

Progress in the Treatment of Motor Neurone Disease with Traditional Chinese and Western Medicine

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Abstract: Motor neurone disease (MND) is commonly referred to as amyotrophic lateral sclerosis, which is characterized by progressive muscle weakness and muscle atrophy. At present, Western medicine has limited effective treatment measures for motor neurone disease. A large number of clinical trials have proved that TCM has achieved obvious curative effect in the treatment of MND through dialectical treatment, which can alleviate the clinical symptoms of patients to a certain extent. Therefore, this paper further discusses the progress of TCM and western medicine in the treatment of MND.

1. Introduction to motor neuron disease (MND)

Motor neurone disease (MND) is a series of progressive and chronic neurodegenerative diseases with marked damage to the upper and lower motor nerves. It is manifested as the damage of different combinations of upper and lower motor neurons, characterized by myasthenia, muscular atrophy, lateral sclerosis, medulla oblongata paralysis and vertebral bundle sign. It selectively damages specific anatomical structures and neurons, with insidious onset and progressive aggravation. There are no obvious symptoms in the early stage, but most of them have familial aggregation. Most of the patients are middle-aged, the course of disease is about 2~6 years, the annual incidence is 1.5/100 000 ~ 2.7/100 000, the prevalence is about 2.7/100 000 ~ 7.4/100 000[1]. There are usually fewer women than men, with a ratio of 1.2/1 to 1.5/1. The annual incidence ranges from 1.5 per 100 000 to 2.7 per 100 000, and the prevalence is about 2.7 per 100 000 to 7.4 per 100 000[2].

1.1 Classification

Motor neurone disease (MND) is a group of progressive chronic neurodegenerative diseases of unknown etiology that selectively invade the brain stem motor neurons, spinal cord anterior horn cells, cortical vertebral cells, and vertebral body regions. Divided into amyotrophic lateral sclerosis (ALS), primary lateral sclerosis (PLS), progressive muscular atrophy (PMA), progressive medulla oblongata paralysis (PBP). In this country, motor neurone disease is commonly referred to as amyotrophic lateral sclerosis.

1.2 Pathogenesis

The etiology of MND is not completely clear, about 5% ~ 10% of this disease has a familial tendency, modern studies have proved that this disease is related to peroxide dismutase-1 gene mutation, but the etiology is still not completely clear, in recent years, It is gradually recognized that its pathogenesis may be related to the toxic effect of excitatory amino acids, oxidative damage of free radicals, deficiency or synthesis of neurotrophic factors, environmental factors, prior viral infection, heredity, autoimmune and so on[3]. At present, there is no effective treatment and the prognosis is poor.

2. Study on motor neuropathy in traditional Chinese medicine

2.1 Name of Disease

Motor neurone disease has no corresponding name in the relevant literature of traditional Chinese medicine. This disease takes impotence and weakness of limbs as the main symptom, so many doctors put it in the category of "impotence syndrome" or "impotence disease". Impotence refers to muscle impotence soft, lean, hands and feet, skin numbness of a disease syndrome. The word impotence was first seen in the neijing, "plain question · Angry theory" cloud: "Because of wet, first such as wrapped, wet and hot not bustling, big tendons soft short, small tendons long, soft short for arrest, relaxation long for impotence." According to the above literature, the symptoms of "impotence syndrome" or "impotence disease" are basically consistent with the prominent clinical manifestations of motor neurone disease, such as muscle weakness and muscle atrophy. In addition, different from impotence, motor neurone disease often appears in the early stage of upper limb muscle bundle tremor clinical manifestations, and more similar to "fibrillation syndrome". The symptoms of symmetric myasthenia and spasmodic gait of the lower limbs are common in patients, which can also be classified as "spasmodic syndrome"[4].

In the late stage of motor neurone disease, there were symptoms of nerve paralysis, such as difficulty swallowing, coughing when drinking water, and lack of pronunciation. Recently, some scholars pointed out that it was a crime that miliaria diagnosed. Sui Dynasty "HuangDi Neijing Tai Su · Meridia disease solution" annotated "MOU Milao" said: "Kui, not speak also." In the Song Dynasty, "Shengji Zong Lu · Spanx Milaria" described the pattern of "Spanx Milaria". There is a similar description in the Jin Dynasty's "Huang Di Su Wen Xuan Ming on Fang": "The internal usurpation of Jue, tongue mute, two feet waste, not for use." The definition of the disease in the literature and the description of the crime was very similar to that of motor neurone disease[5].

2.2 Etiology and pathogenesis

In clinical diagnosis and treatment of diseases, it is necessary to pay attention to the holistic concept and treatment based on syndrome differentiation. Through analyzing the nature of the occurrence of diseases, we can explore the changes of evil spirits and Yin and Yang of the disease. The pathogenesis of this disease is the deficiency and damage of viscera, and the wind, phlegm, blood stasis and dampness as the standard. In the recent ten years of literature, modern doctors have recognized the etiology and pathogenesis of motility neuropathy as follows: Chen Shaohong's view of treatment starts from the pathogenesis of the five Zang organs, and believes that the core pathogenesis of this disease is the deficiency of spleen and kidney. Liu Yu believes that the cause of the disease is related to the loss of liver, spleen and kidney. Many factors such as improper rest, anger and leisure, excessive sex can damage the liver, spleen and kidney, and cause liver and kidney loss. Xu Shifen believes that there are many causes of impotence, but positive deficiency is

still the main reason. Zheng Shaozhou summarized the pathogenesis of the disease as "the deficiency of liver, spleen and kidney as the primary, and the blockage of the complex veins as the standard". Professor Gao Li believed that the occurrence and manifestations of the disease were internal and external, with many symptoms mixed with deficiency and solid. He pointed out that the core pathogenesis of the disease was "cerebral pulpotomy, deficiency of the spleen and kidney, and obstruction of the choroid veins", indicating that the disease location was in the brain and pulp, and the manifestations were in the muscles and veins. Wang Baoliang believed that the occurrence of motor neurone disease is fundamentally the deficiency of the five viscera and six organs, and the loss of the muscles and veins in each body. What should not be ignored is the blockage of the meridians and veins caused by dampness, phlegm, blood stasis and wind.

3. TCM treatment

3.1 Traditional Chinese Medicine

Professor Chen Shaohong for the treatment of this disease, pay attention to the vitality of the body itself, stress the resistance, repair ability and other internal factors such as the role of ShenlingBaizhu Sanhe Huqian pill treatment of this disease[6]. Professor Liu Yu thinks that the pathological formation process of "limbs not use in spleen disease" is discussed in "Su Wen · Taiyin Ming Theory": "Spleen disease cannot do its body fluid for the stomach, the limbs cannot enjoy the water valley Qi, Qi day to decline, the pulse is unfavorable, muscles, bones and muscles are not Qi to live, so it is not necessary to Yan." Treatment should be spleen qi, and stomach to help transport. Radix Astragalus, Radix pseudostellariae, atractylodes atractylodes, poria cocos, licorice, Chinese yam, Buddha's hand, etc. If accompanied by chest hospital ruffian stuffy, magnolia officinalis, coix seed, poria cocos, alisma; If with eating less abdominal distension add sand kernel, fructus aurantii, coke three immortals; If the dampness and heat does not melt, it should be combined with the moisture-clearing product when the spleen is replenishing and Qi is replenishing. According to the characteristics of motor neurone disease, self-chuang Qi Tonifying kidney Tongluo Decoction is used to treat the syndrome differentiation of this disease as virtual syndrome, and the drug composition is: Astragalus, codonopsis, angelica tail, salviorrhizae, Eucommia ulmoides, Radix nobilis, cohoma, alisma, centipedes, night Tengtegment of this disease[7]. In the treatment of encephalopathy, Professor Zhai Lei likes to use insect medicine and rattan medicine, most of which are poisonous. Therefore, Professor Zhai Lei likes to use Zhishui pill, which can make tired blood and phlegm turbidities slow and dissipate gradually, and also reduce toxic damage. Professor Zhai Lei applied rattan medicine to pay attention to syndrome differentiation. For example, Unguteng was selected for Yin deficiency and Yang hyperactivity, night cross rattan was selected for blood deficiency and blood exhaustion, Tianxian Rattan was selected for Qi deficiency and blood exhaustion, and Luoshi rattan was selected for phlegm-heat exhaustion[8]. Zheng Shaozhou Treatment techniques use astragalus, codonopsis, medicinal indianmulberry root, epimedium, kidney qi, tuckahoe, atractylodes spleen yiqi, pinellia, bravery south star, white mustard phlegm turbidity reduction, polyphylla, June snow, white grass qingrejiedu, snake, centipede, scorpion, batrycated silkworm, black tip functions of detoxification t2dm, cornus, medlar, dodder, yellow fine to nourish liver and kidney[9]. Gao LiProfessor Gao proposed to treat this disease with the core formula of "filling lean pulp, reinforcing spleen and kidney as well as removing pathogenic factors". At the same time, it is recommended to eat pig bone marrow, beef bone soup to fill lean marrow, tonify kidney and strengthen bones[10]. Processing astragalus membranaceus, codonopsis, stir-fried attektylope tonifying the Qi, invigorating the spleen and dampness, so that the body fluid can be warm and run in the meridians, so that the metabolism is often; With poria, licorice to make the water excretion degree, the main

fluid of the spleen and stomach to their positions, so that salivation and nocturia can be treated. Based on the root cause of motor neurone disease, Fangshen Fengxin Decoction is formulated for salivation and nocturia, which can replenish Yang, nourish qi and nourish Yin, and exert astringent effect simultaneously, warm but not dry, astringent but not stagnation, and play the effect of harmonizing Yin and Yang[11].

3.2 Proprietary Chinese medicine

Professor Wang Baoliang is experienced in Fang Qi Antong granules[12], and the astragalus in Fang is beneficial to Qi and spleen; Velvet deer and purple river chariot as flesh and blood products, tonifying kidney Yang, invigorating blood, strengthening muscles and bones; With Fengfeng Qufeng Sheng wet spasmolysis, dragon through active collaterals. The results of clinical trials show that this drug can improve the symptoms of motor neurone disease patients and prolong the survival of patients. Jiweiling preparation[13] is created by academician Wu Yiling, which contains: antler antler, ginseng, cistanche, etc. Among them, antler antler can enhance immunity, regulate blood pressure, tonalize qi and blood, and strengthen the body. Modern research shows that ginseng has anti-shock, anti-inflammation, anti-allergy and anti-diuretic effects, which can significantly increase cardiac amplitude and heart rate. Cistanche stanches can adjust endocrine and stimulate the release of hormones from adrenal glands. Shenmai Injection[14] is a traditional Chinese medicine preparation, including ginseng, ophiopogon, etc., which can improve the body's immunity and stress response ability, and the drug has little adverse reactions, so it is suitable for long-term use. Fuyuan Shengji Granule[15], prepared by Shanghai Guanghua Hospital of Integrated Traditional Chinese and Western Medicine, is mainly composed of Radix Astragalus, Radix atresia, Fructus officinalis and other traditional Chinese medicines. It has the advantages of multiple approaches and multiple targets, and may play a certain role in delaying the medulla oblongata and limb function in ALS patients.

3.3 Acupuncture

Professor Xu Shifen[16] used stage demonstration to treat impotence according to the pathogenesis. The early lesions were mainly manifested in meridian channels, liver, spleen and kidney qi have not yet failed, and external treatment methods such as acupuncture and acupoint injection were used as the main treatment. The upper limb muscle weakness was combined with Guanyujing, Guanyujing, Quchi, Hegu and Yangxi. The lower limb muscle weakness points were injected with 1ml adenosine cobalt amine in bilateral Zusanli, and Liangqiu, bi bi guan, Jiexi and Zusanli. On the basis of early acupoint selection, Baihui, Dazhui and other acupoints were selected to regulate the Qi and blood of the Du pulse, and Huatuo Jiaji, Dazhui, Pishu, Weishu, Ganshu, Shenshu and other back-shu points were used to regulate the Zang-fu meridians. Select Zhongwan, Xiawan, Qihai, Guanyuan, Tianshu (Shuang) and Daheng (shuang) for abdominal acupuncture to dredge Ren pulse and harmonize Qi and blood; And moxibustion Gubenpeiyuan, Qihai, Zusanli point Gubenpeiyuan. Late for the combination of dysphagia, dyspnea, with the tongue three needle (located in the throat, the first needle is the thumb line press the mandibular push back pressure, fingertip is the point (that is, Lian quan point), for the tongue I needle; The needles of tongue II and tongue III were opened 0.8 inches on the left side of tongue I and 0.8 inches on the right side, respectively. The depth of the needles could reach 1.2 inches to the root of tongue body. For the treatment of patients with impotence of limbs, Professor Gao Zhiying [17] mainly took hand Yangming large intestine Meridian and Foot Yangming stomach meridian. Acupoints were selected as follows: upper limb Shoulder Condyle, Quchi, Hand Sanli and Hegu; In the treatment of motor neurone disease, Professor Gao emphasizes the treatment of spleen and stomach, liver and kidney,

emphasizing the replenishing of qi and blood, strengthening spleen and stomach, regulating liver and kidney, and strengthening muscles and bones. According to syndrome differentiation, Pishu, Weishu, Ganshu, Shenshu, Zhangmen, Zhongwan, Qimen and Jingmen were selected. Han Biying coiling dragon moxibustion is used in the middle treatment of this disease. Coiling dragon moxibustion is suitable for the Du vein, that is, "Yang Jinghai", which has the effect of warming the meridian and replenishing the Yuan Yang. Yang qi is the driving force of the transformation of spleen and stomach. Moxa sticks are the product of pure Yang. Moxibustion can warm the spleen and stomach, solve the stagnation of medium coke, and aconite, asarum isothermal drugs, strong medium coke, Qi and blood, channels and collaterals; The role of scripture. Coiling dragon moxibustion integrates medicinal materials, moxibustion, meridians and acupoints, warms the spleen Yang, promotes the normal transformation function of the spleen and stomach, and then plays the role of reducing swelling and increasing muscle. At this stage, the amount of moxibustion should be large, supplemented by acupuncture and moxibustion to clear heat and moisten. Academician Shi Xuemin[18] attributed the onset of motor neuron to Naoshenshuiji. The acupuncture method of Xingnao Kaiqiao is the basic prescription used by Academician Shi in the treatment of God. In this acupuncture method, Neiguan, Shuigou, Fengchi, Anguu and Tianzhu are taken as the basic points for the treatment of this disease. Among them, acupuncture in Neiguan can open the chest to disperse qi, promote blood circulation, and treat heart-brain related diseases; Gutter is one of the first aid points, acupuncture is more painful, the sense of stimulation is strong, so it has a waking effect; Acupuncture Fengchi can smooth liver Qianyang, dredge meridians, dispel evil and relieve pain.

4. Western medicine treatment

4.1 Drug Therapy

The excitatory transmitter -glutamate in human nervous system is increased in the blood and cerebrospinal fluid of ALS patients. The excitatory amino acid receptor blocker -Liluzole can interfere with the activity and release of glutamate, stabilize the inactive calcium channel, and thus potentially protect nerves. The drug has been shown to improve muscle strength, slow the progression of ALS, and improve survival in patients with PBP, but the survival benefits for other types of patients are not significant. Side effects include muscle spasms, muscle weakness, and increased transaminase or blood pressure, and the drug is expensive.

Dr. Brunhilde Wirth et al., University of Embo, Germany, studied SMA and found that valproic acid could activate SMN2 transcription and restore the motor neuron survival gene of exon 7 splicing mode at a low dose, and significantly improve the protein content of Htra2-Betal.

4.2 Neuronutritional therapy

TSH can not only promote the proliferation and synthesis of thyroid cells, promote the secretion of lactin and oxytocin, but also affect brain function. Relevant studies have found that the use of TSH can restore part of the muscle strength of motor neuron patients and relieve the stiffness of some of the symptoms of limb strain disease, but its long-term efficacy has not reached the ideal level. The effects of this kind of hormone on muscle function are seldom reported in clinical studies, so it can be regarded as a new research direction.

Neurotrophic factor is a class of proteins that can play an important role in the development and apoptosis of neurons, including NGF, BDNF, NT-3 and NT-4. NGF exists in various types of animals and has a good effect on the recovery of nerve function. If necessary, the degree of nerve injury can be assessed by electromyography. Factors that monitor the effectiveness of nutritional

therapy may also be used to monitor nerve damage during treatment.

4.3 Antioxidants

Foreign randomized controlled trials suggest that superoxide dismutase (SOD), superoxide dismutase (SOD) and catalase (catalase) play an important role in the neuroprotective signaling pathway of this cell population. In addition, antioxidants improve the microcirculation of small blood vessels in the brain, thus enhancing the delivery of oxygen and nutrients to brain cells, can protect cells from damage caused by free radicals, protect heart health, and improve their cognitive function. Currently, the effectiveness and safety of antioxidants in the treatment of motor neurone disease is still being investigated.

4.4 Non-drug therapy

4.4.1 Bone marrow stem cell transplantation

Stem cell transplantation is a procedure in which stem cells are transplanted into the nervous system to repair or replace damaged nerve cells and perform normal nerve function. Stem cells can be directly used in the human body without rejection. Transplanted stem cells can promote nerve regeneration, secrete growth factors to regulate inflammation, improve the microenvironment, and then promote the recovery and remodeling of nerve function. In recent years, they have been applied in cerebral infarction, cerebral trauma, cerebral hemorrhage, Parkinson's disease, cerebral atrophy, Alzheimer's disease, motor neurone disease, cerebral palsy, movement disorders and other diseases. Huachao Shen and others treated 11 motor neurone disease patients with stem cell transplantation, and found that some patients improved muscle strength. This indicates that stem cell transplantation can alleviate some neurological symptoms in motor neurone disease patients, with obvious short-term effects without side effects, but the long-term effects need to be further monitored[19].

4.4.2 Hyperbaric oxygen therapy

Wang Ruli et al. treated 12 cases of MND with hyperbaric oxygen (HBO), and all the symptoms and signs were improved except the muscle atrophy was not significantly improved, which confirmed that HBO treatment was feasible[20].

5. Summary

MND is a relatively rare disease in the department of neurology. Its etiology and pathogenesis are still unknown. MND is a difficult disease in the world, there is no specific drugs and treatment methods, every patient in the spirit and soul are facing a huge challenge, for each family also caused a huge economic burden, so in the treatment at the same time to give patients positive psychological guidance is particularly important. According to current reports, TCM has many advantages in the treatment of MND, but more data support is lacking. In the future work, we should carry out large sample clinical trials and animal experiments on the treatment of MND by traditional Chinese medicine, so as to better evaluate the efficacy of traditional Chinese medicine and develop the TCM diagnosis and treatment norms for MND. At the same time, we should give full play to the advantages of comprehensive treatment and actively use modern medicine, traditional Chinese medicine and acupuncture and moxibustion to treat MND, so as to improve the clinical symptoms of patients and improve the quality of life of patients. At the same time, psychological counseling for patients and their families is also very important. The double burden of economy and spirit will

crush patients' confidence in treatment.

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