications to surgery [11] were excluded. All 120 cases were enrolled and divided into the experimental group ($n = 60$) and the control group ($n = 60$). The two groups presented no significant difference in baseline data ($P > 0.05$, Table 1). The study was ratified by the ethics committee.

2.2. Withdrawal Criteria. (1) Patients with adverse events or serious adverse events; (2) with deterioration during the experiment; (3) with complications; and (4) who were unwilling to participate in the subsequent clinical trial and provoked their consent were excluded.

3. Method

All cases were given systematic holistic nursing, the specific steps were as follows: (1) *Nursing protocol formulation*. After enrollment, the clinical data of the patients were analyzed in detail to evaluate their psychological status. Nursing protocols were formulated according to the patients' actual situation, including general nursing, psychological nursing, and health education. The patients' conditions and feedback were recorded promptly for further adjustment of the nursing plans. (2) *Health education*. Different groups were divided based on the patients' education level and religious beliefs. Health education manuals of advanced cancers were distributed to all patients, and the key contents were explained to patients and their families. Chief physicians, nutritionists, and psychologists were invited to give health education lectures regularly. (3) *General nursing*. The cleanliness of the ward, visiting time, and the number of visitors was under strict control to avoid cross-infection. The patients were instructed to perform deep breathing exercises and were assisted in gesture changing and expectoration through manual tremor and atomization inhalation. The drainage tubes were secured and prevented from distortion or obstruction. The drainage fluid was closely monitored, and any abnormalities were reported immediately. The surgical wounds were kept dry to prevent pressure sores. The nursing staff administered medicines to patients according to the doctor's advice, observed changes in patients' physical signs, and strengthened gastrointestinal decompression nursing. (4) *Dietary nursing*. The large amount of ascites in patients resulted in a poor appetite and a risk of malnutrition. Dietary instructions were given according to the patient's eating habits, including a high-calorie and high-protein diet, a daylong stream of mini-meals, and a light diet for patients with severe gastrointestinal reactions. Appropriate antiemetic drugs were given if necessary. (5) *Sports nursing*. The patients were assisted to turn over 2 hours after the operation, sit up after 1 day, perform bedside exercise after 2 days, and exercise indoors after 3 days. (6) *Psychological nursing*. The nursing staff communicated with patients every week to help eliminate their negative emotions and provide more psychological support.

The experimental group additionally received a narrative nursing intervention. The specific steps were as follows: (1) The nursing staff received training from psychologists, to master psychological nursing skills and ensure the professionality and scientificity of the nursing. (2) The nursing staff communicated with patients face-to-face every day and guided the patients to share their stories and daily issues, assess the impact of the problems, and explore the reasons and appropriate solutions in daily nursing. (3) Personalized nursing programs were developed to enhance daily communication with the patients and understand their psychological needs. The patients were instructed to examine their situations and problems more objectively to further alleviate their psychological pressure. (4) The nursing staff communicated with the patients' family members to provide family support for the patients and enhance their positive outlook on life.

Table 1: Comparison of general information of patients.

Groups	Experimental group ($n = 60$)	Control group ($n = 60$)	X^2/t	P
Gender			0.037	0.847
Male	39	40		
Female	21	20		
Age (years)				
Range	45–76	46–74		
Average age	60.23 ± 2.10	60.45 ± 2.12	0.571	0.569
Average weight (kg)	53.26 ± 2.50	53.68 ± 2.10	0.996	0.321
BMI (kg/m^2)	20.42 ± 2.15	20.52 ± 2.23	0.250	0.803
TNM staging			0.139	0.709
III	35	37		
IV	25	23		
Karnofsky score	65.22 ± 2.10	64.98 ± 2.15	0.619	0.537
Pathological classification				
Adenocarcinoma	38	36	0.141	0.707
Signet-ring cell carcinoma	18	18	0.000	1.000
Small cell lung carcinoma	4	6	0.436	0.509
Underlying disease				
Diabetes	12	11	0.054	0.817
Hypertension	16	18	0.164	0.685
Lung disease	10	9	0.063	0.803
Lesion				
Gastric cardia cancer	20	21	0.037	0.847
Gastric cancer invading cardia	30	30	0.000	1.000
Total gastric cancer	1	2	0.342	0.559
Remnant gastric cancer	9	7	0.289	0.591
Education level			0.034	0.853
High school and below	25	26		
University and above	35	34		

3.1. Observational Criteria

(1) Complication rate: complications include pulmonary infection, atelectasis, incision infection, anastomotic fistula, gastric dysfunction, and pressure ulcers.

(2) Negative emotion score: emotional state of the patients between nursing was evaluated based on the hospital anxiety and depression (HAD) Scale [12]. The HADS-A includes 7 items that assess generalized anxiety including tension, worry, fear, panic, difficulties in relaxing, and restlessness. Responses are rated on a 4-point Likert scale and range from 0 to 3.

(3) Quality of life score: generic Quality of Life Inventory-74 Scale (GQOLI-74) [13] was used to assess the quality of life of all groups of patients between nursing. The scale contains four scoring factors: mental function, physical function, social function, and material life status, all score of 100 points. The higher the score, the better the level of life of the patients.

(4) Self-efficacy score: self-efficacy scores of all cases between the nursing were evaluated according to the general self-efficacy scale (GSES) [14]. The GSES is a self-reported measure that includes 10 questions scored on a 4-point Likert scale; the total score is the sum of all items evaluated. Scores on this scale range between 10 and 40, with a higher score indicating greater self-efficacy.

(5) Self-care ability score: the hospital's self-developed questionnaire was used to investigate the patient's mastery of advanced gastric cancer health knowledge and home care skills before and after nursing. The scores for each item are between 0–100 points. A higher score indicates better patients' self-care ability.

(6) Nursing satisfaction: the hospital's self-developed scale was used to assess the patients' nursing satisfaction. The scoring range is between 0–5 stars, with 5 stars being highly satisfied, 3 and 4 stars being satisfied, and below being dissatisfied.

3.2. Statistical Method. In this study, SPSS20.0 was used for statistical processing. Graphpad Prism 7 software was used to plot the graphics. Research includes counting data and measurement data. Counting data were analyzed using the chi-square test and the measurement data were analyzed

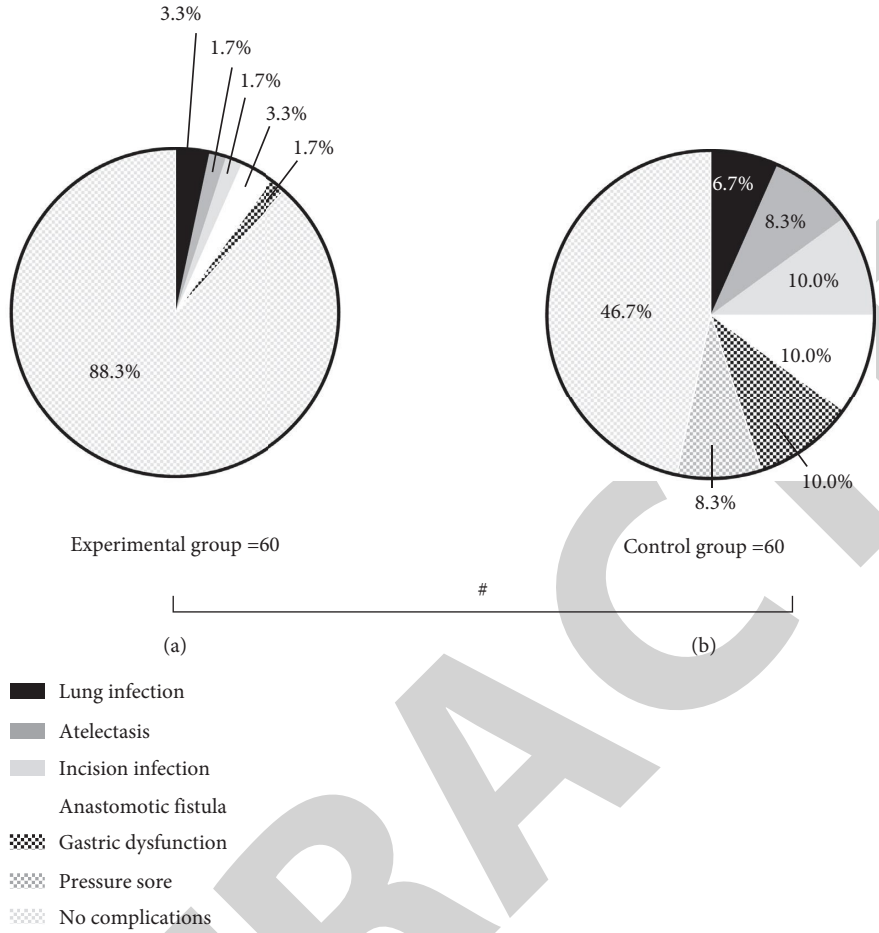

Figure 1: Comparison of the incidence of complications between the two groups of patients (n (%)). Note: Figure 1(a) is the experimental group, and Figure 1(b) is the control group. In the figure, the black area is lung infection, the dark gray area is atelectasis, the light gray area is incision infection, the white area is an anastomotic fistula, the black grid area is gastric dysfunction, the dark gray grid area is pressure ulcer, and the light gray grid area is no complication. # indicates $P < 0.001$. There were no significant differences in the incidence of lung infection, atelectasis, incision infection, anastomotic fistula, gastric dysfunction, and pressure ulcer between the two groups (2 vs 4, 1 vs 5, 1 vs 6, 2 vs 6, 1 vs 6, 0 vs 5, $P > 0.05$). More patients had no complications in the experimental group than the control group (53 vs 28, $P < 0.001$).

using the t-test. $P > 0.05$ was used as a cut-off value for statistical significance.

4. Results

4.1. Complication. The incidence of complications in the experimental group was significantly lower than that of the control group ($P < 0.001$), as shown in Figure 1.

4.2. Negative Emotion Scores. After nursing, lower negative emotion scores were observed in the experimental group ($P < 0.001$) (Figure 2).

4.3. Quality of Life Scores. The experimental group had higher quality of life scores than the control group ($P < 0.001$), as shown in Figure 3.

4.4. Self-Efficacy Scores. Self-efficacy scores of the experimental group after nursing were remarkably higher than those of the control group ($P < 0.001$) (Figure 4).

4.5. Self-Care Ability Scores. The experimental group had higher self-care ability scores than the control group ($P < 0.001$) (Table 2).

4.6. Nursing Satisfaction. Patients in the experimental group were more satisfied with the nursing ($P < 0.05$) (Table 3).

5. Discussion

Gastric cancer is a malignant tumor originating from the gastric mucosal epithelium with hidden symptoms in the early stages. Most cases are at the advanced stages of disease at the time of diagnosis, during which surgery and chemotherapy are the main treatment methods [15]. As advanced-stage malignant tumors are serious stressors [16], invasive treatment methods such as surgery may result in negative emotions in patients such as anxiety, depression, and fear [17], seriously compromising the treatment effect and quality of life of patients. To improve the psychological state of cases and enhance the influence of surgery, comprehensive nursing is frequently applied for intervention in

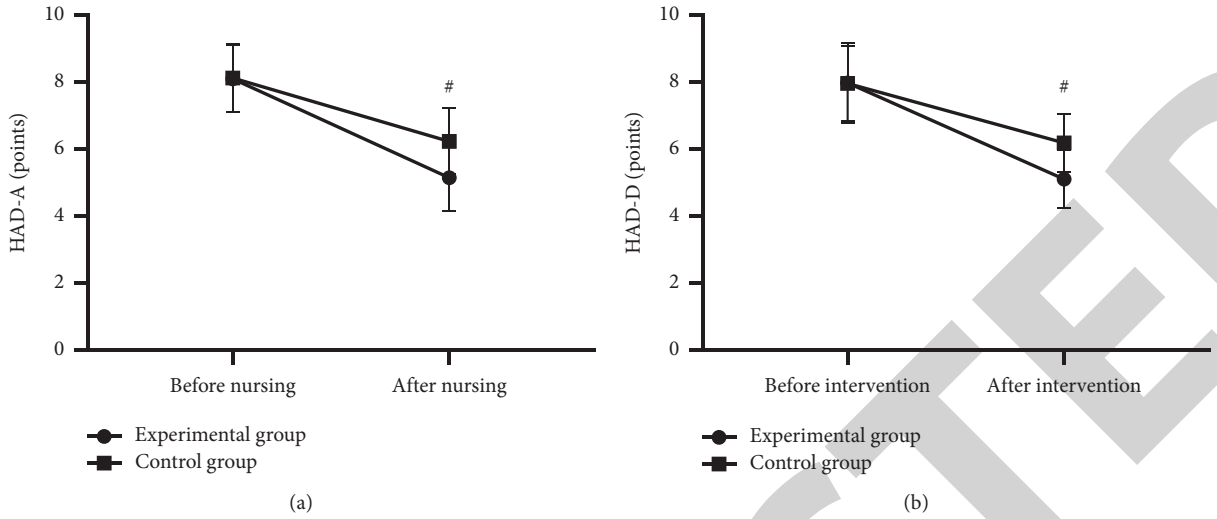

Figure 2: Comparison of negative emotion scores of the two groups of patients ($\overline{x} \pm s$, points). Note: Figure 2(a) is the HAD-A score, and Figure 2(b) is the HAD-D score; the abscissas of the two figures from left to right are before and after nursing; the dotted line in the figure is the experimental group, and the square line is the control group; # indicates $P > 0.05$. The HAD-A score and HAD-D score before nursing between the experimental group and the control group were not statistically different (8.10 ± 1.00 vs 8.13 ± 1.01, 7.98 ± 1.20 vs 7.96 ± 1.12, $P > 0.05$); the HAD-A and HAD-D scores of the experimental group after nursing were significantly lower than those of the control group (5.15 ± 0.98 vs 6.24 ± 0.98, 5.10 ± 0.87 vs 6.19 ± 0.86, $P < 0.001$).

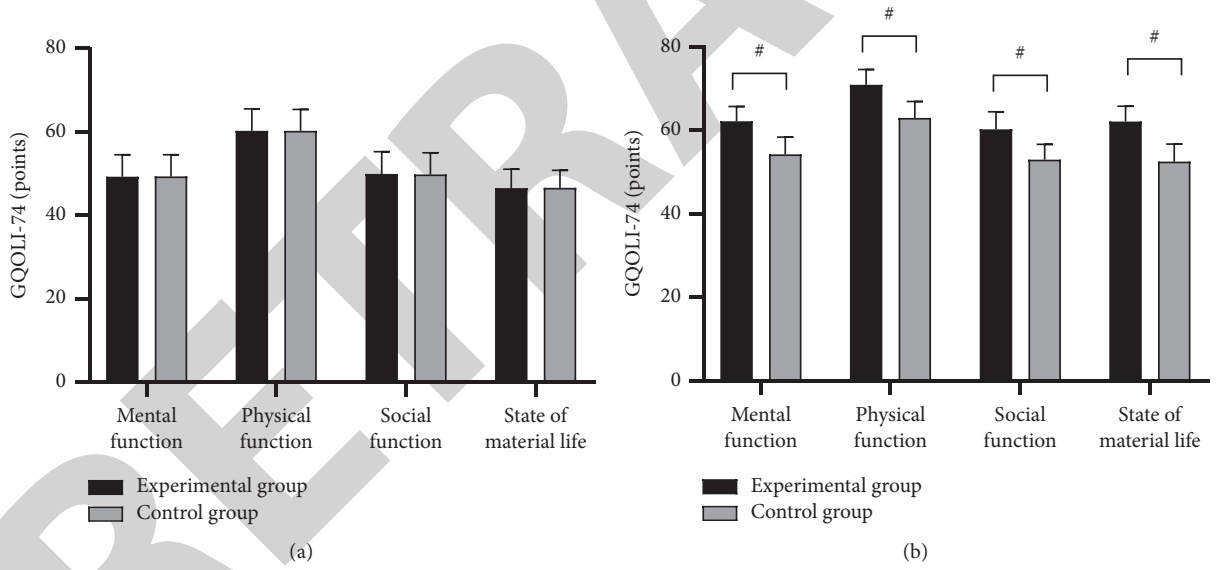

Figure 3: Comparison of quality of life scores between the two groups of patients ($\overline{x} \pm s$, points). Note: the abscissas of Figures 3(a) and 3(b) represent psychological function, physical function, social function, and material life status from left to right. The black area in the figure is the experimental group, and the gray area is the control group; # indicates $P < 0.001$. Figure 3(a) shows the quality of life score before nursing. There was no statistical difference in the scores of psychological function, physical function, social function, and material life state between the two groups before nursing (49.26 ± 5.21 vs 49.32 ± 5.20, 60.26 ± 5.21 vs 60.23 ± 5.12, 49.88 ± 5.32 vs 49.78 ± 5.20, 46.52 ± 4.52 vs 46.58 ± 4.20, $P > 0.05$). Figure 3(b) shows the quality of life score after nursing. The scores of mental function, physical function, social function, and material life state of the experimental group after nursing were significantly higher than those of the control group (62.15 ± 3.58 vs 54.26 ± 4.10, 70.89 ± 3.68 vs 62.98 ± 3.89, 60.23 ± 4.20 vs 52.98 ± 3.65, 62.11 ± 3.65 vs 52.53 ± 4.14, $P < 0.001$).

clinical scenarios; nonetheless, previous research revealed that comprehensive nursing intervention failed to alleviate the negative emotions of patients [18], which highlights the importance of a more targeted nursing model for patients with advanced gastric cancer. The systematic holistic nursing intervention used in the present study is a high-quality nursing model with psychological nursing as the core that integrates health education, general nursing, and dietary guidance during nursing. It monitors the patient's condition changes in real-time and adjusts the nursing scheme promptly according to the patient's feedback. Previous research has applied systemic holistic nursing in the nursing of

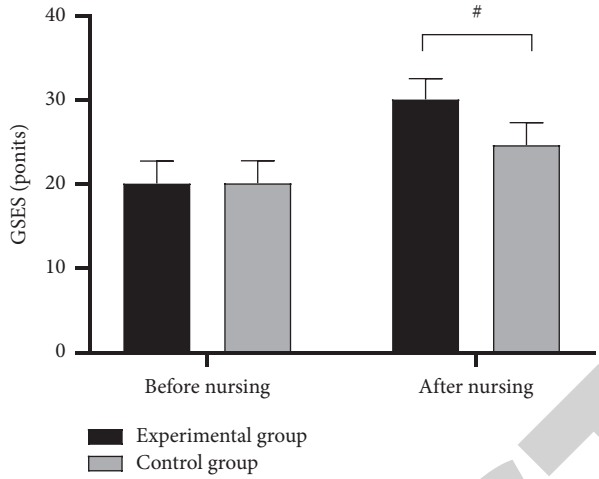

Figure 4: Comparison of self-efficacy scores between the two groups of patients ($\overline{x} \pm s$, points). Note: in Figure 4, the abscissa is from left to right before and after nursing, and the ordinate is the self-efficacy score (points); the black area in the figure is the experimental group, and the gray area is the control group; # indicates $P < 0.001$. There was no statistical difference in the self-efficacy scores of the two groups before nursing (20.13 ± 2.65 vs 20.15 ± 2.68, $P > 0.05$); the self-efficacy scores of the experimental group after nursing were significantly higher than those of the control group (30.12 ± 2.45 vs 24.68 ± 2.68, $P < 0.001$).

Table 2: Comparison of self-care ability scores between the two groups ($\overline{x} \pm s$, points).

Items	Experimental group		Control group		t	P
Mastery of gastric cancer knowledge	Before nursing	40.26 ± 2.65	Before nursing	40.37 ± 2.56	0.231	0.818
	After nursing	89.98 ± 5.40	After nursing	79.21 ± 5.22	11.108	<0.001
	t	64.026	t	51.747		
	P	<0.001	P	<0.001		
Mastery of home nursing skills	Before nursing	46.98 ± 2.58	Before nursing	47.00 ± 2.10	0.047	0.963
	After nursing	92.35 ± 2.54	After nursing	85.26 ± 3.54	12.605	<0.001
	t	97.068	t	72.002		
	P	<0.001	P	<0.001		

Table 3: Comparison of nursing satisfaction between the two groups of patients [n(%)].

Groups	n	Very satisfied	Satisfied	Dissatisfied	Total satisfaction
Experimental group	60	24 (40.0)	34 (56.7)	2 (3.3)	58 (96.7)
Control group	60	18 (30.0)	32 (53.3)	10 (16.7)	50 (83.3)
$\mathbf{X^2}$		1.319	0.135	5.926	5.926
$\boldsymbol{P}$		0.251	0.714	0.015	0.015

patients with advanced gastric cancer after chemotherapy and found that cancer-related fatigue after treatment was significantly reduced and their quality of life has been significantly improved [19].

However, the application of systemic holistic nursing intervention shows no major breakthrough in terms of psychological nursing when compared with conventional psychological nursing. Accordingly, narrative nursing was employed in addition to systematic holistic nursing in the present study. Specifically, the psychological care in the systematic holistic nursing intervention is replaced with more scientific and advanced narrative nursing that helps patients abandon bad lifestyles and establishes a positive life attitude through storytelling. Anja et al. stated that the essence of narrative nursing is to absorb and accept patients' stories and assist them to reconstruct the meaning of life, thereby achieving the purpose of psychological care [20]. The study showed lower negative emotion scores in the experimental group after nursing ($P < 0.001$), and patients in the experimental group had a stronger sense of self-efficacy, suggesting that narrative medicine fully alleviated the negative emotions of patients and enhanced their psychological health.

In addition to patients, narrative medicine also has a positive effect on patients' families. It contributes to maintaining and enhancing communication between the patients and their families, which mitigates the negative psychological conditions of the family members. Thronicke A et al. revealed that narrative nursing provides hope for the patients' families in terms of the patients' condition, which leads to better family care and positive family support [21]. There are potential limitations to this study. Firstly, this study did not

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Retraction

Retracted: Effect of Cryotherapy plus Flurbiprofen Axetil for Pain Management in Children Undergoing Tonsillectomy

Evidence-Based Complementary and Alternative Medicine

Received 20 June 2023; Accepted 20 June 2023; Published 21 June 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.

References

[1] P. Gao, W. Wang, W. Yang, T. Yan, and B. Zhang, "Effect of Cryotherapy plus Flurbiprofen Axetil for Pain Management in Children Undergoing Tonsillectomy," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 7687437, 5 pages, 2022.

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Research Article

Effect of Cryotherapy plus Flurbiprofen Axetil for Pain Management in Children Undergoing Tonsillectomy

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Objective. To investigate the effect of cryotherapy using ice pops for physical analgesia and preventive analgesia using flurbiprofen axetil for pain management in children undergoing tonsillectomy. *Methods*. A total of 120 children scheduled for tonsillectomy were recruited after assessment for eligibility and assigned to a control group (group *C*), flurbiprofen axetil group (group *F*), cryotherapy group (group *I*), and cryotherapy plus flurbiprofen axetil group (Group FI) via the random number table method. Groups *F* and FI were given 1 mg/kg of flurbiprofen axetil through intravenous injection 30 min before surgery, while group *C* received an equal amount of saline at the same time point. Groups *I* and FI received sweet ice pops for pain relief after recovery from anesthesia. The modified Children's Hospital of Eastern Ontario Pain Scale (mCHEOPS) scores and pediatric anesthesia emergence delirium (PAED) scores at 5 minutes (T1), 30 minutes (T2), 60 minutes (T3), 4 hours (T4), and 24 hours (T5) postoperatively, and the incidence of postoperative complications in the children were recorded by investigators who were masked to the grouping results. *Results*. From T1 to T4, significantly lower mCHEOPS scores and PAED scores were observed in group F, group *I*, and group FI versus those in group *C* ($P < 0.05$). At T2, group FI showed significantly lower mCHEOPS scores and PAED scores versus groups F and I ($P < 0.05$). There were no significant differences in the mCHEOPS scores and PAED scores between the four groups at 24 h postoperatively ($P > 0.05$). The differences in the documented postoperative complications between the four groups did not come up to the statistical standard ($P > 0.05$). *Conclusion*. Cryotherapy plus flurbiprofen axetil for pain management significantly mitigates post-tonsillectomy pain and delirium in children and facilitates recovery, with no significant adverse events.

1. Introduction

Tonsillectomy is a widely performed surgical procedure worldwide and is the second most common surgery performed on children [1]. Removal of the tonsils is possible in cases of recurrent acute tonsillitis, peritonsillar abscesses, and in young children, where the tonsils have become enlarged and hypertrophied, resulting in poor circulation of the upper respiratory tract and even difficulty in breathing and swallowing [2]. Other conditions, such as tonsillar keratosis and tonsillar tumours, can also be treated by this procedure [3]. Pain, bleeding, agitation, and dysphagia after tonsillectomy are the main factors affecting postoperative recovery [4]. The pain, mainly at the throat and the ears, builds up for the first few days and is usually at its worst around the fifth day after surgery. Intense pain is one of the most important postoperative complaints after tonsillectomy, and inadequate postoperative pain management is associated with negative consequences such as the development of chronic postoperative pain, impaired throat function, and negative psychological states.

Currently, pain management after tonsillectomy consists of physical analgesics, such as ice packs, and pharmacological management. Nonsteroidal anti-inflammatory drugs (NSAIDs) are privileged for pharmacological analgesia [5], and other drugs include preoperative dexmedetomidine nasal drip or local anesthetic application [6, 7]. Flurbiprofen ester reduces prostaglandin synthesis by inhibiting cyclooxygenase (COX) in the spinal cord and periphery, reducing the nociceptive hypersensitivity state caused by surgical trauma [8]. Lipid microsphere formulations are more potent, have a more rapid onset of action, last longer, and are less likely to cause adverse effects such as gastric mucosal damage [9]. Its use in postoperative analgesia has the advantage that it has no central depressant effect, does not interfere with the awakening of patients under anaesthesia, and can be used immediately after surgery [10]. However, relatively little knowledge is available related to the joint use of physical and pharmacological analgesia in children undergoing tonsillectomy. To this end, this study was undertaken to evaluate the clinical effects and safety of cryotherapy using ice pops for physical analgesia and preventive analgesia using flurbiprofen axetil for pain management in children undergoing tonsillectomy, so as to provide a reference for clinical application.

2. Materials and Methods

2.1. Baseline Patient Profile. 120 children scheduled for tonsillectomy and/or adenoidectomy were recruited for prospective analysis and assigned by random number table to the control group (group *C*), flurbiprofen axetil group (group *F*), cryotherapy group (group *I*), and cryotherapy plus flurbiprofen axetil group (group FI). The experiments were approved by the ethics committee of The First Affiliated Hospital of USTC (no. FAHUSTC753). All participants' families were informed, and they signed the consent form.

Inclusion criteria were (1) patients aged 3–11 years; (2) patients with an American Society of Anesthesiologists (ASA) physical status classification of I-II [11] and normal cardiopulmonary, hepatic, and renal function; (3) no preoperative chronic pain.

Exclusion criteria were (1) history of NSAID drug allergy, recent peptic ulcer, neuromuscular sensory abnormalities, hepatic, renal, and haematological dysfunction; (2) patients who have used analgesics within the last 24 hours; (3) patients who have undergone another procedure for the above reasons.

2.2. Treatment Methods. The blood pressure, oxygen saturation, and electrocardiogram of the children were monitored before surgery. All children received 0.1 mg/kg of tropisetron intravenously before surgery. 1 mg/kg of flurbiprofen axetil was administered to groups FI and F 30 min before surgery, and an equal amount of saline was given to group *C* at the same time point. The general anesthesia was established using 0.05 mg/kg of midazolam, 0.4 ug/kg of sufentanil, 0.2 mg/kg of etomidate, and cisatracurium besylate. After tracheal intubation, the breathing machine was connected for respiratory control, and the tidal volume was maintained at 8–10 ml/kg. Combined intravenous-inhalation anesthesia was used for anesthesia maintenance, with continuous infusion of propofol and remifentanil, intermittent inhalation of 0.5% to 1% sevoflurane, and additional cisatracurium besylate as needed. The heart rate and blood pressure of the children were maintained within 30% of the preoperative baseline values, the anesthesia was terminated at the completion of the operation, and the children were immediately sent to the postanesthesia care unit (PACU). The tracheal tube was removed when the children could breathe freely and were hemodynamically stable, and the patients of the children were asked to accompany the children to PACU. Children in groups *I* and FI were given a sweet ice pop for physical analgesia for 5 minutes after extubation under the instruction of the medical staff. Children with postoperative modified Children's Hospital of Eastern Ontario Pain Scale (mCHEOPS) scores greater than 4 points were given flurbiprofen axetil at a dose of 1 mg/kg.

2.3. Outcome Measures

(1) The operating time and volume of intraoperative bleeding in the children were recorded.

(2) Postoperative pain in the children was assessed using mCHEOPS scores and postextubation agitation of the children was assessed using the pediatric anesthesia emergence delirium (PAED) scale [12]. Scoring criteria are shown in Tables 1 and 2. The mCHEOPS scores and PAED scores at 5 minutes (T1), 30 minutes (T2), 60 minutes (T3), 4 hours (T4), and 24 hours (T5) postoperatively were recorded by investigators who were blinded to the grouping results. The mCHEOPS scores consisted of 5 domains, each with a score of 0–10 points, and the score was proportional to the severity of pain. The PAED scores also consisted of 5 domains, each with a score of 0–20 points, and the score was proportional to the severity of agitation.

(3) The occurrence of traumatic bleeding, nausea and vomiting, postoperative diarrhea, and fever was recorded 3 days after surgery. Traumatic bleeding was defined as bleeding that requires surgical intervention for hemostasis. Postoperative diarrhea was defined as the number of bowel movements ≥3 times/day with loose stools. A postoperative temperature >38.0°C was defined as a febrile case.

2.4. Statistical Analysis. All statistical analyses were performed with the use of SPSS 17.0. Normally distributed measurement data are expressed as the mean ± standard deviation; a *t*-test was used to determine the statistical significance of differences between the groups, and an ANOVA with repeated measure design was used for intragroup comparisons. Count data are expressed as the

Table 1: Modified children's hospital of eastern Ontario pain scale scores.

Scores	0 points	1 point	2 points
Crying	None	Moaning	Screaming
Facial expressions	Smiling	Calm	Painful
Language	No pain	No complaint of pain	Complaint of pain
Body reaction	Normal	Relaxed	Nervous and quivering
Legs	Normal	Kicking	Need for constraints

Table 2: Pediatric anesthesia emergence delirium scores.

Items	4 points	3 points	2 points	1 point	0 points
Eye contact with their guardians	None	Infrequent	Moderate	Frequent	Extremelyfrequent
Behavioral purposefulness	None	Infrequent	Moderate	Frequent	Extremelyfrequent
Recognize the environment	None	Infrequent	Moderate	Frequent	Extremely frequent
Restlessness and agitation	Extremely frequent	Frequent	Moderate	Infrequent	None
Unmitigated crying	Extremely frequent	Frequent	Moderate	Infrequent	None

Table 3: Baseline characteristics and intraoperative indices ($\overline{x} \pm s$, $n = 30$).

Groups	n	Male/female	Age (year)	Height (cm)	Weight (kg)	Operation time (min)	Intraoperative bleeding volume (ml)
Group C	30	21/9	6.87 ± 2.73	121.28 ± 15.78	22.30 ± 8.15	78.37 ± 14.76	26.40 ± 8.17
Group F	30	19/11	6.70 ± 2.07	116.60 ± 11.78	23.28 ± 7.91	73.10 ± 16.43	23.37 ± 8.60
Group I	30	21/9	7.07 ± 2.38	116.42 ± 12.65	22.78 ± 8.64	76.45 ± 17.33	22.76 ± 6.76
Group FI	30	22/8	7.20 ± 2.57	120.00 ± 14.06	22.94 ± 8.89	75.53 ± 15.17	22.17 ± 7.03

Table 4: Postoperative pain and agitation ($\overline{x} \pm s$, $n = 30$).

Indices	Groups	n	T_1	T_2	T_3	T_4	T_5
MCHEOPS scores	Group C	30	3.4 ± 0.8	3.4 ± 0.7	3.2 ± 0.7	2.2 ± 0.8	0.8 ± 0.4
	Group F	30	2.5 ± 0.6^{a}	2.6 ± 0.8^{a}	2.1 ± 0.9^{a}	1.2 ± 0.5^{a}	0.8 ± 0.5
	Group I	30	2.5 ± 0.7^{a}	2.8 ± 0.9^{a}	2.1 ± 0.8^{a}	1.2 ± 0.5^{a}	0.8 ± 0.4
	Group FI	30	2.2 ± 0.6^{a}	1.8 ± 0.8^{ab}	1.8 ± 0.8^{a}	1.2 ± 0.4^{a}	0.7 ± 0.5
PAED scores	Group C	30	6.7 ± 1.6	8.2 ± 2.4	7.8 ± 1.8	3.5 ± 1.8	1.5 ± 1.2
	Group F	30	5.8 ± 1.2^{a}	6.3 ± 1.5^{a}	6.2 ± 2.0^{a}	2.4 ± 1.3^{a}	1.6 ± 1.4
	Group I	30	5.4 ± 1.5^{a}	5.2 ± 1.4^{a}	6.4 ± 2.2^{a}	2.6 ± 1.3^{a}	1.2 ± 0.8
	Group FI	30	5.3 ± 1.6^{a}	4.2 ± 1.3^{ab}	6.4 ± 1.5^{a}	2.2 ± 1.6^{a}	1.2 ± 0.7

Note. [a] indicates a significant difference ($P < 0.05$) in comparison with group C; [b] indicates a significant difference ($P < 0.05$) in comparison with groups F and I.

number of cases and percentages (%) and analyzed using the chi-square test. The rank-sum test was used for the comparison of rank data. Statistically significant results were defined as $P < 0.05$.

3. Results

3.1. Baseline Patient Characteristics and Intraoperative Indices. There were no significant differences in the baseline characteristics such as age, weight, and gender ratios, the operation time, and the intraoperative bleeding volume between the four groups of children ($P > 0.05$) (Table 3).

3.2. Postoperative Pain and Agitation. From T1 to T4, significantly lower mCHEOPS scores and PAED scores were observed in group F, group I, and group FI versus those in group C ($P < 0.05$). At T2, group FI showed significantly lower mCHEOPS scores and PAED scores versus groups F and I ($P < 0.05$) (Table 4).

3.3. Postoperative Complications. The differences in the occurrence of traumatic bleeding, nausea and vomiting, postoperative diarrhea, and fever between the four groups of children did not come up to the statistical standard ($P > 0.05$) (Table 5).

4. Discussion

Most children complain of severe pain after tonsillectomy, which compromises the quality of life and leads to reduced diet, dysphagia, dehydration, and possibly long-term behavioral and/or psychological alterations [13]. Postoperative pain also predisposes children to agitation during the recovery period, especially in the early stages of tracheal tube removal in the PACU. Therefore, the significance of the control of mitigation of postoperative pain in pediatric tonsillectomy has been established definitively.

The aim of this study was to evaluate the clinical effectiveness and safety of physical analgesia using ice lolly cryotherapy and prophylactic analgesia using flurbiprofen

Table 5: Postoperative complications (n [%], $n = 30$).

Groups	Traumatic bleeding	Nausea and vomiting	Postoperative diarrhea	Fever
Group *C*	2 (6.7)	2 (6.6)	0 (0)	3 (10.0)
Group *F*	1 (3.3)	1 (3.3)	1 (3.3)	4 (13.3)
Group *I*	0 (0)	2 (6.7)	0 (0)	2 (6.7)
Group FI	0 (0)	1 (3.3)	0 (8)	2 (6.7)

axetilin children undergoing tonsillectomy. Prophylactic analgesia refers to the reduction of postoperative pain by reducing the transmission of surgically induced pain stimuli to the centre and preventing central sensitisation by pre-emptive analgesic drugs. Flurbiprofen axetilis is a nonsteroidal anti-inflammatory drug that is commonly used clinically for prophylactic analgesia [14]. It can be used for postoperative pain relief in children, has a rapid onset of action, lasts for a long time, and has no significant side effects, which is relatively safe. The dosage of this drug should be strictly followed to avoid overdosing, which may affect the normal growth and development of the child [15]. In this study, children who received flurbiprofen axetilin combination with cryotherapy achieved the lowest pain scores and agitation scores, suggesting a synergistic effect of cryotherapy and prophylactic analgesia in post-tonsillectomy pain management.

There is considerable evidence to support the impact of cryotherapy on post-tonsillectomy pain management. Vieira et al. [16] reported that the use of 500 ml of saline at 5°C to 10°C for 3 and 6 days postoperatively reduced pain. Similar results were obtained by Shin et al. [17], who used 300 ml of saline at 5°C to relieve postoperative pain. The current data confirm that cryotherapy has a significant effect on pain relief and agitation in the early posttracheal extubation period. The mechanism of action of cryotherapy is that low temperatures reduce tissue congestion and swelling and lower the activation threshold of tissue damage receptors and the conduction rate of pain nerve signals [18]. In this study, children in Groups *I* and FI received sweet ice lollies, which would create localised hypothermia in the mouth and a sweet taste to soothe the child.

Flurbiprofen axetilis is a nonsteroidal anti-inflammatory drug with stable pharmacokinetics and no significant adverse complications when used in pediatric patients over 6 months of age [19], but it may impair platelet function and lead to increased surgical bleeding. Postoperative follow-up in this study showed that flurbiprofen axetil used 30 minutes before surgery as prophylactic analgesia did not increase trauma bleeding. Furthermore, the lack of difference in postoperative complications among the four groups of children also suggests that the combination of cryotherapy plus flurbiprofen axetil has a high safety profile.

However, at any time during treatment with all (NSAIDs), adverse reactions of gastrointestinal bleeding, ulceration, and perforation can occur, and the risk can be fatal [20]. When gastrointestinal bleeding or ulceration occurs in patients taking the drug, it should be discontinued. Clinical trials have shown that this product may cause an increased risk of serious cardiovascular thrombotic adverse events, myocardial infarction and stroke, the risk of which may also be fatal [21]. Patients with cardiovascular disease or risk factors for cardiovascular disease are at greater risk [22]. In Chinese medicine, the main ingredients of Du Liang soft capsules are Angelica dahurica and Rhizoma Chuanxiong, which is an orally administered proprietary Chinese medicine preparation [23]. The clinical effects are mainly to dispel wind and cold, invigorate blood, and promote blood circulation. The clinical effects are mainly for the treatment of headaches, and the TCM symptoms need to be of the type of wind-cold and blood stasis blocking the arteries and channels [24]. A study has demonstrated the efficacy of Du Liang soft capsule in relieving pain after hand tonsillectomy with no significant adverse effects, which provides another basis for the combined treatment of Chinese and Western medicine [25].

However, there are a number of limitations to this study. The number of popsicles consumed by children was not standardised, there were subjective judgements on post-operative pain and agitation scores, and the limited duration of postoperative follow-up did not allow for an objective evaluation of long-term outcomes. More scientific and precise indicators are needed for evaluation in follow-up trials.

5. Conclusion

Flurbiprofen axetil preventive analgesia is available for postoperative analgesia in children undergoing tonsillectomy, and ice pops offer an economical and safe alternative for short-term postoperative analgesia. Cryotherapy plus flurbiprofen axetil for pain management significantly mitigates post-tonsillectomy pain and delirium in children and facilitates recovery, with no significant adverse events.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] R. Subramanyam, A. Varughese, J. P. Willging, and S. Sadhasivam, "Future of pediatric tonsillectomy and perioperative outcomes," *International Journal of Pediatric Otorhinolaryngology*, vol. 77, no. 2, pp. 194–199, 2013.

[2] D. H. Darrow and C. Siemens, "Indications for tonsillectomy and adenoidectomy," *The Laryngoscope*, vol. 112, no. S100, pp. 6–10, 2002.

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Retraction

Retracted: Simvastatin in the Treatment of Colorectal Cancer: A Review

Evidence-Based Complementary and Alternative Medicine

Received 5 December 2023; Accepted 5 December 2023; Published 6 December 2023

This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

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References

[1] H. Zang, W. Yang, and X. Tian, "Simvastatin in the Treatment of Colorectal Cancer: A Review," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 3827933, 6 pages, 2022.

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Review Article

Simvastatin in the Treatment of Colorectal Cancer: A Review

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Drug repositioning and drug reuse are the heated topics in the field of oncology in recent years. These two concepts refer to seeking effective drugs for cancer that are not originally intended to treat cancer. The survival benefits are then analyzed by combining the re-positioned drugs with conventional cancer treatment methods. Simvastatin is a clinically commonly used hyperlipidemia drug and exerts the effect of preventing cardiovascular diseases. Recent studies have found that simvastatin has great potential in the treatment of colorectal cancer, and a large number of clinical studies have used simvastatin as an adjuvant drug to help treat metastatic colorectal cancer.

1. Introduction

Colorectal cancer is one of the most common malignant tumors worldwide, with the incidence ranking third among all malignant tumors, and the mortality ranking second [1, 2]. The WHO Cancer Research Centre's GLOBOCAN project estimated that the number of new colorectal cancer cases worldwide in 2018 was approximately 1.8 million and the number of deaths was approximately 880,000 [3]. The incidence of colorectal cancer is related to age, region, and gender, with colorectal cancer mainly occurring in middle-aged and elderly people over 40 years of age [3]. In recent years, the incidence and mortality rate of colorectal cancer in China have been on the rise, which should be given sufficient attention. Due to the large individual differences, there is no absolute best, fastest, and most effective medication. Apart from the commonly used over-the-counter drugs, the most suitable drug should be selected under the guidance of a doctor, taking into full consideration the individual situation. The main drug treatments for colorectal cancer are targeted drugs, bevacizumab and cetuximab [4]. Bevacizumab binds to the vascular endothelial growth factor (VEGF) and inhibits proliferation and neovascularisation of tumour endothelium, reducing tumour tissue nutrition and thus may inhibit tumour growth [5]. Cetuximab is recommended for patients with wild-type K-ras, N-ras, and BRAF genes, and it inhibits the proliferation of cancer cells and induces apoptosis by blocking intracellular signaling pathways through binding to the epidermal growth factor (EGF) receptor [6]. The use of cetuximab in combination with radiotherapy and cisplatin has been associated with increased serious adverse events, such as cardiac events, compared to radiotherapy and cisplatin alone [7]. Despite the clinical advantages of immunotherapy, it is available for a specific population, and the drug option for sudden aggravated colorectal cancer in the course of treatment is limited [8, 9].

Considering the high cost of expense and time to develop new drugs in clinical practice, some scholars proposed the flexible and economical concepts of drug repositioning and drug reuse. Statins, 3-hydroxy-3-methylglutaraldehyde coenzyme A (HMG-CoA) reductase inhibitors, can effectively prevent the conversion of HMG-CoA into meglutarate, thereby reducing the synthesis of cholesterol in patients [10, 11]. Statins are commonly used drugs to treat hyperlipidemia and prevent cardiovascular diseases. In recent years, relevant studies have pointed out that statins have good therapeutic effects on a variety of diseases, including cancer, through their involvement in angiogenesis, proliferation, apoptosis, and metastasis pathways [12, 13].

Furthermore, studies have shown that among statins, simvastatin, which has high lipophilicity, shows a beneficial anticancer activity in colon cancer cell lines. Furthermore, some studies have shown that simvastatin is effective in reducing the risk of colorectal cancer in patients. Many clinical trials have begun to add simvastatin to colorectal cancer chemotherapy regimens for the treatment of patients with metastatic colorectal cancer [14–17]. This article reviews the possible mechanisms of action of simvastatin in the treatment of colorectal cancer and the current status of its use in relevant clinical trials.

2. Analysis of the Possible Mechanism of Simvastatin in the Treatment of Colorectal Cancer

2.1. Simvastatin Combined with Cetuximab for KRAS-Mutated Colorectal Cancer. The colorectal cancer diagnostic guidelines (Chinese Society of Clinical Oncology) do not recommend the EGRF inhibitor cetuximab for KRAS-mutated colorectal cancer patients [18]. Kodach et al. (2011) also pointed out that the EGRF inhibitor cetuximab is not effective in the treatment of KRAS-mutated colorectal cancer patients [19]. Because KRAS is a key part of the EGFR signaling pathway, a mutation in the KRAS gene would make it insensitive to EGFR signaling and thus affect the effectiveness of EGFR inhibitors. Simvastatin is an (HMG-CoA) reductase inhibitor that interferes with the production of derivatives of the mevalonate pathway: farnesyl pyrophosphate and geranyl pyrophosphate. They are important substrates for Ras and Rho and play a key role in cell growth, proliferation, migration, and intracellular signaling [20]. Simvastatin can interfere with the Ras function, inhibit downstream signal transduction pathways (inhibit BRAF enzyme activity), and reverse cetuximab resistance in KRAS-mutant colorectal cancer cell lines.

2.2. The Antiangiogenesis Effect of Simvastatin on Colorectal Cancer. New blood vessels can supply energy and oxygen to cancer cells and also have a role in tumor metastasis. Tumor angiogenesis is regulated by various cytokines in the tumor microenvironment. The vascular endothelial growth factor is overexpressed in most cancer cells, which makes it the main target of the cancer antiangiogenic therapy. The overexpression of human epidermal growth factor receptor 2 promotes tumor angiogenesis. The vascular endothelial growth factor, human epidermal growth factor receptor 2, and phosphorylated human epidermal growth factor receptor 2 are consistently expressed at high levels in colorectal cancer patient cells. Among animal experiments, Lee et al. (2009) found that the expression of oncogenic human epidermal growth factor receptor 2 was positively correlated with the expression of the vascular endothelial growth factor, further speculating that there may be a link between human epidermal growth factor receptor 2 and angiogenesis in metastatic colorectal cancer [21]. Simvastatin inhibits angiogenesis in human epidermal growth factor receptor 2+ colorectal cancer cells.

2.3. Simvastatin Can Enhance the Radiosensitivity of Colorectal Cancer Cells. Bass et al. (2015) used simvastatin, radiotherapy alone, and combined therapy on 3 patients with colorectal cancer, respectively, and then compared the curative effects of the 3 patients. The results found that simvastatin not only effectively reduced the vitality of colorectal cancer cells but also enhanced the sensitivity of cancer cells to radiation *in vitro* [22]. It is speculated that this may be related to the depletion of GGPP and the effected EGFR-RAS-ERK1/2 pathway, reducing the phosphorylation of extracellular signal-regulated kinases (ERK1/2) [23].

2.4. The Effect of Simvastatin on Cancer Stem Cells. Simvastatin can slow down the proliferation of cancer stem cells. Possibly, it is related to the fact that simvastatin inhibits the activity of DNMT, which in turn affects the two promitogenic signaling pathways PI3K/AKT and MEK/ERK in colorectal cancer [24]. However, some scholars believe that simvastatin, as an inhibitor of DNMT, can demethylate the promoter region of the bone morphogenetic protein (BMP), tissue inhibitor of metalloproteinase (TIMP3), and HIC-1 gene and can reactivate BMP to inhibit tumor stem cells and resensitize colorectal cancer cells to 5-Fu treatment [25].

2.5. Simvastatin-Induced Activation of Nrf2. Nuclear factor E2-related factor 2 (Nrf2) is a transcription factor that activates the intracellular antioxidant stress response. Simvastatin can affect the expression of Nrf2 through the ERK and PI3K/AKT pathways in HT-29 and HCT-116 colorectal cancer cells, thereby inducing the high expression of antioxidant enzymes, thereby inhibiting the proliferation of colorectal cancer cells.

2.6. Simvastatin Upregulates GSK3β and Downregulates CDK4/Cyclin D1 and CDK2/Cyclin E1. The human cell cycle is regulated by the cyclic activation or inactivation of cyclin-dependent kinases (CDK) and their inhibitors, such as p21 and p27. Cyclins C1, D, and E bind to CDK4/6 and CDK2, respectively, and initiate the transition from the G1 phase to the S phase. Appropriate levels of cyclin D1 play a key role in the progression of the G1-S cell cycle transition. Glycogen synthase kinase 3β (GSK3β) is an important regulatory protein. Simvastatin upregulates GSK3β and inhibits CDK4/cyclin D1 and CDK2/cyclin E1, thereby blocking the cell cycle in the G1 phase in colorectal cancer.

2.7. Simvastatin Activates miR-192 to Inhibit Cancer Cell Proliferation. A novel tumor suppressor RNA miR-192 is an important endogenous biomolecule in the human body. Related studies have shown that miR-192 is overexpressed in colorectal cancer HCT-116 cells. Ras-associated protein Rab-2A (RAB2A) was bioinformatically identified as a downstream target of miR-192. Simvastatin, an activator of miR-192, upregulated its expression in colorectal cancer cells and acted on RAR2A to inhibit not only colon cancer cell proliferation but also to reduce β-catenin to inhibit

epithelial-mesenchymal transition and thus cancer cell migration.

3. Exploration of Simvastatin in the Treatment of Colorectal Cancer

3.1. XELIRI/FOLFIRI Regimen Combined with Simvastatin. A total of 288 patients were recruited from 7 cancer hospitals in Japan, and a phase III clinical trial of XELIRI/FOLFIRI combined with simvastatin/placebo in colorectal cancer patients was carried out to explore whether this regimen provides a survival benefit in previously treated rectal cancer patients and to confirm progression-free survival [26]. Finally, the median progression-free survival in the study group and observation group was 6.1 months and 7.3 months, respectively, the median overall survival in the two groups was 15.7 months and 20.1 months, respectively, and there was an absence of statistical difference in the progression-free survival and overall survival in the two groups. Presumably, it is associated with the underdosing of the trial simvastatin. Simvastatin has a biphasic effect on angiogenesis. Simvastatin accelerates endothelial cell proliferation at low concentrations (0.005–0.01 μmol/L); at high concentrations (0.05–1 μmol/L), it inhibits endothelial cell proliferation, migration, and differentiation. Most preliminary clinical studies have used high doses of simvastatin that are not permitted for use in humans. Therefore, in this clinical trial, an accepted safe dose (40 mg/d) was used, but this dose may not be sufficient to inhibit tumour cell proliferation.

3.2. CAPOX + Bevacizumab Regimen Combined with Simvastatin. Simvastatin is an antiangiogenic inhibitor that potentiates the effect of bevacizumab *in vitro* and *in vivo*. Previously, it is proved that simvastatin doses of 40 mg/d during chemotherapy may not have an anticancer effect. A phase III clinical trial was designed to evaluate the addition of simvastatin (80 mg/d) to CAPOX + bevacizumab regimen in the efficacy and safety of chemotherapy in patients with colorectal cancer. A total of 86 patients with colorectal cancer were recruited in this study, and all patients received standard CAPOX + bevacizumab chemotherapy and simvastatin (80 mg/d) was added during treatment. The results revealed that the median progression-free survival for all patients was 11.2 months, and the median overall survival was 18.7 months, and the disease control rate and overall response rate were 87.6% and 57.8%, respectively [27]. Progression-free survival results in this trial were more favourable compared to previous studies, with median overall survival results similar to those of CAPOX + bevacizumab alone. It was therefore concluded that the addition of simvastatin to CAPOX + bevacizumab chemotherapy prolonged progression-free survival in patients with colorectal cancer with no additional toxicity [28].

3.3. Trial of Simvastatin for an Adjuvant Therapy of Rectal Cancer. Radical resection of rectal cancer after adjuvant chemoradiotherapy is considered the standard treatment for locally advanced rectal cancer in the industry. Despite the ability to enhance the radiosensitivity of rectal cancer cells, a recent Chilean study found that the addition of simvastatin during adjuvant chemoradiotherapy failed to improve progression-free survival in patients with rectal cancer [29]. It is hypothesized that this is related to the inadequate daily dose of simvastatin, which affects long-term oncological outcomes [30]. More clinical trials are needed to verify whether simvastatin can be used in the adjuvant treatment of rectal cancer.

3.4. Analysis of Whether Simvastatin Can Reduce the Risk of Colorectal Cancer. Lee et al. (2015) found in an observational study that long-term (≥3 years) use of simvastatin is associated with a low risk of colorectal cancer [31]. A team at the University of Pennsylvania School of Medicine conducted a retrospective study and found that starting to administrate simvastatin at least 60 days before colonoscopy reduced the incidence of PC-CRC-3y by 31% [32]. However, critics have argued that most of these studies had less than 3 years of follow-up and that data on cancer incidence and mortality were also omitted from the randomized comparative trials of cardiovascular effects, inevitably leading to biased statistical results [33]. In view of this, the independent relationship between the risk of colorectal cancer, the use of simvastatin, and changes in serum cholesterol concentrations should be first clarified when analyzing whether simvastatin can reduce the risk of colorectal cancer. Zhang et al. (2009) conducted a subgroup analysis of the population who had previously received simvastatin and found that there was no significant difference in the risk of colorectal cancer among those who continued or stopped taking simvastatin, but the increase in serum cholesterol levels was independently associated with the risk reduction of colorectal cancer. We hypothesize that the idea that simvastatin reduces the risk of colorectal cancer in previous studies does not exclude the potential confounding effect of serum cholesterol prior to the use of simvastatin and that there may be concurrent use of simvastatin in people with a lower risk of cancer, which could lead to biased trial results and conclusions [34]. Clinical studies have confirmed that higher serum cholesterol levels can effectively reduce the risk of colorectal cancer. It raises a question for us that whether the recent unexplained drop in serum total cholesterol in the subject can indicate a risk of colorectal cancer [35]. To date, there are few studies on the relationship between cholesterol measurement time and colon cancer diagnosis, serum cholesterol changes, and colorectal cancer risk, and thus more clinical evidence is required to collaborate the hypothesis that simvastatin can reduce colorectal cancer risk.

4. Conclusion

Colorectal cancer is a common malignant tumor of the digestive system and its incidence is second only to lung cancer in the global malignant tumor. Common clinical symptoms of colorectal cancer include blood in the stool, abdominal pain, weight loss, and intestinal obstruction [36].

The causes of colorectal cancer are generally considered to be the following: (1) the development of colorectal cancer is closely related to dietary factors, such as low-fibre diet, high-fat and high-protein diet, and lack of micronutrients and vitamins are all risk factors for colorectal cancer [37]; (2) genetic factors play an important role in the development of colorectal cancer. In addition, the risk of colorectal cancer is four times higher in people with a family history of colorectal cancer [38, 39]; and (3) nitrosamines and their compounds are the most important chemical carcinogens causing colorectal cancer, and methyl aromatic amines in fried and baked foods are also closely related to the development of colorectal cancer [40]. There are also parasites and lifestyle factors [41]. The mainstay for colorectal cancer includes surgery, drug therapy, and radiation therapy, of which surgical therapy is suitable for patients with carcinoma in situ and early-stage cancer. Regarding patients with advanced cancer, surgery remains less than satisfactory, and drugs and radiation are frequently combined [42]. Bevacizumab, cetuximab, and panitumumab are commonly used in chemoradiotherapy and drug therapy in clinical practice, and the rational therapy should be formulated, tailoring the specific conditions of patients [43].

Statins are a general term for a class of lipid-lowering drugs that have been used in many other diseases in addition to their promising use in colorectal cancer. Lovastatin has the effect of lowering total cholesterol and LDL cholesterol and can be used to modulate lipids in the treatment of patients with primary hypercholesterolaemia [44]; fluvastatin is often used in the treatment of patients with primary hypercholesterolaemia for lipid modulation, which helps to reduce lipid levels and in patients with mixed dyslipidaemia [45]; atorvastatin is used as a lipid-modifying drug, which can be applied in the treatment of hypercholesterolaemia when nonpharmaceuticals are not effective, and also in the treatment of coronary artery diseases [46]. In recent years, numerous scholars believe that simvastatin has the potential to treat colorectal cancer, and many clinical studies have confirmed that simvastatin realizes clinical anticancer effects by inhibiting the proliferation and migration of endothelial cells and inducing apoptosis [47]. In the dimension of drug reuse, simvastatin exhibits a good anticancer potential. Its anticancer effect in preclinical research has prompted scholars to explore its use as a cancer treatment drug; also, many related studies have confirmed the feasibility of the drug, yet further clinical studies are still needed to confirm its outcome [48]. Notably, the adverse effects of simvastatin are of concern as long-term administration of simvastatin may cause symptoms such as rhabdomyolysis and hepatotoxicity [49]. In view of this, the optimal clinical dose and duration of use needs to be determined to ensure patient safety [31, 50, 51].

There are few clinical studies on the treatment of colorectal cancer patients with simvastatin, and the specific mechanism of action of simvastatin in the treatment of colorectal cancer has not been studied in depth at multiple levels. Obviously, the most important work at present is to identify the molecular mechanism of the antitumor effect of simvastatin, which includes the specific effects, pathways and targets of each mechanism, such as the mechanism of inhibiting tumor angiogenesis. This rules out controversy about the antitumour effects of simvastatin analogues and proves them at the protein and genetic level. A full understanding of the sensitivity of simvastatin to tumour cells and the specific pathways of action of simvastatin cytotoxicity will help to reveal new molecular targets for simvastatin in the treatment of colorectal cancer and help to explore the maximisation of its efficacy, maximum tolerated dose, and toxicity. Clinical applications [52]. We look forward to more reports on the application of simvastatin in the treatment of colorectal cancer in the future.

Data Availability

The datasets used and 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.

References

[1] T. P. Ahern, P. Damkier, S. Feddersen et al., "Predictive pharmacogenetic biomarkers for breast cancer recurrence prevention by simvastatin," *Acta Oncologica*, vol. 59, no. 9, pp. 1009–1015, 2020.

[2] I. Akbarzadeh, A. Saremi Poor, S. Yaghmaei et al., "Niosomal delivery of simvastatin to MDA-MB-231 cancer cells," *Drug Development and Industrial Pharmacy*, vol. 46, no. 9, pp. 1535–1549, 2020.

[3] P. Rawla, T. Sunkara, and A. Barsouk, "Epidemiology of colorectal cancer: incidence, mortality, survival, and risk factors," *Gastroenterology Review*, vol. 14, no. 2, pp. 89–103, 2019.

[4] Y. H. Xie, Y. X. Chen, and J. Y. Fang, "Comprehensive review of targeted therapy for colorectal cancer," *Signal Transduction and Targeted Therapy*, vol. 5, no. 1, p. 22, 2020.

[5] N. Nishida, H. Yano, T. Nishida, T. Kamura, and M. Kojiro, "Angiogenesis in cancer," *Vascular Health and Risk Management*, vol. 2, no. 3, pp. 213–219, 2006.

[6] V. M. Pratt, S. A. Scott, M. Pirmohamed et al., *Medical Genetics Summaries*, National Center for Biotechnology Information, Bethesda, MD, USA, 2012.

[7] M. L. Gillison, A. M. Trotti, J. Harris et al., "Radiotherapy plus cetuximab or cisplatin in human papillomavirus-positive oropharyngeal cancer (NRG Oncology RTOG 1016): a randomised, multicentre, non-inferiority trial," *The Lancet*, vol. 393, no. 10166, pp. 40–50, 2019.

[8] H. Alarfi, L. A. Youssef, and M. Salamoon, "A prospective, randomized, placebo-controlled study of a combination of simvastatin and chemotherapy in metastatic breast cancer," *Journal of Oncology*, vol. 2020, Article ID 4174395, 10 pages, 2020.

[9] F. Bai, Z. Yu, X. Gao, J. Gong, L. Fan, and F. Liu, "Simvastatin induces breast cancer cell death through oxidative stress up-regulating miR-140-5p," *Aging (Albany NY)*, vol. 11, no. 10, pp. 3198–3219, 2019.

[10] T. Lim, I. Lee, J. Kim, and W. K. Kang, "Synergistic effect of simvastatin plus radiation in gastric cancer and colorectal cancer: implications of BIRC5 and connective tissue growth

factor," *International Journal of Radiation Oncology, Biology, Physics*, vol. 93, no. 2, pp. 316–325, 2015.

[11] W. W. Chen, J. W. Qi, Y. Hang et al., "Simvastatin is beneficial to lung cancer progression by inducing METTL3-induced m6A modification on EZH2 mRNA," *European Review for Medical and Pharmacological Sciences*, vol. 24, no. 8, pp. 4263–4270, 2020.

[12] J. A. Duarte, A. L. B. de Barros, and E. A. Leite, "The potential use of simvastatin for cancer treatment: a review," *Biomedicine & Pharmacotherapy*, vol. 141, Article ID 111858, 2021.

[13] Y. E. Elakkad, S. N. S. Mohamed, and N. Z. Abuelezz, "Potentiating the cytotoxic activity of a novel simvastatin-loaded cubosome against breast cancer cells: insights on dual cell death via ferroptosis and apoptosis," *Breast Cancer (Dove Med Press)*, vol. 13, pp. 675–689, 2021.

[14] J. Y. Hong, H. J. Kim, K. Kim et al., "TPK1 as a predictive marker for the anti-tumour effects of simvastatin in gastric cancer," *Pathology, Research & Practice*, vol. 216, no. 3, Article ID 152820, 2020.

[15] G. Li, J. Zheng, B. Xu, J. Ling, W. Qiu, and Y. Wang, "Simvastatin inhibits tumor angiogenesis in HER2-overexpressing human colorectal cancer," *Biomedicine & Pharmacotherapy*, vol. 85, pp. 418–424, 2017.

[16] A. B. Ibrahim, H. F. Zaki, W. Wadie, M. M. Omran, and S. A. Shouman, "Simvastatin evokes an unpredicted antagonism for tamoxifen in MCF-7 breast cancer cells," *Cancer Management and Research*, vol. 11, pp. 10011–10028, 2019.

[17] B. Karimi, M. Ashrafi, T. Shomali, and A. Yektaseresht, "Therapeutic effect of simvastatin on DMBA-induced breast cancer in mice," *Fundamental & clinical Pharmacology*, vol. 33, no. 1, pp. 84–93, 2019.

[18] S. Ishikawa, H. Hayashi, K. Kinoshita et al., "Statins inhibit tumor progression via an enhancer of zeste homolog 2-mediated epigenetic alteration in colorectal cancer," *International Journal of Cancer*, vol. 135, no. 11, pp. 2528–2536, 2014.

[19] L. L. Kodach, R. J. Jacobs, P. W. Voorneveld et al., "Statins augment the chemosensitivity of colorectal cancer cells inducing epigenetic reprogramming and reducing colorectal cancer cell "stemness" via the bone morphogenetic protein pathway," *Gut*, vol. 60, no. 11, pp. 1544–1553, 2011.

[20] J. S. Kim, J. Turbov, R. Rosales, L. G. Thaete, and G. C. Rodriguez, "Combination simvastatin and metformin synergistically inhibits endometrial cancer cell growth," *Gynecologic Oncology*, vol. 154, no. 2, pp. 432–440, 2019.

[21] J. Lee, K. H. Jung, Y. S. Park et al., "Simvastatin plus irinotecan, 5-fluorouracil, and leucovorin (FOLFIRI) as first-line chemotherapy in metastatic colorectal patients: a multicenter phase II study," *Cancer Chemotherapy and Pharmacology*, vol. 64, no. 4, pp. 657–663, 2009.

[22] J. M. Baas, L. L. Krens, A. J. ten Tije et al., "Safety and efficacy of the addition of simvastatin to cetuximab in previously treated KRAS mutant metastatic colorectal cancer patients," *Investigational New Drugs*, vol. 33, no. 6, pp. 1242–1247, 2015.

[23] A. Sehdev, Y. C. T. Shih, D. Huo, B. Vekhter, C. Lyttle, and B. Polite, "The role of statins for primary prevention in non-elderly colorectal cancer patients," *Anticancer Research*, vol. 34, no. 9, pp. 5043–5050, 2014.

[24] E. D. Yulian, N. C. Siregar, and Bajuadji, "Combination of simvastatin and FAC improves response to neoadjuvant chemotherapy in locally advanced breast cancer," *Cancer Res Treat*, vol. 53, no. 4, pp. 1072–1083, 2021.

[25] Q. Pan, J. Xu, and L. Ma, "Simvastatin enhances chemotherapy in cervical cancer via inhibition of multiple prenylation-dependent GTPases-regulated pathways," *Fundamental & clinical Pharmacology*, vol. 34, no. 1, pp. 32–40, 2020.

[26] U. Ravnskov, "Re: the association between statins and cancer incidence in a veterans population," *Journal of the National Cancer Institute: Journal of the National Cancer Institute*, vol. 100, no. 13, pp. 972-973, 2008.

[27] X. F. Qi, D. H. Kim, Y. S. Yoon et al., "Involvement of oxidative stress in simvastatin-induced apoptosis of murine CT26 colon carcinoma cells," *Toxicology Letters*, vol. 199, no. 3, pp. 277–287, 2010.

[28] Q. Liu, H. Xia, S. Zhou et al., "Simvastatin inhibits the malignant behaviors of gastric cancer cells by simultaneously suppressing YAP and β-catenin signaling," *OncoTargets and Therapy*, vol. 13, pp. 2057–2066, 2020.

[29] W. Yuan, B. Hai, X. Ren et al., "Single-dose local intraosseous injection of simvastatin suppresses breast cancer with tumor vascular normalization," *Translational Oncology*, vol. 13, no. 12, Article ID 100867, 2020.

[30] L. Lu, W. Huang, W. Hu et al., "Kruppel-like factor 2 mediated anti-proliferative and anti-metastasis effects of simvastatin in p53 mutant colon cancer," *Biochemical and Biophysical Research Communications*, vol. 511, no. 4, pp. 772–779, 2019.

[31] J. Lee, Y. S. Hong, J. Y. Hong et al., "Erratum to: effect of simvastatin plus cetuximab/irinotecan for KRAS mutant colorectal cancer and predictive value of the RAS signature for treatment response to cetuximab," *Investigational New Drugs*, vol. 33, no. 1, pp. 269-270, 2015.

[32] L. Levine, "Cyclooxygenase expression is not required for release of arachidonic acid from cells by some nonsteroidal anti-inflammatory drugs and cancer preventive agents," *BMC Pharmacology*, vol. 6, no. 1, p. 7, 2006.

[33] C. Riganti, S. Doublier, C. Costamagna et al., "Activation of nuclear factor-kappa B pathway by simvastatin and RhoA silencing increases doxorubicin cytotoxicity in human colon cancer HT29 cells," *Molecular Pharmacology*, vol. 74, no. 2, pp. 476–484, 2008.

[34] I. Rus, M. Tertiş, C. Barbalata et al., "An electrochemical strategy for the simultaneous detection of doxorubicin and simvastatin for their potential use in the treatment of cancer," *Biosensors*, vol. 11, no. 1, p. 15, 2021.

[35] K. Okubo, K. Miyai, K. Kato, T. Asano, and A. Sato, "Simvastatin-romidepsin combination kills bladder cancer cells synergistically," *Translational Oncology*, vol. 14, no. 9, Article ID 101154, 2021.

[36] X. Yao, R. Xie, Y. Cao et al., "Simvastatin induced ferroptosis for triple-negative breast cancer therapy," *Journal of Nanobiotechnology*, vol. 19, no. 1, p. 311, 2021.

[37] S. K. Veettil, T. Y. Wong, Y. S. Loo et al., "Role of diet in colorectal cancer incidence: umbrella review of meta-analyses of prospective observational studies," *JAMA Network Open*, vol. 4, no. 2, Article ID e2037341, 2021.

[38] K. W. Jasperson, T. M. Tuohy, D. W. Neklason, and R. W. Burt, "Hereditary and familial colon cancer," *Gastroenterology*, vol. 138, no. 6, pp. 2044–2058, 2010.

[39] E. Half, D. Bercovich, and P. Rozen, "Familial adenomatous polyposis," *Orphanet Journal of Rare Diseases*, vol. 4, no. 1, p. 22, 2009.

[40] R. L. Santarelli, F. Pierre, and D. E. Corpet, "Processed meat and colorectal cancer: a review of epidemiologic and experimental evidence," *Nutrition and Cancer*, vol. 60, no. 2, pp. 131–144, 2008.

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Retraction

Retracted: Effects of Laparoscopic Hyperthermic Perfusion Therapy Combined with Adjuvant Treatment of Compound Yew Capsule on Ovarian Blood Flow Parameters and Immune Function in Patients with Ovarian Cancer

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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] M. Su, D. Wang, and P. Huang, "Effects of Laparoscopic Hyperthermic Perfusion Therapy Combined with Adjuvant Treatment of Compound Yew Capsule on Ovarian Blood Flow Parameters and Immune Function in Patients with Ovarian Cancer," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 9603492, 5 pages, 2022.

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Research Article

Effects of Laparoscopic Hyperthermic Perfusion Therapy Combined with Adjuvant Treatment of Compound Yew Capsule on Ovarian Blood Flow Parameters and Immune Function in Patients with Ovarian Cancer

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Objective. To determine the effects of laparoscopic hyperthermic perfusion therapy combined with adjuvant compound yew capsules on ovarian blood flow parameters and immune function in patients with ovarian cancer (OC). *Methods*. A total of 90 OC patients enrolled in our hospital between January 2019 and January 2020 were randomly distributed into the control (Con group) and experimental group (Exp group) based on the sealed envelope method. The Con group was administered laparoscopic hyperthermic perfusion therapy. On this basis, the Exp group was subjected to compound yew capsules; the ovarian blood flow parameters and immune function indexes were compared between the two groups. *Results*. The Exp group was reported to perform better than the Con group regarding ovarian blood flow parameters and immune indexes after treatment ($p < 0.001$). *Conclusion*. Laparoscopic hyperthermic perfusion therapy combined with adjuvant compound yew capsules for patients with OC can substantially improve the clinical indexes and immune function. Furthermore, research and adequate promotion are needed to elicit the evidence beyond preclinical studies to understand the intricacies of its implementation.

1. Introduction

Ovarian cancer (OC) is a frequently occurring malignant tumor and ranked second after uterine body cancer and cervical cancer [1, 2]. Epithelial cancer and malignant germ cell tumors are common types of OC. The ovarian tumor's symptoms are vague, are not prominent in the early stage, and appear upon progression to the advanced stage. Symptoms include decreased appetite, lower abdominal discomfort, and bloating [3–5]. At present, the pathogenesis of OC has not been fully elucidated. Some scholars believe its etiology is associated with endocrine and fertility factors. If not appropriately diagnosed early, ovarian cancer can be life-threatening and more challenging to treat at later stages [4, 6]. Previously, traditional Chinese medicine (TCM) has been extensively applied as a promising adjunctive drug in the fight against ovarian cancer [7, 8]. For instance, bitter lemon seeds-derived MAP 30 [9] and yew-derived Paclitaxel [10] have recently achieved safe and curative effects against ovarian cancers. The scant research literature and the shortcomings associated with clinical trial design and quality control limit the application of TCM as a viable regimen against ovarian cancer. In recent years, surgery combined with chemotherapy has been the mainstay for clinical treatment of this kind of disease, but the safety concern and reduction in patient ability to resist chemotherapy are the risks associated [11, 12]. The advent of laparoscopic hyperthermic perfusion therapy (LHPT) can improve the efficacy and lower the incidence of adverse reactions through thermal effects. However, it is clinically found that no single treatment method is appropriate. On this basis, the introduction of compound yew capsule adjuvant therapy can effectively improve the clinical indicators of patients [13]. Therefore, this study was designed to explore the influence of

LHPT combined with compound yew capsule adjuvant treatment on ovarian blood flow parameters and immune function in patients with OC. Ninety patients treated in our hospital between January 2019 and January 2020 were enrolled as the research objects. The results are reported as follows.

2. Materials and Methods

2.1. General Information. A total of 90 OC patients admitted to Cangzhou Central Hospital between January 2019 and January 2020 were distributed into the control group (Con group) and the experimental group (Exp group) based on the sealed envelope method. This study was conducted with approval from the ethics committee of Cangzhou Central Hospital (Approval No. 9297101).

2.2. Inclusion Criteria. The inclusion criteria are as follows: ① patients met the diagnostic criteria for OC in *Obstetrics and Gynecology,* in which the diagnosis of OC is based on the patient's personal and family history of gynecologic, breast, and colon cancer, and performed diagnostic tests when necessary [14]; ② patients had a survival time ≥3 months; ③ this study was conducted with approval from the hospital ethics committee (medical scientist, head nurse, clinicians, ethicist, secretary, and medical specialist), and the patient and his family members signed an informed consent form after being apprised of the purpose and process of the study.

2.3. Exclusion Criteria. The exclusion criteria are as follows: ① combined with acute and chronic infectious diseases; ② patients who have received antitumor therapy in the past; ③ patients with abnormal heart, lung, liver, and kidney function.

2.4. Method. The Con group was administered with LHPT, and ultrasound positioning, routine disinfection, and draping were performed; 1% lidocaine was given to the patients (manufacturer: Shiyao Yinhu Pharmaceutical Co., Ltd.; approval no.: H14024045; specification: 5 ml: 0.1 g) for local anesthesia, the patient's bilateral abdominal cavities were punctured to perform fluid extraction, and the ascites was released through the drainage bag; then, an extracorporeal circulation perfusion machine was used to heat 0.9% saline to a temperature > 42°C. In addition, a puncture needle was used to puncture the abdominal cavity, and the other cavity was used to measure the drainage of ascites. The lavage was continued until the outflow was clear. Finally, a perfusion machine was used to place the indwelling tube on both sides of the abdominal cavity, ensuring the state of one out and one in, and infusion was continued for 60 minutes; after the circulatory treatment was completed, the effusion was drained and the puncture needle was removed. The perfusion was performed 1 time/3 weeks.

On this basis, the Exp group introduced two pills of compound yew capsules (manufacturer: Chongqing Sino Biopharmaceutical Co., Ltd.; approval no.: Z20026350; specification: 0.3 g*12 capsules), 3 times/d.

Both groups underwent 2 months of treatment.

2.5. Observation Indicators. A Doppler ultrasound detector (manufacturer: Beijing Kuntaide Medical Technology Co., Ltd.; model: C9) was used to detect the blood volume perfusion index (PI) and the peak systolic velocity (PSV) and resistance index (RI) of both groups before and after therapy.

The immune function indicators of the two groups were compared after therapy. 2 ml of fasting venous blood was collected from both groups of patients. EDTA was used as an anticoagulant, and the flow cytometry (manufacturer: German Partec; model: CyFlow® Ploidy Analyzer) was performed to detect CD4+, CD8+, and CD4+/CD8+ in the *T*-lymphocyte subsets of the patients.

2.6. Statistical Analyses. Data analyses were conducted with SPSS20.0 software. The study includes count and measurement data, which were analyzed via the x^2 and *t*-tests. Values of $p < 0.05$ were deemed statistically significant.

3. Results

3.1. Comparison of General Information. The two groups showed no differences between average age, BMI, pathological type, FIGO staging, and location of residence ($p > 0.05$, Table 1).

3.2. Comparison of Ovarian Blood Flow Parameters. After therapy, the ovarian blood flow parameters of the Exp group were notably enhanced as compared to the Con group ($p < 0.05$, Table 2).

3.3. Comparison of Immune Indicators. After therapy, the immune indexes of the Exp group were found superior to the Con group ($p < 0.05$, Table 3).

4. Discussion

Over the past few years, the incidence of OC has been rising, seriously endangering women's life and health [15]. OC has a high incidence and a high mortality rate. Owing to the insidious symptoms in the early stage, patients with OC are often diagnosed at the advanced stage. A variety of clinical symptoms and difficulty in separating and differentiating between tumor cells prompting the diagnostic treatment approach challenging, which is not conducive to the prognosis of patients [16–18]. At present, the main clinical treatment is surgery combined with chemotherapy. However, because OC is a chemotherapy-sensitive tumor, long-term chemotherapy will not only cause toxic reactions such as immunosuppression but also decrease the immune function of the patient's body. Along with safety concerns, it is also difficult to meet clinical needs [19–21]. Pilot studies have shown that TCM, including MAP 30 and Paclitaxel, has been extensively applied to treat ovarian cancer effectively

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

	Experimental group ($n = 45$)	Control group ($n = 45$)	x^2 or t	p
Mean age (year)	62.25 ± 3.32	62.33 ± 3.29	0.115	0.909
BMI (kg/m^2)	26.27 ± 1.59	25.89 ± 1.63	1.119	0.266
Pathological type				
Serous adenocarcinoma	32 (71.11)	30 (66.67)	0.207	0.649
Mucinous adenocarcinoma	7 (15.56)	8 (17.78)	0.080	0.777
Endometrioid carcinoma	6 (13.33)	7 (15.56)	0.089	0.764
FIGO staging			0.051	0.822
III	31 (68.89)	30 (66.67)		
IV	14 (31.11)	15 (33.33)		
Place of residence			0.050	0.822
City	31 (68.89)	30 (66.67)		
Countryside	14 (31.11)	15 (33.33)		

Table 2: Comparison of ovarian blood flow parameters between the two groups ($\overline{x} \pm s$).

Groups	n	PI		PSV (cm/s)		RI	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Experimental group	45	0.66 ± 0.05	1.71 ± 0.16	25.88 ± 2.27	16.21 ± 1.52	0.37 ± 0.06	0.79 ± 0.09
Control group	45	0.67 ± 0.04	1.01 ± 0.13	25.86 ± 2.25	20.88 ± 2.02	0.38 ± 0.04	0.42 ± 0.05
t		1.048	22.778	0.042	12.392	0.930	24.108
p		0.298	<0.001	0.967	<0.001	0.355	<0.001

Table 3: Comparison of immune indicators between the two groups ($\overline{x} \pm s$).

Groups	n	$CD4^+$ (%)		$CD8^+$ (%)		$CD4^+/CD8^+$	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Experimental group	45	36.66 ± 7.15	39.23 ± 5.21	26.88 ± 4.27	23.21 ± 3.85	1.37 ± 0.31	1.79 ± 0.23
Control group	45	36.67 ± 7.21	33.27 ± 6.11	26.86 ± 4.25	30.01 ± 3.93	1.38 ± 0.32	1.42 ± 0.16
t		0.007	4.979	0.022	8.291	0.151	8.859
p		0.995	<0.001	0.982	<0.001	0.881	<0.001

[8–10, 14]. However, despite extensive clinical research, the clinical efficacy of TCM is still not well understood. Moreover, recent evolution in radiotherapy with the advent of low-dose hyperfractionation, intensity-modulated radiotherapy (IMRT), and stereotactic body radiotherapy (SBRT) [22] have led to unprecedented advances in ovarian cancer and could be reconsidered as the standard treatment modality for this deadly tumor. The possible side effects of toxicity, diarrhea, and successive advancement of systemic therapies have limited radiotherapy's use in treating this disease. It is clinically found that LHPT combined with compound yew capsule adjuvant therapy can substantially improve the patients' clinical indicators, inhibit tumor development, and produce significant clinical effects. Among them, LHPT is to inject chemotherapeutic drugs into the abdominal cavity to directly contact the tumor lesions, reducing the toxic and side effects caused by high-dose intravenous chemotherapy and improving the clinical efficacy of cancerous ascites [23–25]. In addition, heat sensitivity and tolerance of normal human cells are quite different from those of tumor cells. Tumor cells are prone to damage at a temperature between 40°C and 42°C. A large number of tumor cells will be killed upon exposure to this range of temperature. Fortunately, normal cells can tolerate this temperature range, permitting therapy to perform efficiently and effectively against tumors [26–28]. Although laparoscopic hyperthermic perfusion therapy emanates a desirable clinical effect, the single treatment remains unsatisfactory. On this basis, the introduction of compound yew capsules can effectively prolong the patients' survival. Yew capsule such as Paclitaxel is a clear mix of Chinese and Western medicine with both mitogenic and TCM effects. Paclitaxel, a yew-derived (*Taxus brevifolia*) compound, was isolated in 1969 and administered as TCM for relieving cough [29, 30]. Later, one with multiple screening experiments for anticancer activities was approved as a potential anticancer drug by the US Food and Drug Administration in 1992 [31], which is now the first line of treatment against ovarian and breast cancer [32]. Compound yew capsules, as a new type of antimitotic inhibitor, have the effects of dredging collaterals, dispelling lumps, eliminating evils, and strengthening the body. Among them, iron-clad gold can reduce swelling and detoxification and stop bleeding and analgesia; licorice can relieve heart fire, clear heat, and detoxify; and Yew can improve human immunity and suppress tumors; the combination of all these medicines can effectively inhibit the development of the patient's condition. Related studies have found that the blood flow parameters of malignant tumor tissues are characterized by low resistance and high flow rate. Because OC tumors are in a high metabolism state for a long

run during the development process, it will cause an increase in blood perfusion and a decrease in vascular resistance. Blood flow parameters are also clinically used as effective indicators for judging OC tumors [33].

In our study, the Exp group showed notably improved ovarian blood flow parameters than the Con group after therapy induction, indicating that LHPT combined with adjuvant treatment of compound yew capsules can effectively improve the patients' clinical indicators. Moreover, the Exp group showed notably better immune indexes than the Con group after treatment in the study, which was in agreement with the research results of KATO et al. [34], who pointed out that CD4+, CD8+, and CD4+/CD8+ were $(38.39 \pm 5.41)\%$, $(25.19 \pm 3.11)\%$, and (1.56 ± 0.27), noticeably better than the Con group values $(35.16 \pm 6.27)\%$, $(29.76 \pm 3.73)\%$, and (1.31 ± 0.18). It fully demonstrates that LHPT combined with compound yew capsule treatment can enhance the patient's immunity by elevating the above-mentioned immune cells by increasing the expression of both MHC-I and PD-L1, as reported previously [32].

Previously, various combinational therapies have been administered with fruitful results. For instance, chemotherapy has been used as adjuvant therapy in combination with radiation therapy [35], chemotherapy [36], anti-angiogenesis drugs [37], and poly-ADP ribose polymerase inhibitors (PARPi) [38], yielding significant results including enhanced antitumor activities against ovarian cancer and increased survival time. The present study's findings concord with the previously mentioned combination therapies.

The preliminary limitation of the current study was the clinical trials endorsed in the Chinese population without taking other populations into consideration. This result fails to figure out the intricacies of the novel treatment strategy in different populations, thus limiting the reliability and accuracy of the conclusion. Another limitation of the study was selecting a small sample size. Furthermore, research is needed to validate the findings of the present study by endorsing large-scale clinical trials.

In summary, the combination of LHPT and compound yew capsules in patients with OC can substantially induce a potent CD4+ and CD8+ T-cell-dependent antitumor immune response and enhance the patient's clinical indicators. It deserves promotion and application.

Data Availability

All data generated or analyzed during this study are included within this article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] M. A. Tanay and J. O. Armes, "Lived experiences and support needs of women who developed chemotherapy-induced peripheral neuropathy following treatment for breast and ovarian cancer," *European Journal of Cancer Care*, vol. 28, no. 3, Article ID e13011, 2019.

[2] A. E. Stenzel, M. F. Buas, and K. B. Moysich, "Survival disparities among racial/ethnic groups of women with ovarian cancer: an update on data from the surveillance, epidemiology and end results (SEER) registry," *Cancer epidemiology*, vol. 62, Article ID 101580, 2019.

[3] T. Steffen, L. Häller, L. Bijelic et al., "Decision-making analysis for hyperthermic intraperitoneal chemotherapy in ovarian cancer: a survey by the executive committee of the peritoneal surface oncology group international (PSOGI)," *Oncology*, vol. 99, no. 1, pp. 41–48, 2021.

[4] E. M. Hill and A. Hamm, "Intolerance of uncertainty, social support, and loneliness in relation to anxiety and depressive symptoms among women diagnosed with ovarian cancer," *Psycho-Oncology*, vol. 28, no. 3, pp. 553–560, 2019.

[5] M. Stukan, J. L. Alcazar, J. Gębicki et al., "Ultrasound and clinical preoperative characteristics for discrimination between ovarian metastatic colorectal cancer and primary ovarian cancer: a case-control study," *Diagnostics*, vol. 9, no. 4, p. 210, 2019.

[6] M. P. Ward, F. A. Saadeh, S. A. O'Toole, J. J. O'Leary, N. Gleeson, and L. A. Norris, "Procoagulant activity in high grade serous ovarian cancer patients following neoadjuvant chemotherapy-the role of the activated protein C pathway," *Thrombosis Research: An International Journal on Vascular Obstruction, Hemorrhage and Hemostasis*, vol. 200, pp. 20091–20098, 2021.

[7] H. Liu and S. L. Liu, "Pharmacological effects of natural components against ovarian cancer and mechanisms," *Advances in Experimental Medicine and Biology*, vol. 1330, pp. 55–73, 2021.

[8] J. Y. Xu, F. Y. Liu, S. X. Liu et al., "Plant-derived Chinese medicine monomers on ovarian cancer via the wnt/β-catenin signaling pathway: review of mechanisms and prospects," *JAMA Oncology*, vol. 2021, Article ID 6852867, 10 pages, 2021.

[9] D. W. Chan, M. M. Yung, Y. S. Chan et al., "MAP30 protein from Momordica charantia is therapeutic and has synergic activity with cisplatin against ovarian cancer in vivo by altering metabolism and inducing ferroptosis," *Pharmacological Research*, vol. 161, Article ID 105157, 2020 Nov.

[10] J. Wu, T. Zhou, Y. Wang, Y. Jiang, and Y. Wang, "Mechanisms and advances in anti-ovarian cancer with natural plants component," *Molecules*, vol. 26, no. 19, p. 5949, 2021 Sep 30.

[11] Y. Wang, J. Cao, W. Liu et al., "Protein tyrosine phosphatase receptor type R (PTPRR) antagonizes the Wnt signaling pathway in ovarian cancer by dephosphorylating and inactivating β-catenin," *Journal of Biological Chemistry*, vol. 294, no. 48, pp. 18306–18323, 2019.

[12] E. Hinchcliff, C. Paquette, J. Roszik et al., "Lymphocyte-specific kinase expression is a prognostic indicator in ovarian cancer and correlates with a prominent B cell transcriptional signature," *Cancer Immunology, Immunotherapy*, vol. 68, no. 9, pp. 1515–1526, 2019.

[13] D. Newsted, S. Banerjee, K. Watt et al., "Blockade of TGF-β signaling with novel synthetic antibodies limits immune exclusion and improves chemotherapy response in metastatic ovarian cancer models," *OncoImmunology*, vol. 8, no. 2, Article ID e1539613, 2019.

[14] D. L. Richardson, "The role of the obstetrician-gynecologist in the early detection of epithelial ovarian cancer in women at average risk," *Obstetrics & Gynecology*, vol. 130, no. 3, pp. e146–e149, 2017.

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Retraction

Retracted: Analysis of the Application Value of Different Esophagography Techniques in the Diagnosis of H-Type Tracheoesophageal Fistula in Neonates

Evidence-Based Complementary and Alternative Medicine

Received 26 September 2023; Accepted 26 September 2023; Published 27 September 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.

References

[1] K. Deng and L. Luo, "Analysis of the Application Value of Different Esophagography Techniques in the Diagnosis of H-Type Tracheoesophageal Fistula in Neonates," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 7264343, 5 pages, 2022.

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Research Article

Analysis of the Application Value of Different Esophagography Techniques in the Diagnosis of H-Type Tracheoesophageal Fistula in Neonates

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Objective. The study aimed to analyse the detection rates of the triple-lumen double-balloon catheter technique and conventional esophagography in diagnosing H-type tracheoesophageal fistula (H-TEF) in neonates. *Methods*. The data of 8 neonates diagnosed with H-TEF by surgery in the researchers' hospital between January 2015 and January 2022 were collected. We compared the detection (true positive) rates of H-TEF by the triple-lumen double-balloon catheter technique, conventional esophagography, and multidetector row spiral CT. *Results*. Before surgery, conventional esophagography was applied in all 8 cases, of which the H-TEF diagnosis was confirmed in 5 cases and TEF was suspected in 3 cases. The triple-lumen double-balloon catheter technique was employed in 5 cases, of which 4 were confirmed with H-TEF and 1 was suspected with TEF. Multidetector row spiral CT was performed in 4 cases, and 1 case was confirmed with H-TEF, while no fistula was observed in the other 3 cases. The triple-lumen double-balloon catheter technique yielded a 100% detection rate, while conventional esophagography revealed a 62.5% rate and multidetector row spiral CT showed a 25% rate. By comparative analysis, the true positive rates (TPRs) of the triple-lumen double-balloon catheter technique and conventional esophagography were not significantly different ($P = 0.118$). No significant differences were recorded in TPRs between conventional esophagography and multidetector row spiral CT ($P = 0.221$). However, the triple-lumen double-balloon catheter technique had a significantly higher TPR than multidetector row spiral CT ($P = 0.118$). *Conclusion*. To diagnose congenital H-TEF in neonates, conventional esophagography is a highly valuable yet inconsistently reliable method and the diagnostic value of CT is relatively limited. The triple-lumen double-balloon catheter technique boasts a significantly valuable application for H-TEF diagnosis. Being simple, economical, and effective, it barely requires state-of-the-art facilities, and no complications have occurred during its clinical practice. These advantages justify a possible wider application of the triple-lumen double-balloon catheter technique in clinical practice.

1. Introduction

A tracheoesophageal fistula (TEF) is a fistula connecting the trachea and the oesophagus caused by an abnormality or lesion of the oesophagus [1, 2]. TEF is a rare congenital malformation with an incidence of 1 in 3500–4500 births, and H-type tracheoesophageal fistulas (H-TEFs) account for only 4% of all congenital tracheoesophageal malformations [3]. The most common presentations include choking, coughing and reflux during feeding, and vomiting of pharyngeal secretions, leading to aspiration pneumonia and respiratory distress resulting in sudden death [4, 5]. Right cervical incision or thoracotomy is the preferred treatment modality for congenital H-TEF, and thoracoscopic ligation and dissection of low H-type fistulas are an alternative and less invasive approach compared to thoracotomy [6]. Children were treated with a minimally invasive approach with endoscopy and electrocautery, but initial treatment failed to close the fistula, and surgery was performed; only one was successfully treated with electrocautery after the second operation [7].

Because H-TEF is extremely rare, its clinical symptoms are similar to those of other respiratory diseases, such as

recurrent respiratory symptoms, cyanotic aspiration during feeding, and abdominal distention. It is therefore poorly understood by some paediatricians and difficult to diagnose [8–10]. Current clinical diagnostic techniques mainly include conventional esophagography, multidetector row spiral CT, and fibreoptic bronchoscopy [11]. Conventional esophagography boasts the highest detection rate of 90%, but all three techniques have limitations in confirming the diagnosis of H-TEF at an early stage [12]. The diagnosis is confirmed if a fistula is observed, but it is hard to confirm in highly suspected cases of H-TEF, presenting a major difficulty in the current clinical diagnosis of H-TEF. The triple-lumen double-balloon catheter is a gastric catheter connected with an oesophageal balloon and a gastric balloon. Once the catheter is inflated, the two soft-inflated balloons compress the bleeding varices in the lower oesophagus and the fundus of the stomach for haemostasis. Based on the working principle of the technique (the upper and lower oesophagus obstructed by a balloon and contrast are injected into the oesophagus to create positive pressure), this study looks at whether the contrast enters the trachea through the fistula. The diagnosis of H-TEF can be confirmed by radiographs [13, 14]. We used the three-lumen double-balloon catheter technique to diagnose H-TEF in eight neonates, and the results are reported in the following section.

2. Materials and Methods

2.1. General Data. Data were collected for retrospective analysis from 8 newborns presenting from January 2015 to January 2022. There were 4 males and 4 females, with an age at presentation of 6 days to 11 months and a mean of (56.38 ± 3.75) days. The weight on admission ranged from 2.40 to 2.89 kg, with a mean weight of (2.64 ± 0.77) kg. All presented with varying degrees of choking, shortness of breath, cyanosis, malnutrition, and abdominal distention after breastfeeding. The study was conducted with the approval of the Ethics Committee of Northwest Women and Children's Hospital, No.2015-191/645, and all cases involved in the study were agreed upon and signed by the families of the children:

Inclusion criteria were as follows: (1) children with surgically diagnosed H-TEF; (2) all children born at full term; (3) children with symptoms starting immediately after birth.

Exclusion criteria were as follows: (1) children with incomplete information collection; (2) children with other congenital diseases.

2.2. Detection Equipment and Techniques

2.2.1. The Triple-Lumen Double-Balloon Catheter Technique. The subject was placed in a lateral semirecumbent position. After local lubrication, a three-chambered double-balloon catheter is delivered into the subject's oesophagus. Once the lower balloon is in the stomach, it is inflated with an appropriate amount of air and iophorol (a contrast agent). The lower balloon is then raised against the cardia to obstruct the lower end of the oesophagus; similarly, the upper balloon is raised against the oesophageal wall to obstruct the upper end of the oesophagus; 1 : 4 iophorol is then slowly injected between the two balloons and the oesophageal wall, gradually increasing the dose until the oesophageal image is clear. Fluoroscopy was performed to observe whether the contrast medium flowed into the trachea through a fistula, leading to the increased contrast of the trachea and bronchi on the image. The triple-lumen double-balloon catheter needed to be inflated and deflated regularly and should not be left in place for an extended period of time.

2.2.2. Conventional Esophagography. The subject's position was adjusted ready for the esophagography. The subject's head was held up, or the examination table was tilted upward to make sure that the subject's feet were lower than the subject's head. Iodinated oil was injected into the tip of a catheter using the slightly stiff No. 8 catheter. The subject's head was then tilted backwards. The catheter was inserted into the oesophagus through the mouth or nose until the front end of the catheter was resisted, and 1-2 mL of iodinated oil was injected into the oesophagus. After the blind end of the oesophagus was filled with iodinated oil, an anterior-posterior view, a left-posterior oblique view, and a right lateral view were taken. The iodinated oil contrast medium in the oesophagus was immediately removed.

2.2.3. Multidetector Row Spiral CT. The GE LightSpeed VCT 64-MDCT scanner was used. Before scanning, the subject was held upright for 5 to 10 minutes to allow the gastrointestinal gas to enter the distal oesophagus; approximately, 5 mL of air was then injected into the proximal oesophagus through the gastric tube to make the proximal oesophageal blind pouch clearly visualized when scanning. Scanning covered the areas from the level of the hard palate to the top of the diaphragm, with parameters of 120 kVp and 50–80 mA. The spiral mode was selected all the way through, with collimation of 64×0.625 mm, a pitch of 1.375, and a rotation speed of 0.8 s/circle. The spiral mode also entailed a standard algorithm with a reconstruction interval of 0.625 mm. During the scan, no sedation was administered to avoid respiratory distress, and subjects were secured with tape to reduce motion artefacts. After scanning, data were transferred to Advantage Workstation 4.3 for multiplanar volume reconstruction (MPVR) with minimal intensity projection (MinIP) (all voxels $\leq$704 HU and $\geq$280 HU were shown as translucent areas). Machine defaults were used. MPVR uses the lung window to observe the presence of a tracheoesophageal fistula and to measure the distance between the fistula and the blind end of the oesophagus.

2.3. Statistical Analysis. Data analysis was performed with the statistical software SPSS 22.0. One-way ANOVA was used to compare multiple groups of measurement data. The *t*-test was performed to determine whether there was a

Table 1: General data of the subjects.

Case#	Sex	Age	Weight (kg)	Severe pneumonia	PFO	VSD and PFO	Congenital laryngeal chondrodysplasia	Oesophageal stricture
1	Female	4 months	2.71	—	—		1	—
2	Female	11 days	2.76	—	1	—	—	—
3	Male	7 months	2.58	1	1	1	—	1
4	Male	13 days	2.90	—	—	—	—	—
5	Male	30 days	2.40	—	—	—	—	1
6	Female	41 days	2.47	—	—	—	—	—
7	Female	8 months	2.85	—	1	—	—	—
8	Male	7 days	2.59	—	—	1	—	—

Note. "1" means the subject presented with the complication; "—" means the subject did not present with the complication.

significant difference between the means of the two groups. The chi-squared test was performed to analyse count data, expressed as percentages. $P < 0.05$ indicated that the difference between the two groups was statistically significant.

3. Results

3.1. General Data of the Subjects. Among the 8 cases, there was 1 case with severe pneumonia, 3 cases with coexisting patent foramen ovale (PFO), 2 cases with ventricular septal defect (VSD) and PFO, 1 case with congenital laryngeal chondrodysplasia, and 2 cases with an oesophageal stricture. The details of the subjects are shown in Table 1.

3.2. Results of Diagnosis by the Three Techniques. Before surgery, conventional esophagography was applied in all 8 cases, of which the H-TEF diagnosis was confirmed in 5 cases and TEF was suspected in 3 cases. The triple-lumen double-balloon catheter technique was employed in 5 cases, of which 4 were confirmed with H-TEF and 1 was suspected with TEF. Multidetector row spiral CT was performed in 4 cases, and 1 case was confirmed with H-TEF, while no fistula was observed in the other 3 cases. The triple-lumen double-balloon catheter technique yielded a 100% detection rate, while conventional esophagography revealed a 62.5% rate and multidetector row spiral CT showed a 25% rate. By comparative analysis, the true positive rates (TPRs) of the triple-lumen double-balloon catheter technique and conventional esophagography were not significantly different ($P = 0.118$). No significant differences were recorded in TPRs between conventional esophagography and multidetector row spiral CT ($P = 0.221$). However, the triple-lumen double-balloon catheter technique had a significantly higher TPR than multidetector row spiral CT ($P = 0.118$). The detection rates of the 3 groups of subjects are shown in Table 2.

4. Discussion

H-TEF is a rare congenital malformation of the foregut. Its most common symptoms include choking during feeding, cyanosis, recurrent lower respiratory tract infections, and abdominal distention. However, these symptoms are nonspecific and intermittent and usually result in a delay in the preoperative diagnosis of H-TEF [15, 16]. Infants who suffer from aspiration, coughing, and choking during meals are often misdiagnosed as having reflux [17]. For suspected cases, esophagography, bronchoscopy, and multidetector row spiral CT are commonly used as diagnostic techniques, but their diagnostic value is limited. The oesophageal opening is small and often obscured by the folded mucosa, contributing to cases of suspected diagnosis or even missed diagnosis [18, 19].

H-TEF always occurs more cephalad on the tracheal side and less on the oesophageal side, which makes the anatomy more like N than H. Therefore, the horizontal axial view on chest CT does not show the entire fistula making monitoring difficult [17]. The use of an oesophagoscopic tracer via tracheal MB injection also carries the risk of patient asphyxia and choking. The study found that before surgery, conventional esophagography was applied in all 8 cases, of which the H-TEF diagnosis was confirmed in 5 cases and TEF was suspected in 3 cases. The triple-lumen double-balloon catheter technique was employed in 5 cases, of which 4 were confirmed with H-TEF and 1 was suspected with TEF. Multidetector row spiral CT was performed in 4 cases, and 1 case was confirmed with H-TEF, while no fistula was observed in the other 3 cases. The triple-lumen double-balloon catheter technique yielded a 100% detection rate, while conventional esophagography revealed a 62.5% rate and multidetector row spiral CT showed a 25% rate. By comparative analysis, the true positive rates (TPRs) of the triple-lumen double-balloon catheter technique and conventional esophagography were not significantly different ($P = 0.118$). No significant differences were recorded in TPRs between conventional esophagography and multidetector row spiral CT ($P = 0.221$). However, the triple-lumen double-balloon catheter technique had a significantly higher TPR than multidetector row spiral CT ($P = 0.118$).

The results indicate that both the triple-lumen double-balloon catheter technique and conventional esophagography could diagnose H-TEF in most cases with a high TPR; the triple-lumen double-balloon catheter technique had a slightly higher TPR than conventional esophagography, but the difference was not statistically significant, and

Table 2: Diagnosis results of the subjects.

Case[#]	Triple-lumen double-balloon catheter technique	Conventional esophagography	Multidetector row spiral CT
1	Diagnosed	Suspected	—
2	—	Diagnosed	Negative
3	—	Diagnosed	Diagnosed
4	Diagnosed	Diagnosed	Negative
5	Diagnosed	Suspected	—
6	Diagnosed	Suspected	Negative
7	Diagnosed	Diagnosed	—
8	—	Diagnosed	—

Note. "Diagnosed" stands for a confirmed diagnosis of H-TEF; "suspected" stands for suspected TEF; "negative" means no fistula was seen; "—" means the diagnostic technique was not used in the case.

multidetector row spiral CT had no significant value in confirming the diagnosis of H-TEF. The results were highly similar to the findings in the literature [20]. The TPR of esophagography, bronchoscopy, and multidetector row spiral CT in 10 cases of H-TEF were 83%, 72.1%, and 20.0%, respectively, which showed that the TPR of esophagography and bronchoscopy was relatively higher and most patients could be diagnosed through these two techniques [21].

The study had several limitations. Firstly, the retrospective summary analysis failed to provide a randomised comparison of outcomes. Secondly, as H-TEF is a rare disease, the number of subjects was small and it is expected that more subjects will be enrolled for further studies. We will also consider more ethical factors in the trial, with the life and health of the child as the primary concern.

5. Conclusion

In summary, esophagography is a highly valuable yet inconsistently reliable method to diagnose congenital H-TEF in neonates, and the diagnostic value of CT is relatively limited. The findings of the present study are also supported by the literature [3]. Given the pathological characteristics and pathogenesis of H-TEF and the limitations of various diagnostic techniques, this study employed the triple-lumen double-balloon catheter technique, blocking the upper and lower ends of the oesophagus with balloons and creating a positive pressure in the oesophagus with contrast media [22–24] to detect whether a fistula existed. The triple-lumen double-balloon catheter technique proved a significant application value for the diagnosis of H-TEF. It is simple, economical, and effective. The technique requires little effort in the way of very advanced equipment, and no other complications have arisen in clinical practice. These advantages therefore justify the potential for wider use of the triple-lumen double-balloon catheter technique in clinical practice.

Data Availability

The datasets used and analysed in the present study are available from the corresponding author upon formal request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] B. Edelman, B. J. Selvaraj, M. Joshi, U. Patil, and J. Yarmush, "Anesthesia practice: review of perioperative management of H-type tracheoesophageal fistula," *Anesthesiol Research Practice*, vol. 3, Article ID 8621801, 2019.

[2] K. Taghavi, S. P. Tan Tanny, A. Hawley et al., "H-type congenital tracheoesophageal fistula: insights from 70 years of the Royal Children's Hospital experience," *Journal of Pediatric Surgery*, vol. 56, no. 4, pp. 686–691, 2021.

[3] K. Toczewski, M. Rygl, A. Dzielendziak, B. Frybova, and D. Patkowski, "Thoracoscopic repair of congenital isolated H-type tracheoesophageal fistula," *Journal of Pediatric Surgery*, vol. 56, no. 8, pp. 1386–1388, 2021.

[4] T. M. Klouda, E. Lindholm, E. Poletto, S. Rani, L. Varlotta, and J. Velasco, "Presentation of an H-type tracheoesophageal fistula in an adolescent male with cystic fibrosis: a case report and review of literature," *Clinical Imaging*, vol. 60, no. 1, pp. 38–47, 2020.

[5] K. Sampat and P. D. Losty, "Diagnostic and management strategies for congenital H-type tracheoesophageal fistula: a systematic review," *Pediatric Surgery International*, vol. 37, no. 5, pp. 539–547, 2021.

[6] A. H. Al-Salem, M. A. Mohaidly, H. M. H. Al-Buainain, S. Al-Jadaan, and E. Raboei, "Congenital H-type tracheoesophageal fistula: a national multicenter study," *Pediatric Surgery International*, vol. 32, no. 5, pp. 487–491, 2016.

[7] M. Barbian, N. Raol, A. Landry, J. Meisel, M. T. Santore, and S. Keene, "Repair of congenital H-type tracheoesophageal fistula by electrocautery," *Journal of Pediatric Surgery Case Reports*, vol. 72, Article ID 101943, 2021.

[8] J. Bank, R. Voaklander, and M. Sossenheimer, "H-type tracheoesophageal fistula: a rare cause of cough and dysphagia in adults," *ACG Case Reports Journal*, vol. 7, no. 12, Article ID e00492, 2020.

[9] M. Urík, J. Tuma, J. Jančíková et al., "Videofluoroscopic swallow study in diagnostics of H-type tracheoesophageal fistula in children," *Ear, Nose, & Throat Journal*, vol. 30, 2021.

[10] U. Kumbasar, S. Uysal, R. Ö. Günaydın, and R. Doğan, "A-rare-case of H-type tracheoesophageal fistula treated with slide tracheoplasty," *Tuberk Toraks*, vol. 68, no. 4, pp. 449–452, 2020.

[11] S. Lee, "Basic knowledge of tracheoesophageal fistula and esophageal atresia," *Advances in Neonatal Care*, vol. 18, no. 1, pp. 14–21, 2018.

[12] I. Salik and M. Paul, *Tracheoesophageal Fistula*, StatPearls Publishing, Treasure Island, Florida, USA, 2022.

[13] C. Dingemann, S. Eaton, G. Aksnes et al., "ERNICA consensus conference on the management of patients with esophageal atresia and tracheoesophageal fistula: diagnostics,

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Retraction

Retracted: The Efficacy of Mannitol Combined with 6-Aminocaproic Acid in the Treatment of Patients with Cerebral Hemorrhage and Its Impact on Immune Function

Evidence-Based Complementary and Alternative Medicine

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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] B. Tian, B. Tian, and Y. Zhang, "The Efficacy of Mannitol Combined with 6-Aminocaproic Acid in the Treatment of Patients with Cerebral Hemorrhage and Its Impact on Immune Function," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 7396310, 6 pages, 2022.

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Research Article

The Efficacy of Mannitol Combined with 6-Aminocaproic Acid in the Treatment of Patients with Cerebral Hemorrhage and Its Impact on Immune Function

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Objective. To determine the efficacy of Mannitol combined with 6-aminocaproic acid in the treatment of patients with cerebral hemorrhage, as well as its impact on the immune system. *Methods*. The study subjects consisted of 122 patients with early intracerebral hemorrhage treated in our hospital from April 2019 to April 2022. Based on the different admission times, the participants were randomly divided into the control group and the study group in a ratio of 1:1. 6-Aminocaproic acid was used to treat patients in the control group, while Mannitol along with 6-aminocaproic acid was used to treat patients in the study group. Short form-36 health survey (SF-36) scores, hematoma volume changes, National Institutes of Health Stroke Scale (NIHSS), and Mini-Mental State Examination (MMSE) scores, clinical efficacy, and changes in the immune function in patients from the two groups were analyzed and compared. *Results*. The total efficacy of treatment in the study group was significantly higher than that in the control group ($x^2 = 9{,}375$, $P < 0.001$). Patients in the study group had significantly higher scores in social function, mental health, physical function, and physiological function compared to those in the control group ($P < 0.05$). After treatment, there was a significant reduction in NIHSS scores in patients from both groups, but a greater reduction was seen in patients from the study group ($P < 0.05$). After 2 weeks of treatment, the volume of cerebral edema was significantly smaller in patients from the study group than in those from the control group ($P < 0.05$). Before treatment, there was no significant difference in the number of CD4+ and CD8+ T lymphocytes between patients in the two groups. However, after treatment, patients in the study group had higher numbers of CD4+ T lymphocytes and lower numbers of CD8+ T lymphocytes compared to those in the control group ($P < 0.05$). *Conclusions*. The combination of Mannitol and 6-aminocaproic acid appears to be very efficacious in the treatment of cerebral hemorrhage. It improves immune function, reduces neurological damage, and minimizes the volume of cerebral edema.

1. Introduction

Clinically, hemorrhage associated with nontraumatic brain injury that is caused by rupture of blood vessels in the brain is referred to as cerebral hemorrhage. It is a chronic cerebrovascular disorder [1, 2] that is very common in the field of neurology. It accounts for about 30% of all strokes [3], and causes significant morbidity and mortality. It usually occurs in middle-aged or elderly patients with poorly controlled hypertension and is associated with a lot of complications. It poses a serious threat to the health of patients [4, 5]. Hemorrhage is frequently accompanied by somatic dysfunction due necrosis of neurons [6]. The clinical symptoms and their severity depend on which arterial territory is involved and the size of the lesion [7]. The typical presentation occurs over minutes, affects an identifiable area of the brain and is "negative" in character (i.e., abrupt loss of function without positive features such as abnormal movement). Provided there is a clear history of this, the chance of a brain lesion being anything other than vascular is 5% or less. Some patients may also experience sequelae such as language, cognitive, and motor impairments. Symptoms are sudden in

onset and if the treatment is delayed, the mortality rate can be very high. Therefore, an effective treatment plan is crucial to the patient's survival. If not devised in time, death could result [8].

Currently, treatment of cerebrovascular diseases is primarily pharmacological. 6-aminocaproic acid, an inhibitor of fibrinolysis, is the most commonly used hemostatic drug in the treatment of cerebral hemorrhage [9]. However, using this drug alone cannot reduce intracranial blood pressure fast enough, leading to only a small improvement in the patient's condition. Consequently, the concomitant use of antihypertensive agents when treating such patients is critical. To understand the mechanism of action of 6-aminocaproic acid, one must have a basic understanding of the physiology of coagulation. The main component of a hemostatic plug is fibrin. Fibrin can be degraded by plasmin, which is the active form of plasminogen. The conversion of plasminogen to plasmin relies on the action of plasminogen activators. 6-aminocaproic acid works mainly by inhibiting plasminogen activators, thus preventing the conversion of plasminogen to its active form, plasmin. By doing so, the drug inhibits dissolution of fibrin, thus, maintaining the hemostatic plug [10]. Rapid injections of large volumes of Mannitol intravenously may cause a buildup of Mannitol in the body. This leads to a rapid increase in the blood volume, resulting in heart failure, dilutional hyponatremia and even hyperkalemia. Excessive diuresis can also lead to hypovolemia, which aggravates oliguria [11]. Mannitol is an isomer of sorbitol that acts as an osmotic diuretic, resulting in a rapid reduction of intracranial pressure. It also induces dehydration [12]. In recent years, compression medicine has been used to treat and control cerebrovascular diseases. Currently, there are few studies on the efficacy of Mannitol and 6-aminocaproic acid in the treatment of cerebral hemorrhage. It is against this backdrop that our study aims to determine the clinical efficacy of Mannitol and 6-aminocaproic acid in the treatment of intracerebral hemorrhage, with a view to providing a reliable reference for future clinical application.

2. General Information and Methods

2.1. General Information. The study included 122 patients with early cerebral hemorrhage who were admitted to our hospital from April 2019 to April 2022. The patients were randomly assigned to either the control or the study group based on the time of admission. There were 61 patients in each group. All patients were informed of this study, and all of them provided informed consent. The study was reviewed and approved by the Medical Ethics Committee of the First Affiliated Hospital of Jinzhou Medical University before it began (Approval No. 20196104).

2.1.1. Inclusion Criteria. Patients who met the following criteria were included in this study:

(1) Patients who had intracerebral hemorrhage that met the criteria set forth in the *Standards of the 4th National Academic Conference on Cerebrovascular Diseases* [13].

(2) Patients who did not suffer from other serious illnesses.

(3) Patients who were never transferred to other hospitals for the entirety of this study, and whose information was complete.

(4) Patients who saw a doctor within 24 hours of symptom onset.

2.1.2. Exclusion Criteria. The following patients were excluded from the study:

(1) Patients with severe liver and kidney dysfunction.

(2) Patients who were allergic to either 6-aminocaproic acid or amnnitol.

2.2. Methods. All patients were given routine treatment following diagnosis: monitoring and regulating blood pressure, maintaining stillness, maintaining smooth breathing, maintaining the balance of various trace elements in the body, nutritional support, use of antihypertensive agents, hemostasis, and other symptomatic treatments. Patients in the control group received continuous intravenous infusions of 6-aminocaproic acid at a dosage of 24 g/d during the first week of treatment, followed by gradual reductions to 8 g/d thereafter. In the event of a sudden drop in the blood pressure or cardiac arrest, the drug should immediately be discontinued and emergency treatment must be administered. Patients in the study group were treated in much the same way as those in the control group, but Mannitol was also added to the treatment regimen. Mannitol was administered twice a day by an intravenous drip in a dosage of 5 ml. The time of each drip was controlled to about 30 minutes. The patient's intracranial pressure was measured regularly, and if it fell to below 20 mmHg, the drug was discontinued.

All patients were observed for 2 weeks.

2.3. Observational Indicators

(1) *Comparison of Clinical Efficacy between the Two Groups*. Markedly effective: patients report complete disappearance or significant improvement in symptoms, and they do not exhibit any disability. Effective: Patients report significant improvement in symptoms, with mild disability. Ineffective: Patients report no improvement or worsening of symptoms, with severe disability. Total efficacy rate = (markedly effective + effective) number of cases/total number of cases × 100%.

(2) Quality-of-life score: the quality-of-life score (SF-36) primarily focused on four dimensions, each worth 100 points [14]. The higher the patient's score, the better their quality of life.

(3) Neurological function: the NIHSS was used to assess neurological damage. The higher the score, the more

Table 1: Comparison of efficacy of treatment between the two groups [n (%)].

Group	n	Effective	Ineffective	Total efficacy rate
Control group	61	32	13	48 (78.69%)
Study group	61	31	3	58 (95.08%)
X^2				9.735
P				<0.001

severe the damage [15]. We assessed the patient's cognitive function using the MMSE, which has a total score of 30. The lower the score, the worse the patient's cognitive function [16].

(4) Cerebral edema volume: CT scans of the patient's head were obtained before initiation of treatment and after 2 weeks after treatment, and calculated the volume of cerebral edema using the Tada formula.

(5) Immune function: flow cytometry was used to measure the number of CD4+ and CD8+ T lymphocytes.

2.4. Statistical Analysis. SPSS 24.0 was used as the data analysis software. Measurement data was expressed as ($\overline{x} \pm s$), and the independent t-test samples were used. Enumeration data was expressed as the number of cases (%), and the chi-square test was used. Statistical significance was assumed at a P value <0.05.

3. Results

3.1. Comparison of the General Information. There was a total of 37 males and 24 females in the control group, aged between 41 and 82 years, with an average of 61.08 ± 5.44 years. This group had 34 cases of putamen hemorrhage and 27 cases of lobar hemorrhage. There was a total of 35 males and 26 females in the study group, aged between 40 and 82 years, with an average age of 60.37 ± 5.49 years. This group had 35 cases of putamen hemorrhage and 28 cases of lobar hemorrhage. There was no significant difference in the general data of patients from the two groups ($P > 0.05$).

3.2. Comparison of Clinical Efficacy. The total clinical efficacy rate was 95.08% in the study group and 78.69% in the control group. Compared to the control group, the study group had a significantly higher finite rate ($\mathbf{X}^2 = 9.735, P < 0.001$). See Table 1 for more details.

3.3. Comparison of Quality-of-Life Scores. Patients in the study group scored significantly higher in social function, mental health, physical function, and physiological function compared to those in the control group after treatment ($P < 0.05$). See Table 2 for details.

3.4. Comparison of Neurological Function. There was a reduction in the NIHSS score of patients from both groups following treatment. However, a greater decrease was seen in the study group than in the control group ($P < 0.05$). There was also no significant difference in the MMSE score of patients from the two groups before treatment. After treatment, there was an increase in the MMSE score in patients from both groups, but a greater increase was seen in the study group than in the control group ($P < 0.05$). See Table 3 for details.

3.5. Comparison of Changes in the Cerebral Edema Volume. The volumes of cerebral edema in the two groups of patients after 2 weeks of treatment were significantly smaller than those before treatment. Patients in the study group had significantly smaller volumes than those in the control group ($P < 0.05$). See Table 4 for details.

3.6. Comparison of Immune Function. Before treatment, there was no significant difference in the numbers of $CD4^+$ and $CD8^+$ T lymphocytes between the two groups of patients. Following treatment, patients in the study group had higher numbers of $CD4^+$ T lymphocytes and lower numbers of $CD8^+$ T lymphocytes compared to those in the control group ($P < 0.05$). See Table 5 for details.

4. Discussion

Intracerebral hemorrhage usually occurs when there is a sudden rise in the blood pressure that ruptures an artery and causes bleeding. There are many other types of cerebral hemorrhage, which can be caused by numerous factors [17, 18]. Patients usually have no prodromal symptoms, but a few may have dizziness, headache, and weakness of the limbs. The symptoms reach their peak within minutes or hours of onset. As earlier alluded to, the nature of symptoms as well as their severity depends on the artery involved [19]. Failure to provide quick interventions can endanger the patient's life [20]. Treatment of cerebral hemorrhage can be medical or surgical, usually the former, unless the condition is critical or if a secondary cause is found and there are indications for surgery [21]. Medical management mainly focuses on controlling bleeding and reducing intracranial pressure. If the patient is currently taking anticoagulants (e.g., warfarin) or antiplatelets (e.g., clopidogrel), then the patient may be given other drugs or blood transfusions to counteract the effects of the anticoagulants or antiplatelets. The patients may also be given drugs to lower systemic and intracranial blood pressure, prevent vasospasm or prevent seizures [22, 23]. Once the bleeding in the brain has stopped, treatment usually involves supportive medical care while the hematoma gets absorbed [24]. If the bleeding is extensive, the surgeon may perform surgery to remove the hematoma

Table 2: Comparison of quality-of-life scores between the two groups after treatment [$(\overline{x} \pm s)$, points].

Group	n	Social function	Mental health	Physical function	Physiological function
Control group	61	76.31 ± 4.15	81.39 ± 4.27	80.71 ± 4.53	83.26 ± 3.62
Study group	61	93.25 ± 6.24	92.74 ± 4.90	92.77 ± 5.18	93.52 ± 5.71
t		18.491	10.629	12.537	11.352
P		<0.001	<0.001	<0.001	<0.001

Table 3: Comparison of neurological impairment in the two groups [$(\overline{x} \pm s)$, points)].

Group	n	NIHSS score		MMSE score	
		Before treatment	After treatment	Before treatment	After treatment
Control group	61	23.48 ± 3.07	15.65 ± 2.91	21.13 ± 1.65	24.21 ± 1.84
Study group	61	23.44 ± 3.11	10.37 ± 2.30	21.09 ± 1.49	27.63 ± 2.37
t		0.067	6.337	0.086	3.693
P		0.985	0.021	0.947	0.013

Table 4: Comparison of changes in the cerebral edema volume between the two groups [$(\overline{x} \pm s)$, cm^2].

Group	n	Before treatment	Two weeks after treatment
Control group	61	25.36 ± 3.81	19.37 ± 2.63
Study group	61	25.37 ± 3.85	14.31 ± 2.18
t		0.034	5.414
P		0.931	0.02

Table 5: Comparison of immune function between the two groups [$(\overline{x} \pm s)$, %].

Group	n	$CD4^+$		$CD8^+$	
		Before treatment	After treatment	Before treatment	After treatment
Control group	61	26.57 ± 3.37	30.32 ± 3.52	35.62 ± 3.84	30.64 ± 3.38
Study group	61	26.48 ± 3.29	34.77 ± 3.87	35.67 ± 3.91	27.85 ± 3.23
t		0.097	4.982	0.057	7.664
P		0.928	0.035	0.894	<0.001

and relieve the pressure it exerts on the brain [25]. In patients with cerebral hemorrhage, hemostatic drugs should be administered quickly. 6-aminocaproic acid is an antifibrinolytic drug [26], and studies have shown that antifibrinolytic drugs can reduce bleeding by more than 50% [21, 27, 28]. Upon intravenous administration, this medication acts directly on the site of the lesion. Researchers have shown that when Mannitol is used as a supplementary therapy in patients with cerebral hemorrhage, the clinical outcome is greatly improved. Mannitol is commonly used as an osmotic diuretic in the clinical setting. It works by enhancing the kidneys' ability to eliminate water from the body, thus reducing blood volume and ultimately, intracranial pressure [29].

The results of this study have shown that there were no statistically significant differences in neurological function score or cognitive function score between patients from the two groups prior to the treatment. There was a reduction in the NIHSS score of patients from both groups following the treatment, but a greater decrease was seen in the study group than in the control group. There was also an increase in the MMSE score in patients from both groups following treatment, but a greater increase was seen in the study group than in the control group. Following the treatment, the quality-of-life scores of patients in the study group were higher than those of patients in the control group. Researchers found that combining the two drugs reduced the severity of damage to neurons and improved the cognitive function. This in turn improved the patient's quality of life and the prognosis. Other studies have also arrived at a similar conclusion [21]. In addition to symptoms secondary to hemorrhage, the immune system also plays an important role. In order to assess changes in the immune function of patients, $CD4^+$ and $CD8^+$ expression levels were evaluated. Our results show that there was no significant difference in the numbers of $CD4^+$ and $CD8^+$ T lymphocytes between patients in the two groups before the treatment. Following the treatment, patients in the study group had higher numbers of $CD4^+$ T lymphocytes and lower numbers of CD8+ T lymphocytes compared to those in the control group. This indicates that combining the two drugs can greatly improve the patient's immune function. It is sometimes possible to determine the severity of acute cerebral hemorrhage from the volume of cerebral edema. We measured the volume of cerebral edema after 2 weeks of treatment, and found that patients in the study group had

small volumes than those in the control group. The total clinical efficacy rate was 95.08% in the study group and 78.69% in the control group. A significantly higher finite rate was observed in the study group compared to the control group.

It can, therefore, be concluded that Mannitol can improve clinical outcomes and reduce cerebral edema in patients with intracerebral hemorrhage. This finding is the same as what is reported in the hypothesis [30]. The reason for this may be that patients with mild hemorrhages have a small amount of bleeding, and 6-aminocaproic acid is used to stop the bleeding as quickly as possible, thus reducing the possibility of subsequent bleeding and improving the clinical outcomes. On the other hand, patients with severe diseases have a larger amount of bleeding and significantly higher intracranial pressure than those with mild hemorrhages. Currently, Mannitol is used as a supplement to 6-aminocaproic acid, and evidence suggests that it increases the clinical efficacy of treatment and prevents further deterioration [31–33]. The reason for this may be that Mannitol is able to facilitate the flow of cerebrospinal fluid and water in the brain tissue into the circulation, thus reducing cerebral oedema and lowering intracranial pressure. It also improves cerebral blood circulation, reduces the number of inflammatory mediators in the brain tissue, and increases mean arterial pressure, hence improving neurological function.

Patients with cerebral hemorrhage can be treated with Chinese medicine, including herbal medicine, acupuncture, massage, and a combination of Chinese and western medicine [34]. Chinese medicine emphasizes syndrome differentiation and treatment. If there are symptoms of hyperactivity of the liver yang such as irritability, red eyes, and a stringy pulse, Tianma Gouteng decoction can be used to calm the liver and relieve wind. If there is wind-phlegm or phlegm-heat manifestations such as coughing white phlegm or sticky phlegm, Ditan Tongluo decoction can be used to expel phlegm and activate collaterals. If patients have symptoms of Qi (breath power) deficiency and blood stasis such as laziness, fatigue, red tongue, and a stringy pulse, Buyang Huanwu decoction can be used to nourish Qi and activate the blood. Also, one can take Qi and blood drugs on weekdays to improve one's constitution [35–37]. In addition to oral herbal tonics, acupuncture can also be used to invigorate the blood and eliminate blood stasis, and to benefit and tonify the Qi [38].

The relatively small sample size of our study may make the results regionally heterogeneous, with a high probability of error. Secondly, recovery following cerebral hemorrhage is a long process, and our study lacks long-term follow-up to determine the prognosis. In future studies, we hope to conduct an in-depth analysis of the molecular mechanisms and signaling pathways that are responsible for the results.

5. Conclusion

The combination of Mannitol and 6-aminocaproic acid appears to be very efficacious in the treatment of cerebral hemorrhage. It improves immune function, reduces neurological damage, and minimizes the volume of the cerebral edema. This treatment regimen is one that definitely deserves more widespread promotion and clinical application.

Data Availability

All data generated or analyzed during this study are included in this published article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] A. L. De Oliveira Manoel, "Surgery for spontaneous intracerebral hemorrhage," *Critical Care*, vol. 24, no. 1, p. 45, 2020.

[2] R. Garg and J. Biller, "Recent advances in spontaneous intracerebral hemorrhage," *F1000Research*, vol. 8, 2019.

[3] I. C. Hostettler, D. J. Seiffge, and D. J. Werring, "Intracerebral hemorrhage: an update on diagnosis and treatment," *Expert Review of Neurotherapeutics*, vol. 19, no. 7, pp. 679–694, 2019.

[4] N. Ironside, C. J. Chen, D. Ding, S. A. Mayer, and E. S. Connolly, "Perihematomal edema after spontaneous intracerebral hemorrhage," *Stroke*, vol. 50, no. 6, pp. 1626–1633, 2019.

[5] C. S. Kase and D. F. Hanley, "Intracerebral hemorrhage: advances in emergency care," *Neurologic Clinics*, vol. 39, no. 2, pp. 405–418, 2021.

[6] K. Shi, D. C. Tian, Z. G. Li, A. F. Ducruet, M. T. Lawton, and F. D. Shi, "Global brain inflammation in stroke," *The Lancet Neurology*, vol. 18, no. 11, pp. 1058–1066, 2019.

[7] V. Rass and R. Helbok, "Early brain injury after poor-grade subarachnoid hemorrhage," *Current Neurology and Neuroscience Reports*, vol. 19, no. 10, p. 78, 2019.

[8] K. N. Kearns, N. Ironside, M. S. Park et al., "Neuroprotective therapies for spontaneous intracerebral hemorrhage," *Neurocritical Care*, vol. 35, no. 3, pp. 862–886, 2021.

[9] H. G. Jeong, B. G. Cha, D. W. Kang et al., "Ceria nanoparticles synthesized with aminocaproic acid for the treatment of subarachnoid hemorrhage," *Stroke*, vol. 49, no. 12, pp. 3030–3038, 2018.

[10] N. J. Mutch and C. S. Whyte, "Physiology of haemostasis: plasmin-antiplasmin system," *InTrauma Induced Coagulopathy*, pp. 53–74, Springer, Berlin, Germany, 2021.

[11] O. Tachenius and H. Ti, "ACID-BASE and electrolyte disorders," *Medical Secrets E-Book.*vol. 29, p. 197, 2018.

[12] M. Rezvani, B. Aminmansour, H. Tabesh, and H. Poorjafari, "Effects of Mannitol 20% on outcomes in nontraumatic intracerebral hemorrhage," *Advanced Biomedical Research*, vol. 6, no. 1, p. 75, 2017.

[13] C. Wu and B. Liu, "The 4th national cerebrovascular disease academic conference," *China Medical Information Herald*, vol. 6, p. 4, 1996.

[14] Ö Timur, N. Gündüz, H. Altaş et al., "Burden, quality of life and coping strategies of palliative care patients' caregivers," *Ege Tıp Dergisi*, vol. 19, pp. 1–9, 2021.

[15] M. Ling, Q. Zhang, L. Zang, X. Li, and Q. Liu, "Decompressive craniectomy can improve the recovery of neurological function, daily living ability and life quality of patients with intracerebral hemorrhage after surgery," *American Journal of Translational Research*, vol. 13, no. 10, pp. 11364–11374, 2021.

[16] A. Gómez-González, U. Lazcano, R. M. Vivanco-Hidalgo et al., "Defining minor intracerebral hemorrhage," *Cerebrovascular Diseases*, vol. 50, no. 4, pp. 435–442, 2021.

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Retraction

Retracted: The Clinical Effects of Metronidazole Vaginal Effervescent Tablets Combined with Kushen Suppository in the Treatment of Trichomonas Vaginitis

Evidence-Based Complementary and Alternative Medicine

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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] H. Zhang, Z. Jing, F. Li, B. Yue, P. Zhang, and H. Li, "The Clinical Effects of Metronidazole Vaginal Effervescent Tablets Combined with Kushen Suppository in the Treatment of Trichomonas Vaginitis," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 7730474, 7 pages, 2022.

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Research Article

The Clinical Effects of Metronidazole Vaginal Effervescent Tablets Combined with Kushen Suppository in the Treatment of Trichomonas Vaginitis

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Objective. The aim of this study was to explore the clinical effects of metronidazole vaginal effervescent tablets combined with Kushen suppository in the treatment of Trichomonas vaginitis. *Methods*. Ninety patients with trichomoniasis admitted to our hospital from January 2019 to January 2020 were prospectively analyzed and randomly divided into a control group ($n = 45$) treated with metronidazole vaginal effervescent tablets and an experimental group ($n = 45$) treated with Kushen suppository on top of the control group using the random number table method. The clinical effects, inflammatory factors, and microcirculation indexes were compared. We assessed patient's vaginal health by Vaginal Health Score Scale (VHS) before and after treatment and estimated their quality of life according to Generic Quality of Life Inventory-74 (GQOLI-74). A follow-up visit was conducted to compare patient's recurrence 3 months after treatment. *Results*. Distinctly higher total clinical effective of the experimental group compared with that of the control group was obtained ($P < 0.05$); the serum level of inflammatory factors of the experimental group was dramatically lower than that of the control group after treatment ($P < 0.001$); the experimental group experienced a favorable microcirculation index in comparison with the control group ($P < 0.001$); superior VHS ($P < 0.001$) and GQOLI-74 ($P < 0.05$) scores of the experimental group after treatment compared to those of the control group were observed; the recurrence rate of the experimental group 3 months after treatment was significantly decreased in comparison with that of the control group ($P < 0.05$). *Conclusion*. Metronidazole vaginal effervescent tablets combined with Kushen suppository can effectively improve the clinical symptoms of patients with trichomonas vaginitis, abate patient's inflammatory reaction, and raise their quality of life, which is worthy of promotion.

1. Introduction

Trichomonas vaginitis, as a common gynecological disease, is the female vaginal infection on account of *Trichomonas vaginalis*, wherein clinical symptoms will appear such as mucosal redness, swelling, pruritus vulvae, and painful intercourse [1–3]. Unsafe sexual practices and long-term use of antibiotics are thought to be closely associated with the causative factors of this disease [4, 5]. According to relevant data, there are 1.8 billion cases of trichomoniasis worldwide each year, most of which are among people with low immunity and poor lifestyle habits. If patients do not take timely and effective treatment, trichomoniasis can lead to a variety of complications such as cystitis, trichomoniasis urethritis, and pyelonephritis, seriously affecting their physical and mental health and quality of life. At present, medication is the main clinical treatment, which aims to ameliorate patient's clinical symptoms and restrain disease progression. Among them, metronidazole vaginal effervescent tablets are commonly used drugs in clinic which do have a certain clinical effect but is impotent to disordered vaginal microecological environment, leading to increased drug resistance of patients and the recurrence of disease with the extension of treatment time [6, 7].

Bitter ginseng root contains bitter ginseng alkaloids and chrysophanes, which are used to clear heat and dampness, antibacterial, anti-inflammatory, stomachic, and anthelmintic effects, commonly used to treat itchy skin, neurasthenia, indigestion, and constipation. Kushen suppository is mainly used for the treatment of cervical erosion, red and white leucorrhoea, vaginal trichomoniasis, or gynecological inflammation caused by mycobacterial infection. It has anti-inflammatory and antipruritic properties. Animal studies have confirmed that the application of Kushen suppository can lead to a reduction or disappearance of inflammation, as well as a relief of the resulting itching. It should not be used in women with severe allergies or in menstruating patients, except during pregnancy. Clinical research shows that the introduction of Kushen suppository based on this treatment can effectively promote patient's clinical indicators and has a marked improvement on trichomonas vaginitis [8, 9]. Trichomoniasis is mainly treated with medication, the main western drugs being metronidazole and tinidazole. As patients may have concurrent infections in the urethra, paraurethral glands, and vestibular glands, purely local medication is not easily cured completely, and concurrent systemic medication is required. In view of this, 90 patients with trichomoniasis admitted to our hospital from January 2019 to January 2020 were selected for this study to analyze the efficacy of metronidazole vaginal effervescent tablets combined with Kushen suppository in the treatment of trichomoniasis.

2. Materials and Methods

2.1. General Information. Ninety patients with trichomoniasis admitted to our hospital from January 2019 to January 2020 were recruited for a prospective analysis and randomly divided into an experimental group ($n = 45$) and a control group ($n = 45$) using a random number table hair. The experiment was approved by the ethics committee of The Fourth Hospital of Shijiazhuang for implementation, Approval no. 29791-03.

2.2. Inclusive Criteria. The inclusion criteria were as follows: ① no vaginal or uterine surgery; ② no history of psychiatric illness or confusion; and ③ meets diagnostic criteria for *Trichomonas vaginalis* [10]. This study was approved by the hospital ethics committee, and the family members of the patient have full understanding of the research process and sign the consent form.

2.3. Exclusive Criteria. The exclusion criteria were as follows: ① patients combined with mycoplasma and other pathogens infection; ② drug allergy; and ③ those who have used antibiotics or glucocorticoids within one month.

2.4. Methods. In the control group, metronidazole vaginal effervescent tablets (Manufacturer: Hubei Dongxin Pharmaceutical Co., Ltd; State Drug License No. H20067252; Specification: 0.2 g/7 tablets/2 plates) were given once or twice a day for seven days. During the medication period, it is important to prohibit sexual intercourse for the time being and keep the vulva clean and dry. Individuals may experience a burning sensation, which may vary in intensity and will disappear after discontinuation of the drug.

The experimental group was treated with Kushen suppository (Manufacturer: Guangdong Luofushan National Pharmaceutical Co., Ltd; National Medicine Permission Number Z20063889; Specification: 1.5 g ∗ 6 capsules) based on the control group, administrated vaginally at a dose of 1 capsule per time, once daily. Both group were treated for 15 days.

2.5. Outcome Measures. We compared the clinical efficacy of the two groups. Effective: patients' clinical symptoms such as vulvar itching disappeared and vaginal cleanliness was within I-II degree; totally clinically effective: patients' clinical symptoms reduced and vaginal cleanliness was II degree; ineffective: clinical symptoms did not improve or even worsened and vaginal cleanliness was III degree. Total clinically effective = significant + effective.

Blood was collected from the patient's fasting elbow vein in the morning. The serum was separated after centrifugation and the supernatant was taken. All serum samples were placed at −80°C. The determination of tumor necrosis factor-α (TNF-α), interleukin 8 (IL-8), and interleukin 1β (IL-1β) in the samples was carried out in strict accordance with the ELISA kit instructions and protocols.

The blood perfusion, erythrocyte aggregation, and the diameter of capillary of microcirculation indexes before and after treatment of the two groups were detected by a microcirculation microscope (Manufacturer: Xuzhou Tongren Medical Electronic Technology Co., Ltd; Model: tr8000).

The Vaginal Health Scale (VHS) [11] was used to evaluate the vaginal health status of patients into five factors: pH, discharge, vaginal elasticity, moisture, and vaginal mucosa. The total score is 20 points. The higher the score, the healthier the vagina.

Quality of life after the intervention was assessed according to the *General Quality of Life Inventory 74* (GQOLI-74) [12], which scores four aspects of psychological functioning, physical functioning, social functioning, and physical living status. The total score is 100 points. The higher the score, the better the quality of life.

Recurrence was recorded in both groups at a 3-month follow-up observation after treatment.

2.6. Statistical Analysis. All data analysis was done by SPSS20.0, and the graphics were plotted by GraphPad Prism 7 (GraphPad Software, San Diego, USA). The counting data and measurement data were examined by χ^2 test, t-test, and normality test. A P value of 0.05 or lower was claimed as statistically significant.

3. Results

3.1. General Information. No significant difference in age, BMI, courses, SAS score, SDS score, disease manifestation,

and residence of the two groups was found as shown in Table 1.

3.2. Comparison of Clinical Effects. The experimental group witnessed a much more remarkable improvement as compared to the control group ($P < 0.05$) after treatment. See Table 2.

3.3. Comparison of the Level of Inflammatory Factors. A significantly lower serum level of inflammatory factors of the experimental group than that of the control group was observed ($P < 0.05$) as shown in Table 3.

3.4. Comparison of Microcirculation Indexes. Table 4 displays that the experimental group experienced a favorable microcirculation index in comparison with the control group ($P < 0.05$).

3.5. Comparison of the VHS Score. A superior VHS score of the experimental group after treatment to the control group was obtained ($P < 0.001$); see Figure 1.

3.6. Comparison of the GQOLI-74 Score. The GQOLI-74 score of the experimental group after treatment was observably higher than that of the control group ($P < 0.05$) as shown in Figure 2.

3.7. Comparison of the Recurrence Rate. Figure 3 exhibits a remarkable lower recurrence rate in the experimental group 3 months after treatment ($P < 0.05$).

4. Discussions

Trichomoniasis is a common vaginal inflammatory disease caused by *Trichomonas vaginalis* and is a common sexually transmitted disease characterized by vulvar itching and a foamy, yellowish-white, and thin discharge [1]. The disease is associated with the patient's physical condition, especially in women around the time of menstruation, when the pH of the vagina changes, making it suitable for trichomonads to grow and multiply, causing inflammatory episodes. Trichomoniasis can lead to infertility if not treated properly or in a timely manner and can be harmful to the psychological and physical health of the patient [2]. Trichomonas vaginitis is characterized by features like high incidence and often accompanied by various diseases such as pruritus vulvae, which can not only trigger negative emotions in patients but also diminish their quality of life [13, 14]. Currently, drug therapy is the main clinical treatment for this disease. Although monotherapy is clinically effective, it can lead to increased drug resistance and relapse rates with prolonged treatment [15–17]. Metronidazole vaginal effervescent tablets are common antibacterial drugs in clinic of trichomonas vaginitis, which can yield an effect by blocking the metabolism of trichomonas and bacteria, promoting their death, so as to achieve the purpose of antibacterial [18, 19]. Kushen suppository, which is composed of lanolin, semisynthetic fatty acids, and total matrine, has both antibacterial and anti-inflammatory effects. In addition, related studies have demonstrated that matrine can improve patient's body immunity, enhance the phagocytic phagocytosis, and has an obvious effect on inflammatory injury and mucosal repair [20].

In this study, the total clinical effective of the experimental group, which was treated with metronidazole vaginal effervescent tablets combined with Kushen suppository, was evidently higher compared with that of the control group ($P < 0.05$), which received metronidazole vaginal effervescent tablets treatment only. The results showed that the combined drug treatment was more effective than single drug treatment. In addition, the vagina, as a female physiological organ, has a unique physiological structure that tends to cause dysbiosis of the vaginal flora, causing various inflammatory reactions and leading to a decrease in vaginal immunity. The results showed that the serum inflammatory factor level was significantly lower in the experimental group than in the control group after treatment ($P < 0.05$), suggesting that metronidazole vaginal effervescent tablets combined with Kushen suppository can mitigate patient's inflammatory reaction and inhibit the development of the disease, which is conducive to the recovery of patients with vaginal diseases.

Vaginal diseases can lead to microcirculatory abnormalities at the site of the patient's lesion. Blood perfusion, red blood cell aggregation, and capillary diameter are important indicators of local microcirculation [21, 22]. In the current study, microcirculation indicators improved significantly in both groups after treatment. While, the data of experimental group were distinctly better in comparison with that of control group ($P < 0.05$), which may be attributed to the Chinese herb substances in Kushen suppository. Modern pharmacological studies have manifested that matrine in Kushen suppository has antibacterial, anti-inflammatory, diuretic, and liver protective effects, and it can restrain vaginal fungal infection in some degree, simultaneously. Furthermore, this combination therapy can also interfere with microbial sugar metabolism, make the vaginal pH value return to the normal level, improve the vaginal self-purification effect, and help patients to maintain vaginal health for a long time. In addition, in our results, the recurrence rate was significantly lower in the experimental group compared to the control group ($P < 0.05$), which is in line with the findings of Chlebicz *et al.* (2016) [23]. The study by Chlebicz et al.(2016) reported "3 cases of recurrence in the experimental group, with a recurrence rate of 7.89%, and 10 cases in the control group, with a recurrence rate of 26.32%, $x^2 = 4.547$, $P = 0.033$", clearly indicating that metronidazole vaginal tablets combined with bitter ginseng alkaloids can inhibit bacterial growth, improve vaginal cleanliness, and reduce recurrence in patients. The combination of metronidazole vaginal effervescent tablets and bitter ginseng alkaloids clearly demonstrated that metronidazole vaginal effervescent tablets inhibited bacterial growth, improved vaginal cleanliness, improved vaginal environment, and reduced the recurrence rate of patients.

Table 1: Comparison of the general information.

	Experimental group ($n = 45$)	Control group ($n = 45$)	χ^2 or t	P
Age (years)			1.550	0.125
	30.25 ± 3.32	31.33 ± 3.29		
BMI (kg/m^2)			1.119	0.266
	26.27 ± 1.59	25.89 ± 1.63		
Course (d)			0.041	0.968
	34.12 ± 1.21	34.13 ± 1.11		
SAS (scores)			1.533	0.129
	47.33 ± 0.51	47.17 ± 0.48		
SDS (scores)			0.258	0.797
	52.13 ± 1.61	52.21 ± 1.32		
Disease manifestation				
Pruritus vulvae	28 (62.22)	25 (55.56)	0.413	0.520
Leucorrhea increases	11 (24.44)	13 (28.89)	0.227	0.634
Leucorrhea odor	6 (13.33)	7 (15.56)	0.089	0.764
Residence			0.050	0.822
City	31 (68.89)	30 (66.67)		
Village	14 (31.11)	15 (33.33)		

Table 2: Comparison of clinical effects (n (%)).

Groups	N	Remarkably effective rate	Effective rate	Invalid rate	Total effective rate
Experimental group	45	66.67% (30/45)	31.11% (14/45)	2.22% (1/45)	97.78% (44/45)
Control group	45	46.67% (21/45)	26.67% (12/45)	26.67% (12/45)	73.33% (33/45)
x^2					10.879
P					<0.05

Table 3: Comparison of the serum level of inflammatory factors ($\ddot{y}x \pm s$).

Groups	n	TNF-α (pg/L)		IL-8 (ng/mL)		IL-1β (ng/mL)	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Experimental group	45	63.88 ± 9.89	19.36 ± 5.27	4.23 ± 0.52	1.65 ± 1.87	62.13 ± 4.53	47.32 ± 3.23
Control group	45	64.01 ± 10.11	27.23 ± 7.32	4.25 ± 0.49	3.58 ± 2.27	61.99 ± 4.86	55.27 ± 3.68
t		0.087	5.853	0.188	4.402	0.141	10.892
P		0.931	<0.001	0.852	<0.001	0.888	<0.001

Table 4: Comparison of the serum level of inflammatory factors ($\ddot{y}x \pm s$).

Groups	n	Blood flow perfusion (V)		Erythrocyte aggregation (%)		The diameter of capillary (μm)	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Experimental group	45	0.39 ± 0.05	1.31 ± 0.27	67.88 ± 5.43	11.85 ± 1.49	3.77 ± 0.35	8.13 ± 0.62
Control group	45	0.38 ± 0.02	0.86 ± 0.12	67.52 ± 5.51	21.33 ± 2.87	3.81 ± 0.31	5.61 ± 0.43
t		1.246	10.217	0.312	19.666	0.574	22.405
P		0.216	<0.001	0.756	<0.001	0.568	<0.001

In TCM, trichomoniasis is mainly considered to be caused by a deficiency of the spleen and dampness, resulting in damp-heat downward injection, or a deficiency of the liver and kidneys, resulting in increased vulvar discharge, vulvar itching, and burning pain [24]. Therefore, the main treatment is to choose drugs that clear heat and detoxify, clear heat and dampness, kill insects, and relieve itching. In addition to the drugs studied in the article, we can also choose Phellodendron Bark, Job's Tears, Dan Pi, and Serpentine Seed for treatment, which can have a very good effect of dispelling dampness and relieve itching [25]. Meanwhile, the herbs commonly used in the treatment of trichomoniasis are usually chosen for sitz baths and fumigation, which are more effective in killing worms locally and relieving itching, and the above herbs can usually be chosen for boiling water and then sitz baths for about five to three minutes, which can be very effective [26]. Additionally, it is important to take care of personal hygiene and to eat as lightly as possible during treatment [25].

However, there are some limitations to our experiments. First, the sample and the scope of our experiment are too small, which may lead to large errors. Second, trichomoniasis requires long-term treatment and the duration of our trial was too short to demonstrate long-term efficacy. Therefore, in a follow-up trial, we will need a large number of follow-up visits to determine long-term efficacy and prognosis.

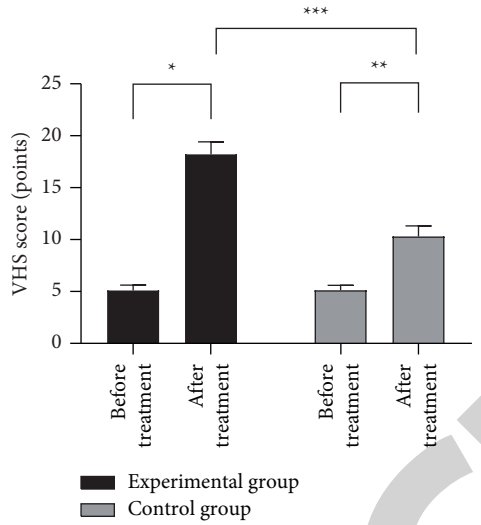

Figure 1: Comparison of VHS score ($\ddot{y}x \pm s$). The horizontal axis represents before and after treatment, and the vertical axis represents the VHS score (points). The VHS score of experimental group before and after treatment were (5.11 ± 0.53) and (18.23 ± 1.22), respectively. The VHS score of control group before and after treatment were (5.13 ± 0.49) and (10.32 ± 1.03), respectively. * indicates that the patient's VHS score of the experimental group significantly increased after treatment ($t = 66.167$, $P < 0.001$); ** demonstrates that there was a dramatic promotion of patient's VHS score of the control group after treatment ($t = 30.524$, $P < 0.001$); *** displays a remarkable difference of patient's VHS score in different groups after treatment ($t = 33.233$, $P < 0.001$).

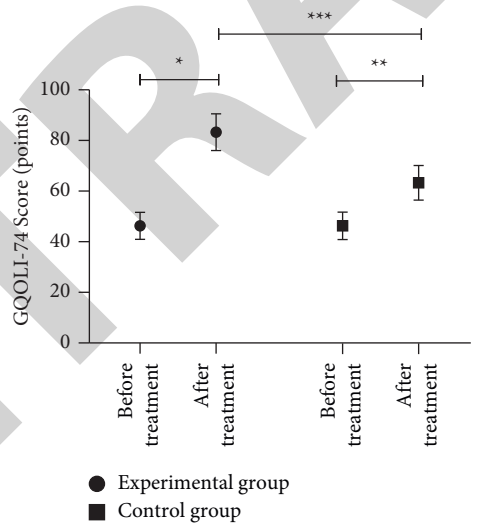

Figure 2: Comparison of GQOLI-74 score ($x \pm s$). The horizontal axis represents before and after treatment, and the vertical axis represents the GQOLI-74 score. The GQOLI-74 score of experimental group before and after treatment were (46.32 ± 5.33) and (83.27 ± 7.24), respectively. The GQOLI-74 score of control group before and after treatment were (46.29 ± 5.41) and (63.28 ± 6.83), separately. * shown that the GQOLI-74 score of experimental group was enhanced obviously after treatment ($t = 27.570$, $P < 0.001$); ** exhibits a remarkable increase of patient's GQOLI-74 score of the control group after treatment ($t = 13.081$, $P < 0.001$); *** indicates that there is a significant difference of the GQOLI-74 score in the experimental group before and after treatment (13.473, $P < 0.001$).

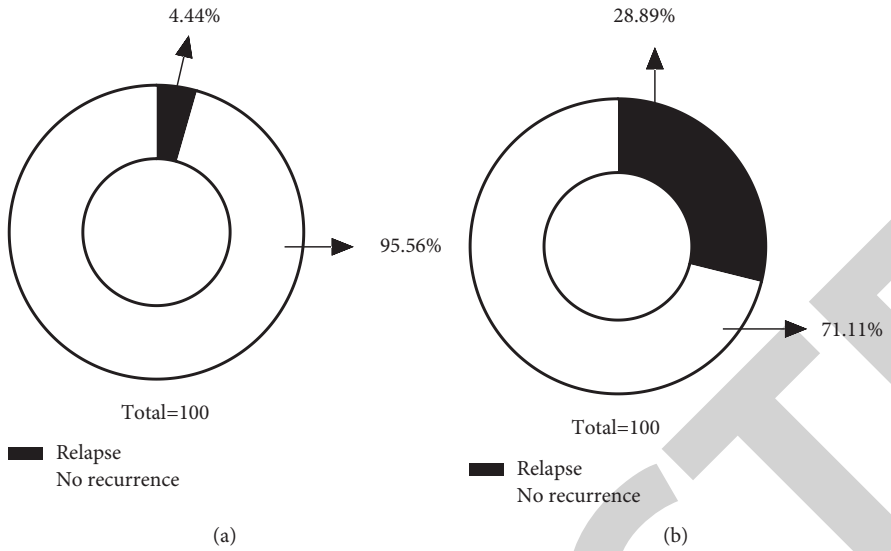

Figure 3: Comparison of recurrence rate (n (%)). (a) and (b) represent the recurrence rate of the experimental and control group, respectively. In the experimental group, the recurrence rate was 4.44% (2/45) and the nonrecurrence rate was 95.56% (43/45) 3 months after treatment. In the control group, the recurrence and nonrecurrence rate were 28.89% (13/45) and 71.11% (32/45) 3 months later after treatment, respectively. There was a distinct difference in the recurrence rate between the experimental and control groups ($x^2 = 9.680$, $P < 0.05$).

5. Conclusion

In conclusion, for patients with trichomonas vaginitis, metronidazole vaginal effervescent tablets combined with Kushen suppository can engender an outstanding effect in ameliorating the vaginal environment, abating the recurrence rate, repressing inflammatory reaction, and improving the quality of life, which is worthy of promotion and application.

Data Availability

No data were used to support this study.

Conflicts of Interest

All authors declare that they have no conflicts of interest.

Authors' Contributions

Hongxia Zhang and Zeng Jing contributed equally to this work.

References

[1] J. R. Schwebke, S. N. Taylor, R. Ackerman et al., "Clinical validation of the Aptima bacterial vaginosis and Aptima Candida/*Trichomonas vaginitis* assays: results from a prospective Multicenter clinical study," *Journal of Clinical Microbiology*, vol. 58, no. 2, 2020.

[2] J. E. Junior, R. M. N. Eleutério, A. B. G. V. Valente, F. S. Queiroz, A. K. S. Goncalves, and P. C. Giraldo, "Comparison of BD Affirm VPIII with gram and liquid-based cytology for diagnosis of bacterial vaginoses, candidiasis and Trichomonas," *Clinical & Experimental Obstetrics & Gynecology*, vol. 46, no. 1, pp. 32–35, 2019.

[3] S. Zhang, M. Fang, Q. Zhang, X. Li, and T. Zhang, "Evaluating the bioequivalence of metronidazole tablets and analyzing the effect of in vitro dissolution on in vivo absorption based on PBPK modeling," *Drug Development and Industrial Pharmacy*, vol. 45, no. 7/12, pp. 1646–1653, 2019.

[4] E. Faghih-Mirzaei, S. Sabouri, L. Zeidabadinejad et al., "Metronidazole aryloxy, carboxy and azole derivatives: synthesis, anti-tumor activity, QSAR, molecular docking and dynamics studies," *Bioorganic & Medicinal Chemistry*, vol. 27, no. 2, pp. 305–314, 2019.

[5] A. A. Sakur, H. A. Dabbeet, and I. Noureldin, "Novel drug selective sensors for simultaneous potentiometric determination of both ciprofloxacin and metronidazole in pure form and pharmaceutical formulations," *Research Journal of Pharmacy and Technology*, vol. 12, no. 7, pp. 3377–3384, 2019.

[6] M. I. Gadallah, H. R. H. Ali, H. F. Askal, and G. A. Saleh, "Innovative HPTLC-densitometric method for therapeutic monitoring of meropenem and metronidazole in acute pancreatic patients," *Microchemical Journal*, vol. 146, pp. 940–947, 2019.

[7] B. Karimi and M. H. Habibi, "High photocatalytic activity of light-driven Fe_2TiO_5 nanoheterostructure toward degradation of antibiotic metronidazole," *Journal of Industrial and Engineering Chemistry*, vol. 80, pp. 292–300, 2019.

[8] P. Ranganathan, B. Mutharani, S.-M. Chen, and P. Sireesha, "Biocompatible chitosan-pectin polyelectrolyte complex for simultaneous electrochemical determination of metronidazole and metribuzin," *Carbohydrate Polymers*, vol. 214, pp. 317–327, 2019.

[9] S. Zhang, M. Fang, Q. Zhang, X. Li, and T. Zhang, "Evaluating the bioequivalence of metronidazole tablets and analyzing the effect of *in vitro* dissolution on *in vivo* absorption based on PBPK modeling," *Drug Development and Industrial Pharmacy*, vol. 45, no. 10, pp. 1646–1653, 2019.

[10] S. Talwar, A. K. Verma, and V. K. Sangal, "Modeling and optimization of fixed mode dual effect (photocatalysis and photo-Fenton) assisted Metronidazole degradation using

Hindawi
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Retraction

Retracted: Incentive Nursing can Effectively Improve the ESCA Level of Patients with Endometrial Cancer after Laparoscopic Hysterectomy

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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] J. Zong, L. Chen, and J. Chen, "Incentive Nursing can Effectively Improve the ESCA Level of Patients with Endometrial Cancer after Laparoscopic Hysterectomy," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 5159009, 6 pages, 2022.

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Research Article

Incentive Nursing can Effectively Improve the ESCA Level of Patients with Endometrial Cancer after Laparoscopic Hysterectomy

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Objective. To investigate the effect of incentive nursing on the rehabilitation of patients with endometrial cancer after laparoscopic hysterectomy. *Methods*. A total of 110 patients with endometrial cancer receiving laparoscopic hysterectomy in our hospital from October 2017 to July 2020 were recruited and assigned at a ratio of 1 : 1 to receive either routine nursing (control group) or incentive nursing plus routine care (study group). Outcome measures included the self-rating anxiety scale (SAS) score, Hamilton depression scale (HAMD) score, the exercise of self-care agency (ESCA) score, postoperative rehabilitation outcomes, the incidence of nursing complications, and nursing satisfaction. *Results*. Patients receiving incentive nursing showed significantly lower SAS scores and HAMD scores, and a higher ESCA score versus patients given routine care alone ($P < 0.05$). Incentive care resulted in a shorter length of hospital stay and postoperative time of out-of-bed activities and exercises versus routine care ($P < 0.05$). Incentive care was associated with a significantly lower incidence of nursing complications and higher nursing satisfaction versus routine nursing ($P < 0.05$).*Conclusion*. Incentive nursing can effectively improve the ESCA level of patients, promote postoperative recovery, and reduce the incidence of complications, so it is worthy of clinical promotion.

1. Introduction

Endometrial cancer is a common malignant tumor, and its incidence has been increasing worldwide in recent years. Typical symptoms of endometrial cancer include irregular vaginal bleeding, vaginal discharge, and abdominal pain, and patients at the advanced stage may experience anemia, weight loss, and cachexia [1, 2]. Endometrial carcinoma has been classified into Type I and Type II. Type I, i.e., endometrioid type, because it is similar to the endometrium and is characterized by genetic predisposition, such as obesity, polycystic ovarian syndrome, anovulatory cycles, and irregular menstruation that causes a hyperestrogenic state. Type II cancers are associated with higher patient age, higher stage and grade, nonendometrioid histology, and poor prognosis instead. Most patients with endometrial cancer have an excess of estrogen and typically show a clinical profile of high body mass index, often with other components of metabolic syndrome. Common complications of endometrial cancer include endometrial polyps, breast cancer, uterine fibroids, and ovarian tumors [3]. Laparoscopy is a fiberoptic light source endoscope used for intraabdominal examination and treatment of endometrial cancer. Laparoscopy is completely painless and allows a clear view of the patient's abdominal cavity to understand the cause of the disease [4–6]. A scientific approach in the management of care, using incentives to adequately meet the needs of patients, can fully motivate patients for treatment. Motivation is the process of psychological activities that motivate people through external stimuli to progress towards the desired goal. Motivation in nursing boosts patient motivation in therapy [7–10]. ESCA, according to the definition by Orem, is one's learned capability to engage in self-care behaviors. It has been reported that a good self-care agency predicts favorable adherence to medications,

well-preserved quality of life, and a low rate of complications. There are few studies on the improvement of patients' physical and mental health and living conditions after laparoscopic hysterectomy, especially from the perspective of ESCA. To this end, this study examined the rehabilitation effect of incentive nursing on patients with endometrial cancer after laparoscopic hysterectomy to provide a reference for future clinical practice.

2. Materials and Methods

2.1. General Information. A total of 110 patients with endometrial cancer receiving laparoscopic hysterectomy in our hospital from October 2017 to July 2020 were recruited and randomly assigned (1 : 1) to receive either routine nursing (control group) or incentive nursing plus routine care (study group). The patients in the control group were aged 41–65 years, and those in the study group were aged 42–65 years. The research was approved by the Ethics Committee of our hospital.

2.2. Inclusion and Exclusion Criteria. Inclusion criteria were as follows: all patients diagnosed with endometrial cancer received treatment in our hospital; with complete clinical data; with consent to the experiment; aged 30–65 years; with no other serious organ diseases; and provided written informed consent. Exclusion criteria were as follows: patients with death, physical disability, pregnancy, or other autoimmune diseases; with other chronic diseases, hospital referral, mental illness, language dysfunction, or other diseases that affect the results of this study during treatment.

2.3. Methods. Surgical methods: Laparoscopic hysterectomy was performed in both groups. With the patient in a lithotomy position, the patient was given anesthesia, followed by the placement of a uterine manipulator through the vagina, and pneumoperitoneum was constructed using carbon dioxide. Laparoscopic exploration was performed with intraabdominal pressure maintained within 14 mmHg. An incision of about 5 mm was made on the left and right lower abdomen as the second and third puncture ports, and a 5 mm incision was made between the symphysis pubis and the umbilical cord as the fourth puncture port. The abdominal cavity and pelvic cavity conditions of the patient were explored, and enlarged and suspicious lymph nodes were removed. Extrafascial hysterectomy and double adnexectomy were performed for the relevant lesions that invaded the myometrium <50%, with a diameter of less than 2 cm, moderately or highly differentiated, and low-risk lymph node metastasis. For lesions with high-risk factors that invade ≥50% of the muscularis, in addition to pelvic lymph node resection, para-aortic lymph nodes were also removed. For lesions involving the cervix, radical hysterectomy was performed, and the abdomen was routinely sutured after lymph node dissection.

2.3.1. Nursing Method. The control group was given routine nursing. Diet nursing: The patients were given health education by the nursing staff, and a diet plan with low sugar, low fat, moderate protein, high fiber, and high vitamins was developed for the patients. Proper exercise: Proper exercise could enhance the body's immunity and improve postoperative recovery. Patients were instructed to participate in appropriate aerobic exercises such as jogging and yoga.

The study group received incentive nursing based on the control group. Health education: The patients were given disease knowledge education, such as common treatments and adverse effects of endometrial cancer, daily dietary guidance, and lifestyle. The patients and their families were lectured by the nurses about endometrial cancer and given incentive psychological counseling to encourage patients to actively participate in the care and treatment in order to improve their self-care ability and self-psychological ability. A medical file was established for the patient, and a care plan was developed according to the patient's condition. Endometrial cancer specialists were invited to lecture patients weekly about exercise, diet, and disease-related knowledge. Telephone follow-up was conducted weekly, and the patient's data were collected and analyzed. Questionnaires were distributed and collected by professional nursing staff at admission and 1 month after discharge. Psychological nursing: The nurse patiently cooperated with the family to care for, support, and encourage the patient. Psychological care was provided according to the patient's personality and psychological characteristics to eliminate their psychological stress and help the patient better cope with various psychological problems in disease treatment. For patients with excessive stress and mood swings during hospitalization, nurses should give psychological counseling and motivation to encourage the patient's cooperation with treatment.

The two groups of patients were given pain care. After surgical treatment, a long healing time of the wound may lead to local pain. The patients were given analgesic injections as prescribed for pain relief within 6–24 h postoperatively. An intramuscular injection of pertechnetate hydrochloride 50–90 mg was administered with a controlled frequency of 2–3 injections. For patients with stronger postoperative pain, analgesic pumps were used to reduce the risk of pulmonary infections, and nursing interventions such as turning, deep breathing, and coughing up sputum were provided. Infection prevention: Patients with endometrial cancer were prone to different degrees of infection after surgery, which compromised their recovery. Therefore, postoperative vital signs of the patients were monitored continuously for 1 week by nursing staff, and the patients were instructed to drink more water, urinate more, and exercise appropriately to reduce the risk of infection from their surgical incisions. For patients with abdominal drains indwelling after surgery, nursing staff should enhance laboratory tests regarding the flow, the color, and properties of the patient's urine while avoiding pressure and distortion of the urinary catheter and changing the drainage bag regularly.

2.4. Outcome Measures

(1) Self-rating anxiety scale (SAS) [11] score was used to evaluate the patients' anxiety with a total score of 100 points. A score of 50–70 points indicates mild

anxiety, a score of 71–90 points indicates moderate anxiety, and a score of >90 points indicates severe anxiety.

(2) Hamilton depression scale (HAMD) [11] was used to evaluate the depression of patients. The scale includes 24 items, and the higher the score, the more serious the depression.

(3) The exercise of self-care agency (ESCA) was used to evaluate the self-care ability with a confidence validity of 0.865. The ESCA was divided into 4 dimensions (self-care concept, self-care responsibility, self-care skills, and health knowledge level), with 43 items and a total score of 172 points. The higher the score, the stronger the self-care ability.

(4) Rehabilitation: The time of the first postoperative out-of-bed activities, the time of the first exercise, and the length of hospital stay in the two groups were recorded and compared.

(5) Complications: Complications that may occur during postoperative care include fever, irregular vaginal bleeding, abdominal pain, and uterine infection. The equation for incidence of complication is the number of complications divided by the total number of participants.

(6) Nursing Satisfaction: The Nursing Satisfaction Questionnaire made by our hospital was used, with a total of 20 questions, with 5 points for each question. A total score of <70 points indicates unsatisfied, a score of 70–89 points indicates satisfied, and a total score of ≥90 points indicates highly satisfied. Satisfaction = (highly satisfied cases + satisfied cases)/Total cases × 100%.

2.5. Statistical Methods. SPSS20.0 was used for data analysis, and GraphPad Prism 8 was used to plot the graphs. Measurement data were expressed as $(\overline{x} \pm s)$ and processed by the independent sample t-test. The counting data were expressed as the number of cases (rate) and processed by the X^2 test. Differences were considered statistically significant at $P < 0.05$.

3. Results

3.1. Baseline Data. There was no significant difference in the general data such as age, body weight, stage of endometrial cancer, and type of endometrial cancer between the two groups ($P > 0.05$). (Table 1).

3.2. SAS Score. The two groups showed similar SAS scores before treatment (82.21 ± 5.14 vs. 82.17 ± 5.09) ($P > 0.05$). Patients receiving incentive nursing showed significantly lower SAS scores (42.34 ± 3.85) versus patients given routine care alone (71.15 ± 4.32) ($P < 0.05$) (Table 1). (*indicates a significant difference in the comparison of SAS scores between the control group and the study group before nursing, $t = 0.041$, $P = 0.967$) (**indicates a significant difference in the comparison of the SAS scores between the control group and the study group after nursing, $t = 36.923$, $P < 0.001$) (Figure 1).

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

	Control group ($n = 55$)	Study group ($n = 55$)	T Or x^2	P
Average age (years)	55.21 ± 3.35	55.30 ± 3.24	−0.143	0.887
Average weight (kg)	60.12 ± 8.02	60.33 ± 7.98	−0.138	0.89
Endometrial cancer staging			0.178	0.673
Stage I	39	37		
Stage II	15	17		
Stage III	1	1		
Stage IV	0	0		
Endometrial cancer typing			0.178	0.673
Endometrioid adenocarcinoma	39	37		
Adenocarcinoma with squamous cell differentiation	15	17		
Clear cell carcinoma	1	1		

3.3. HAMD Score. There was no statistical significance in the HAMD score between the two groups before treatment (65.82 ± 4.28 vs. 65.91 ± 4.11) ($P > 0.05$). Incentive care was associated with a significantly lower HAMD score (41.38 ± 3.46) versus routine nursing (55.12 ± 3.56) ($P < 0.05$) (Figure 2). (*indicates a significant difference in the comparison of HAMD scores between the control group and the research group before nursing treatment, $t = -0.112$, $P = 0.911$) (**indicates a significant difference in the comparison of the HAMD scores between the control group and the research group after nursing treatment, $t = 20.526$, $P < 0.001$).

3.4. ESCA Score. The two groups showed comparable ESCA scores before treatment ($P > 0.05$). Incentive care was associated with a significantly higher ESCA score versus routine nursing ($P < 0.05$). (Table 2).

3.5. Postoperative Rehabilitation. Incentive care resulted in a shorter length of hospital stay (10.85 ± 4.21) d and postoperative time to out-of-bed activities (4.67 ± 2.12) d and exercises (7.31 ± 2.03) d versus routine care ([8.63 ± 3.45] d, [3.12 ± 1.76], and [5.27 ± 2.12]) ($P < 0.05$). (Table 3).

3.6. Comparison of the Incidence of Complications in Patient Care. Incentive care was associated with a significantly lower incidence of nursing complications (4%, including 1 case of fever and 1 case of intrauterine) versus routine nursing (16%, including 3 cases of fever, 1 case of irregular vaginal bleeding, 3 cases of abdominal pain, and 2 cases of intrauterine infection) ($P < 0.05$). (Table 4).

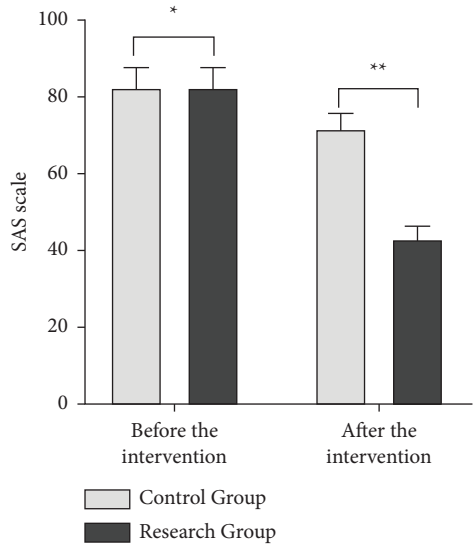

Figure 1: Comparison of SAS scores before and after nursing treatment ($x \pm s$).

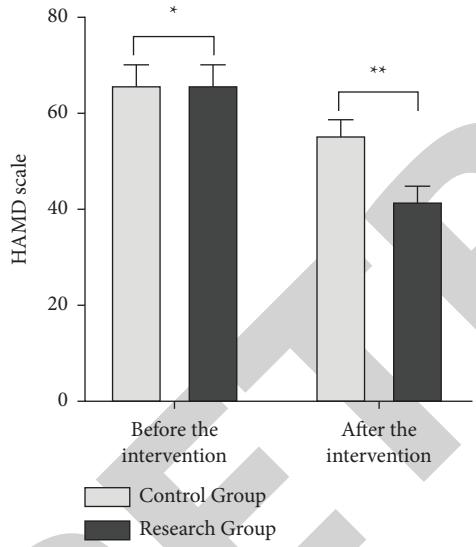

Figure 2: Comparison of HAMD scores before and after nursing treatment ($x \pm s$).

3.7. Nursing Satisfaction. Incentive care resulted in significantly higher nursing satisfaction (94%, including 33 cases of highly satisfied, 19 cases of satisfied, and 3 cases of dissatisfied) versus routine nursing (67%, including 27 cases of highly satisfied, 10 cases of satisfied, and 18 cases of dissatisfied) ($P < 0.05$). (Table 5).

4. Discussion

Endometrial cancer is an epithelial malignant tumor that occurs in the endometrium of women, to which perimenopausal and postmenopausal women are more susceptible. It can be divided into endometrioid adenocarcinoma, adenocarcinoma with squamous cell differentiation, and mucinous adenocarcinoma. In recent years, its incidence has been increasing worldwide [11–14]. Compared with laparotomy, laparoscopic surgery is less traumatic with less intraoperative blood loss, which contributes to the postoperative recovery of patients. Laparoscopy allows for a more open view of the organization of anatomical structures, which facilitates the exposure of blood vessels deep in the occluded fossa, clearly excises the lymph nodes in the area, and avoids extensive damage to blood vessels deep in the occluded fossa. In addition, the construction of the pneumoperitoneum can effectively increase abdominal pressure and avoid damage to small blood vessels [15–18]. Accordingly, laparoscopic surgery was adopted in the present study. Moreover, incentive nursing was also used to mobilize the patients for better treatment and nursing cooperation [19–21]. Negative emotions such as fear and anxiety lead to a significant weakening of the body's "immune surveillance" (which is often regarded as the intellectual underpinning of cancer immunology). Although the hypothesis itself has contributed little to our attempts to treat cancer through immunological means, it has profound implications for understanding the functions of the immune system., "while a good psychological condition can promote the body's recovery". To alleviate and eliminate the patient's negative emotions and enhance the immunity of the organism, the nursing staff should give priority to the patient's health and recovery and provide the patient with as much attentive service as possible.

In the present study, patients receiving incentive nursing showed significantly lower SAS scores and HAMD scores versus patients given routine care alone, indicating that incentive nursing is effective in reducing anxiety and depression. Studies have shown that anxiety disorders are associated with poor recovery outcomes and increased medical complications in patients with endometrial cancer, compromising their quality of life. The study group outperformed the control group in terms of ESCA scores, which indicated that incentive nursing can effectively improve the self-management ability of patients. Furthermore, incentive care herein resulted in a shorter length of hospital stay and postoperative time for out-of-bed activities and exercises versus routine care, which indicates that incentive nursing can boost postoperative recovery. Also, incentive care was associated with a significantly lower incidence of nursing complications versus routine nursing, suggesting that incentive nursing can enhance the patients' understanding of the disease, which results in better protection and reduces the incidence of nursing complications.The results of nursing satisfaction showed a higher satisfaction was found in patients given incentive nursing versus routine nursing, which further proved the feasibility of incentive nursing. Comprehensive care of endometrial cancer patients using the holistic concept of traditional Chinese medicine, including care of the patient's physique, personality, mood, and dietary habits, as well as attention to the effects of climate and geography, can achieve promising nursing outcomes. All these findings are attributed to the fact that incentive nursing is implemented throughout the whole process by motivating the patients and their family members in various aspects. Conversely, the traditional one fails to

Table 2: Comparison of ESCA scores before and after nursing treatment ($x \pm s$).

Group	Cases	ESCA							
		Self-care concept		Self-care responsibility		Self-care skills		Health knowledge level	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Control group	55	20.11 ± 5.02	25.31 ± 3.14	20.36 ± 4.42	24.38 ± 6.10	30.14 ± 3.32	34.22 ± 3.97	33.24 ± 7.05	40.12 ± 4.31
Study group	55	20.08 ± 4.99	30.17 ± 3.44	20.33 ± 4.38	31.49 ± 7.21	30.11 ± 3.27	43.21 ± 4.18	33.25 ± 7.08	47.52 ± 4.66
t	—	0.031	−7.738	0.036	−5.583	0.048	−1.565	−0.007	−8.646
P	—	0.975	<0.001	0.971	<0.001	0.962	<0.001	0.994	<0.001

Table 3: Comparison of postoperative rehabilitation progress of patients ($x \pm s$).

Group	Cases	Postoperative recovery process of patients		
		The first time to get out-of-bed after surgery (d)	The first time to participate in sports after surgery (d)	Hospital stay (d)
Control group	55	4.67 ± 2.12	7.31 ± 2.03	10.85 ± 4.21
Study group	55	3.12 ± 1.76	5.27 ± 2.12	8.63 ± 3.45
T	—	4.172	5.154	3.025
P	—	<0.001	<0.001	0.003

Table 4: Comparison of complication rates among patients (n (%)).

Group	Cases	Fever	Irregular vaginal bleeding	Bellyache	Intrauterine infection	Total incidence
Control group	55	3	1	3	2	9 (16%)
Study group	55	1	0	0	1	2 (4%)
x^2	—	—	-	-	-	4.949
P	—	—	-	-	-	0.026

Table 5: Comparison of patient care satisfaction (n (%)).

Group	Cases	Great satisfaction	Satisfaction	Dissatisfaction	Total satisfaction
Control group	55	27	10	18	37 (67%)
Study group	55	33	19	3	52 (94%)
x^2	—	—	—	—	13.242
P	—	—	—	—	<0.01

focus on these but considers them a matter of routine instead.

Moreover, previous studies suggested that DNA methylation inhibitors were administered to endometrial cancer cell lines to determine their ability to inhibit cell growth and analyze the downstream genes regulated by DNA methylation. Histone deacetylase (HDAC) inhibitors have been reported to induce apoptosis in endometrial cancer cell lines. Several studies have investigated the combination of HDAC inhibitors and other anticancer agents, such as carboplatin, docetaxel, gemcitabine, cisplatin, etoposide, doxorubicin, and paclitaxel in gynecological cancers. HDAC inhibitors have also been reported to restore the expression of progesterone receptors in endometrial cancer cells. Moreover, it was proven that HDAC inhibitors suppressed the oncogene MYC in EC cells. Vorinostat is also effective in endometrial cancer cell lines. It is considered that the insulin-like growth factor system is related to the carcinogenesis of endometrial cancer and that vorinostat was found to induce apoptosis by suppressing its insulin-like growth factor signals [22–24].

5. Conclusion

Incentive nursing can effectively improve the ESCA level of patients, promote postoperative recovery, and reduce the incidence of complications, so it is worthy of clinical promotion.

Data Availability

The datasets used during the present 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: Study on the Mechanism of circRNA Regulating the miRNA Level in Nephrotic Syndrome

Evidence-Based Complementary and Alternative Medicine

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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] Q. Li, M. Yin, Z. Zhang, Y. Yu, and F. Liu, "Study on the Mechanism of circRNA Regulating the miRNA Level in Nephrotic Syndrome," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 3729995, 9 pages, 2022.

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Research Article

Study on the Mechanism of circRNA Regulating the miRNA Level in Nephrotic Syndrome

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Background. Nephrotic syndrome is an enormous public healthy threaten, which causes a variety of complications and secondary disease; however, the molecular mechanism of nephrotic syndrome remains unclear. *Methods*. In our study, RNA-seq were used to test the transcription level of patients with nephrotic syndrome, in order to investigate the interaction of circRNA-miRNA-mRNA in nephrotic syndrome patients. *Results*. Consistent with our hypothesis, miRNAs were confirmed to be associated with nephrotic syndrome, majority of their targeting circRNAs downregulated in nephrotic syndrome patients and at the same time, the KEGG pathway analysis found that target genes of the circRNAs bonding miRNAs was highly correlated with the occurrence of kidney diseases. *Conclusion*. Thus, we can draw a conclusion that downregulated circRNAs cause miRNA expressing aberrant and then affect the expression level of mRNA, finally leading to the generation of nephrotic syndrome.

1. Introduction

The kidney is an important organ for the removal of metabolic waste and water electrolytes and metabolites. When inflammatory lesions and immune complexes occur that disrupt the integrity of the glomerular filtration membrane or reduce its negative charge, permeability increases and manifests as hematuria and proteinuria [1]. Nephrotic syndrome is characterized by massive proteinuria, hypoproteinemia, edema, and dyslipidemia and is a clinical condition with high morbidity and mortality in patients with kidney diseases in China [2]. Its pathogenesis is the destruction of the glomerular filtration barrier due to various causes, which may lead to an irreversible end-stage renal disease (ESRD) if patients are left untreated [3]. The diagnosis of nephrotic syndrome in recent years has been based on clinical symptoms, including features such as increased proteinuria, hypoproteinemia, and edema, and is clinically known as nephrotic syndrome and can be divided into three categories: primary, secondary, and genetic [4, 5]. In patients with nephrotic syndrome, lesions of the glomerulus and glomerular basement membrane and alterations in plasma osmolality lead to the production of proteinuria and oedema [6, 7].

Primary nephrotic syndrome (PNS) is the most prevalent kidney disease and a main cause of chronic kidney disease (CKD), but the pathogenesis of PNS is not completely tangible [8]. Some researchers hypothesize that PNS may be caused by dysregulation of T lymphocytes or T cell dysfunction [9, 10]. It is known that $\gamma\delta$T cells were involved in the progression of IgA nephropathy to renal failure, and further research found that the balance between Th17 cells and Treg cells is essential to PNS development [11, 12]. Podocyte damage is also a major cause of nephrotic syndrome. Podocytes are highly specialized cells of the visceral epithelium that are found in the glomerular membrane of the kidney, and when podocytes are broken down or destroyed, damage to the terminal barrier of the glomerular filtration membrane will lead to leakage of urinary proteins [13]. Patients in this study are just diagnosed with nephrotic syndrome excluding the interference of other disease, such as heart diseases and diabetes mellitus. Secondary nephrotic syndrome and hereditary nephropathy were excluded by renal biopsy.

Circular RNA (circRNA) is a newly discovered noncoding RNA (ncRNA), which is the latest research hotspot in RNA field [13]. Unlike linear RNA that contains a 5′ cap and 3′ adenosine tail, circRNA forms a special covalently closed loop that has neither 5′-3′ nor polyA tail [14]; the inherent stability of circRNAs is conferred by their circular structure and exonuclease resistance [15]. Previous researchers found that some miRNAs are abnormally expressed in patients with nephrotic syndrome. MiRNAs are important in maintaining the homeostasis of both physiological and pathological conditions [16]. The aberrant expression of miR-148b in peripheral blood mononuclear cells is associated with aberrant glycosylation of IgA1 in IgA nephropathy [17]. Many patients with cancer, cardiovascular, and renal diseases have confirmed that their miRNA expression level is significantly different compared to that of a normal human [18]. Clement et al. found that miR-30a-5p, miR-151-3p, miR-150, miR-191, and miR-19b were highly expressed in serum of children with nephrotic syndrome as compared to healthy controls [19]. CircRNA is characterized by its universality, conservatism, specificity, stability, and high abundance expression, which make circRNAs as a potential marker of disease screening and treatment, though there is restricted evidence between circRNA and primary nephrotic syndrome. Given the relationship between circRNA and miRNA and the relationship between miRNA and nephrotic syndrome, we hypothesize that there is some connection between circRNA and nephrotic syndrome.

2. Methods

2.1. RNA-Seq Analysis. Total RNA was extracted from peripheral blood. Transcriptome high-throughput sequencing and subsequent bioinformatics analysis were done by Cloud-Seq Biotech (Shanghai, China). RNA quantification and quality assurance by nanodrop ND-1000(Thermo Fisher Scientific, Waltham, MA, USA). All RNA samples used in this study passed the quality control based on a qualified ratio of OD260 to OD280 (1.8~2.1). Denaturalized agarose gel electrophoresis was used to measure RNA integrity and gDNA contamination. Libraries were controlled for quality and quantified using the BioAnalyzer 2100 system (Agilent Technologies, USA). 10 pM libraries were denatured as single-stranded DNA molecules, captured on Illumina flow cells, amplified in situ as clusters, and finally sequenced for 150 cycles on a Illumina HiSeq Sequencer.

2.2. circRNA Profiling Analysis and Quantification. The high-quality reads were aligned to the reference genome/transcriptome and circRNAs were detected and identified by DCC software. EdgeR software was used to normalize the data and perform differentially expressed circRNA analysis. Compared with the classical transcription, circRNAs are characterized by loop splicing. We use the number of loops splicing reads as the expression level of circRNA. With the TMM method of edgeR, original junction reads were standardized according to the sequencing depth and degree of variation, and log2 transformation was performed to obtain the logCPM value. Fold change ≥2 and P value ≤0.05 were used as thresholds for differentially expressed circRNAs. To generate the profiling of differentially expressed circRNAs between nephrotic syndrome patients and healthy people, the hierarchical clustering analysis was performed based on the expression levels of all identified circRNAs and the significant difference between nephrotic syndrome patients and healthy people. The predicted functions of the differentially expressed circRNAs between nephrotic syndrome patients and healthy people were obtained by GO and KEGG analysis.

2.3. Real-Time qPCR of circRNAs. For each sample, after image and base recognition, the raw reads were harvested from the Illumina HiSeq sequencer. We use the Cutadapt software to splice low-quality reads for high-quality clean reads. The clean reads were mapped to the human reference genome (UCSC hg19) obtained from UCSC genome database, guided by the Ensembl transcriptome (v75) gtf file; DCC software was used for loop RNA detection.

3. Result

3.1. Clinical Characteristics of the Patients and Healthy People. Nephrotic syndrome (NS) patients and the healthy people (normal control, NC) were divided into 5 groups, respectively ($N = 3$). Each group had 2 males and 1 female. RNA-seq were used to analyze the transcription level of the NS and the NC. In NS patients, urinary analysis showed proteinuria (>3.5 g/24 h) and hypoproteinemia (plasma albumin <30 g). The estimated glomerular filtration rate (eGFR) was calculated by the chronic kidney disease epidemiology collaboration (CKD-EPI) equation, there was no significant difference between NS and NC ($P > 0.05$).

After harvesting the raw reads, we spliced the low-quality reads into high-quality clean reads, with the clean reads aligned to the human reference genome. In total, we obtained 727.718 M raw reads and 649.576 M clean reads, for a total mapped reads of 476.982 M, with an average mapping ratio of 67.95%.

3.2. Peripheral Blood circRNA and mRNA Profile in Nephrotic Syndrome Patients. First, we analyzed the profiling of circRNA in peripheral blood of 15 patients with nephrotic syndrome and 15 healthy people. In total, 5637 distinct circRNAs were harvested, including 1451 upregulated circRNAs and 4186 downregulated circRNAs in NS compared with healthy people. Compared with circRNAs detected from the patients and the health human, the number of the circRNAs in the nephrotic syndrome patients was significantly reduced (Figure 1(a)), indicating that in the nephrotic syndrome patients, either circRNA biosynthesis were suppressed or circRNA degradation is promoted, thus resulting in a low expression level. We identified that there were 5 types of circRNAs across RNA-seq, including exonic, intronic, intergenic, antisense, and sense overlap, about 37% of the circRNAs derived from exonic, while 23% of the circRNAs derived from the antisense, intronic and

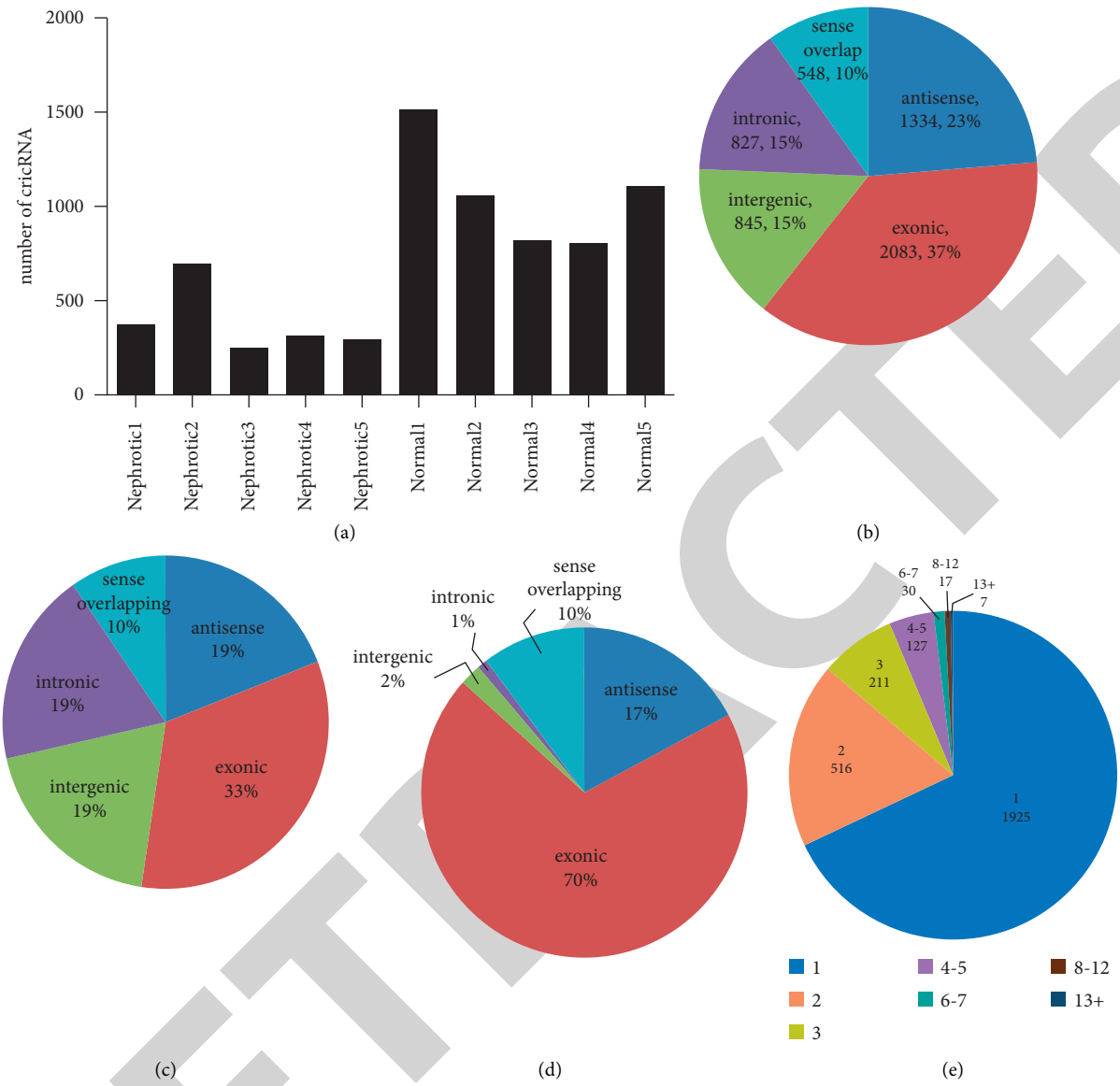

Figure 1: circRNAs in nephrotic syndrome patients are inhibited. (a) Numbers of circRNAs in nephrotic syndrome patients and healthy human. (b) Statistics of the proportion of total circRNAs after RNA-seq. (c) Statistics of the proportion of upregulated circRNAs. (d) Statistics of the proportion of downregulated circRNAs. (e) Numbers of circRNAs produce from one gene (5637 circRNAs generated from 2833 host genes).

intergenic account for 15%, respectively; only 548 sense overlap circRNAs were detected, accounting for 10% (Figure 1(b)). Combined with the previous result, we examined the proportion of different types in differently expressed circRNAs compared with normal tissues. While the upregulated differentially expressed circRNAs show almost no change compared with the total circRNAs (Figure 1(c)), the proportion in downregulated circRNAs was significantly different; about 70% downregulated circRNAs were exonic circRNAs, only 1% were intronic circRNAs and 2% intergenic circRNAs; the antisense cricRNAs and sense overlap circRNAs with no significant different (Figures 1(d), 1(e)). Analysis of the circRNAs and their host gene revealed that one gene could produce multiple circRNAs, 2833 genes generated 5637 circRNAs in this test, which are consistent with the former research results [17].

Statistically significant circRNAs and mRNAs differentially expressed between the two groups were shown by fold change and P value (fold change ≥ 2.0 and $P < 0.05$). 120 circRNAs were differentially expressed between the NS and healthy groups, and of the 120 circRNAs, 21 circRNAs were significantly upregulated and 99 circRNAs were significantly downregulated on clusters heatmap (Figure 2(a)) and volcano plots(Figure 3(a)). Meanwhile, 8375 mRNAs were differentially expressed between the NS group and healthy group. 8321 mRNAs were upregulated and 54 mRNAs were downregulated on

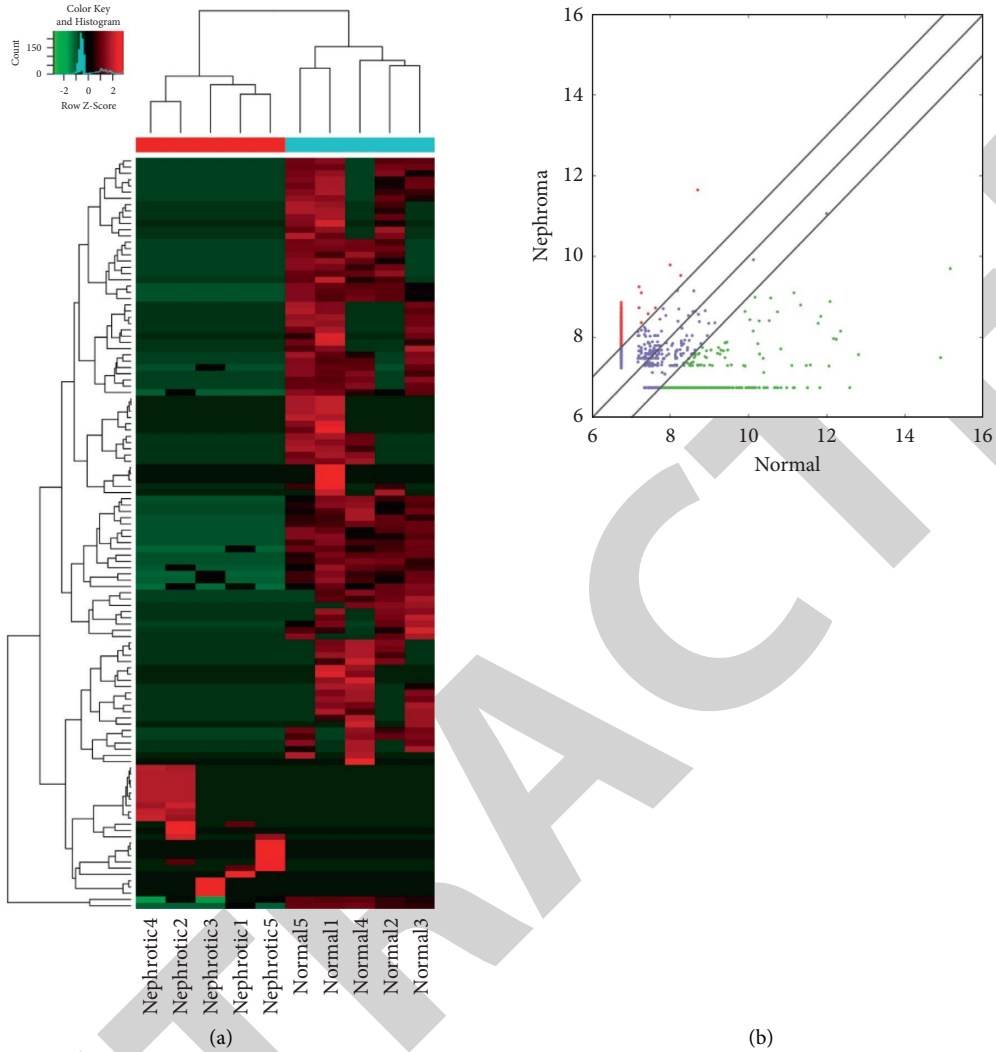

Figure 2: Continued.

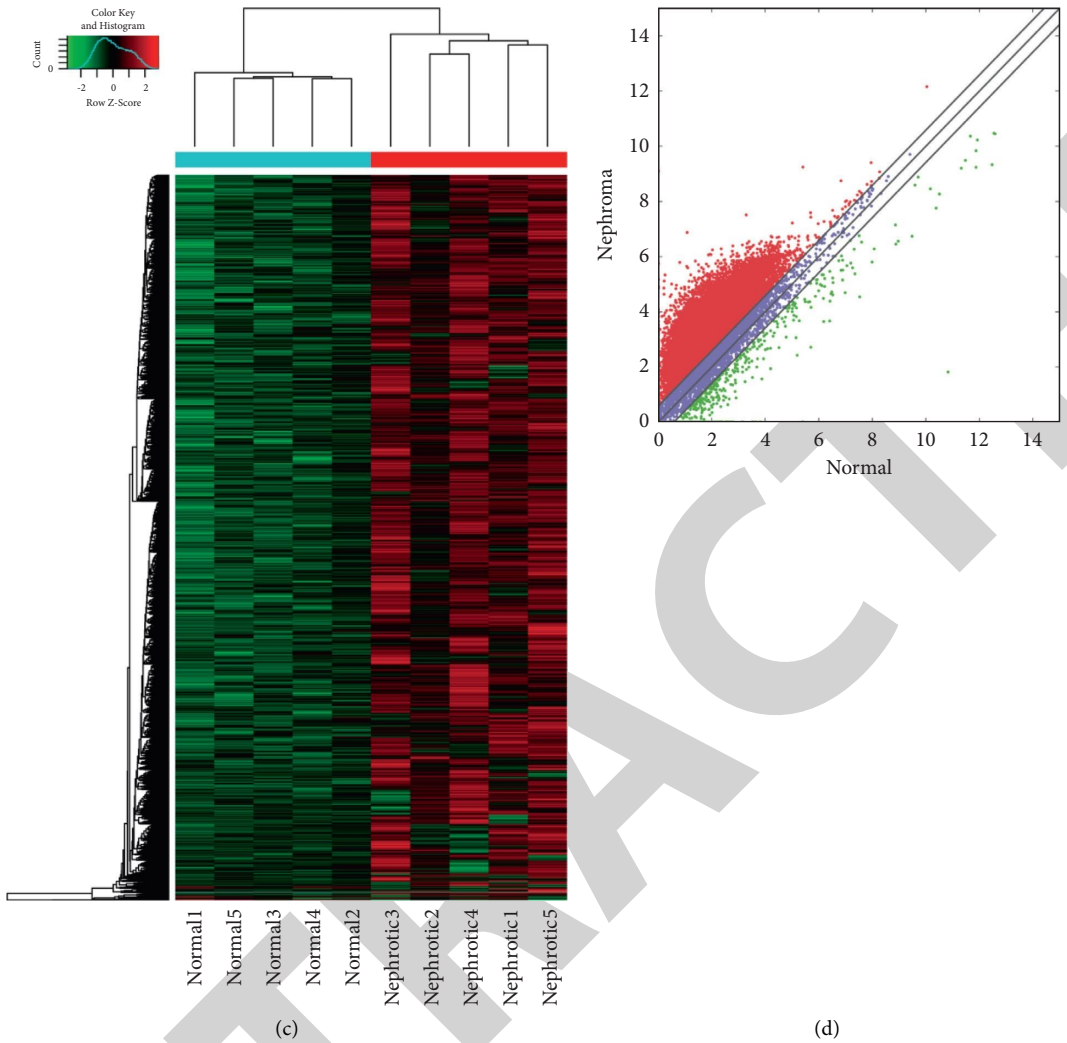

Figure 2: Differentially expressed circRNAs and mRNAs cluster analysis. (a) Differentially expressed circRNAs cluster analysis. (b) Scatter plot analysis of different expressed circRNAs. (c) Differentially expressed mRNAs cluster analysis. (d) Scatter plot analysis of differentially expressed mRNAs.

cluster heatmap (Figure 2(c)) and volcano plots (Figure 3(b)). The scatter plot confirmed this conclusion (Figures 2(b) and 2(d)). Taken together, the number and expression of circRNAs detected in NS patients were significantly different compared to controls, suggesting that fluctuations in circRNAs may be responsible for the development of nephropathy.

3.3. KEGG Pathway Analysis and circRNA-miRNA-mRNA Co-Network. A large number of specific miRNAs bind to circRNAs, each with its target gene, and we selected six differentially expressed circRNAs among the down-regulated circRNAs by machine (Table 1). Five of the six circRNAs had five miRNA predicted targets, the other had nine miRNA predicted targets. The network showed that circRNA-miRNA-mRNA had a strong connection with each other (Figure 4). KEGG analysis revealed that target genes of circRNAs that bind to miRNAs are highly associated with the development of renal disease, such as AMPK signaling, Wnt signaling, Hif signaling, and TGF-β signaling. In previous research studies, many miRNAs upregulated in nephrotic syndrome patients, such as hsa-miR-181a-5p, hsa-miR-30a-5p, hsa-miR-205, and many other miRNAs [18–20]. The co-network show that circRNA-miRNA-mRNA had a close relationship.

3.4. Validation of the circRNA Expression by qPCR. RNA-seq in patients with nephrotic syndrome suggested that most of circRNAs get downregulated. We performed further qPCR validation on the selected 6 circRNAs, the levels of all 6 circRNAs were significantly downregulated in the NS patients compared with the control group (Figure 5). The result suggested that the development of nephrotic syndrome may be due to the decrease of circRNAs, thus increasing the expression level of its corresponding miRNA and then activating disease-related signaling pathways, eventually lead to the occurrence of the nephrotic syndrome.

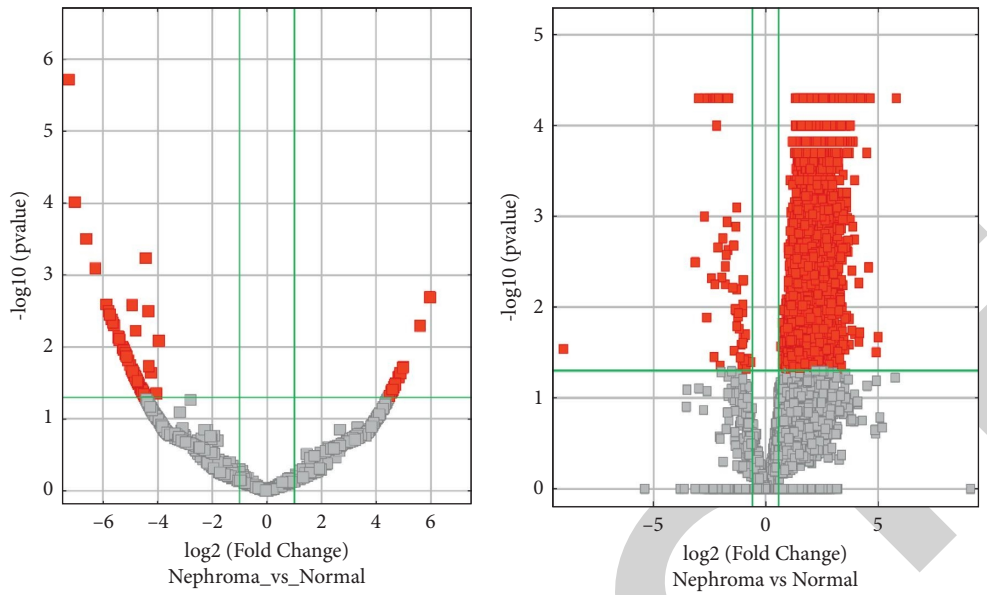

Figure 3: Differentially expressed circRNAs and mRNAs on volcano plots. (a). Volcano plots showed the differential expression of circRNAs between NS and NC. (b). Volcano plots showed the differential expression of mRNAs between NS and NC.

Table 1: Six differentially expressed downregulated circRNAs.

	circRNAs
chr4	156696120–156698794+
chr2	106774514–106782539–
chr5	107684100–107703654–
chr16	85667520–85667738+
chr4	144464662–144465125+
chr12	109046048–109048186–

4. Discussion

Hepatorenal syndrome is a functional renal failure that occurs late in the course of severe liver disease in patients with no apparent organic lesions of the kidneys and is characterized by renal impairment, impaired arterial circulation, and marked abnormalities in vasodilatory factors [1–3]. 80% of untreated, rapidly progressive patients with the acute form die within approximately 2 weeks. Abdominal effusion is often present and death can also occur as a result of acute transformation [21]. The exact incidence and prevalence of hepatorenal syndrome is unknown. Hepatorenal syndrome accounts for approximately 11% of kidney damage in hospitalized patients with cirrhosis-refractory ascites and is prone to progression to renal failure, with a high morbidity and mortality rate of approximately 80% to 95% [22].

In the past, circRNA was not valued while it was considered as a product of abnormal splicing. With the development of high-throughput sequencing technology, the function of circRNA has gradually been understood [23]. CircRNA contains lots of miRNA response element (MRE), which could bind to miRNA and plays the role as miRNA sponge in cells; circRNA can block out the inhibitory effect of miRNA on its target mRNA and increase the expression level of their targeting mRNA [24, 25]. For example, testis-specific circRNA (SRY), with 16 miR-138 binding sites, can affect various physiological and pathological processes in human through its interaction with miRNAs [26]. EIciRNA binds to U1 snRNP form the EIciRNA-U1 snRNP complex via particular RNA-RNA combination. The complex can enhance its parental gene transcription level after binding to Pol II [27]. Chip-sequencing revealed that circRNA-regulated gene unusual expression is ubiquitous in tumors [28]. 67 circRNAs is deficit in the serum of the colon cancer patients while 257 circRNAs are newly produced, for example, the expression level of circ-KLDHC10 in serum exosomes of patient and normal human is significantly different [29].

In this study, we use RNA-seq to detect transcriptome expression level in nephrotic syndrome patients and healthy people (control group), in order to investigate the transcription level in nephrotic syndrome patients and health people. Nephrotic syndrome is divided into primary and secondary nephropathies with a variety of causes. Infection, genetic, and immune factors are all possible causes of nephrotic syndrome, and if nephrotic syndrome is not treated promptly, it can easily lead to various complications and secondary complications. The pathogenesis of nephrotic syndrome is still largely unknown [30–32]. For the clinical examination of nephrotic syndrome, there are no definitive molecular markers to identify nephrotic syndrome, other than testing for general biochemical parameters and only performing repuncture tests that are harmful to the patient [33].

CircRNAs are RNA loops which spliced from transcriptome that are widely expressed in cells, furthermore, deep sequencing combined with novel bioinformatics were

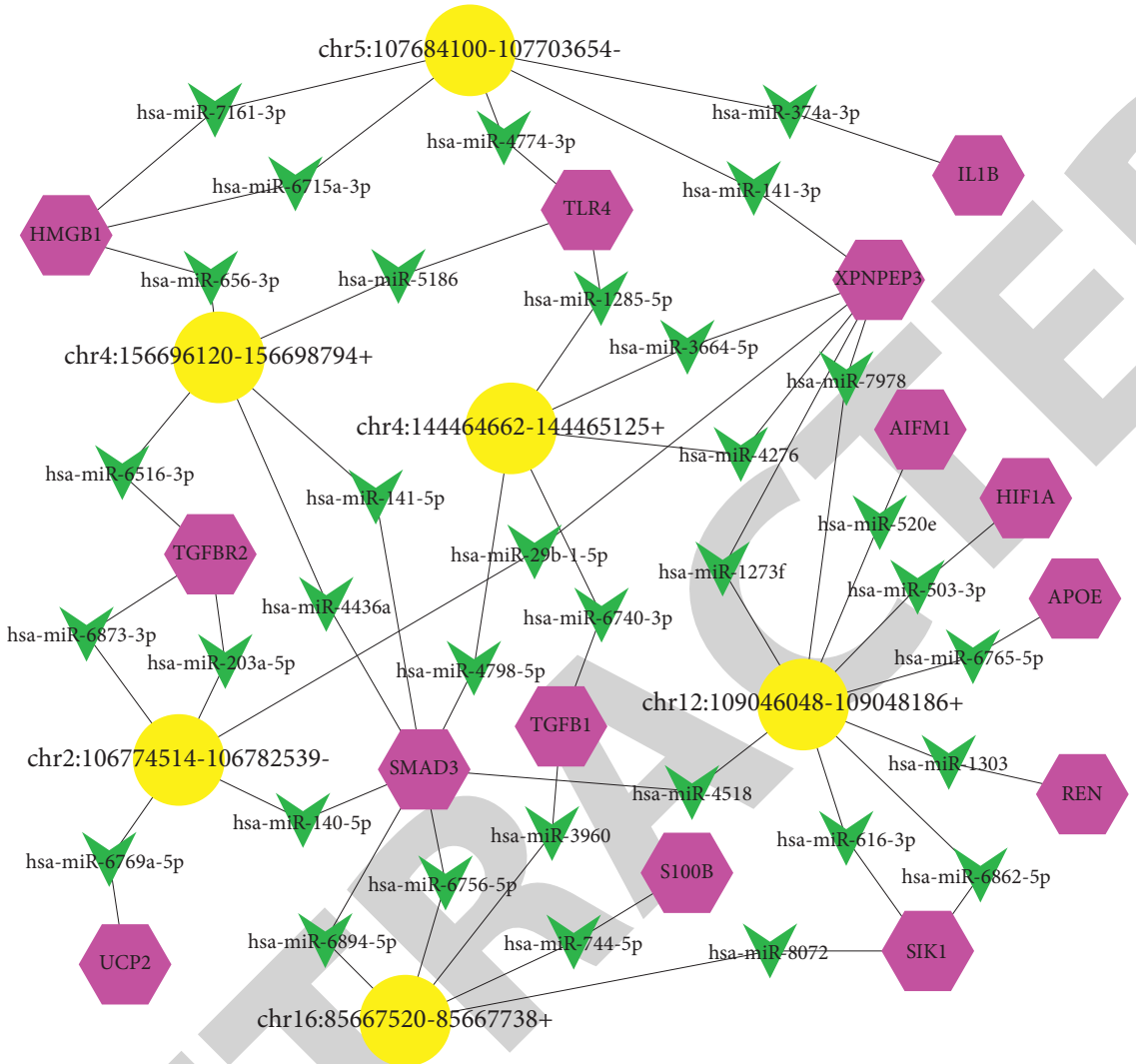

Figure 4: circRNA-miRNA-mRNA co-network: The network shows the 6 circRNAs (yellow), fourteen mRNA (purple), and the 34 miRNAs (green).

used to analysis circRNAs [34]. Previous researchers found that expressions of circRNAs are tissue-specific, they could participate in posttranscriptional of genes and regulate their expression level [35]. Due to circRNAs specific biological structure and characteristics [36], they have a great potential work as markers of diseases [37].

In our test, 15 nephrotic syndrome patients were divided into 5 groups randomly. RNA-seq were used to detect the transcription level of patients and healthy people. After analyzing all data, we found that the circRNAs expression level in nephrotic syndrome patients and healthy people is significantly different; the amount of circRNA detected in nephropathy patients is significantly lower than that of healthy human circRNAs. MiRNAs reported in the previous research are upregulated in nephropathy, the vast majority of circRNAs targeted by these miRNAs in nephropathy patients were downregulated, indicating that the miRNAs rising level is related to the decreasing level of circRNAs. KEGG pathway analysis confirmed the former conclusion. Finally, we have identified several circRNAs that may associate with nephrotic syndrome, their downregulated expression in patients will lead to the upregulation of their targeting miRNAs, inducing targeting mRNAs to be upregulated and then generate the nephrotic syndrome. The mechanisms by which these circRNAs interact with miRNAs and mRNAs are unclear, but these circRNAs may be potential targets for the treatment of kidney disease, in line with the findings of Yu et al. that circRNAs are novel diagnostic biomarkers and therapeutic targets for kidney disease [38], but whether these circRNAs can be biomarkers for nephrotic syndromes requires further testing.

The conclusion that these circRNAs in our study may be potential targets for the treatment of kidney disease is based on reasonable analogies to existing studies, such as the finding that ciRS-7 is highly expressed in renal cell carcinoma tumor tissues and cell lines and may serve as a prognostic marker, and further evidence that ciRS-7 acts as a "ceRNA" for miR-139-3p, preventing TAGLN degradation and promoting the development and metastasis of renal cell carcinoma through the PI3K/AKT signaling pathway [39].

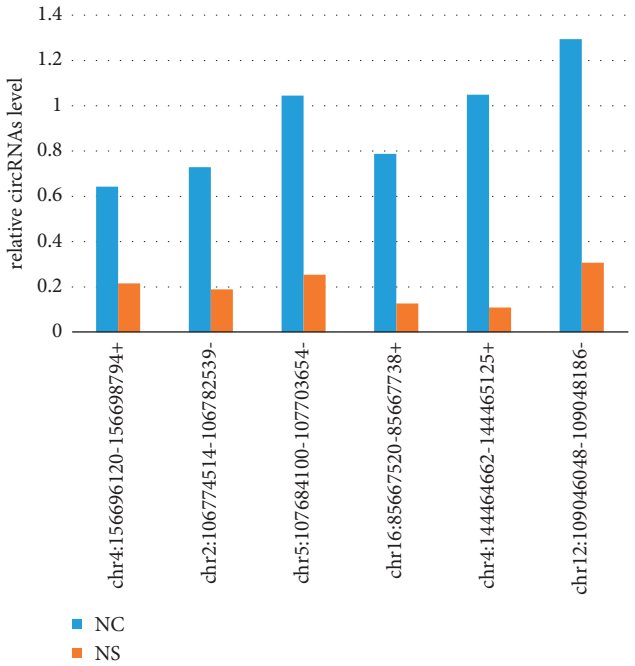

Figure 5: The differentially expressed between nephrotic syndrome (NS) patients and healthy (NC). Data are expressed as means ± SD ($P < 0.05$).

ciRS-7 is highly expressed in RCC tumor tissues and cell lines, and this high expression correlates with tumor size, high Fuhrman grading, and low survival [40]. In vivo depletion of ciRS-7 significantly inhibited RCC cell proliferation, invasion, tumor growth, and metastasis, while the overexpression of ciRS-7 did the opposite. Mechanistically, ciRS-7 acts as a "ceRNA" for miR-139-3p, blocking TAGLN degradation through the PI3K/AKT signaling pathway and promoting RCC progression and metastasis [39]. In addition, this study developed a nanocomplex targeting drug-PBAE/si-ciRS-7 that significantly inhibited renal cell carcinoma tumor development and metastasis in vivo, and drug development of this nanocomplex may be a promising gene therapy strategy for renal cell carcinoma with important practical implications for oncology clinical treatment [39]. Our subsequent experiments could produce targeted drugs based on existing findings and posttranslational translation of proteins regulated by circRNAs.

However, there are still limitations to our experiments. First, because of currently insurmountable technical limitations, it remains very challenging to investigate the physicochemical properties and mechanisms of circRNAs. Second, although many circRNAs have been demonstrated in renal tissues, their potential role in disease progression remains largely elusive as they are still largely studied in vitro.

5. Conclusion

In summary, it can be concluded from these experiments that the downregulation of circRNAs leads to abnormal miRNA expression, which in turn affects mRNA expression levels and ultimately leads to the development of nephrotic syndrome.

Data Availability

The datasets used during the present study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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References

[1] W. Thoenes, "The pathology of glomerulonephritis," *Internist (Berl)*, vol. 30, no. 3, pp. 127–139, 1989.

[2] L. Salmena, L. Poliseno, Y. Tay, L. Kats, and P. Pandolfi, "A ceRNA hypothesis: the Rosetta Stone of a hidden RNA language?" *Cell*, vol. 146, no. 3, pp. 353–358, 2011.

[3] A. L. Sellier-Leclerc, A. Duval, S. Riveron et al., "A humanized mouse model of idiopathic nephrotic syndrome suggests a pathogenic role for immature cells," *Journal of the American Society of Nephrology*, vol. 18, no. 10, pp. 2732–2739, 2007.

[4] G. Serino, F. Sallustio, S. N. Cox, F. Pesce, and F. P. Schena, "Abnormal miR-148b expression promotes aberrant glycosylation of IgA1 in IgA nephropathy," *Journal of the American Society of Nephrology*, vol. 23, no. 5, pp. 814–824, 2012.

[5] Chronic Kidney Disease Prognosis Consortium, M. van der Velde, B. C. Astor et al., "Association of estimated glomerular filtration rate and albuminuria with all-cause and cardiovascular mortality in general population cohorts: a collaborative meta-analysis," *Lancet*, vol. 375, no. 9731, pp. 2073–2081, 2010.

[6] Y. Li, Q. Zheng, C. Bao et al., "Circular RNA is enriched and stable in exosomes: a promising biomarker for cancer diagnosis," *Cell Research*, vol. 25, no. 8, pp. 981–984, 2015.

[7] P. L. Wang, Y. Bao, M. C. Yee et al., "Circular RNA is expressed across the eukaryotic tree of life," *PLoS One*, vol. 9, no. 3, Article ID e90859, 2014.

[8] S. Qu, X. Yang, X. Li et al., "Circular RNA: a new star of noncoding RNAs," *Cancer Letters*, vol. 365, no. 2, pp. 141–148, 2015.

[9] S. Memczak, M. Jens, A. Elefsinioti et al., "Circular RNAs are a large class of animal RNAs with regulatory potency," *Nature*, vol. 495, no. 7441, pp. 333–338, 2013.

[10] W. R. Jeck, J. A. Sorrentino, K. Wang et al., "Circular RNAs are abundant, conserved, and associated with ALU repeats," *RNA*, vol. 19, no. 2, pp. 141–157, 2013.

[11] J. Salzman, C. Gawad, P. L. Wang, N. Lacayo, and P. O. Brown, "Circular RNAs are the predominant transcript isoform from hundreds of human genes in diverse cell types," *PLoS One*, vol. 7, no. 2, Article ID e30733, 2012.

[12] S. K. Patnaik, P. Kumar, P. Yadav et al., "Circulating microRNAs as potential biomarkers for nephrotic syndrome," *Iranian Journal of Kidney Diseases*, vol. 8, no. 5, p. 371, 2014.

[13] L. Lasagni and P. Romagnani, "Basic research: podocyte progenitors and ectopic podocytes," *Nature Reviews Nephrology*, vol. 9, no. 12, pp. 715-716, 2013.

[14] X. O. Zhang, H. B. Wang, Y. Zhang, X. Lu, L. L. Chen, and L. Yang, "Complementary sequence-mediated exon circularization," *Cell*, vol. 159, no. 1, pp. 134–147, 2014.

Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2023, Article ID 9805178, 1 page
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Retraction

Retracted: Comparative Analysis of Clinical Effects of Insulin Aspart Combined with Acarbose and Metformin in the Treatment of Diabetes Mellitus

Evidence-Based Complementary and Alternative Medicine

Received 20 June 2023; Accepted 20 June 2023; Published 21 June 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.

References

[1] H. Jin and H. Zhang, "Comparative Analysis of Clinical Effects of Insulin Aspart Combined with Acarbose and Metformin in the Treatment of Diabetes Mellitus," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 3541931, 7 pages, 2022.

Hindawi
Evidence-Based Complementary and Alternative Medicine
Volume 2022, Article ID 3541931, 7 pages
https://doi.org/10.1155/2022/3541931

Research Article

Comparative Analysis of Clinical Effects of Insulin Aspart Combined with Acarbose and Metformin in the Treatment of Diabetes Mellitus

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Objective. To investigate the clinical effect of Insulin aspart 30 combined with acarbose and metformin enteric-coated tablets in the treatment of diabetes mellitus. *Methods*. 90 diabetic patients admitted to our hospital from January 2019 to December 2021 were selected as the research subjects, and the patients were randomly divided into group A ($n = 30$, using insulin aspart 30 alone), group B ($n = 30$, using insulin aspart 30 combined with metformin enteric-coated tablets), and group C ($n = 30$, using insulin aspart 30 combined with acarbose). The blood glucose balance before meals and before going to bed was maintained in the three groups of patients, and the blood glucose fluctuations, time to target, hypoglycemia, insulin dosage, and daily consumption of the three groups were compared. *Results*. There was no significant difference in blood glucose and average blood glucose at each time point before treatment in the 3 groups of patients ($P > 0.05$); compared with the blood glucose and average blood glucose at each time point after reaching the target in the three groups, the blood glucose after dinner in group A was significantly higher than that in groups B and C; at 2 : 00, the blood glucose of group A was significantly higher than that of group B ($P < 0.05$); there was no significant difference in blood glucose and average blood glucose at other time points ($P > 0.05$). There was no significant difference in blood glucose standard deviation, LAGE, and PPGE at each point in the three groups before treatment ($P > 0.05$); the standard deviation of blood glucose, LAGE, and PPGE at each point of the three groups of patients after reaching the standard were compared with those in the same group before treatment, and the differences were statistically significant ($P < 0.05$); there were statistically significant differences in blood glucose standard deviation, LAGE, and PPGE among the 3 groups after reaching the standard ($P < 0.05$). Compared among the three groups, the standard deviation of blood glucose and LAGE level at each point after reaching the standard, the difference between group B, group C, and group A was statistically significant ($P < 0.05$); however, there was no significant difference between the patients in group B and group C ($P > 0.05$); the level of PPGE in group A was higher than that in group B, which was higher than group C, and between group C and group A, the difference was statistically significant ($P < 0.05$). The time of reaching the standard in 3 groups was statistically significant ($P < 0.05$); there was no significant difference in the time of reaching the standard between group B and group C ($P > 0.05$). There was no significant difference in the incidence of hypoglycemia among the 3 groups ($P > 0.05$); there were significant differences in the proportion of insulin twice a day among the three groups ($P < 0.05$); there were statistically significant differences in daily insulin dosage among the 3 groups after reaching the standard ($P < 0.05$). The daily consumption of the three groups of patients after reaching the standard was compared, the difference was statistically significant ($P < 0.05$), and there was no significant difference between group A and group B ($P > 0.05$). *Conclusion*. The effect of insulin aspart 30 alone in the treatment of diabetic patients is not good, it will lead to a large fluctuation of blood sugar in the patient's body, and the time required to reach the standard is relatively long; the use of insulin aspart 30 combined with metformin enteric-coated tablets or acarbose can effectively reduce the blood sugar fluctuation range of diabetic patients and reduce the number of insulin injections, and insulin aspart 30 combined with metformin en teric-coated tablets can also greatly reduce the daily insulin dosage and daily consumption cost of diabetic patients.

1. Introduction

The body of patients with type 2 diabetes is often accompanied by insufficient insulin secretion. With the development of the patient's disease course, the function of pancreatic islets will gradually weaken, so patients with type 2 diabetes often need supplemental insulin therapy [1]. When blood sugar levels are high in the body, pancreatic beta cells secrete insulin to lower blood sugar [2]. If the β-cell function is defective, the insulin secretion is insufficient, and the blood sugar cannot be effectively lowered, and the blood sugar level will rise. Some patients have normal insulin secretion, but the body is not sensitive to insulin and cannot use insulin effectively, that is, insulin resistance occurs, which will also lead to high blood sugar [3,4].

There are many clinical programs for insulin treatment of patients with type 2 diabetes, including basal insulin, premixed insulin, and multiple insulin treatments [5]. Premixed insulin therapy is the most commonly used treatment method in China. Patients can choose to use premixed insulin alone for treatment, or they can choose premixed insulin combined with oral hypoglycemic drugs such as metformin enteric-coated tablets or acarbose for treatment [6]. Clinically relevant studies have shown that the above treatment methods can effectively control patients' blood glucose, but there are relatively few clinical reports on their all-weather blood glucose fluctuations, overall efficacy, and treatment costs [7].

In our study, 90 diabetic patients admitted to our hospital from January 2019 to December 2021 were selected for the study and were given menthol insulin alone, menthol insulin combined with metformin enteric-coated tablets, and menthol insulin combined with acarbose. The purpose of this study was to compare the clinical effects of insulin aspart 30 combined with acarbose and metformin enteric-coated tablets in the treatment of diabetes, in order to provide a reference for clinical treatment decisions.

2. Materials and Methods

2.1. General Information. Ninety diabetic patients admitted to our hospital from January 2019 to December 2021 were selected for the prospective study. Patients were randomly and equally divided into group A ($n = 30$, using insulin aspart 30 alone), group B ($n = 30$, using insulin aspart 30combined with metformin enteric-coated tablets), and group C ($n = 30$, using insulin aspart 30 combined with acarbose). The study was approved by the Medical Ethics Committee of our hospital, and all patients and their families signed an informed consent form.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria

(1) All patients were clinically diagnosed with diabetes.

(2) The patients did not use insulin within 6 months.

2.2.2. Exclusion Criteria

(1) Patients with special types of diabetes

(2) Patients with serious diseases of other organs

(3) Lactating or pregnant women

(4) Patients who were taking hypoglycemic drugs;

(5) Patients with poor compliance and who do not cooperate well with this study

2.3. Methods

(1) Patients in group A were treated with insulin aspart 30 alone: Novo Rui 30 (Novo Nordisk China Pharmaceutical Co., Ltd., approval number: 2018030882, 2019010872, 2019073372 specification: 300 U/piece) 2 times/d

(2) Patients in group B were treated with insulin aspart 30 combined with metformin enteric-coated tablets: NovoRapid 30 (twice/d), combined with metformin enteric-coated tablets (Guizhou Shengjitang Pharmaceutical Co., Ltd., approval number: 20181011, 20190902, 20200605, specification: 0.25g∗60#) 500 mg/time, 3 times/d [8]

(3) Patients in group C were treated with insulin aspart 30 combined with acarbose: Novoray 30 (twice/d), combined with acarbose (Bai Tang Ping, Bayer Healthcare, approval number: BJ49535, BJ59265, BJ63980, specification: 50 mg∗30#) 50 mg/time, 3 times/d [9].

2.4. Insulin Dose. All patients stopped taking oral hypoglycemic drugs on the day of admission and the second day. The insulin and C-peptide release were detected on the third day of admission, and hypoglycemic treatment was taken before dinner on the third day. For patients with a BMI less than 24 kg, daily insulin started from 0.35 U/kg; for patients with a BMI ≥ 24 kg, insulin started from 0.45 U/kg, and the ratio of insulin before breakfast and dinner was 1 : 1. Insulin dosage was adjusted appropriately according to blood glucose levels before meals and before going to bed. The adjustment cycle was 2 d/1 time, and 3–6 U could be added to each substandard blood glucose point each time, with blood glucose less than 10 mmol/L + 3 U and blood glucose more than 10 mmol/L + 5 U. If the patient had hypoglycemia, the cause of the patient's hypoglycemia should first be identified. If it was not a human cause, each blood sugar point where hypoglycemia occurs was −3 U each time. In all 3 groups, the insulin dose was adjusted. If the insulin dose was not up to the standard before dinner, Novoray 30 was added before lunch to adjust to the standard before dinner. Blood sugar control target: fingertip blood sugar was 4.2–7.0 mmol/L before three meals and before going to bed [10].

2.5. Observation Indicators

(1) Fingertip blood glucose of all patients before treatment and after reaching the standard was detected at 8 time points, including fasting, after breakfast, before lunch, after lunch, before dinner, after dinner, 22 : 00 and 2 : 00, and the mean, standard deviation, largest amplitude of glycemic excursions (LAGE),

and postprandial glucose excursion (PPGE) at 8 time points were calculated. LAGE = difference between the maximum and minimum blood glucose values; PPGE = average of the absolute values of blood glucose after three meals minus the absolute values of blood glucose before three meals, respectively. Fingertip blood glucose was uniformly detected by the same Roche Excellence Glucose Meter.

(2) The incidence of hypoglycemia: the number of people with fingertip blood sugar <3.9 mmol/L/total number of the group.

(3) Time to meet the standard, daily dosage of insulin, and daily consumption: the medical staff of our hospital recorded the daily consumption, including the sum of insulin, oral hypoglycemic drugs, insulin needles, and other expenses.

2.6. Statistical Methods. The data analysis software was SPSS 21.0, the measurement data was expressed as ($\overline{x} \pm s$), and the independent sample t-test was used; the count data was expressed as the number of cases (rate), and the X^2 test was used. Statistical significance was set at $P < 0.05$.

3. Results

3.1. General Information. In group A, the present sample consisted of 12 males and 18 females; aged 24–84, with an average of 59.67 ± 13.17 years old; BMI 21–26, with an average of 23.97 ± 2.43; hospitalization time 3–24 days, with an average of 9.70 ± 4.64 days. In group B, the present sample consisted of 11 males and 19 females; aged 35–89, with an average of 63.23 ± 11.73 years old; BMI 20–29, with an average of 24.72 ± 2.67; hospitalization time 5–16 days, with an average of 9.80 ± 3.35 days. In group C, the present sample consisted of 14 males and 16 females; aged 32–75, with an average of 60.93 ± 9.37 years old; BMI 19–28, with an average of 24.02 ± 2.37; hospitalization time 4–30 days, with an average of 10.60 ± 5.95 days. There was no significant difference in the general data of the three groups of patients ($P > 0.05$), as shown in Table 1.

3.2. Comparison of Blood Glucose. There was no significant difference in blood glucose and average blood glucose at each time point before treatment in the 3 groups of patients ($P > 0.05$); compared with the blood glucose and average blood glucose at each time point in the 3 groups of patients after reaching the standard, the blood glucose after dinner in group A was significantly higher than that in groups B and C; the blood glucose at 2 : 00 in group A was significantly higher than that in group B ($P < 0.05$). There was no significant difference in blood glucose and average blood glucose at other time point ($P > 0.05$), as shown in Table 2.

3.3. Comparison of Blood Glucose Fluctuations before and after Treatment. There was no significant difference in the standard deviation of blood glucose, LAGE, and PPGE at each point in the three groups before treatment ($P > 0.05$); the standard deviation of blood glucose, LAGE, and PPGE at each point after reaching the standard in the three groups was compared with those in the same group before treatment, and the differences were statistically significant ($P < 0.05$); after reaching the standard, the standard deviation of blood glucose, LAGE, and PPGE among the three groups were compared, and the differences were statistically significant ($P < 0.05$). Comparing the standard deviation of blood glucose and LAGE level at each point after reaching the standard among groups, there were statistically significant differences between group B, group C, and group A ($P < 0.05$). However, there was no significant difference between group B and group C ($P > 0.05$). The level of PPGE in group A was higher than that in group B, which was higher than group C, and the difference between group C and group A was statistically significant ($P < 0.05$), as shown in Table 3.

3.4. Comparison of Related Indicators. There were statistically significant differences in the times of reaching the standard among the 3 groups ($P < 0.05$), and there was no significant difference in the time of reaching the standard between groups B and C ($P > 0.05$); there was no significant difference in the incidence of hypoglycemia among the 3 groups ($P > 0.05$). The ratio of insulin twice a day in 3 groups was statistically significant ($P < 0.05$). There were statistically significant differences in the daily dosage of insulin after reaching the standard in 3 groups ($P < 0.05$). There was statistical significance in daily consumption between the 3 groups after reaching the standard ($P < 0.05$). After reaching the standard, there was no significant difference in daily consumption between group A and group B ($P > 0.05$), as shown in Table 4.

4. Discussion

In patients with type 2 diabetes, postprandial blood glucose is elevated due to insufficient insulin secretion in the early stages [11]. The development and progression of chronic complications in diabetic patients are not only related to the body's overall blood glucose but also to fluctuations in blood glucose. Excessive blood glucose drift in patients can significantly increase the rate of apoptosis of vascular endothelial cells, and vascular endothelial dysfunction is the initial link and basic pathology of macrovascular and microvascular lesions in diabetic patients [12]. Type 2 diabetes is characterized by insulin resistance, that is, it can produce insulin by itself, but the body tissue is not sensitive to the action of insulin, and the normal amount of insulin cannot achieve the normal hypoglycemic effect [13]. Moreover, with the prolongation of the course of the disease, the function of the pancreas may decline, and the effect of the original effective insulin and oral hypoglycemic drugs will be greatly reduced, so insulin and oral hypoglycemic drugs need to be adjusted in time [14].

Liebl et al. (2013) and other studies pointed out that the impact of blood sugar fluctuations in diabetic patients' complications may far exceed their blood sugar levels [15].

Table 1: Comparison of general data [n (%)].

	Group A ($n=30$)	Group B ($n=30$)	Group C ($n=30$)	$F/t/x^2$	P
Gender				1.067	0.302
Male	13	17	15		
Female	17	13	15		
Age	$\overline{x}\pm s$	$\overline{x}\pm s$	$\overline{x}\pm s$		
Mean age	59.67 ± 13.17	63.23 ± 11.73	60.93 ± 9.37	0.036	0.965
BMI (kg/m^{-2})	$\overline{x}\pm s$	$\overline{x}\pm s$	$\overline{x}\pm s$		
Mean BMI (kg/m^{-2})	23.97 ± 2.43	24.72 ± 2.67	24.02 ± 2.37	0.848	0.432
Hospital stay (day)	$\overline{x}\pm s$	$\overline{x}\pm s$	$\overline{x}\pm s$		
Average length of hospital stay (day)	9.70 ± 4.64	9.80 ± 3.35	10.60 ± 5.95	0.431	0.651

Table 2: Comparison of blood glucose ($\overline{x}\pm s$).

Group	Fasting	Before breakfast	Before lunch	After lunch	Before dinner	After dinner	22 : 00	2 : 00	Average blood sugar
Before treatment									
Group A ($n=30$)	12.63 ± 2.68	21.54 ± 2.06	16.26 ± 3.66	19.34 ± 3.70	14.50 ± 3.91	18.05 ± 3.33	14.59 ± 4.71	11.58 ± 2.86	16.08 ± 2.90
Group B ($n=30$)	12.76 ± 2.57	20.25 ± 3.03	16.06 ± 3.91	19.88 ± 4.42	14.36 ± 3.61	18.89 ± 4.41	14.60 ± 3.82	11.56 ± 2.81	16.05 ± 3.08
Group C ($n=30$)	11.59 ± 2.41	19.98 ± 3.65	13.98 ± 2.80	18.07 ± 4.14	13.96 ± 3.37	17.93 ± 2.58	13.68 ± 2.55	10.73 ± 2.49	14.98 ± 2.61
After reaching the standard									
Group A ($n=30$)	5.97 ± 0.73	9.83 ± 3.24	5.56 ± 0.99	11.15 ± 3.83	6.13 ± 0.74	9.77 ± 2.02	6.36 ± 1.35	5.52 ± 0.51	7.55 ± 0.77
Group B ($n=30$)	5.63 ± 0.68	9.61 ± 1.10	5.31 ± 0.74	9.67 ± 1.93	6.24 ± 0.63	8.05 ± 2.36*	6.17 ± 1.50	4.93 ± 0.55*	6.95 ± 0.66
Group C ($n=30$)	6.38 ± 0.77	9.29 ± 2.83	5.94 ± 0.82	9.95 ± 1.28	6.26 ± 0.72	7.10 ± 1.89*	5.72 ± 1.11	5.21 ± 0.44	6.98 ± 0.69

Note. *means $P>0.05$ compared with group A.

Table 3: Comparison of blood glucose fluctuation before and after treatment ($\overline{x}\pm s$).

	The level of blood sugar (m·mol/L)			
Index	Group A ($n=30$)	Group B ($n=30$)	Group C ($n=30$)	P
Standard deviation before treatment	3.87 ± 0.51	3.78 ± 0.84	3.51 ± 0.86	0.163
LAGE before treatment	10.87 ± 1.48	10.68 ± 2.33	10.11 ± 3.09	0.444
PPGE before treatment	5.39 ± 1.04	5.37 ± 1.38	5.37 ± 1.19	0.997
Standard deviation after treatment	2.85 ± 0.98#	2.18 ± 0.61*#	2.03 ± 0.74*#	<0.001
LAGE after treatment	8.27 ± 2.94#	5.98 ± 1.52*#	5.67 ± 2.22*#	<0.001
PPGE after treatment	4.49 ± 1.59#	3.49 ± 1.18#	2.83 ± 1.57*#	<0.001

Note. *means $P<0.05$ compared with group A; # means $P<0.05$ compared with before treatment.

Table 4: Comparison of related indicators ($\overline{x}\pm s$).

Index	Group a ($n=30$)	Group B ($n=30$)	Group C ($n=30$)	P
Time to reach the standard (d)	7.41 ± 1.62	5.58 ± 1.71*	5.30 ± 1.33*	<0.001
The incidence of hypoglycemia (%)	58	55	50	—
Insulin ratio twice a day (%)	0	72	30	—
Daily dose of insulin (U)	40.84 ± 8.96#	31.36 ± 8.43	34.31 ± 7.94#	<0.001
Daily consumption (¥)	15.92 ± 2.53@	15.09 ± 2.78@	20.63 ± 2.58	<0.001

Note. *means $P<0.05$ compared with group A; # means $P<0.05$ compared with group B; and @ means $P<0.05$ compared with group C.

Insulin aspart 30 used in this study was a mixture of 30% soluble insulin aspart and 70% protamine crystalline insulin aspartate. At present, it is often used clinically to compare with conventional premixed human insulin, and relevant studies have shown that the use of insulin aspart 30 can significantly improve the peak time and peak concentration

of patients [16]. In terms of its control of postprandial blood glucose in patients, studies have found that menadione insulin 30 is effective in reducing the level of postprandial blood glucose fluctuations in patients with type 2 diabetes compared to regular premixed insulin [17]. In addition, the convenience of using insulin aspart 30 immediately before meals makes it have a tendency to replace regular human insulin. However, Lundby-Christensen et al. (2016) pointed out that insulin aspart 30 still has problems such as large blood sugar fluctuations, poor blood sugar control after lunch, and hypoglycemia before meals and at night [18]. Therefore, it is clinically proposed that patients need to inject insulin aspart 30 3 times a day or let it be combined with metformin enteric-coated tablets and acarbose to achieve the purpose of stably controlling their blood sugar [19]. Metformin enteric-coated tablets increase the uptake and utilization of glucose by peripheral tissues, enhances the glycolysis of the patient's body, and reduces the patient's hepatic glucose output, which can enhance the activity of PPAR-γ, thereby reducing the patient's blood sugar and improving the insulin resistance [20]. At the same time, metformin enteric-coated tablets inhibit the uptake of glucose and cholesterol synthesis by the patient's small intestinal cells, thus often causing a gastrointestinal response in patients and facilitating weight loss but also limiting its use in some patients [21]. Acarbose can delay the decomposition of starch and disaccharide into glucose by α-glycosidase, and reduce the expelling of mixed food in the stomach, so as to slow down the absorption rate of glucose in the body of patients, which can effectively improve the fluctuation of blood glucose and hypoglycemic events of patients after a meal [22]. There have been more clinical studies of mendon insulin 30 combined with metformin enteric-coated tablets or acarbose, but relatively fewer studies comparing the three groups [23].

In this study, three groups were compared one-to-one by allowing patients to use insulin aspart 30 alone, insulin aspart 30 combined with metformin enteric-coated tablets, and insulin aspart 30 combined with acarbose. The results showed that insulin aspartic 30 combined with metformin metformin enteric-coated tablets or acarbose had less effect on blood glucose fluctuation than insulin aspartic 30 alone, and acarbose combined with metformin enteric-coated tablets had less blood glucose fluctuation, especially in the control effect of postprandial blood glucose fluctuation [24]. Wang et al. (2021) and other related studies have found that acarbose can effectively reduce postprandial blood glucose in diabetic patients, but it does not affect the reduction of nocturnal blood glucose, which is consistent with the results of this study [25]. The results of this study also showed that the combination of insulin aspart 30 with metformin enteric-coated tablets or acarbose can significantly shorten the time for patients to reach the target and reduce their daily insulin dosage. The blood glucose settings for this study were 4.2–7.0 mmol/L before meals and at bedtime. However, 2 daily injections of menadione insulin aspart 30 often result in poor glycemic control in the afternoon, requiring patients to have 3 daily injections to help control their blood glucose, which can add to the inconvenience of daily life. But a combination of metformin enteric-coated or acarbose can significantly reduce the number of insulin injections while meeting the target, and metformin enteric-coated tablets in combination are more effective. There was no significant difference in the incidence of hypoglycemic events among the three treatment methods, and no severe hypoglycemic events occurred. Compared with the daily consumption of the three treatment methods after reaching the standard, insulin aspart 30 combined with acarbose was the highest [26].

As a traditional medicine in my country, Chinese medicine has a unique method for treating type 2 diabetes. For example, the classic drug is Xiaoke Pill, which is recommended for the elderly because its hypoglycemic intensity is not so great, and it is not easy to cause the so-called h, which is helpful for glycemic control in elderly patients with type 2 diabetes and avoiding acute complications such as hypoglycemia [27,28]. The clinical treatment of type 2 diabetes with traditional Chinese medicine is based on dialectical treatment, which is divided into two types: spleen deflation (obesity) and spleen deflation (weight loss) [29]. The following treatment recommendations are stated in the *China Guidelines for the Prevention and Treatment of Type 2 Diabetes* (2018 Edition), but the specific medication still needs to be prescribed by a professional doctor according to individual circumstances [30]. For pretype 2 diabetes syndrome of qi and yin deficiency, it is recommended to take Tianqi Jiangtang capsules orally on the basis of lifestyle intervention; for type 2 diabetes, on the basis of poor efficacy of metformin enteric-coated tablets alone, it is recommended to use Jinlida granules orally [30]. In the early and middle stages of intestinal damp-heat syndrome, it is recommended to take Gegenlinglian Decoction orally, while in the middle stage of liver-stomach stagnation-heat syndrome, it is recommended to take Dachaihu Decoction orally [30].

But our study also has limitations. First of all, our sample size is small and the duration is short, so a large number of follow-up visits are required to compare the efficacy and safety of acarbose and metformin enteric-coated tablets combined with premixed insulin.

5. Conclusion

In summary, treating diabetic patients with insulin aspart 30 alone is ineffective and can lead to greater fluctuations in blood glucose and a longer time to reach the target. Insulin aspart 30 combined with metformin enteric-coated tablets or acarbose can effectively reduce blood glucose fluctuations and decrease the number of insulin injections in diabetic patients. In addition, insulin aspart 30 combined with metformin enteric-coated tablets can significantly reduce the daily dosage and cost of insulin consumption in diabetic patients.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] L. K. Billings, A. Doshi, D. Gouet et al., "Efficacy and safety of IDegLira versus basal-bolus insulin therapy in patients with type 2 diabetes uncontrolled on metformin and basal insulin: the DUAL VII randomized clinical trial," *Diabetes Care*, vol. 41, no. 5, pp. 1009–1016, 2018.

[2] A. Nadal, P. Alonso-Magdalena, S. Soriano, I. Quesada, and A. B. Ropero, "The pancreatic β-cell as a target of estrogens and xenoestrogens: implications for blood glucose homeostasis and diabetes," *Molecular and Cellular Endocrinology*, vol. 304, no. 1-2, pp. 63–68, 2009.

[3] J. Cantley and F. M. Ashcroft, "Q&A: insulin secretion and type 2 diabetes: why do β-cells fail?" *BMC Biology*, vol. 13, no. 1, p. 33, 2015.

[4] G. Wilcox, "Insulin and insulin resistance," *Clinical Biochemist Reviews*, vol. 26, no. 2, p. 19, 2005.

[5] K. Bowering, J. Harvey, J. W. Kolaczynski, J. W. Snyder, and B. W. Bode, "Mealtime fast-acting insulin aspart versus insulin aspart for controlling postprandial hyperglycaemia in people with insulin-resistant type 2 diabetes," *Diabetic Medicine*, vol. 36, no. 6, pp. 771–775, 2019.

[6] X. Chen, Y. Xu, J. Zhang et al., "Exenatide twice daily plus glargine versus aspart 70/30 twice daily in patients with type 2 diabetes with inadequate glycemic control on premixed human insulin and metformin," *Endocrine Practice*, vol. 27, no. 8, pp. 790–797, 2021.

[7] D. Cucinotta, S. Caputo, E. Mannucci et al., "Safety and efficacy of insulin aspart and soluble human insulin in type 2 diabetes mellitus," *Minerva Endocrinologica*, vol. 37, no. 4, pp. 357–366, 2012.

[8] G. Derosa, A. D'Angelo, C. Martinotti et al., "Vitamin D3 supplementation improves glycemic control in type 2 diabetic patients: results from an Italian clinical trial," *International Journal for Vitamin and Nutrition Research*, vol. 92, no. 2, pp. 91–100, 2022.

[9] L. Guo, L. Chen, B. Chang, L. Yang, Y. Liu, and B. Feng, "A randomized, open-label, multicentre, parallel-controlled study comparing the efficacy and safety of biphasic insulin aspart 30 plus metformin with biphasic insulin aspart 30 monotherapy for type 2 diabetes patients inadequately controlled with oral antidiabetic drugs: the merit study," *Diabetes, Obesity and Metabolism*, vol. 20, no. 12, pp. 2740–2747, 2018.

[10] T. Demir, S. Turan, K. Unluhizarci, O. Topaloglu, T. Tukek, and D. Gogas Yavuz, "Use of insulin degludec/insulin aspart in the management of diabetes mellitus: expert panel recommendations on appropriate practice patterns," *Frontiers in Endocrinology*, vol. 12, Article ID 616514, 2021.

[11] S. Kaneko, F. Chow, D. S. Choi et al., "Insulin degludec/insulin aspart versus biphasic insulin aspart 30 in Asian patients with type 2 diabetes inadequately controlled on basal or pre-/self-mixed insulin: a 26-week, randomised, treat-to-target trial," *Diabetes Research and Clinical Practice*, vol. 107, no. 1, pp. 139–147, 2015.

[12] W. S. Lane, E. Favaro, N. Rathor et al., "A randomized trial evaluating the efficacy and safety of fast-acting insulin aspart compared with insulin aspart, both in combination with insulin degludec with or without metformin, in adults with type 2 diabetes (ONSET 9)," *Diabetes Care*, vol. 43, no. 8, pp. 1710–1716, 2020.

[13] S. Chatterjee, K. Khunti, and M. J. Davies, "Type 2 diabetes," *The Lancet*, vol. 389, no. 10085, pp. 2239–2251, 2017.

[14] A. Chaudhury, C. Duvoor, V. S. Reddy Dendi et al., "Clinical review of antidiabetic drugs: implications for type 2 diabetes mellitus management," *Frontiers in Endocrinology*, vol. 8, p. 6, 2017.

[15] A. Liebl, J. Davidson, H. Mersebach, P. Dykiel, C. J. Tack, and T. Heise, "A novel insulin combination of insulin degludec and insulin aspart achieves a more stable overnight glucose profile than insulin glargine: results from continuous glucose monitoring in a proof-of-concept trial," *Journal of Diabetes Science and Technology*, vol. 7, no. 5, pp. 1328–1336, 2013.

[16] S. Linjawi, B. W. Lee, O. Tabak, S. Lovdahl, S. Werther, and S. Abusnana, "A 32-week randomized comparison of stepwise insulin intensification of biphasic insulin aspart (BIAsp 30) versus basal-bolus therapy in insulin-naïve patients with type 2 diabetes," *Diabetes Therapy*, vol. 9, no. 1, pp. 1–11, 2018.

[17] S. Linjawi, R. Sothiratnam, R. Sari, H. Andersen, L. C. Hiort, and P. Rao, "The study of once- and twice-daily biphasic insulin aspart 30 (BIAsp 30) with sitagliptin, and twice-daily BIAsp 30 without sitagliptin, in patients with type 2 diabetes uncontrolled on sitagliptin and metformin-the Sit2Mix trial," *Primary Care Diabetes*, vol. 9, no. 5, pp. 370–376, 2015.

[18] L. Lundby-Christensen, A. Vaag, L. Tarnow et al., "Effects of biphasic, basal-bolus or basal insulin analogue treatments on carotid intima-media thickness in patients with type 2 diabetes mellitus: the randomised Copenhagen Insulin and Metformin Therapy (CIMT) trial," *BMJ Open*, vol. 6, no. 2, Article ID e008377, 2016.

[19] L. Niskanen, L. A. Leiter, E. Franek et al., "Comparison of a soluble co-formulation of insulin degludec/insulin aspart vs biphasic insulin aspart 30 in type 2 diabetes: a randomised trial," *European Journal of Endocrinology*, vol. 167, no. 3, p. 453, 2012.

[20] M. J. Picón-César, M. Molina-Vega, M. Suarez-Arana et al., "Metformin for gestational diabetes study: metformin vs insulin in gestational diabetes: glycemic control and obstetrical and perinatal outcomes: randomized prospective trial," *American Journal of Obstetrics and Gynecology*, vol. 225, no. 5, pp. 517.e1–517.e17, 2021.

[21] K. Su, C. Lv, Z. Ji et al., "Phase III study on efficacy and safety of triple combination (Exenatide/Metformin/Biphasic insulin aspart) therapy for type 2 diabetes mellitus," *American Journal of Therapeutics*, vol. 25, no. 6, pp. e609–e616, 2018.

[22] J. Vora, N. Cohen, M. Evans, A. Hockey, J. Speight, and C. Whately-Smith, "Intensifying insulin regimen after basal insulin optimization in adults with type 2 diabetes: a 24-week, randomized, open-label trial comparing insulin glargine plus insulin glulisine with biphasic insulin aspart (LanScape)," *Diabetes, Obesity and Metabolism*, vol. 17, no. 12, pp. 1133–1141, 2015.

[23] L. Wang, X. Liu, W. Yang et al., "Comparison of blood glucose variability between exenatide and biphasic insulin aspart 30 in Chinese participants with type 2 diabetes inadequately controlled with metformin monotherapy: a multicenter, open-label, randomized trial," *Diabetes Therapy*, vol. 11, no. 10, pp. 2313–2328, 2020.

[24] R. R. Wang, Z. M. Lv, Y. P. Dan, K. Y. Chen, and C. Zhang, "Effects of acarbose and siglitine on blood glucose fluctuation and islet β-cell function in patients with type 2 diabetes mellitus," *Journal of Biological Regulators & Homeostatic Agents*, vol. 33, no. 2, pp. 365–374, 2019.

[25] W. Wang, Y. Fan, and Q. Lin, "Metformin combined with insulin aspart for ameliorating blood glucose levels and maternal and neonatal outcomes in women with gestational diabetes mellitus and chronic hypertension," *American Journal of Translational Research*, vol. 13, no. 5, pp. 5596–5602, 2021.

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Retraction

Retracted: Correlation between Cardiac Ultrasound-Related Indicators and Cardiac Function in Patients with Coronary Heart Disease and Heart Failure

Evidence-Based Complementary and Alternative Medicine

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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] M. Tian, Y. Wang, X. Ren, S. Zhao, and X. Wang, "Correlation between Cardiac Ultrasound-Related Indicators and Cardiac Function in Patients with Coronary Heart Disease and Heart Failure," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 5754922, 5 pages, 2022.

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Research Article

Correlation between Cardiac Ultrasound-Related Indicators and Cardiac Function in Patients with Coronary Heart Disease and Heart Failure

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Objective. The purpose of this paper is to analyse the correlation between cardiac ultrasound-related indicators and cardiac function in patients with coronary heart disease and heart failure. *Methods*. In this experiment, a total of 160 patients with coronary heart disease and heart failure who were diagnosed and treated in our hospital from June 2019 to March 2021 were recruited as the study group. All were examined by colour Doppler ultrasound instrument, SPSS statistical software was used to analyse the data obtained, and Spearman correlation was used to analyse the correlation between cardiac ultrasound-related indicators and cardiac function in patients with coronary heart disease and heart failure. *Results*. In the study group, there were 68 patients with grade II cardiac function, accounting for 42.50%; 74 patients with grade III, accounting for 46.25%; and 18 patients with grade IV, accounting for 11.25%. The ultrasound parameters of the patients in the study group were profiled and calculated, and then statistically analysed with cardiac function grading. Cardiac function classification was significantly positively correlated with LVMI, LAD, and LVEDd ($r = 0.689/0.915/0.928$, $P = 0.001$) and significantly negatively correlated with CI, LVFS, and LVEF ($r = -0.689/-0.878/-0.912$), $P = 0.001$). *Conclusion*. Cardiac ultrasound-related indicators are associated with patients with coronary heart disease and heart failure. With the decline of cardiac function in patients with coronary heart disease and heart failure, the patient's condition is aggravated. Therefore, cardiac ultrasound-related indicators play a major role in the diagnosis of clinical disease progression.

1. Introduction

According to data released by the World Health Organization, an estimated 17.9 million people will die from cardiovascular disease in 2019, accounting for 32% of global deaths, and in 85% of deaths, the major factors were heart attacks and strokes. Coronary atherosclerotic heart disease is the result of coronary artery disease caused by ischaemia, hypoxia, or necrosis [1]. Heart failure, also known as congestive heart failure (HF) [2], is a syndrome of ventricular occlusion and impaired ejection capacity caused by various structural or functional disorders of the heart [3] that predispose to venous stasis and adversely affect local blood circulation to the heart [4]. Coronary heart disease complicated by heart failure is a common and serious complication of cardiovascular disease. It is a syndrome in which patients with coronary heart disease have impaired cardiac pumping function for various reasons [5], while cardiac output is unable to meet basic systemic metabolic needs, and angina pectoris tends to lead to myocardial ischaemia and hypoxia. In severe cases, adverse symptoms such as atherosclerosis can also occur, posing a great threat to patients' life safety. Symptoms in patients with coronary artery disease and heart failure are mainly exertional dyspnoea, chest tightness, asthma, and possibly bilateral lower limb oedema, jugular venous dilatation, pleural effusion, and hepatomegaly [6]. Epidemiological statistics show that more than 60% of heart failure is caused by coronary artery disease [7]. Because of the high frequency of coronary artery disease complicating heart failure and the fact that it occurs mostly in middle-aged and elderly people, it accounts for a considerable amount of mortality and disability [8, 9].

Therefore, it is urgent to conduct early diagnosis and treatment in clinical practice. Cardiac ultrasound, the most common diagnostic method at present, can display the internal structure of the heart [10]. The heartbeat and dynamic blood flow probe is like a camera lens, and the different structures of the heart are clearly displayed on the screen with the rotation of the probe [11]. It has the advantages of convenient operation, wide application range, and no damage to the human body [12]. It has been widely recognized by clinicians and patients due to its accuracy in providing the changes in the size of the cardiac chamber, the structure of the heart valve, and the function of the heart [13]. Heart failure should be combined with the indicators of cardiac ultrasound, which usually looks at the ejection fraction of the heart. The cardiac ejection fraction of a normal person is greater than 50%. If the cardiac ejection fraction is less than 50%, it is necessary to consider heart failure. For cardiac ejection fraction [14], if the ejection fraction of the heart is above 40% and less than 50%, it needs to be considered as mild heart failure; if the ejection fraction of the heart is between 30% and 40%, it is considered as moderate heart failure [15]. In recent years, there have been many reports on the physical and chemical examination results of cardiac ultrasound, but the in-depth discussions on the cardiac function of patients have rarely been reported. To address the gap, we study and analyse the correlation between cardiac ultrasound-related indicators and cardiac function in patients with coronary heart disease and heart failure.

2. Materials and Methods

2.1. Participants. A total of 160 patients with coronary heart disease and heart failure who were diagnosed and treated in our hospital from June 2019 to March 2021 were enrolled, including 88 males and 72 females. The studies involving human participants were reviewed and approved by the ethics committee of Heping Hospital affiliated to Changzhi Medical College (approved no. 2939/81).

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria. The inclusion criteria were as follows: (1) patients who met the relevant diagnostic criteria for coronary heart disease in *Clinical Disease Diagnosis and Efficacy Determination Criteria*; (2) patients who met the diagnostic criteria for heart failure in *Chinese Heart Failure Diagnosis and Treatment Guidelines 2018*; (3) patients and their families who were informed of the study and voluntarily signed the consent form; (4) participants who were between 50 and –70 years old; and (5) patients who were examined by colour Doppler ultrasound.

2.2.2. Exclusion Criteria. The exclusion criteria were as follows: (1) patients with acute myocardial infarction combined with heart failure; (2) combined with mental illness or unconsciousness; (3) combined with autoimmune system diseases; (4) patients previously treated with valsartan, diuretics, or spironolactone; and (5) patients undergoing other experiments.

2.3. Methods. All subjects were diagnosed by ultrasound Doppler ultrasound (IE33, probe s5–1). The attending physician of our hospital applied a phased array probe, with a frequency of the probe of 2.5–4.0 MHz before the examination, then assisted the patient in the appropriate supine position, performed continuous scans of the cardiac structure to obtain normal ultrasound parameters, and observed the overall shape and structure. 2D cardiac echocardiography was used to image the heart, and the direction of the sampling line was determined according to the M-type ECG, and then the layered activity of the upper structure of the heart was observed and recorded.

2.4. Observation Indicators

(1) According to the New York Heart Association (NYHA) cardiac function classification, the cardiac function was assessed. Grade I: the patient has heart disease, but the number of daily activities is not limited, and general activities do not cause fatigue, palpitations, dyspnoea, or angina pectoris. Grade II: the physical activity of patients with heart disease is slightly restricted, and there are no symptoms at rest, but fatigue, palpitations, dyspnoea, or angina pectoris occur during normal activities. Grade III: the physical activity of patients with heart disease is significantly limited, and less than the usual general activities can cause the above symptoms. Grade IV: patients with heart disease cannot engage in any physical activity, and symptoms of heart failure also occur at rest, which are aggravated by physical activity.

(2) The modified Simpson method was used to monitor the aortic annulus diameter (AAD), aortic sinus diameter (ASD), left atrial diameter (LAD), ventricular septal thickness (IVST), left ventricular end-diastolic diameter (LVEDd), left ventricular end-systolic diameter (LVESd), left ventricular posterior wall thickness (LVPWT), right ventricular diameter (RVD), right ventricular outflow tract (RVOT), right atrial diameter (RAD), main pulmonary artery diameter (MPAD), left ventricular short axis shortening rate (LVFS), left ventricular ejection fraction (LVEF), stroke volume (SV), and cardiac output (CO).

The index reflecting ventricular systolic function, cardiac index (CI) and the index reflecting cardiac remodelling, left ventricular myocardial mass index (LVMI) were calculated according to the formula in *Cardiology*.

$$CI = CO/BSA.$$ BSA is the body surface area, expressed in m^2

$$LVMI = LVM \text{ (left ventricular mass)/body surface area}$$

$$\text{Left ventricular mass} = 0.8\{1.04[([LVEDD + IVSd + PWd]3 - LVEDD3)]\} + 0.6$$

Table 1: Patients' profile.

Groups	n	Gender		Age (years)		BMI (kg/m^2)		Educational background		
		Male	Female	Range	Mean	Range	Mean	High school and below	College	Undergraduate and above
Study group	160	88	72	50–70	60.98 ± 4.87	23.1–24.5	23.91 ± 0.88	48	79	33

Table 2: Cardiac function classification.

Total	Classification		
	Grade II	Grade III	Grade IV
160	68 (42.50)	74 (46.25)	18 (11.25)

2.5. Statistical Analysis. Correlation analysis was performed by Spearman correlation. SPSS22.0 software was used to process and analyse the data. The data were tested for normality before analysis, and the correlation was represented by the r value, and the higher the r value, the higher the correlation. Statistical differences were set at $P < 0.05$.

3. Results

3.1. Patient Profile. There were 160 cases in the study group, 88 males and 72 females; aged 50–70 years old, average age 60.98 ± 4.87 years old; BMI 23.1–24.5 kg/m^2, average 23.91 ± 0.88 kg/m^2; educational background: 48 cases of high school and below, 79 cases of colleges, and 33 cases of undergraduate degree or above (see Table 1).

3.2. Classification of Cardiac Function. Among the patients in the study group, there were 68 cases of cardiac function grade II, accounting for 42.50%; 74 cases of grade III, accounting for 46.25%; and 18 cases of grade IV, accounting for 11.25% (see Table 2).

3.3. Ultrasonic Parameters. The ultrasound parameters of the patients in the study group were ADD 20.78 ± 2.58 mm, ASD 34.58 ± 4.96 mm, LAD 42.08 ± 5.21 mm, IVST 8.99 ± 1.54 mm, LVEDd 60.07 ± 9.88 mm, LVESd 45.87 ± 7.94 mm, LVPWT 9.00 ± 1.02 mm, RVD 21.27 ± 4.13 mm, RVOT 30.97 ± 4.83 mm, RAD 41.02 ± 7.11 mm, MPAD 24.11 ± 4.09 mm, LVFS 24.16 ± 4.08%, LVEF 45.75 ± 8.22%, SV 70.84 ± 20.41 ml, and CO 5.22 ± 1.21 L/min. See Table 3.

3.4. Correlation Analysis. Cardiac function classification was significantly positively correlated with LVMI, LAD, and LVEDd ($r = 0.689/0.915/0.928$, $P = 0.001$) and was significantly negatively correlated with CI, LVFS, and LVEF ($r = -0.689/-0.878/-0.912$, $P = 0.001$) (see Table 4).

4. Discussion

Currently, there is no complete cure for coronary heart disease in clinical practice. Heart failure is resulted from the inability of the myocardium to contract normally due to various factors and failure to meet the body's needs [16]. It is the end stage of the development of various cardiovascular diseases such as hypertension, coronary heart disease, and cardiomyopathy [17]. Some studies have pointed out that the current survival rate of multicause heart failure is approaching to that of patients with malignant tumours, greatly threatening the physical and mental health of patients, and constituting a considerable mortality of more than 50% [18]. In recent years, the incidence and mortality of coronary heart disease combined with heart failure have been extremely high [19]. Therefore, early detection and early diagnosis are particularly important for the treatment of patients, and they also have positive significance for improving prognosis and improving the quality of life of patients [20]. Traditional diagnosis is criticized due to failure to comprehensive analysis of cardiac function, high rates of misdiagnosis, and examination-induced injuries. Cardiac ultrasound emerges in response to the development of ultrasound technology in clinical diagnosis. It can display the respondent's heart data and circulation data and can provide a more comprehensive assessment of cardiac function. Some studies argued that cardiac colour Doppler ultrasound has the advantages of minor damage, simple operation, repeatability, etc., and its sensitivity is higher than that of ECG, which can significantly improve the accuracy of disease diagnosis [19, 21, 22]. However, its application in coronary heart disease combined with heart failure needs to be further studied.

The ejection fraction is the main indicator, which is the percentage of output per beat to the end-diastolic volume of the ventricle (i.e., the preload of the heart) and can be examined by echocardiography and is one of the most important indicators of the type of heart failure. The normal value is 50–70%, with more than 50% generally falling within the normal range, and the ejection fraction at rest in humans is approximately 55% to 65% [14]. Ejection fraction (EF) values measured by cardiac ultrasound can determine the severity of heart failure and will gradually increase as the condition improves. Therefore, EF values can be used to diagnose heart failure, and improvements in the degree of heart failure can be observed. However, the use of echocardiography in coronary artery disease combined with heart failure needs further study. Colour Doppler ultrasound looks mainly at the shape of the heart and blood flow. Colour ultrasound in coronary artery disease mainly shows ventricular segmental dyskinesia, so colour ultrasound is rarely used alone in the diagnosis of coronary artery disease [23]. The gold standard for the diagnosis of coronary heart disease is the coronary arteries. Angiography, if a coronary angiogram shows a stenosis of more than 50%, coronary artery disease is diagnosed. Each diagnostic method has areas

Table 3: Ultrasound parameter values.

Groups	N	AAD (mm)	ASD (mm)	LAD (mm)	IVST (mm)	LVEDd (mm)
Study group	160	20.78 ± 2.58	34.58 ± 4.96	42.08 ± 5.21	8.99 ± 1.54	60.07 ± 9.88
Control group	100	17.63 ± 3.21	25.63 ± 3.05	30.15 ± 4.17*	6.89 ± 1.15	50.27 ± 5.08
Groups	N	LVESd (mm)	LVPWT (mm)	RVD (mm)	RVOT (mm)	RAD (mm)
Study group	160	45.87 ± 7.94	9.00 ± 1.02	21.27 ± 4.13	30.97 ± 4.83	41.02 ± 7.11
Control group	100	28.41 ± 3.87*	7.89 ± 1.45	33.25 ± 3.14	21.12 ± 3.08	35.12 ± 3.17
Groups	N	MPAD (mm)	LVFS (%)	LVEF (%)	SV (ml)	CO (L/min)
Study group	160	24.11 ± 4.09	24.16 ± 4.08	45.75 ± 8.22	70.84 ± 20.41	5.22 ± 1.21
Control group	100	26.14 ± 3.12	35.15 ± 5.08*	59.56 ± 7.03*	70.21 ± 10.05	5.83 ± 1.11

Note. *indicates that there is a statistically significant difference between the two groups.

Table 4: Correlation analysis of cardiac function classification and ultrasound indexes.

	r	P
CI	−0.689	0.001
LVMI	0.689	0.001
LAD	0.915	0.001
LVESd	0.928	0.001
LVFS	−0.878	0.001
LVEF	−0.912	0.001

where it is most suitable and certain disadvantages. For example, magnetic resonance imaging (MRI) techniques are similar to catheter angiography in their effectiveness in examining the heart. The advantage is that there is no image overlap, and it can replace invasive cardiac angiography. The disadvantage is that it is not suitable for uncooperative infants or critically ill patients [24, 25].

The results of this study showed that cardiac function classification was significantly positively correlated with LVMI, LAD, and LVEDd ($r = 0.689/0.915/0.928$, $P = 0.001$) and was significantly negatively correlated with CI, LVFS, and LVEF ($r = -0.689/-0.878/-0.912$, $P = 0.001$). This would suggest that the cardiac function classification of patients with coronary heart disease and heart failure is closely related to ultrasound indicators. It is known that LVFS can reflect the sensitivity of myocardial systolic function, heart size, heart rhythm, individual differences, LVESd reflects an important index of left ventricular diastolic function, LAD can directly reflect the size of the left atrium, and CI and LVMI are both indicators calculated from the ultrasound results. All these contribute to provide a comprehensive assessment of the cardiac function of patients with coronary heart disease and heart failure. That would probably suggest that when the patient's cardiac function grade increases, the relevant ultrasound indicators would abnormally change. The above indicators can also restore to normal displayed via ultrasound indicators given proper and effective treatment, which is similar to the results of the previous study.

The method of traditional Chinese medicine to judge coronary heart disease is firstly through inspection. The inspection first looks at the colour of the tongue coating and tongue. In patients with coronary heart disease, the colour of the tongue coating will generally appear red or purple, and then observe the blood in the veins at the base of the tongue [26]. In most patients with coronary heart disease, the veins at the base of the tongue are dark purple and engorged. In addition, for patients with coronary heart disease, the method of cutting the pulse can also be used. In the case of coronary heart disease, there will be thin pulses, deep pulses, colour pulses, and knotted pulses. The third is the consultation, and the consultation is to ask the patient's situation. From the perspective of traditional Chinese medicine, heart failure can be diagnosed as chest pain, asthma, or palpitations according to clinical manifestations [26, 27]. Heart failure is mainly caused by physical weakness or prolonged illness, or disorders after illness, resulting in the loss of yang qi in the heart, spleen, lung, and kidney, blockage of blood stasis, and flooding of water and dampness, often due to the feeling of external pathogens, emotional disorders, overwork, improper diet, etc., induced or aggravated [27, 28]. Some patients show that they cannot lie down at night; otherwise, they will have more severe wheezing, which can be diagnosed as asthma, while some patients are flustered by a little activity, and such patients are diagnosed as palpitations [28]. Therefore, from the perspective of traditional Chinese medicine, heart failure is mainly diagnosed according to the different clinical manifestations of patients. Combining the above, we can consider combining the diagnosis and treatment methods of traditional Chinese and Western medicine and take advantage of each to create a new clinical diagnosis method.

To sum up, cardiac ultrasound-related indicators are associated with patients with coronary heart disease and heart failure. With the decline of cardiac function in patients with coronary heart disease and heart failure, the patient's condition is aggravated. Therefore, cardiac ultrasound-related indicators play a major role in the diagnosis of clinical disease progression. The use of ultrasound is widely recognised due to the presence of abnormal ultrasound parameters that are very intuitive in patients with coronary artery disease and heart failure. However, our study found differences in these parameters between patients with different levels of cardiac function, disease severity, and prognosis. Aiming at this difference, it is necessary to design more detailed schemes and divide more subtle exponential partitions for research in subsequent experiments.

Data Availability

All data generated or analysed during this study are included in this article.

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Retraction

Retracted: Effects of Self-Care plus Forecasting Nursing on the Treatment Outcomes and Emotions in Patients with Nasopharyngeal Carcinoma after Radiotherapy

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Chen, W. Yao, and L. Ding, "Effects of Self-Care plus Forecasting Nursing on the Treatment Outcomes and Emotions in Patients with Nasopharyngeal Carcinoma after Radiotherapy," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 5751903, 5 pages, 2022.

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Research Article

Effects of Self-Care plus Forecasting Nursing on the Treatment Outcomes and Emotions in Patients with Nasopharyngeal Carcinoma after Radiotherapy

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Objective. To explore the effects of self-care plus forecasting nursing on the treatment outcomes and emotions in nasopharyngeal carcinoma patients undergoing radiotherapy. *Methods*. Eighty nasopharyngeal carcinoma patients after radiotherapy admitted to our hospital from February 2020 to August 2021 were selected. The patients were allocated into an observation group ($n = 40$) and an experimental group ($n = 40$) according to different nursing protocols. The observation group received traditional nursing intervention, whereas the experimental group received self-care plus forecasting nursing intervention. The levels of the indexes (quality of life, score on the Zung Self-Rating Anxiety Scale (SAS), score on the Zung Self-Rating Depression Scale (SDS), and adverse reaction) were compared between the two groups. *Results*. The score of the experimental group for the quality of life was significantly higher than that of the observation group ($P < 0.05$); the SAS and SDS scores of the experimental group after nursing intervention were significantly lower than those of the observation group ($P < 0.05$); the incidence of adverse reactions in the experimental group during radiotherapy was significantly lower than that of the observation group ($P < 0.05$). *Conclusion*. The self-care plus forecasting nursing intervention is effective in postradiotherapy patients with nasopharyngeal carcinoma. The technique is proved effective to improve the quality of life, reduce anxiety and depression, and decrease the incidence of adverse reactions in patients during treatment. These features make the technique worthy of a wider clinical application.

1. Introduction

Nasopharyngeal carcinoma (NPC) is a common clinical malignancy occurring in the mucosal epithelium of the nasopharynx, and is particularly common in the southern region of China [1]. Epidemiological trends in recent years have shown that its incidence and mortality have increased year by year, posing a serious threat to people's health and life [2]. The latest statistics show that there were more than 60,000 new cases of nasopharyngeal carcinoma diagnosed in China in 2018, with the incidence rate in men being about 2.5 times higher than that in women, and it is more common in people between the ages of 40 and 50 [1]. Nasopharyngeal cancer has significant geographical and ethnic differences and has a tendency to cluster in families, with descendants of overseas Chinese who have migrated to low-incidence areas still having a high propensity to develop the disease [3]. It is now believed that the occurrence of nasopharyngeal cancer is mainly related to EBV infection, and genetic and environmental factors [4]. At the same time, people's unhealthy lifestyle can also trigger the development of the disease, such as heavy smoking, consumption of preserved foods, and air pollution [5].

In consideration of the deep-seated anatomic location and radiosensitive behavior of nasopharyngeal carcinoma cells, radiotherapy has been established as the primary treatment method [6]. Radiotherapy is a conventional treatment for nasopharyngeal carcinoma that uses high-energy X-rays to irradiate the nasopharyngeal mass and the lymph node area of the neck to kill tumour cells. However,

clinical studies have shown that radiotherapy can cause adverse reactions to varying degrees. According to relevant research, 96.3% of nasopharyngeal carcinoma patients have xerostomia after radiotherapy, 71.8% have anorexia, 71.2% have swallowing difficulty, and 21.4% have trismus [7]. These late effects usually last for several weeks or months, and in severe cases for the whole life of the patients, impairing their quality of life and emotions [8].

The evaluation of the quality of life involves multiple dimensional factors, such as physical, psychological, and social factors, which have become important content for efficacy evaluation [9]. Adverse reactions are mostly concentrated in the oral cavity and pharynx, therefore, Wang Tian et al. [10] propose that nasopharyngeal carcinoma patients should receive nursing intervention featured with self-care mouth-opening exercise. This technique can effectively promote recovery and reduce the damage caused by adverse reactions. Moreover, research conducted by Li Guangjin et al. [11] et al indicates that safe and effective postradiotherapy nursing intervention can improve the quality of patients' life and alleviate negative emotions [12]. In the light of this, eighty nasopharyngeal carcinoma patients after radiotherapy admitted to our hospital from February 2020 to August 2021 were selected. This study aimed to explore the effects of self-care plus forecasting nursing on the treatment outcomes and emotions in patients with nasopharyngeal carcinoma after radiotherapy.

2. Data and Methods

2.1. General Data. A total of 80 nasopharyngeal carcinoma patients after radiotherapy admitted to our hospital from February 2020 to August 2021 were selected and allocated evenly into an observation group ($n = 40$) and an experimental group ($n = 40$) according to different nursing protocols for prospective analysis. This study has been reviewed and approved by the Medical Ethics Committee of Qingdao Municipal Hospital, Approval no.29879/177. All patients and their families have been informed of this study and signed the informed consent form.

2.2. Inclusion and Exclusion Criteria. Inclusion criteria were as follows: (1) a clinical diagnosis of nasopharyngeal carcinoma; (2) first treatment of radiotherapy; (3) an ability to communicate normally, with no mental disease.

Excluded criteria were as follows: (1) patients with recurrence and complications; (2) patients with concomitant cancer; (3) patients showing poor compliance.

3. Methods

(1) The patients in the observation group received traditional nursing intervention

(2) The patients in the experimental group received self-care plus forecasting nursing intervention. The details are as follows: (1) Self-care with mouth-opening exercise: ① Publicity activities were organized, such as giving out leaflets, playing videos, giving lectures, listening to patients' complaints and answering their questions patiently to raise patients' awareness of the cancer [13]. ② Patients were shown how to rinse the nasal cavity after radiotherapy and how to brush their teeth correctly. Guidance was offered to patients about mouth rinsing, temporomandibular massage, and rehabilitation training. ③ Patients and their families were taught how to measure incisor spacing and the relevant data were collected on a regular basis. (2) Forecasting nursing intervention: ① Mental health nursing was carried out by listening to patients' complaints, performing psychological evaluation, and providing targeted care in order to remove their negative emotions. ② Basic forecasting nursing was given to patients, including preparing the oral cavity for treatment, cleaning teeth, handling gingival inflammation, removing mental braces, and maintaining oral hygiene. ③ Patients were advised to have highly nutritious and digestible food, and drink more water to facilitate tissue repair [14]. ④ Forecasting nursing measures for adverse reactions were taken to protect the skin, such as avoiding exposure to the sun, avoiding the application of soap and coarse towels, avoiding scratching or tearing off the *epidermis* applying borneol and calamine lotion in times of intolerable itching, and keeping the skin dry and clean [15].

3.1. Observation Indicators. The observation indicators included the following.

(1) Quality of life: The patients were evaluated with a questionnaire of comprehensive measurement of the quality of life in terms of physical functioning, psychological functioning, social functioning, and material living conditions, with the first three incorporating five factors and the last one incorporating four factors. A five-point scale was used for evaluation and the higher the score was, the higher the quality of life it indicated.

(2) SAS and SDS scores: The Zung Self-Rating Anxiety Scale (SAS) (0–100 points, the boundary value is 50) was used to evaluate the anxiety level, 50–59 points indicating mild anxiety, 60–69 indicating moderate anxiety, and 69+ indicating severe anxiety. The Zung Self-Rating Depression Scale (SDS) (0–100 points, the boundary value is 53) was utilized to evaluate the depression level, 53–62 indicating mild depression, 63–72 indicating moderate depression, and 73+ indicating severe depression.

(3) Adverse reactions: The adverse reactions during radiotherapy mainly included the following: trismus, oral infection, radiodermatitis, as well as nasal mucosa response.

3.2. Statistical Analysis. Data analysis was performed with SPSS 21.0 software. Measurement data were expressed as mean and standard deviations ($\overline{x} \pm s$). An independent sample t-test was conducted. The counting data were

Table 1: Comparison of general data (n (%)).

	Observation group ($n = 40$)	Experimental group ($n = 40$)	t or x^2	P
Gender			0.251	0.617
Male	30	28		
Female	10	12		
Age (years)	18–66	18–64		
Average age (years)	51.25 ± 3.72	51.32 ± 3.68	−0.085	0.932
Pathological types			0.605	0.437
Squamous cell carcinoma	27	24		
Adenocarcinoma	9	12		
Undifferentiated carcinoma	4	4		

expressed in the number of cases (rate), using the chi-square tests. The difference with $P < 0.05$ is statistically significant.

4. Results

4.1. General Data. The patients in the observation group (male: 30, female: 10) were aged between 18 and 66, with an average age of 51.25 ± 3.72 years. Of them, there were 27 cases of squamous cell carcinoma, 9 cases of adenocarcinoma, and 4 cases of undifferentiated carcinoma. The patients in the experimental group (male: 28, female: 12) were aged between 18 and 64, with an average age of 51.32 ± 3.68 years. Of them, there were 24 cases of squamous cell carcinoma, 12 cases of adenocarcinoma, and 4 cases of undifferentiated carcinoma. The difference in general data between the two groups was not statistically significant ($P > 0.05$) as shown in Table 1.

4.2. Comparison of Quality of Life. The physical function score of the observation group was 32.72 ± 3.28, the psychological function score was 31.41 ± 3.22, the social function score was 34.50 ± 3.28, and the material living condition score was 24.35 ± 3.65; the physical function score of the experimental group was 38.15 ± 3.12, and the psychological function score was 37.59 ± 3.48, the social function score was 37.63 ± 3.89, and the material living condition score was 28.66 ± 3.27. The scores of the experimental group for the quality of life were significantly higher than those of the observation group ($P < 0.05$)(Table 2).

4.3. Comparison of SAS and SDS Scores. The SAS score before nursing in the observation group was higher than that after nursing (68.72 ± 2.36 vs 58.14 ± 2.44), and the SDS score before nursing was higher than that after nursing (65.39 ± 3.18 vs 53.94 ± 5.78); the SAS score in the experimental group before nursing was higher after nursing (68.58 ± 2.29 vs 48.47 ± 2.68), the SDS score before nursing was higher than that after nursing (65.51 ± 3.20 vs 47.55 ± 5.42); the SAS and SDS scores of the experimental group were not significantly different before the nursing intervention, and the scores of the experimental group after nursing were far lower than those of the observation group ($P < 0.05$)(Table 3).

4.4. Comparison of Adverse Reactions. In the experimental group, there were 2 people with trismus (5.0%), 1 person with oral infection (2.5%), 0 person with emission dermatitis (0.0%), and 1 person with nasal mucosa reaction (2.5%). The total incidence of adverse reactions was 10%; in the observation group, there were 6 people with trismus (15.0%), 3 people with oral infection (7.5%), 2 people with recurrent dermatitis (5.0%), and 2 people with nasal mucosa reaction (5.0%). The incidence rate of total adverse reactions was 32.5%. The incidence of adverse reactions in the experimental group was significantly lower than that in the observation group ($P < 0.05$)(Table 4).

5. Discussion

For nasopharyngeal carcinoma, the lesion may occur in the skull base and the neck, most commonly in the pharyngeal recess and the upper nasal septum [16]. The pathological types of nasopharyngeal carcinoma mainly include nodular, ulcerative, and mucoepidermoid types, with squamous-cell carcinoma being the commonest in clinical practice. Clinical manifestations of nasopharyngeal carcinoma include nasal obstruction, headache, tinnitus, hearing loss, facial numbness, diplopia, ocular symptoms, as well as pharyngeal foreign body sensation [17]. Radiotherapy is currently the main treatment option in clinical practice in China. Radiotherapy for nasopharyngeal cancer starts with CT localisation, followed by assessment of the patient's dose, calculation of the dose, tolerance level, and then radiotherapy [18]. The mechanism of radiotherapy is mainly through radiation damage to the patient's tumour cells to achieve the effect of treating the tumour [19]. As nasopharyngeal carcinoma is sensitive to radiotherapy, radiotherapy is the most important treatment for the disease [20]. Radiotherapy is currently the primary treatment protocol in clinical practice in China. Despite the rapid advancement of medical technology and upgrading of radiotherapy equipment, severe adverse reactions are likely to occur during the treatment due to irreversible damage of radiation to normal tissue. Most nasopharyngeal carcinoma patients treated with radiotherapy face side effects such as severe pain, mucosa ulcer, and trismus, causing great pain to patients and severely impairing the quality of their life [21].

Due to their condition and the toxic side effects of radiotherapy, patients often present with depression, anxiety, resignation, avoidance, low self-management skills, and reduced quality of life and self-identity [22]. The results of this study showed that the scores for the quality of life in the experimental group were significantly higher than those in the observation group, their SAS and SDS scores were significantly lower than those in the observation group, and the incidence for the experimental group was significantly lower than the incidence of the observation group. This indicated that self-care plus forecasting nursing intervention

Table 2: Comparison of the quality of life ($\bar{x} \pm s$).

Group	Number of cases	Physical functioning	Psychological functioning	Social functioning	Material living conditions
Observation group	40	32.72 ± 3.28	31.41 ± 3.22	34.50 ± 3.28	24.35 ± 3.65
Experimental group	40	38.15 ± 3.12	37.59 ± 3.48	37.63 ± 3.89	28.66 ± 3.27
T	—	−7.586	−8.244	−3.89	−5.562
P	—	<0.001	<0.001	<0.001	<0.001

Table 3: Comparison of SAS and SDS scores ($\bar{x} \pm s$).

Group	Number of cases	SAS (points)		SDS (points)	
		Before nursing	After nursing	Before nursing	After nursing
Observation group	40	68.72 ± 2.36	58.14 ± 2.44	65.39 ± 3.18	53.94 ± 5.78
Experimental group	40	68.58 ± 2.29	48.47 ± 2.68	65.51 ± 3.20	47.55 ± 5.42
T	—	0.269	16.874	−0.168	5.1
P	—	0.789	<0.001	0.867	<0.001

Table 4: Comparison of adverse reaction [n (%)].

Group	Number of cases	Trismus	Oral infection	Radiodermatitis	Nasal mucosa response	Total incidence
Observation group	40	6	3	2	2	13 (32.5%)
Experimental group	40	2	1	0	1	4 (10.0%)
x^2	—	—	—	—	—	15.672
P	—	—	—	—	—	<0.001

was effective to improve the quality of patients' life, reduce anxiety and depression, and decrease the incidence of adverse reactions during radiotherapy. This may be explained by the fact that the carcinoma and its adverse reactions were a big blow to the patients, substantially reducing their confidence and enthusiasm for treatment, leading to treatment discontinuity in some patients and ultimately missing the optimal opportunity for treatment and reducing therapeutic efficacy [23]. Self-care plus forecasting nursing intervention was carried out in this study so that the patients could have a good knowledge of the possible adverse reactions and targeted countermeasures before radiotherapy. Moreover, the patients were informed about the fact that effective nursing could cut down on the incidence of adverse reactions, thus helping them rebuild confidence and improve compliance [24]. After the intervention of mental health nursing, most patients could take a positive attitude towards treatment and show a relatively good psychological status, enabling them to fulfill radiotherapy. This technique not only boosted confidence and aroused enthusiasm for survival, but also induced cooperative actions and improved the quality of life [25].

Radiotherapy on the oral cavity and pharynx caused eating difficulty, so it was essential to take forecasting-based mouth-opening exercise. Patients were instructed about safe and effective oral care measures, and a diet based on liquid food during radiotherapy, so as to enhance radioresistance and accelerate tissue repair [26]. Additionally, forecasting-based countermeasures were taken and rehabilitation training targeted at trismus was given to patients to avoid similar adverse reactions [27]; preventive measures such as rinsing the oral and nasal cavities were effective to prevent stomatitis; avoidance of exposure to the sun greatly reduced the incidence of radiodermatitis. The self-care plus forecasting nursing could inform patients about possible adverse reactions and effective countermeasures to radiation, which improved their tolerance to radiotherapy and aroused their initiative to fight disease, thus reducing the incidence of adverse reactions substantially [28].

However, we still need to further track the long-term treatment effect in follow-up experiments and expand the experimental sample to analyze the risk factors affecting the poor prognosis of NPC patients, so as to improve the treatment effect.

6. Conclusion

In summary, self-care plus forecasting nursing intervention is effective in the treatment of patients with nasopharyngeal carcinoma after radiotherapy. The technique is proved effective to improve patients' quality of life, reduce anxiety and depression, and decrease the incidence of adverse reactions. These features make the technique worthy of a wider clinical application.

Data Availability

All data generated or analysed during this study are included in this published article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] X. Zhang, J. Liu, H. Yu et al., "Weight change trajectory in patients with locally advanced nasopharyngeal carcinoma

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Retraction

Retracted: Effect of Perioperative Comprehensive Nursing Intervention on Transcatheter Arterial Chemoembolization in Patients with Primary Hepatic Carcinoma

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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] M. Hu, Z. Fan, and Y. Han, "Effect of Perioperative Comprehensive Nursing Intervention on Transcatheter Arterial Chemoembolization in Patients with Primary Hepatic Carcinoma," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 9000331, 7 pages, 2022.

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Research Article

Effect of Perioperative Comprehensive Nursing Intervention on Transcatheter Arterial Chemoembolization in Patients with Primary Hepatic Carcinoma

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Objective. To study and analyze the effect of perioperative comprehensive nursing intervention on transcatheter arterial chemoembolization (TACE) in patients with primary hepatic carcinoma (PHC). *Methods.* One hundred and ten patients with PHC diagnosed in our hospital from May 2019 to January 2022 were randomly selected and divided into a control group ($n = 55$) and an observation group ($n = 55$) by random number sorting according to odd and even numbers. Patients in the control group received conventional nursing interventions and those in the observation group received comprehensive nursing interventions. The two groups were compared in terms of surgical status, quality of life (QoL), and nursing satisfaction. *Results.* The operation time, postoperative bed rest time, and hospital stay in the observation group were significantly ($P < 0.05$) shorter than those in the control group; the observation group had significantly ($P < 0.05$) higher scores of quality of life, including somatic function, emotional function, role function, social function, and cognitive function than the control group; chemotherapy adverse reactions including fever, abdominal pain, urinary retention, and gastrointestinal reactions in the observation group were significantly less than those in the control group ($P < 0.05$); the total incidence of complications in the observation group was significantly ($P < 0.05$) lower than that in the control group. The total satisfaction with nursing care in the observation group was significantly ($P < 0.05$) higher than that in the control group. *Conclusion.* The perioperative application of comprehensive nursing intervention in TACE for patients with PHC aids in the smooth operation, improves patients' QoL, lowers the risk of chemotherapy reactions and complications, and enhances patient satisfaction and nursing quality. These advantages justify a wider perioperative application of comprehensive nursing intervention in TACE clinical practice.

1. Introduction

Primary hepatic carcinoma (PHC) refers to a malignant tumor occurring in hepatocytes or intrahepatic cholangiocytes [1]. Recent years have witnessed the rising incidence of PHC across the globe. Hepatic carcinoma has been more common in men over 40 years old in China, according to relevant epidemiological statistics, with a male-to-female incidence ratio of roughly 2.7 : 1 [2]. Its histopathological types include hepatocellular carcinoma, cholangiocarcinoma, mixed cellular carcinoma, and other special types. Among them, hepatocellular carcinoma accounts for more than 80% and cholangiocarcinoma represents about 5%–10% [3]. Mixed cellular carcinoma is uncommon and rarer even are such particular types as fibrolamellar carcinoma and clear cell carcinoma [4]. Most of the clinical symptoms include hepatomegaly, liver pain, systemic and gastrointestinal symptoms (such as fatigue, emaciation, inappetence, and abdominal edema), and metastatic liver cancer symptoms. However, as the disease is in its early stages, patients exhibit typical clinical signs and symptoms usually in the middle to late stages, when they are asymptomatic and have an insidious onset [5]. The prognosis of hepatocellular carcinoma is largely dependent on early

diagnosis and treatment. The 5-year survival rate is 30–50% after resection for hepatocellular carcinoma and 50–60% after resection for small hepatocellular carcinoma [6, 7]. In summary, PHC is a common malignant tumor in China and causes a lot of suffering to people.

PHC treatment is defined by the convergence of several approaches and disciplines in clinical practice, with a focus on interdisciplinary comprehensive care and individualized treatment. The main treatment approaches include hepatectomy, liver transplantation, local ablation, transcatheter arterial chemoembolization (TACE), radiotherapy, and systemic drug therapy. TACE is an interventional therapy that primarily involves femoral artery intubation and sending anticancer drugs or embolic agents into the hepatic artery [8, 9]. This technique is only applicable to patients with hepatic carcinoma and is currently the top choice for nonsurgical treatment of hepatic carcinoma [10, 11]. It can not only kill tumor cells directly but also cut off the tumor's blood supply, causing it to "starve to death" without nutrition. Using the Seldinger puncture and cannulation technique, the hepatic artery is routinely punctured through the right femoral artery, and celiac arteriography is routinely performed. If it is found that the tumor vascular tumor staining is incomplete, continue to search for variant blood supply arteries [12–14].

Previous research findings reveal that TACE can not only lengthen patients' lives and control disease progression but also pave the way for secondary surgical treatment [15]. However, many clinical practice results suggest that TACE can cause a series of chemotherapeutic responses and complications, as well as varying degrees of liver reserve function impairment [16]. Therefore, active and effective nursing intervention techniques for patients in the perioperative period are essential for the prevention and management of chemotherapeutic reactions and complications as well as the protection of liver function [17, 18]. The aim of this study was to investigate and evaluate the impact of comprehensive perioperative nursing interventions on TACE in patients with PHC, providing a reference value and theoretical basis for future clinical practice.

2. Materials and Methods

2.1. Subjects. A total of 110 patients who were diagnosed with PHC and received TACE in our hospital from May 2019 to January 2022 were randomly selected, including 81 males and 29 females, aged between 43 and 75 years, with a mean age of 60.34 ± 9.84 years. All patients were allocated to the control group ($n = 55$) and the observation group ($n = 55$) according to odd and even numbers through random number sequencing. Patients in the control group were treated with routine nursing intervention, while patients in the observation group received comprehensive nursing intervention. Their families and themselves were informed of the study and signed the informed consent form voluntarily. The experiment has been approved by the ethics committee of our hospital (Approval ID: 20190420).

2.2. Inclusion and Exclusion Criteria

Inclusion criteria: (1) patients who met the diagnostic criteria for PHC; (2) patients who received TACE treatment; and (3) patients with no distant metastasis found in clinical examinations.

Exclusion criteria: (2) patients with severe heart, lung, liver, and renal insufficiency; (2) patients with mental illness or unconsciousness; and (3) patients with complications such as severe jaundice or abnormal coagulation function.

3. Methods

Patients in both groups were treated with TACE after being diagnosed and admitted to the hospital [19]. They received the following treatment: preoperative preparations were routinely performed. All patients were placed in the supine position. Local anesthesia was performed before the operation, and the puncture point was disinfected. The Seldinger maneuver was used to puncture the femoral artery, and the 5F-RH catheter or Yashiro catheter was inserted into the celiac artery or common hepatic artery for DSA. Angiography was performed to determine the location, size, number, and supplying arteries of the tumor and then perfusion with chemotherapy drugs, often using epirubicin, lobaplatin, or oxaliplatin, 5-fluorouracil (5-Fu), etc., 2–3. According to the patient's tumor burden, body surface area, physical fitness status, previous drug use, and whether it is used in combination, the compatibility and dosage should be selected, and the infusion time of chemotherapy drugs should not be less than 20 minutes. The ultraliquefied lipiodol and chemotherapeutic drugs were fully mixed into an emulsion, and then, chemoembolization was performed under fluoroscopy. After completion, routine angiography was performed to monitor the state of embolization. After surgery, normal pressure was applied to the puncture site with a bandage for 12 hours.

Patients in the control group received routine nursing intervention, including observation of illness, improvement of preoperative examination, medication guidance, routine dressing change at the puncture site, bandaging, and prevention of infection.

Patients in the observation group were treated with comprehensive nursing intervention. Specific treatment included the following:

(1) Before the operation, patients were informed of relevant information to allow them to fully and correctly understand the etiology, clinical manifestations, treatment methods, and prognosis of cancer. Any discomfort and complications that may occur after operation were explained in detail. According to the individual situation of patients, appropriate psychological care and health guidance were formulated, and a relationship of mutual trust with patients was established for patient encouragement and compliance as well as the elimination of negative emotions such as anxiety, fear, depression, and

sadness that often appear in the treatment process. Preoperative guidance and preparation of surgical instruments and drugs were conducted, followed by a detailed physical examination and allergy tests. Patients were reminded to fast 4 hours before the operation.

(2) Intraoperative: patients cooperated with physicians to complete the operation, with the indexes of patients normally checked and the internal conditions of patients monitored. Patients were informed of the chemotherapy process promptly. Physicians could remind patients to be mentally prepared before injection chemotherapy, which may cause obvious discomfort. They could also tell patients that the operation was successful and praise the patient's compliance when it was approaching the end of the operation. Various conditions should be handled reasonably appropriately: pain care, attention to control, respiratory control, and position adjustment to relieve the patient's pain. Patients in severe pain may be given analgesics to relieve severe pain with the consent of the physician's diagnosis. Nursing for complications and adverse reactions was performed with prevention in advance by ventilating and maintaining a warm temperature in the ward, frequently changing sheets and clothes, closely monitoring the condition, and timely handling the side effects and complications of chemotherapy to different degrees. Diet nursing was followed according to the individual physiological and dietary characteristics of patients, with reasonable and healthy daily diet plans formulated, and the diet plans focused on light foods with high calorie, high cellulose, and high protein, boosting the patients' body resistance and immunity. Daily life nursing intervention was conducted through formulating activity plans according to the actual situation of patients after operation, such as encouraging patients to get out of bed for postoperative recovery, paying attention to sleep quality, guiding patients to rest more, drinking water properly, sleeping well, carefully following the doctor's instructions on medication, and regularly checking liver function and blood circulation [20].

3.1. Evaluation Criteria

(1) Detailed recording and comparison of the two groups, including the duration of surgery, postoperative bed rest, and length of hospital stay.

(2) QoL rating scale (SF-36) was used to evaluate patients' quality of life, which was divided into five dimensions: somatic function, emotional function, role function, social function, and cognitive function. The total score of each dimension was 100 points. The higher the score after evaluation, the better the patient's quality of life.

(3) Chemotherapy adverse reactions, including fever, abdominal pain, urinary retention, and gastrointestinal reactions, were recorded in detail and compared between the two groups.

(4) We also recorded and compared the complications of the two groups, including renal failure, tumor rupture, hemorrhage of the digestive tract, and puncture point bleeding. The total incidence of complications was calculated and compared between the two groups. Complication rate = number of people with complications/total number × 100%

(5) Using the Questionnaire of Nursing Satisfaction created by our hospital (for the evaluation of medical personnel from the perspectives of attitude, efficiency, and disease explanation, among others), we set four options of satisfaction (very satisfied, satisfied, not very satisfied, and dissatisfied) to understand the satisfaction of the two groups of patients and determine which one of the two groups of treatment methods was more effective through the results.

3.2. Data Analysis. The GraphPad Prism 8 software was used to process images, and data processing was conducted with the SPSS 22.0 software. Chi-square tests and t-tests were performed for enumeration data (n (%)) and measurement data ($\overline{x} \pm s$), respectively. The difference was statistically significant if $P < 0.05$.

4. Results

4.1. General Data. In the control group, there were 55 cases, including 41 males and 14 females, aged 43–75 years, with a mean age of 61.25 ± 9.24 years. The course of the disease was 0.5–7.1 years, with a mean course of disease of 3.53 ± 1.78 years. The diameter of the carcinoma was 5–13 cm, with a mean diameter of 7.82 ± 1.71 cm. There were 55 cases in the observation group, including 40 males and 15 females, aged 43–75 years, with a mean age of 59.42 ± 9.72 years. The course of the disease ranged from 0.8 to 7.5 years, with a mean course of disease of 3.68 ± 1.74 years. The carcinoma diameter ranged from 5 cm to 13 cm, with a mean diameter of 7.68 ± 1.84 cm. There was no significant ($P > 0.05$) difference in general data between the two groups, but the two groups were comparable. See Table 1 for details.

4.2. Operation Situation. The operation time, postoperative bed rest time, and hospital stay in the observation group (66.78 ± 13.25, 39.48 ± 5.65, 9.08 ± 1.23) were significantly ($P < 0.05$) shorter than those in the control group (75.69 ± 18.65, 47.38 ± 5.98, 11.23 ± 2.17). See Table 2 for details.

4.3. QoL. The observation group had significantly ($P < 0.05$) higher scores of QoL, including somatic function, emotional function, role function, social function, and cognitive

Table 1: Comparison of general data ($\overline{x} \pm s$).

Group	Number of cases	Sex		Age (years)		Course of disease (years)		Tumor diameter (cm)	
		Male	Female	Range	Mean	Range	Mean	Range	Mean
Control group	55	41	14	43–75	61.25 ± 9.24	0.5–7.1	3.53 ± 1.78	5–13	7.82 ± 1.71
Observation group	55	40	15	43–75	59.42 ± 9.72	0.8–7.5	3.68 ± 1.74	5–13	7.68 ± 1.84
t	—	—	—	—	1.193	—	0.447	—	0.413
P	—	—	—	—	0.238	—	0.656	—	0.680

Table 2: Comparison of operation situation ($\overline{x} \pm s$).

Group	Number of cases	Operation time (min)	Postoperative bed rest time (h)	Hospital stay (d)
Control group	55	75.69 ± 18.65	47.38 ± 5.98	11.23 ± 2.17
Observation group	55	66.78 ± 13.25	39.48 ± 5.65	9.08 ± 1.23
t	—	2.888	7.121	6.392
P	—	0.005	<0.001	<0.001

Table 3: Comparison of QoL ($\overline{x} \pm s$).

Group	Number of cases	Somatic function	Emotional function	Role function	Social function	Cognitive function
Control group	55	69.17 ± 15.56	68.91 ± 12.56	67.45 ± 13.34	69.08 ± 15.56	66.98 ± 15.68
Observation group	55	84.51 ± 11.25	86.68 ± 10.17	84.45 ± 11.52	83.45 ± 11.51	84.64 ± 10.54
t	—	5.925	8.154	7.153	5.506	6.932
P	—	<0.001	<0.001	<0.001	<0.001	<0.001

Table 4: Comparison of chemotherapy adverse reactions (%).

Group	Number of cases	Fever	Abdominal pain	Urinary retention	Gastrointestinal reactions
Control group	55	39 (70.91)	32 (58.18)	28 (50.91)	31 (56.36)
Observation group	55	12 (21.82)	15 (27.27)	8 (14.55)	10 (18.18)
t	—	26.650	10.736	15.517	17.147
P	—	<0.001	0.001	<0.001	<0.001

function (84.51 ± 11.25, 86.68 ± 10.17, 84.45 ± 11.52, 83.45 ± 11.51, 84.64 ± 10.54) than the control group (69.17 ± 15.56, 68.91 ± 12.56, 67.45 ± 13.34, 69.08 ± 15.56, 66.98 ± 15.68). See Table 3 for details:

4.4. Chemotherapy Adverse Reactions. Chemotherapy adverse reactions including fever, abdominal pain, urinary retention, and gastrointestinal reactions (12 (21.82%), 15 (27.27%), 8 (14.55%), 10 (18.18%)) in the observation group were significantly ($P < 0.05$) less than those in the control group (39 (70.91%), 32 (58.18%), 28 (50.91%), 31 (56.36%)). See Table 4 for details.

4.5. Complications. There were 0 (0.00%) case of renal failure, 0 (0.00%) case of tumor rupture, 1 (1.82%) case of hemorrhage of the digestive tract, and 2 (3.64%) cases of puncture point bleeding in the observation group, while 5 (9.09%) cases of renal failure, 0 (0.00%) case of tumor rupture, 7 (12.73%) cases of hemorrhage of the digestive tract, and 6 (10.91%) cases of puncture point bleeding in the control group. The total incidence of complications in the observation group (5.45%) was significantly ($P < 0.05$) lower than that in the control group (32.73%). See Table 5 for details.

4.6. Satisfaction. The results of questionnaire survey showed that 15 (27.27%) patients in the control group were very satisfied, 25 (45.45%) were satisfied, 11 (20.00%) were not very satisfied, and 4 (7.27%) were dissatisfied. In the observation group, 26 (47.27%) patients were very satisfied, 28 (50.91%) were satisfied, 1 (1.82%) was not very satisfied, and 0 (0.00%) was dissatisfied. The total satisfaction with nursing care in the observation group (98.18%) was significantly ($P < 0.05$) higher than that in the control group (72.73%). See Figure 1 for details.

5. Discussion

Primary liver cancer has become the fourth most common malignancy and the second leading cause of death in China, posing a serious threat to human safety and health [21]. The etiology of primary liver cancer is not fully understood and may be the result of a synergistic effect of multiple factors. Based on epidemiological investigations, it is mostly believed to be related to the following susceptibility factors. About 70% of primary liver cancers occur on the basis of cirrhosis, and most of them are nodular cirrhosis that develops from chronic hepatitis B and C [22]. The risk of liver cancer is greater when HBV or HCV infection coexists with alcoholic or nonalcoholic fatty liver disease [23]. Hepatic

Table 5: Comparison of complications (%).

Group	Number of cases	Renal failure	Tumor rupture	Hemorrhage of digestive tract	Puncture point bleeding	Total incidence
Control group	55	5 (9.09)	0 (0.00)	7 (12.73)	6 (10.91)	18 (32.73)
Observation group	55	0 (0.00)	0 (0.00)	1 (1.82)	2 (3.64)	3 (5.45)
T	—			13.242		
P	—			<0.001		

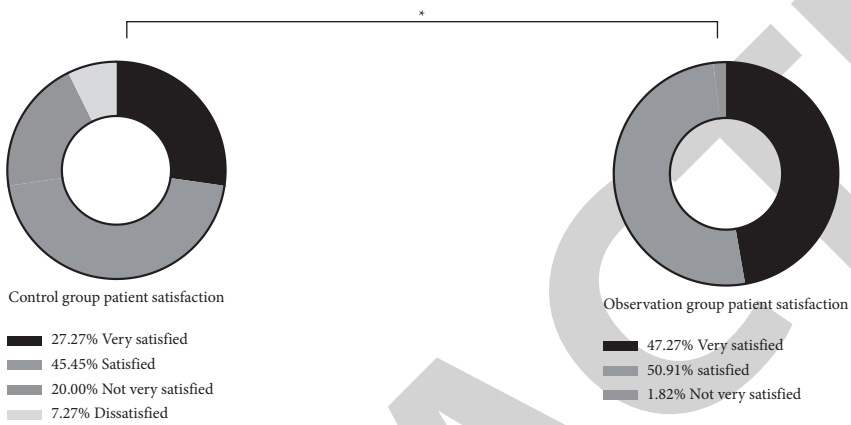

Figure 1: Comparison of nursing satisfaction. *denotes that there is a statistically significant ($P < 0.05$) difference between the two groups.

encephalopathy is a terminal complication of primary liver cancer and accounts for one third of the causes of death. Another is gastrointestinal bleeding, which accounts for approximately 15% of the causes of death from liver cancer [24]. Combined cirrhosis or portal vein or hepatic vein carcinoma embolism can lead to ruptured oesophagogastric fundic varices and bleeding [25]. Secondary infections are due to long-term consumption of cancer, especially in the case of reduced white blood cells after radiotherapy and chemotherapy, weakened resistance, coupled with factors such as prolonged bed rest, which can easily complicate various infections, such as pneumonia, intestinal infections, and fungal infections [26].

TACE is a combination of medical imaging and clinical treatment that has become one of the most important treatments for the treatment of PHC, as it can help reduce tumor volume and allow for a second operation. Although liver resection or transplantation provides better results than other therapies in the local control of HCC, survival rates are unsatisfactory, particularly for large tumors, and it remains controversial whether HCC angiogenesis is enhanced after TACE even in patients undergoing radical resection [27]. It is frequently utilized in arterial infusion chemotherapy with chemotherapy drugs that are generally given all at once at a high concentration and large dose. The drugs selected in this study have been verified and confirmed in clinical practice that they can affect microtubules of cells and promote aggregation, thus preventing microscopic aggregation and rearrangement, inhibiting mitosis, interfering with tumor cell dynamics, and effectively preventing tumor cell dissociation [28]. The perioperative period covers the entire period from the patient's admission to the surgical ward to the patient's postoperative recovery and discharge, i. e., the time before, during, and after surgery. At different stages of the perioperative period, the patient exhibits different signs. As the condition progresses, it creates a variety of problems. If patients are adequately prepared before and during the perioperative period, have a proper understanding of their psychological and physical condition, and take appropriate measures, they can be assured of better surgical treatment. Combined with reasonable and appropriate overall interventions during and after surgery, this will not only improve the overall treatment outcome but also effectively prevent various side effects and complications for patients, enabling them to complete their treatment and recover as soon as possible.

Previous studies have revealed that TACE for patients with PHC has noticeable adverse effects, such as digestive system reactions, that affect postoperative recovery and treatment effectiveness [29]. Based on the aforementioned, 110 patients with PHC diagnosed in our hospital were selected at random and divided into two groups for this study. Throughout the perioperative period of different groups of patients, routine nursing and comprehensive nursing interventions were carried out to ensure the smooth course of TACE and the realization of the intended results. The results showed significantly shorter operation time, postoperative bed rest time, and hospital stay in the observation group than those in the control group. Through an investigation of the reasons, comprehensive nursing intervention is considered to necessitate preoperative guidance to patients in a variety of ways, dispelling patients' uncertainties about diseases and treatment techniques, and assisting patients in fully and correctly understanding cancer. Measures such as

improving the ward environment and keeping patients informed of the progress of the procedure can help to minimize the impact of numerous factors on the course and outcome of TACE in the perioperative period, thereby improving patient intraoperative indicators. The reduction in operative time suggests that comprehensive nursing interventions can improve the efficiency of medical staff and clinical turnaround rates. This is consistent with the findings of Zhao et al. The reduction in postoperative bed rest and hospital stay was mainly associated with the occurrence of adverse effects and complications of postoperative chemotherapy. In this study, it was observed that the observation group had significantly fewer adverse chemotherapy reactions and a significantly lower overall complication rate than the control group.

TACE has been shown to have positive efficacy. However, clinical controversy remains due to the necrosis of normal liver segments or lobe tissue in patients after occlusion of the liver donor vessels and the toxic side effects of chemotherapeutic drugs and embolic agents. The patient's postoperative recovery and overall treatment outcome are affected by a variety of adverse effects or complications. The application of comprehensive nursing intervention in the perioperative period requires postoperative nursing of complications and adverse reactions, which can be prevented in advance by ventilating and keeping warm in wards as well as changing sheets and clothes frequently. In the case of adverse reactions, medical staff will monitor the situation closely so that chemotherapy-related side effects and complications of varying degrees of severity can be managed promptly. This approach is effective in reducing the risk of chemotherapy reactions and complications for patients, as well as preventing patients from being bedridden, hospitalized for observation, or treated for adverse reactions and complications. The results also demonstrated that the observation group had significantly higher scores of QoL and total satisfaction with nursing care than the control group.

The physical pain, organ damage, and negative emotions associated with PHC may increase the risk or exacerbate the extent of adverse reactions. Also, due to the technical aspects of TACE and the physical condition of the patient, one or more adverse chemotherapy reactions and complications often occur after the procedure, leading to a variety of negative emotions and a significant deterioration in the patient's quality of life. However, comprehensive nursing interventions are required throughout the perioperative period, which means that care should be provided before, during, and after the procedure. Pain care alleviates the patient's suffering. Dietary care improves the patient's immune system. Daily life nursing intervention encourages patients to get out of bed for postoperative recovery, guides patients to rest more, drink enough water, and sleep well. Patients are instructed to carefully follow the doctor's advice on medications and regularly check liver function and blood circulation. It not only satisfies patients' needs for love and belonging, eliminates negative emotions, and increases patients' confidence and compliance in treatment, but it also improves their QoL, contributing to a considerable increase in patient satisfaction. This is consistent with the findings of Li et al., who found that perioperative comprehensive nursing could improve patients' psychosocial and self-care abilities, followed by a higher QoL [30].

6. Conclusion

To sum up, the perioperative application of comprehensive nursing intervention in TACE for patients with PHC aids in the smooth operation, improves patients' QoL, lowers the risk of chemotherapy resections and complications, and enhances patient satisfaction and nursing quality. These advantages justify a wider perioperative application of comprehensive nursing intervention in TACE clinical practice.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] L. Fang, X. Meng, W. Luo, and X. D. Zhou, "Treatment of primary hepatic carcinoma through ultrasound-guided microwave ablation," *Nigerian Journal of Clinical Practice*, vol. 22, no. 10, pp. 1408–1411, 2019.

[2] C. G. Roth and D. G. Mitchell, "Hepatocellular carcinoma and other hepatic malignancies," *Radiologic Clinics of North America*, vol. 52, no. 4, pp. 683–707, 2014.

[3] X.-L. Xu, X.-D. Liu, M. Liang, and B.-M. Luo, "Radiofrequency ablation versus hepatic resection for small hepatocellular carcinoma: systematic review of randomized controlled trials with meta-analysis and trial sequential analysis," *Radiology*, vol. 287, pp. 461–472, 2018.

[4] K. Xu, Y. Chen, M. Chen et al., "Diagnosis and treatment of primary hepatic neuroendocrine carcinoma," *Zhonghua Zhongliu Zazhi*, vol. 37, no. 6, pp. 451–455, 2015.

[5] M. S. Grandhi, A. K. Kim, S. M. Ronnekleiv-Kelly, I. R. Kamel, M. A. Ghasebeh, and T. M. Pawlik, "Hepatocellular carcinoma: from diagnosis to treatment," *Surgical Oncology*, vol. 25, no. 2, pp. 74–85, 2016.

[6] M. F. Chedid, C. R. P. Kruel, M. A. Pinto et al., "Hepatocellular carcinoma: diagnosis and operative management," *Arquivos Brasileiros de Cirurgia Digestiva (São Paulo)*, vol. 30, no. 4, pp. 272–278, 2017.

[7] S. Z. Frager and J. M. Schwartz, "Hepatocellular carcinoma: epidemiology, screening, and assessment of hepatic reserve," *Current Oncology*, vol. 27, 2020.

[8] C. An, M. Zuo, W. Li, Q. Chen, and P. Wu, "Infiltrative hepatocellular carcinoma: transcatheter arterial chemoembolization versus hepatic arterial infusion chemotherapy," *Frontiers in Oncology*, vol. 11, Article ID 747496, 2021.

[9] S. Murata, T. Mine, T. Ueda et al., "Transcatheter arterial chemoembolization based on hepatic hemodynamics for hepatocellular carcinoma," *Scientific World Journal*, vol. 2013, Article ID 479805, 8 pages, 2013.

[10] W. Wang, S. Wang, J. Liu, Y. Liu, Y. Mu, and J. Wang, "Transcatheter hepatic arterial chemoembolization combined with kangai injection for hepatitis B virus-related

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Retraction

Retracted: Correlation between the Expression of VEGF and Ki67 and Lymph Node Metastasis in Non-small-Cell Lung Cancer: A Systematic Review and Meta-Analysis

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References

[1] D. Wei, Y. Xin, Y. Rong, and Y. Hao, "Correlation between the Expression of VEGF and Ki67 and Lymph Node Metastasis in Non-small-Cell Lung Cancer: A Systematic Review and Meta-Analysis," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 9693746, 8 pages, 2022.

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Review Article

Correlation between the Expression of VEGF and Ki67 and Lymph Node Metastasis in Non-small-Cell Lung Cancer: A Systematic Review and Meta-Analysis

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Background. Lymph node metastasis is the most common and important way of metastasis in NSCLC and is also the most important factor affecting lung cancer stage and prognosis. It is very important to analyze the relationship between the expression of vascular endothelial growth factor (VEGF) and Ki67 and lymph node metastasis (LNM) in non-small-cell lung cancer (NSCLC). *Methods*. We searched the PubMed, EMBASE, and Cochrane Library and conducted meta-analyses using the *R* meta-package. Relative risk (RR) with a 95% confidence interval (95% CI) was the main indicator. *Results*. Totally, 18 studies were considered eligible, with 4521 patients, including 1518 LNM-positive patients and 3033 LNM-negative patients. The incidence of LNM in Ki67-negative patients was lower than that in Ki67-positive patients (RR = 0.66, 95% CI: 0.44, 0.98). The incidence of LNM in VEGF-A-negative patients was lower than that in VEGF-A-positive patients (RR = 0.64, 95% CI: 0.49, 0.83). The incidence of LNM in VEGF-C negative patients was lower than that in VEGF-C positive patients (RR = 0.68, 95% CI: 0.53, 0.88). The incidence of LNM in VEGF-D negative and positive patients were of no significant differences (RR = 0.84, 95% CI: 0.61, 1.14). *Conclusion*. The high expression of Ki67, VEGF-A, and VEGF-C significantly increases the risk of lymph node metastasis in NSCLC, while the VEGF-D expression has no correlation with lymph node metastasis. The expression levels of Ki67, VEGF-A, and VEGF-C show a good potential for lymph node metastasis prediction.

1. Introduction

Lung cancer is a tumor that originates from the bronchial mucosa or glands of the lungs, and the confirmed cases approached 1.8 million in year 2012, and the death toll was about 1.6 million [1]. Statistics show that there were 230,000 new cases in the United States alone in 2018, and lung cancer-related deaths exceed the sum of breast, prostate, and colon cancer-related deaths [2, 3]. In recent years, despite major progress in lung cancer treatment with respect to risk factors determination, disease progression detection, and immune control approach, the disease is the leading cause of cancer death because of the insidious symptoms and the lack of effective screening methods [4, 5]. Non-small-cell lung cancer (NSCLC) is a common type of lung cancer and includes squamous cell carcinoma, adenocarcinoma, and large cell carcinoma [6]. Within contrast to small cell carcinoma, NSCLC features slow cells growth and division and late spread and metastasis [7]. Lymph node metastasis is an essential link in tumor progression, indicating that the tumor transforms from local to invasive type [8]. In contrast to patients with the same tumor size but without lymph node metastasis, those with lymph node metastasis experience a grimmer prognosis [9].

Ki-67 is a cell proliferation-associated antigen that is expressed in the nucleus and closely linked to mitosis and integrally embodies the cell proliferation activity. Its function is correlated with cell mitosis and cell cycle [10]. Ki67 marks cells in the growth cycle, and the higher positive rate indicates larger proportion of tumor cells in the growth

phase, faster tumor growth, and unpromising prognosis [11, 12]. One study showed that Ki67 was also associated with a significantly higher hazard ratio for lung cancer death and recurrence (HR 2.19, 95% CI 1.30–3.70; HR 1.92, 95% CI 1.07–3.46).

Vascular endothelial growth factor (VEGF) is a highly specific vascular endothelial growth factor that boosts angiogenesis and facilitates the movement, proliferation, and division of vascular endothelial cells [13]. VEGF includes VEGF-A, VEGF-B, VEGF-C, and VEGF-D. The high expression of VEGF and its mRNA are observed in most malignant tumors, especially in sites of abundant vascular proliferation in tumor tissues [14]. Signals induced by the binding of VEGF-A to the receptor VEGFR2 are the master controllers of angiogenesis. After VEGF-A binds to VEGFR2, VEGFR2 is activated to phosphorylate the tyrosine 175 (Y1175) site. The Y1175 site is an important autophosphorylation site of VEGFR2, which can bind to phosphatidylinositol 3 hydroxy kinase (PI3K) and directly activate it to promote endothelial cell proliferation. VEGF-A is the most important and effective stimulator of angiogenesis. VEGF-D has similar properties to VEGF-C and also plays a central role in lymphangiogenesis, but not in angiogenesis. VEGF secreted by tumor cells stimulates endothelial cell proliferation, giving rise to abnormal angiogenesis [15]. VEGF inhibitors have become therapeutic drugs for various malignancies including NSCLC [16]. Prior research has confirmed that the high expression of Ki67 and VEGF is tightly linked to the poor prognosis of NSCLC, but its correlation with lymph node metastasis remains further to be elucidated [17, 18]. Accordingly, this study was undertaken to explore the association of the expression of Ki67 and VEGF with lymph node metastasis, so as to provide evidence for prognosis prediction of lung cancer.

2. Methods

2.1. Search Strategy and Selection Criteria. In this study, we searched the PubMed, EMBASE, and Cochrane Library from the date of their inception to March 13, 2022. We used the search terms (Ki67 (Title/Abstract)) or (VEGF (Title/Abstract) or (vascular endothelial growth factor (Title/Abstract))) and ((non-small-cell lung cancer) (Title/Abstract) or NSCLC (Title/Abstract)]), with a language restriction of English. The reference lists of all included articles and all pertinent review articles herein were reviewed to identify articles that may have been missed.

2.2. Inclusion and Exclusion Criteria of Literature. Inclusion criteria were as follows: (1) study type: randomized comparison clinical trial (RCT), observational study, or clinical trial; (2) study object: pathologically diagnosed NSCLC; (3) the study data include lymph node status (whether lymph node metastasis occurs or not), Ki67, and VEGF levels; (4) the study design is scientific and standardized, and the follow-up data and other data are complete; and (5) Ki67, VEGF-A, VEGF-C, and VEGF-D are evaluated by ELISA, immunohistochemistry, or flow cytometry.

Exclusion criteria were as follows: (1) case reports, reviews, or in vitro studies; (2) no lung cancer staging; and (3) less than 20 patients were included.

2.3. Quality Assessment. Two reviewers screened the search results, retrieved full text articles, checked inclusion criteria, and eliminated duplicate literature from three levels of article title, abstract, and full text, and then decided the included articles of this study. The Newcastle–Ottawa Scale was adopted to evaluate the quality of the eligible literature, and if consensus was not reached, a third reviewer was involved.

2.4. Data Extraction. Data extraction was performed by two investigators independently, and the data were entered in electronic forms including first author name, publication year, tumor stage, number of subjects, lymph node metastasis status, Ki 67 expression, VEGF expression, and other results. Among them, the primary meta-analysis outcomes of interest were the incidence of lymph node metastasis in cases with different Ki 67 and VEGF expression.

2.5. Statistical Analysis. We conducted meta-analyses using the *R* meta-package. Data extraction was (sample size) and the number of target indicators was (case). We estimated the heterogeneity via I^2 test ($I^2 > 0$ or P value <0.1 indicated heterogeneity, and a random-effects model of analysis was used; $I^2 = 0.01$, P value >0.1 indicated the absence of significant heterogeneity, and a fixed-effects model of analysis was used). 95% CIs for the cumulative risks were calculated with the risk estimates provided, applying a dichotomic variable analysis.

3. Results

3.1. Literature Search and Intervention Studies. Our search yielded 2685 citations, which were initially screened on the abstract level for eligibility. After reading the full text, 18 studies [19–36] including 4521 patients were deemed eligible (1518 LNM-positive patients and 3033 LNM-negative patients). The literature screening flowchart is displayed in Figure 1, and the descriptive details of the eligible studies are provided in Table 1. The risk of literature bias is displayed in Figure 2, suggesting a high quality of the included literature.

3.2. Ki67 Expression Level and Incidence of LNM. A total of 5 literature analyzed the incidence of LNM in patients with different Ki67 expression levels, including 396 Ki67 negative patients and 2588 positive patients. The results showed significant heterogeneity among the studies ($I^2 = 72\%$, $P < 0.01$) using a random-effects model. The incidence of LNM in Ki67-negative patients was lower than that in Ki67-positive patients (RR = 0.66, 95% CI: 0.44, 0.98), indicating that Ki67-positive expression can increase the incidence of LNM (Figure 3).

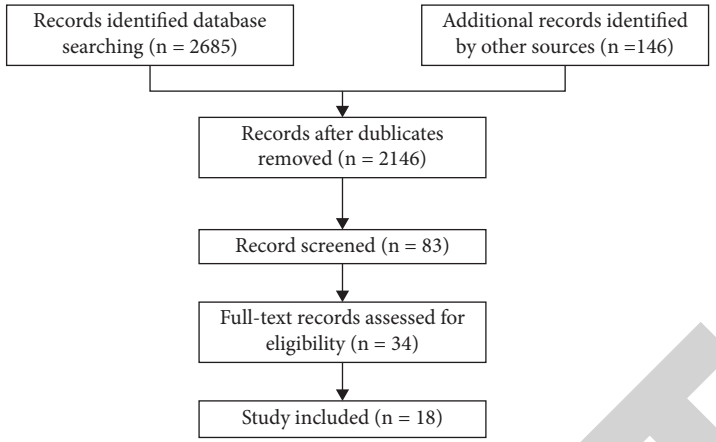

Figure 1: Literature screening flowchart.

Table 1: Descriptive details of the included trials.

Author	Year	Stage	LNM-positive	LNM-positive	Outcome
He et al. [19]	2016	Undeclared	43	25	Ki 67
Xue et al. [20]	2020	Resected NSCLC	779	1844	Ki 67
Ji et al. [21]	2014	I~III	40	17	Ki 67
Yang et al. [22]	2006	I~IIIa	46	81	Ki 67
Ahn et al. [23]	2014	I~III	49	60	Ki 67
Adachi et al. [24]	2007	Resected NSCLC	17	59	VEGF-C, VEGF-C
Donnem et al. [25]	2009	I—IIIa	102	232	VEGF-A, VEGF-C, VEGF-D
Feng et al. [26]	2010	I—IIIa	42	54	VEGF-C, VEGF-D
Guo et al. [27]	2009	I—IV	34	31	VEGF-C
Iwakiri et al. [28]	2001	I—IV	25	37	VEGF-C
Kojima et al. [29]	2005	I—III	24	105	VEGF-C
Nakashima et al. [30]	2004	I—IIIb	47	106	VEGF-A, VEGF-C
Ogawa et al. [31]	2004	I—IIIb	71	135	VEGF-C
Renyi-Vamos et al. [32]	2005	I—IIIa	42	47	VEGF-C
Saintigny et al. [33]	2007	I—III	45	47	VEGF-C
Takanami [34]	2006	I—IIIa	30	47	VEGF-C
Zuo et al. [35]	2008	I—III	16	32	VEGF-C
Bi et al. [36]	2017	I—IV	66	44	VEGF-C

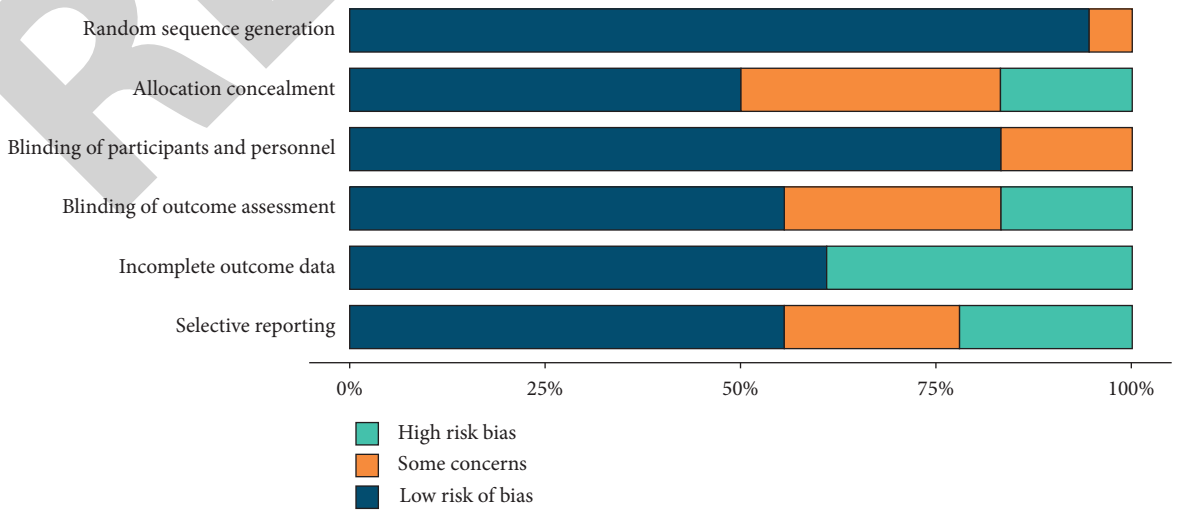

Figure 2: Included literature quality evaluation chart.

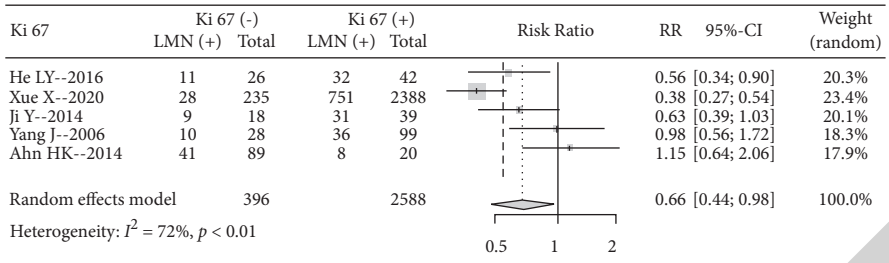

Figure 3: Forest plot of the Ki67 expression level and incidence of LNM.

3.3. VEGF Expression and Incidence of LNM

3.3.1. VEGF-A Expression and Incidence of LNM. A total of 2 literature analyzed the incidence of LNM in patients with different VEGF-A expression levels, including 267 VEGF-A-negative patients and 220 positive patients. No significant heterogeneity was seen between studies ($I^2 = 0$, $P = 0.94$) using a fixed-effects model. The incidence of LNM in VEGF-$P = 0.68$A negative patients was lower than that in VEGF-A positive patients (RR = 0.64, 95% CI: 0.49, 0.83), indicating that VEGF-A positive expression can increase the incidence of LNM (Figure 4).

3.3.2. VEGF-C Expression and Incidence of LNM. A total of 13 pieces of literature analyzed the incidence of LNM in patients with different VEGF-C expression levels, including 811 VEGF-C-negative patients and 727 positive patients. Significant heterogeneity existed among studies ($I^2 = 6$ 1%, $P < 0.01$), using a random-effects model. The incidence of LNM in VEGF-C negative patients was lower than that in VEGF-C positive patients (RR = 0.68, 95% CI: 0.53, 0.88), indicating that VEGF-C positive expression can increase the incidence of LNM (Figure 5).

3.3.3. VEGF-D Expression and Incidence of LNM. A total of 3 literature analyzed the incidence of LNM in patients with different VEGF-D expression levels, including 211 VEGF-D-negative patients and 294 positive patients. There was no significant heterogeneity among studies ($I^2 = 0\%$, $P = 0.68$), using a fixed-effects model. No significant difference in the incidence of LNM between VEGF-D-negative and positive patients was seen (RR = 0.84, 95% CI: 0.61, 1.14) (Figure 6).

3.4. Publication Bias Analysis. The funnel plot of the meta-analysis of the incidence of LNM at different expression levels of Ki67, VEGF-A, VEGF-C, and VEGF-D is shown in Figure 7. The funnel plot of the Ki67 analysis was significantly asymmetric, and the scatter points of the other three studies were distributed on both sides of the inverted funnel plot, which was basically symmetrical, indicating a small possibility of publication bias in this study.

4. Discussion

Despite the recent progress in immunotherapy and targeted therapy in lung cancer, multiple emerging targeted therapy drugs being approved for marketing, and the expanded indications of targeted therapy, lung cancer constitutes the highest mortality in China [37, 38]. In 2017, lung cancer in China ranked first among male patients, accounting for 23.01% of all cancers, and second only to breast cancer in female patients, with an incidence of 14.85% [39]. Lymph node metastasis is the major content of TMN staging and a key approach to determine treatment options and evaluate clinical prognosis [40, 41]. However, lymph node metastasis is not only related to tumor diameter, depth of invasion, and histological type, but also to factors such as Ki67 and VEGF [42].

Here, the incidence of LNM in Ki67-negative patients was lower than in Ki67-positive patients and the expression level of Ki67 was closely related to lymph node metastasis in NSCLC patients. Ki-67, an indirect method for detecting the proliferation of cells, reflects the proliferation ability of tumor cells and it is solely expressed in proliferating cells [43]. Studies have confirmed that lung cancer cells with a positive expression of Ki-67 have significantly increased proliferation activity, stronger invasive ability, and are more prone to lymph node metastasis. In the NSCLC cohort, Ki67 expression was positively correlated with male sex, lymph node metastasis, larger tumor (≥4 cm), advanced stage (stage III + IV), smoking, and tumor differentiation [44]. In addition, the overexpression of Ki67 is closely related to circulating tumor cell epithelial-mesenchymal transition (CTC EMT), and the positive rate of CTC EMT in patients with a high Ki67 expression is significantly increased [45]. In addition, significant heterogeneity was found in the analysis of the relationship between Ki67 levels and the incidence of LNM. This finding might be attributed to the fact that although Ki-67 is a powerful and valuable biomarker of cell proliferation, the clinical value of the assay is hampered by variability in the degree of measurement and lack of standardization across different types of specimens, and it possibly explains the presence of heterogeneity in this study [46]. In this regard, defining the detection method and determining the detection standard are the key links to be addressed during the clinical use of Ki67.

Additionally, the incidence of LNM in VEGF-A-negative patients was lower than that in VEGF-A-positive patients; the incidence of LNM in VEGF-C-negative patients was lower than that in VEGF-C-positive patients; the difference in the incidence of LNM between VEGF-D negative and positive patients did not come up to the statistical standard. All these findings suggest a good potential of the expression levels of VEGF-A–C to predict lymph node metastasis. Similar to our findings, prior research considered VEGF as a specific vascular endothelial cell growth factor to the division and

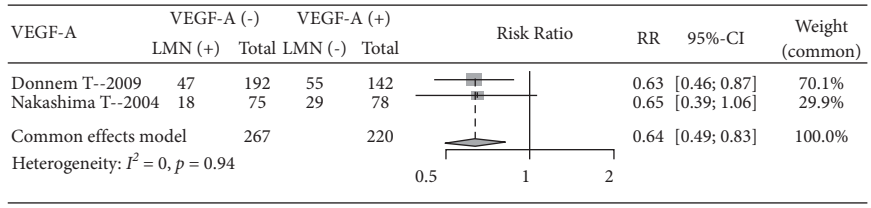

Figure 4: Forest plot of the VEGF-A expression level and incidence of LNM.

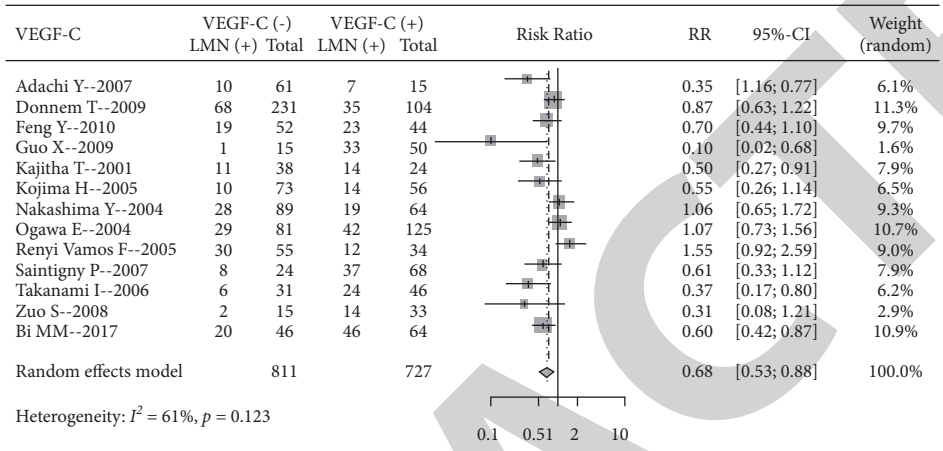

Figure 5: Forest plot of the VEGF-C expression level and incidence of LNM.

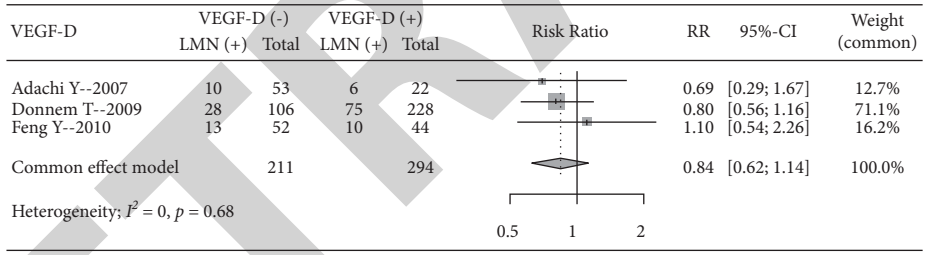

Figure 6: Forest plot of the VEGF-D expression level and incidence of LNM.

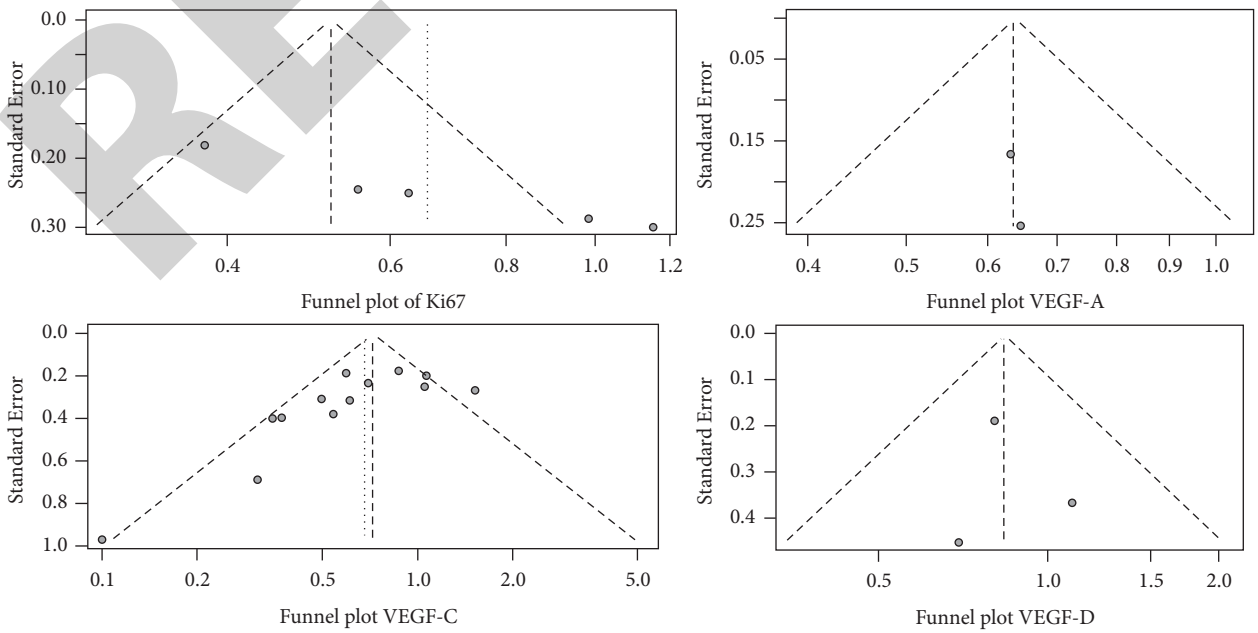

Figure 7: Funnel plot of literature publication bias.

proliferation of vascular endothelial cells and enhancement of vascular permeability and is strongly associated with tumor growth and metastasis. Its expression is therefore a key indicator for judging tumor types and prognosis [47, 48].

VEGF is a family in which VEGF-A can accelerate angiogenesis and increase the permeability of blood vessels [49]. VEGF-C and VEGF-D function in angiogenesis and new lymphatic vessels in cancer tissues [26]. Among them, VEGF-C mediates angiogenesis via VEGFR-2 and lymphangiogenesis via VEGFR-3, which are the key links in lymphatic metastasis [50]. We must admit that our study has certain limitations. First, the included studies were conducted over a large time span, and the improvement of detection methods inevitably impacts the detection results, which reduce the reliability of the study. Second, only LNM metastasis was used as the main indicator in the meta-analysis, and the differences in survival data between different factors were not compared, and thus the results might not be generalized. The literature included in this study has high heterogeneity, which may be related to the time span of the included literature. Whether it is the diagnosis method of Ki67 and VEGF, the treatment of NSCLC or the detection method of lymph node metastasis in NSCLC, it is constantly improving. Ki67 and VEGF have been the main targets of current NSCLC treatment, and different treatment regimens will have a significant impact on the expression of Ki67 and VEGF. Therefore, later analysis should be performed according to different inclusion times to determine whether different study times have an impact on the relationship between Ki67, VEGF, and lymph node metastasis in NSCLC. Future research will still need to potentially involve more reliable data and indicators.

5. Conclusion

In NSCLC patients, the high expression of Ki67, VEGF-A, and VEGF-C is associated with an increased risk of lymph node metastasis, while VEGF-D was not correlated with lymph node metastasis. The levels of Ki67, VEGF-A, and VEGF-C show great potential to anticipate the risk of lymph node metastasis. However, the prognosis is related to various factors such as the malignancy of the tumor, the treatment plan, and efficiency, whether the cancer cells are completely removed, the hospital's prognostic measures, and the patient's physical and psychological state. Therefore, the prognosis cannot be determined only by Ki67 and VEGF. In addition to paying attention to relevant tumor indicators, patient's mentality, balanced diet, reasonable schedule, and scientific exercise are also required.

Data Availability

The datasets used during the present study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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References

[1] F. Wu, L. Wang, and C. Zhou, "Lung cancer in China: current and prospect," *Current Opinion in Oncology*, vol. 33, no. 1, pp. 40–46, 2021.

[2] A. A. Thai, B. J. Solomon, L. V. Sequist, J. F. Gainor, and R. S. Heist, "Lung cancer," *The Lancet*, vol. 398, no. 10299, pp. 535–554, 2021.

[3] B. C. Bade and C. S. Dela Cruz, "Lung cancer 2020," *Clinics in Chest Medicine*, vol. 41, no. 1, pp. 1–24, 2020.

[4] R. Ruiz-Cordero and W. P. Devine, "Targeted therapy and checkpoint immunotherapy in lung cancer," *Surgical Pathology Clinics*, vol. 13, no. 1, pp. 17–33, 2020.

[5] I. Toumazis, M. Bastani, S. S. Han, and S. K. Plevritis, "Risk-based lung cancer screening: a systematic review," *Lung Cancer*, vol. 147, pp. 154–186, 2020.

[6] R. S. Herbst, D. Morgensztern, and C. Boshoff, "The biology and management of non-small cell lung cancer," *Nature*, vol. 553, no. 7689, pp. 446–454, 2018.

[7] C. M. Rudin, E. Brambilla, C. Faivre-Finn, and J. Sage, "Small-cell lung cancer," *Nature Reviews Disease Primers*, vol. 7, no. 1, p. 3, 2021.

[8] Z. Wang, Y. Wu, L. Wang et al., "Predicting occult lymph node metastasis by nomogram in patients with lung adenocarcinoma ≤2 cm," *Future Oncology*, vol. 17, no. 16, pp. 2005–2013, 2021.

[9] B. Jianlong, Z. Pinyi, W. Xiaohong et al., "Risk factors for lymph node metastasis and surgical scope in patients with cN0 non-small cell lung cancer: a single-center study in China," *Journal of Cardiothoracic Surgery*, vol. 16, no. 1, p. 304, 2021.

[10] X. Sun and P. D. Kaufman, "Ki-67: more than a proliferation marker," *Chromosoma*, vol. 127, no. 2, pp. 175–186, 2018.

[11] M. Sobecki, K. Mrouj, J. Colinge et al., "Cell-cycle regulation accounts for variability in ki-67 expression levels," *Cancer Research*, vol. 77, no. 10, pp. 2722–2734, 2017.

[12] S. S. Menon, C. Guruvayoorappan, K. M. Sakthivel, and R. R. Rasmi, "Ki-67 protein as a tumour proliferation marker," *Clinica Chimica Acta*, vol. 491, pp. 39–45, 2019.

[13] R. S. Apte, D. S. Chen, and N. Ferrara, "VEGF in signaling and disease: beyond discovery and development," *Cell*, vol. 176, no. 6, pp. 1248–1264, 2019.

[14] K. S. Siveen, K. Prabhu, R. Krishnankutty et al., "Vascular endothelial growth factor (VEGF) signaling in tumour vascularization: potential and challenges," *Current Vascular Pharmacology*, vol. 15, pp. 339–351, 2017.

[15] S. K. Riaz, Y. Iqbal, and M. F. A. Malik, "Diagnostic and therapeutic implications of the vascular endothelial growth factor family in cancer," *Asian Pacific Journal of Cancer Prevention*, vol. 16, no. 5, pp. 1677–1682, 2015.

[16] T. Nagano, M. Tachihara, and Y. Nishimura, "Molecular mechanisms and targeted therapies including immunotherapy for non-small cell lung cancer," *Current Cancer Drug Targets*, vol. 19, no. 8, pp. 595–630, 2019.

[17] A. Del Gobbo, A. Pellegrinelli, G. Gaudioso et al., "Analysis of NSCLC tumour heterogeneity, proliferative and 18F-FDG PET indices reveals Ki67 prognostic role in adenocarcinomas," *Histopathology*, vol. 68, no. 5, pp. 746–751, 2016.

[18] S. P. L. Saw and D. S. W. Tan, "Co-targeting the VEGF axis and immune checkpoints in NSCLC: back to the future," *Annals of Oncology*, vol. 32, no. 9, pp. 1075-1076, 2021.

[19] L. Y. He, H. Zhang, Z. K. Wang, and H. Z. Zhang, "Diagnostic and prognostic significance of E-cadherin and Ki-67 expression in non-small cell lung cancer patients," *European Review for Medical and Pharmacological Sciences*, vol. 20, pp. 3812–3817, 2016.

[20] X. Xue, X. Zang, Y. Liu et al., "Independent risk factors for lymph node metastasis in 2623 patients with non-small cell lung cancer," *Surgical Oncology*, vol. 34, pp. 256–260, 2020.

[21] Y. Ji, M. Zheng, S. Ye, J. Chen, and Y. Chen, "PTEN and Ki67 expression is associated with clinicopathologic features of non-small cell lung cancer," *Journal of Biomedical Research*, vol. 28, pp. 462–467, 2014.

[22] J. Yang, N. Ramnath, K. B. Moysich et al., "Prognostic significance of MCM2, Ki-67 and gelsolin in non-small cell lung cancer," *BMC Cancer*, vol. 6, no. 1, p. 203, 2006.

[23] H. K. Ahn, M. Jung, S.-Y. Ha et al., "Clinical significance of Ki-67 and p53 expression in curatively resected non-small cell lung cancer," *Tumor Biology*, vol. 35, no. 6, pp. 5735–5740, 2014.

[24] Y. Adachi, H. Nakamura, Y. Kitamura et al., "Lymphatic vessel density in pulmonary adenocarcinoma immunohistochemically evaluated with anti-podoplanin or anti-D2-40 antibody is correlated with lymphatic invasion or lymph node metastases," *Pathology International*, vol. 57, no. 4, pp. 171–177, 2007.

[25] T. Donnem, K. Al-Shibli, S. Al-Saad, M. P. Delghandi, L.-T. Busund, and R. M. Bremnes, "VEGF-A and VEGFR-3 correlate with nodal status in operable non-small cell lung cancer: inverse correlation between expression in tumor and stromal cells," *Lung Cancer*, vol. 63, no. 2, pp. 277–283, 2009.

[26] Y. Feng, W. Wang, J. Hu, J. Ma, Y. Zhang, and J. Zhang, "Expression of VEGF-C and VEGF-D as significant markers for assessment of lymphangiogenesis and lymph node metastasis in non-small cell lung cancer," *The Anatomical Record: Advances in Integrative Anatomy and Evolutionary Biology*, vol. 293, no. 5, pp. 802–812, 2010.

[27] X. Guo, Y. Chen, Z. Xu, Z. Xu, Y. Qian, and X. Yu, "Prognostic significance of VEGF-C expression in correlation with COX-2, lymphatic microvessel density, and clinicopathologic characteristics in human non-small cell lung cancer," *Acta Biochimica et Biophysica Sinica*, vol. 41, no. 3, pp. 217–222, 2009.

[28] S. Iwakiri, S. Nagai, H. Katakura et al., "D2-40-positive lymphatic vessel density is a poor prognostic factor in squamous cell carcinoma of the lung," *Annals of Surgical Oncology*, vol. 16, no. 6, pp. 1678–1685, 2009.

[29] H. Kojima, N. Shijubo, G. Yamada et al., "Clinical significance of vascular endothelial growth factor-C and vascular endothelial growth factor receptor 3 in patients with T1 lung adenocarcinoma," *Cancer*, vol. 104, no. 8, pp. 1668–1677, 2005.

[30] T. Nakashima, C. L. Huang, D. Liu et al., "Expression of vascular endothelial growth factor-A and vascular endothelial growth factor-C as prognostic factors for non-small cell lung cancer," *Medical Science Monitor: International Medical Journal of Experimental and Clinical Research*, vol. 10, pp. 157–165, 2004.

[31] E. Ogawa, K. Takenaka, K. Yanagihara et al., "Clinical significance of VEGF-C status in tumour cells and stromal macrophages in non-small cell lung cancer patients," *British Journal of Cancer*, vol. 91, no. 3, pp. 498–503, 2004.

[32] F. Renyi-Vamos, J. Tovari, J. Fillinger et al., "Lymphangiogenesis correlates with lymph node metastasis, prognosis, and angiogenic phenotype in human non-small cell lung cancer," *Clinical Cancer Research*, vol. 11, no. 20, pp. 7344–7353, 2005.

[33] P. Saintigny, M. Kambouchner, M. Ly et al., "Vascular endothelial growth factor-C and its receptor VEGFR-3 in non-small-cell lung cancer: concurrent expression in cancer cells from primary tumour and metastatic lymph node," *Lung Cancer*, vol. 58, no. 2, pp. 205–213, 2007.

[34] I. Takanami, "Lymphatic microvessel density using D2-40 is associated with nodal metastasis in non-small cell lung cancer," *Oncology Reports*, vol. 15, pp. 437–442, 2006.

[35] S. Zuo, Y. Ji, J. Wang, and J. Guo, "Expression and clinical implication of HIF-1α and VEGF-C in non-small cell lung cancer," *Journal of Huazhong University of Science and Technology-Medical Sciences*, vol. 28, no. 6, pp. 674–676, 2008.

[36] M. M. Bi, B. Shang, Z. Wang, and G. Chen, "Expression of CXCR4 and VEGF-C is correlated with lymph node metastasis in non-small cell lung cancer," *Thoracic Cancer*, vol. 8, no. 6, pp. 634–641, 2017.

[37] F. R. Hirsch, G. V. Scagliotti, J. L. Mulshine et al., "Lung cancer: current therapies and new targeted treatments," *The Lancet*, vol. 389, no. 10066, pp. 299–311, 2017.

[38] L. Xia, Y. Liu, and Y. Wang, "PD-1/PD-L1 blockade therapy in advanced non-small-cell lung cancer: current status and future directions," *The Oncologist*, vol. 24, no. S1, pp. 31–41, 2019.

[39] S. Wang, S. Zimmermann, K. Parikh, A. S. Mansfield, and A. A. Adjei, "Current diagnosis and management of small-cell lung cancer," *Mayo Clinic Proceedings*, vol. 94, no. 8, pp. 1599–1622, 2019.

[40] A. H. El-Sherief, C. T. Lau, B. W. Carter, and C. C. Wu, "Staging lung cancer," *Radiologic Clinics of North America*, vol. 56, no. 3, pp. 399–409, 2018.

[41] F. Celikoglu, S. I. Celikoglu, and E. P. Goldberg, "Intratumoural chemotherapy of lung cancer for diagnosis and treatment of draining lymph node metastasis," *Journal of Pharmacy and Pharmacology*, vol. 62, no. 3, pp. 287–295, 2010.

[42] A. R. Dezube and M. T. Jaklitsch, "Minimizing residual occult nodal metastasis in NSCLC: recent advances, current status and controversies," *Expert Review of Anticancer Therapy*, vol. 20, no. 2, pp. 117–130, 2020.

[43] J. N. Jakobsen and J. B. Sørensen, "Clinical impact of ki-67 labeling index in non-small cell lung cancer," *Lung Cancer*, vol. 79, no. 1, pp. 1–7, 2013.

[44] J. Y. Kim, S.-M. Hong, and J. Y. Ro, "Recent updates on grading and classification of neuroendocrine tumors," *Annals of Diagnostic Pathology*, vol. 29, pp. 11–16, 2017.

[45] C. R. Lindsay, S. Le Moulec, F. Billiot et al., "Vimentin and Ki67 expression in circulating tumour cells derived from castrate-resistant prostate cancer," *BMC Cancer*, vol. 16, no. 1, p. 168, 2016.

[46] L. F. Xiong, Y. M. Lou, and L. Wang, "Expressions of Kif2c and Ki-67 in non-small cell lung cancer and their relationship with invasion and metastasis," *Journal of Biological Regulators & Homeostatic Agents*, vol. 34, pp. 541–546, 2020.

[47] Y. Hisada and N. Mackman, "Tissue factor and cancer: regulation, tumor growth, and metastasis," *Seminars in Thrombosis and Hemostasis*, vol. 45, no. 04, pp. 385–395, 2019.

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Retraction

Retracted: Acute Thrombolytic Therapy Combined with the Green Channel Can Reduce the Thrombolytic Time and Improve Neurological Function in Acute Stroke Patients

Evidence-Based Complementary and Alternative Medicine

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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] Z. Hong, M. Zheng, Y. Li et al., "Acute Thrombolytic Therapy Combined with the Green Channel Can Reduce the Thrombolytic Time and Improve Neurological Function in Acute Stroke Patients," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 1127159, 10 pages, 2022.

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Research Article

Acute Thrombolytic Therapy Combined with the Green Channel Can Reduce the Thrombolytic Time and Improve Neurological Function in Acute Stroke Patients

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Objective. To explore the effect of acute thrombolytic therapy combined with the green channel on the thrombolytic time and neurological function in acute stroke patients. *Methods*. A total of 100 acute stroke patients admitted to our hospital from August 2016 to August 2019 were recruited as the research cohort. In experimental group, 50 patients were administered green channel combined with acute thrombolytic therapy, while the patients in control group were administered general therapy. The thrombolytic times, the muscle strength grades, the FMA scores, the Barthel index levels, the NIHSS and SSS scores, the SAS and SDS scores, the arterial pressure and heart rates, the total effective rates, the incidences of postoperative adverse reactions, and the satisfaction levels were compared between the two groups. *Results*. The thrombolysis times in experimental group were shorter than those in control group. In experimental group, there were more patients with muscle strength grades 4 and 5 ($P < 0.05$), the FMA and Barthel index levels were higher, the NIHSS and SSS ($P < 0.05$) and the SAS and SDS scores were lower, the arterial pressure and heart rates were lower ($P < 0.05$), the incidence of postoperative adverse reactions was lower ($P < 0.05$), the total efficiency was higher ($P < 0.05$), and the satisfaction level was higher ($P < 0.05$). *Conclusion*. Acute thrombolytic therapy combined with the green channel can significantly reduce the thrombolytic time and improve the neurological function in acute stroke patients.

1. Introduction

Acute stroke due to cerebral infarction is a very common disease, especially in the middle-aged and elderly population, with a poor prognosis and high mortality rate that will have a significant impact on daily life [1–4]. In serious cases, the normal exercise of patients will be impaired, eventually even leading to disability [5, 6]. As a result of the development of atherosclerosis, intracranial blood vessels become embolised, in most cases blocking the flow of blood to a part of the brain, leading to massive cerebral infarction and stroke [7, 8]. Thrombolysis has always been a therapeutic method for stroke caused by obstruction [9]. Intravenous thrombolytic therapy can rapidly restore cerebral blood flow, can improve brain tissue metabolism, can protect the ischaemic semidark zone tissue around the infarct with only functional changes from forming necrosis, can maximise the signs and symptoms of neurological deficits, and can reduce the mortality and disability of patients [10]. Urokinase, an enzyme that acts directly on the endogenous fibrinolytic system, is derived from the urine of healthy individuals and has been widely used to treat thrombolysis in stroke patients [11]. It catalyses the conversion of a fibrin hydrolase, plasminogen, into an active form of plasmin and plays a thrombolytic role [12]. A variety of clinical studies on stroke are also treated with urokinase activating fibre enzymic, which is a kind of acute thrombolytic therapy [13, 14].

Untreated cerebral ischaemia in stroke patients has the potential to cause cognitive impairment, which not only has a serious impact on social functioning but also places a burden

on family care [15]. There is also a risk of motor dysfunction, most commonly resulting in hemiparesis and, in severe cases, bed rest [16]. If the ischaemic stroke is large, it may even cause the patient to become unconscious and endanger his or her life. In the acute phase, ischaemic stroke can also lead to complications, such as lung infection, stress ulcers, and deep vein thrombosis of the lower limbs [17]. The urgency of acute stroke treatment has led to the creation of a green channel for patients in many clinical settings so that they can receive timely and effective treatment [18, 19]. In recent years, there have been many studies on the effects of green channel and thrombolytic therapy, but there are few studies that evaluate the effects of green channel and thrombolytic therapy based on mental health status, nerve function, limb function, and other indicators.

This study aimed to analyse the effect of acute thrombolytic therapy combined with the green channel on patients with acute stroke through their anxiety and depression scores, thrombolytic times, neurological function, and other indicators.

2. Materials and Methods

2.1. Baseline Data. 100 patients with acute cerebral stroke according to Chinese Guidelines for Diagnosis and Treatment of Acute Ischemic Stroke (2014) who were admitted to our hospital from August 2016 to August 2019 were recruited for prospective study and divided into two groups by random number table method, of which 50 patients received green channel combined with acute thrombolysis (experimental group), and 50 cases were given traditional treatment (control group).

2.1.1. Inclusion Criteria

(1) Patients with a strong compliance

(2) Patients who could correctly understand the instructions of the medical staff during the treatment

(3) Patients who could accurately express physical discomfort, patients whose symptoms were stable within the last month, and in whom no new strokes occurred

(4) Patients and their families who agreed to the study and who signed the consent form

2.1.2. Exclusion Criteria

(1) Patients who suffered from other serious underlying diseases, such as dysfunction of the heart, liver, kidneys, and other internal organs

(2) Patients who suffered from mental disorders, such as frequent anxiety, depression, and suicide

This study was approved by our hospitals' ethics committees.

2.2. Methods of Treatment

Experimental Group. The patient received acute thrombolytic therapy combined with green channel treatment. When the patient is admitted to the hospital, the medical staff needs to make an initial assessment of the patient's vital signs as well as other indicators (muscle tension, state of consciousness, facial expression, etc.) and immediately notify the emergency department. Several departments such as the emergency department, radiology, neurology, and laboratory then need to join forces to set up the green channel immediately. Next, the designated application form was used to avoid having the patient's queue for treatment. At the same time, the attending physician in the department of neurology had to be in place within 5 minutes. The NIHSS (neurological impairment) score scale test and a physical examination were carried out within 10 min [20]. The emergency nurses needed to establish venous channels for the patients within 5 minutes, and they took blood samples and sent them to the department of laboratory for testing. The medical staff in the department of laboratory conducted the blood test within 40 minutes and sent the test results to the corresponding departments. The radiology medical staff performed a brain CT or an MRI examination on the patient within 30 minutes and sent the examination results to the corresponding department. The patient's condition was then assessed by the attending neurologist. With the consent of the patient and family, intravenous thrombolytic therapy with urokinase was performed. Recombinant human tissue fibrinogen activator (rt-PA) was used for thrombolysis. A microcatheter was delivered to the stenosis or occlusion site (the head end was as close to the thrombus as possible) by superselection. The r-tpA (20–30 mg) (average 25 mg) +50 ml normal saline was infused for 30–60 min. The cerebral angiography was reviewed to determine the recanalization of the occluded vessels. After the surgery, heparin was used for 24 hours to maintain normal coagulation function, and the coagulation mechanism was monitored. During the treatment, the thrombolysis was stopped immediately in the case of cerebral haemorrhage, and fresh frozen plasma and platelets were used to maintain fibrin at more than 1 g/L. At the same time, 30 mg of edaravone (Lijun Pharmaceutical Co., Ltd., batch no.: H20120042) was given via intravenous drip twice a day. After 24 h, the skull was reexamined with CT or MRI to confirm that there was no intracranial haemorrhage, and then low-molecular-weight heparin and aspirin were used for anticoagulation. Rehabilitation training was carried out after the operation.

Control Group. The patients underwent general therapy [21]. The medical staff needed to diagnose the specific conditions of the patient's disease; then, they formulated a thrombolytic therapy and cooperated with postoperative rehabilitation training.

2.3. The Index Levels

2.3.1. Thrombolytic times. The patients' thrombolytic times were observed and compared in the two groups.

2.3.2. Muscle Strength Grades. The patients' muscle strength after the treatment was used as an index to judge the limb recovery levels. Grade 0: The patient cannot feel muscle

contractions. Grade 1: The patient had no significant movement, but muscle contractions were possible. Grade 2: The patients was unable to overcome the limb weight movement and the horizontal surface of the movement without load. Grade 3: The patient could move aginst the body's own weight. Grade 4: The patient could exercise to overcome moderate resistance. Grade 5: The patient could move on his or her own.

2.3.3. Limb Function. Before and after treatment for one month, the limb function (FMA) scores [22] and the Barthel index [23] levels were compared to evaluate the patients' limb recoveries. The higher the score, the better the recovery of the limb effect.

2.3.4. Neurological Function and Mental Health. The NIHSS and neurological function scores (SSS) were used to evaluate the neurological function recovery of the patients in the two groups. The better the recovery of a patient's neurological function, the lower the score. The self-rating anxiety scale (SAS) [24] and the self-rating depression scale (SDS) [25] were used to evaluate the mental health levels (20 items, 0–100 points) of the patients in experimental group and control group before the treatment and after the treatment for 1 month. The worse the mental health level of patients, the higher the score.

2.3.5. Arterial Pressure and Heart Rate. After the hospitalization, the patients' arterial pressure and heart rates were measured in real time in the two groups. The patients' arterial pressure and heart rates were compared in the two groups before the treatment and after the treatment for 14 days.

2.3.6. Postoperative Complications. After the operation and for 28 days, the patients' adverse reaction indexes (epilepsy, urinary incontinence, pulmonary infection, and dementia after stroke) were determined and compared.

2.3.7. Total Effective Rate. Criterion of the therapeutic effect: The neurological function improvement rate was over 46%, and the daily living abilities were basically restored (markedly effective). The nerve function improvement rate was 18%~45%, and the daily living abilities were recovered to a certain extent (effective). The neurological function improvement rate was less than 18%, and the daily living abilities were not restored (ineffective). Total effective rate = markedly effective rate + effective rate.

2.3.8. The Treatment Satisfaction Was Compared in the Two Groups. The treatment satisfaction questionnaire was used to test the patients' satisfaction with treatment. Then, the treatment satisfaction scores of the patients were compared in the two groups. We drew up the test content and evaluation criteria. The total possible score was 100 points, of which 100–85 points was considered satisfactory, more than 70 points was considered basically satisfactory, and less than 70 points was considered unsatisfactory.

2.4. Statistical Methods. SPSS 19.0 (AsiaAnalytics, formerly SPSS China) was used for the statistical analysis of the comprehensive data. X^2 tests were used for the count data, such as the baseline data (gender, hypertension or not, hyperlipidaemia, diabetes, incidence of adverse reactions, and total effective rate). The measurement data were expressed as $(X \pm S)$ and t tests were used, such as comparing the scores in experimental group and control group. A difference was considered statistically significant when $P < 0.05$.

3. Results

3.1. Baseline Data of the Patients in Both Groups. There were no significant differences in terms of the baseline data, including gender, age, BMI, smoking history, drinking history, and the obesity status between the two groups ($P > 0.05$) (Table 1).

3.2. Thrombolytic Times of the Patients in Both Groups. The thrombolytic time of experimental group was (68.74 ± 10.75), and the thrombolytic time of control group was (145.65 ± 17.45). The thrombolytic time in experimental group was significantly shorter than the thrombolytic time in control group ($P < 0.05$) (Figure 1).

3.3. The Muscle Strength Grades of the Patients in Both Groups. There were significantly fewer patients in experimental group with grades 0–3 than there were in control group, and there were significantly more patients in experimental group with grades 4-5 than there were in control group ($P < 0.05$) (Table 2).

3.4. Limb Function of Patients in Both Groups. In experimental group, the FMA score was (49.78 ± 4.54) before the treatment and (90.34 ± 7.67) at one month after the treatment. In control group, the FMA score was (49.89 ± 4.68) before the treatment and (79.25 ± 6.23) at one month after the treatment. The FMA score improved in both groups at one month after the treatment, and the FMA score in experimental group was significantly higher than that in control group at one month after the treatment ($P < 0.05$). In experimental group, the Barthel index was (42.89 ± 3.45) before the treatment and (84.65 ± 5.81) at one month after the treatment. In control group, the Barthel index was (43.13 ± 3.24) before the treatment and (74.31 ± 4.45) at one month after the treatment. The Barthel index improved in both groups at one month after the treatment, and the Barthel index in experimental group was significantly higher than it was in control group at one month after the treatment ($P < 0.05$) (Figure 2).

Table 1: Baseline data of the patients in both groups ($n = 50$).

Classification	Experimental group	Control group	t/X^2	P
Gender			0.04	0.839
Male	22 (44.00)	21 (42.00)		
Female	28 (56.00)	29 (58.00)		
Age (years old)	67.53 ± 6.44	66.98 ± 7.07	0.42	0.685
BMI (kg/m^2)	25.12 ± 2.83	24.86 ± 2.49	0.49	0.627
Smoking or not			0.04	0.841
Yes	24 (48.00)	25 (50.00)		
No	26 (52.00)	25 (50.00)		
Drinking or not			0.98	0.545
Yes	23 (46.00)	20 (40.00)		
No	27 (54.00)	30 (60.00)		
Hyperlipidemia			0.04	0.841
Yes	24 (48.00)	23 (46.00)		
No	26 (52.00)	27 (54.00)		
Hypertension			0.36	0.548
Yes	25 (50.00)	22 (44.00)		
No	25 (50.00)	28 (56.00)		
Diabetes mellitus			0.04	0.839
Yes	21 (42.00)	20 (40.00)		
No	29 (58.00)	30 (60.00)		

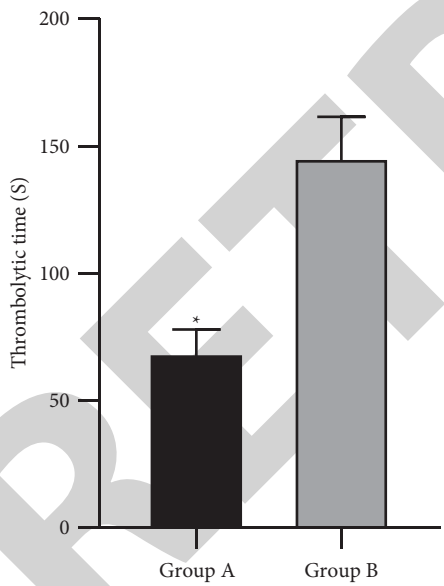

Figure 1: Comparison of the thrombolytic times in the two groups. The thrombolytic times in experimental group were significantly shorter than they were in control group ($P < 0.05$). *Note.* * indicates compared with control group, $P < 0.05$.

3.5. The Neurological Function and Mental Health of the Patients in the Two Groups

3.5.1. Neurological Function. In experimental group, the patients' NIHSS scores were (68.32 ± 5.66) before the treatment and (33.34 ± 2.77) at one month after the treatment. In control group, the patients' NIHSS scores were (68.95 ± 5.87) before the treatment and (46.67 ± 6.23) at one month after the treatment. The NIHSS scores decreased in both groups at one month after the treatment, and the NIHSS scores in experimental group were significantly lower than they were in control group at one month after the treatment ($P < 0.05$). In experimental group, the patients' SSS scores were (24.87 ± 2.42) before the treatment and (12.45 ± 1.31) at one month after the treatment. In control group, the patients' SSS scores were (24.34 ± 2.04) before the treatment and (20.13 ± 0.98) at one month after the treatment. The SSS scores decreased in both groups at one month after the treatment, and the SSS scores in experimental group were significantly lower than they were in control group at one month after the treatment ($P < 0.05$) (Figure 3).

Table 2: Muscle strength grades of the patients in both groups ($n = 50$).

Classification	Experimental group	Control group	X^2	P
0	1	9	7.11	0.008
1	1	10	8.27	0.004
2	1	10	8.27	0.004
3	1	10	8.27	0.004
4	22	5	14.66	<0.001
5	24	6	18.38	<0.001

3.5.2. Mental Health. Before the treatment and at one month after the treatment, the SAS scores were (63.87 ± 9.61) and (40.43 ± 5.53), respectively, in experimental group. Before the treatment and at one month after the treatment, the SAS scores were (64.18 ± 9.45) and (52.21 ± 5.43), respectively, in control group. At one month after the treatment, the SAS scores in experimental group were significantly lower than they were in control group ($P < 0.05$). Before the treatment and at one month after the treatment, the SDS scores were (61.13 ± 8.54) and (41.34 ± 5.34), respectively, in experimental group. Before the treatment and at one month after the treatment, the SDS scores were (60.87 ± 8.05) and (53.54 ± 6.45), respectively, in control group. At one month after the treatment, the SDS scores in experimental group were significantly lower than they were in control group ($P < 0.05$) (Figure 4).

3.6. Arterial Pressure and Heart Rate in the Two Groups. Before and at one month after the treatment, the arterial pressure in experimental group was (118.12 ± 4.92) mmHg and (96.12 ± 2.02) kPa, respectively. Before and at one month after the treatment, the heart rate in experimental group was (105.88 ± 4.79) bpm and (87.54 ± 3.67) bpm, respectively. Before and at one month after the treatment, the arterial pressure in control group was (117.85 ± 5.28) mmHg and (103.78 ± 3.01) kPa, respectively. Before and at one month after the treatment, the heart rate in control group was (106.24 ± 5.26) bpm and (95.47 ± 3.56) bpm, respectively. The arterial pressure and heart rate were compared between the two groups. The arterial pressure and heart rate in experimental group were significantly higher than they were in control group after the operations (Figure 5).

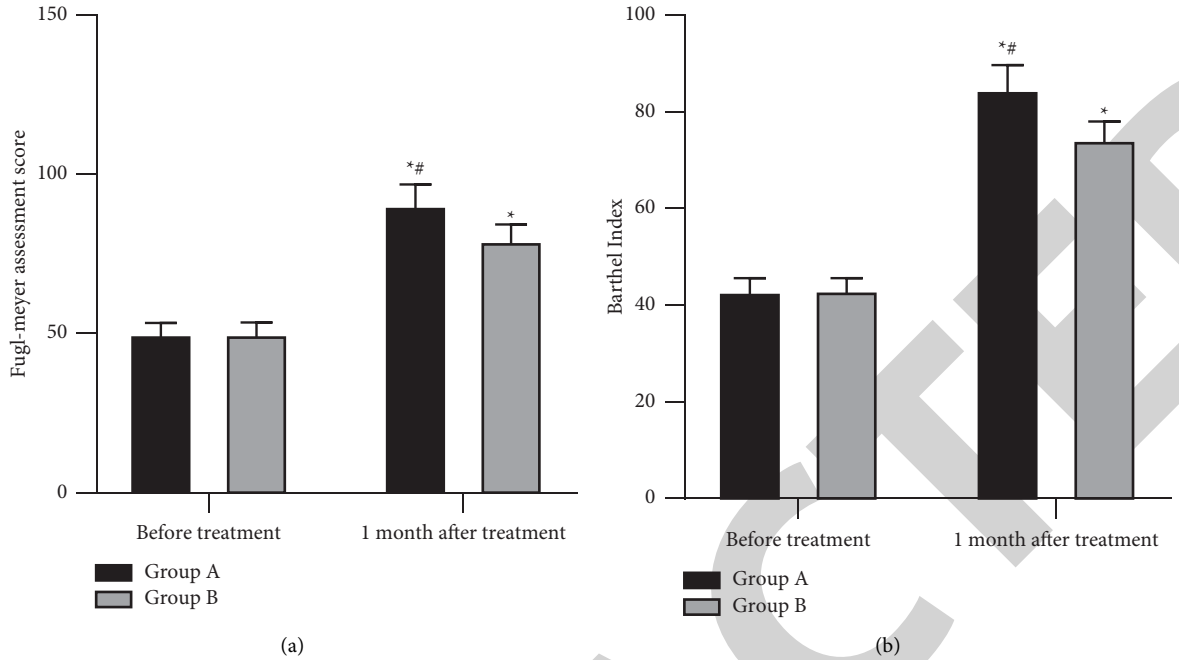

Figure 2: Comparison of the limb function between the two groups. (a) FMA scores in the two groups: The FMA scores of both groups improved at one month after the treatment, and the FMA scores in experimental group were significantly higher than they were in control group at one month after the treatment ($P < 0.05$). (b) Barthel index levels in the two groups: The Barthel index levels improved in both groups at one month after the treatment, and the Barthel index levels in experimental group were significantly higher than they were in control group at one month after the treatment ($P < 0.05$). *Note.* *means a comparison with before the treatment, $P < 0.05$; #means a comparison with control group, $P < 0.05$.

3.7. Postoperative Complications of the Patients in the Two Groups. In experimental group, there was 1 case of epilepsy (2.00%), 1 case of urinary incontinence (2.00%), 1 case of dementia after a stroke (2.00%), and no pulmonary infections, so the incidence of adverse reactions was 6%. In control group, there were 5 cases of epilepsy (10.00%), 5 cases of urinary incontinence (38.00%), 3 cases of pulmonary infection (6.00%), and 2 cases of dementia after a stroke (4.00%), so the incidence of adverse reactions was 30%. The postoperative complication rate in control group was significantly higher than it was in experimental group ($P < 0.05$) (Table 3).

3.8. Total Effective Rates of the Patients in the Two Groups. In experimental group, there were 26 cases that were markedly effective, 21 cases that were effective, and 4 cases that were ineffective, for a total effective rate of 92.00%. In control group, there were 18 cases that were markedly effective, 20 cases that were effective, and 12 cases that were ineffective, for a total effective rate of 76%. The total effective rate in experimental group was significantly higher than it was in control group ($P < 0.05$) (Table 4).

3.9. Treatment Satisfaction in the Two Groups. In experimental group, there were 35 patients who were satisfied, 14 patients who were basically satisfied, 1 patients who was dissatisfied, for a satisfaction rate of 98.00%. In control group, there were 20 patients who were satisfied, 15 cases who were basically satisfied, and 15 cases who were dissatisfied, for a satisfaction rate of 70.00%. The satisfaction in experimental group was significantly higher than it was in control group ($P < 0.05$) (Table 5).

4. Discussion

Cerebral thrombosis is a condition in which the cerebral arteries are thickened, narrowed, or occluded as a result of thrombosis secondary to local vascular disease, resulting in reduced or interrupted blood flow to the brain, ischaemia, hypoxia, necrosis, and focal neurological deficits in brain tissue [26]. As a disease with a high mortality and disability rate, the choice of treatment for acute stroke is undoubtedly very important, and acute thrombolysis is an excellent method of thrombolysis, of which rt-PA is an appropriate choice [27, 28]. In this experiment, the effect of acute thrombolytic therapy combined with the green channel on acute stroke patients was studied. The green life-safety channel for emergency care refers to the principle of prioritising resuscitation, examination, and hospitalization for all patients in critical and serious conditions [29]. When a patient arrives at the hospital, if the onset of stroke is very short, a dedicated person will accompany him to the hospital, examine him, treat him, and give him medication as quickly as possible in order to shorten the delay, because once a stroke occurs, there is a lot of brain cell necrosis, which increases with time [30]. A good green channel for stroke care during this process will allow the patient to be treated as quickly as possible.

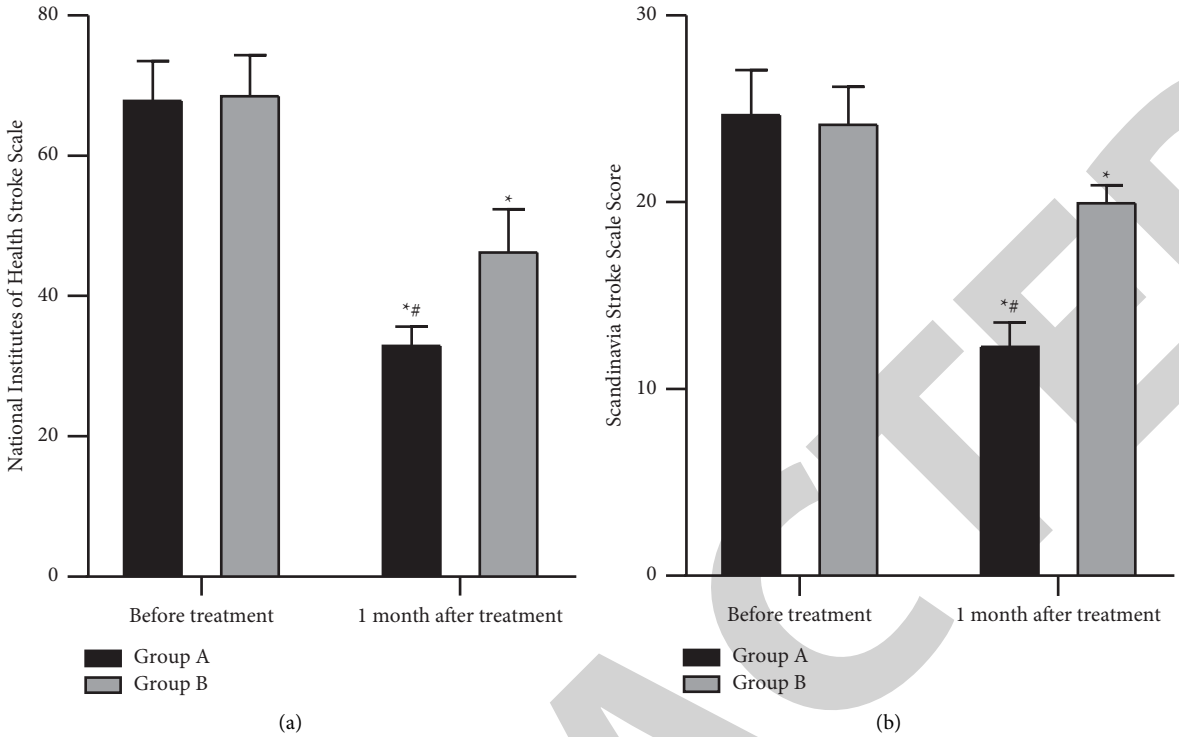

Figure 3: Comparison of neurological function between the two groups. (a) NIHSS scores in the two groups: The NIHSS scores were reduced in both groups at one month after the treatment, and the NIHSS scores in experimental group were significantly lower than they were in control group at one month after the treatment ($P < 0.05$). (b) The SSS scores in both groups: The SSS scores decreased in both groups at one month after the treatment, and the SSS scores in experimental group were significantly lower than they were in control group at one month after the treatment ($P < 0.05$). *Note.* *means a comparison with before the treatment, $P < 0.05$; #means a comparison with control group, $P < 0.05$.

Firstly, we compared the thrombolytic times of the patients in the two groups. The results showed that patients receiving green channel and acute thrombolytic therapy had significantly shorter thrombolysis times than those receiving general therapy. rt-PA is a wonderful method for thrombolytic therapy. Its mechanism of action is to catalyse fibrin hydrolase into active fibrinolytic enzymes to achieve a thrombolytic effect. At the same time, rt-PA needs to be completed in a short time; otherwise, the effect will be poor [31]. Meanwhile, acute stroke treatment needs to buy time, so in many cases green channels need to be opened to enable patients to receive timely treatment [32]. In contrast, the patients undergoing the conventional treatment are at a disadvantage. Because the common treatment is not as timely as the acute thrombolysis, the thrombolysis times are significantly shorter than they are in the patients receiving the acute thrombolysis with the green channel. Following this, our results comparing the patients' limb recovery showed that, although all had undergone rehabilitation, patients receiving acute thrombolysis in the green channel generally had muscle strength levels 4 and 5, with higher FMA and BI (i.e., better limb recovery than their counterparts, patients who received general treatment). Based on the timing of previous thrombolysis, patients who underwent acute thrombolysis using the green channel had better thrombolysis results and this group of patients could complete their rehabilitation in a better and more timely manner. As a result, they had better limb recovery.

The patients' neurological function and mental health were also tested in our study. Our study revealed that the SSS and NIHSS scores after the acute thrombolytic therapy using the green channel were lower, and the SAS and SDS scores were also lower. Stroke is caused by cerebral obstruction, which causes ischaemic damage to the brain. Subsequently, inflammatory factors cause vasoconstriction, reduced blood flow, and endothelial cell damage in the brain, resulting in significant impairment of neurological function [33]. During thrombolysis with rt-PA, there is a dynamic balance between coagulation and fibrinolysis, which consumes large amounts of coagulation factors and promotes thrombolysis [34]. Cerebral ischaemic symptoms caused by thrombotic obstruction were correspondingly relieved, with better recovery of brain cells and neurological function. We also compared the overall efficiency, complication rates and patient satisfaction. The results showed that patients treated with acute thrombolysis combined with green channel had a higher overall efficiency and satisfaction rate and fewer complications. According to the results of the thrombolytic times and neurological function recovery, the patients with acute thrombolytic therapy combined with the green channel had shorter thrombolytic times, so their neurological function recovery was better, and their limb function recovery was faster. In addition to lower SDS and SAS scores,

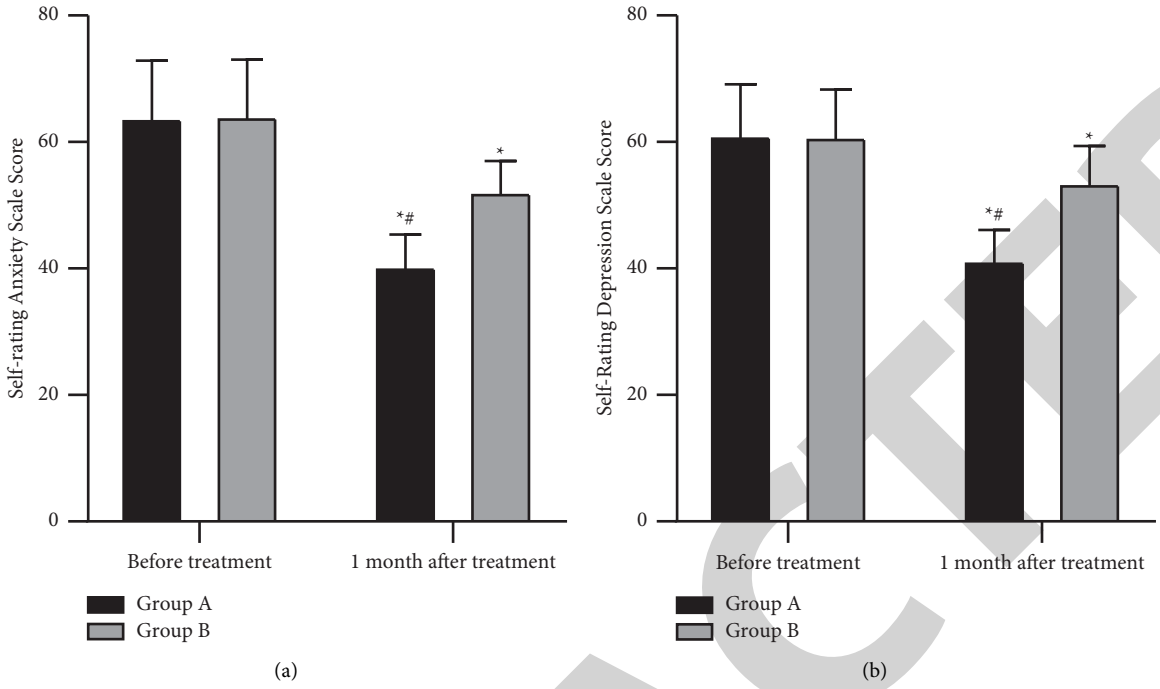

Figure 4: Comparison of the mental health in the two groups. (a) SAS scores in the two groups: The SAS scores were decreased in the two groups after the treatment, and the SAS scores in experimental group were significantly lower than they were in control group ($P < 0.05$). (b) The SDS scores in the two groups: The SDS scores were decreased in the two groups after the treatment, and the SDS scores in experimental group were significantly lower than they were in control group ($P < 0.05$). *Note*. *means a comparison with before the treatment, $P < 0.05$; #means a comparison with control group, $P < 0.05$.

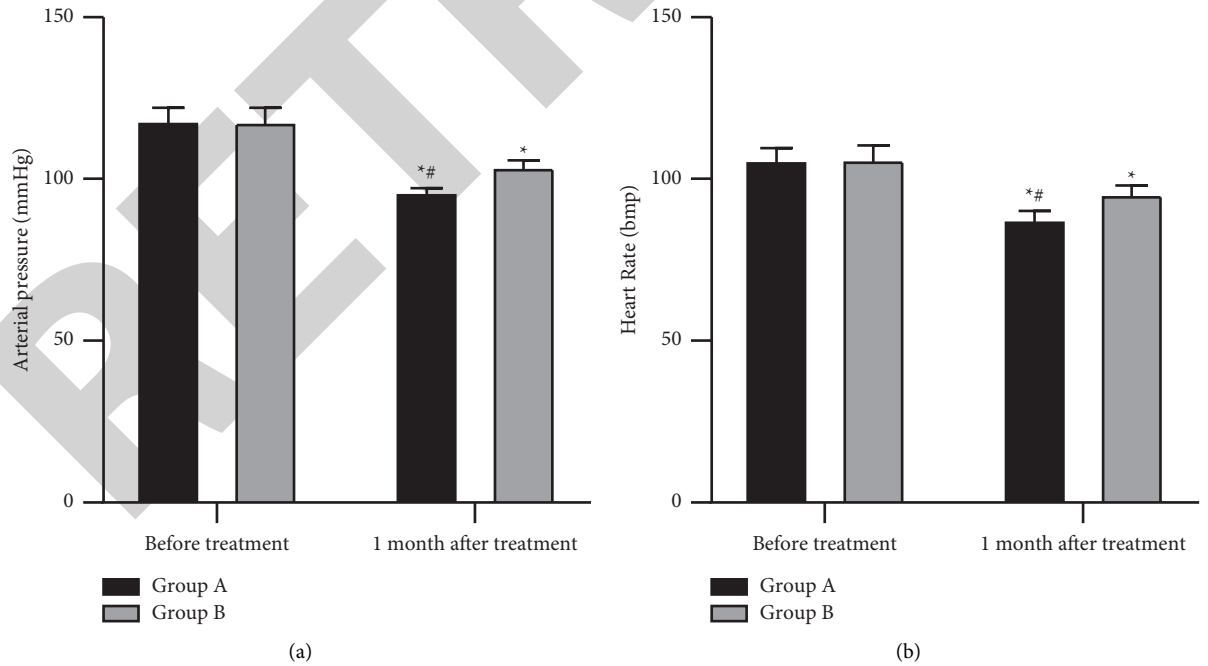

Figure 5: Comparison of the arterial pressure and heart rates in the two groups. (a) The arterial pressure before and at one month after the treatment: The arterial pressure in the two groups at one month after the treatment was significantly lower than it was before the treatment, and the arterial pressure levels in the experimental group were significantly lower than they were in control group ($P < 0.05$). (b) The heart rates before and at one month after the treatment: The heart rates in the two groups after treatment for one month were significantly lower than they were before the treatment, and the heart rates in experimental group were significantly lower than they were in control group ($P < 0.05$). *Note*. *means a comparison with before the treatment, $P < 0.05$; #means a comparison with control group, $P < 0.05$.

Table 3: Incidence of adverse reactions of the patients in both groups ($n = 50$).

Classification	Experimental group	Control group	X^2	P
Epilepsy (%)	1 (2.00)	5 (10.00)		
Urinary incontinence (%)	1 (2.00)	5 (10.00)		
Pulmonary infection (%)	0 (0.00)	3 (6.00)		
Dementia after stroke (%)	1 (2.00)	2 (4.00)		
Incidence of adverse reactions (%)	3 (6.00)	15 (30.00)	9.76	0.002

Table 4: Total effective rate of the patients in both groups ($n = 50$).

Classification	Experimental group	Control group	X^2	P
Markedly effective	25 (50.00)	18 (36.00)	—	—
Effective	21 (38.00)	20 (40.00)	—	—
Ineffective	4 (8.00)	12 (24.00)	—	—
Total effective rate (%)	46 (92.00)	38 (76.00)	4.76	0.03

Table 5: Satisfaction of the patients in both groups ($n = 50$).

Classification	Experimental group	Control group	X^2	P
Satisfactory	35 (70.00)	20 (40.00)	—	—
Basic satisfaction	14 (28.00)	15 (30.00)	—	—
Dissatisfaction	1 (2.00)	15 (30.00)	—	—
Satisfaction (%)	49 (98.00)	35 (70.00)	15.48	<0.001

we found that their anxiety and depression were better relieved by improvement, resulting in higher overall efficiency and fewer postoperative complications. Therefore, the patients were more satisfied, and the evaluation rate was higher. In the clinical study of Qin et al. on patients with acute cerebral infarction, it was found that green channel and rt-PA thrombolytic therapy had a better effect on thrombus [35]. In the clinical study of intravenous thrombolytic therapy conducted by Liu et al., it was found that reducing the interval time of intravenous thrombolytic therapy in hospital was helpful in accelerating the recovery of patients after stroke [36]. This is similar to this research on the green channel.

Traditional Chinese medicine believes that thrombosis is mostly caused by stagnation of qi and blood, so traditional Chinese medicines for thrombolysis generally have the effect of promoting blood circulation and removing blood stasis [37]. Lysis capsule is mainly composed of Dilong, which has the functions of clearing heat and calming convulsions, promoting blood circulation, and dredging collaterals effect [38]. Xiaoshuan Tongluo capsules can also be used as an auxiliary, which has the effect of promoting blood circulation and removing blood stasis, warming meridians, and dredging collaterals. It is used in the recovery period of meridians and collaterals in stroke caused by qi deficiency and blood stasis and has a certain role in assisting thrombolysis [39]. Chinese herbal medicine Panax notoginseng not only has the effect of promoting blood circulation and removing blood stasis, but also nourishing blood and relieving pain [40]. The anticoagulant effect of Panax notoginseng can increase coronary blood flow, slow down heart rate, control blood pressure, reduce coronary resistance, reduce myocardial oxygen consumption, and prevent platelet aggregation, thereby playing an antithrombotic effect [41].

There are some limitations and shortcomings in this trial. Firstly, this trial only tested partial thrombolysis times and neurological function scores. Secondly, due to equipment limitations, we were unable to explore the target molecules and related pathways that lead to stroke, nor did we perform animal experiments on the related molecules. Hence, in our subsequent studies, we will actively procure equipment to further investigate these molecular mechanisms.

5. Conclusion

To sum up, acute thrombolytic therapy combined with the green channel can significantly reduce the thrombolytic times and improve the neurological function in acute stroke patients. It can cure acute stroke patients in a timelier manner, so it is worthy of clinical promotion [42].

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding the publication of this paper.

References

[1] M. Writing Group, D. Mozaffarian, E. J. Benjamin et al., "American heart association statistics C and stroke statistics S. Executive summary: heart disease and stroke statistics--

2016 update: a report from the American heart association," *Circulation*, vol. 133, pp. 447–454, 2016.

[2] B. Zhang, D. Wang, T. F. Ji, L. Shi, and J. L. Yu, "Overexpression of lncRNA ANRIL up-regulates VEGF expression and promotes angiogenesis of diabetes mellitus combined with cerebral infarction by activating NF-κB signaling pathway in a rat model," *Oncotarget*, vol. 8, no. 10, pp. 17347–17359, 2017.

[3] W. Li, C. Jin, A. Vaidya et al., "Blood pressure trajectories and the risk of intracerebral hemorrhage and cerebral infarction: a prospective study," *Hypertension*, vol. 70, no. 3, pp. 508–514, 2017.

[4] W. Wu, Y. Guan, K. Xu et al., "Plasma homocysteine levels predict the risk of acute cerebral infarction in patients with carotid artery lesions," *Molecular Neurobiology*, vol. 53, no. 4, pp. 2510–2517, 2016.

[5] I. P. Hsueh, C. H. Wang, T. H. Liou, C. H. Lin, and C. L. Hsieh, "Test-retest reliability and validity of the comprehensive activities of daily living measure in patients with stroke," *Journal of Rehabilitation Medicine*, vol. 44, no. 8, pp. 637–641, 2012.

[6] A. Azad, T. Mohammadinezhad, G. Taghizadeh, and L. Lajevardi, "Clinical assessment of activities of daily living in acute stroke: validation of the persian version of katz index," *Medical Journal of the Islamic Republic of Iran*, vol. 31, no. 1, pp. 178–183, 2017.

[7] L. Catanese, J. Tarsia, and M. Fisher, "Acute ischemic stroke therapy overview," *Circulation Research*, vol. 120, no. 3, pp. 541–558, 2017.

[8] J. Puyal, V. Ginet, and P. G. Clarke, "Multiple interacting cell death mechanisms in the mediation of excitotoxicity and ischemic brain damage: a challenge for neuroprotection," *Progress in Neurobiology*, vol. 105, pp. 24–48, 2013.

[9] C. Nichols, J. Carrozzella, S. Yeatts, T. Tomsick, J. Broderick, and P. Khatri, "Is periprocedural sedation during acute stroke therapy associated with poorer functional outcomes?" *Journal of Neurointerventional Surgery*, vol. 10, pp. i40–i43, 2018.

[10] S. Liu, S. R. Levine, and H. R. Winn, "Targeting ischemic penumbra: part I-from pathophysiology to therapeutic strategy," *Journal of Experimental Stroke & Translational Medicine*, vol. 3, no. 1, pp. 47–55, 2010.

[11] F. C. Yang, C. C. Lin, C. J. Hsueh et al., "Local intra-arterial thrombolysis with urokinase for acute ischemic stroke before and after the approval of intravenous tissue plasminogen activator treatment in Taiwan," *Annals of Vascular Surgery*, vol. 24, no. 8, pp. 1117–1124, 2010.

[12] S. Uchiyama, M. Yamazaki, and M. Iwata, "Strategy for circulatory disturbance," *Rinsho Shinkeiexperimental Groupku*, vol. 41, no. 12, pp. 1056–1059, 2001.

[13] H. Kawano, C. Levi, Y. Inatomi et al., "International benchmarking for acute thrombolytic therapy implementation in Australia and Japan," *Journal of Clinical Neuroscience*, vol. 29, pp. 87–91, 2016.

[14] T. Matsuki and K. Toyoda, "The future perspective of acute thrombolytic therapy for acute ischemic stroke," *Nihon Rinsho*, vol. 74, no. 4, pp. 613–620, 2016.

[15] J. X. Wu, J. Xue, L. Zhuang, and C. F. Liu, "Plasma parameters and risk factors of patients with post-stroke cognitive impairment," *Annals of Palliative Medicine*, vol. 9, no. 1, pp. 45–52, 2020.

[16] L. J. Melton, R. D. Brown Jr, S. J. Achenbach, W. M. O'Fallon, J. P. Whisnant, and J. P. Whisnant, "Long-term fracture risk following ischemic stroke: a population-based study," *Osteoporosis International*, vol. 12, no. 11, pp. 980–986, 2001.

[17] H. B. Van der Worp and L. J. Kappelle, "Complications of acute ischaemic stroke," *Cerebrovascular Diseases*, vol. 8, no. 2, pp. 124–132, 1998.

[18] B. C. Campbell, "Thrombolysis and thrombectomy for acute ischemic stroke: strengths and synergies," *Seminars in Thrombosis and Hemostasis*, vol. 43, no. 02, pp. 185–190, 2016.

[19] Y. Shen, B. H. Chao, L. Cao, W. J. Tu, and L. D. Wang, "Stroke center care and outcome: results from the CSPPC stroke program," *Translaional Stroke Research*, vol. 11, no. 3, pp. 377–386, 2020.

[20] T. Askim, J. Bernhardt, L. Churilov, and B. Indredavik, "The scandinavian stroke scale is equally as good as the national institutes of health stroke scale in identifying 3-month outcome," *Journal of Rehabilitation Medicine*, vol. 48, no. 10, pp. 909–912, 2016.

[21] Chinese Sociaty of Neurology and Chinese Stroke Society, "Chinese guidelines for diagnosis and treatment of acute ischemic stroke 2014," *Chinese Journal of Neurology*, vol. 48, pp. 246–257, 2015.

[22] H. T. Peters, S. J. Page, and A. Persch, "Giving them a hand: wearing a myoelectric elbow-wrist-hand orthosis reduces upper extremity impairment in chronic stroke," *Archives of Physical Medicine and Rehabilitation*, vol. 98, no. 9, pp. 1821–1827, 2017.

[23] L. T. Y. Silveira, J. M. D. Silva, J. M. P. Soler, C. Y. L. Sun, C. Tanaka, and C. Fu, "Assessing functional status after intensive care unit stay: the barthel index and the katz index," *International Journal for Quality in Health Care*, vol. 30, no. 4, pp. 265–270, 2018.

[24] M. Samakouri, G. Bouhos, M. Kadoglou, A. Giantzelidou, K. Tsolaki, and M. Livaditis, "Standardization of the Greek version of zung's self-rating anxiety scale (SAS)," *Psychiatriki*, vol. 23, no. 3, pp. 212–220, 2012.

[25] J. Jokelainen, M. Timonen, S. Keinanen-Kiukaanniemi, P. Harkonen, H. Jurvelin, and K. Suija, "Validation of the Zung self-rating depression scale (SDS) in older adults," *Scandinavian Journal of Primary Health Care*, vol. 37, no. 3, pp. 353–357, 2019.

[26] D. M. Wootton and D. N. Ku, "Fluid mechanics of vascular systems, diseases, and thrombosis," *Annual Review of Biomedical Engineering*, vol. 1, no. 1, pp. 299–329, 1999.

[27] S. Vidale, A. Consoli, M. Arnaboldi, and D. Consoli, "Postischemic inflammation in acute stroke," *Journal of Clinical Neurology*, vol. 13, p. 1, 2017.

[28] R. Tarr, D. Hsu, Z. Kulcsar et al., "The post trial: initial postmarket experience of the penumbra system: revascularization of large vessel occlusion in acute ischemic stroke in the United States and Europe," *Journal of Neurointerventional Surgery*, vol. 10, pp. i35–i38, 2018.

[29] X. Wu, "Reflections on strengthening the construction of emergency green life channels," *China Medical Management Science*, no. 2, pp. 26-27, 2016.

[30] A. G. Ceulemans, T. Zgavc, R. Kooijman, S. Hachimi-Idrissi, S. Sarre, and Y. Michotte, "The dual role of the neuroinflammatory response after ischemic stroke: modulatory effects of hypothermia," *Journal of Neuroinflammation*, vol. 7, no. 1, p. 74, 2010.

[31] M. Castellanos, C. van Eendenburg, C. Gubern et al., "Low levels of caveolin-1 predict symptomatic bleeding after thrombolytic therapy in patients with acute ischemic stroke," *Stroke*, vol. 49, no. 6, pp. 1525–1527, 2018.

[32] L. Ren, C. Li, W. Li et al., "Fast-tracking acute stroke care in China: Shenzhen stroke emergency map," *Postgraduate Medical Journal*, vol. 95, no. 1119, pp. 46-47, 2019.

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Retraction

Retracted: Progress of Research on the Application of Triple Antibiotic Paste and Hydrogel Scaffold Materials in Endodontic Revascularization: A Systematic Review

Evidence-Based Complementary and Alternative Medicine

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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] J. Zhao, "Progress of Research on the Application of Triple Antibiotic Paste and Hydrogel Scaffold Materials in Endodontic Revascularization: A Systematic Review," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 3610461, 5 pages, 2022.

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Review Article

Progress of Research on the Application of Triple Antibiotic Paste and Hydrogel Scaffold Materials in Endodontic Revascularization: A Systematic Review

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Objective. To evaluate the application of hydrogel scaffold materials and triple antibiotic paste in endodontic regeneration through literature review. *Methods*. An electronic search of the literature published on PubMed, Wangfang database, and CNKI database using the search terms "endodontic regeneration," "pulp blood flow reconstruction," "recanalization," "triple antibiotic paste," and "scaffold material" was conducted. The searched literature was used for analysis. *Results and Conclusion*. Hydrogels regulate stem cell fates, modulate growth factor release, and encapsulate antibacterial and anti-inflammatory drugs. The triple antibiotic paste is composed of metronidazole, ciprofloxacin, and minocycline, which exhibits promising antibacterial effects and duration at appropriate concentrations, with low cytotoxicity, and effectively promotes the preservation and regeneration of pulp tissues and the formation of dental hard tissues. However, issues such as tooth discoloration and bacterial drug resistance also exist. The present article reviews the progress of research on the application of hydrogel scaffold materials and triple antibiotic paste in endodontic revascularization.

1. Introduction

Pulpal periapical disease is a common disease in dentistry [1]. Endodontic disease is very prevalent in China, with conservative estimates suggesting that more than 80% of the population has varying degrees of endodontic disease, mainly due to the low awareness of oral health among the majority of our population [2]. The pulp is located inside the tooth and is surrounded by highly calcified dentin, in the crown, which is also covered by enamel in the outermost layer, and in the root, which is covered by the bone [3]. Therefore, external stimuli should not generally enter the pulp chamber and cause pulp lesions. Pulpitis is most often caused by infection, which mainly comes from deep caries [4]. Etiologically, pulp disease and periapical disease are broadly similar, for example, severe caries can cause pulpitis, which in turn can cause periapical inflammation [5]. Pathologically, most periapical lesions, especially inflammation, are secondary to endodontic disease, and lesion products and bacteria from the pulp can easily spread to the periapical tissue, which in turn can affect the pulp [6], e.g., acoustic infection from the periodontium can cause lesions in the pulp when the lesions reach the root apex.

Pulpal periapical disease is conventionally treated by apical induction molding followed by filling with nonbiologically active material [7]. However, this approach is unsustainable in preserving the living pulp, resulting in fragile and easily fractured teeth after the loss of sensation such as heat and cold [8, 9], which usually leads to extraction of the affected tooth. Endodontic regeneration is a topical and difficult area of research in recent years, and the American Association of Endodontics defines it as "a biological replacement of damaged tooth tissue, roots, pulp-dentin complex, and other structures to form a functional pulp-like tissue" [9]. Current research has led to two alternative options for achieving pulp regeneration; one is pulp blood flow reconstruction and the other is the regeneration of pulp-dentin complexes using tissue engineering principles. With the development of tissue engineering and materials science, scholars have applied

tissue engineering to pulp regeneration studies to obtain long-term tooth retention by inducing differentiation of the pulp-dentin complex through allogeneic/autologous/nested stem cell-scaffold-growth factor complexes [10] to repairing damaged pulp tissue and restoring its physiological function. The control of root canal infection and the choice of the scaffold material are both crucial to the success of this approach [11]. The control of root canal infections is as follows: root canal preparation is mainly done by chemical methods to remove infectious material. Existing studies have concluded that infected root canals are primarily a mixture of aerobic and anaerobic bacteria, for which single antibiotic treatment is of poor efficacy; therefore, triple antibiotic paste, first proposed by Sato et al. in 1996, which contains three antibiotic components (metronidazole, ciprofloxacin, and minocycline), provides excellent antibacterial properties, with less irritation and greater penetration, and has been widely used in endodontic regeneration therapy [12]. Scaffold materials: scaffolds play a bridging role in endodontic regeneration, acting as a delivery system to realize the sustained local release of stem cells and growth factors [13]. In recent years, hydrogels have gained popularity among scaffold materials [14], which have a 95% water content, a three-dimensional structure, some toughness, and rheological properties, and can regulate stem cell fate, modulate growth factor release, and load drugs [15].

This study focuses on the investigation and analysis of hydrogel scaffold materials and triple antibiotic paste in endodontic regeneration. The results are as follows.

2. Data Overview and Analysis

2.1. Hydrogel Scaffold Materials Commonly Used in Endodontic Regeneration

2.1.1. Natural Hydrogels. Collagen-based hydrogels are one of the earliest and most widely used hydrogel scaffold materials of biological origin [16]. Collagen is the main component of the extracellular matrix and the most abundant protein in mammalian tissues. It can be recognized by cells and degraded by proteases secreted by cells, resulting in good biocompatibility and low immunogenicity. Under certain conditions, collagen molecules can form collagen fibers spontaneously and hydrogels in aqueous solvents. However, prior research found that single-component collagen-based hydrogels exhibit unsatisfactory physical properties, weak mechanical properties, and rapid degradation, and natural collagen is often derived from xenobiotics, which may elicit immune reactions.

Hyaluronic acid-based hydrogels: hyaluronic acid is a proteoglycan that forms the extracellular matrix, and due to its richness in hydrophilic groups, it can be chemically modified and chemically cross-linked to form hydrogel materials under mild conditions with excellent biocompatibility [17]. A caseinized hyaluronic acid-based hydrogel, CorgelTM, was developed in 2009, which undergoes gelation upon addition of a hydrogen peroxide initiator and maintains relative stability with resistance to digestion by hyaluronidase. However, studies have reported that hyaluronic acid often contains impurities and endotoxins that may be pathogenic or cause an immune response, which limits its application. No studies have been reported on its application to regenerate dental pulp in animals in vivo.

Chitosan-based hydrogels are deacetylated products of the natural polysaccharide chitin, a polysaccharide composed of randomly distributed N-acetylglucosamine and glucosamine units, which forms chitosan-based hydrogels by physical association or covalent cross-linking and obtains the desired pore size, degree of cross-linking, and solubility precisely. Studies have shown that chitosan-based hydrogels constitute a dexamethasone release system that can modulate the drug release rate and can also be used as a slow/controlled release carrier for a variety of drugs due to their good biocompatibility, biodegradability, and natural antibacterial effects [18, 19], and have been intensively studied and applied in the biomedical field. However, the application of unmodified chitosan is highly restricted because of its compact crystal structure, which hinders its solubility in neutral solutions and most organic solvents.

2.2. Synthetic Hydrogels. Self-assembled peptide hydrogels (SAP): in tissue engineering applications, SAP hydrogels feature good biocompatibility and degradability and can build nanoscale scaffolds and slow-release systems [20], which are novel biomaterials that satisfy a variety of needs in tissue engineering. They usually consist of 15–20 amino acids and have a nanoscale matrix structure similar to an extracellular matrix and good physicochemical properties that allow the hardness and viscosity of the hydrogel to be altered by changing the peptide concentration, thus changing the plasticity of the hydrogel. Self-assembled hydrogels formed based on such a structure can be freely designed and modified to deliver biological functions such as cell adhesion, enzymatic degradation, and proangiogenesis. In recent years SAP has been used in the regeneration of a variety of tissues such as the nerves and the spinal cord, but the complex preparation process, high cost, and limited access have limited the popularization and application of SAP hydrogels.

2.2.1. Multicomponent Hydrogels. Decellularized matrix hydrogels: decellularized matrix hydrogels are scaffold materials that have been well studied in the last decade and are more bionic in composition and structure, offering unparalleled advantages and potential [20]. A decellularized matrix is used to remove immunogenic cellular components by various physicochemical methods to maximize the retention of matrix components. Song et al. isolated a decellularized matrix from the pulp of healthy third molars and used it as scaffold material, which facilitated the proliferation of apical tooth papillae stem cells and the differentiation of adult dentin cells. Nevertheless, the preparation of the scaffold material requires the acquisition of a large amount of autologous tissue, which may cause self-inflicted damage. Thus, the majority of such studies were conducted using a heterogeneous or homogeneous decellularized

matrix, which may easily induce immune reactions and present risks of disease carriage and transmission.

2.3. Composition and Action Characteristics of Triple Antibiotic Paste

2.3.1. Composition of Triple Antibiotic Paste. The triple antibiotic paste is a paste made of metronidazole, ciprofloxacin, minocycline, and wood slip oil [21].

Metronidazole is a highly effective and less expensive drug of the nitroimidazole class, which is strongly potent against various G+, G-, and anaerobic bacteria and mainly targets anaerobic infections to kill specialized anaerobic bacteria. Metronidazole is selectively toxic to anaerobic microorganisms. Upon entry into the bacteria, the nitro group in the drug molecule is reduced by certain redox proteins to highly reactive nitro radicals, which are capable of disrupting the helix structure of deoxyribonucleic acid (DNA), leading to rapid bacterial death. An analytical study showed that the use of metronidazole as an adjunct to nonsurgical treatment of aggressive periodontitis resulted in better clinical outcomes.

Ciprofloxacin is a broad-spectrum antibacterial drug that belongs to the 3rd generation of quinolone drugs, with strong antibacterial activity, is less liable to produce resistance, and can be used in combination with metronidazole and other drugs for root canal disinfection. Ciprofloxacin inhibits DNA-associated substances such as DNA procyclase in the nucleus of bacteria, causing degradation of DNA and thus producing a bactericidal effect. Ciprofloxacin has very strong antibacterial activity against Gram-negative bacteria, but Gram-positive bacteria and most anaerobic bacteria are resistant to ciprofloxacin. Therefore, ciprofloxacin is often used in combination with metronidazole to treat mixed infections to compensate for the limited antibacterial spectrum. In addition, although ciprofloxacin can cause side effects, the drug can be used safely in clinics at low dose effects.

Minocycline, also known as semisynthetic tetracycline and dimethylaminotetracycline, is a broad-spectrum antimicrobial drug, with fewer resistant bacteria, and only a small amount of use can produce a high local drug concentration, with high efficiency and long-lasting effect. Minocycline accompanies the passive diffusion of cell membranes across the outer membrane of bacteria and invades the inner membrane through active transport to reach the surface of ribosomes within the bacterium and inhibit protein synthesis, ultimately leading to bacterial death. Because minocycline tends to cause discolouration of the tooth structure, it has also been studied as a replacement for other antibiotics to form modified TAP.

2.3.2. Characteristics of the Action of Triple Antibiotic Paste. Triple antibiotic paste possesses strong antimicrobial activity, high penetration, low irritation, less cytotoxicity while exerting antimicrobial disinfection, and good biocompatibility to promote pulp regeneration [22]. Currently, the triple antibiotic paste is widely used as an effective root canal disinfection drug in basic and clinical studies of pulp regeneration.

3. Application of Hydrogel Scaffold Materials in Endodontic Regeneration

3.1. Advantages of Hydrogels. In tissue engineering, how to achieve a uniform distribution of cells in the scaffold after implantation into the scaffold and how to place the scaffold into the site of action are the key issues that remain to be addressed [23], which are particularly important in endodontic regeneration. In recent years, the extensive use of hydrogels in tissue engineering scaffold materials is attributable to the ability of hydrogels to swell sufficiently in water without dissolving. It is formed by the cross-linking reaction of monomers, and the polymer network formed by the hydrogel can bind water, allowing for good biocompatibility and minimizing the risks of inflammatory reactions in tissues. It is structurally similar to the body tissues and the extracellular matrix, and the soft and moist surface will reduce to a great extent the irritation of the material to the surrounding tissues, and has good permeability where water and its water-soluble small molecules can diffuse freely within the hydrogel [16]. As a result, hydrogel materials present an unparalleled advantage over other materials in endodontic tissue engineering.

3.2. Hydrogel Scaffold Materials in Endodontic Regeneration. Regulation of stem cell fate: biomaterials in direct contact with stem cells largely influence the behaviour and differentiation fate of stem cells, including the physical and chemical properties of the material. During endodontic regeneration, hydrogel scaffold materials are modified to promote cell adhesion and migration, increase the rate of material degradation, and maximize the induction of stem cell differentiation for endodontic regeneration. Modulation of growth factor release: it has been reported that inadequate blood supply constitutes one of the challenges for pulp regeneration, and that in spite of sufficient dentin-derived growth factors to promote dentinogenic differentiation of stem cells, insufficiency exists to provide vasculogenic differentiation of stem cells. The direct use of growth factors that promote angiogenesis is associated with failure to maintain long-lasting effects due to their short half-life and rapid metabolism in vivo. In a study using a hydrogel scaffold with cell adhesion and matrix degradation, adding a series of growth factors to the hydrogel via heparin binding and encapsulating pulp stem cells in the scaffold material showed better pulp stem cell proliferation and spreading, superior intercellular cluster formation, and collagen secretion.

Loading of anti-inflammatory drugs: hydrogels can absorb large amounts of water to encapsulate therapeutic drugs to prevent their rapid degradation and control the release rate of encapsulated drugs. Numerous studies have reported that self-assembled peptides can mimic the extracellular matrix structure, promote the growth and differentiation of pulp stem cells, and serve as a satisfactory

vehicle for the attachment of growth factors. Colombo et al. predicted that self-assembled peptide hydrogels could be a reliable vehicle for the attachment of abscisins, and by adding bioactive scaffold materials, they could achieve the slow release of abscisins, modulate the inflammatory state of the pulp cavity, and regenerate the pulp-dentin complex.

Loading of antimicrobial drugs: after total pulp necrosis, the bacterial biofilm colonizing the root canal wall is difficult to be completely removed due to the complexity of the root canal system. A foreign study reported for the first time that injectable nanofiber hydrogel slow-release antimicrobial drugs (triple antibiotic paste) are available to avoid direct contact of high local concentrations of drugs with stem cells around the apical foramen, and its sustained release can provide a relatively sterile microenvironment in the root canal, resulting in more stable pulp regeneration.

4. The Efficacy and Deficiencies of Triple Antibiotic Paste

4.1. Efficacy. The advantages of the triple antibiotic paste are high antibacterial activity, high penetration, long duration of action, and low cytotoxicity, which facilitate the formation of hard tooth tissues and the continued development of the root. Most of the bacteria in the dentin tubules are anaerobic and are the target bacteria for root canal disinfection. The metronidazole in the triple antibiotic paste kills specialized anaerobic bacteria, and is unassociated with dysbiosis and drug-resistant strains, with no contraindications to the combined application of other antibiotics. Its ineffectiveness against parthenogenic anaerobic bacteria can be compensated by minocycline. Minocycline is effective against both parthenogenic anaerobic bacteria and anaerobic bacteria, with stable efficacy and little damage to adjacent tissues, and promotes regeneration of adjacent tissues. Ciprofloxacin is available in combination with metronidazole and other drugs thanks to its broad-spectrum antimicrobial properties and a good bactericidal effect. Based on the pharmacological properties of the three antibiotics, the combination of the three drugs achieved a good root canal disinfection effect [24].

4.2. Deficiencies and Countermeasures. Tooth discoloration: during pulpal vascular regeneration treatment, minocycline chelates with Ca2+ in dentin to form insoluble complexes are deposited in the hard tissues of the teeth resulting in tooth discoloration. Porter et al. found that triple antibiotic paste containing doxycycline resulted in lighter dentin staining than triple antibiotic paste containing minocycline, which can be prevented by presealing the dentin tubules through acid etching bonding to inhibit chelation and avoid tooth staining. Alternatively, the use of an injectable nanofiber hydrogel slow-release triple antibiotic paste to avoid direct contact between the high local concentrations of the drug and the stem cells around the apical foramen is also available for the prevention of tooth discoloration. Moreover, Porter et al. also proposed the replacement of minocycline with double antibiotic paste or with other generic antibiotics such as amoxicillin and cefaclor to reduce dentin staining. Results of previous studies have confirmed that the substitution of minocycline with cefaclor and its application in the teeth of animals obviated tooth discoloration.

Destruction of the dentin surface: the results of several studies have shown that triple antibiotic pastes can significantly reduce the hardness of the dentin surface and induce demineralisation of the dentin surface. Yasen et al. found that triple antibiotic paste had a significantly stronger effect on the root canal wall roughness than sodium hypochlorite solution and calcium hydroxide. The countermeasure may involve the selection of an appropriate concentration of triple antibiotic paste or the use of a drug-laden scaffold to slow-release drugs to protect the root canal and reduce erosion.

Bacterial resistance and drug allergic reactions: given the complexity of microorganisms in the root canal, prolonged use or high concentrations of the triple antibiotic paste may produce resistant strains and lead to reinfection and treatment failure. Allergic reactions to drugs such as urticaria or pruritus have been reported with metronidazole, oral mucosal oedema with ciprofloxacin, and pneumonia or eosinophilia with minocycline. Therefore, bacterial culture, drug sensitivity test, exploration for appropriate triple antibiotic paste concentration, and application length are essential. Drug allergic reactions are mostly associated with systemic medications and uncommon with topical medications, for which dentists should be vigilant to protect the physical and mental health of patients.

5. Summary and Perspectives

Research on hydrogel scaffold materials has focused on inflammation control, promotion of blood supply, and mimicking the microenvironment of healthy pulp tissues. In recent years, although hydrogel scaffold materials have made milestones in the study of pulp regeneration, the efficient and stable generation of functional pulp-dentin complexes still needs to be explored. The ideal hydrogel scaffold material should have excellent biological properties in endodontic regeneration, mimic ECM, participate in the release of signaling molecules, modulate the behavior of stem cells, and possess excellent physicochemical properties [25]. In terms of composition, collagen, chitosan, and hyaluronic acid are gel components with beneficial biological properties, and peptide hydrogels are currently at the forefront of research. The investigation of endodontic regenerative scaffolds should further screen hydrogels with different components, properties, and functions for scaffold materials with intracanal application characteristics, which can be injected and formed in situ under mild conditions. Triple antibacterial pastes are highly antimicrobial, penetrate well, are ideally antibacterial at the right concentration, and have low cytotoxicity, while effectively promoting the preservation and regeneration of pulp tissue, and the formation of hard tissue in the dentition. Although challenges remain for its application such as tooth discolouration and bacterial resistance, these can be addressed by incorporating hydrogel scaffold materials such as injectable nanofiber hydrogel

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Retraction

Retracted: Clinical Effect and Postoperative Pain of Laparo-Thoracoscopic Esophagectomy in Patients with Esophageal Cancer

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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. Yu and Y. Han, "Clinical Effect and Postoperative Pain of Laparo-Thoracoscopic Esophagectomy in Patients with Esophageal Cancer," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 4507696, 7 pages, 2022.

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Research Article

Clinical Effect and Postoperative Pain of Laparo-Thoracoscopic Esophagectomy in Patients with Esophageal Cancer

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Objective. To investigate the clinical effect and postoperative pain of laparo-thoracoscopic esophagectomy in patients with esophageal cancer. *Methods*. A total of 90 patients with esophageal cancer who were admitted and treated in our hospital from August 2020 to November 2021 were randomly selected as the research subjects for prospective analysis, and the patients were assigned to the control group and the experimental group according to the time of admission equally, with 45 cases in each group. Patients in the control group underwent conventional open surgery, and those in the experimental group underwent laparo-thoracoscopic esophagectomy. Then, operation-related indicators, postoperative pain, inflammatory factors, and complications were compared between the two groups. *Results*. The operation time, intraoperative blood loss, postoperative drainage, and postoperative length of stays of the experimental group were significantly shorter or less than those of the control group ($P < 0.05$); there was no significant difference in the number of lymph nodes dissected between the two groups ($P > 0.05$). The number of patients with moderate and severe pain in the experimental group was significantly smaller than that in the control group, and the number of patients with mild pain was significantly larger than that in the control group ($P < 0.05$). The level of inflammatory factors (TNF-α, IL-6, IL-8, and IL-10) was significantly lower than that in the control group ($P < 0.05$); the incidence of surgical complications in the experimental group was significantly lower than that in the control group ($P < 0.05$). *Conclusion*. Laparo-thoracoscopic esophagectomy can significantly improve the clinical effect in patients with esophageal cancer. Thoracic-laparoscopic esophagectomy can significantly improve the clinical results of patients with esophageal cancer. With better performance in surgery-related indicators, lower inflammatory factor levels and postoperative pain, and fewer postoperative complications, it will speed up patients' recovery and is worthy of clinical promotion and application.

1. Introduction

Esophageal cancer is one of the most common malignancies in clinical practice [1]. As one of the countries with a high incidence of esophageal cancer, the number of deaths from esophageal cancer in China is over 200,000 per year, accounting for over 46% of deaths worldwide [2]. For patients with esophageal cancer, esophagectomy and regional lymph node dissection are the two commonly used treatments [3]. However, Kunisaki et al. held that conventional thoracotomy is not conducive to the patient's postoperative recovery for its great trauma to patients' bodies, especially the stress and the body's inflammatory response caused by severe postoperative pain would impair the immune function and thus increase the risk of postoperative infection [4]. The injury to patients' lungs during the surgery is one of the key factors triggering postoperative pulmonary complications [5]. In recent years, with the increasing demands of patients for surgery, its impact on the patients' postoperative life has become one of the factors to be considered clinically [6]. In recent years, with the continuous progress and development of laparoscopic technology in China, thoraco-laparoscopic esophagectomy has received widespread attention from surgeons [7]. Laparo-thoracoscopy features small trauma, fast recovery, and high safety, through which the postoperative pain and blood loss of patients can be effectively reduced, and so the recovery can be accelerated [8].

The aim of this study was to collect data from 90 randomly admitted patients with esophageal cancer in our hospital from August 2020 to November 2021, and to investigate the clinical efficacy of laparoscopic esophagectomy and postoperative pain, with a view to providing a clinical reference.

2. Data and Methods

2.1. General Data. Ninety patients with esophageal cancer admitted to our hospital from August 2020 to November 2021 were randomly selected for prospective analysis, and were divided equally and randomly into a control group and an experimental group of 45 patients each according to the time of admission. The experiment was approved by the Ethics Committee of Shengjing Hospital of China Medical University, No. 289711/01., and all included patients and their families were informed and signed the informed consent form.

2.2. Inclusion and Exclusion Criteria. Patients were included if (1) they had been diagnosed with esophageal cancer by clinical examinations, (2) the tumor presents no sign of metastasis or invasion, and (3) they agreed to participate in the study voluntarily after being informed. Patients were excluded from the study if they are living with (1) other serious organ diseases, (2) psychiatric diseases or communication disorders, (3) surgery-related contraindications, and (4) or are possibly unable to cooperate well with the study due to poor compliance.

2.3. Methods. All procedures were performed by the same surgical team.

(1) Patients in the control group underwent conventional open surgery: preoperative double-lumen bronchial intubation with general anaesthesia combined with epidural anaesthesia. The right side of the posterior lateral 6th intercostal space was opened, and the location and size of the mass was explored and routinely excised free of charge. All mediastinal lymph nodes were cleared, especially the inferior ramus and the bilateral paraglottic lymph nodes, after which the chest was closed and the patient was turned to the supine position. Subsequently, the stomach was opened through the middle of the epigastrium, and the stomach was freed. The lymph nodes in the large and small curves of the stomach, the left paravalvular gastric vessels, the common hepatic artery, the abdominal arterial trunk, and the splenic artery were cleared. The cardia was disconnected, a tubular stomach was created and pulled from the neck region through the esophageal bed, then, the esophagus was disconnected, and the proximal esophagus was anastomosed to the stomach base.

(2) Patients in the experimental group underwent laparothoracoscopic esophagectomy: general anaesthesia compounded with epidural anaesthesia through double-lumen bronchial intubation was performed with single-lung ventilation. A 10 mm thoracoscopic hole is made in the 7th intercostal space in the midaxillary line and three 4 mm surgical holes are made in the subscapularis, the 4th intercostal space in the midaxillary line, and the 7th intercostal space in the posterior axillary line, respectively. Carbon dioxide is flushed to create an artificial pneumothorax. The patient is placed prone, allowing the right lung to descend ventrally and fully exposing the posterior mediastinum. The mediastinal pleura is opened to determine if the esophageal cancer is resectable. Then, the right recurrent laryngeal nerve was first dissected and exposed, and the lymph nodes adjacent to it were cleared. Next, the entire esophagus and its wall lymph nodes are cleared from the thoracic inlet to the diaphragmatic fissure, and the internal esophageal artery is dissected with an ultrasonic knife. The free esophagus is retracted to the right to clear the subaortic lymph nodes and avoid damaging the patient's bronchus. The trachea is then pulled forward to expose the area between the left side of the trachea and the aortic arch, and the left laryngeal recurrent nerve is located and cleared of its para-acoustic lymph nodes. After the operation, with a drainage tube left in place, the patient was turned to the supine position, an artificial pneumoperitoneum was established, the stomach was freed laparoscopically, and the lymph nodes next to the esophagogastric junction, the perigastric region, the left gastric vessel, the common hepatic artery, the abdominal arterial trunk, and the splenic artery were carefully cleared; the esophagus was cut at the esophagogastric junction, the tube was inserted into the stomach, and the suture between the esophageal cut edge and the base of the tube was used for traction. An incision was made at the anterior border of the sternocleidomastoid muscle in the neck, the cervical esophagus is freed, the cervical lymph nodes are removed, the thoracic segment of the esophagus is pulled out of the neck via the posterior mediastinal esophageal bed, the tubular stomach is elevated to the neck, and a transverse manual anastomosis is performed from the esophagus to the gastric end.

2.4. Control Indicators

(1) Surgery-related indicators include operation time, intraoperative blood loss, number of lymph nodes dissected, postoperative drainage, and postoperative length of hospital stay. All the above indicators were recorded by the medical staff in our hospital.

(2) Pain score indicator: The Visual Analog Scale (VAS) was used to assess the patients' pain. With a full score at 10; 1–3 indicating mild pain, 4–6 indicating moderate pain, and 7–10 indicating severe pain. The higher the score, the more severe the pain patients feel.

Table 1: Comparison of general data (n (%)).

	Control group ($n = 45$)	Experimental group ($n = 45$)	t/X^2	P
Gender			0.185	0.667
Male	28	26		
Female	17	19		
Age (years)	40–72	41–73		
Mean age (years)	60.72 ± 3.54	60.82 ± 3.59	−0.133	0.894
Tumor sites			0.067	0.796
Upper segment	12	13		
Middle segment	19	18		
Lower segment	14	14		
Pathological types			0.072	0.788
Adenocarcinoma	16	18		
Squamous carcinoma	17	16		
Adenosquamous carcinoma	12	11		
TNM staging			0.065	0.799
Stage I	12	11		
Stage II	23	24		
Stage III	10	10		

(3) Inflammatory factor indicators: 5 ml of fasting venous blood was drawn from patients in the morning before and after treatment, and the supernatant was collected after low-speed centrifugation. The levels of the tumor necrosis factor (TNF-α), interleukin-6 (IL-6), interleukin-8 (IL-8), and interleukin-10 (IL-10) were measured using an enzyme-linked immunosorbent assay kit from Shanghai Enzyme Biotechnology Co., Ltd. (4Possible complications of patients after surgery include the following: surgical wound infection, pulmonary infection, nerve injury, and pleural effusion.

2.5. Statistical Methods. SPSS 21.0 was used for data analysis, and the T test and the chi-squared test were performed for measurement data ($\overline{X} \pm s$) and enumeration data (n (%)), respectively. The difference was statistically significant if $P < 0.05$.

3. Results

3.1. General Data. The control group: 28 males and 17 females, aged between 40–72 years, with a mean age of 60.72 ± 3.54; tumor sites: 12 in the upper segment, 19 in the middle segment, and 14 in the lower segment; pathological types: 16 of adenocarcinoma, 17 of squamous carcinoma, 12 of adenosquamous carcinoma; TNM staging: 12 in stage I, 23 in stage II, and 10 in stage III. The experimental group: 26 males and 19 females, aged between 41–73 years, with a mean age of 60.82 ± 3.59; tumor sites: 13 in the upper segment, 18 in the middle segment, and 14 in the lower segment; pathological types: 18 of adenocarcinoma, 16 of squamous carcinoma, 11 of adenosquamous carcinoma; TNM staging: 11 in stage I, 24 in stage II, and 10 in stage III. This study was reviewed and approved by the medical ethics committee of our hospital. General data of the two groups were compared, and no significant ($P > 0.05$) difference was found, as shown in Table 1.

3.2. Surgery-Related Indicators. As can be seen from Table 2, operation time, intraoperative blood loss, postoperative drainage, and postoperative length of stay of patients in the experimental group were significantly shorter or less than those in the control group ($P < 0.05$). No significant difference was observed in the number of lymph node dissected in the two groups ($P > 0.05$).

3.3. Postoperative Pain. The number of patients with moderate and severe postoperative pain in the experimental group was significantly smaller than that of the patients in the control group, and the number of patients with mild pain was significantly larger than that of the patients in the control group ($P < 0.05$), as shown in Table 3.

3.4. Level of Inflammatory Factors. The level of inflammatory factors (TNF-α, IL-6, IL-8, and IL-10) in the experimental group were significantly lower than that of the control group after treatment ($P < 0.05$), as shown in Table 4.

3.5. Complications. The incidence of surgical complications in the experimental group was significantly lower than that in the control group ($P < 0.05$), as shown in Table 5.

4. Discussion

China is one of the countries with a high incidence of esophageal cancer worldwide. Its clinical mortality rate is high [9]. At present, the pathogenesis of esophageal cancer in clinical practice is not fully understood. Some studies suggest that it is closely related to excessive intake of tetranitrate, lack of trace elements and inorganic salts in food, and poor living habits [10]. At present, the common treatment methods for malignant tumours include radiotherapy, surgery, and other conventional treatments, among which surgical resection is still the mainstay [11]. Clinical studies showed that conventional open esophagectomy

Table 2: Comparison of surgery-related indicators ($\overline{X} \pm s$).

Indicator	Control group ($n = 45$)	Experimental group ($n = 45$)	t	P
Operation time (min)	389.47 ± 29.72	253.41 ± 31.59	21.044	<0.001
Intraoperative blood loss (mL)	490.68 ± 28.57	291.17 ± 21.32	37.543	<0.001
Number of lymph node dissection (pieces)	28.18 ± 4.52	27.96 ± 4.27	0.237	0.813
Postoperative drainage (mL)	504.71 ± 70.44	332.69 ± 83.15	10.589	<0.001
Postoperative length of stay (d)	14.12 ± 2.48	9.37 ± 1.35	11.285	<0.001

Table 3: Comparison of postoperative pain ($\overline{X} \pm s$, n (%)).

Group	VAS score	Pain level grading (cases)		
		Mild	Moderate	Severe
Control group ($n = 45$)	5.87 ± 1.25	17	21	7
Experimental group ($n = 45$)	4.52 ± 1.13	33	11	1
t/X^2	5.374	11.52	4.849	4.939
P	<0.001	0.001	0.028	0.026

Table 4: Comparison of the levels of inflammatory factors ($\overline{X} \pm s$).

Indicator	Time	Control group ($n = 45$)	Experimental group ($n = 45$)	t	P
TNF-α (ng/L)	Preoperative	105.23 ± 41.59	103.78 ± 35.79	0.177	0.86
	Postoperative	170.37 ± 62.58	130.72 ± 79.82	2.622	0.01
IL-6 (ng/L)	Preoperative	191.23 ± 18.35	189.75 ± 18.96	0.376	0.708
	Postoperative	296.70 ± 21.57	281.74 ± 21.35	3.307	0.001
IL-8 (ng/L)	Preoperative	170.03 ± 16.42	167.38 ± 16.34	0.767	0.445
	Postoperative	265.47 ± 24.62	227.61 ± 23.99	7.388	<0.001
IL-10 (ng/L)	Preoperative	54.82 ± 6.47	55.68 ± 6.52	−0.628	0.532
	Postoperative	82.15 ± 7.68	66.83 ± 7.23	9.743	<0.001

Table 5: Comparison of complications (n (%)).

	Control group ($n = 45$)	Experimental group ($n = 45$)	X^2	P
Wound infection	5	2		
Pulmonary infection	4	1		
Nerve damage	2	1		
Pleural effusion	2	1		
Incidence	13 (29%)	5 (11%)	4.444	0.035

caused greater trauma to patients' bodies, including more tubes left in the postoperative period, which would seriously affect postoperative recovery [12]. With the continuous development of laparoscopic surgery and the maturation of minimally invasive techniques in China, laparoscopic esophagectomy has received widespread attention from surgeons in recent years [13]. Related studies have shown that thoracic-laparoscopic esophagectomy is less traumatic and causes less bleeding than conventional open surgery, and it significantly accelerates patients' postoperative recovery and reduces the incidence of postoperative complications [14].

Laparoscopy is a medical device with a miniature camera and with it comes laparoscopic surgery, a minimally invasive surgical method that has developed rapidly in recent years [15]. Using a laparoscope, a hole is made in the patient's abdomen and the laparoscope is subsequently placed inside the patient's abdomen; using the miniature camera carried by the laparoscope the inside of the abdomen can be viewed [16]. Once the laparoscope is inside the patient, the light source at the head of the laparoscope emits light to provide light for the surgical field of view, and the camera transmits images from the abdominal cavity to the screen via optical fibres, allowing the operator to see the patient's abdominal cavity clearly on the screen of the camera [17]. Laparoscopy is now widely used in minimally invasive laparoscopic surgery, therefore, minimally invasive surgery in gynaecology, gastrointestinal surgery, hepatobiliary surgery, and urology all require laparoscopic assistance [18]. Compared to traditional open surgery, laparoscopy can reduce the trauma and blow of surgery and is a major trend in the future development of surgery [19].

In this study, we compared the differences between laparoscopic esophagectomy and conventional open surgery in terms of clinical outcomes and postoperative pain [20]. The results showed that the operative time, intraoperative bleeding, postoperative drainage, and postoperative hospital stay of patients in the experimental group were significantly shorter than those in the control group; the number of patients with moderate to severe postoperative pain in the experimental group was significantly less than that in the control group, and the number of patients with mild postoperative pain scores was significantly more than that in the control group. The levels of inflammatory factors (TNF-α, IL-6, IL-8, and IL-10) were significantly lower in the experimental group than in the control group; the number of lymph nodes cleared in the two groups was not statistically significant; the incidence of surgical complications was significantly lower in the experimental group than in the control group. There was no significant difference between laparo-thoracoscopic esophagectomy and conventional open surgery concerning the number of lymph nodes cleared [21]. In addition, laparoscopic esophagectomy performs better in terms of intraoperative indications, effectively alleviating postoperative pain symptoms and inflammatory response in patients [22], thus, effectively reducing the incidence of complications, and ultimately speeding up their postoperative recovery. The reason behind this may be that laparoscopic esophagectomy provides an open and non-blinded view, allowing the same anatomical results as conventional open surgery [23].

In conventional open surgery, the internal organs will be exposed for a long time due to the large wound, and the lung will be further compressed and contused, which will cause a serious impact on patients' bodies and circulatory system function [24]. Damage to the body then leads to an increase in the level of serum inflammatory factors. TNF-α, IL-6, and IL-8 are common proinflammatory factors that have been shown by Xing et al. to exacerbate the inflammatory response of patients by promoting the expression of *T*-lymphocytes and hypersensitive *C*-reactive protein [25]. The levels of these three proinflammatory factors increase with the degree of damage to the patient's body, and the interaction of multiple inflammatory factors in the patient's body can lead to a circulatory effect, leading to a series of adverse reactions and complications. IL-10, on the other hand, is an anti-inflammatory factor that effectively suppresses the immune response of the patient's body and antagonises a number of factors to alleviate the inflammatory response. Laparoscopic esophagectomy is known to be minimally invasive and can effectively reduce the damage to the patient, thereby alleviating the inflammatory response and reducing serum inflammatory factor levels. At the same time, there is a close relationship between the body's pain and the inflammatory response. Therefore, the decrease in the inflammatory response predicts the relief of pain the patients feel. Chen et al. found that there is a close correlation between the occurrence of tumors and the immune system [26]. Once a tumor develops in patients' bodies, cancer cells will seriously affect the immune function. At the same time, the damage caused by surgical trauma can cause a series of stress reactions that further compromise the immune system, leaving the patient's body susceptible to various infections and ultimately creating a vicious cycle. The results showed that minimally invasive surgery can significantly reduce damage to the patients' bodies, thus effectively reducing the impact on the immune function and so reducing the occurrence of complications.

For patients with mid-to late-stage esophageal cancer who cannot undergo surgery or for whom surgery is not feasible, a combination of radical radiotherapy and chemotherapy may improve survival [27]; for patients with recurrent or distant metastatic esophageal cancer, a combination of chemotherapy or targeted therapy-based treatment may prolong survival [28]. The general treatment of esophageal cancer is mainly to maintain water and electrolyte balance, and nutritional support [29]. As esophageal cancer can lead to swallowing obstruction and difficulty in eating, patients in advanced stages suffer from malnutrition and wasting, so nutritional support therapy is very important for patients' survival and subsequent antitumour treatment [30]. Nutritional support therapy for patients with esophageal cancer can be divided into two forms: enteral nutrition and parenteral nutrition, with enteral nutrition being the mainstay as far as possible because it can be administered through a nasal feeding tube or gastrostomy to avoid the obstructed esophageal segment. Parenteral nutrition is administered as an infusion of glucose, electrolytes, amino acids, and fatty milk, depending on the patient's condition.

There are some limitations to our experiments. First of all, because the sample size is too small, it will cause a certain deviation of the results. Moreover, we need to conduct a large number of follow-up visits in the follow-up period to prove the prognostic effect of laparoscopy and the improvement effect on long-term quality of life.

5. Conclusion

In conclusion, thoracic-laparoscopic esophagectomy can significantly improve the clinical results of patients with esophageal cancer. With better performance in surgery-related indicators, lower inflammatory factor levels and postoperative pain, and fewer postoperative complications, it will speed up patients' recovery, and is worthy of clinical promotion and application.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] Y. Zheng, Y. Li, Z. Wang, H. Sun, and R. Zhang, "A video demonstration of the Li's anastomosis-the key part of the "non-tube no fasting" fast track program for resectable

esophageal carcinoma," *Journal of Thoracic Disease*, vol. 7, no. 7, pp. 1264–1268, 2015.

[2] C. M. Thakkar, A. V. Kumar, H. N. Soni, A. J. Shah, K. S. Patel, and S. P. Haribhakti, "Thoracoscopic part of minimal invasive oesophagectomy in semiprone position," *Surgical Laparoscopy Endoscopy and Percutaneous Techniques*, vol. 24, no. 4, pp. 337–341, 2014.

[3] H. T. Künzli, M. Van Berge Henegouwen, S. Gisbertz et al., "Thoracolaparoscopic dissection of esophageal lymph nodes without esophagectomy is feasible in human cadavers and safe in a porcine survival study," *Diseases of the Esophagus: Official Journal of the International Society for Diseases of the Esophagus*, vol. 29, no. 6, pp. 649–655, 2016.

[4] C. Kunisaki, T. Kosaka, H. A. Ono et al., "Significance of thoracoscopy-assisted surgery with a minithoracotomy and hand-assisted laparoscopic surgery for esophageal cancer: the experience of a single surgeon," *Journal of Gastrointestinal Surgery*, vol. 15, no. 11, pp. 1939–1951, 2011.

[5] Y. Yang, X. Zhang, B. Li et al., "Short- and mid-term outcomes of robotic versus thoraco-laparoscopic McKeown esophagectomy for squamous cell esophageal cancer: a propensity score-matched study," *Diseases of the Esophagus: Official Journal of the International Society for Diseases of the Esophagus*, vol. 33, no. 6, 2020.

[6] J. Boone, M. G. G. Hobbelink, M. E. I. Schipper et al., "Sentinel node biopsy during thoracolaparoscopic esophagectomy for advanced esophageal cancer," *World Journal of Surgical Oncology*, vol. 14, no. 1, p. 117, 2016.

[7] P. C. Van Der Sluis, J. P. Ruurda, S. Van Der Horst et al., "Robot-assisted minimally invasive thoraco-laparoscopic esophagectomy versus open transthoracic esophagectomy for resectable esophageal cancer, a randomized controlled trial (ROBOT trial)," *Trials*, vol. 13, no. 1, p. 230, 2012.

[8] E. Tagkalos, P. C. Van Der Sluis, F. Berlth et al., "Robot-assisted minimally invasive thoraco-laparoscopic esophagectomy versus minimally invasive esophagectomy for resectable esophageal adenocarcinoma, a randomized controlled trial (ROBOT-2 trial)," *BMC Cancer*, vol. 21, no. 1, p. 1060, 2021.

[9] S. Van Der Horst, T. J. Weijs, J. P. Ruurda et al., "Robot-assisted minimally invasive thoraco-laparoscopic esophagectomy for esophageal cancer in the upper mediastinum," *Journal of Thoracic Disease*, vol. 9, no. Suppl 8, pp. S834–s842, 2017.

[10] J. Li, X. Chen, Y. Shen et al., "A rare collision tumor of squamous carcinoma and small cell carcinoma in esophagus involved with separate lymph nodes: a case report," *Journal of Thoracic Disease*, vol. 5, no. 5, pp. E203–E206, 2013.

[11] K. Wang, J. Zhong, Q. Liu, P. Lin, and J. Fu, "A propensity score-matched analysis of thoracolaparoscopic vs. open McKeown's esophagectomy," *The Annals of Thoracic Surgery*, vol. 113, no. 2, pp. 473–481, 2022.

[12] H. T. Künzli, M. I. Van Berge Henegouwen, S. S. Gisbertz et al., "Pilot-study on the feasibility of sentinel node navigation surgery in combination with thoracolaparoscopic lymphadenectomy without esophagectomy in early esophageal adenocarcinoma patients," *Diseases of the Esophagus: Official Journal of the International Society for Diseases of the Esophagus*, vol. 30, no. 11, pp. 1–8, 2017.

[13] J. Mu, S. Gao, Y. Mao et al., "Open three-stage transthoracic oesophagectomy versus minimally invasive thoraco-laparoscopic oesophagectomy for esophageal cancer: protocol for a multicentre prospective, open and parallel, randomised controlled trial," *BMJ Open*, vol. 5, no. 11, Article ID e008328, 2015.

[14] P. C. van der Sluis, J. P. Ruurda, R. J. Verhage et al., "Oncologic long-term results of robot-assisted minimally invasive thoraco-laparoscopic esophagectomy with two-field lymphadenectomy for esophageal cancer," *Annals of Surgical Oncology*, vol. 22, no. Suppl 3, pp. S1350–S1356, 2015.

[15] D. J. Riskin, M. T. Longaker, M. Gertner, and T. M. Krummel, "Innovation in surgery," *Annals of Surgery*, vol. 244, no. 5, pp. 686–693, 2006.

[16] T. E. Langwieler, T. Nimmesgern, and M. Back, "Single-port access in laparoscopic cholecystectomy," *Surgical Endoscopy*, vol. 23, no. 5, pp. 1138–1141, 2009.

[17] M. N. Van Oosterom, D. D. D. Rietbergen, M. M. Welling, H. G. Van Der Poel, T. Maurer, and F. W. B. Van Leeuwen, "Recent advances in nuclear and hybrid detection modalities for image-guided surgery," *Expert Review of Medical Devices*, vol. 16, no. 8, pp. 711–734, 2019.

[18] B. S. Peters, P. R. Armijo, C. Krause, S. A. Choudhury, and D. Oleynikov, "Review of emerging surgical robotic technology," *Surgical Endoscopy*, vol. 32, no. 4, pp. 1636–1655, 2018.

[19] N. Li, H. Liu, R. Y. Abdolmalaki, G. J. Mancini, and J. Tan, "s-CAM: an untethered insertable laparoscopic surgical camera robot with non-contact actuation," *Sensors*, vol. 22, no. 9, p. 3405, 2022.

[20] Z. M. Zhang, Y. Wang, Y. S. Gao, Y. Song, and L. Ma, "Minimally invasive esophagectomy for esophageal carcinoma: clinical analysis of 160 cases," *Zhonghua Wei Chang Wai Ke Za Zhi*, vol. 15, no. 9, pp. 934–937, 2012.

[21] Y. Xu, X. K. Li, Z. Z. Cong et al., "Long-term outcomes of robotic-assisted versus thoraco-laparoscopic McKeown esophagectomy for esophageal cancer: a propensity score-matched study," *Diseases of the Esophagus: Official Journal of the International Society for Diseases of the Esophagus*, vol. 34, no. 9, 2021.

[22] Z. Zhang, M. Xu, M. Guo, and X. Liu, "Long-term outcomes of minimally invasive Ivor Lewis esophagostomy for esophageal squamous cell carcinoma: compared with open approach," *International Journal of Surgery*, vol. 45, pp. 98–104, 2017.

[23] H. Zhang, L. Chen, Z. Wang et al., "The learning curve for robotic McKeown esophagectomy in patients with esophageal cancer," *The Annals of Thoracic Surgery*, vol. 105, no. 4, pp. 1024–1030, 2018.

[24] H. Daiko and T. Fujita, "Laparoscopic assisted versus open gastric pull-up following thoracoscopic esophagectomy: a cohort study," *International Journal of Surgery*, vol. 19, pp. 61–66, 2015.

[25] F. Xing, L. Zhang, Z. Tang et al., "Effect of thoraco-laparoscopic esophagectomy on postoperative immune function of patients with esophageal carcinoma," *Nan Fang Yi Ke Da Xue Xue Bao*, vol. 41, no. 1, pp. 146–150, 2021.

[26] J. Chen, Q. Liu, X. Zhang et al., "Comparisons of short-term outcomes between robot-assisted and thoraco-laparoscopic esophagectomy with extended two-field lymph node dissection for resectable thoracic esophageal squamous cell carcinoma," *Journal of Thoracic Disease*, vol. 11, no. 9, pp. 3874–3880, 2019.

[27] Y. Tamaki, Y. Hieda, M. Nakajima et al., "Concurrent chemoradiotherapy with docetaxel, cisplatin, and 5-fluorouracil improves survival of patients with advanced esophageal cancer compared with conventional concurrent chemoradiotherapy with cisplatin and 5-fluorouracil," *Journal of Cancer*, vol. 9, no. 16, pp. 2765–2772, 2018.

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Retraction

Retracted: Effect of Intensive Psychological Care on Patients with Benign Breast Lumps after Mammotome-Assisted Tumor Resection

Evidence-Based Complementary and Alternative Medicine

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

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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.

References

[1] P. Xu, R. Xu, Q. Yang, and H. Zhu, "Effect of Intensive Psychological Care on Patients with Benign Breast Lumps after Mammotome-Assisted Tumor Resection," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 9054266, 6 pages, 2022.

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Research Article

Effect of Intensive Psychological Care on Patients with Benign Breast Lumps after Mammotome-Assisted Tumor Resection

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Objective. The aim of the study was to evaluate the effect of intensive psychological care on patients with benign breast lumps after Mammotome-assisted tumor resection. *Methods*. A total of 160 patients with benign breast lumps diagnosed and treated in our hospital between May 2019 and January 2021 were recruited and divided into a study group ($n = 80$) and a control group ($n = 80$) via the random number table method. All patients received Mammotome-assisted tumor resection. Patients in the control group received conventional nursing, and those in the study group received intensive psychological care. The outcome measure included quality of life of patients, psychological states, treatment compliance, and nursing satisfaction. *Results*. The differences in the Functional Assessment of Cancer Therapy-General (FACT-G) scores, self-rating anxiety scale (SAS) scores, Hamilton Depression Rating Scale (HAMD) scores, and Morisky scores between the two groups were not significant before the intervention ($p > 0.05$). The FACT-G scores improved in both groups after the intervention, with higher results in the study group than those in the control group ($p < 0.05$). Patients in the study group showed a significantly greater reduction in the SAS and HAMD scores than those in the control group ($p < 0.05$). Intensive psychological care used in the study group resulted in significantly higher compliance scores in the body mass control, medication compliance, exercise compliance, and dietary compliance versus conventional care for the control group ($p < 0.05$). *Conclusion*. Intensive psychological care provides satisfactory outcomes in patients with benign breast lumps after Mammotome-assisted tumor resection. It effectively improves the quality of life of patients, relieves their negative emotions, and strengthens treatment compliance and patient satisfaction, which shows good potential for clinical promotion.

1. Introduction

Breast cancer [1, 2] is the result of the uncontrolled proliferation of breast epithelial cells under the influence of various carcinogenic factors. Its clinical manifestations are mostly breast nodules, bleeding nipples, and enlarged axillary lymph nodes. Advanced breast cancer may develop distant metastases, leading to multiorgan damage and risk of death [3]. Epidemiological statistics show that the prevalence of breast cancer ranks first among malignant tumors in women, accounting for 24.2%. Benign breast lumps [4] are commonly seen in young women, with fibroadenomas being the most frequent. Excessive oestrogen stimulation, an imbalance between oestrogen and progesterone secretion, or local breast tissue hypersensitivity to oestrogen promotes abnormal proliferation of epithelial and mesenchymal components of the breast and is associated with the formation of benign breast masses. Genetic factors for benign breast masses have also been reported as previous studies have found genetic abnormalities in 20–30% of patients with fibroadenoma of the breast [5, 6]. Moreover, it has been indicated that the risk of malignant transformation of benign breast lumps is 2–3 times higher compared with the normal population, which seriously affects the life and health of patients [7]. Surgery is the mainstay of treatment for breast tumors, and Mammotome-assisted tumor resection is an effective surgical approach. During Mammotome-assisted tumor resection, a small hole of about 3 mm was pierced

in a hidden place such as the axilla or areola, and the lump was located and resected using the Mammotome vacuum-assisted breast biopsy system, with benefits such as small wound, less pain, shorter hospital stays, and faster postoperative recovery [8, 9]. Most patients suffer from varying degrees of psychological problems and negative emotions due to a lack of awareness of the disease, which hinders the smooth implementation of surgery and recovery, thus seriously affecting the quality of life and psychological well-being. Therefore, postoperative care to alleviate patients' negative emotions and encourage active treatment cooperation is essential. Intensive psychological care provides patients with different forms and degrees of psychological aid and supports to induce a sense of psychological satisfaction and security, thus relieving their psychological stress and negative emotions. However, there is a dearth of studies on the effect of intensive psychological care on patients with benign breast lumps after Mammotome-assisted tumor resection [10]. To this end, the aim of this study was to evaluate the impact of intensive psychological care on patients with benign breast masses after Mammotome-assisted tumor resection and to provide further data to support related studies.

2. Materials and Methods

2.1. Participants. A total of 160 patients with benign breast lumps diagnosed and treated in our hospital between May 2019 and January 2021 were recruited, and all eligible patients were female, aged 30–68 (46.83 ± 6.17) years. They were assigned to a study group ($n = 80$) and a control group ($n = 80$) via a random number table method. All patients received Mammotome-assisted tumor resection. Patients in the control group received conventional nursing, and those in the study group received intensive psychological care.

2.2. Inclusion and Exclusion Criteria. The inclusion criteria were as follows: (1) diagnosis of a benign breast tumor in accordance with the clinical diagnostic criteria of the International Federation of Obstetrics and Gynaecology [11]; (2) undergoing Mammotome adjuvant tumor resection at our institution; and (3) patients who provided written informed consent were included in the study.

The exclusion criteria were as follows: (1) severe cardiac, hepatic, or renal dysfunction or organic pathology; (2) psychiatric illness or unconsciousness; (3) pregnancy and lactation; and (4) patients with contraindications to treatment.

2.3. Treatment Methods. All patients underwent Mammotome-assisted tumor resection. The location, size, and depth of the lesion were accurately located preoperatively. Patients were placed in a supine position with lateral shoulder elevation. After routine disinfection, 1–2 drops of epinephrine and 20 ml of 0.5% lidocaine were injected into the selected prepuncture site. An incision of approximately 3 mm was made at the injection site, and the rotary blade was inserted, moved underneath the lump, and pressed against the bottom of the lump under ultrasound guidance. The position of the blade slot was adjusted to align the lesion, followed by rotary resection and aspiration of the lesion. After the lesion was excised, the residual blood was removed by vacuum aspiration. The wound was covered with sterile gauze without sutures, and local compression was applied to the original lesion for more than 10 minutes to ensure good hemostasis, followed by compression bandaging with an elastic bandage.

Patients in the control group received routine care, including health education on tumor knowledge, preoperative examination, intraoperative adjuvant physician, vital signs monitoring, and postoperative basic care.

Patients in the study group received intensive psychological care:

(1) Preoperative care: psychological status assessment of patients upon admission and active communication was performed to understand the causes of negative emotions and ensure effective preoperative preparation. The patients were also educated about the cause, treatment, and prognosis of the disease as well as the need and benefits of surgical treatment to reduce their anxiety and fear. Soothing and decompression methods such as playing soothing music may help patients relax.

(2) Intraoperative care: the temperature and humidity in the operating room should be properly managed to ensure a comfortable external environment. Nursing staff talked slowly and gently with patients during the operation to guide them to maintain a positive and stable psychological state and avoid stress reactions.

(3) Postoperative care: the patients were informed of the surgical results immediately after they recovered from anesthesia and visited frequently for close observation of their status to establish a good nurse-patient relationship. The family members of the patients were also instructed to provide the patients with encouragement and support to enhance their life attitudes. Cognitive therapy was used to help the patients understand the correlation of disease with negative emotions, and biofeedback therapy instruments were used to collect physiological signals of the patients, which contribute to enhancing the self-regulation and treatment compliance of patients.

2.4. Outcome Measures

(1) Quality of life [12]: the Functional Assessment of Cancer Therapy - General (FACT-G) was used to evaluate the quality of life in four aspects: emotional function, cognitive function, social function, and physical function, using a scale of 0–4 points, with a total of 27 items and a total score of 108 points.

(2) Negative emotions [13]: the Self-Rating Anxiety Scale (SAS) and the Hamilton Depression Rating Scale (HAMD) were used to assess the negative emotions of patients. The SAS scale consisted of 20 items with a total score of 100 points, with 50–70

Table 1: Patient characteristics ($\overline{x} \pm s\ \overline{x}$).

Group	n	Age (year)		Course of disease (year)		Tumor diameter (cm)		Pathological types		
		Mean	Range	Mean	Range	Mean	Range	Breast hyperplasia	Breast fibroids	Other
Control	80	46.55 ± 6.23	30–65	2.02 ± 0.27	0.8–4.0	1.28 ± 0.41	0.6–2.8	35	38	7
Study	80	46.98 ± 5.89	32–68	1.98 ± 0.35	1.0–3.9	1.17 ± 0.39	0.5–2.5	33	36	11
T	—	0.287	—	0.361	—	0518	—	—	—	—
p value	—	0.787	—	0.728	—	0.596	—	—	—	—

points being mild anxiety, 71–90 points being moderate anxiety, and >90 points being severe anxiety. The higher the score, the more severe the anxiety. The HAMD scale consists of 24 items and was scored on a scale of 0–4 points, and the higher the score, the more severe the depression.

(3) Compliance [14]: the Morisky compliance scale was used to evaluate the patients' compliance with treatment before and after nursing intervention in four aspects: medication compliance, body mass control, dietary compliance, and exercise compliance, with a full score of 50 points, with higher scores indicating higher compliance.

(4) Satisfaction: the "Nursing Satisfaction Questionnaire" (including the attitude of healthcare personnel, efficiency of care, and disease education) created by our hospital was divided into four levels (highly satisfied, satisfied, less satisfied, and dissatisfied) to understand the satisfaction of patients in both groups.

2.5. Statistical Analysis. GraphPad Prism 8 software was used to plot the graphics, and SPSS22.0 software was used for data analyses. The count data are expressed as rates (n (%)) and analyzed using the chi-square test, and the measurement data are expressed as the mean ± standard deviation and analyzed using Student's t-test. Statistically significant results were defined as $p < 0.05$.

3. Results

3.1. Patient Characteristics. There were 80 patients in the control group, aged 30–65 (46.55 ± 6.23) years, with a disease duration of 0.8–4.0 (2.02 ± 0.27), a mean tumor diameter of 0.6–2.8 cm (1.28 ± 0.41) cm; there were 35 cases of breast hyperplasia, 38 cases of breast fibroids, and 7 cases of other in terms of pathological types. There were 80 patients in the control group, aged 32–68 (46.98 ± 5.89) years, with a disease duration of 1.0–3.9 (1.98 ± 0.35), a mean tumor diameter of 0.5–2.5 cm (1.17 ± 0.39) cm; there were 33 cases of breast hyperplasia, 36 cases of breast fibroids, and 11 cases of other in terms of pathological types. There were no significant differences in the baseline patient characteristics between the two groups ($p > 0.05$) (Table 1).

3.2. Quality of Life. No significant difference was found in the FACT-G scores between the two groups before the intervention ($p > 0.05$). The FACT-G scores improved in both groups after the intervention, with higher results in the study group (87.21 ± 5.57) than those in the control group (64.84 ± 6.28) ($p < 0.05$) (Table 2).

Table 2: FACT-G scores ($\overline{x} \pm s$).

Group	n	Before intervention	After intervention
Control	80	43.28 ± 5.28	64.84 ± 6.28*
Study	80	43.17 ± 5.65	87.21 ± 5.57*
T	—	0.053	12.987
p value	—	0.958	<0.001

Note. The symbol * indicates a statistically significant difference ($p < 0.05$) in the comparison between before and after treatment within the same group.

3.3. Negative Emotions. There was no statistically significant difference in the SAS and HAMD scores between the two groups of patients before the intervention ($p > 0.05$). After the intervention, patients in the study group showed a significantly greater reduction in the SAS and HAMD scores (32.15 ± 3.18, 33.08 ± 4.11) than those in the control group (51.51 ± 4.54, 40.36 ± 5.65) ($p < 0.05$) (Table 3).

3.4. Treatment Compliance. The differences in the Morisky scores between the two groups did not come up to the statistical standard before intervention ($p > 0.05$). After the intervention, intensive psychological care used in the study group resulted in significantly higher compliance scores in the body mass control, medication compliance, exercise compliance, and dietary compliance (39.67 ± 2.24, 41.92 ± 2.41, 42.01 ± 2.08, and 43.88 ± 3.12) versus conventional care for the control group (28.17 ± 3.21, 29.87 ± 2.65, 30.79 ± 3.18, and 33.25 ± 4.11) ($p < 0.05$) (Figure 1).

3.5. Nursing Satisfaction. In the control group, there were 26 (32.50%) cases of highly satisfied, 35 (43.75%) cases of satisfied, 11 (13.75%) cases of less satisfied, and 8 (10.00%) cases of dissatisfied. In the study group, there were 33 (41.25%) cases of highly satisfied, 45 (56.25%) cases of satisfied, 1 (1.25%) case of less satisfied, and 1 (1.25%) case of dissatisfied (Table 4).

4. Discussion

The incidence of breast cancer is increasing year by year and has leapt to the top of the list of malignant tumors in women,

Table 3: SAS and HAMD scores ($\overline{x} \pm s\ \overline{x}$).

Group	n	SAS		HAMD	
		Before intervention	After intervention	Before intervention	After intervention
Control	80	66.83 ± 4.96	51.51 ± 4.54∗	53.53 ± 6.21	40.36 ± 5.65∗
Study	80	66.74 ± 5.17	32.15 ± 3.18∗	53.45 ± 6.08	33.08 ± 4.11∗
t	—	0.327	13.695	0.355	11.081
p value	—	0.798	<0.001	0.732	<0.001

Note. The symbol ∗ indicates a statistically significant difference ($p < 0.05$) in the comparison between before and after treatment within the same group.

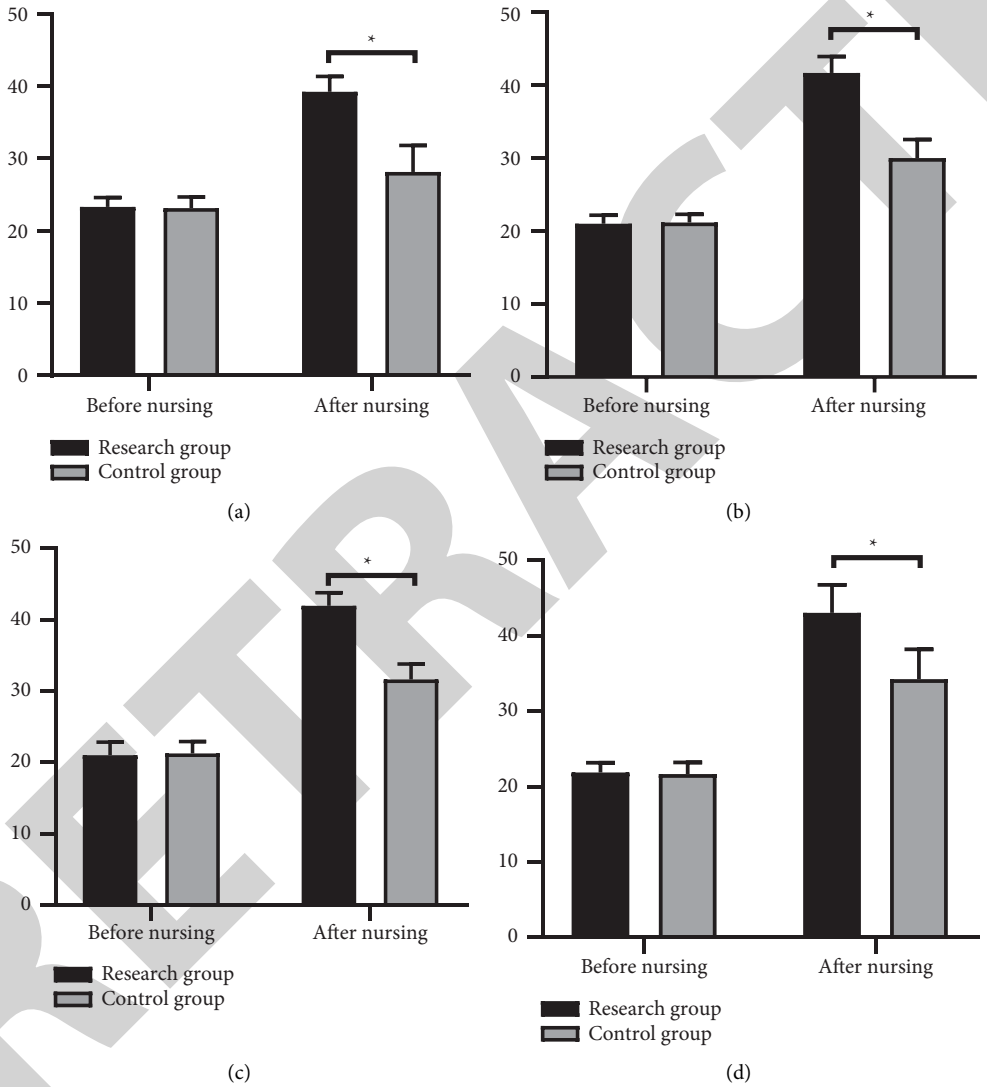

Figure 1: Morisky scores. The symbol * indicates that there is a statistically significant difference ($p < 0.05$) between the two groups. (a) Body mass control; (b) medication compliance; (c) exercise compliance; (d) dietary compliance.

estimated to be close to 0.03%, i.e., close to 3 per 10,000 people worldwide [15]. Breast cancer is more common in women between the ages of 40 and 60 and is relatively uncommon in women younger than 35 years [16]. Breast cancer is now considered to be multifactorial. Family history is a high-risk factor for breast cancer; early menarche, late menopause, and benign breast disease are also risk factors; chronic use of exogenous oestrogens or alcohol and depression are also risk factors, and genetic mutations may also play an important role [17, 18]. Biopsied open surgery of clinical breast lesions has been the conventional method in the past, which can completely remove the mass and provide sufficient tissue volume for pathological diagnosis [19]. However, it may leave obvious scars, affect the beauty of the breasts, and cause great mental stress and psychological burden to female friends [20].

Table 4: Nursing satisfaction (%).

Group	n	Highly satisfied	Satisfied	Less satisfied	Dissatisfied	Total satisfaction
Control	80	26 (32.50)	35 (43.75)	11 (13.75)	8 (10.00)	61 (76.25)
Study	80	33 (41.25)	45 (56.25)	1 (1.25)	1 (1.25)	78 (97.50)
x^2	—			8.624		
p value	—			0.001		

The Mammotome system, developed by Johnson & Johnson, is the most advanced minimally invasive biopsy system available. It consists of two main devices: a rotary cutter and a vacuum suction pump, which allow repeated cutting of suspicious breast lesions to obtain histological specimens of the breast, providing more and better methods for the detection and diagnosis of breast cancer, as well as a technical basis for minimally invasive excision of benign tumors [21, 22]. Ultrasound-guided breast puncture biopsy and the complete excision system can diagnose most breast lesions. Mammotome allows for minimally invasive biopsy of diseased breast tissue under ultrasound guidance, while complete excision of some benign tumors can be performed under ultrasound guidance [23]. Mammotome is the gold standard for biopsy of calcified lesions and is uniquely designed to make biopsies easier and more definitive [22, 23]. Mammotome is designed to be used in conjunction with a molybdenum-targeting system to its fullest advantage. The needle can be rotated 360 degrees to ensure large, continuous specimens are obtained, and there are two types of localised biopsies, both firing and nonfiring, making it possible to biopsy deep lesions and smaller breasts with greater diagnostic accuracy than previous fine and coarse needle punctures [24].

Psychological care refers to the application of psychological methods and practices to achieve a positive psychological impact on patients [25], and intensive psychological care provides patients with different forms and degrees of psychological help and support [26, 27]. Traditional mastectomy can leave scars and lead to negative emotions, and studies have shown that 98% of breast cancer patients experience anxiety and depression [3, 28]. Mammotome-assisted tumor resection is characterised by precise positioning, ease of operation, and small incisions and being combined with intensive psychological care can alleviate patients' postoperative moods [29, 30]. The results of the present study showed that intensive psychological care resulted in significantly higher FACT-G scores, higher treatment compliance, and lower SAS and HAMD scores versus conventional care ($p < 0.05$), indicating that intensive psychological care benefits the quality of life and treatment compliance of patients by mitigating their negative emotions. Presumably, the reason can be that intensive psychological care enhances patients' understanding of the disease and the surgery to reduce their fear and foster a positive treatment attitude, which contributes to a successful surgery. In addition, intraoperative reassurance helps patients maintain a stable physical state and increase surgical tolerance, while postoperative psychological support alleviates negative postoperative emotions and encourages patients to communicate with others to achieve emotional release [31]. Moreover, patients in the study group showed a significantly higher nursing satisfaction (97.50%) than those in the control group (76.25%) ($p < 0.05$), suggesting that intensive psychological care is effective in enhancing the quality of life of patients and alleviating their negative emotion [32, 33]. This result is in concordance with the research results by Jimmy Kim et al., which reported that psychological care was associated with higher nursing satisfaction in breast cancer patients after surgical resection.

However, our experiments also have certain flaws. The first is the chance caused by the small sample size. Second, we need a large number of return visits to determine long-term efficacy. In addition, Mammotome's use in other diseases (such as breast hyperplasia and malignancy) is less studied, and further clinical trials are needed. Finally, minimal residual disease caused by incomplete resection may not always be detected by ultrasound, and further studies are needed to determine the prognostic effect.

5. Conclusion

Intensive psychological care provides satisfactory outcomes in patients with benign breast lumps after Mammotome-assisted tumor resection. It effectively improves the quality of life of patients, relieves their negative emotions, and strengthens treatment compliance and patient satisfaction, which shows good potential for clinical promotion.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] H.-W. Lai, H.-Y. Lin, S.-L. Chen, S.-T. Chen, D.-R. Chen, and S.-J. Kuo, "Endoscopy-assisted surgery for the management of benign breast tumors: technique, learning curve, and patient-reported outcome from preliminary 323 procedures," *World Journal of Surgical Oncology*, vol. 15, no. 1, p. 19, 2017.

[2] D. Hodorowicz-Zaniewska, J. Szpor, and P. Basta, "Intraductal papilloma of the breast-management," *Ginekologia Polska*, vol. 90, no. 2, pp. 100–103, 2019.

[3] H. Dhahri, I. Rahmany, A. Mahmood, E. Al Maghayreh, and W. Elkilani, "Tabu search and machine-learning classification of benign and malignant proliferative breast lesions," *Biomed Research International*, vol. 2020, Article ID 4671349, 10 pages, 2020.

[4] L. A. Erickson and B. Chen, "Fibroadenoma of the breast," *Mayo Clinic Proceedings*, vol. 95, no. 11, pp. 2573-2574, 2020.

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Retraction

Retracted: Clinical Efficacy of Laparoscopic Billroth II Subtotal Gastrectomy Plus Lienal Polypeptide Injection for Gastric Cancer

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References

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Research Article

Clinical Efficacy of Laparoscopic Billroth II Subtotal Gastrectomy Plus Lienal Polypeptide Injection for Gastric Cancer

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Objective. To evaluate the clinical efficacy of laparoscopic Billroth II subtotal gastrectomy plus lienal polypeptide injection for gastric cancer. *Methods*. Between May 2018 and January 2021, 110 patients with gastric cancer treated in Jingzhou First People's Hospital were recruited and assigned via the random number table method to either an observation group or a control group, with 55 patients in each group. All patients received laparoscopic Billroth II subtotal gastrectomy, and the observation group additionally received lienal polypeptide injection. Outcome measures include surgical indexes, clinical efficacy, and adverse events. *Results*. The patients in the observation group had significantly less intraoperative hemorrhage volume, smaller surgical wounds, shorter time lapse before passing gas and hospital stay, and longer operation time than those in the control group ($P < 0.001$). The observation group showed significantly higher efficacy than the control group ($P = 0.001$). The observation group had a significantly lower incidence of toxic side effects and adverse events than the control group ($P < 0.05$). After treatment, the $CD3^+$ and $CD4^+$ levels were significantly elevated and the $CD8^+$ level was decreased, with higher $CD3^+$ and $CD4^+$ levels and lower $CD8^+$ levels in the observation group than in the control group ($P < 0.05$). *Conclusion*. In the treatment of patients with gastric cancer, laparoscopic Billroth II subtotal gastrectomy plus lienal polypeptide injection features promising efficacy, improves the immune function of patients, effectively reduces the occurrence of toxic side effects and adverse reactions, with less trauma and rapid recovery, which shows good potential for use in clinical application.

1. Introduction

Gastric cancer is a malignant tumor that originates from the epithelium of the gastric mucosa and occurs mostly in people over 50 years of age. Gastric cancer ranks fourth in prevalence and second in mortality of all tumors worldwide. The main causes of gastric cancer include chronic inflammation, atrophic gastritis, atrophic gastritis with intestinal epithelial hyperplasia, and heterotypic hyperplasia, and other adverse factors include *Helicobacter pylori* infection, unhealthy diet, and poor environment conditions [1]. The majority of gastric cancer patients have no specific symptoms in the early stage, such as fullness and indigestion, which are similar to the symptoms of chronic gastric diseases such as gastritis and gastric ulcer and are prone to be overlooked. The common reasons for most gastric cancer cases attending the clinic are epigastric pain and weight loss, by which time the disease has usually progressed to the advanced stage [2]. Most patients with early-stage gastric cancer could obtain radical cure after surgery, while progressive-stage cancers require comprehensive treatment based on the pathological type and clinical stages of gastric cancer, such as surgery-based treatment with perioperative chemotherapy, radiotherapy, and biotargeted therapy so as to prolong patient survival and improve their survival quality [3]. Distal gastrectomy is one of the standard procedures for distal gastric cancer [4]. Billroth II subtotal gastrectomy is a modified version of Billroth I operation [5, 6], in which the residual stomach and the upper jejunum are anastomosed after major gastric resection, and the duodenum is sewn up [7]. However, traditional open surgery is highly traumatic, with high surgical risks and slow postoperative recovery. With the development of laparoscopic technology, laparoscopic radical gastric cancer treatment has

been widely used in clinical practice [8]. Chemotherapy is commonly used postoperatively to eliminate small lesions and tumor cells that are unresectable, but it is associated with toxic side effects and leads to poor prognosis. The prognosis of gastric cancer is related to the pathological stage, site, tissue type, biological behavior, and therapeutic measures of gastric cancer [9]. Lienal polypeptide injection is a sterile aqueous solution of peptides, free amino acids, nucleic acids, and total sugars with a molecular weight of fewer than 6,000 daltons made from healthy calf spleen extracts, mostly used in primary and secondary cellular immunodeficiency diseases [10]. Studies have demonstrated its effectiveness in boosting immunity and improving physical weakness in postoperative or critically ill patients. It has been shown that traditional Chinese medicine (TCM) shows good potential in the treatment and prevention of tumors [4], which, as an adjuvant treatment, can curb the growth of tumor cells and attenuate the toxic effects of chemotherapy [5]. This study was conducted to evaluate the clinical efficacy of laparoscopic Billroth II subtotal gastrectomy plus lienal polypeptide injection in the treatment of gastric cancer and to provide clinical references for treatment.

2. Materials and Methods

2.1. Participants. Between May 2018 and January 2021, 110 patients with gastric cancer treated in Jingzhou First People's Hospital were recruited and assigned via the random number table method to either an observation group or a control group, with 55 patients in each group. All patients received Billroth II subtotal gastrectomy, and the observation group additionally received lienal polypeptide injection. The research was approved by the Ethics Committee of the Jingzhou First People's Hospital, Approval No. 833301–6/7.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion criteria. Patients who met the relevant diagnostic criteria in the Gastric Cancer Diagnostic and Treatment Standard, with an expected survival of >3 months, with preoperative pathologically confirmed gastric cancer, with preoperative cTNM (UICC/AJCC 2016 gastric cancer staging) stage II to III, with the tumor located in the lower and middle part of the stomach, which was estimated to meet the requirement of distal radical resection range, with nonemergency surgery, without preoperative chemoradiotherapy, with American Society of Anesthesiology (ASA) classification I–III, and who provided written informed consent were included.

2.2.2. Exclusion criteria. Patients who received preoperative radiotherapy, with allergies to study-related drugs or a history of related allergy, and with other malignant tumors were excluded.

2.3. Treatment Methods. Patients in both groups underwent pathological examination after admission and received surgery after confirmation of the diagnosis. Before surgery, patients in both groups received routine examinations, such as electrocardiogram, chest X-ray, coagulation analysis, routine blood and urine testing, whole abdominal computed tomography (CT) scan, and contrast CT scanning.

All the patients received laparoscopic Billroth II subtotal gastrectomy. The surgery was performed after the family signed the consent form for surgery and anesthesia. After preoperative routine disinfection and draping, with the patient in the supine position, gastrointestinal decompression was performed, followed by insertion of a gastric tube to establish a CO_2 pneumoperitoneum, with a pneumoperitoneum pressure of 12–14 mm·Hg. An incision of 10 cm in length was made at the superior border of the umbilicus as the main operating port, and the secondary operating port was made 2 cm below the rib margin in the left and right anterior axillary lines and 2 cm above the midclavicular line in the left and right sides. A 5 cm Trocar was placed in the main and secondary operating ports, respectively. The lymph nodes were dissected as per the Guidelines for Operative Laparoscopic Gastric Cancer Surgery [11], the vagus nerve was severed, and the corresponding vessels were clamped and separated using peptide clips. The duodenum was severed 3 cm below the pylorus and the gastric body was disconnected 5 cm from the upper edge of the tumor through the main operating port, followed by sewing up the duodenum and the collection of the specimen [12, 13]. Billroth II anastomosis was performed. After lifting the transverse colon, Billroth II anastomosis of the residual stomach and jejunum was performed with a linear cutter, intermittent reinforcement sutures were performed on the plasma muscle layer, and a drainage tube was placed in the right anterior axillary line incision after surgery [14].

The SOX regimen (oxaliplatin/tegafur, gimeracil, and oteracil potassium capsules) was used for postoperative chemotherapy. The patients received 130 mg/m^2 of oxaliplatin (Approval No. H20113281, Lianyungang Jereh Pharmaceutical Co. Ltd.) diluted in 500 mL of 5% glucose solution through intravenous infusion for 3 h. Tegafur, gimeracil, and oteracil potassium capsules (Approval No. H2130816, Taiho Pharmaceutical Co. Ltd., Tokushima Plant) were administered twice daily in the morning and the evening. The duration of treatment was two courses, with one course of 4 weeks.

Patients in the observation group additionally received 10 mL of lienal polypeptide injection (Approval No. H22026497, Jilin Fengsheng Pharmaceutical Co. Ltd.) diluted in 500 mL of 5% glucose solution daily using an intravenous drip pump (2C1009K, Baxter). The drug was discontinued after 1 week of administration for 3 weeks. The duration of treatment was two courses, with one course of 4 weeks.

2.4. TCM Adjuvant Therapy. The patient received Fuzi Lizhong decoction as adjuvant therapy, and the ingredients include Bupleuri Radix 10 g, Cyperi Rhizoma 10 g, Aurantii Fructus 10 g, Atractylodis Macrocephalae Rhizoma 10 g, Paeoniae Radix Alba 10 g, Chuanxiong Rhizoma 10 g, Pinelliae Rhizoma 10 g, *Oroxylum indicum* 6 g, Gardeniae Fructus 6 g, Amomi Fructus 4.5 g, and licorice root 3 g. The

above herbs were decocted in 500 ml of water and 250 ml of filtrate was collected for oral administration, one dose daily, with a half dose administered in the morning and a half in the evening, respectively. The duration of treatment was two courses, with one course of 4 weeks.

2.5. Outcome Measures. The duration of follow-up was 6 months.

(1) Surgical indices: the operation time, intraoperative bleeding, wound length, time lapse before anal exhaustion, and hospital stay of the two groups were recorded and compared.

(2) Treatment efficacy: with reference to the Criteria for Evaluation of Therapeutic Efficacy of Solid Tumors, Response Evaluation Criteria in Solid Tumors (RECIST) [15], the efficacy was divided into complete remission (CR), partial remission (PR), stable disease (SD), and progressive disease (PD). CR: the lesion disappeared; PR: the lesion reduced by >30% in volume compared with that before treatment; SD: there was no significant change in lesion; PD: the lesion increased by >20% in volume compared with that before treatment. Total efficacy = (CR + PR)/total number of cases × 100%.

(3) Toxic side effects: with reference to the National Cancer Institute Common Terminology Criteria for Adverse Events (NCI-CTCAE), the occurrence of toxic side effects, including myelosuppression, neurological impairment, nausea and vomiting, and neutropenia, was recorded in all patients and compared between groups.

(4) Immune function: the changes in $CD3^+$, $CD4^+$, and $CD8^+$ levels of all patients before and after treatment were recorded in detail and compared between groups. 2 ml of fasting morning peripheral venous blood was collected from all patients and centrifuged to obtain the serum for the determination of T-lymphocyte subsets, and the absolute values of $CD3^+$, $CD4^+$, and $CD8^+$ were measured by cell biopsies.

(5) Adverse reactions: the occurrence of adverse reactions, including diarrhea, constipation, heartburn, and reflux gastritis, was recorded for all patients after surgery and compared between groups.

2.6. Statistical Analysis. The SPSS22.0 software was used for data analyses. The measurement data are expressed as (mean ± SD) and analyzed using the independent sample *t*-test. The count data are expressed as rates (%) and analyzed using the chi-square test. Differences were considered statistically significant at $P < 0.05$.

3. Results

3.1. Clinical Patient Profile. The patient characteristics were comparable between the two groups ($P > 0.05$) (Table 1).

3.2. Surgical Indices. The patients in the observation group had significantly less intraoperative hemorrhage volume, smaller surgical wounds, shorter time lapse before passing gas and hospital stay, and longer operation time ((127.71 ± 17.77) ml, (8.08 ± 1.37) cm, (2.71 ± 0.35) d, (7.73 ± 1.23) d, (211.15 ± 21.56) min) than those in the control group ((348.18 ± 25.96) ml, (17.23 ± 2.05) cm, (3.92 ± 0.88) d, (11.17 ± 1.85) d, (211.15 ± 21.56) min) ($P < 0.05$). (Table 2).

3.3. Treatment Efficacy. There were 12 (21.82%) cases of CR, 25 (45.45%) cases of PR, 13 (23.64%) cases of SD, and 5 (9.09%) cases of PD in the control group. There were 21 (38.18%) cases of CR, 30 (54.55%) cases of PR, 3 (5.45%) cases of SD, and 1 (1.82%) case of PD in the observation group. The observation group showed significantly higher efficacy (92.73%) than the control group (67.27%) ($P = 0.001$) (Table 3).

3.4. Toxic Side Effects. There were 15 (27.27%) cases of myelosuppression, 13 (23.64%) cases of neurological impairment, 9 (16.36%) cases of nausea and vomiting, and 7 (12.73%) cases of neutropenia in the control group, and there were 2 (3.64%) cases of myelosuppression, 3 (5.45%) cases of neurological impairment, 2 (3.64%) cases of nausea and vomiting, and 1 (1.82%) case of neutropenia in the observation group. The observation group had a significantly lower incidence of adverse events than the control group ($P < 0.05$) (Table 4).

3.5. Immune Function. Before treatment, the two groups showed similar immune function parameters ($P > 0.05$). After treatment, the $CD3^+$ and $CD4^+$ levels were significantly elevated and the CD^{8+} level was decreased, with higher $CD3^+$ and $CD4^+$ levels and lower $CD8^+$ levels in the observation group ((60.54 ± 9.12)%, (46.95 ± 5.08)%, (28.98 ± 4.45)%) than in the control group ((55.15 ± 8.95)%, (33.78 ± 5.37)%, (32.01 ± 4.18)%) ($P < 0.001$) (Table 5).

3.6. Adverse Events. There were 1 (1.82%) case of diarrhea, 2 (3.64%) cases of constipation, 3 (5.45%) cases of heartburn, and 2 (3.64%) cases of reflux gastritis. There were 8 (14.55%) cases of diarrhea, 6 (10.91%) cases of constipation, 7 (12.73%) cases of heartburn, and 9 (16.36%) cases of reflux gastritis. The observation group had a lower incidence of adverse events (14.55%) than the control group (54.55%) ($P < 0.001$) (Table 6).

4. Discussion

Radical gastric resection is currently the most effective treatment for gastric cancer [15], and with the development of minimally invasive surgery, laparoscopic radical gastric resection has been widely used for gastric cancer, in which the quality of gastrointestinal tract reconstruction is a key factor in determining patients' postoperative quality of life [16]. Billroth II subtotal gastrectomy enables radical

Table 1: Patient characteristics (±*s*).

Group	*n*	Gender		Age (year, $x \pm s$)	Body mass index (kg/m^2, $x \pm s$)	Tumor size	TNM stage	
		Male	Female				II	III
Control	55	38	17	51.03 ± 5.87	21.03 ± 2.61	4.39 ± 1.52	29	26
Observation	55	40	15	50.88 ± 6.13	20.96 ± 2.83	4.41 ± 1.37	28	27
t/X^2		2.638		0.131	0.135	0.072	1.454	
P value		0.435		0.896	0.893	0.943	0.357	

Table 2: Surgical indices (±*s*).

Group	*n*	Operation time (min)	Intraoperative hemorrhage (ml)	Surgical wound (cm)	Time lapse before passing gas (d)	Hospital stay (d)
Control	55	145.15 ± 20.51	348.18 ± 25.96	17.23 ± 2.05	3.92 ± 0.88	11.17 ± 1.85
Observation	55	211.15 ± 21.56	127.71 ± 17.77	8.08 ± 1.37	2.71 ± 0.35	7.73 ± 1.23
t		16.449	51.973	27.521	9.475	11.484
P value		<0.001	<0.001	<0.001	<0.001	<0.001

Table 3: Treatment efficacy (*n* (%)).

Group	*n*	CR	PR	SD	PD	Total efficacy
Control	55	12 (21.82)	25 (45.45)	13 (23.64)	5 (9.09)	37 (67.27)
Observation	55	21 (38.18)	30 (54.55)	3 (5.45)	1 (1.82)	51 (92.73)
X^2	—	—	—	—	—	11.136
P value	—	—	—	—	—	0.001

CR, complete remission; PR, partial remission; SD, stable disease; PD, progressive disease.

Table 4: Toxic side effects (*n* (%)).

Group	*n*	Myelosuppression	Neurological impairment	Nausea and vomiting	Neutropenia
Control	55	15 (27.27)	13 (23.64)	9 (16.36)	7 (12.73)
Observation	55	2 (3.64)	3 (5.45)	2 (3.64)	1 (1.82)
X^2		11.785	7.314	4.949	4.734
P value		0.001	0.003	0.026	0.030

Table 5: $CD3^+$, $CD4^+$, and $CD8^+$ levels (%, ±*s*).

Group	*n*	$CD3^+$		$CD4^+$		$CD8^+$	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Control	55	50.99 ± 8.36	55.15 ± 8.95*	30.02 ± 4.87	33.78 ± 5.37*	33.98 ± 4.99	32.01 ± 4.18*
Observation	55	51.15 ± 8.45	60.54 ± 9.12*	29.98 ± 5.45	46.95 ± 5.08*	33.54 ± 5.15	28.98 ± 4.45*
t	—	2.348	3.128	0.041	13.213	0.455	3.681
P value	—	0.921	0.002	0.967	<0.001	0.650	<0.001

A significant difference, $^*P < 0.05$ in the comparison between the pretreatment and post-treatment results in the same group.

Table 6: Adverse events (*n* (%)).

Group	*n*	Diarrhea	Constipation	Heartburn	Reflux gastritis	Total incidence
Control	55	8 (14.55)	6 (10.91)	7 (12.73)	9 (16.36)	30 (54.55)
Observation	55	1 (1.82)	2 (3.64)	3 (5.45)	2 (3.64)	8 (14.55)
X^2	—	—	—	—	—	19.459
P value	—	—	—	—	—	<0.001

resection of gastric tumors without concerns about anastomotic tension. Postoperative chemotherapy is usually adopted to remove unresectable tumor lesions and cells but may impair patient immunity. Lienal polypeptide injection features good tolerance, favorable efficacy, and a high safety profile in clinical applications [17].

The results of the present study showed that the patients in the observation group had less intraoperative hemorrhage volume, smaller surgical wounds, shorter time lapse before passing gas and hospital stay, and longer operation time than those in the control group. In distal gastric cancer surgery [18], the deep lesion site and special anatomical structure result in

high difficulties in surgical operation and increase the operation time, which is consistent with the results of previous studies. Compared with traditional open surgery, laparoscopic Billroth II subtotal gastrectomy is less invasive, thereby reducing intraoperative bleeding, avoiding large exposure of abdominal organs to air, and shortening the time lapse before passing gas [19]. Relevant studies suggest that the SOX chemotherapy regimen is effective in the treatment of advanced gastric cancer by killing tumor cells, blocking malignant tumor DNA synthesis, and inhibiting cell lines to prevent cancer progression and spread. However, chemotherapy may result in collateral damage to adjacent normal cells and disrupt the immune function of the body, giving rise to a cascade of toxic side effects. In this study, TCM was employed as an adjuvant therapy to suppress tumor cells, which stimulates immune cells to recognize and engulf cancer cells by regulating the secretion of cytokines [13], thereby preventing recurrence and metastasis after resection of the primary lesion [14].

In the present study, after treatment, the CD^{3+} and CD^{4+} levels were significantly elevated and the CD^{8+} level was decreased, with higher CD^{3+} and CD^{4+} levels and lower CD^{8+} levels in the observation group than in the control group, and the observation group had fewer toxic side effects than the control group, indicating that laparoscopic Billroth II subtotal gastrectomy plus lienal polypeptide injection activates the nonspecific immune function of the body to improve the immunity, and the Fuzi Lizhong decoction contributes to enhancing the immunity of the body and attenuating the toxicity from chemotherapy. The reason may be that lienal polypeptide injection enters the spleen with blood circulation through an intravenous drip and improves immune cell activity through bidirectional multitarget immunomodulation, which enhances cellular nonspecific immune response and prevents serious toxic side effects. Previous research [20] suggests that lienal polypeptide injection has been widely used in postoperative chemotherapy for various cancers such as liver cancer and breast cancer with certain effectiveness, and the results of the present study also demonstrated its ability to mitigate the irritation of chemotherapy drugs on patients' gastrointestinal tract and effectively improve body immunity. Moreover, the observation group showed a significantly higher treatment efficacy and a lower incidence of adverse events than the control group. The reason may be that compared with conventional open surgery, laparoscopic Billroth II subtotal gastrectomy plus lienal polypeptide injection has a small incision, less intraoperative bleeding, and faster postoperative recovery, thereby effectively reducing the incidence of complications and improving the prognosis, with a high safety profile, which is similar to previous research results.

Data Availability

All the data generated or analyzed during this study are included in this published article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

Wei Yan and Siqi Yan contributed equally.

References

[1] H. L. Waldum and R. Fossmark, "Types of gastric carcinomas," *International Journal of Molecular Sciences*, vol. 19, 2018.

[2] M. Zhang, S. Hu, M. Min et al., "Dissecting transcriptional heterogeneity in primary gastric adenocarcinoma by single cell RNA sequencing," *Gut*, vol. 70, no. 3, pp. 464–475, 2021.

[3] A. Horvath, A. Bausys, R. Sabaliauskaite et al., "Distal gastrectomy with Billroth II reconstruction is associated with oralization of gut microbiome and intestinal inflammation: a proof-of-concept study," *Annals of Surgical Oncology*, vol. 28, no. 2, pp. 1198–1208, 2021.

[4] N. Zhang, K. Xu, and X. Su, "Comparison of postoperative short-term complications and endoscopy scan in distal gastrectomy for gastric cancer between Billroth I and Billroth II reconstruction," *Zhonghua Wei Chang Wai Ke Za Zhi*, vol. 22, no. 3, pp. 273–278, 2019.

[5] C. H. Chen, C. L. Lin, and C. H. Kao, "Subtotal gastrectomy with Billroth II anastomosis is associated with a low risk of ischemic stroke in peptic ulcer disease patients: a Nationwide population-based study," *Medicine (Baltimore)*, vol. 95, Article ID e3481, 2016.

[6] X. M. Xiao, C. Gaol, W. Yin, W. H. Yu, F. Qi, and T. Liu, "Pylorus-preserving versus distal subtotal gastrectomy for surgical treatment of early gastric cancer: a meta-analysis," *Hepato-Gastroenterology*, vol. 61, no. 131, pp. 870–879, 2014.

[7] E. Sakamoto, A. R. Dias, M. F. K. P. Ramos et al., "Laparoscopic completion total gastrectomy for remnant gastric cancer," *Journal of Laparoendoscopic and Advanced Surgical Techniques*, vol. 31, no. 7, pp. 803–807, 2021.

[8] C. H. Chen, C. M. Hsu, C. L. Lin, A. K. Chou, and L. B. Jeng, "The development of diabetes after subtotal gastrectomy with Billroth II anastomosis for peptic ulcer disease," *PLoS One*, vol. 11, no. 11, Article ID e0167321, 2016.

[9] J. Grosek, H. Zavrtanik, and A. Tomažič, "Health-related quality of life after curative resection for gastric adenocarcinoma," *World Journal of Gastroenterology*, vol. 27, no. 16, pp. 1816–1827, 2021.

[10] D. Jia, W. Lu, C. Wang et al., "Investigation on immunomodulatory activity of calf spleen extractive injection in cyclophosphamide-induced immunosuppressed mice and underlying mechanisms," *Scandinavian Journal of Immunology*, vol. 84, no. 1, pp. 20–27, 2016.

[11] C. H. Chen, C. L. Lin, Y. S. Cheng, and L. B. Jeng, "Association between subtotal gastrectomy with Billroth II anastomosis and coronary heart disease," *Obesity Surgery*, vol. 27, no. 6, pp. 1604–1611, 2017.

[12] Z. Cai, Y. Zhou, C. Wang et al., "Optimal reconstruction methods after distal gastrectomy for gastric cancer: a systematic review and network meta-analysis," *Medicine (Baltimore)*, vol. 97, no. 20, Article ID e10823, 2018.

[13] H. Zhou, A. Wang, J. Ying, and H. Lu, "Simultaneous laparoscopic subtotal gastrectomy (Billroth II) and total colectomy with ileorectal anastomosis for synchronous gastric and multifocal colon cancer—a video vignette," *Colorectal Disease*, vol. 23, no. 6, pp. 1589-1590, 2021.

[14] T. Yamaguchi, J. Kinoshita, T. Tsukada et al., "Laparoscopy assisted subtotal gastrectomy (billroth? Reconstruction) for

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Retraction

Retracted: The Effectiveness and Safety of Ropivacaine and Medium-Dose Dexmedetomidine in Cesarean Section

Evidence-Based Complementary and Alternative Medicine

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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] B. Huang and S. Niu, "The Effectiveness and Safety of Ropivacaine and Medium-Dose Dexmedetomidine in Cesarean Section," *Evidence-Based Complementary and Alternative Medicine*, vol. 2022, Article ID 4447484, 7 pages, 2022.

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Research Article

The Effectiveness and Safety of Ropivacaine and Medium-Dose Dexmedetomidine in Cesarean Section

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Objective: To study the effects of epidural anesthesia with different doses of dexmedetomidine and ropivacaine on postoperative hemodynamics and neonatal outcome of cesarean section parturients. *Methods*. A total of 90 parturients who underwent cesarean section admitted to our hospital from January 2019 to January 2020 were selected as the research objects and were divided into groups A, B, and C according to different dosages of dexmedetomidine, with 30 cases in each group. Groups A, B, and C were given dexmedetomidine 0.5 μg/kg, 0.8 μg/kg, 1.0 μg/kg, respectively, combined with 0.2% ropivacaine. The anesthesia effect, traction response, hemodynamic indexes, and neonatal Apgar score of the three groups were compared; the "Numerical Rating Scale (NRS) Score" was used to assess the postoperative pain of the parturients, and the "Ramsay Sedation Scale" was used to assess the sedation state of the parturients. *Results*. The superior anesthesia effect of group B was obtained compared with groups A and C ($P < 0.05$). Group B witnessed a lower degree of grade III stretching response, as compared to group A ($P < 0.05$). In comparison with groups A and C, superior results of the heart rate and mean artery pressure (MAP) of group B at T1 and T2 were obtained ($P < 0.05$). The neonatal Apgar score in group B was lower than those in groups A and C ($P < 0.05$), and the NRS score of group B was also lower than that of group A ($P < 0.05$). Compared with groups A and C, group B yielded a more favorable outcome in terms of the Ramsay score ($P < 0.05$). *Conclusion*. The use of medium-dose dexmedetomidine in cesarean section parturients is safer and can effectively reduce the impact on maternal hemodynamics, which is worthy of promotion and application.

1. Introduction

Cesarean section, as a common operation in obstetrics and gynecology, is currently widely used and an effective means to save the lives of mothers and infants [1]. With the advancement of medical technology and the improvement of living standards, people's requirements for clinical anesthesia effects and safety have become more stringent. At present, epidural anesthesia, as a common anesthesia method for cesarean section, is characterized by small impact on the fetus and an excellent controllability [2–4]. Most parturients are susceptible to a variety of factors during cesarean section, which can cause dramatic mood swings, and due to the lack of knowledge of the operation process and the unfamiliarity to relevant delivery experience, parturients who are to first experience cesarean section are also prone to anxiety, depression, and other negative emotions, which will seriously reduce the quality of delivery [5, 6]. In addition, epidural anesthesia for women undergoing second cesarean section is prone to a short duration of anesthesia block, and it is often accompanied by adverse events such as nausea and traction-related reactions during the operation. Based on this, the actual situation of the parturients should be fully assessed before performing anesthesia surgery to further stabilize their heart rate and blood pressure and relieve the negative emotions.

The most important features of pain-free delivery are pain avoidance, reduced fear of childbirth, and reduced postpartum fatigue [7]. It can also reduce unnecessary oxygen consumption, prevent maternal and infant metabolic acidosis, reduce uteroplacental blood flow, and improve fetal oxygen and condition [8]. Related studies have found that dexmedetomidine can stable hemodynamics and analgesia, improve the effect of the local anesthesia in cesarean section,

and avoid the occurrence of adverse events [9–11]. In addition, ropivacaine can reduce the immune stress response of the parturients, so the combined use of the two exerts a promising clinical effect. In previous studies on the combined use of dexmedetomidine and ropivacaine, more attention was paid to the effect of the two used in epidural anesthesia, while the effects of different doses of dexmedetomidine combined with ropivacaine for epidural anesthesia on postoperative hemodynamics and the neonatal outcome of cesarean section parturients are rarely reported [12, 13]. In order to further explore the effect of different doses of dexmedetomidine and ropivacaine for epidural anesthesia on postoperative hemodynamics and the neonatal outcome of cesarean section parturients, this study matched 90 cases of parturients who underwent cesarean section in our hospital from January 2019 to January 2020 as the research objects. The results are summarized as follows.

2. Materials and Methods

2.1. General Information. A total of 90 parturients who underwent cesarean section and admitted to our hospital from January 2019 to January 2020 were selected as the research objects. They were divided into groups A, B, and C according to different doses, with 30 cases in each group.

2.2. Inclusion Criteria. Inclusion criteria were defined as follows: ① age >18 years old; ② all who were singleton full-term pregnancy and who met the surgical indications would go through cesarean section to end the delivery; ③ this study was approved by the hospital ethics committee, and the patients and their family members understood the purpose and process of the study and signed the informed consent.

2.3. Exclusion Criteria. Exclusion criteria were defined as follows: ① combined with primary hematopoietic system diseases and primary immunodeficiency diseases; ② had recently taken analgesics; and ③ with contraindications to surgery.

2.4. Methods. All parturients were given epidural anesthesia. Before the operation, they were fasted for 6 hours and forbidden to drink for 8 hours. The temperature of the operating room was maintained at around 24°C. In the meanwhile, the vital signs of the parturients were closely monitored. In order to prevent accidents, intravenous infusion of upper extremities should be established to prepare for first aid. Puncture method: the parturient took the left lateral decubitus position, and epidural puncture at $L_{2\text{-}3}$ was performed to observe whether there was blood return. After the puncture, the parturient took the supine position, and 3 mL of 2% Lidocaine (Manufacturer: Chengdu First Pharmaceutical Co., Ltd.; H51021662; specification: 5 ml: 0.1 g) was injected as the test volume. After observing for 6 minutes without abnormalities and excluding signs of spinal anesthesia, group A was given intravenous infusion of 0.5 μg/kg dexmedetomidine (Manufacturer: Jiangsu Hengrui Pharmaceutical Co., Ltd.; Guoyao Zhunzi H20090248; specification: 2 mL: 200 μg), combined with 15 mL 0.2% ropivacaine (Manufacturer: Guangdong Jiabo Pharmaceutical Co., Ltd.; Guoyao Zhunzi H20173194; specification 20 mL: 200 mg) mixed with 2 mL physiological saline. Dexmedetomidine for group B was changed to 0.8 μg/kg, and for group C, it was changed to 1.0 μg/kg. The rest were the same as group A, and the infusion time for the three groups was all 15 minutes. All operations were performed by the same group of gynecologists.

2.5. Observation Indicators. In comparing the anesthesia effects of the three groups, if there were no adverse reactions, the induction of anesthesia was stable, and if the vital indicators were normal, it would be marked as excellent; if there was slight restlessness and the muscle relaxation was good, it would be marked as average; if the muscle relaxation was poor and accompanied by pain, then it would be marked as medium; if the anesthesia failed, and other anesthesia methods were used to complete the operation, it would be marked as bad. Effective rate = (excellent + good)/total number of cases * 100%.

The time points of before the operation, 30 min during the operation, and at the end of the operation were set as T0, T1, and T2, separately. The hemodynamic indexes of the three groups at different time points were observed and compared. The hemodynamic indexes include the heart rate (HR) and mean arterial pressure (MAP).

The stretching response of the three groups was observed: grade I represented comfortable and quiet; grade II stood for the pain of stretching within a tolerable range; grade III as unbearable.

The "Apgar Score" [14] was used to evaluate the physical status of the three groups. The scale had a full score of 10 points. The lower the score, the more severe the asphyxia of the newborn.

The "NRS" [15] was used to assess the postoperative pain intensity of the parturients. The scale had a total score of 10 points. The higher the score, the more severe the pain of the parturients.

The "Ramsay Sedation Rating Scale" [16] was to evaluate the postoperative sedation status of the three groups of parturients. The total score of the scale was 6 points. The higher the score, the better the sedation effect.

2.6. Statistical Analysis. SPSS20.0 was selected to process the data in this study, and GraphPad Prism 7 (GraphPad Software, San Diego, USA) was used to draw the data. The study included count data and measurement data, using x^2-tests, t-test, and the test of normality. $P < 0.05$ was considered to be statistically significant.

3. Results

3.1. Comparison of Clinical Data of the Three Groups. There were no significant differences in the age, height, body mass index (BMI), average gestational week, and residence

of the three groups of parturients ($P > 0.05$), and they were comparable, as shown in Table 1.

3.2. Comparison of Anesthesia Effects of the Three Groups. Superior anesthesia effect of group B was obtained compared with groups A and C ($P < 0.05$), as shown in Table 2.

3.3. Comparison of Traction Responses of the Three Groups. Group B witnessed a lower degree of grade III stretching response, as compared to group A ($P < 0.05$), as shown in Table 3.

3.4. Comparison of HR of the Three Groups at Different Time Points. The heart rate at T0, T1, and T2 in group A was (88.34 ± 10.21) times/min, (85.27 ± 8.38) times/min, and (86.33 ± 10.25) times/min, respectively, while in group B, the heart rate at T0, T1, and T2 was (88.35 ± 9.35) times/min, (80.21 ± 4.25) times/min, and (81.22 ± 5.12) times/min, respectively; the heart rate at T0, T1, and T2 in group C was (88.21 ± 10.21) times/min, (94.22 ± 9.32) times/min, and (96.33 ± 11.25) times/min, respectively. In comparison with groups A and C, the heart rate of group B at T1 and T2 was lower ($P < 0.05$), as shown in Figure 1.

3.5. Comparison of MAP Indexes of the Three Groups at Different Time Points. The MAP indexes at T0, T1, and T2 in group A was (82.37 ± 7.32) mmHg, (87.69 ± 9.11) mmHg, and (88.35 ± 10.05) mmHg, respectively, while in group B, the MAP indexes at T0, T1, and T2 was (82.24 ± 7.41) mmHg, (83.01 ± 7.55) mmHg, and (83.27 ± 8.23) mmHg, respectively; the MAP indexes at T0, T1, and T2 in group C was (82.32 ± 7.29) mmHg, (95.33 ± 9.35) mmHg, and (97.35 ± 11.23) mmHg, respectively. In comparison with the groups A and C, the MAP index of group B was less ($P < 0.05$), as shown in Figure 2.

3.6. Comparison of the Apgar Score of the Three Groups. The Apgar score of group A was (9.01 ± 1.12) points; the Apgar score of group B was (8.22 ± 1.05) points; the Apgar score of group C was (9.21 ± 1.21) points. In comparison with the groups A and C, a superior outcome of the Apgar score of group B was obtained ($P < 0.05$), as shown in Figure 3.

3.7. Comparison of the NRS Score of the Three Groups. The NRS score of group A was (7.23 ± 1.24) points; the NRS score of group B was (4.32 ± 1.01) points; the NRS score of group C was (3.98 ± 0.96) points. In comparison with the group A, a lower score of the NRS score of group B was obtained ($P < 0.05$), as shown in Figure 4.

3.8. Comparison of the Ramsay Score of the Three Groups. The NRS score of group A was (2.37 ± 0.56) points; the NRS score of group B was (4.98 ± 1.23) points; the NRS score of group C was (2.41 ± 0.66) points. Compared with groups A and C, group B yielded a more favorable outcome in terms of the Ramsay score ($P < 0.05$), as shown in Figure 5.

4. Discussion

Pregnancy will affect maternal organ function, and the implementation of effective anesthesia in cesarean section can not only relieve maternal pain but also reduce the impact on mothers and infants [17, 18]. Compared with conventional anesthesia, epidural anesthesia with a higher maternal acceptance enjoys a rosy analgesic effect, which is widely used in clinical practice. This kind of anesthesia method is to inject local anesthetics into the epidural space of parturients, which aims to block the spinal nerve root and produce temporary analgesic anesthesia effect in the nearby area, so as to bring down the stress response of parturients [19–21]. In addition, the parturients will be in a relatively conscious state to feel the contractions in the whole process of labor. Due to the existence of risk of epidural anesthesia technology, which is easy to be affected by individual differences of the parturients, it can result in different analgesic effects and labor processes with the different dosages of anesthetics. Besides, during the operation, the parturients are prone to anxiety and other negative emotions, which excites the sympathetic nerve and dilates the uterus, thus affecting the uterine contraction, which will increase the incidence of bleeding and other adverse events, and they affect the operation results [22, 23]. The rational use of sedatives and anesthetics can ensure the comfort and safety of the parturients and reduce the harmful stimulation to them as well, so as to alleviate the pain and negative emotions, which is conducive to the prognosis.

Dexmedetomidine is a common high selective α 2 adrenoceptor agonists in clinical practice, which is characterized by a short action time and a strong analgesic effect, and the analgesic mechanism is through the locus ceruleus of the brain stem α 2 adrenergic receptors to play the role of analgesia and reduce maternal stress response. However, it is clinically found that a variety of adverse reactions may occur after using dexmedetomidine, such as dry mouth, nausea, and dizziness, which is mostly positively related to the application dose of dexmedetomidine [24, 25]. Many hospitals prescribe dexmedetomidine for use in pregnant women only when the potential benefit outweighs the potential risk to the fetus [26]. In addition, studies have shown that radioisotope-labeled dexmedetomidine is secreted in breast milk after subcutaneous administration to lactating female mice, so this product should be used with caution in lactating women [27]. As a new type of a long-acting amide local anesthetic, ropivacaine has the advantages of low toxicity and quick onset, which can promote the rapid recovery of the maternal body, so it is widely used in cesarean operations. It can inhibit the sodium ion channel of nerve cells and block the flow of sodium ions into the nerve fiber cell membrane, thereby reversibly blocking the impulse conduction along the nerve fiber. And the side effect of this drug on the motor nerve block is rather hidden, so the parturients can freely carry out activities after the operation [28]. Because it is not an intravenous anesthesia, it is a

Table 1: Comparison of clinical data of the three groups (n (%)).

	Group A ($n = 30$)	Group B ($n = 30$)	Group C ($n = 30$)	x^2/t value	P value
Age (years)	25.37 ± 2.32	25.11 ± 2.45	25.23 ± 2.38	0.281	0.780
Height (cm)	1.67 ± 0.38	1.65 ± 0.35	1.66 ± 0.36	0.142	0.887
BMI (kg/m^2)	27.31 ± 2.33	27.22 ± 2.45	27.35 ± 2.27	0.141	0.887
Average gestational week (weeks)	38.45 ± 2.33	38.22 ± 2.45	38.32 ± 2.38	0.248	0.805
Place of residence				0.317	0.853
Urban	20 (66.67)	21 (70.00)	22 (73.33)		
Rural	10 (33.33)	9 (30.00)	8 (26.67)		

Table 2: Comparison of anesthesia effects of the three groups.

Group	No.	Excellent	Good	Average	Poor	Effective rate
Group A	30	50.00% (15/30)	10.00% (3/30)	13.33% (4/30)	26.67% (8/30)	73.33% (18/30)
Group B	30	66.67% (20/30)	26.67% (8/30)	6.67% (2/30)	0.00% (0/30)	93.33% (28/30)
Group C	30	53.33% (16/30)	13.33% (4/30)	10.00% (3/30)	23.33% (7/30)	66.67% (20/30)
X^2 value						9.545
P value						< 0.05

Table 3: Comparison of traction responses of the three groups (n (%)).

Group	No.	Grade I	Grade II	Grade III
Group A	30	36.67% (11/30)	30.00% (9/30)	33.33% (10/30)
Group B	30	66.67% (20/30)	23.33% (7/30)	10.00% (3/30)
Group C	30	63.33% (19/30)	30.00% (9/30)	6.67% (2/30)
X^2 value		5.931	0.443	4.812
P value		0.015	0.506	0.028

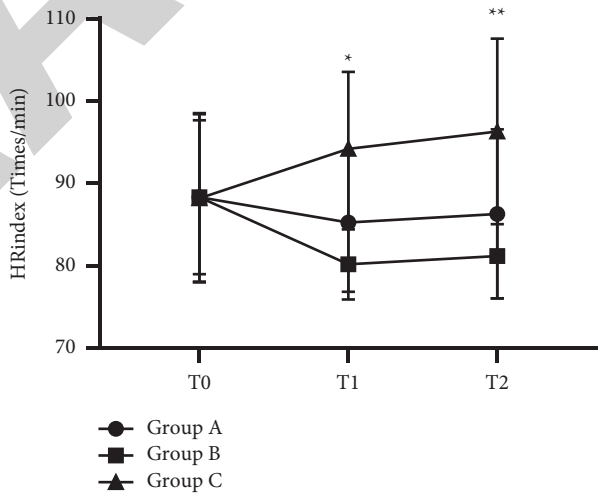

Figure 1: Comparison of the HR of the three groups at different time points ($x \pm s$). The abscissa represented time of T0, T1, and T2, and the ordinate represented heart rate (times/min). *indicates that there was a significant difference in the heart rate of the three groups at T1 ($t = 4.784$, $P = 0.002$); **indicates that there was a significant difference in the heart rate of the three groups at T1 ($t = 4.245$, $P = 0.006$).

relatively safe anesthetic drug that will not pass through the blood between the mother and the fetus [29]. However, it has many disadvantages when used alone, including hypotension, excessive sedation, bradycardia, and prolonged secondary labor [30].

This study found that the heart rate and MAP indexes of group B at T1 and T2 were significantly lower than those of groups A and C ($P < 0.05$), indicating that the 0.8 μg/kg dose of dexmedetomidine and 0.2% ropivacaine in epidural anesthesia could effectively reduce the hemodynamic parameters during maternal surgery, reduce the occurrence of adverse reactions during surgery, and improve the safety of the operation. Moreover, compared with groups A and C, the anesthesia effect of dexmedetomidine at a dose of 0.8 μg/kg was better, which was beneficial to alleviate the negative emotions and improve the prognosis of the parturients. The results of this study showed that the Apgar score of group B was significantly lower than that of groups A and C ($P < 0.05$), which was consistent with the research results of ANNIEK F et al. [26] who pointed out that "the Apgar score of newborns in group D0.8 was (7.38 ± 1.11) points, significantly better than the (9.11 ± 0.24) points and (9.17 ± 0.58) points ($P < 0.05$) of the D0.6 group and D1.0 group ($P < 0.05$)," indicating that the 0.8 μg/kg dose of dexmedetomidine has a little effect on the newborns.

After pregnancy, a woman's body loses a lot of DHA elements, which can lead to memory loss [31]. During pregnancy, many pregnant women experience pregnancy complications such as gestational hypertension and gestational diabetes, and their body's resistance to infection deteriorates after pregnancy [32]. Weakness and fatigue may

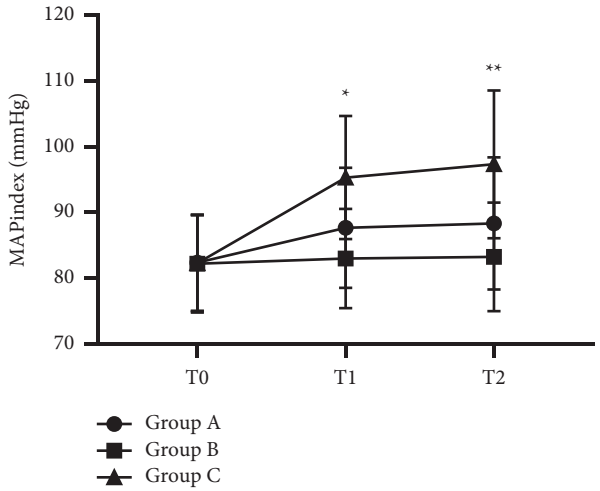

Figure 2: Comparison of MAP indexes of the three groups at different time points ($x \pm s$). The abscissa represented time of T0, T1, and T2, and the ordinate represented the MAP index (mmHg). *indicates that there was a significant difference in the MAP index of the three groups at T1 ($t = 3.662$, $P = 0.012$); **indicates that there was a significant difference in the MAP index of the three groups at T2 ($t = 3.650$, $P = 0.013$).

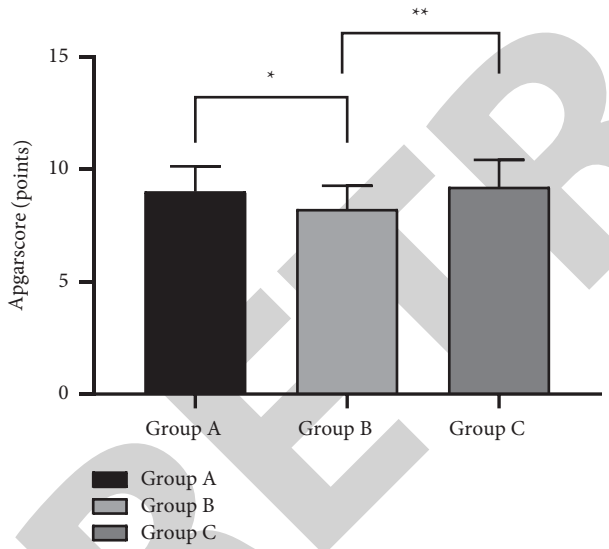

Figure 3: Comparison of the Apgar score of the three groups ($x \pm s$). The abscissa represented groups A, B, and C, and the ordinate represented the Apgar score (points). *indicates that there was a significant difference in the Apgar score between groups A and B ($t = 2.818$, $P = 0.007$); **indicates that there was a significant difference in the Apgar score between groups B and C ($t = 3.385$, $P = 0.001$).

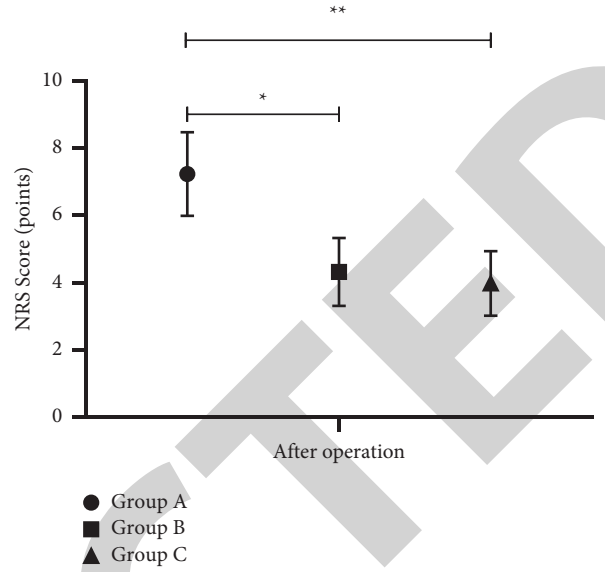

Figure 4: Comparison of the NRS score of the three groups ($x \pm s$). The abscissa represented after operation, and the ordinate represented the NRS score (points). *indicates that there was a significant difference in the NRS score between groups A and B ($t = 9{,}966$, $P < 0.001$); **indicates that there was a significant difference in the NRS score between groups A and C ($t = 11.341$, $P < 0.001$).

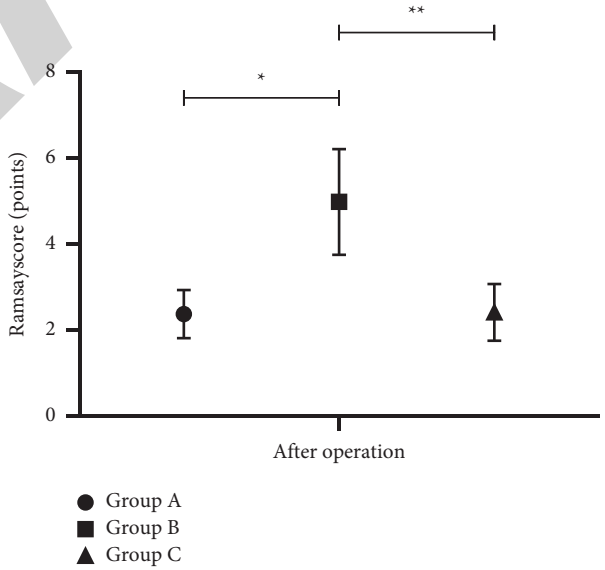

Figure 5: Comparison of the Ramsay score of the three groups ($x \pm s$). The abscissa represented after operation, and the ordinate represented the Ramsay score (points). *indicates that there was a significant difference in the Ramsay score between groups A and B ($t = 10.578$, $P < 0.001$); **indicates that there was a significant difference in the NRS score between groups B and C ($t = 10.084$, $P < 0.001$).

occur after delivery, and joint pain may result if exposed to wind and cold [33]. According to traditional Chinese medicine, the main problem for women after childbirth is weakness of energy and blood, which is caused by the loss of blood and qi during labour [34]. The woman's body is often weak and her resistance is poor, making her susceptible to infections [35]. Postnatal care is particularly important as the postnatal period is a period of weakness and fatigue due to the depletion of blood and energy. Traditional Chinese medicine emphasizes that the mainstay of postpartum care should be to nourish the blood and replenish kidney yin [35]. Pregnant women can take Ten Perfect Tonic and Eight

Precious Soup, or they can eat Astragalus and Angelica to nourish the energy and replenish the blood and add Chinese wolfberries [36].

Finally, our horizon's sample size is small, and the results may be inaccurate, affecting the results. In addition, different clinical centers, different time periods, different instruments, and different postoperative pain assessments can increase the heterogeneity of results. We need to conduct further clinical trials in multiple centers.

5. Conclusion

In summary, the application of medium-dose dexmedetomidine and ropivacaine in cesarean section can effectively reduce the pain of the parturients and yields a promising anesthesia effect and high safety, which is worthy of promotion and application.

Data Availability

The datasets used during the present study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] X. Liu, X. Zhang, X. Wang, J. Wang, and H. Wang, "Comparative evaluation of intrathecal bupivacaine alone and bupivacaine combined with dexmedetomidine in cesarean section using spinal anesthesia: a meta-analysis," *Journal of International Medical Research*, vol. 47, no. 7, pp. 2785–2799, 2019.

[2] A. C. Hayley, M. Green, L. A. Downey et al., "Neurocognitive performance under combined regimens of ketamine-dexmedetomidine and ketamine-fentanyl in healthy adults: a randomised trial," *Progress in Neuro-Psychopharmacology & Biological Psychiatry: An International Research, Review and News Journal*, vol. 94, Article ID 109647, 2019.

[3] M. Hatami, M. Mashayekhi, H. Abbasi, V. Ayatollahi, and S. Vaziribozorg, "Comparing the effect of dexmedetomidine and labetalol on hemodynamic variables in patients undergoing microlaryngoscopy," *European Archives of Oto-Rhino-Laryngology*, vol. 276, no. 9, pp. 2513–2517, 2019.

[4] N. Xing, F. Xing, Y. Li et al., "Dexmedetomidine improves propofol-induced neuronal injury in rat hippocampus with the involvement of miR-34a and the PI3K/Akt signaling pathway," *Life Sciences*, vol. 247, 2020.

[5] Y. Li, X. Jiang, J. Wang et al., "Intravenous dexmedetomidine combined with ultrasound-guided rectus sheath block for open gastrectomy: a prospective randomized trial," *Journal of Gastrointestinal Surgery: Official Journal of the Society for Surgery of the Alimentary Tract*, vol. 24, no. 6, pp. 1290–1297, 2020.

[6] Y. R. Ji, Y. Chen, Y. N. Chen et al., "Dexmedetomidine inhibits the invasion, migration, and inflammation of rheumatoid arthritis fibroblast-like synoviocytes by reducing the expression of NLRC5," *International Immunopharmacology*, vol. 82, 2020.

[7] L. N. Ebirim, O. Y. Buowari, and S. Ghosh, "Physical and psychological aspects of pain in obstetrics," in *Pain in Perspective*IntechOpen, London, UK, 2012.

[8] P. Brownridge, "The nature and consequences of childbirth pain," *European Journal of Obstetrics & Gynecology and Reproductive Biology*, vol. 59, pp. S9–S15, 1995.

[9] K. S. Oh, C. Hwang, H. Y. Lee et al., "Preclinical studies of ropivacaine extended-release from a temperature responsive hydrogel for prolonged relief of pain at the surgical wound," *International Journal of Pharmaceutics*, vol. 558, pp. 225–230, 2019.

[10] F. Chai, M. Maton, S. Degoutin et al., "In vivo evaluation of post-operative pain reduction on rat model after implantation of intraperitoneal PET meshes functionalised with cyclodextrins and loaded with ropivacaine," *Biomaterials*, vol. 192, pp. 260–270, 2019.

[11] X. Li, Y. Wei, P. Lv, Y. Wu, K. Ogino, and G. Ma, "Preparation of ropivacaine loaded PLGA microspheres as controlled-release system with narrow size distribution and high loading efficiency," *Colloids and Surfaces, A. Physicochemical and Engineering Aspects*, vol. 562, pp. 237–246, 2019.

[12] K. Varun Reddy, J. Anendd, B. Nitin, A. Mishra, and P. Dakshinkar, "Is 0.75% ropivacaine more efficacious than 2% lignocaine with 1 : 80,000 epinephrine for IANB in surgical extraction of impacted lower third molar?" *Oral and Maxillofacial Surgery*, vol. 23, no. 2, pp. 225–231, 2019.

[13] M. B. Ghabach, N. E. Mhanna, M. R. Abou Al Ezz, G. N. Mezher, M. J. Chammas, and M. M. Ghabach, "Comparison of effects of hemostatic gelatin sponge impregnated with ropivacaine versus normal saline applied on the transverse process of the operated vertebrae on postoperative pain in patients undergoing spinal instrumentation surgery: a randomized clinical trial," *World Neurosurgery*, vol. 128, pp. E1126–E1130, 2019.

[14] M. Tijanic and N. Buric, "A randomized anesthethic potency comparison between ropivacaine and bupivacaine on the perioperative regional anesthesia in lower third molar surgery," *Journal of Cranio-Maxillofacial Surgery*, vol. 47, no. 10, pp. 1652–1660, 2019.

[15] J. Hayden, A. Gupta, S. E. Thörn, P. Thulin, L. Block, and J. Oras, "Does intraperitoneal ropivacaine reduce postoperative inflammation? A prospective, double-blind, placebo-controlled pilot study," *Acta Anaesthesiologica Scandinavica*, vol. 63, no. 8, pp. 1048–1054, 2019.

[16] P. B. Véronique, B. Ellen, O. Nadia et al., "A 96-hour continuous wound infiltration with ropivacaine reduces analgesic consumption after liver resection: a randomized, double-blind, controlled trial," *Journal of Surgical Oncology*, vol. 119, no. 1, pp. 47–55, 2019.

[17] S. Hantoushzadeh, M. Shariat, R. Moradi, N. Nikobakhat, and F. Sabzevari, "Personality traits of volunteer females of normal vaginal delivery or cesarean section based on HEXACO's personality model: a comparison study," *Archives of Gynecology and Obstetrics*, vol. 301, no. 2, pp. 387–392, 2020.

[18] E. Elshamy, Y. Z. A. Ali, M. Khalafallah, and A. Soliman, "Chlorhexidine-alcohol versus povidone-iodine for skin preparation before elective cesarean section: a prospective observational study," *Journal of Maternal-Fetal and Neonatal Medicine*, vol. 33, pp. 272–276, 2020.

[19] B. Lin, B. Zhou, J. Chen, and J. Yang, "Prophylactic application of Bakri balloon tamponade versus uterine gauze packing during cesarean section in patients with placenta previa," *Journal of International Medical Research*, vol. 48, no. 3, 2020.