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Retraction

Retracted: Intelligent Enhancement Algorithm-Based High Resolution CT Image in Evaluation of Expelling Wind and Relieving Cough and Asthma Prescription on Bronchial Asthma with High Immunoglobulin E Expression

Computational and Mathematical Methods in 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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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.

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[1] P. Shen, K. Li, and J. Chen, "Intelligent Enhancement Algorithm-Based High Resolution CT Image in Evaluation of Expelling Wind and Relieving Cough and Asthma Prescription on Bronchial Asthma with High Immunoglobulin E Expression," *Computational and Mathematical Methods in Medicine*, vol. 2022, Article ID 5800155, 9 pages, 2022.

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Research Article

Intelligent Enhancement Algorithm-Based High Resolution CT Image in Evaluation of Expelling Wind and Relieving Cough and Asthma Prescription on Bronchial Asthma with High Immunoglobulin E Expression

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The therapeutic effect of expelling wind and relieving cough and asthma prescription on bronchial asthma with high immunoglobulin E (IgE) expression was studied based on high resolution CT (HRCT) images of intelligent enhancement algorithm. 90 patients with bronchial asthma were randomly divided into control group ($n = 45$) and therapy group ($n = 45$). The control group was given budesonide inhalation. The therapy group was treated with expelling wind and relieving cough and asthma prescription on the basis of the treatment in the control group. Both groups were given 1 month of treatment time. The scanned images were processed by image enhancement algorithm, and the image quality and distribution separation measurement (DSM) were used as image evaluation indicators. The bronchial wall thickness (WT), inner diameter (L), wall area (WA), and percentage of wall area (WA%) were used as quantitative indicators of airway remodeling. The changes of traditional Chinese medicine (TCM) score before and after treatment were recorded and analyzed. The changes of serum IgE indicators before and after treatment were recorded. Results: the image quality of HRCT image enhancement algorithm was better, and the DSM was 36.7 larger than that of the control group. It was found that after 1 month of treatment, the TCM symptom score of the therapy group was lower than that of the control group ($P < 0.05$), and compared with the control group, the IgE level of the therapy group was also reduced. Meanwhile, compared with the control group, the WT of segmental bronchial wall in the therapy group decreased, and the WT of left apical bronchus was smaller than that in the control group ($P < 0.05$), and the WT of subsegmental bronchus decreased significantly ($P < 0.05$). The L of segmental bronchus and subsegmental bronchus in the therapy group was wider ($P < 0.05$). The WA of segmental bronchus and subsegmental bronchus decreased, but there was no statistical significance ($P > 0.05$). Compared with the control group, the WA percentage of segmental bronchus and the WA percentage of subsegmental bronchus in the therapy group were significantly lower ($P < 0.05$). In conclusion, image enhancement algorithm can improve the HRCT image quality of patients with bronchial asthma, which is helpful to improve the diagnostic efficiency in clinical treatment. Expelling wind and relieving cough and asthma prescription has a better therapeutic effect on bronchial asthma with high IgE expression.

1. Introduction

Bronchial asthma is a common chronic inflammatory disease of the airways involving a variety of cells and cellular components, characterized by widely variable reversible airflow limitation, manifested as recurrent wheezing, shortness of breath, chest tightness or cough, and other symptoms [1]. The etiology of asthma is complex and recurrent, which not only directly affects the health and quality of life of patients but also places a heavy burden on families and society. How to improve the control level of asthma and reduce the frequency of acute attacks has attracted widespread attention and has also become a major social problem that needs to be urgently solved. This disease is common in the respiratory system. The main clinical manifestations are recurrent wheezing and shortness of breath, with or without chest tightness or cough, which are typically characterized by spontaneous remission or remission after treatment [2]. Poor control can lead to recurrent and aggravated disease and gradual changes in airway structure, such as airway remodeling [3]. It seriously affects the quality of life and health and safety of patients and brings heavy psychological and economic burden. Timely and effective control of asthma symptoms, maintenance of normal living standards, minimizing the frequency of asthma exacerbations and mortality, reducing the impairment of lung function, and adverse reactions of drug treatment are not only the goal of asthma treatment but also the common pursuit of medical staff worldwide [4]. Asthma is considered a heterogeneous disease and has a different clinical phenotype. Among them, allergic asthma represents the most widespread and easily recognized phenotype of asthma, accounting for 60%–80% of bronchial asthma [5].

High resolution CT (HRCT) is commonly used in the diagnosis of pulmonary lesions and is currently the most objective and accurate examination method for judging airway remodeling in patients with bronchial asthma [6]. However, at present, in the imaging process of HRCT, because it is easy to be affected by the operation mode and equipment, the obtained image has low contrast of gray level, especially there is no significant gray level difference at the local details. In addition, the HRCT image is visually judged by the imaging physician, relying on the experience and theoretical knowledge of the physician, with the disadvantages of strong subjectivity [7]. With the application of digital image technology in medical imaging, the use of intelligent algorithms to process medical images has also made continuous progress, which lays a foundation for improving the clinical diagnosis and treatment of diseases. Common medical image processing methods include enhancement, segmentation, denoising, restoration, registration, fusion, and feature extraction. The most basic is medical image enhancement. Medical image enhancement is an image processing method that highlights some important information in medical images according to specific needs and weakens or removes some information that does not need and affects the quality of medical images. The purpose of medical image enhancement is to improve the clarity of the image, improve the visual effect of the image, and enhance the intelligibility and readability of the image, so as to facilitate the diagnosis and analysis of medical images by doctors and machines. The common image enhancement processing methods contain histogram correction, gray transformation, noise removal, median filtering, smoothing filtering, high-low pass filtering in frequency domain, image sharpening, and gradient enhancement. Therefore, it is crucial to choose a good algorithm for medical image enhancement.

Studies showed that bronchial asthma is a chronic airway inflammation involving a variety of cells and cytokines, and this inflammation can enhance the airway hyperreactivity of susceptible individuals to various provocative factors, and cause airway stenosis, manifested as recurrent wheezing, dyspnea, cough, chest tightness, and other symptoms [8]. Immunoglobulin E (IgE) is considered to be one of the important factors leading to the persistence and aggravation of bronchial asthma symptoms. Therefore, timely and effective restriction of the activity of IgE can root-block its mediated inflammatory cascade of bronchial asthma attacks [9]. Aiming at the role of IgE in the pathogenesis of bronchial asthma, blocking IgE-mediated immune pathways opens up a new way for the treatment of bronchial asthma. According to the phenotype and pathogenesis of different asthma, the corresponding therapeutic drugs have become a new direction of asthma treatment, and that is biological targeted therapy for asthma. Among the many biologics recommended by Global Initiative for Asthma (GINA) Guidelines in 2020 and the Bronchial Asthma Prevention and Treatment Guidelines in China (2020 edition), omalizumab is important in reducing the rate of emergency or hospitalization, reducing the use of inhaled/oral hormones and rescue drugs, and delaying airway remodeling and deterioration of lung function [10, 11]. Although omalizumab has more than ten years of clinical practice experience overseas, these differences may be significant due to differences in internal and external factors such as different races, geographical environment, and dietary structure, especially omalizumab as a biological agent. According to traditional Chinese medicine (TCM), bronchial asthma belongs to the category of "wind-cold cough and asthma," which belongs to virtual real. Clinically, although asthma is often induced by pathogenic focus, it is often combined with wind pathogen. Wind light, for the "common cause of all diseases," often combined with other pathogens to invade the body, pathogens into the lung, resulting in invading the lung, qi does not distribute, condensed into phlegm, and asthma is caused by phlegm-qi obstruction and airway spasm. TCM has been used to treat asthma for nearly two thousand years and has a profound understanding and rich clinical experience of the disease, with the advantages of small side effects, good economic benefits, and good long-term efficacy, and it is believed that pathogenesis lies in the imbalance of viscera, wind pathogen invading the lung, impairment of dispersing, and descending function of the lung, and the treatment is based on expelling wind and relieving cough and asthma [12].

Based on published studies, the TCM formula was modified to plan to treat bronchial asthma patients with high IgE expression with expelling wind and relieving cough and asthma prescription, and those patients were compared with patients who only received budesonide inhalation. The aim is to investigate the therapeutic effect of expelling wind and relieving cough and asthma prescription in patients with high IgE expression, to prove its therapeutic effect by HRCT imaging means, and to analyze the indicators after treatment. The HRCT images are processed by image enhancement algorithm, so that the obtained images are clearer and easier to diagnose images are obtained, to evaluate the therapeutic effect of expelling wind and relieving cough and asthma prescription on bronchial asthma with high IgE expression.

2. Materials and Methods

2.1. Research Objects. In this study, 90 patients (53 males and 37 females, 22–65 years, mean age 43.5 years) with bronchial asthma admitted to hospital from January 2020 to August 2021 were selected and randomly divided into therapy group and control group. 45 patients in the control group were given budesonide inhaler; 45 patients in the therapy group were given expelling wind and relieving cough and asthma prescription in addition to the same treatment as the control group. Both groups were given 1-month treatment time. All patients and patients' families in this study signed the informed consent form, and this study has been approved by the medical ethics committee of hospital.

Inclusion criteria: (1) the bronchial asthma in accordance with the *2020 edition of the Chinese Guidelines for the Prevention and Treatment of Bronchial Asthma* diagnostic results confirmed as bronchial asthma, and serum IgE was highly expressed by laboratory examination on admission. (2) In accordance with TCM syndrome of wind-heat invading lung. (3) Patients with a history of chronic asthma for more than 12 months, and there is a tendency to aggravate. (4) Patients can accept CT scan examination, no contraindications to contrast agent allergy. (5) Patients older than 22 years to less than 65 years.

Exclusion criteria: (1) patients have other combined bronchial lesions. (2) Patients have pulmonary infectious diseases. (3) Patients have more serious cardiovascular and cerebrovascular diseases, or liver and kidney function disorders. (4) Patients have mental and consciousness disorders, poor cooperation. (5) Pregnant and lactating women.

The expelling wind and relieving cough and asthma prescription of this study refers to the equation of Zhang et al. [13], and it is slightly modified. The expelling wind and relieving cough and asthma prescription of this study included: ephedra + 10 g, bitter almond + 10 g, *Scutellaria b aicalensis* + 12 g, rhizoma pinelliae + 10 g, periostracum cicadae + 10 g, baked radix glycyrrhizae + 8 g, Cortex Mori + 9 g, perilla seed + 9 g, *Platycodon grandiflorum* + 6 g, and ground dragon + 12 g.

2.2. Lung CT Scanning Methods. In this study, among all patients with asthma who underwent pulmonary HRCT, the CT scanner used was 64-slice spiral CT scanner. Setting of conventional CT scanning parameters: the slice thickness is 5 mm, the slice distance is also 5 mm, the tube voltage is 120 kV, and the tube current is 100 mA. Airway remodeling in patients undergoing HRCT scanning: the range starts from the slice above the aortic arch to the lung base, the slice thickness and slice distance are 1.25 mm, the tube voltage is 140 kV, and the tube current is 200 mA. The CT images obtained from the scans were professionally analyzed by at least two radiologists. Lung CT changes were observed descriptively. The measured bronchial data include the following: WT, L, WA, and WA%. The final data result was based on the average value obtained from 3 measurements.

2.3. Basic Method of Image Enhancement Algorithm. The HRCT image enhancement is a basic medical image processing technology. The purpose of enhancement mainly includes as follows: the first is to use a series of technologies to improve the visual effect of images and improve the clarity of images, so as to obtain the images with better visual effect and easier diagnosis for doctors; the second is to convert the medical images into a form that is more suitable for people or machines for interpretation, analysis, and processing. The image enhancement algorithm in this study is based on the idea of classification in particle computing theory to highlight the overall or local target region of the image according to the actual situation of the image. In the classification process, the HRCT images are regarded as a complete knowledge system, the classification is performed according to the unique medical attribute and image pixel attribute "knowledge" of HRCT, the HRCT images are segmented into different regions, and the image enhancement processing is performed to highlight the local target region. The large amount of data information contained in the HRCT is reduced to obtain relatively small image data without affecting the quality of the target region in the image, assisting the physician to locate the region of interest until the accurate quantitative analysis, which can greatly improve the accuracy and accuracy of clinical diagnosis [14]. The approach involved in the algorithm is the conditional attribute S is defined according to Equation (1).

$$S = \{S_1, S_2\}, \tag{1}$$

S_1 represents the gray value attribute of the image, and S_2 represents the noise attribute of the image.

The image is segmented according to S_1, it is assumed that n image particles and the gray values of two pixels in a certain image particle satisfy $R_{k-1} < f(i, j) < R_k$, $k = 1, 2, 3, 4, \ldots n$, then these two pixels are P_{s1} correlated and belong to the equivalent class, which can be defined as follows.

$$P_{S1}(i, j) = \left\{ \frac{i, j}{R_{K-1}} < f(i, j) < R_k \right\}, \tag{2}$$

The gray value of two pixels (i, j) is represented as $f(i, j)$, and the gray threshold value ranges from 0 to 4000. Then, the image is segmented according to S_2, first the difference is obtained between image particle $H_{a,b}$ and adjacent image particle $H_{a\pm1,b\pm1}$, and then integer operation is performed on its absolute value, and finally the result greater than a certain threshold Q is obtained, which can be defined as follows.

$$P_{S2}(H) = U_a U_b \left\{ \frac{H_{a,b}}{\text{int}\left|\overline{S_{a,b}} - \overline{S_{a\pm1,b\pm1}}\right|} > Q \right\}, \tag{3}$$

$\overline{S_{a,b}}$ represents the mean gray value of image particle $S_{a,b}$, $\overline{S_{a\pm1,b\pm1}}$ represents the mean gray value of image particle $S_{a\pm1,b\pm1}$, $\left|\overline{S_{a,b}} - \overline{S_{a\pm1,b\pm1}}\right|$ represents the mean gray value integer, and $P_{s2}(H)$ represents the set of noise pixels.

2.4. Image Evaluation Indicators. The image quantitative evaluation index used in this study is the evaluation method proposed by Chaudhry et al. (2021) [15], distribution separation measurement (DSM). When the DSM result is negative, it indicates that the contrast of the image is not enhanced, and when the DSM result is positive, it indicates that the image is enhanced, and the greater the DSM value, the better the contrast enhancement effect of the image. It is defined as follows.

$$\mathrm{DSM} = \left(\left|W_2 - \delta_{\mathrm{S}}^{\mathrm{A}}\right| + \left|W_2 - \delta_{\mathrm{T}}^{\mathrm{A}}\right|\right) - \left(\left|W_1 - \delta_{\mathrm{s}}^{\mathrm{B}}\right| + \left|W_1 - \delta_{\mathrm{T}}^{\mathrm{B}}\right|\right),$$
$$W_1 = \frac{\delta_S^B \varphi_T^B + \delta_T^B \varphi_S^B}{\varphi_T^B + \varphi_S^B},$$
$$W_2 = \frac{\delta_S^A \varphi_T^A + \delta_T^A \varphi_S^A}{\varphi_S^A + \varphi_T^A}, \tag{4}$$

δ_T^B represents the gray value of target region in the image, δ_S^B represents the gray value of background region in the image, φ_T^B represents the standard deviation of gray value of target region in the image, φ_S^B represents the standard deviation of gray value of background region in the image, B represents the original image, T represents the target region in the original image, S represents the background region in the original image, and A represents the enhanced image.

2.5. Evaluation Indicators of Therapeutic Effect of Expelling Wind and Relieving Cough and Asthma Prescription

2.5.1. Detection of airway remodeling by HRCT. Quantitative analysis of bronchial airway remodeling included bronchial WT, L, WA, and WA%.

2.5.2. Evaluation Indicators of TCM. According to the evaluation method of Diao Yuming, the changes of TCM score of the patients were recorded and analyzed. The cough and dry throat itching of patients with bronchial asthma were the main symptoms, constipation, and dry mouth were the secondary symptoms. Finally, the results of TCM syndrome score were compared with those before treatment and 1 month after treatment.

2.5.3. Changes In Serum IgE Indicators. Before and after 1 month of treatment, 3 mL of cubital venous blood was drawn from the patients in the fasting state and centrifuged at 2,000 r/min for 5 min to separate the serum and stored in a −20°C freezer for testing. The serum IgE levels were measured by enzyme-linked immunosorbent assay (ELISA), and the operating steps were performed according to the instructions.

2.6. Statistical Analysis. All data entered in this study were analyzed by SPSS 20.0 statistical software, the measurement data were expressed adopting mean ± standard deviation ($\bar{x} \pm s$), and the difference between groups was analyzed by chi-square test. When $P < 0.05$, the difference was statistically significant.

3. Results

3.1. Basic Data of Patients in the Two Groups. The general clinical data of all patients are shown in Table 1. There was no significant difference in gender, age, and disease duration between the two groups ($P > 0.05$), which were comparable.

3.2. Processing Results and Evaluation Indicators of HRCT Image Enhancement Algorithm. The images obtained by HRCT scanning of the patient's lung as the target area are processed by the HRCT image enhancement algorithm, and the obtained images are illustrated in Figure 1. The multihistogram equalization enhancement algorithm was selected to process the images [16], and the images processed by the two methods were compared. Results: compared with the multihistogram equalization enhancement algorithm, the image processed by the HRCT image enhancement algorithm was clearer, the resolution was higher, the gray level was higher, and the contrast was clearer. It was found that the DSM of multihistogram equalization enhancement algorithm was 40.5, and the HRCT enhancement algorithm DSM was 77.2, indicating that both algorithms play the purpose of image enhancement, but the effect of enhancement algorithm was better (Figure 2).

3.3. Evaluation Indicators of Therapeutic Effect

3.3.1. HRCT Bronchial Measurement Analysis. Quantitative analysis of bronchial airway remodeling in all patients included WT, L, WA, and WA%. Compared with the control group, the WT of segmental bronchus wall in the therapy group decreased, and the WT of left acute bronchus was smaller than that in the control group ($P < 0.05$), and the WT of subsegmental bronchus decreased significantly ($P < 0.05$). Compared with the control group, the L of segmental bronchus and subsegmental bronchus in the therapy group was wider ($P < 0.05$). Compared with the control group, the WA of segmental bronchus and subsegmental bronchus in the therapy group also decreased, but there was no statistical significance ($P > 0.05$). Compared with the control group, the WA% of segmental bronchus and the WA% of subsegmental bronchus in the therapy group were significantly lower ($P < 0.05$) (Figure 3).

3.3.2. Results of TCM Score Evaluation Indicators. The changes of TCM scores are shown in Table 2. Before treatment, there was no significant difference in TCM symptom scores between the two groups ($P > 0.05$). After 1 month of treatment, the TCM symptom scores of both groups decreased, and the TCM symptom scores of the therapy group were lower than those of the control group ($P < 0.05$).

3.3.3. Results of Changes in Serum IgE Indicators. Before treatment, there was no significant difference in serum IgE levels between the two groups ($P > 0.05$). After 1 month of treatment, the serum IgE levels in both groups decreased, and compared with the control group, the IgE levels in the therapy group were lower ($P < 0.05$) (Table 3).

4. Discussion

At present, asthma is a worldwide problem and is one of the common chronic diseases of the respiratory system. In

Table 1: Comparison results of general data of all patients.

Group	Gender(men/women)/cases	Age/years old	Course of disease/years
Therapy group ($n = 45$)	33/12	44.26 ± 10.43	3.63 ± 2.96
Control group ($n = 45$)	25/20	43.38 ± 12.52	3.70 ± 2.19
P	0.957	0.687	0.261

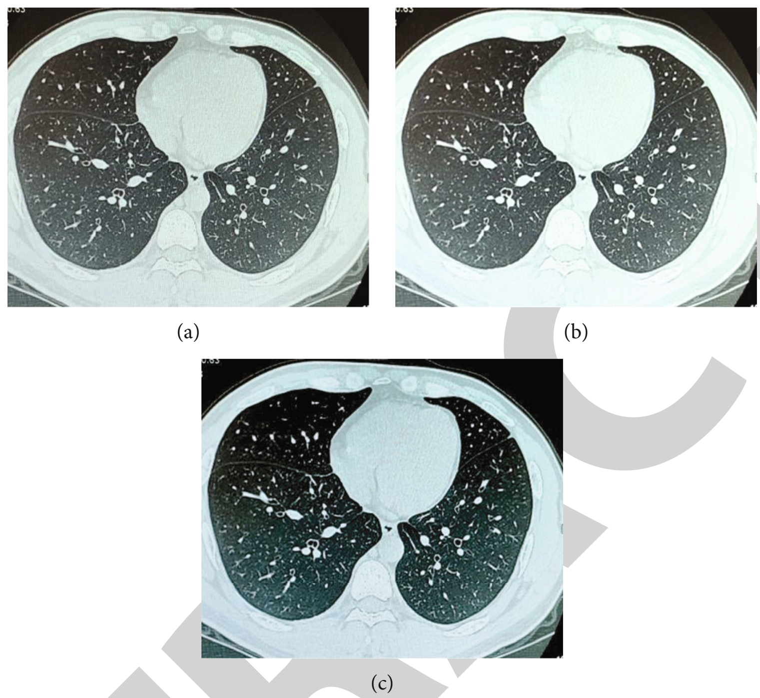


Figure 1: Enhanced processing results of the images by two different algorithms. (a) Represents the original image. (b) Represents the processing results using multihistogram equalization enhancement algorithm. (c) Represents the HRCT image enhancement algorithm in this study.

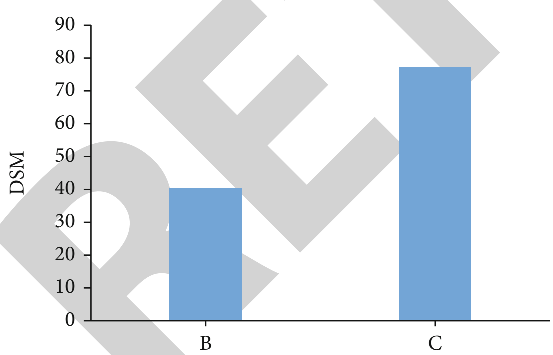


Figure 2: Comparison of DSM results of images processed by the two algorithms. (a) Represents the processing result of multihistogram equalization enhancement algorithm. (b) represents the HRCT image enhancement algorithm).

recent years, the average prevalence of asthma has also increased. At present, there are at least 300 million patients with asthma worldwide, while there are about 30 million patients with asthma in China [17]. Airway remodeling, as an important feature of the pathological changes of bronchial asthma, is also an important reason why asthma symptoms are difficult to control [18]. The measurement of bronchial airway remodeling by HRCT in patients with bronchial asthma can provide valuable information for the treatment of bronchial asthma and help to evaluate the clinical manifestations, degree of pulmonary function damage, and prognosis caused by airway remodeling.

However, in the imaging process of HRCT, due to the influence of operation mode and equipment, the obtained image has low contrast of gray level. The main purpose of image enhancement algorithm is to improve the quality of images and improve the visual effect of images, so that the converted images are more suitable for human eye observation and machine analysis and identification, so as to obtain more favorable information [19, 20]. Fundamentally, there is no general standard for the effect of image enhancement, and the subjective evaluation is the main method to determine whether an enhancement technique is excellent [21]. The results suggest that the DSM of multihistogram equalization enhancement algorithm is 40.5, and the DSM of HRCT enhancement algorithm is 77.2. The results also show that the enhancement method considers the global and local information of the image and can more effectively improve the quality of medical images [22]. The HRCT image

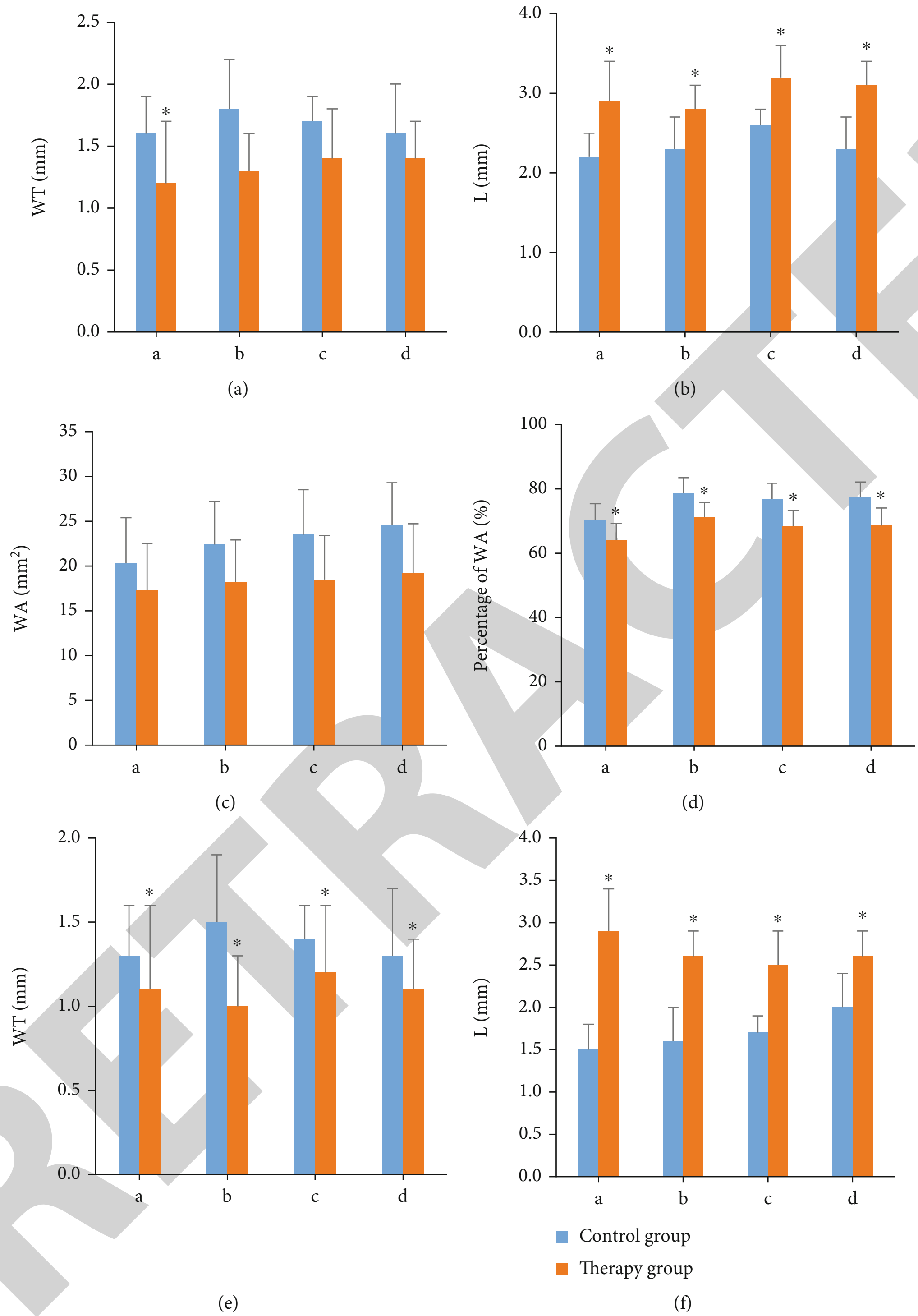
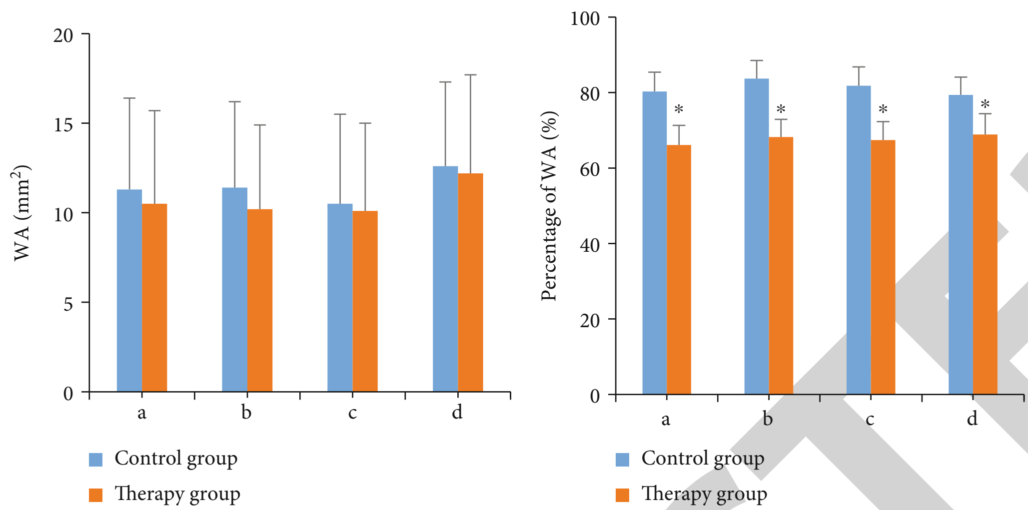


Figure 3: Continued.



(g) (h)

Figure 3: Comparison of measurement of various parameters of the bronchus between the two groups.(a–d) Indicate measurement results of segmental bronchus; (e–h) indicate measurement results of subsegmental bronchus; (b and f) represent the inner diameter; (a and e) represent the tracheal wall weight; (c and g) mean the airway wall area; (d–h) mean the percentage of airway wall area to total airway cross-sectional area. *indicates comparison with control group, $P < 0.05$.

Table 2: Results of TCM score changes before and after treatment in the two groups.

Group	TCM syndrome points	
	Before therapy	After treatment
Control group ($n = 45$)	19.37 ± 2.71	8.23 ± 1.67
Therapy group ($n = 45$)	20.82 ± 2.40	6.20 ± 1.94
P	0.863	0.032

Table 3: Comparison of changes of IgE indicators before and after treatment between the two groups.

Group	Changes before and after IgE treatment (IU/mL)	
	Before therapy	After treatment
Control group ($n = 45$)	320.42 ± 76.23	176.32 ± 56.64
Therapy group ($n = 45$)	321.10 ± 77.72	136.58 ± 59.31
P	0.993	0.041

enhancement algorithm will be performed on the target area using the HRCT images of the lungs of patients with bronchial asthma as the target area. Airway remodeling is a major pathological feature of bronchial asthma, and even mild asthma patients have the phenomenon of airway remodeling, so this study will use HRCT measurement of airway remodeling in patients as one of the indicators of treatment effect. Therefore, this study uses HRCT image enhancement algorithm to process the scanning images of patients with bronchial asthma and finds that the HRCT image enhancement algorithm used in this study has better image quality and DSM, which proves that the image enhancement algorithm used in this study has better effect on processing image enhancement.

There is a great correlation between the pathogenesis of bronchial asthma and high IgE expression in serum. At present, the treatment of bronchial asthma with high IgE expression is mainly based on anti-IgE monoclonal antibodies. For example, omalizumab can fundamentally reduce the onset of asthma by targeting and binding IgE to achieve clinical efficacy, but it has therapeutic differentiation and therefore also has great limitations. According to the theory of TCM, "asthma is dominated by phlegm," and "latent phlegm" being mobilized by exogenous pathogen [4]. Asthma is a syndrome of deficiency of vital energy and excess of pathogenic factors. Wind-cold enters the interior to dissipate heat, and prolonged accumulation of phlegm can also dissipate heat. Therefore, heat asthma is a common type in clinical practice. TCM believes that "wind being mobile and changeable, fengsheng spasm," which is consistent with the characteristics of recurrent asthma, sudden onset [23]. In contrast with the control group, the segmental bronchial wall weight decreased, the left acute bronchial weight was smaller ($P < 0.05$), and the subsegmental bronchial weight decreased obviously ($P < 0.05$) in the therapy group. The segmental bronchi and subsegmental bronchi L in the therapy group were wider than those in the control group ($P < 0.05$). The WA of segmental bronchi and subsegmental bronchi was also decreased in the therapy group relative to the control group, but it was not statistically meaningful ($P > 0.05$). Compared with the control group, the WA% of segmental bronchi and the WA% of subsegmental bronchi were clearly decreased in the therapy group ($P < 0.05$); expelling wind and relieving cough and asthma prescription was used to treat patients with high serum IgE expression and it was found that after 1 month of treatment, the TCM symptom score of the therapy group was lower than that of the control group ($P < 0.05$), and compared with the control group, the IgE level of the therapy group was also decreased. Airway remodeling as one of the characteristics of asthma, this study measured the two groups of airway remodeling related indicators and found that the indicators of therapy group and control group have different changes, indicating that HRCT can be applied to detect the effect of treatment in patients with bronchial asthma.

5. Conclusion

The image enhancement algorithm and the multihistogram equalization enhancement algorithm were used to process the images, and the images processed by the two methods were compared. The results revealed that the images processed by the HRCT image enhancement algorithm were clearer, higher resolution, higher gray level, and clearer contrast, which could effectively improve the HRCT image quality of bronchial asthma patients and help to improve the diagnostic efficiency of clinical treatment. Bronchial asthma patients with high IgE expression were treated with expelling wind and relieving cough and asthma prescription combined with budesonide inhalation, and the results were compared with those treated with budesonide inhalation alone. The results show that expelling wind and relieving cough and asthma prescription has good therapeutic effect on bronchial asthma with high IgE expression and has clinical promotion value.

Data Availability

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

Conflicts of Interest

The authors declare no conflicts of interest.

Authors' Contributions

Peihong Shen and Kang Li contributed equally to this work.

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