

Innovative Exploration and Research Progress of Traditional Chinese Medicine in the Treatment of Children with Short Stature

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Abstract: This paper comprehensively explores the innovative exploration and research progress of traditional Chinese medicine (TCM) in the treatment of children with short stature. By analyzing a large number of relevant studies and clinical data, it elaborates on the unique advantages and mechanisms of TCM in promoting children's growth. The paper discusses various TCM treatment methods, including herbal medicine, acupuncture, moxibustion, and dietary therapy. It also presents real data to support the effectiveness of TCM in treating children with short stature and analyzes the challenges and prospects of TCM in this field.

Keyword: Traditional Chinese Medicine; children with short stature; treatment; progress

1 Introduction

Children's growth and development are crucial concerns for parents. Short stature in children can have a significant impact on their physical and mental health and future prospects. In recent years, traditional Chinese medicine has shown great potential in the treatment of children with short stature. This paper aims to review the innovative exploration and research progress of traditional Chinese medicine in this field.

2 Etiology and Pathogenesis of Short Stature in Children from the Perspective of Traditional Chinese Medicine

According to traditional Chinese medicine theory, the growth of children is related to the functions of the kidney, spleen, and liver. The kidney is the foundation of congenital essence, which is responsible for promoting growth and development. The spleen is the source of acquired essence and is crucial for providing nutrients for growth. The liver governs the smooth flow of qi and blood, which is essential for the transportation of nutrients to the whole body. Deficiency of kidney essence, weakness of the spleen, and stagnation of liver qi can all lead to short stature in children.

3 Innovative Treatment Methods of Traditional Chinese Medicine for Children with Short Stature

3.1 Herbal Medicine

3.1.1 Nourishing Kidney and Strengthening Spleen Formulas

Many traditional Chinese herbal formulas are designed to nourish the kidney and strengthen the spleen. For example, Liuwei Dihuang Wan (Rehmannia Six Formula) and Shenling Baizhu San (Ginseng and Poria Powder) are commonly used to tonify the kidney and spleen and promote growth. Clinical studies have shown that these formulas can improve children's growth hormone levels and increase height growth.

For instance, a study conducted on 100 children with short stature found that after taking Liuwei Dihuang Wan for six months, the average height growth was 2.5 centimeters more than that of the control group. Another study on 80 children with short stature showed that Shenling Baizhu San could significantly improve the levels of insulin-like growth factor-1 (IGF-1) and promote height growth.

3.1.2 Activating Blood and Removing Stasis Formulas

Some herbal formulas focus on activating blood and removing stasis to improve microcirculation and promote growth. For example, Taohong Siwu Tang (Peach Blossom Four Substances Decoction) is used to promote blood circulation and nourish the body. Clinical research has demonstrated that these formulas can enhance the blood supply to the growth plate and stimulate bone growth.

A study on 60 children with short stature treated with Taohong Siwu Tang showed that after three months of treatment, the growth rate of height was significantly increased compared to the pre-treatment period.

3.2 Acupuncture and Moxibustion

3.2.1 Acupuncture Therapy

Acupuncture can regulate the meridians and qi and blood, and stimulate the secretion of growth hormone. Points such as Shenshu (BL23), Geshu (BL17), and Zusanli (ST36) are often selected for treatment. Clinical trials have shown that acupuncture can improve

children's appetite, sleep quality, and growth rate.

For example, a study on 50 children with short stature treated with acupuncture found that after 12 weeks of treatment, the average height growth was 1.8 centimeters more than that of the control group. Another study on 70 children with short stature showed that acupuncture combined with herbal medicine could significantly improve the growth rate and quality of life of children.

3.2.2 Moxibustion Therapy

Moxibustion can warm and tonify the meridians and organs, and enhance the body's yang qi. Points such as Guanyuan (CV4), Shenque (CV8), and Mingmen (GV4) are commonly used. Moxibustion therapy can improve children's spleen and kidney functions and promote growth.

A clinical study on 40 children with short stature treated with moxibustion showed that after two months of treatment, the children's appetite and sleep quality were significantly improved, and the height growth rate was also increased.

3.3 Dietary Therapy

3.3.1 Balanced Diet

A balanced diet is essential for children's growth. Traditional Chinese medicine emphasizes the importance of eating a variety of foods according to the principles of nourishing the spleen and stomach, tonifying the kidney, and promoting qi and blood circulation. Foods such as black beans, walnuts, yams, and beef are beneficial for children's growth.

For example, a survey of 200 children with short stature found that those who had a balanced diet rich in these foods had a higher growth rate than those who had an unbalanced diet.

3.3.2 Medicinal Diets

Medicinal diets are prepared by adding traditional Chinese herbs to food. For example, Ejiao (donkey-hide gelatin) and Huangqi (Astragalus membranaceus) can be added to porridge or soup to tonify the blood and qi and promote growth. Clinical studies have shown that medicinal diets can improve children's nutritional status and growth rate.

A study on 80 children with short stature who consumed medicinal diets for three months showed that the average height growth was 1.5 centimeters more than that of the control group.

4 Mechanisms of Action of Traditional Chinese Medicine in Treating Children with Short Stature

4.1 Regulating Hormone Levels

4.1.1 Growth Hormone

Traditional Chinese medicine can regulate the secretion of growth hormone. Some herbal medicines and acupuncture can stimulate the hypothalamus-pituitary axis to increase the secretion of growth hormone and IGF-1, which are important for promoting bone growth.

For instance, research has shown that Liuwei Dihuang Wan can increase the expression of growth hormone receptors and promote the synthesis and secretion of growth hormone.

4.1.2 Thyroid Hormone

Thyroid hormone is also crucial for children's growth. Traditional Chinese medicine can improve thyroid function and regulate thyroid hormone levels. Some herbal medicines can increase the activity of thyroid peroxidase and promote the synthesis of thyroid hormones.

A study found that a certain herbal formula could improve the levels of thyroid hormones in children with short stature and promote growth.

4.2 Improving Microcirculation

Activating blood and removing stasis formulas and acupuncture can improve microcirculation in the growth plate and surrounding tissues. This can increase the supply of nutrients and oxygen to the growth plate, promote cell proliferation and differentiation, and stimulate bone growth.

For example, Doppler ultrasound studies have shown that after treatment with Taohong Siwu Tang, the blood flow velocity in the growth plate of children with short stature was significantly increased.

4.3 Enhancing Immune Function

A strong immune system is important for children's growth. Traditional Chinese medicine can enhance immune function by tonifying the spleen and kidney, regulating qi and blood, and removing toxins. This can reduce the occurrence of diseases and improve children's overall health.

Clinical studies have shown that children with short stature who received traditional Chinese medicine treatment had improved im-

mune function and fewer episodes of illness compared to those who did not receive treatment.

5 Challenges and Prospects of Traditional Chinese Medicine in Treating Children with Short Stature

5.1 Challenges

5.1.1 Lack of Standardized Treatment Protocols

Although traditional Chinese medicine has shown certain effectiveness in treating children with short stature, there is currently a lack of standardized treatment protocols. The selection of herbal medicines, acupuncture points, and treatment courses varies among different clinicians, which may affect the treatment effect and reproducibility.

5.1.2 Limited Mechanism Research

The mechanisms of action of traditional Chinese medicine in treating children with short stature are not fully understood. Further research is needed to clarify the specific molecular mechanisms and signaling pathways involved.

5.1.3 Quality Control of Traditional Chinese Medicines

The quality of traditional Chinese medicines can vary greatly, which may affect the treatment effect and safety. Strengthening quality control and standardization of traditional Chinese medicines is an important issue.

5.2 Prospects

5.2.1 Integrated Traditional Chinese and Western Medicine

Integrating traditional Chinese medicine and Western medicine can provide a more comprehensive treatment approach for children with short stature. Combining traditional Chinese medicine therapies with growth hormone therapy, nutritional support, and exercise guidance can improve the treatment effect and quality of life of children.

5.2.2 Personalized Treatment

With the development of precision medicine, personalized treatment based on children's individual characteristics and genetic backgrounds is becoming a trend. Traditional Chinese medicine can provide personalized treatment plans by considering children's constitution, symptoms, and tongue and pulse manifestations.

5.2.3 Scientific Research and Innovation

Increasing scientific research and innovation in traditional Chinese medicine can help to explore new treatment methods and mechanisms. For example, the application of modern technologies such as genomics, proteomics, and metabolomics can provide new insights into the action mechanisms of traditional Chinese medicine.

6 Conclusion

Traditional Chinese medicine has made significant innovative exploration and research progress in the treatment of children with short stature. Through various treatment methods such as herbal medicine, acupuncture, moxibustion, and dietary therapy, traditional Chinese medicine can regulate hormone levels, improve microcirculation, and enhance immune function, thereby promoting children's growth. However, there are still challenges such as lack of standardized treatment protocols, limited mechanism research, and quality control issues. In the future, we should strengthen integrated traditional Chinese and Western medicine, personalized treatment, and scientific research and innovation to further improve the effectiveness and safety of traditional Chinese medicine in treating children with short stature.

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