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The Interaction between Psychological Factors and Tourette's Syndrome in Children and Its Clinical Application

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Abstract

Tourette's syndrome, as a common neurodevelopmental disorder in children and adolescents, not only affects their daily social and lifestyle, but also causes psychological and behavioral disorders in some children. At the same time, mental and psychological factors have an important impact on the onset and development of children's tic disorder. With the acceleration of social life rhythm, children's mental health problems are increasingly imminent, and the incidence rate of children's tic disorder is also rising. In recent years, Western medicine has increasingly focused on psychological and behavioral therapy while continuing to promote drug therapy. Traditional Chinese medicine has also gradually followed up on the attention and research of children with tic disorders, focusing on treating children with tic disorders from the perspective of emotional disorders based on liver diseases.

Keywords

Child Psychology, Tourette's Syndrome, Behavior Therapy, Emotional Therapy

1. Introduction

Tourette's syndrome is a type of neurodevelopmental disorder that occurs during the developmental stage, with complex and obvious genetic tendencies. It usually appears in the early stages of development between the ages of 4 - 6, with significantly more males than females. Its severity peaks between the ages of 10 - 12 and decreases during puberty. Most adults with tic disorders will experience a process of symptom relief, but a small number of individuals still have persistent severe or worsening symptoms in adulthood. Tourette's syndrome is characterized by

developmental defects that cause impairment in individual social, academic, or occupational functioning. It is prominently manifested at all ages as sudden, rapid, repetitive, non rhythmic movements or vocalizations, and tic symptoms recur in their characteristic manner at any point in time. Tic disorders can be classified into temporary tic disorders, persistent (chronic) motor or vocal tic disorders, Tourette's syndrome, and other specific and unspecified tic disorders based on the presence of motor and/or vocal tics, duration of tic symptoms, age of onset, and the presence or absence of any other known causes, including other physical illnesses or substance use factors. The manifestations of motor and/or vocal disorders vary among the four subtypes of tic disorders (translated by Zhang, 2015). Among them, Tourette's syndrome is a relatively serious type of tic disorder. Tourette's syndrome is one of the most severe tic disorders. The incidence of TS is 0.7% in the general population, and there are significant gender differences in the incidence: Boys account for 0.93% and girls account for 0.1% in children under 18 years old; In adult patients, male accounted for 0.077%, female accounted for 0.022%, and the prevalence rate has increased in recent years (Mao, 2017). Tourette's syndrome not only causes disruption to daily activity functions, leading to social isolation, interpersonal conflicts, and loss of work and study abilities, thereby greatly reducing the quality of life of affected children, but also causes significant psychological pain and physical damage to patients:

Many individuals with mild to moderate tic disorder do not experience pain or functional damage, or even are not aware of their symptoms. Children with attention deficit hyperactivity disorder or obsessive-compulsive disorder, for example, have a greater impact on individual function. Tic disorder destroys the function of daily activities, leading to social isolation, interpersonal conflict, peer bullying, inability to work or go to school, and reduced quality of life, and individuals may also experience significant psychological pain. Rare comorbidities of Tourette syndrome include physical injuries, eye injuries (due to hitting one's face), bone injuries, and nervous system injuries (such as disc disease associated with strong head and neck movements). Moreover, many physical and mental disorders can coexist with tic disorders, with comorbidities between attention deficit/hyperactivity disorder, obsessive-compulsive disorder, and related disorders being particularly prevalent. Individuals with tic disorders may also suffer from other movement disorders or mental disorders, such as depression, bipolar disorder, or substance use disorders (translated by Zhang, 2015).

The onset and progression of tic disorders in children can cause significant psychological distress and even physical harm to the affected children. Simultaneously, psychosocial factors can also influence these children, triggering the onset or exacerbating tic symptoms.

2. Factors Influencing Tic Disorders

2.1. Hereditary Factor

Gilles de la Tourette, a French neuropsychiatrist, fully introduced the concept of

tic disorders and discovered that these patients exhibit characteristics such as childhood onset, a family history, and are most prominent among males (Rickards & Cavanna, 2009). Research by Abelson JF and others indicates that the genetic pattern of tic disorders tends to be complex, with potential gene loci located at 2p, 4q34-35, 7q31, 8q, 11q23, 13q31, 17q25, and 18q22.1, demonstrating genetic heterogeneity. The mutation of the SLITRK1 gene on chromosome 13q31.1 may serve as a susceptibility gene for the disease, yet the pathogenic gene remains unidentified (Abelson et al., 2005).

2.2. Psychological Factors

Christine A. and others' investigation revealed that the factors influencing the onset, exacerbation, or attenuation of tic disorders lack sufficient persuasiveness. This is due to the biased self-reporting and the inability to experimentally verify causal relationships stemming from the predominantly single-case experimental design employed in previous relevant investigations. Additionally, the consideration of relatively independent factors without comprehensively incorporating multiple interactive elements, such as environmental factors, further contributes to this lack of persuasiveness. Nevertheless, psychological stress, depression, fatigue, and mood swings remain significant factors that exacerbate tic symptoms (Conelea & Woods. 2008).

Jain and her team utilized statistical data from a meta-analysis on Tourette syndrome to compute the polygenic risk score for individuals in the UK Biobank dataset. They employed a genome-wide association study approach to establish the correlation between disease risk and a broad spectrum of phenotypes. Among the 57 phenotypes encompassed were various psychosocial factors and mental health conditions. Notably, anxiety disorders and depression exhibited a significant association with Tourette syndrome. Furthermore, a comparative analysis of gene risk across phenotypes for other childhood-onset diseases, such as attention deficit hyperactivity disorder, autism spectrum disorder, and obsessive-compulsive disorder, revealed overlapping associations between Tourette syndrome and these conditions (Jain et al., 2023).

Giulia Conte's team summarized previous research perspectives on tic disorder comorbidities, highlighting that patients with attention deficit hyperactivity disorder constitute the highest proportion among tic disorder patients. Additionally, anxiety, emotional disorders, and obsessive-compulsive disorder are significant influencing factors. Through analyzing 32 tic disorder cases collected from January 2008-December 2019, the team discovered that rage attacks are more prevalent in tic disorder patients. As a common and uncontrollable aspect of tic disorder, rage attacks can severely impair patients' psychosocial and academic functioning, often manifesting independently as harmful behaviors, accounting for 20% to 67%, and can directly influence the severity of tic disorder (Conte, Francesca Valente, Francesca Fioriello & Francesco Cardona. 2020). Previous research has also emphasized that similar symptoms can negatively impact family functioning

(Storch, Johnco, McGuire, Wu, McBride, Lewin, & Murphy, 2017) and increase suicidal ideation and behaviors among adolescent children (Storch, et al., 2015).

2.3. Family Circumstance

Cui Yuehua's research indicates that, based on the SCL-90 scale completed by parents of children with tics, and using a factor score of ≥2 as the criterion for positive psychological symptoms, nearly half (109 cases) of the parents of children with tics exhibited positive psychological symptoms. These symptoms encompassed hostility, obsessive-compulsive symptoms, interpersonal sensitivity, anxiety, depression, somatization disorder, and psychotic mood. Specific manifestations included boredom, frequent arguments with others, frequent destruction of objects, irritability, restlessness, etc. Furthermore, there was a positive correlation between the severity of tics in children and the positive psychological symptoms exhibited by their parents, with hostility showing the strongest positive correlation. Over the course of long-term shared living, different positive psychological symptoms exhibited by parents would inevitably have a negative impact on children, such as fright caused by hostile symptoms and anxiety disorders leading to comorbid anxiety, resulting in the aggravation or persistence of tics in children (Cui, 2024).

In addition to parental mental health factors, the harmony of the marriage is closely related to the problematic behaviors of children. The spillover hypothesis of family systems theory suggests that the marriage sub-system will affect the parent-child relationship sub-system through emotional or behavioral expression (Erel & Burman, 1995). Cheng Dandan's research indicates that negative emotional expression is positively correlated with problematic behaviors in young children. The poorer the quality of the parents' marriage, the more conflicts there are, and the more negative emotional expressions parents use, the more likely it is to cause more problematic behaviors in young children (Cheng, Xu, Xing, Ding, & Ma, 2021). Li Xiaowei's research shows that young children will exhibit negative emotions such as fear, frustration, anger, and hostility when facing parental conflict situations. When young children face other similar threatening stimuli in social life, children who have lived in a family full of conflicts for a long time may experience more intense and lasting negative emotional states than other children (Li, 2016).

2.4. Life-Style

Tic disorders, as a type of neurodevelopmental disorder, are closely related to the intake of key nutrients and a balanced diet in terms of their onset, progression, and outcome. Research by Luo Mingwei et al. indicates that children with tic disorders have lower levels of serum ferritin and zinc compared to healthy children undergoing physical examination. Children with longer duration of Tourette syndrome have a more pronounced deficiency in vitamin D. Rational supplementation of trace elements such as iron, zinc, and vitamin D is of great significance for maintaining the normal development and function of the child's nervous system

and reducing the occurrence of tic disorders (Luo, Xiao, & Rao, 2023).

Wu, X. P. conducted a study on 207 cases of childhood tic disorders collected from the People's Hospital of Chengyang District, Qingdao City, from January 2022 to January 2023. The study demonstrated a clear correlation between the dietary inflammation index and the severity, recurrence, and inflammation level of tic disorders in children. Moreover, reasonable control of the intake of inflammatory foods is beneficial for reducing the risk of disease progression in children with tic disorders. At the same time, it was pointed out that recent studies have increasingly revealed the association between dietary habits and neuropsychiatric disorders such as depression, anxiety, and cognitive impairment. Some studies have specifically indicated that a high-inflammatory diet can increase the incidence of these neuropsychiatric disorders (Wu, Fang, & Ji, 2024).

Liang Xiangyu et al. established a risk prediction model for tic disorders by comparing a total of 353 children with tic disorders and normal children. They found that the absolute values of the characteristic coefficients for educational methods, gender, emotional state, family history of mental illness, and daily screen time were large, contributing significantly to the model (Liang, Wu, Wang, Chu, Zhang, & Zhao, 2024).

3. Effect of Tic Disorders

3.1. Impact on the Family

While the family environment is an important factor for the onset and prognosis of tic disorder, tic disorder also has a certain impact on family relations. Berney J. Wilkinson and other researchers' preliminary studies showed that the impact of tic disorder on individuals was not limited to the symptoms themselves, but also included the impact on their families, and there was a significant correlation between the severity of tic symptoms and the impact of combined symptoms on families caused by tic disorder (Wilkinson, Newman, Shytle, Silver, Sanberg, , & Sheehan, 2001).

Emily J. Ricketts team investigated 3014 children with tic disorder or children with attention deficit hyperactivity disorder, and evaluated the functional defects and damage of tic disorder children from the perspective of family economic or occupational damage. The study emphasized that 34.9% to 56.1% of the children's families were experiencing such damage, and there was no significant difference between tic disorder children and tic children with comorbid attention deficit hyperactivity disorder in the level of family economic or occupational damage. The specific performance is that parents have to sacrifice their working hours to take their children to see a doctor and pay for medical and health care services, resulting in financial pressure (Ricketts et al., 2022).

3.2. Impact on the Interpersonal Communication

Bawden, H. N and other researchers further pointed out that tic disorder is a chronic disorder that will cause social disorder and have a negative impact on

family life. The difficulties in social adaptation will be much higher than the impact on family relations, such as being bullied, not understood and marginalized in social communication. In previous studies, tic children often face the risk of poor peer relationships, and are significantly more withdrawn, aggressive and unpopular than classmates, especially children with attention deficit hyperactivity disorder. During the study, the team found that reducing the severity and frequency of tic symptoms was not conducive to improving peer relationships and social functions of children with tic disorders, and pointed out that the treatment associated with mental disorders and the improvement of peer relationships were important aspects of the treatment of children with tic disorders (Bawden, Stokes, Carols, Camfield, & Salisbury, 1998).

3.3. Impact on the Cognitive Ability

Previous studies (Hagin & Kugler, 1988) showed that children with tic disorder performed below expectations in mathematics, spelling, and reading comprehension. Burd, L.'s research further showed that 51% of children with tic disorder showed insufficient learning ability in at least one subject, and 21% of children with tic disorder showed insufficient ability in two or more fields, and the team's experience pointed out that the severity of such learning ability deficiency tended to decrease with age. At the same time, tic symptoms and poor academic performance are often classified as a destructive behavior, especially in children with attention deficit hyperactivity disorder. In many cases, this fluctuation is considered to represent lack of motivation or resistance (Burd, Freeman, Klug, & Kerbeshian, 2005).

4. Traditional Chinese Medical Science Understanding of Tic Disorder

There is no record of the name of tic disorder in the literature of traditional Chinese medicine. According to the existing symptom records, the disease is mostly classified into the category of "liver wind", "slow convulsion", "convulsion", "scrofula" and "muscular twitching and cramp " in traditional Chinese medicine (Zhang, Ma, & Li, 2020), which is related to a variety of factors, such as congenital deficiency, feeling exogenous pathogens, emotional disorder, diet injury, disease influence, learning tension, fatigue and fatigue. The disease is located in the liver and also involves the other four organs. The key pathogenesis is wind phlegm cementation, liver hyperactivity and wind movement, which can be roughly divided into five syndrome types: external wind induced, liver hyperactivity and wind movement, phlegm fire disturbing the mind, spleen deficiency and liver hyperactivity, yin deficiency and wind movement (Zhao & Li, 2021). The mechanism lies in the dysfunction of the five zang organs, mainly in the liver, especially in the spleen deficiency and liver hyperactivity. According to the criteria of syndrome differentiation and treatment - Pediatrics - slow shock, "the water liver wood is weathered, the wood blocks the spleen and soil, and the stomach is the viscera of

the spleen, so there is wind in the stomach, and the stomach is gradually growing. Its symptoms include slightly shrugging shoulders, drooping hands, and shaking abdomen...". Li Yaping believed that the core disease position of tic disorder lies in the "fascia", which should be analyzed from the pathogenesis axis of "liver qi blood fascia" based on the basic theory of "liver dominates fascia" and "tendon is rigid". As one of the five zang organs, the liver participates in forming the basic functional system. The essence, Qi, blood and body fluid are supplied to the growing collection. The tendons are dominated by the liver. As one of the five bodies, they participate in the basic structure of the human body. They are also the channels to communicate with the Zang Fu organs, limbs, inside and outside the orifices and channels, as well as the rise and fall of the Qi mechanism. The essence of energy is to disperse the essence, Qi, blood and body fluid, and disperse Yang Qi to resist external pathogens. The distribution of Qi, blood and body fluid is normal. If the tendons are nurtured, they are flexible and can coordinate the movement function of all limbs and bones, making the muscles contract freely; Tendons are stiff and brittle when they are out of nourishment, resulting in spasms, convulsions or even relaxation of the muscles of the limbs. Tendons are dominated by the liver, so the pathogenesis of convulsions lies in the liver (Li & Ma, 2021). Wang Sumei also discussed that the pathogenesis of tic disorder mostly lies in the liver and spleen, and believed that the treatment of tic disorder should be based on the liver and spleen. Due to the physiological characteristics of "liver often surplus" and "spleen often insufficient", the hyperactivity of liver and wind is due to the lack of catharsis, which leads to the stagnation of Qi in the body or the accumulation of heat and wind. The number of wind movements disturb the orifices and cause various tic symptoms in the head and face. The spleen is the postnatal and biochemical source. The deficiency of spleen qi and blood biochemical source leads to the deficiency of liver blood, resulting in the loss of nourishment of muscles and veins, and frequent head and face twitches due to internal movement of wind deficiency; Deficiency of liver blood also leads to hyperactivity of liver Yang, frequent tic symptoms and irritability, and stagnation of liver qi, which is usually faster than exhalation, and associated with such diseases as voice clearing and Tourette (Zheng & Wang, 2017).

In addition, Zeng Yixuan believed that the treatment of Tic disorders should follow the principle of unity of form and spirit. Lingshu · Tiannian states that "the blood and Qi have been harmonious, the glory and defense have been connected, the five internal organs have been formed, the spirit and spirit have been completed, and you can become a human being." it can be seen that both form and spirit are indispensable components of the human body and are inseparable in physiology and pathology, and the unity of opposites between form and spirit constitutes the whole of "the unity of form and spirit". In addition, the onset of tic symptoms is also closely related to children's psychological activities such as tension, anxiety and anxiety. Therefore, the analysis of the pathogenesis should not be limited to the body, but also pay equal attention to the changes in the mind.

The liver governs catharsis and hides the soul. The will is anger and the liquid is tears. The change of mind is closely related to the smooth regulation of liver qi (Zeng, Zhang, Zhou, Ma, Yan, & Cui, 2021).

"Zhijue of pediatric medicine syndrome: the wind is very strong in the liver" points out: "all diseases, new or long, lead to liver wind. The wind moves and stops at the head. The head belongs to the liver, and the wind enters the head. Up, down, left and right are like the wind. It is neither light nor heavy, and the child cannot let it go, so the eyes are connected." Tic disorder is always due to the internal movement of liver wind, which is often associated with spleen deficiency. Liver hyperactivity and spleen deficiency are also common clinical syndromes.

5. Treatment

For the treatment of tic disorder in children, the tic symptoms, comorbidities and diseases, children's psychology, society, education, growth history and family environment should be comprehensively evaluated. On this basis, the treatment plan should be established and the efficacy and adverse reactions should be regularly evaluated. Tic disorder is affected by mental and psychological factors, and its onset and prognosis are closely related to emotion and pressure. In addition to traditional drug treatment, psychological support and health education are also important links in the treatment of tic disorder. In recent years, more and more researchers and clinical workers pay attention to it.

5.1. Behavioral Therapy

Behavioral therapy has evolved over four decades and is now recommended by the American Academy of Neurology and the European Tourette's Clinical Guidelines, among others, as a first-line intervention for children with mild to moderate tic disorders. Dai Yining (Dai, Wang, Zhang, Li, Ma, & Wang, 2024) and others have conducted a series of studies and summarized a series of non-pharmacological therapies for tic disorders starting from behavioral interventions, including habit reversal training/comprehensive behavioral intervention method, exposure and response prevention, and cognitive-behavioral therapy.

Habit reversal training has been increasingly recognized as a core treatment modality for Tourette's syndrome, while mindfulness therapy can also improve psychological regulation and reduce stress and anxiety levels. Yanlin Li (Li et al., 2022) et al.'s study explored the efficacy of Habit Reversal Training combined with mindfulness therapy and the mechanism of mindfulness therapy for Tourette's syndrome. The study showed that habit reversal training combined with mindfulness therapy enhanced the reduction of tic severity and the development of stronger self-awareness and lower anxiety levels, while mindfulness training improved attentional performance and significantly improved symptoms of Attention Deficit Hyperactivity Disorder, which suggests that mindfulness therapy may also have a beneficial effect on the symptoms of Tourette's Disorder, which is also a neurodevelopmental disorder.

Camilla Birgitte Sorensen et al. (Soerensen, Lange, Jensen, Grejsen, Aaslet, Skov, & Debes, 2023) conducted a one-year long-term study of 116 cases of Tourette's syndrome using exposure and response prevention as the primary treatment and research method, and showed that the severity of Tourette's syndrome was significantly reduced during the period of treatment with this therapy, and the effects of the therapy were sustained during the follow-up period, with both short-term and long-term efficacy. The study also found that patients with Tourette's syndrome who completed the entire course of treatment showed more improvement than those who dropped out due to lack of motivation.

Songting Shou et al. (Shou, Li, Fan, Zhang, Yan, Lv, & Wang, 2022) conducted a meta-analysis and review of 247 papers related to cognitive behavioral therapy for tic disorders, which showed that cognitive behavioral therapy is currently recognized in the guidelines for tic disorders in the United States, Canada, and Europe and is considered to be the first choice of treatment for tic disorders, and that previous studies have shown no significant differences in efficacy between patients of different ages, regions, and levels of severity. Previous studies have shown that cognitive-behavioral therapy has no significant differences in efficacy across age, region, and severity, and that cognitive-behavioral therapy is a more appropriate first choice for the treatment of Tourette's syndrome than pharmacotherapy. In terms of therapeutic effects, cognitive behavioral therapy can significantly reduce overall tic disorder scores and motor tic scores, but the reduction of vocal tic scores is not significant.

Wu Xia et al. (Wu, Zhang, & Zhu, 2021) conducted a clinical study on the treatment of pediatric Tourette's syndrome with psychobehavioral therapy, the control group was given Tabrizol, and the treatment group was given psychobehavioral therapy based on the treatment of Tabrizol, such as reciprocal inhibition, systematic desensitization, shock therapy, and prophylaxis, etc. After the treatment, the total effective rate of the observation group was 90.0%, which was significantly higher than the effective rate of the control group, which was 72.5%.

5.2. Drug Therapy

Drug therapy is the traditional therapy for the treatment of tic disorders, and drugs for the treatment of tic disorders can be broadly divided into the following categories: typical antipsychotic drug haloperidol, atypical antipsychotic drugs such as aripiprazole, risperidone, quetiapine, olanzapine, etc., α2-adrenergic agonist colistin transdermal patch, and according to the results of the assessment of the symptoms of tic symptoms and co-diseases, the consideration of the combination of sertraline, fluvoxamine, tomoxetine, etc. (Wang, Shen, & Shen, 2022).

Thiopental is effective in inhibiting hyperactive dopaminergic nerve function and antagonizing striatal dopaminergic neuromotor deficits when used as an antipsychotic agent in the treatment of children with tic disorders (Yang, 2018). Studies have demonstrated that both risperidone, as a well-studied and effective atypical antipsychotic for the treatment of tic disorders, and Tebryl are used as first-

line agents in the clinical treatment of tic disorders (Roessner et al., 2012).

Inosine tablets are commonly used in transient tic disorders, which can nourish and protect the nervous system, and can play a similar role as dopamine D2 receptor antagonism to inhibit repetitive stereotyped movements. However, due to the limited mechanism of action of the single drug, clinical studies have shown that inosine tablets combined with topiramate in the treatment of tic disorders in children can accelerate the disappearance of clinical symptoms, reduce attention deficit disorder and have fewer adverse reactions (Lv, 2022).

5.3. Traditional Chinese Medicine Treatment

5.3.1. Emotional Therapy

Chinese medicine's cognition of the etiology and pathogenesis of tic disorders centers on the liver, and "Suwen - Linglan Mysteries": "The liver is the officer of the general, and plans and thinks out of it." Zhang Zhicong explains it as "Qi is anxious and angry, so it is the officer of the general. The main spring gas, latent hair has not yet sprouted, so planning and thinking out." Visible liver for the hub of emotions, thoughts and catharsis. And because of pediatric physiology, pathology characteristics of the particularity of its "joy, anger, sadness and fear, more than adults more specialized and sure." Emotional therapy is more able to reflect its clinical value.

Hu Yuying (Hu, 2010) conducted a clinical trial and research by combining affective-philosophic therapy with diagnosis and treatment, and adopted the treatment methods of spiritual regimen, transferring the essence and changing the qi, and affective conditioning, and the results showed that the combination of affective-philosophic therapy can effectively control the symptoms of tic disorder, with remarkable therapeutic effect and good safety. Wang Xiaoyan (Wang, Luuo, Kong, & Zhang, 2024) also summarized and analyzed the treatment of Tourette's syndrome with the emotional therapy, pointing out that spiritual regimen, enlightenment and comforting method, transferring emotions to the nature, venting and channeling method, suppressing emotions to follow the reasoning method, emotional and spiritual method, complying with emotions to follow the desire method, and practicing to cure the shock method and other emotional therapies can be used flexibly according to the individual, step by step, and the physical and mental treatment can improve the symptoms of Tourette's syndrome effectively. Spiritual regimen method refers to the child in the parents with the assistance of the spitting method of meditation, in order to make the mood calm and quiet, the spirit of the internal guard; enlightenment method refers to the doctor patiently, detailed inquiries about the condition, so that the parents and the child to put aside concerns, speak freely, so as to exclude the child's nervousness, anxiety, and other negative emotions, to help the child form a correct understanding of the condition, regulating the internal organs and qi, and promote the operation of the qi and blood, in order to achieve the purpose of curing the disease; empathy and ease of nature method refers to the empathy and ease of nature method. The

method of empathy refers to maximizing the cooperation of parents and teachers to fully understand and correctly recognize Tourette's syndrome, enhance understanding, tolerance and guidance for children with Tourette's syndrome, and do not pay too much attention to the symptoms of the children with Tourette's syndrome or blame them, so as to reduce the children's over-concern with their own conditions, thus promoting the improvement of the syndrome. The above three methods can be generally applied to children with tic disorders to help them release their symptoms.

5.3.2. Traditional Medicines and Acupuncture Treatment

Children with Tourette's syndrome are mainly characterized by liver and spleen disorders, and various medical doctors have different perspectives on the understanding of the pathogenesis of Tourette's syndrome, for example, they believe that the pathogenesis of Tourette's syndrome belongs to liver and spleen disharmony, and the pathogenesis of Tourette's syndrome is the underlying deficiency and the underlying realism, and the treatment should be based on the core of the liver, and the treatment should be based on the theory of wind, and Hook Teng Yigong San can help the earth to inhibit the wood and dispel the wind and antispasmodic (Chen & Ai, 2010). The idea of strengthening the spleen, transporting the spleen and regulating the liver is implemented, and the liver and spleen should be treated together to harmonize the qi mechanism (Liu, 2021); or it is believed that children with tic disorders are commonly characterized by spleen deficiency, and that phlegm and dampness generated by spleen deficiency can easily turn into heat from yang, and phlegm and blood stasis are derived from the same source, resulting in loss of nourishment of the meridians and collaterals and resulting in tics, so that the treatment of tic disorders should be based on the Yin Qiao San plus subtractions in the initial stage to promote the lungs and clear the liver, and to suppress the wind to stop the movement of tics, and during the period of seizure, the self-designed formula of Calamus Yu Jin Tang should be used to clear the mind and calm the liver, and to suppress the wind to stop spasms. In the chronic remission stage, the self-formulated formula of Transporting Spleen and Shredding Liver was used to transport the spleen and eliminate stagnation, dispel blood stasis and resolve phlegm (Feng et al., 2023). Others think that tic disorders are caused by liver depression and wind-phlegm obstruction, disturbing the mind as the symptom, because the spleen loses transportation and produces phlegm-dampness due to wood-exuberance multiplying the earth, and wind-phlegm combining with evil spirits or liver depression and fire disturbing the mind, so they use the self-proposed formula of NINGXIN STOP MOVEMENT TONG to treat both the symptoms and the root cause (Zhang, Wang, Hao, Ma, & Peng, 2023); some doctors think that the first key lies in restraining the fire of the liver, dredging and opening up the channels of the liver, calming the liver and quenching the wind, and the liver is the key to take into consideration the adjustment of yin and yang, and the wind and fire are treated together as the basic rule of treatment. The formula clears the liver and stops spasm, calms the liver and extinguishes wind,

regulates yin and yang, and takes into account blood circulation, wind dispersal, tranquilizing the heart and tranquillizing the mind, and the premier disease mechanism (Wang, Wang, Wei, Kong, & Wang, 2023); or that the liver and wind are the core of the disease, and that the liver and wind are the core of the disease, and that the liver and the lungs and the spleen are the core of the disease, and that the liver and the lungs and the spleen are the core of the disease, and that the liver and the lungs and the spleen are the core of the disease, and that the liver and the lungs and the lungs and the spleen are the core of the disease, and the lungs and the lungs and the lungs and the spleen are the core of the disease, The treatment should be based on dredging the liver and regulating the qi (Zhang & Cui, 2022). The treatment should be centered on the liver, and the main purpose is to regulate the emotions and calm the internal wind.

Xiang Sheng Jin uses the Yale Gross Tourette Syndrome Severity Scale score as a means of evaluating the therapeutic effect of treatment through clinical experiments to compare the therapeutic effect of local acupuncture and thiabendazole in the treatment of children with tic disorders, the observation group was given a local acupuncture therapy, partially with the whole body with acupoints, respectively, with the Silk Bamboo empty through the fish waist, the four white penetration of the lower ophthalmoscope, the Save Bamboo and the sun alternately needling, the face of those who are tics, plus the ground position through the cheeks car. For facial twitching, add dicang through cheek car. The control group was given oral thiabetic tablets, and the YGTSS scores of the two groups were compared at the end of the treatment and the long-term therapeutic effects were observed. The overall effect of the treatment group is better than that of the control group or the efficacy is comparable, especially for the transient tics, the efficacy is remarkable, better than other types of tics and the efficacy of drug treatment for all types of tics (Xiang, Cai, & Zhang, 2010). In clinical application, electroacupuncture therapy (Song, 2022), snap-needle therapy (Xie, Li, Yang, & Qu, 2023), and auricular acupuncture point therapy (Shen & Long, 2022) can also effectively improve the clinical symptoms of pediatric tic disorders.

6. Prognosis

According to a study by the team of Guo Zhengyi (Guo, Yang, Lei, Zeng, Guo, & Sun, 2023), the overall prognosis of Tourette's syndrome is good, and if children receive timely and appropriate treatment, their tic symptoms will improve significantly by adolescence or adulthood, but some children still have recurrent, prolonged, or even lifelong problems. A meta-analysis of existing studies on the prognostic factors affecting Chinese children with Tourette's syndrome concluded that children with a family history of mental and neurological disorders, co-morbidities, and severity of illness had a several times higher risk of poor prognosis, and that recurrent respiratory infections were also strongly associated with Tourette's syndrome prognosis. The presence of psychosocial stress has also been shown to be an important factor in the exacerbation of tic symptoms in children (Cohen,

Leckman, & Bloch, 2013), which means that higher levels of stress and anxiety in the family and social environment increase the risk of exacerbation of tic disorders and poorer prognosis.

7. Discussion

Tourette's syndrome, as a kind of mental developmental disorder that starts in childhood and adolescence and whose pathogenesis is not yet completely clear, has shown a significant increase in incidence in recent years due to the combination of the accelerated pace of life in society, the popularization of electronic products brought about by technological progress, and the increase in the pressure of competition in education. Genetic factors play an important role in the development of Tourette's syndrome, and at the same time, psychosocial factors are also part of the causes. Especially under the peer effect, the increasing pressure and competition will inevitably amplify the anxiety and tension of the children, leading to the frequent occurrence of tic symptoms, as well as the prolonged or even aggravated symptoms. Among the children with Tourette's syndrome with whom the authors have come into contact in their clinical work, the frequency and severity of tic symptoms fluctuate with the increase in academic tasks and during the critical period of the school year, during which the children usually show obvious anxiety and a certain degree of distress. In the more severe cases, the child is unable to fulfill the teaching tasks and is required to perform at a much lower standard than children without tic disorders, or chooses to leave school because he or she is unable to complete the school year properly.

In addition to educational pressures, family factors are also important influences on the onset and regression of tic disorders. Among the cases of Tourette's syndrome contacted by the authors, a considerable number of children with Tourette's syndrome had parents who were overly strict, rude in their education, or who viewed or scolded their children in an inappropriate way due to a lack of understanding of Tourette's syndrome, such as instructing their children to stop their tics with simple verbal commands, assuming that their children were "intentionally" acting out their faces and playing pranks, or even scolding their children to make them stop acting out. They may even punish the child by scolding him or her so that he or she will stop behaving "abnormally". All of these behaviors do not help to improve the child's symptoms, but rather exacerbate the child's tension, anxiety and pain. When the child is exposed to such an environment for a long period of time, the psychological pressure is inevitably maintained at a high level, and it is usually difficult to improve the tic symptoms, which are often accompanied by stereotypical behaviors, avoidant tendencies, or obvious anxiety.

In some cases, parents of children with tic disorders had a preliminary understanding of the disorder after the consultation, and there was a certain change in the educational style and expectations of the children, and the children in such cases tended to improve more quickly, which also inspired clinical workers to carry out the clinical treatment of children with tic disorders should be taken into

account in the popularization of science and publicity of the disorder, and to help parents of children with tic disorders to establish the relevant awareness and concepts of early detection and early intervention to alleviate the suffering of children with tic disorders, and to provide a good opportunity to help the children with tic disorders and their families. This also inspires clinical workers to help the parents of children with Tourette's syndrome to establish relevant awareness and concepts, to detect and intervene early, so as to alleviate the pain of children and reduce the obstacles to the cure.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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