

A Case Report on Treating Progressive Supranuclear Palsy with a Combination of Chinese and Western Medicine

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Abstract: A case of progressive supranuclear palsy in a 66-year-old woman is presented. The patient complained of “progressive stiffness of both lower limbs for five years, accompanied by choking and coughing for more than 1 year,” and was diagnosed with paralysis in traditional Chinese medicine (TCM), which was characterized by a deficiency of liver and kidney, and phlegm and blood stasis blocking the collaterals. Western medicine diagnosed it as progressive supranuclear palsy. The patient was diagnosed with “Parkinson’s disease” several times in the past and was given “polybasic hydrazide” and “amantadine hydrochloride tablets,” etc. The patient did not have significant symptomatic relief, so she sought further treatment with a combination of traditional Chinese and Western medicine. Based on the concept of deficiency and excess, this disease is categorized as a paralytic disease in Chinese medicine, and the onset of the disease is closely related to the deficiency of the body after a long period of illness, with wind, phlegm, blood stasis, and deficiency as the main pathogenetic mechanism. The treatment is based on the combination of disease and evidence, with traditional Chinese medicine and acupuncture as the main treatments, supplemented by intermediate-frequency pulsed electrical stimulation, transcranial repetitive magnetic stimulation, medicated canisters, wax therapy, traditional Chinese medicine guasha, and acupoint injections. Western medicine is based on symptomatic treatment, and the patient’s symptoms were relieved significantly after the combination of Chinese and Western medicine.

Keywords: Progressive supranuclear palsy; Paralytic disease; Diagnosis and treatment; Deficiency and excess; Combination of Chinese and Western medicine

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1. Introduction

Progressive supranuclear palsy (PSP) is a neurodegenerative disease pathologically characterized by four repetitive tau deposits in a variety of cell types and anatomical regions^[1] as a chronic traumatic encephalopathy caused by abnormal accumulation of tau protein. Clinically, it is characterized by pseudobulbar palsy, vertical supranuclear ophthalmoplegia, extrapyramidal muscle tonus, gait ataxia, and dementia, with vertical

supranuclear ophthalmoplegia being the most helpful in diagnosis ^[2]. The incidence of this disease is low, with an incidence rate of 5–7 in 100,000 ^[3], early symptoms are atypical, and the gold standard for diagnosis relies on pathologic diagnosis, lacking early indicators for diagnosing PSP ^[4]. This disease is a neurodegenerative disease, and there is no specific drug for its treatment ^[5]. The treatment is based on symptom-targeted therapy, and neurotransmitter replacement therapy is the basic option, such as levodopa, γ -aminobutyric acid receptor agonists, and acetylcholinesterase inhibitors ^[6], but symptom relief is not obvious. There is no record of this disease in Chinese medicine literature, and according to its clinical manifestations, it can be categorized as “dementia,” “paralysis,” “impotence,” “tremor,” etc., which makes clinical treatment difficult. The patient reported in this paper is an elderly woman, with progressive stiffness of the limbs, slow speech and reaction, blurred vision, and inflexible eye movements. She was diagnosed with “Parkinson’s disease” several times in the past, and was given “polybasic hydrazide” and “amantadine hydrochloride tablets.” In this case, by clarifying the deficiency and excess, seizing the core disease mechanism of wind, phlegm, blood stasis, and deficiency, and combining disease and evidence with traditional Chinese medicine and acupuncture treatment, supplemented by physiotherapy of traditional Chinese medicine, and combined with the symptomatic treatment of Western medicine, the patient’s symptoms improved significantly, reflecting the unique advantages of the combination of traditional Chinese and Western medicine in the treatment of progressive supranuclear palsy.

2. Case presentation

The patient is a 66-year-old married female. The initial consultation was on April 7, 2023. She complained of progressive stiffness in both lower limbs for five years, accompanied by choking on drinking water for more than 1 year. Patient history includes no obvious cause of bilateral lower limb stiffness five years ago, slow movement, awkward posture, falling down many times when walking, no speech dysfunction, no choking on drinking water, and no numbness of limbs; the patient consulted a local tertiary care hospital, it was considered “Parkinson’s disease” and was given polybasic hydrazide to improve the symptoms, but the patient realized that the stiffness of both lower limbs did not improve significantly, accompanied by localization disorder, and he fell down many times. In the past year, the patient’s stiffness in both lower limbs has worsened, and there is also stiffness in both upper limbs, occasional shaking of the left hand, accompanied by slow speech, slow reaction, and stiff facial expression, he has visited foreign hospitals several times and has been considered to have Parkinson’s disease. The patient was given a dosage adjustment of polybasic hydrazide to improve the symptoms, but the symptom relief was not obvious; in the past three months, the patient had blurred vision and eye movement disorder; in the local tertiary hospital, the patient was examined by cranial magnetic resonance imaging (MRI) in January, which showed the following: bilateral paraventricular and sub-frontal subcortical white matter area of punctate demyelination; the right side of the top of the cranial plate under the abnormal signals, arachnoid cysts, and arachnoid cysts. Parkinson’s disease was considered, and additional amantadine hydrochloride tablets were given to improve the symptoms, but the patient’s symptoms were not significantly relieved. The patient had clear consciousness, poor sleep and appetite, stiff limbs and facial expression, slow speech and reaction, occasionally trembling left hand, unclear vision, inflexible eye movement, frequent urination, and dry stool, which was relieved once in 3–5 days, and was unable to walk alone. The tongue was dark red, with a yellow coating, sublingual veins were migrating and curved, and the pulse was sunken and thin. The patient’s family history was not specified.

3. Auxiliary examination

In January 2023, a local hospital conducted a cranial magnetic resonance examination, which showed: bilateral lateral paraventricular and frontal subcortical white matter areas of punctate demyelination; the right side of the top of the cranial plate under the abnormal signals, arachnoid cysts were considered. In April 2023, the local tertiary care hospital performed urine routine tests yielding occult blood (1+) and leukocytes (1+), and liver function tests showing 19.4 $\mu\text{mol/L}$ total bilirubin and 15.2 $\mu\text{mol/L}$ indirect bilirubin. There were no obvious abnormalities in blood routine, fecal routine, blood coagulation, blood lipids, renal function, electrolytes, myocardial injury test, and brain natriuretic peptide test.

4. Diagnostic basis in Chinese and Western medicine

Chinese medicine diagnosis was paralysis due to deficiency of the liver and kidney, with phlegm and blood stasis obstructing collaterals. Progressive supranuclear palsy has no exact name in Chinese medicine, and the patient's progressive stiffness of the limbs is the main symptom, which can be attributed to the category of paralysis in Chinese medicine. The "Evidence Treatment Compendium Paralysis" mentioned, "invaded by the essence of internal deficiency and the three qi, it cannot be dissipated at any time, flows into the meridians, and becomes paralyzed for a long time." The patient has been sick for a long time, the liver and kidneys are deficient, the qi and blood do not flow smoothly leading to blood stasis, and the fluid condensation becomes phlegm, forming a mutual obstruction of phlegm and blood stasis. Deficiency of kidney and yin, deficiency of yin with wind, wind and phlegm obstructing the orifices, cognitive dysfunction, phlegm and stagnant phlegm paralyzing the meridians and collaterals, eye movement issues and stiffness of expression, tongue paralysis, speech retardation, and choking on drinking water and coughing. Liver and kidney insufficiency, loss of nourishment in the tendons and bones, phlegm and stasis paralysis, and blockage of meridians and channels can manifest as slow movement and stiffness of the limbs. Combined with the examination of the tongue and pulse, these symptoms are recognized as a deficiency of the liver and kidneys, and obstruction of the channels by phlegm and blood stasis.

Western medicine diagnosis was progressive supranuclear palsy. The diagnostic basis was the manifestation of symptoms. The patient was an elderly woman, complaining of progressive stiffness in both lower limbs for five years, accompanied by choking on water for more than one year. The patient was diagnosed with "Parkinson's disease" in several tertiary hospitals based on the symptoms of bradykinesia and balance disorders. The progressive development of the disease gradually leads to the emergence of (1) special facial expressions of sadness. It has been found that the excessive activity of the frontalis muscle and the elongation of the neck in patients with PSP lead to the emergence of special facial expressions. This is different from the dull expression of Parkinson's patients^[7]; (2) upward and downward gaze paralysis of both eyes; it first appears as the inability to see downward and the toes of the feet and walking difficulties, and then the inability to see upward and complete vertical gaze paralysis gradually appear, the eyeballs are fixed in the center position. Lower vision paralysis is often accompanied by head hyperextension dystonia posture, called oculocervical dystonia; (3) axial dystonia: early gait instability, knee stiffness, turn around with both lower limbs crossed, backward tilt and fall, a study called this special behavior "rocket sign," manifested as standing up from a chair accompanied by a backward tilt posture^[8]. The patient's cervical and trunk muscles were straightened, pseudobulbar palsy was common, and cognitive-behavioral deficits appeared late, manifesting cognitive decompensation, reduced affective activity, dementia, and poor spatial orientation tests. The patient's clinical symptoms were consistent with the disease and met the Chinese diagnostic criteria for progressive supranuclear palsy^[9].

5. Interventions

The traditional Chinese medicine treatment focused on tonifying the liver and kidney, resolving phlegm, and eliminating blood stasis. The patient was given Tianma Gouteng Decoction combined with Liuwei Dihuang Decoction. The prescription included the following ingredients: 15g of Tianma, 20g of Gouteng, 6g of Gentian, 20g of Shijueming, 30g of Cassia, 12g of Chinese foxglove (*Rehmannia glutinosa*), its rhizome used in TCM, 12g of Xia Gu Cao, 12g of Chicken Blood Vine, 10g of Flos Chrysanthemi, 15g of Sangjisheng, 20g of calcined magnetite (TCM), 12g of Yam, 12g of *Cornus officinalis* (botany), 12g of Mu Dan Pi, and 6g of licorice. This was administered alongside hospital-prepared oral medications, including the epilepsy capsule (stiff silkworm, white peony, papaya, Dilong, *Angelica sinensis*, *Pueraria lobata*, white pepper, Houpu, licorice) and the Congbrain Puzzle Capsule (Yuanzhi, calamus, ginseng, Poria, cinnamon, deer antler gelatin, cinnamon twig, *Angelica sinensis*, dry ginger, white peony, Chuanxiong, licorice). Acupuncture was primarily applied to the Yangming meridians of bilateral hand and foot. According to Ji *et al.* ^[10], when the stomach meridian is damaged or blocked, it can lead to dysfunction in the medullary sea, resulting in sensory and motor impairment in the limbs. The prescription included points: Quchi, Neiguan, Hegu, Taiyuan, Shakuzawa, Ashigaru, Sanyinjiao, Xuehai, Liangqiu, Yanglingquan, Fenglong, Taixi, Fengshi, Shakuzawa, Xiaowu, Guanyuan, Zhongkou, and Qihai. The needles were retained for 30 minutes, six times a week, combined with electroacupuncture and acupoint injection to enhance meridian stimulation. Additional treatments included medium-frequency pulsed electrical stimulation (for both lower limbs), transcranial repetitive magnetic stimulation (targeting the motor area), medication cupping (on Neiguan, Quchi, Handsanli, Xuehai, Yanglingquan, Zusanli, Fenglong, etc.), wax therapy (for all limbs), and traditional Chinese medicine rubbing treatment (using drugs that activate blood circulation and eliminate blood stasis).

Western medical treatment included intravenous cytarabine sodium injection to nourish brain cells and improve metabolism; oral polybasic hydrazide, pramipexole hydrochloride, and amantadine hydrochloride tablets were taken to improve the mental state and regulate the levels of neurotransmitters and neurotrophic factors. Oral trazodone hydrochloride tablets were used to improve mood, oral eszopiclone tablets to improve sleep and other symptomatic treatments.

6. Therapeutic effects

After treatment, the patient's limb stiffness was significantly relieved, and he could push the wheelchair to walk slowly and sit on his own; his facial stiffness was relieved, his upward and downward eye movement was impaired, and his left and right activities were inflexible; his sleep was improved and he could take food, his choking on drinking water was relieved, the frequency of urination was reduced, and his stools were normal.

7. Discussion and conclusion

The diagnosis and treatment of this disease align with the approach of Professor Xinzhi Wang, a nationally renowned traditional Chinese medicine practitioner, who addresses it from the perspective of deficiency and excess. The basic pathogenesis of this disease is lower yuan deficiency, wind phlegm obstruction, and collateral stasis. The pathological factors include wind, phlegm, deficiency, and stasis. The nature of the disease is the underlying deficiency and excess ^[11]. Therefore, based on the theory of deficiency and excess, the treatment of progressive supranuclear palsy from the theory of deficiency of liver and kidney, phlegm and blood stasis obstruction of collaterals is as follows.

7.1. Kidney and liver deficiency: Tonifying the kidney and liver, cultivating energy, and consolidating the root

The kidney is considered the main bone and marrow, while the brain is regarded as the sea of marrow. Both are fundamental to thinking and motor function. If the kidneys are deficient, the bones are not nourished, the sea of marrow is not filled, water does not contain wood, and the false wind moves inside. As a result, the brain loses its consciousness and control over movement. Symptoms resembling progressive supranuclear palsy, such as slow reaction, slow movement, unsteadiness, tremor, and limb tightness, may appear. As stated in *The Spiritual Pivot*, “If the sea of the medulla is insufficient, then the brain turns to tinnitus, the tibia is sore and dizzy, the eyes are unable to see, and there is no slackness in lying down.” Kidney division involves two yin; in this patient, frequent urination indicates kidney yin deficiency, false fire, and bladder qi failure. Stool dryness is a result of false fire depleting body fluid, leading to intestinal loss of moisture, which is also closely related to kidney deficiency. In summary, progressive supranuclear palsy aligns with the lesions caused by kidney deficiency and emptiness of the medulla. Kidney deficiency and emptiness of the medulla constitute the basic pathogenesis. Treatment should focus on replenishing the deficiency, particularly by nourishing the kidneys and essence, cultivating vital energy, and consolidating the root. The prescription should include Liuwei Dihuang Decoction with additions to replenish the kidneys and benefit the medulla, along with acupuncture at Guanyuan and Qihai to cultivate vital energy and consolidate the root. In the formula, mulberry parasol dispels wind-dampness, nourishes the liver and kidney, and strengthens the tendons and bones. The *Materia Medica* states: “Sang Sheng, the most important agent for tonifying the kidney and blood. ... If the kidney is replenished, the muscles and bones will be powerful and will not be impotent and sore.” Calcined magnesite calms the mind, soothes the liver, submerges the yang, and brightens the ears and eyes. According to another book, it “nourishes the kidneys, strengthens the bones and qi, benefits the essence in addition to reducing annoyance, and aids in joint movement.” Studies have found that early dysfunction accelerates disease progression and increases the risk of death, and there is a lack of effective drugs for PSP with dysfunction ^[12]. This treatment addresses the key disease mechanism of kidney deficiency, effectively solving clinical difficulties.

7.2. Liver deficiency and wind movement: Calming the liver and quenching wind, softening the liver and easing urgency

The liver embodies both yin and yang and is the primary regulator of qi. When qi is well-organized, qi and blood are harmonized, preventing all diseases. *Danxi Xinfu* ^[13] stated: “When qi and blood are harmonized, no diseases arise. A lack of harmony leads to diseases.” Progressive supranuclear palsy is a chronic disease that seriously affects patients’ daily lives. Patients are easily disturbed by the disease and internal stagnation, resulting in disharmony of qi and blood, depression, and anxiety. This leads to dysfunction of the body and various additional diseases, complicating the original condition. Prolonged liver depression, coupled with kidney yin deficiency, results in an inability to contain wood, leading to liver fire and wind phenomena. This manifests as blurred vision, tremors, and other symptoms. Therefore, treatment should focus on calming the liver, quenching the wind, softening the liver, and easing urgency. The prescribed formula is Tianma Gouteng Decoction, with modifications, and the oral hospital preparation epilepsy capsule. Tianma Gouteng is used to calm the liver and quench the wind; Shi Jueming calms the liver and submerges yang, along with Gentian Grass, Cassia Seed, Xia Gu Cao, and Chrysanthemum to clear the liver, eliminate fire, and brighten the eyes. White peony and papaya soften the liver and alleviate urgency, while *Angelica sinensis* and chickweed tonify and activate blood to relieve the tendons. Stiff silkworms and Dilong quench wind and spasm. These insect medicines, being of flesh and blood, act similarly by moving and accessing the meridians.

7.3. Phlegm and blood stasis obstructing the collaterals: Resolving phlegm to open the orifices, dispelling blood stasis, and clearing the collaterals

Progressive supranuclear palsy is based on underlying deficiency. Deficiency of the liver and kidneys leads to a deficiency of positive qi in the organism, which makes it easy for various evils to arise, resulting in phlegm and blood stasis. As stated in *Jingyue Quanshu* ^[14], “Phlegm is considered a form of water, originating in the kidneys and regulated by the spleen. When the kidneys fail to properly manage water, it accumulates and transforms into phlegm. Meanwhile, the spleen, responsible for transforming food into energy, struggles to control water levels, leading to further fluid imbalance and phlegm formation.” This imbalance of fluids, often stemming from deficiencies in the spleen and kidneys, obstructs the flow of qi and blood, causing stagnation and potentially leading to various health issues. To address these imbalances, the focus should be on tonifying the kidneys, strengthening the spleen, and regulating the liver, rather than merely eliminating symptoms. The in-hospital preparation (Congbrain Puzzle Capsule) was used to strengthen the spleen, tonify the kidneys, and eliminate phlegm and blood stasis. In the formula, antler gelatin warms the liver and kidney, benefits the essence and nourishes the blood; ginseng, Poria, and dry ginger warms the yang and strengthens the spleen; gui zhi, angelica, and chuanxiong warms the meridians; yuanzhi and calamus expel phlegm and open the orifices. Combined with the “hand and foot acupuncture with twelve needles” by Leting Wang (Hegu, Neiguan, Quchi, Sanyinjiao, Ashigaru, Yanglingquan), it can harmonize yin and yang, invigorate the meridians and channels, regulate qi and blood, and clear away heat and open the orifices. The “hand and foot acupuncture with twelve needles” can downregulate the excitability of the motor cortex in the brain area, promote the reconstruction of the excitability balance of the bilateral motor cortex, thus promoting the recovery of neurological function and limb function, and then improve the patient’s ability to take care of themselves in their daily life ^[15]. Supplemented with medium-frequency pulsed electrical stimulation (both lower limbs), transcranial repetitive magnetic stimulation (motor area), medication canning (Neiguan, Quchi, Shousanli, Xuehai, Yanglingquan, Zusanli, Fenglong, etc.), wax therapy (limbs), and traditional Chinese medicine guasha (medications that activate blood circulation and eliminate blood stasis) to open and activate the channels and improve the symptoms of the limbs.

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