

Clinical Application of Acupoint Application Therapy in Pediatrics

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Abstract: In order to investigate the current status of clinical application and research of acupoint patch therapy in paediatrics, and to provide a clinical theoretical basis for acupoint application therapy in the treatment of pediatric diseases. We collected relevant references to briefly describe the basic concepts of acupoint application therapy and the understanding of traditional Chinese medicine. And we collected and inquired about the actual clinical effects of the existing acupoint application therapy. On this basis, we briefly discussed the common pediatric diseases applicable to acupoint application therapy and the current status of traditional Chinese and Western medicine treatment. Then we analyzed and summarized the development trend and functional characteristics of acupoints in pediatrics. Resultly, it was found that the children's original symptoms improved significantly after acupoint treatment. In conclusion, acupoint application therapy had good clinical efficacy in the field of pediatrics.

1. Introduction

Acupoint application therapy is the application of traditional Chinese medicine to the body's acupoints, which can stimulate the acupoints to clear the meridians, regulate yin and yang, and exert pharmacological effects on the corresponding parts of the body, resulting in dual effects of treatment and acupoints [1]. Currently, acupoint application therapy is widely used in paediatrics for common diseases with significant therapeutic effects, which plays an important role in the prevention, treatment and health protection of children's diseases.

2. Theories of Chinese Medicine

2.1. Holistic Concept

As a traditional characteristic therapy of Chinese medicine, as early as in the Qing Dynasty, medical practitioner Wu Shangxian in the Li Yue Pian Wen has said that: The principle of external treatment is the principle of internal treatment, and the medicine of external treatment is also the

medicine of internal treatment. External treatment and internal treatment are only different in terms of the way and method of administration. Although they are external treatments, they are not different from the principles of internal treatment [2]. The human body itself is a whole, with the five organs and six internal organs, as well as the meridians and various parts, interconnected, interacting, and influencing each other in terms of function and pathology. The concept that internal treatment and external treatment share the same principle in treating diseases has laid the ideological foundation for the application of Chinese herbal medicine for treatment.

2.2. Theory of Meridians

Ling Shu Hai Lun has said that: The twelve meridians are associated with the organs and limbs. According to the Ling Shu Jing Jin: Meridians can determine a person's life or death, treat various diseases, regulate the deficiency and excess of the organs, and must be kept smooth. Meridians, an important component of the meridian system, refers to the basic pathway to travel qi and blood, connecting internal organs, access to the upper and lower parts of the body, through the internal and external. The meridians are closely related to the internal organs of the body, and are connected to the limbs and joints. Acupoint therapy is the treatment of diseases by continuously stimulating drugs on acupoints, using meridians as transmission channels to induce drug action to reach the affected parts.

2.3. Theory of Acupuncture Points

Acupoints are specific parts of the body where meridians, internal organs, qi and blood flow in and out of the body, which are not only the external reflection points of diseases, but also the main stimulation sites for acupuncture treatment of diseases. Qing Dynasty physician Xu Dachun pointed out in his "On the Origin and Development of Medicine": "Human diseases all come from the outside into the body. If the location of disease is fixed between the skin, muscles and bones, which can be found by pressing. We can apply plasters to this acupoint to block its qi mechanism, causing the drug to reach the striae through the pores and circulate to the meridians. Alternatively, we can use acupuncture to remove evil energy from the body or attack and dissipate it. It is more effective than taking oral traditional Chinese medicine" [3]. It suggests that diseases can be cured if medicated compresses are applied to the corresponding points on the body surface.

3. Application of Acupoint Compresses In Common Paediatric Diseases

3.1. Cough Variant Asthma

Cough variant asthma (CVA) is a chronic cough characterized by dry cough in the morning and at night, which may not have obvious lung signs and can be seen in children of all ages. Diagnostic criteria: (1) Patient has a chronic cough (>8 weeks), often accompanied by a noticeable nocturnal irritating cough. (2) Patient's bronchial provocation test is positive, or the diurnal variability of peak expiratory flow rate is >20%, or bronchodilator test is positive. (3) Patient's bronchodilator treatment is effective, and other causes of chronic cough should be excluded. For the treatment of CVA, modern medicine advocates a combination of traditional Chinese and Western medicine in aspects such as inflammatory cytokines, body immunity, and airway hyperresponsiveness [4]. Guo Jie et al. [5] found that the Chinese patent medicine named Zhixiaoling Tablet can reduce the inflammation and airway hyperresponsiveness of children with CVA. It can effectively alleviate the symptoms of coughing during the attack period, reduce the recurrence rate and improve the quality of life of the children. Li Jing et al. [6] used Self-made Guominjian Combined with Montelukaston to significantly improve

cough symptoms and lung function in 120 cases of paediatric CVA, with an overall effective rate of 96.7%. However, due to improper formulation or poor taste, pediatric patients often easily refuse oral medication.

Li Panpan et al. [7] randomly divided 1407 children into a controlled trial, and the results showed that acupoint therapy had the effect of improving the total effective rate, improving lung ventilation, enhancing immunity, reducing recurrence rate, and shortening the disappearance time of recurrent cough in children with CVA. Shao Yufeng et al. [8] randomly divided 180 CVA patients into a treatment group and a control group, each group contained 90 cases. The control group was treated with Spleen aminopeptide complex lyophilized powder, and the treatment group was treated with Sanjiutie combined with poultice treatment. The medications included Cinnamomum cassia, monkshood, Dodder, Epimedium, monkshood, Asarum, White mustard seed, Euphorbia kansui, Perilla seed, Semen Raphani, Schisandra chinensis, and so on. And the acupoints included Xuanji(RN21), Feishu(BL13), Xinshu(BL15), Pishu(BL20), Shenshu(BL23), Dingchuan(Ex-B02), Zusanli(ST36) and Dazhu(BL11). The results showed that the effective rate and symptom improvement of the treatment group were better than those of the control group. Feng Xiaochun et al. [9] found that acupoint application can effectively treat pediatric patients with cough variant asthma. It can control the progression of the condition by using traditional Chinese medicine (White mustard seed, fumaric, Asarum, Euphorbia kansui, etc.) on Tiantu(RN22), Danzhong(RN17), Feishu(BL13) and Geshu(BL17). In conclusion, the use of traditional Chinese medicine acupoint therapy to prevent and control CVA in children has a definite therapeutic effect.

3.2. Bronchial Asthma

The main clinical manifestations of bronchial asthma included recurrent cough, wheezing, chest tightness, coughing up sputum, expiratory dyspnoea with episodic rales. These symptoms are usually seasonal and reversible, occurring in spring, autumn or winter [10]. The diagnosis is based on respiratory symptoms, signs and pulmonary function tests, which demonstrate the presence of variable expiratory airflow restriction and exclude other diseases with related symptoms. The most important way to prevent and control the onset of asthma in children is to avoid allergens. Inhaled fast-acting β_2 agonists are currently the most effective reliever drugs, and are the first choice of treatment for all acute asthma attacks in children, but they have certain side effects and are expensive [11]. Traditional Chinese medicine adheres to comprehensive, reasonable, and personalized treatment methods, adopting different treatment principles for acute exacerbation and chronic remission. In the acute attack period, we should attack the evil in order to treat the symptom, and treat the deficiency, solidity, cold and heat according to the evidence. And in the remission period, we should support the positive in order to treat the root of the disease.

Shao Gongli et al. [12] selected bilateral Dingchuan(Ex-B02), Feishu(BL13), Gao Huang(BL43) and Danzhong(RN17), and used traditional Chinese medicine (fumaric, Euphorbia kansui, Asarum, White mustard seed, musk) to treat asthma in children. It was observed that TCM acupoint therapy can increase FVC, FEV1, PEF and FEF, decrease immunoglobulin IgE, cytokine IL-4. And it can also increase IgA, IgG and IFN-C. In conclusion, regulating immune function and correcting the imbalance in the ratio of TH1/TH2 may be one of the main mechanisms of the effect of acupoint therapy on the prevention of asthma. Che Xueyuan et al. [13] applied acupoints such as Feishu(BL13), Xinshu(BL15), Geshu(BL17) and Tianshu(ST25), and used traditional Chinese medicine (Euphorbia kansui, Asarum, White mustard seed, fumaric) to treat asthma in children. After treatment, the number of asthma attacks and the severity of the disease in 102 children with asthma decreased significantly within one year. Wang Xinyue et al. [14] randomly divided 160 children with asthma into an observation group and a control group. The observation group was treated with acupoint application,

while the control group was treated with oral ketotifen. The results showed that the treatment effect of the observation group was significantly better than that of the control group. In summary, the use of traditional Chinese medicine acupoint therapy was effective in preventing and treating pediatric bronchial asthma.

3.3. Recurrent Respiratory Infections

Recurrent Respiratory Infections refer to respiratory tract infections that occur frequently and exceed a certain range within a year. Conventional Western medicine treatment is mainly based on conventional anti-influenza drugs, but it is not clinically effective. Chinese medicine advocates that this disease is mainly deficiency of Zhengqi. The treatment should focus on replenishing the deficiency, or strengthening the spleen and tonifying the lungs, or nourishing the yin and benefiting the qi, which can achieve the effect of “positive energy exists in the body, and evil energy cannot invade”. If the clinical syndrome is positive, it is advisable to clear the lungs and stomach.

When applying acupoints to the Feishu(BL13), Zhongfu(LU01), Geshu(BL17), Zusanli(ST36), Tiantu(RN22), Dazhui(DU14), Fenglong(ST40) and other acupoints, it is advisable to use drugs that have the effect of tonifying lung qi in cases of deficiencies. For example, we can use *Astragalus membranaceus*, *Atractylodes macrocephala*, solomon's seal, hawthorn, yam and so on. Or we can use White mustard seed, fumaric, Zhuru, Reed root, *Asarum* and other traditional Chinese medicines that have the effects of moving qi, clearing heat and dispersing wind, with obvious therapeutic effects. Hu Zhiming et al. [15] selected Chinese medicine acupoints (Dazhui(DU14), Feishu(BL13), Geshu(BL17), Pishu(BL20), Shen Shu(BL23), Dingchuan(Ex-B 02), Zusanli(ST36), Guanyuanshu(BL26), and so on), and found that the number of respiratory infections in children was significantly reduced, the symptoms were significantly reduced compared with the previous period, and the duration of the clinical course of the disease was significantly shortened. Cheng Xiaomei and Chen Rongli [16] applied White mustard seed, fumaric, *Asarum*, *Euphorbia kansui*, *Astragalus membranaceus*, *radix stemonae*, and *Platycodon grandiflorum* to Dingchuan(Ex-B 02), Feishu(BL13), Gaohuang(BL43), and Tiantu(RN22). It was found that the acupoint patch therapy against recurrent respiratory infections of children was effective, with both preventive and therapeutic efficacy. Lai Mu [17] selected bilateral Dazhui(DU14), Feishu(BL13), Gaohuang(BL43) and Tiantu(RN22), Danzhong(RN17), selected Chinese medicine including White mustard seed, *Asarum*, fumaric, *Euphorbia kansui*. It was found that the total effective rate of treatment of recurrent respiratory tract infections reached 90%. It can be seen that Chinese medicine acupoint therapy is effective in preventing and treating recurrent respiratory tract infections in children.

3.4. Anorexia Nervosa in Children

One of the common diseases in children, most of them are caused by digestive dysfunction, which is common in children aged 1-6 years old in clinic, manifested by symptoms of longer-term loss of appetite or reduction of diet, which may be accompanied by vomiting, constipation, abdominal distension, abdominal pain and so on. Western medicine often treats anorexia nervosa by supplementing zinc as a micronutrient, using the drug domperidone to promote gastric motility, and supplementing microecological agents to adjust the intestinal tract. The key to the disease of anorexia nervosa in children is summarised in Chinese medicine as a damaged spleen and stomach, which is unable to digest and absorb food [18]. Considering that children are not easily receptive to traditional Chinese medicine and have physiological characteristics such as delicate organs and insufficient vitality, fennel, malt, wolfberry bark, clove, membranes of chicken gizzards, *Codonopsis pilosula*, and *Divine Comedy*, acupoints were selected for the treatment and applied to Zhongwan(RN12), Zusanli(ST36), Shenque(RN08), Tianshu(ST25), Pishu(BL20), and Wei Shu(BL21) [19], which had

a significant therapeutic effect. WANG Jianxia [20] applied the modified Wu Ren Wan (Amomum villosum, gardenia, almond, peach kernel, etc.) to the Neiguan(PC06) to treat 103 cases of pediatric anorexia, male on his left and female on her right, once a week, three times as a course of treatment, a total of two courses, with a total effective rate of 89.3%. Liu Liping [21] randomly divided 80 children with anorexia into a treatment group and a control group, with 40 cases each. The control group was given Xingpi Yanger Granule orally, while the treatment group was given Xiao Dao Cream (composed of rhizoma atractylodis, Atractylodes macrocephala, hawthorn, Divine Comedy, and malt, etc.) applied to Shenque(RN08) and Zhongwan(RN12)for treatment. It was observed that the improvement of appetite, appetite, and other indicators in the treatment group was significantly better than that in the control group ($P<0.05$). In summary, using traditional Chinese medicine acupoint application therapy to prevent and treat anorexia in children has a definite therapeutic effect.

3.5. Inflammatory Bowel Disease (IBD)

It is a digestive tract syndrome characterised by increased stool frequency and changes in stool properties caused by a variety of factors. It is one of the most common conditions in Chinese infants and children. Western medical treatment is to regulate diet, prevent and improve dehydration, take medication correctly, and take good care of the patient. In acute diarrhoea, water and electrolyte balance should be ensured. For prolonged or chronic diarrhoea, treatment should be based on the cause, and antibiotics should not be abused to prevent the imbalance of digestive flora. The traditional Chinese medicine name is pediatric diarrhea, which is believed to be caused by spleen deficiency and excessive dampness, impaired ascending and descending function, water forming dampness, and accumulation of grains and food, resulting in a combination of the two. Take the acupoints paste therapy, choose Guanyuan(RN04), Zusanli(ST36), Shenque(RN08) and other paste must be selected Cinnamomum cassia, monkshood, evodia rutaecarpa, ephedra and other traditional Chinese medicines into powder, ginger liquid into a viscous substance, and then external gauze fixation, therapeutic effect is remarkable [22]. Jiri Galatu et al. [23] used a paste made of Ao Le Gai-13 Wei San powder to apply it to acupoints such as Shenque(RN08), Jianli(RN11), Xiawan(RN10) and Guanyuan(RN04) to treat diarrhea and intestinal spasms in children aged 6 months to 3 years old. The clinical cure rate was as high as 88.3%. Yu Jicong [24] used self-made traditional Chinese medicine pills to apply to the Tianshu, Zhongwan, and navel to treat pediatric diarrhea. The observation group was superior to the control group in terms of stopping diarrhea time, improving stool characteristics, and clinical symptoms. In conclusion, the use of Chinese medicine acupoint therapy for the prevention and treatment of paediatric IBD is efficacious.

4. Current Status of Acupoint Therapy

Acupoint application therapy does not require medication to pass through the gastrointestinal tract, therefore it will not damage the spleen and stomach. Due to the loose skin of children, topical drugs are easily absorbed, which has advantages and characteristics in children. In modern clinical treatment, acupoint application therapy has been applied in various departments and has achieved good effect.

However, with the deepening of modern medical research, the traditional acupoint application method has increased many new challenges at the same time of continuous progress: (1) Although the theory of "internal and external homoeopathy" provides a theoretical basis for external treatment [25], it is not comprehensive enough to use only "internal and external homoeopathy" to explain the system mechanism of acupoint application therapy. (2) Part of the acupoint application operators to grasp the degree of acupoints is not enough to accurately know the children's acupoints, the selection of too many points or no basis, and the main treatment of the acupoints and the effect of the lack of knowledge. (3) Acupoint application of medicine selection and formulation blindness, At present, the

clinical acupoint application of traditional Chinese medicine formulas in the compound formula is more common, containing complex ingredients, the active ingredient is still unclear and low concentration, poor targeting, and its standardisation of the development of the impact [26]. (4) China's acupoint application is in the stage of modernisation and vigorous development, the systematic research on acupoint application and adverse reactions after medication has been more mature but not perfect.

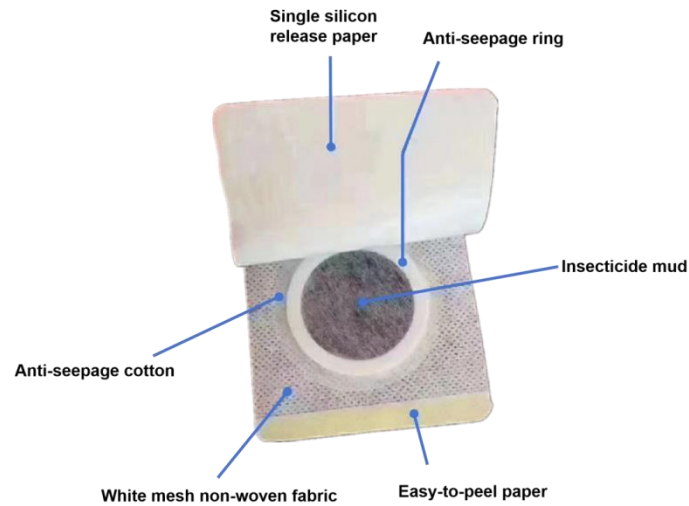


Figure 1: Medicated patch on acupuncture points

5. Development and Characteristics

According to the deficiencies of acupoint therapy at this stage, Chinese medicine practitioners should be guided by modern Chinese medicine theories, understand and fully grasp the basic theories and methods of Chinese medicine, develop discoveries, collect and collate relevant literature, and gradually strengthen the theoretical system of acupoint therapy, and further improve the theory of external drug composition and compounding, so as to make the clinical application of rationale and evidence-based. Secondly, new and improved dosage forms that are convenient and controllable, less toxic and more effective should be further researched in order to improve the transdermal transmittance rate and to achieve better results [27], and the combination of traditional Chinese medicine transdermal therapy and traditional meridian and acupoint system will open up a broad application prospect for Chinese medicine external therapies. This special way of administration of acupoint therapy reduces the adverse reactions formed due to the stimulating effect of oral medication on the gastrointestinal tract, thus supplementing the inadequacy of internal administration of traditional Chinese medicine. In clinical application, it is more suitable for children and the elderly and infirm. While obtaining good therapeutic effect, it can also reduce the pain of acupuncture and moxibustion and the bitterness of decoction. Coupled with the simple and safe operation of the acupoint application method, the medical effect is obvious, and fewer adverse effects, has been used as one of the common treatments in paediatric clinical treatment, especially in the respiratory system and digestive system disorders [28]. It is convenient and simple, economical and safe, non-invasive and painless.

6. Conclusion

This article focuses on a brief description of the basic concepts of acupoint application and

therapeutic methods, basic theories and research in Chinese and Western medicine, and common clinical indications and diseases in paediatrics. It summarises and outlines the current status of the treatment of acupoint application and discusses the characteristics of its development. It allows parents and children to have a better and more comprehensive understanding of acupoint therapy and its clinical application, and at the same time to feel more at ease with the modern, green and safe external treatment of Chinese medicine. It is hoped that with the enrichment of theories and improvement of research, acupoint application can be fully implemented and developed in reducing the number of morbidity of patients and improving the quality of life of children.

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