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The Application Effect of Acupoint Sticking Combined with Spine-Pinching Therapy in the Stage of Remission of Asthma Disease in Children

Zhirong Huang, Ting Huang, Liling Huang, Ruijie Huang, Yan Lu, Fengxing Wang

Department of Pediatrics II, Affiliated Hospital of Youjiang Medical University for Nationalities, Baise 533000, Guangxi Zhuang Automonous Region, China
Correspondence Author

Abstract: ***Objective:*** *To explore the application effect of acupoint application combined with chiropractic therapy based on family intervention in children with asthma disease during the stage of remission.* ***Methods:*** *A total of 90 children with asthma disease in the stage of remission who visited the pediatric asthma outpatient clinic of our hospital from May 2022 to December 2023 were selected as the study subjects. They were randomly divided into a control group and an observation group, with 45 cases in each group, using a random number table method. The control group received conventional nursing care, while the observation group received acupoint application combined with chiropractic therapy based on family intervention. After 6 months of intervention, the changes in the number of upper respiratory tract infections, frequency of asthma disease attacks, syndrome/pattern of spleen deficiency scores, main symptom scores, asthma disease control status, recurrence rates, and Childhood Asthma Control Test (C-ACT) scores were compared between the two groups before and after the intervention.* ***Results:*** *The total control rate in the observation group was 93.33%, compared to 82.22% in the control group, with the observation group showing a significantly higher total control rate (P<0.05). The number of upper respiratory tract infections and asthma disease attacks in the observation group were fewer than those in the control group (P<0.05). The observation group also demonstrated superior improvements in syndrome of spleen deficiency symptom scores, primary symptom scores, and Childhood Asthma Control Test questionnaire scores compared to the control group (P<0.05).* ***Conclusion:*** *The acupoint application therapy combined with chiropractic spinal manipulation based on family intervention can effectively control asthma disease attacks, prevent upper respiratory tract infections, reduce the frequency of asthma disease episodes in children, regulate spleen function, and alleviate symptoms and signs. It is worthy of clinical promotion and application.*

Keywords: Asthma disease in stage of remission, Family intervention, Chiropractic spine pinching, Acupoint application, Children.

1. Introduction

Asthma disease is a heterogeneous condition characterized by chronic airway inflammation and airway hyperresponsiveness, with its recurrent episodes severely affecting the quality of life in children and imposing a significant disease burden [1]. The Global Initiative for Asthma (GINA) report indicates that approximately 30–40% of children experience impaired normal growth and development due to poorly controlled asthma [2]. Recent epidemiological studies reveal a continuous rise in the global prevalence of childhood asthma, with a 2025 meta-analysis showing an overall prevalence rate of 10.2% [3]. In China, the prevalence of asthma among children aged 0~14 years surged from 1.09% in 1990 to 4.90% in 2020, demonstrating a marked upward trend [4, 5]. However, the clinical control rate of asthma in children aged 0–14 years in China remains only 44% [6], indicating a gap compared to global targets. Modern medicine emphasizes the importance of remission-stage management in reducing acute exacerbations, while traditional Chinese medicine categorizes asthma disease under the scope of “wheezing disease” and “dyspnea disease.” Its “latent root” theory identifies spleen dysfunction and internal retention of phlegm fluid as the key pathogenesis, highlighting the critical role of “reinforcing healthy qi and securing the root” during the stage of remission [7]. However, traditional Chinese therapies predominantly rely on medical institutions, making it difficult to meet the continuity demands of long-term management. This study, based on a home intervention model, innovatively combines acupoint application (meridian stimulation) and spine-pinching therapy (visceral regulation). It aims to improve children’s constitution through simultaneous lung-spleen regulation, providing a scientifically grounded and practical home intervention solution for asthma disease during the stage of remission. Additionally, it offers new insights into the integrated prevention and treatment of childhood asthma disease through the combination of Chinese and Western medicine.

2. Data and Methods

2.1 General Information

A total of 90 children with asthma disease in the stage of remission who visited our outpatient clinic from May 2022 to December 2023 and met the inclusion and exclusion criteria were selected as study subjects. They were divided into an observation group and a control group according to a computer-generated random number table, with 45 cases in each group. In the observation group, there were 18 females and 27 males; the disease duration ranged from 4 to 6 months, with an average of (4.33±0.67) months; the age ranged from 2 to 6 years, with an average of (3.40±0.61) years; parental education levels: 10 cases with high school education, 14 cases with college or higher education, and 21 cases with bachelor’s degrees. In the control group, there were 21 females and 24 males; the disease duration ranged from 4 to 6 months, with an average of (4.14±0.50) months; the age ranged from 2 to 6 years, with an average of (3.45±0.63) years; parental education levels: 9 cases with high school education, 16 cases with college or higher education, and 20 cases with bachelor’s degrees. There was no significant difference in

general data between the two groups (P>0.05), indicating comparability. Inclusion criteria: 1) Age 2~6 years; 2) Meeting the diagnostic criteria for the stage of remission of asthma as outlined in the 2016 "Guidelines for the Diagnosis and Management of Childhood Bronchial Asthma" issued by the Pediatric Branch of the Chinese Medical Association; 3) Conforming to the diagnostic and syndrome differentiation criteria for asthma in the 2008 "Guidelines for Traditional Chinese Medicine Diagnosis and Treatment of Infantile Asthma" issued by the Pediatric Branch of the Chinese Association of Traditional Chinese Medicine; 4) Having a guardian, voluntary participation, obtaining guardian consent and signed informed consent, and being able to adhere to the prescribed treatment. Exclusion criteria: 1) Patients with primary diseases involving severe heart, kidney, liver, or hematopoietic system disorders; 2) Patients with psychiatric disorders; 3) Patients currently participating in other drug clinical trials; 4) Patients with skin lesions on the back or other areas involved in manual therapy. Elimination criteria: 1) Discontinuation of observation due to severe adverse reactions or adverse events during the experiment; 2) Exclusion of subjects who fail to comply with the prescribed protocol; 3) Dropout cases due to personal reasons or failure to complete the study, affecting outcome assessment.

2.2 Method

2.2.1 Control group

Conventional Western medicine-based comprehensive treatment and nursing care were administered. The details are as follows: Children with asthma disease maintained their original stage of remission treatment plans. Parents of each child were provided with guidance on asthma disease prevention and management knowledge, primarily including dietary habits, home environment, and exercise methods.

2.2.2 Observation group

On the basis of the control group, a family intervention model combining acupoint application with traditional Chinese medicine characteristics and chiropractic spinal manipulation was adopted.

Form a research group for acupoint application combined with chiropractic therapy, consisting of 4 head nurses, 2 nurses, 1 associate chief pediatrician, and 1 associate chief physician of traditional Chinese medicine. The department director serves as an advisor, and the head nurse acts as the group leader. Group members are medical staff with over 3 years of work experience. The leader is responsible for the smooth implementation and supervision of the project. The associate chief pediatrician is responsible for assessing the condition of very low birth weight infants and determining the timing of intervention. The associate chief physician of traditional Chinese medicine is responsible for training neonatal nurses in the specific methods of acupoint application and chiropractic therapy, as well as conducting reinforcement and assessment. During the operation by pediatric nurses, the stability of the infants' vital signs must be ensured. Graduate students are responsible for conducting regular follow-ups, organizing data, and performing statistical analysis.

All members received unified training on the knowledge related to acupoint application combined with chiropractic spinal manipulation to ensure quality. The training content included specific operation methods of acupoint application and chiropractic spinal manipulation. Training was conducted 3 times per week, 30 minutes each session, for a total of 2 weeks. The deputy chief physician of the Traditional Chinese Medicine Department assessed both theoretical knowledge and practical skills of the training content. Only those who passed the assessment were permitted to perform acupoint application combined with chiropractic spinal manipulation.

Perform acupoint application combined with chiropractic spinal manipulation during the Dog Days and the Three Nine Days periods each year. Administer chiropractic spinal manipulation to the child patients, repeating the procedure 5 times each session, followed by medicinal acupoint application every 2-3 days.

1) Drug preparation: During the Dog Days period, use self-made anti-asthma patches composed mainly of Semen Sinapis Albae, Herba Asari, Rhizoma Corydalis, Radix Angelicae Dahuricae, Radix Scutellariae, Radix Kansui, and Venenum Bufonis. During the Three Nine Days period, use self-made asthma-relieving patches composed mainly of Semen Sinapis Albae, Herba Asari, Radix Angelicae Dahuricae, Radix Scutellariae, Radix Kansui, Rhizoma Corydalis, Venenum Bufonis, and Fructus Evodiae. Grind the ingredients of both self-made anti-asthma and asthma-relieving patches into fine powder, mix with ginger juice to form a paste of moderate consistency, and shape into medicinal cakes with a diameter of 2-3 cm and a thickness of 0.2-0.3 cm.

2) Spine Pinching: The child assumes a prone position with the back skin exposed (apply glycerin or moisturizer evenly as a lubricant depending on the skin condition). Taking a 3-year-old child as an example, first gently push the spine downward 10 times with the fingertip of the right hand, then rub Feishu (BL 13), Pishu (BL 20), Shenshu (BL 23), and Baliao (BL 31-34) until the skin becomes warm. The practitioner uses the thumbs and the index-middle fingers of both hands to lift and pinch the skin along the spine, with the thumb pads pressing firmly while the index and middle fingers push forward alternately. The movement should cause slight tension in the child's skin, starting from Changqiang (GV 1) and moving upward along the Governor Vessel to Dazhui (GV 14), repeated 6 times. Then, perform the "Pinch Three, Lift One" technique 3 times, lifting upward once every three pinches. A total of 9 spine-pinching cycles are completed, followed by gently kneading the child's back downward 3 times to relax the back muscles. After 4 weeks, increase the spinal pinching to 9 repetitions, while the "pinch three and lift one" method remains at 3 repetitions. If the child has nasal symptoms, add 30 rotations of the Yingxiang (LI20) acupoint. If there is abdominal discomfort, add 2 minutes of clockwise and counterclockwise abdominal rubbing each. The operation time may be slightly adjusted according to the child's age, and the intensity can be moderately increased based on the child's tolerance. Perform the procedure 6 times per week for a total of 8 weeks, preferably 1 hour before the child's bedtime.

3) Acupoint application: During the Sanfu period, apply the asthma-relieving patch to Feishu (BL13), Gaohuang (BL43), Pishu (BL20), Geshu (BL17), and Danzhong (CV17) on the 1st, 4th, and 7th days after the start of Sanfu, following spinal pinching. Each application lasts 2–4 hours, totaling 9–12 applications. During the Sanjiu period, apply the asthma-stopping patch to Dazhui (GV14), Dingchuan (EX-B1), Feishu (BL13), Pishu (BL20), and Shenque (CV8) on the 1st, 4th, and 7th days after the start of Sanjiu, following spinal pinching. Each application lasts 2–4 hours, totaling 9 applications.

Precautions: During the acupoint application combined with chiropractic spinal manipulation, the responsible nurse should perform the procedure gently, speak softly, and maintain a friendly attitude. The intensity of the chiropractic spinal manipulation should be controlled to achieve slight skin redness. Throughout the procedure, closely observe the child's facial expression, vital signs, and local skin changes. If the child experiences any discomfort, immediately discontinue the operation and take appropriate emergency measures.

2.3 Observation Indicators

1) Asthma control status within 6 months: Ineffective control: Clinical symptoms worsen or show no improvement, Asthma Control Index <60%; Effective control: Clinical symptoms significantly alleviate, Asthma Control Index 60%–90%; Complete control: Clinical symptoms completely disappear, Asthma Control Index ≥90% [8]. Total control rate = Complete control rate + Effective control rate.

2) Frequency of upper respiratory tract infections: Record in detail the number of upper respiratory tract infections occurring in children during the observation and study period.

3) Frequency of asthma disease attacks: Record in detail the number of asthma disease attacks and symptoms in children during the observation and study period.

4) Syndrome/pattern of spleen deficiency score: Score according to the diagnostic criteria for syndrome/pattern of spleen deficiency in the "Diagnostic Criteria for Syndrome/Pattern of Lung Deficiency, Spleen Deficiency, Blood Stasis, and Kidney Deficiency in Children" [9] (revised at the working meeting of the Pediatric Professional Committee of the Chinese Association of Integrative Medicine, April 2005).

5) Changes in main symptom scores: The TCM symptom scoring criteria were established with reference to the "Guidelines for Diagnosis and Treatment of Common Pediatric Diseases in Traditional Chinese Medicine [7]." Main symptoms include cough, wheezing, shortness of breath, and chest tightness, scored as 0, 3, or 6 points based on severity. Secondary symptoms include susceptibility to common cold disease, poor appetite, excessive sweating, and sallow complexion, scored as 0, 2, or 4 points based on severity.

6) Asthma disease control status: The Childhood Asthma disease Control Test questionnaire was used for scoring [10], covering five aspects: dyspnea, sleep quality, use of rescue medication, self-assessment of control status, and impact on daily life. Each aspect is scored out of 5 points, totaling 25 points. Higher scores indicate better control.

2.4 Statistical Methods

Data analysis was performed using SPSS 23.0 software. Categorical data were expressed as number of cases and percentage, and intergroup comparisons were conducted using the χ^2 test or rank-sum test. Normally distributed measurement data were expressed as mean ± standard deviation, and intergroup comparisons were performed using the independent samples t-test. Non-normally distributed measurement data were expressed as median and interquartile range, and intergroup comparisons were conducted using the rank-sum test. A P-value <0.05 was considered statistically significant.

3. Results

3.1 Comparison of the number of upper respiratory tract infections and asthma disease attacks between the two groups

After 6 months of intervention, the average number of upper respiratory tract infections in the observation group was lower than that in the control group, and the number of asthma disease attacks in the observation group was significantly fewer than that in the control group, with statistically significant differences ($P < 0.05$) (Table 1)

Table 1: Comparison of the number of upper respiratory tract infections and asthma disease attacks between the two groups

	Experimental group(n=45)	Control group(n=45)	Test	P
Average number of upper respiratory tract infections (Mean ± SD)	1.31±0.13	1.55±0.16	t= -7.896	0.001
Number of asthma exacerbations (cases)	3	10	χ^2=4.406	0.036

3.2 Comparison of asthma disease control between the two groups

The total control rate of asthma disease in the observation group was higher than that in the control group, with a statistically significant difference ($P < 0.05$) (Table 2).

Table 2: Comparison of asthma disease control between the two groups [n (%)]

Group	n	No control	Effective control	Complete control	Total control
Experimental group	45	8(17.78)	27(60.0)	10(22.22)	37(82.22)
Control group	45	3(6.67)	23(51.11)	19(42.22)	43(93.33)
Test			χ^2=4.050		
P			0.044		

3.3 Comparison of spleen deficiency syndrome scores between the two groups

Before the intervention, there was no difference in spleen deficiency syndrome scores between the two groups. After the intervention, the observation group showed better scores than

the control group, with a statistically significant difference ($P < 0.05$) (Table 3).

Table 3: Comparison of spleen deficiency syndrome scores between the two groups

	Experimental group(n=45)	Control group(n=45)	Test	P
pre-intervention (Mean ± SD)	9.16±0.80	9.22±0.85	t=0.384	0.702
post-intervention (Mean ± SD)	4.89±0.86	6.73±1.44	t=7.393	0.001

3.4 Comparison of main symptom scores between the two groups

After intervention, the observation group showed significantly lower scores in main symptoms (wheezing, wheezing rales, chest tightness, cough) compared to the control group, with a statistically significant difference of $P < 0.05$ (Table 4).

Table 4: Comparison of primary symptom scores between the two groups (Mean ± SD)

Group	n	wheezing	wheezing rales	chest tightness	cough
Experimental group	45	2.47±1.47	2.07±1.40	1.13±1.47	1.80±1.74
Control group	45	4.20±1.85	2.87±1.42	1.87±1.47	2.93±1.50
Test		t=4.914	t=2.683	t=2.365	t=3.311
P		0.001	0.009	0.020	0.001

3.5 Comparison of Childhood Asthma Control Test scores between the two groups

There was no significant difference in C-ACT scores between the two groups before the intervention. After the intervention, the C-ACT score of the observation group was significantly higher than that of the control group, with a statistically significant difference ($P < 0.05$). (Table 5)

Table 5: Comparison of Asthma Control Test Scores Between the Two Groups of Children

	Experimental group(n=45)	Control group(n=45)	Test	P
pre-intervention (Mean ± SD)	25.64±1.23	25.29±1.39	t= -1.285	0.202
post-intervention (Mean ± SD)	25.62±1.27	24.64±1.64	t= -3.166	0.002

4. Discussion

Bronchial asthma is a common respiratory system disease characterized primarily by chronic airway inflammation, with typical clinical manifestations including symptoms such as dyspnea, chest tightness, and panting that often occur at night or in the early morning [11]. Clinical studies have shown [12] that this disease has a high incidence rate among children, along with characteristics of recurrent attacks and prolonged duration. If not effectively controlled, it may lead to irreversible airway remodeling, severely affecting the quality of life and long-term prognosis of affected children. From the perspective of traditional Chinese medicine theory, the pathological basis of bronchial asthma is primarily attributed to the lung. Its pathogenesis is mainly dominated by pathogenic excess obstructing the lung, due to spleen dysfunction failing to transport and transform water-dampness, which accumulates and generates phlegm. The phlegm fluid retention lurks internally in the lung, and when triggered by external factors, the phlegm ascends with qi, while qi is obstructed by phlegm, leading to mutual contention and blockage of the airway, resulting in panting and breathlessness [13]. Modern medicine primarily employs symptomatic treatments such as antispasmodic and anti-asthmatic therapies, as well as anti-inflammatory and antitussive measures for pediatric asthma disease. While these approaches can alleviate acute-phase symptoms to some extent, the chronic and recurrent nature of the condition often makes it difficult to achieve long-term stable disease control through short-term hospitalization alone. Traditional Chinese medicine emphasizes holistic concepts and syndrome differentiation, aiming to treat the disease by regulating and harmonizing qi and blood, dispelling wind and resolving phlegm, and fortifying the spleen to resolve dampness. This approach holds unique advantages in pediatric asthma treatment and plays a positive role in both disease management and recovery [14]. Acupoint application therapy involves applying medicinal agents to specific acupoints, leveraging drug permeation and acupoint regulation to achieve effects such as dispelling wind and resolving phlegm, as well as fortifying the spleen to resolve dampness [15]. This method not only directly targets the affected area but also regulates systemic qi and blood circulation through the meridian system, enhancing the body's self-regulatory functions [16]. Spinal manipulation is performed on both sides of the spinal column on the back. By stimulating the Governor Vessel, Bladder Meridian, and back-shu points, it can invigorate the body's yang qi, warm the lung and resolve retained fluid, as well as unblock the meridians connecting the exterior and interior, and promote the circulation of qi and blood throughout the body [17]. In the treatment and nursing of childhood asthma disease, the combination of acupoint application and spinal manipulation can improve symptoms and enhance therapeutic outcomes through multiple mechanisms, including regulating meridians, promoting qi and blood circulation, and adjusting spleen-stomach function.

This study innovatively combines acupoint application with spine pinching therapy. Through home intervention observations, it was found that the observation group showed significantly better outcomes than the control group in terms of the frequency of upper respiratory tract infections and acute asthma disease attacks (P<0.05). These results validate the TCM treatment principle of "treating the root in chronic disease." The findings of Qiao Licong's study [18] indicate that spine pinching therapy can enhance spleen and stomach function through the mechanism of "tonifying the spleen and replenishing the lung," thereby improving the lung's ability to resist pathogens. In this study, acupoint application combined with spine pinching therapy was administered to children with asthma disease. The results demonstrated that the total control rate in the observation group was higher than that in the control group, while the frequencies of upper respiratory tract infections and asthma disease attacks in the observation group were lower than those in the control group, aligning with the aforementioned research findings. The analysis suggests that the reason may lie in the fact that, based on the fundamental principles of Traditional Chinese Medicine (TCM), the children were treated with acupoint application combined with spinal manipulation therapy. This approach utilizes TCM emotional regulation, TCM topical application, and TCM

acupoints to balance the body's yin-yang relationship, regulate lung function, and reduce the recurrence of asthma disease. Additionally, it helps children improve self-control, enhances treatment motivation, and thereby achieves better control over disease progression. On the other hand, studies have reported that implementing acupoint application combined with spinal manipulation therapy in school-age children with bronchial asthma disease can increase treatment compliance, effectively alleviate symptoms, and promote an improvement in quality of life [19]. In this study, by analyzing asthma control and quality of life in children with asthma disease, the implementation of TCM-guided acupoint application combined with spinal manipulation therapy showed the following results: the total C-ACT scores of both groups increased, with the observation group scoring higher than the control group. The underlying reason lies primarily in the acupoint application combined with chiropractic spinal manipulation under the guidance of TCM theory, which effectively blocks key links of asthma disease attacks by regulating immune balance and reducing airway hyperresponsiveness. This ensures children's active participation and therapeutic efficacy, achieves effective asthma disease control, and improves their quality of life.

In summary, the implementation of acupoint application combined with chiropractic spinal manipulation under the guidance of traditional Chinese medicine for children with asthma disease effectively prevented upper respiratory tract infections, controlled the onset of asthma disease, reduced the recurrence rate, and improved the quality of life of the children.

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