

Analysis of the Treatment of Tourette Syndrome in Children from the Harmonization of Liver and Spleen

Xiaohong Zhang^{1,a}, Weigang Wang^{2,b,*}

¹Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, 712046, China

²Affiliated Hospital of Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, 712000, China

^a1248336738@qq.com, ^b332062219@qq.com

*Corresponding author

Abstract: Tourette's disease is a chronic neuropsychiatric disorder in children. Its pathogenesis is varied and complex and its clinical incidence are increasing year by year. The pathogenesis of this disease is related to emotional diet, immunity, environment and other factors. The disease location is in the liver, spleen and kidney. The pathogenesis is the deficiency of the essence and the deficiency of the Yin of the liver and kidney, and the phlegm movement of the liver wind. The disease is initially liver wind, and then develops and changes, affecting the spleen. This paper emphasizes on grasping the etiology and pathogenesis of the disease, combining the disease and syndrome, in the treatment of the early stage should calm the liver and dissipate wind, the middle and late stage should strengthen the spleen and eliminate phlegm, so as to put forward the treatment theory of "harmonization of the liver and spleen". The "treatment of liver and spleen" is an important direction of TCM disease diagnosis and treatment. Based on the theory of "harmonization of liver and spleen", the importance of "liver and spleen" in the development process of Tourette's disease in children is explored, which provides a new idea for the clinical diagnosis and treatment of such diseases.

Keywords: Pediatric Tourette Syndrome, The Citizens of China are Guilty, Treatment of Liver and Spleen, Harmonization of Liver and Spleen, Etiology and Pathogenesis

1. Introduction

Children's tourette syndrome, also known as children's tourette syndrome, is a kind of chronic neurological disorders, with involuntary, repeated and rapid muscle movements or vocal jerks in one or several parts of the body as the main clinical manifestations, often accompanied by violent, involuntary vocalizations and tics. It is characterized by inattention, non-autonomy, abruptness, rapidity, repeatability and no rhythm. The incidence of this disease in China is 1.7% ~ 3.9%, which mainly occurs in children at the early school age and school age, especially in children aged 5-10 years, and male children are far more than female children, with a male to female ratio of 4-6:1 [1-2], and it has a certain heritability. This disease is a chronic process with high volatility. Tic symptoms often occur or worsen under the condition of illness, emotional tension, fear or excitement, fatigue, insomnia, etc., and are alleviated or disappeared during relaxation, pleasure, concentration and sleep [3-4]. At present, the incidence of this disease is increasing year by year, which has brought serious impact on children's daily life and study, and has been highly concerned at home and abroad [5].

There is no record of tourette syndrome in the ancient historical literature of traditional Chinese medicine, but there are corresponding symptoms recorded, the disease is classified as "liver wind" "slow

Diseases of startling wind, convulsions, and guilt of the citizens of China [6]. The Doctor of Zhang said, "The citizens of Cloud are addicted to acute physique; Matt, she betrayed you with weak muscles, matt." At present, the etiology and pathogenesis of tourette syndrome are complicated, and it has not been completely clarified, indicating that it may be related to genetic, environmental, psychological, infection, immunity, neurotransmitter and other factors [7]. Research [8] analyzed from the perspective of TCM that zang fu disorders are the key to causing touretic syndrome in children, and the primary pathogenesis is the internal movement of liver wind. The congenital cause is insufficiency of kidney, and the acquired cause is weakness of spleen. The main external cause of this disease is the internal

wind caused by the six evil factors of external sensation. Children often have more than heart and liver, easy cremation sad shock, thereby inducing liver wind. Its disease location is mainly in the liver, spleen, kidney, can be related to the heart and lung, its marked as wind, fire, phlegm, dampness, internal safety is from the evil, this article will focus on the liver and spleen two viscera from the perspective of the treatment of tourette syndrome in children. Summarize the etiology and pathogenesis of tic syndrome in children as shown in Figure 1.

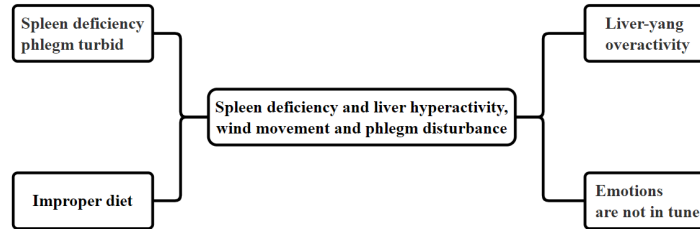


Figure 1: Etiology and pathogenesis of tic syndrome in children

2. The Basis and Clinical Application of Treating Tourette Syndrome in Children from "Liver"

Children have "liver often more than" physiological characteristics, "Nei jing" records: "all the wind dazzle, belong to the liver." And according to the Tibetan image theory of traditional Chinese medicine, the liver is wood in the five elements, the sex is happy to reach the evil depression, the main drainage, the liver qi main rise initiative, every because of emotional frustration, qi is not smooth, depression caused by the liver loss, the liver qi, qi depression fire, injury and body fluid, the operation is blocked, the liver wind, the upper disturbance clear, and now pumping.

Professor Xuan Guiqi [9] believed that this disease is related to the five Zang sections, but it is most closely related to the liver. Professor Xuan proposed to treat this disease by the principle of "filling the deficiency and reducing the actual condition", and "carefully check the location of Yin and Yang and adjust them for a period of leveling". "Plain question • Xuan ming five Qi" cloud "heart hide God, lung hide soul, liver hide soul, spleen hide intention, kidney hide ambition". Professor Wang Sumei [10] believes that the occurrence of diseases is nothing more than the imbalance of Yin and Yang, "Yin is the main static, Yang is active", the liver does not hide the soul leading to the imbalance of Yin and Yang, the tic belongs to the deficiency of Yang and Yin, the deficiency of liver and Yin, and the deficiency of wind and internal movement is the underlying disease. Commonly used drugs include r, centipede, cicada slough, ground dragon, black snake, scorpion, Uncared rhynchoides, white peony root and parsnips, etc. Rigid worm into the liver, lung, stomach meridian, "Compendium of Materia Medica" contained "Rigid worm, silkworm disease wind also." Earth dragon into the liver, spleen, bladder meridian, "southern Yunnan Materia Medica" cloud "Earth dragon dispels wind. To cure pediatric newt convulsion and strengthen tendons ". Cicada sloughs into liver and lung meridian, "Materia Medica to seek truth" records cicada wood residual qi, can cure liver meridian wind heat. Wutian snake into the liver, spleen meridian, "medicinal solution" record Wutian snake specialized dispelling wind; Scorpion into the liver meridian, wind relief spasmodic; Hook rattan into the heart, liver meridian, clearing heat and calming liver, quenching wind and calming panic; White peony into the liver, spleen meridian, calm liver Yang, nourishing blood collect Yin soft liver; Wind-proof to the bladder, lung, spleen, liver meridian, dispel wind and relieve the surface, calm liver wind, spleen dehumidification.

3. The Basis and Clinical Application of Treating Tourette Syndrome in Children from "Spleen"

Children have the physiological characteristics of "spleen is often insufficient", and at the same time, the delicate viscera, coupled with the acquired fat and unwilling to eat, resulting in spleen health loss. According to the discussion of "most diseases are caused by phlegm" and "strange diseases and phlegm", phlegm and dampness are obstructed, Qi is not smooth, phlegm and dampness are blocked for a long time, phlegm and dampness are blocked by phlegm and phlegm obstructs the airway, and strange syndrome is formed between phlegm and throat [11]. Children often have the characteristics of liver, spleen often deficient, "Jingyue book" records: "the disease of the five Zang organs, although can produce phlegm, but all by the spleen and stomach", "spleen for the source of phlegm", liver wood by spleen soil caused by spleen deficiency phlegm, "Compendium of Materia Medica" records: "sputum saliva for things, with qi up and down, nowhere. Spittoon on the reverse, deceive the mind, resulting in repeated language, action.

Clinically, different doctors have different syndrome differentiation types in children with TIC, among which spleen deficiency and liver hyperactivity, spleen deficiency and phlegm accumulation, qi depression and fire, Yin deficiency and fire exuberance are the main types. The incidence rates of different genders and syndrome types are shown in Table 1 and Figure 2 Professor Chen Baoyi [12] believed that the pathogenesis of this disease was spleen deficiency, phlegm stagnation and internal disturbance of wind phlegm. The treatment was based on strengthening the spleen and reducing phlegm and eliminating wind and calming panic, and the prescription was Changganlipi Decoction. The reuse of codonopsis combined with poria codonopsis and atractyloides invigorates the spleen and Qi to eliminate the source of phlegm; Fructus aurantii to reduce qi and phlegm and dredging collaterals; Pinellia pinellia dryness and phlegm; Combined with cassia twig, Qiang hu, rigidworm, ligusticum Chuanxiong, paeony, licorice, bupleurum to fuzheng dispelling evil, rigid and soft, so that the liver is thin and the spleen is healthy, and the wind phlegm will eliminate itself. Zhang Yong [13] divided children's TIC syndrome into three syndromes through TCM dialectics. Spleen deficiency and dampness should be treated by invigorating spleen and dispelling phlegm and dampness. 25 cases of children with tic syndrome were observed, including licorice, rigidworm, turmeric, cicada-slua, white rhizoma, pinellia pinellia, bupleurum, tangerine peel, oyster, yam and Yunling, among which 11 cases were effective, 11 cases were effective and 2 cases were ineffective. And fewer side effects. Tang Xiangqian [14] believed that the disease of Tourette syndrome in children is located in the liver, based on spleen deficiency, and spleen and stomach weakness is the internal basis of tourette syndrome in children. According to the clinical manifestations of the disease, it can be divided into four types, all of which are closely related to the spleen, including spleen deficiency and liver hyperactivity, spleen deficiency and spittoon, spleen and stomach Yin deficiency, and heart and spleen deficiency. It is believed that strengthening the spleen should run through the whole treatment. Including tonifying the spleen and suppressing wood, transporting the spleen and dampness, nourishing the spleen Yin, invigorating the spleen and nourishing the heart to soft liver and wind, cleaning phlegm and ding Zhi, calming the liver wind, Ning Shen and wind.

Table 1: Incidence of tourette syndrome in children with different syndrome types and genders

Type of syndrome	Overall incidence(%)	Male morbidity(%)	Female morbidity(%)
Spleen deficiency and liver yperactivity	30.32	87.01	12.99
Spleen deficiency phlegm accumulation	44.09	83.04	16.96
Qi stagnation leads to fire	15.35	87.18	12.82
Yin deficiency fire flourishing	10.24	92.31	7.69

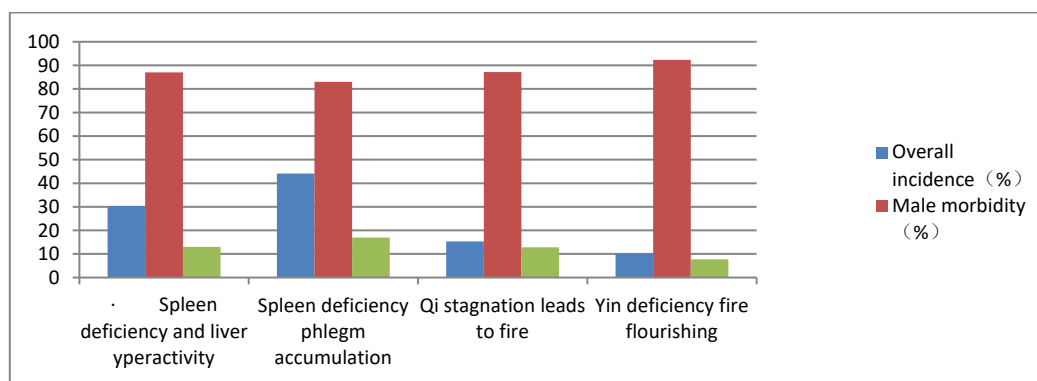


Figure 2: Bar chart of male and female incidence for different syndromic types (%)

4. The Historical Origin and Clinical Application of "Harmonization of Liver and Spleen" in Treating Tourette Syndrome in Children

The doctor Wang Kantang of the Ming Dynasty wrote "Syndrome and Treatment Criteria", "aquatic liver wood, this is weathering, wood is spleen soil, the stomach is the internal organs of the spleen, so there is wind in the stomach, the addicted matt gradually, the symptoms of the addicted matt, two shoulders slightly shrugged, hands sagging, when shaken, called slow shock [15]. It is pointed out that

the occurrence of tourette syndrome in children is related to liver wind and spleen deficiency. There is a saying in "On the Rise and Fall of the Spleen and Stomach" [12] : "Basically the spleen and stomach are weak, Yang qi cannot grow, which is the order of summer and spring is not good, and the qi of the five Zang organs is not born". It means that the liver is wood, born in spring, the spleen is soil, should be long summer and born, liver drainage is the premise of spleen health, that is, the liver is thin, the spleen is safe. The basic ideas for the treatment of children with tic syndrome are summarized in Figure 3.

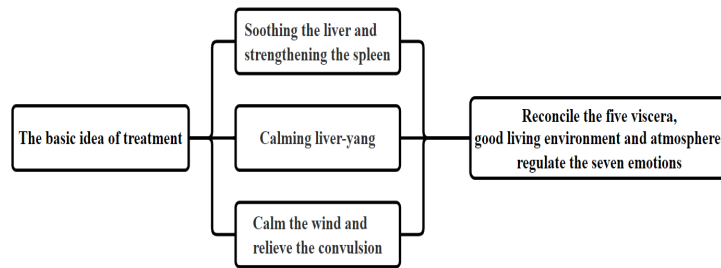


Figure 3: The basic idea of treating children with tic syndrome

In the treatment, there are many clinical methods, and have achieved a good effect, the specific methods are shown in Table 2. Professor Xuan Guiqi [16] advocated soothing the liver and regulating the spleen, eliminating wind and relieving spasmodic in the treatment of tic syndrome, and summarized the disease into three syndromic types, pointing out that external wind induces internal wind and causes liver wind, and it is appropriate to remove wind and reduce phlegm, and soothe the liver and relieve spasmodic. The formula selected is the proposed tic formula No. 1. It consists of white peony root, dragon tooth, cassia, poria cocos, Gastrodia elata, licorice, ground dragon, scorpion, turpentine, calamus, radix isatis root, stir-fried honeysuckle, pueraria, and radix gallanthus. Lung and kidney Yin deficiency, heart and liver fire Wang Yining god extinguish wind, nourishing Yin and flat liver, choose Sanjia Fumai decoction; The deficiency of both heart and spleen, lung and spleen phlegm should regulate qi and phlegm, calm the heart and calm the mind, and remove wind by clearing collaterality. Professor Xuan also suggested that in addition to muscle twitching, the disease can be accompanied by movement, behavior, thought and personality disorders. Studies [17] showed that Professor Wang Sumei believed that the main diseases of this disease were liver and spleen, deficiency of soil and hyperactivity of wood, hyperactivity of liver and wind and phlegm, flowing to the head and limbs, and twitching. The pathogenesis was spleen deficiency and hyperactivity of phlegm, and the basic treatment was to calm liver and relieve wind, strengthen spleen and reduce phlegm, and the principle of "inhibiting wood and soil" was to make liver qi smooth and smooth by soothing liver, clearing liver and softening liver. "Supporting the earth" strengthens the spleen by invigorating and flattening the spleen, and avoids reinforcing and obstructing the spleen. Yao Qipeng [11] believed that the treatment should be soothing the liver and invigorating the spleen, eliminating phlegm and relieving the wind, and designed the decoction of soothing the liver and invigorating the spleen. It was composed of gardenia, Gentian, white peony, chrysanthemum, unguteng, white silkworm, scorpion, ground dragon, white rhizoma, white poria, and raw licorice. The combined use of various medicines could play the effects of invigorating the spleen and invigorating the liver, suppressing wind and relieving spasm, and could achieve the same treatment of specimens. Wang Aimin [18] treated 238 cases of Tourette syndrome in children by using Antuo granules (gastrodia elata, scorpion, rigidus silkworm, ungutensis, pinax pinata, raw oyster, poria coia, paeoniae alba, etc.) in combination with tiaprside, and the total effective rate was 70%, which was better than that of the simple western medicine group and Chinese medicine group.

Table 2: Treatment of TIC syndrome in children

Type	therapy
Internal therapy	Traditional Chinese medicine
	Chinese patent medicine
	Western medicine
External treatment	Acupuncture (body acupuncture, ear acupuncture)
	moxibustion
	Massage
	Acupoint application
	Auricular point pressure pill
Psychotherapy	Transcranial magnetic microcurrent stimulation
	psychological counseling

5. Summary

Thus, from the etiology, pathogenesis and clinical manifestations of tourette syndrome in children, explore the theory of "harmonization of liver and spleen" to explain its effectiveness in the treatment of tourette syndrome in children. Although it is a simple "liver and spleen theory", it is of great significance. Our human body is an organic whole, and the various zang-fu organs complement each other, interact with each other, and also influence each other. If the dysfunction of any zang-fu organs, it will cause the dysfunction of other zang-fu organs, and then lead to the disorder of the entire internal environment of the body. Due to the occurrence and development of tourette syndrome in children the whole process is very complex, at the beginning of the disease, more because of liver wind, with the emergence and development of the disease, gradually spread to the spleen, so the treatment cannot be limited to a zang fu organs, should be multi-directional active exploration, believe that there are more methods, ideas and Angle analysis of tourette syndrome in children, for clinical work to make scientific theoretical guidance.

References

- [1] Luo Diqin, Chen Zhu, Yang Heping, et al. Summary of Professor Chen Zhu's experience in treating tourette syndrome in children. *Chinese Journal of Ethnic and Folk Medicine*, 2020, 29(7): 81-82.
- [2] Yang Xianhong, Li Guiping, Yao Shihan. Literature study on Syndrome distribution and medication regularity of Tourette syndrome in children. *Clinical Research of Traditional Chinese Medicine*, 2022, 14(8): 19-23.
- [3] Qi Jia. Treatment of Tourette syndrome from liver and lung combined with massage. *Inner Mongolia Traditional Chinese Medicine*, 2018, 11 (11): 55.
- [4] Yang Wenjiang, Chen Dakun, Miao Fenming, et al. Treatment of 39 cases of spleen deficiency and liver Wang syndrome with Jianpi Nourishing Pulp Shugan Prescription in children with tic syndrome. *Global Journal of Traditional Chinese Medicine*, 2022, 15 (6): 1083-1086.
- [5] Zhang Min, Qu Bing. Clinical study of Pingganxifeng Decoction combined with Typilide tablets in the treatment of tourette syndrome in children. *Chinese Journal of Traditional Chinese Medicine*, 2017, 45 (3): 67-69. (in Chinese)
- [6] Li Nan, Bai Xiaohong. *Chinese Pediatrics of Integrated Traditional and Western Medicine in the treatment of tic disorders in children*. 2019, 11 (1): 36-40.
- [7] Zhang Yan, Qiu Xiujuan. Research progress on etiology and treatment of tourette syndrome in children. *Shandong Medicine*, 2015, 5 (42): 103-105.
- [8] Zhang Pengyu, Song Jiaying, Yan Jing. Study on the etiology and pathogenesis of tourette syndrome in children. *World Latest Medical Information Abstracts*, 2019, 19 (82): 275-277.
- [9] Chen Qi, Xuan Guiqi. Xuan Guiqi famous old Chinese medicine treatment of Tourette syndrome in children. *Chinese Journal of Traditional Chinese Medicine*, 2009, 37 (3): 37.
- [10] Chen Hong, Ji Xiaoxiao, Huang Xunyan, et al. Professor Wang Sumei's experience in treating children with tic movement disorder, attention deficit hyperactivity disorder and autism spectrum disorder with animal drugs. *Hebei Journal of Traditional Chinese Medicine*, 2022, 44 (1): 10-13.
- [11] Yao Qipeng. Prevention and treatment of Tourette syndrome in children by soothing liver and strengthening spleen. *Henan Traditional Chinese Medicine*, 2011, 31 (3): 221.
- [12] Wei Jianping, Hu Siyuan, Liu Hong, et al. A brief introduction of Chen Baoyi's experience in treating Tourette syndrome. *New Chinese Medicine*, 2012, 44 (4): 158.
- [13] Zhang Yong. Clinical observation on the treatment of Tourette Syndrome by TCM Differentiation. *Journal of Clinical Medicine Literature*, 2019, 6 (23): 53.
- [14] Tang Xiangqian, Tang Mingzhu, Liu Rupeng, et al. Treatment of Tourette syndrome from spleen. *Journal of Pediatrics of Traditional Chinese Medicine*, 2019, 15 (1): 49-51.
- [15] Yin Hang, Zhang Han. Clinical observation of 63 cases of tic disorder treated with acupuncture and medicine. *Heilongjiang Journal of Traditional Chinese Medicine*, 2011, 2:38-39.
- [16] Shi Yanan, Xuan Guiqi. Xuan Guiqi's experience in treating Tourette syndrome in children. *Shanghai Journal of Traditional Chinese Medicine*, 2015, 49 (2): 19-20.
- [17] Han Zhitong, Chen Zijia. Experience of Professor Wang Sumei in the treatment of children with Tourette syndrome. *Modern Chinese Medicine Clinical*, 2021, 28 (4): 42-45.
- [18] Wang Aimin. Effect of Antuo Granule combined with tiapride on Tourette syndrome in children. *Zhejiang Journal of Integrated Traditional and Western Medicine*, 2016, 26 (5): 479-481.