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A Review of the Progress of Clinical Research on Chinese Medicine for the Treatment of Childhood Asthma

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Abstract: ***Childhood asthma is a common chronic respiratory disease, and traditional Chinese medicine (TCM) has demonstrated unique advantages in its treatment. This paper reviews the progress of clinical research on the treatment of childhood asthma with traditional Chinese medicine in recent years, including staging, internal and external combined treatment, mechanism of action, and combination of Chinese and Western medicine. Studies have shown that the staged treatment of Chinese medicine (promoting the lungs and calming asthma during exacerbation, strengthening the spleen and benefiting the kidneys during remission) can significantly increase the asthma control rate and improve lung function; the combination of internal and external treatments, such as acupoints, acupuncture and moxibustion, can enhance the therapeutic effect; modern pharmacological studies have revealed that Chinese medicines can play a role in adjusting the balance of Th1/Th2, inhibiting the TRPV1 channel and lowering the inflammatory factors; and the combination of Chinese and Western medicines can increase the therapeutic effect and reduce the amount of Western medicines at the same time. The combination of Chinese and Western medicine can improve the efficacy of treatment while reducing the amount of Western medicine and adverse effects. In the future, further high-quality clinical studies should be conducted to optimize the treatment protocols of TCM, so as to promote the standardized use of TCM in the prevention and treatment of childhood asthma.***

Keywords: Childhood asthma, Chinese medicine, Staged treatment, Combination of Chinese and Western medicine, Mechanism of action.

1. Introduction

Childhood asthma is the most common chronic inflammatory airway disease in pediatrics. According to the data of three epidemiological surveys conducted by the National Pediatric Asthma Collaborative Group, the prevalence of childhood asthma in China has shown a significant upward trend, the prevalence of asthma in urban children has reached 3.02%, and the prevalence of preschool children is significantly higher than that of school-age children [1]. At present, the diagnosis and treatment of childhood asthma in China has made great progress, and the death rate of childhood asthma is on the decline. However, the overall control level of childhood asthma in China is still unsatisfactory [2]. Modern medicine mainly uses inhaled glucocorticosteroids (ICS) and β2 agonists as the standard treatment regimen. These drugs are effective incontrolling symptoms, but long-term use of ICS may bring adverse effects such as growth retardation and adrenal suppression [3]. Traditional Chinese medicine (TCM) has a long history and rich clinical experience in treating asthma in children, and its concepts of holistic regulation and staged treatment have shown unique advantages in improving symptoms and reducing relapses. In recent years, with the introduction of modern research methods, the mechanism of action of TCM in treating asthma has been gradually elucidated, and the clinical efficacy has been supported by more evidence-based medical evidence. This article analyzes the clinical efficacy and mechanism of action of TCM in treating asthma in children by systematically combing the representative literature published between 1992 and 2025, with the aim of providing reference for clinical practice and exploring the direction of future research.

2. Theoretical Basis of Traditional Chinese Medicine for the Treatment of Childhood Asthma

2.1 Traditional Chinese Medicine Theory

The theoretical system of traditional Chinese medicine for treating childhood asthma has a long history, and its core lies in the “holistic concept” and “evidence-based treatment”. The formation of this theoretical framework has been accumulated and improved through thousands of years of clinical practice. As early as in the “Yellow Emperor’s Classic of Internal Medicine”, the holistic medical concept of “the correspondence between heaven and mankind” has been laid down, which provides a philosophical basis for the understanding of asthma in later generations. Ancient medical practitioners believe that asthma belongs to the category of “asthma evidence”, in the “Essentials of the Golden Chamber”, Zhang Zhongjing first systematically discussed the typical symptoms of “coughing, water chicken sound in the throat”, and put forward the theory of “phlegm and drink to asthma”. and put forward the theory of “asthma caused by phlegm-drinking”. To the Ming and Qing dynasties, many medical doctors such as Zhang Jingyue, Ye Tianshi, etc. further clarified the pathogenesis of “phlegm and drink internal ambush, external evils trigger”, emphasizing the interaction between internal and external causes leading to asthma attack pathology. On the basis of inheriting the essence of traditional theories, modern TCM practitioners have developed a more systematic theoretical framework for childhood asthma by combining contemporary clinical practice and scientific research results. Through large-sample

clinical observations and epidemiological investigations, modern medical doctors have highly generalized the etiology of childhood asthma into the core mechanism of "deficiency of the root cause and the symptoms of asthma". Among them, the "fundamental deficiency" mainly refers to the dysfunction of the lungs, spleen and kidneys: if the lungs are deficient, the guards will not be able to consolidate the outside world and will easily be susceptible to external evils; if the spleen is deficient, the transportation will be out of order and phlegm and dampness will be generated within the body; and if the kidneys are deficient, they will not have the right to hold in the qi, and will have shortness of breath every time. The "standard" involves wind, phlegm, blood stasis and other pathological factors, wind attacking the lungs and triggering phlegm, phlegm obstructing the qi and causing shortness of breath, and blood stasis when the disease is prolonged and enters the channels. This in-depth theoretical understanding provides an important basis for the staged treatment of traditional Chinese medicine, forming the therapeutic principle of "focusing on eliminating evils and treating the symptoms during the attack period, and focusing on supporting the root cause during the remission period". In the exacerbation period, to deal with solid evils such as wind, phlegm and blood stasis, methods such as promoting the lungs and calming asthma, resolving phlegm and clearing collaterals are used; in the remission period, emphasis is placed on regulating the functions of the lungs, spleen and kidneys, and improving the children's physique by tonifying the lungs and consolidating the epidermis, strengthening the spleen and resolving phlegm, and tonifying the kidneys.

2.2 Physiological and Pathological Characteristics of Children and Principles of Medication Use

According to Chinese medicine, children's physiology is characterized by "delicate internal organs, not yet full of form and qi", i.e., the five viscera and six internal organs are not yet well developed, the qi, blood and fluid are not yet full, and the body's defense ability and regulatory function are weak. At the same time, children's pathology is characterized by "easy onset, rapid change", that is, due to the lack of righteousness, vulnerable to external evil, and the condition of the rapid change, if the treatment is not appropriate, it may be from the light to serious, and even affect the growth and development. Therefore, in the pediatrics clinical use of drugs, must follow the "identification of accurate, light, in the disease that stops" principle, to avoid excessive use of harsh drugs damage to the positive qi, and at the same time need to closely observe the changes in the condition, timely adjustment of the treatment program. Take children's asthma as an example, due to the child's lungs are delicate, guarding the outside is not solid, vulnerable to wind-cold, wind-heat and other external evils, leading to phlegm, resulting in the lungs are not declared, the gas reversal and wheezing. At the same time, the child "spleen is often insufficient", the spleen and stomach transport function is weak, if the diet is not appropriate or over-eating cold, easy to cause phlegm and dampness, aggravate asthma attacks. In addition, the child "liver is often surplus, the kidney is often weak", emotional fluctuations or prolonged illness may affect the liver's function of excretion, resulting in poor qi, or even fire and wind, so that asthma attacks repeatedly. Therefore, in the treatment of asthma in children, according to the physical characteristics of the child and the stage of the disease, flexible selection of prescriptions and medication. Zeng Qiaoqian et al [4] in the staged treatment program, epilepsy, almonds and other lung-expanding drugs, relief period using astragalus, tai zi ginseng and other drugs to support the corrective effect, therapeutic effect is good, and did not see obvious adverse reactions.

3. Clinical Practice and Efficacy

3.1 Staged Treatment Program

Wang Yonghong et al [5] randomly divided 75 cases of asthmatic children into traditional Chinese medicine group (45 cases) and western medicine group (30 cases), and set up a normal group of 10 cases, comparing the efficacy of staged treatment. The Chinese medicine group was treated with Shuo Gan No. 2 Combination in the acute stage and Huang Qi Tonic Kidney Combination with addition and subtraction in the remission stage for 3 months; the western medicine group was treated with Ainarine in the acute stage and Shun Er Ning in the remission stage. The results showed that the symptom scores of both groups improved significantly ($P<0.01$), and the nasal symptom relief was more favorable in the western medicine group ($P<0.05$). The lung function of the traditional Chinese medicine group improved significantly, and several ventilation indexes returned to normal levels ($P>0.05$). It was concluded that the staged treatment of traditional Chinese medicine could effectively control asthma symptoms and improve lung function. Xie Meihua et al [6] used Xiaoqinglong Tang with traditional Chinese medicine patch to treat 85 cases of children with acute exacerbation, and the symptoms of wheezing were significantly relieved. Ma Changchun et al [7] believed that external evil attack is the main triggering factor of asthma attack, and the external evil attack on the body affects the normal physiological function of lung qi. Lung qi does not propagate, can not transmit and distribute fluid and stop gathering into phlegm. Therefore, the treatment of asthma attack should be clear and promote lung heat and phlegm, lowering the reversal of asthma and cough, so the use of asthma and asthma formula combined with the treatment of children's asthma attack 66 cases, the efficacy is remarkable. Zhou Shaogu et al [8] used tonifying the kidney, naturing the qi and calming the asthma poultice to treat children in remission, and the total effective rate of treatment in the treatment group was 91. 53%. Zhang Ling [9] believed that pediatric asthma in remission period is dominated by deficiency evidence, therefore, the selection of Codonopsis, Atractylodes macrocephala, Astragali, Fenghuang, Poria and other drugs to replenish qi; Huang Jing, Bone-setting Resin, Cornu Cervi Pantotrichum, Walnut Meat to replenish the kidney, maitake, jade bamboo nourish yin and promote the production of fluids. Combined with acupuncture treatment, the effective rate of the treatment group reached 98. 0%. The study of Huang Ganghua et al [10] confirmed that traditional Chinese medicine identification treatment combined with pediatric wheezing and coughing liquid for the treatment of non-acute exacerbation asthma can not only improve the therapeutic effect, but also significantly improve the immune function index of the children.

3.2 External Treatment Program

Important breakthroughs have been made in the research of

external treatment. Liang Koyun et al [11] used direct current ionization of traditional Chinese medicine combined with Yi Lung Nourishing Yin Capsule to treat pediatric cough variant asthma, and found that adding direct current ionization of traditional Chinese medicine on top of the conventional treatment could more rapidly and effectively alleviate the symptoms of the children. Jian Chen et al [12] innovative Chinese medicine electrical superconductivity technology, so that the drug transdermal absorption rate is increased, helping to improve the children's lung function. These studies provide new ideas for the comprehensive treatment of Chinese medicine.

4. Progress of Research on Mechanism of Action

4.1 Immunoregulatory Mechanism

Important progress has been made in the mechanism research in recent years. Sun Wen et al [13] found that Sophora japonica was able to significantly increase the expression of interferon-γ and decrease the expression of interleukin-4 mRNA, which in turn regulated the mechanism of the balance of T helper lymphocytes, and restored the Th1/Th2 ratio to normal ($P<0.01$). It provides a theoretical basis for Sophora japonica to treat asthma in remission in clinical practice. Zhang [14] demonstrated for the first time that traditional Chinese medicine can inhibit the over-activation of TRPV1 channels and reduce airway hyperresponsiveness.

4.2 Analysis of the Formation Pattern of Traditional Chinese Medicine Compound Prescriptions

Modern studies have used data mining techniques to deeply analyze the grouping pattern of traditional Chinese medicine for the treatment of childhood asthma. Chang Jiajing et al [15] used Apriori algorithm to analyze the medication data of children with asthma through data mining methods such as frequency analysis, association rules, and network diagrams, and found that the core combination of medicines for the phlegm croup symptom in the attack phase was hemixia, suzi, and almonds, while the core combination of ephedra, almonds, and gypsum was used for the external cold and internal heat symptom. These findings are highly consistent with traditional Chinese medicine theories, confirming the principle of "cold is hot, hot is cold".

5. Synergistic Effect of Combined Chinese and Western Medicine

The combination of Chinese and Western medicine in the treatment of asthma in children has formed a number of more mature models. A prospective controlled study by Zhao Kun et al [16] showed that the combination of Chinese medicine and half-dose hormone inhalation was comparable to full-dose hormone in controlling symptoms, but the incidence of hormone-related adverse reactions was significantly lower. Liang Yahao et al [17] combined the GINA regimen with Chinese herbal patch for the treatment of 328 children and showed that the GINA regimen with the addition of Chinese herbal formulations had a better rate of disease control than the GINA regimen alone. In terms of mechanism of action, it was found that the combination of Chinese and Western medicines may exert synergistic effects through multiple pathways: Western medicines rapidly control airway inflammation, while Chinese medicines regulate immune function and improve physical fitness, and this complementary advantage is particularly evident in the treatment of refractory asthma.

6. Conclusion and Prospect

Based on the systematic analysis of the above clinical studies, the treatment of asthma in children with TCM demonstrates unique theoretical and practical value. Existing evidence suggests that the staged treatment of TCM (eliminating evils during exacerbation and supporting corrections during remission) can effectively control symptoms and reduce relapses, and that comprehensive therapies, such as internal and external combinations, can significantly improve the clinical efficacy, and the combination of TCM and Western medicine programs can reduce the adverse effects of Western medicines while guaranteeing the efficacy of the treatment. However, there are still some limitations in the current research: most of the clinical trials have small sample sizes, short follow-up times, and the mechanism of action studies are mostly at the cytokine level. Future research should focus on: conducting multi-center, large-sample randomized controlled trials; using histological techniques to elucidate the multi-target mechanism of action of TCM; and establishing a standardized evaluation system for children's medication. On the basis of the principle of evidence-based medicine, full attention should be paid to the individualized characteristics of Chinese medicine, combining the results of modern pharmacological research with traditional theories, and strengthening the real-world research, so as to provide more reliable evidence for the optimal treatment of asthma in children.

References

[1] National Pediatric Asthma Collaborative Group. The third epidemiologic survey of childhood asthma in urban China [J]. Chinese Journal of Pediatrics, 2013, 51(10): 729-735.

[2] Respiratory Group of the Pediatrics Branch of the Chinese Medical Association, Editorial Committee of the Chinese Journal of Pediatrics, Pediatrics Committee of the China Medical Education Association. Guidelines for the diagnosis and prevention of bronchial asthma in children (2025) [J]. Chinese Journal of Pediatrics, 2025, 63(04): 324-337.

[3] Zhang Tingxi. Systemic side effects of inhaled glucocorticoids in children with asthma[J]. Journal of Clinical Pediatrics, 2004, (10):703-704.

[4] Zeng Qiaoqian, Du Hui, Sun Wen, et al. A randomized controlled study of the effects of a staged Chinese medicine regimen on asthma control and lung function in children[J]. Chinese Journal of Traditional Chinese Medicine, 2019, 34(10):4957-4961.

[5] WANG Yonghong, SHI Yumin, YU Jian, et al. Clinical observation on 45 cases of asthma in children treated with Chinese medicine staged treatment formula[J]. Journal of Traditional Chinese Medicine, 2012, 53(24): 2105-2108.

[6] Xie Meihua, Liu Xuhua. Xiaoqinglong Tang with traditional Chinese medicine paste for the treatment of 85 cases of acute asthma attack in children[J]. Shaanxi Traditional Chinese Medicine, 2004, (05):391.
[7] MA Changchun, FENG Xiaochun. Clinical observation on 66 cases of bronchial asthma exacerbation in children treated by stopping asthma and calming asthma formula with traditional Chinese medicine paste[J]. China Maternal and Child Health Care, 2010, 25(35): 5331-5332.
[8] ZHOU Shaogu, LIU Yuling, HUA Lingyun. Clinical study of Chinese herbal medicine tonifying kidney and nourishing qi and calming asthma poultices in treating children's bronchial asthma in remission[J]. Liaoning Journal of Chinese Medicine, 2015, 42(06):1239-1240.
[9] Zhang Ling. Study on the effect of internal administration of traditional Chinese medicine combined with acupoint acupuncture in treating pediatric asthma in remission[J]. China Journal of Basic Chinese Medicine, 2013, 19(08):934-935.
[10] HUANG Ganghua, LIU Hua, LAI Kaiyan, et al. Clinical study on Chinese medicine treatment program for non-acute exacerbation of asthma in children[J]. Shizhen Guomian Guomao, 2007, (10):2418-2419.
[11] LIANG Keyun, FU Ziyi, LI Na. Evaluation of the efficacy of internal and external combined treatment of pediatric cough variant asthma with traditional Chinese medicine[J]. Chinese Journal of Traditional Chinese Medicine, 2016, 34(07):1686-1690.
[12] CHEN Jian, ZHANG Chenmei, CHEN Hua, et al. Clinical observation on the treatment of mild-moderate exacerbation childhood asthma assisted by electrical superconductivity of Chinese medicine acupoints[J]. Chinese Journal of Integrative Medicine, 2005, (12): 1120-1122.
[13] SUN Wen, YU Jian, SHI Yu Min, et al. Regulation of Th1/Th2 balance in peripheral blood mononuclear cells of children with asthma in remission by Chinese medicine Sophora japonica[J]. Chinese Journal of Traditional Chinese Medicine, 2009, 24(07):915-917.
[14] ZHANG Jianhua, JIN Wenwen, ZHANG Ning, et al. Mechanisms of TRPV1 and related cytokines on children's bronchial asthma and the role of traditional Chinese medicine in its regulation[J]. World Science and Technology-Modernization of Traditional Chinese Medicine, 2017, 19(07): 1155-1159.
[15] CHANG Jiajing, HE Yansheng, GAO Ling, et al. Analyzing the pattern of traditional Chinese medicine use in children with asthma attacks based on Aprior and other statistical methods for phlegm croup and external cold and internal heat syndrome [J]. Shizhen Guojian Guojian, 2019, 30(01):250-252.
[16] ZHAO Kun, LI Jing, WANG Shuling. Clinical controlled study of Chinese medicine with half-dose and full-dose hormone inhalation for controlling asthma in children[J]. Chinese Journal of Traditional Chinese Medicine, 2011, 26(08):881-883.
[17] LIANG YA Hao, ZHANG Liwen, WANG Yi, et al. Clinical observation on 328 cases of asthmatic children treated with GINA program and traditional Chinese medicine patch[J]. Chinese Journal of Integrative Medicine, 2013, 33(10): 1424-1426.