

# Research on traditional Chinese medicine treatment methods for myasthenia gravis

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**Abstract:** Myasthenia gravis is a modern medical disease. Most ancient and modern Chinese medicine scientists classify myasthenia gravis as a "frailty disease" and treat it. There is no specific disease name corresponding to it, but it can be diagnosed based on its different clinical symptoms. It is classified into diseases such as "eyelid waste", "mute prickly heat", "head tilt" and other diseases; some doctors also classify it as "paralysis disease". Later doctors also classified it into the category of "bi disease" based on ancient and modern records and the clinical characteristics of this disease. In terms of treatment, the main treatment principle is to "treat Yangming alone to treat impotence". Syndrome differentiation and treatment are carried out based on different causes, pathogenesis and clinical characteristics. Traditional Chinese medicine, acupuncture or a combination of acupuncture and medicine are used for treatment. This provides a wide range of traditional Chinese medicine treatment for this disease.

**Keywords:** myasthenia gravis; traditional Chinese medicine treatment; impotence

## 1. Introduction

Myasthenia gravis (MG) is caused by acetylcholine receptors (acetylcholine) on the postsynaptic membrane of neuromuscular junctions (receptor, AchR), resulting in acquired autoimmune disease caused by neuromuscular junction transmission dysfunction; the main manifestations are partial or systemic skeletal muscle weakness and easy fatigue. Symptoms are aggravated after activity. After rest and cholinesterase inhibitor (cholinesterase) symptoms can be alleviated after treatment with inhibitors (ChEI) [1]. It can occur in skeletal muscles throughout the body, and the clinical symptoms are diverse. Symptoms of extraocular muscles include unilateral or bilateral eyelid diplopia, drooping, and difficulty in turning. Symptoms of respiratory muscles include dyspnea, chest tightness, and shortness of breath. Facial muscles may include: Weakness in chewing, difficulty in closing eyes, and muscle symptoms in the limbs include weakness in raising the head and soreness in the neck. At present, the pathogenesis of MG is not completely clear, and may be related to environmental, genetic, immune and other factors [2]. "Su Wen·An Lun" says: "Yangming refers to the sea of internal organs, which mainly moistens the Zongjin, which binds the bones and facilitates the organs... Therefore, if Yangming is deficient, the Zongjin will be vertical and the pulse will not flow, so Don't use it if you have foot weakness." It can be seen that doctors of all ages have long recognized the importance of the coordination of viscera, qi and blood to the human body, so the current research on MG is also very important and necessary.

## 2. Cause and pathogenesis

Modern medicine believes that the pathogenesis of MG is mainly caused by autopathogenic antibodies such as AChR and ryanodine receptors destroying NMJ-related structures, thereby interfering with NMJ signal transmission, affecting the normal function of AChR, causing abnormal function of the body's immune system, leading to The occurrence of MG[3]. After summarizing the TCM medical records of the past dynasties, the author found that the pathogenesis of MG is related to a variety of pathogenic factors, mainly attributed to spleen and stomach weakness, qi deficiency and qi depression, meridian stasis, and muscle dystrophy. "Three Causes and One Disease Syndrome Prescription" says: "If it is misused according to emotions, joy and anger are not controlled, and fatigue and loss are combined, it will cause the internal organs to be depleted of essence and blood, and the

glory and defense will be lost...which will make the skin, bones, and muscles weak and weak. Because of exercise, it causes impotence." Zuo Rui et al. [4] believe that MG patients mostly present with ptosis and flaccid limbs, and overall treatment is mostly based on flaccidity. Patients often suffer from insufficient congenital endowment or acquired malnutrition that directly affects the function of the internal organs, resulting in insufficient kidney qi, insufficient liver qi production, and abnormal functioning of the spleen and stomach, resulting in qi deficiency and qi depression. Li Qinghe discovered through research that the cause of MG is related to the evil of dampness and toxin [5]. Patients with improper diet or disharmony between the spleen and stomach will lead to indigestion, turbidity and poisoning, which will further affect the function of the internal organs. Wang Baoxiang et al [6] believe that MG is caused by weak spleen and stomach, insufficient qi, blood and body fluids, resulting in malnutrition of the body's muscles. Zhang Jingsheng believes that the pathogenesis of MG is complex and diverse, often related to multiple pathogenic factors such as wind, dampness, blood stasis, dryness, and fire. Patients with long-term illness will involve nutrients and blood components. Clinically, more methods are needed to distinguish various symptoms. Consider judging the presence of factors such as dampness and heat [7]. No matter what causes the occurrence of MG, it will affect the spleen and stomach's ability to transport water and grain, and the liver and kidneys to store essence and transport blood, eventually leading to Qi and blood deficiency.

### 3. Syndrome differentiation and classification

Because the etiology and pathogenesis of MG is complex and can involve multiple organs, clinical syndrome differentiation is diverse.

Classification based on expert consensus method. Lv Zhiguo et al. [8] searched the literature and used the mention rate to screen common clinical syndromes. After unanimous discussion and determination by 12 experts and scholars, MG was divided into five typical categories, namely syndrome of spleen and stomach qi deficiency, syndrome of spleen and kidney deficiency, and syndrome of qi and yin deficiency.

The syndromes are classified using the "three-step three-step syndromic induction". Liu Yang et al. [9] summarized the syndrome differentiation classifications of doctors in the past by searching the literature, and obtained 8 types of syndromes in 3 categories, namely, deficiency syndrome type, positive syndrome type, and combination of deficiency and excess syndrome. Among them, the deficiency syndrome category includes lung, spleen and stomach qi deficiency, liver, spleen and kidney deficiency, and liver and kidney yin deficiency. The syndrome syndrome refers to the type soaked by dampness. The mixed deficiency and excess category includes spleen deficiency and dampness, spleen and kidney yang deficiency and dampness. The type of liver, spleen and kidney deficiency causing wind and the type of yang deficiency and collateral stasis.

It is classified according to syndrome differentiation of viscera. Gu Xizhen believes that this disease is closely related to the spleen, kidney and liver, and divides it into spleen and stomach deficiency type, liver and kidney deficiency type, kidney yang deficiency type, and spleen deficiency and dampness type [10]. Chen Weiyin focused on organ syndrome differentiation, and combined with Western medicine Osserman classification, divided MG into 4 types: spleen deficiency type, kidney qi deficiency type, damp and heat accumulation type, and air subsidence type [11]. It is divided into types according to the eight cardinal principles. Yang Wenming classified MG into three types, namely spleen and kidney yang deficiency type, spleen and stomach deficiency type, and liver and kidney deficiency type [12]. Li Genghe believed that MG belongs to the category of "deficiency", and based on the evolution of the disease and the severity of yin and yang of spleen and kidney deficiency, he divided it into spleen and kidney qi and yin deficiency type, spleen deficiency and qi weakness type, and spleen and kidney yang deficiency type [13].

In general, the clinical syndrome differentiation of MG has more deficiency syndromes and less positive syndromes, and the disease locations are mostly responsible for the spleen, kidneys, liver, and lungs. Different doctors treat this disease based on their own clinical experience, so there is no unified syndrome differentiation and classification of MG.

### 4. Clinical treatment

For the treatment of MG, both Chinese and Western medicine have their own advantages and disadvantages. Western medicine has quick effects, but has severe side effects and can easily lead to

dependence. Traditional Chinese medicine focuses on overall conditioning, strengthening the body, eliminating evil, and treating both the symptoms and root causes. It has the characteristics of excellent curative effect, good prognosis, and few adverse effects. However, in actual clinical observation, the specific situation should be treated in detail and must not be applied mechanically.

#### ***4.1 TCM syndrome differentiation and treatment***

Zhang Boli believes that since it is known that the spleen governs muscles, treatment of strengthening the spleen and replenishing qi should be carried out, and more importantly, it should be based on clinical syndrome differentiation [14]. According to Gu Xizhen, this disease is caused by congenital deficiencies and acquired malnutrition, and the method should be to replenish the spleen, qi, liver and kidneys [15]. When treating, attention should be paid to the type. For patients with spleen and stomach deficiency, Buzhong Yiqi Decoction should be given. For spleen deficiency and dampness types, Buzhong Yiqi Decoction and Shenling Baizhu Powder should be given. For liver and kidney deficiency, Buzhong Yiqi Decoction and Liuwei Dihuang Pills should be given. For patients with kidney yang deficiency, Buzhong Yiqi Decoction combined with Yougui Pills is used, combined with the addition and subtraction of syndrome differentiation and prescriptions, and the effect is very good. Liu Xuejing [16] used Buzhong Yiqi Decoction to treat more than 40 cases of MG patients. According to syndrome differentiation, they were divided into: For those with excessive dampness, the original prescription was added with coix seed, poria, and atractylodes; for those with kidney yin deficiency, wolfberry and cornus were added with the original prescription. Meat; for kidney yang deficiency, add *Morinda officinalis* and *epimedium* to the original prescription; for stomach yin deficiency, add *dendrobium* and *Ophiopogon japonicus* to the original prescription. Take 1 dose per day, take it warmly in the morning and evening. Statistical analysis of the efficacy will be conducted after 3 months of treatment. Among 40 cases, 10 cases were cured, 15 cases were markedly effective, 9 cases were effective, and 6 cases were ineffective. The total effective rate reached 85%.

#### ***4.2 Treatment with special prescriptions of traditional Chinese medicine***

Yue Meizhong pointed out that treatment based on specific diseases, special certificates, special prescriptions and special medicines should be based on syndrome differentiation to achieve effective results [17]. Zhang Huailiang advocates treating this disease from the perspective of the liver, and is good at regulating the liver. He uses Xiao Chaihu Decoction as the basis for modified and subtracted treatments. On the basis of regulating the liver, he pays attention to strengthening the heart and lungs and lifting the spleen and stomach [18]. Huang Chunhua et al. [19] used Huangqi Zhibai Dihuang Decoction combined with Erzhi Pills to treat MG patients who have been taking hormones for a long time. The prescription consists of: 50 g of raw astragalus, 30 g of *Pseudostellariae*, 20 g of raw *rehmannia*, 20 g of Chinese yam, 20 g of tortoise shell, female *Zhenzi* 15 g, *Morinda officinalis* 15 g, *Eclipta* 12 g, *Cornus* 12 g, mulberry 10 g, *Anemarrhena* 10 g, *Acosta* 10 g. Specific syndrome differentiation, addition and subtraction, the effect is very good. Wang Xiaojun [20] gave Peipi Shugan Decoction (recipe: 250 g of raw astragalus, 45 g of raw malt, 45 g of yam, 30 g of stir-fried *Atractylodes* with bran, 30 g of *Guizhi*, 30 g of dried ginger, 30 g of *Dilong*, stir-fried *White peony root* 15 g, tangerine peel and magnolia bark 10 g each, *Bupleurum* 10 g, *Achyranthes bidentata* 10 g, and *ephedra* 6 g) were used to treat 39 MG patients, 1 dose per day, once a day, for 3 consecutive months, 39 Among the cases, 30 were cured, 8 were effective, and 1 was ineffective. The total effective rate reached 97.44%.

#### ***4.3 Acupuncture treatment***

Chen Jiayue et al. [21] found that the classification of MG is different, and the focus of acupoint selection is also different. Acupoints such as Sanyinjiao, Zusanli, Hegu, Baihui, and Yanglingquan have higher usage rates. Acupuncture treatment of MG embodies the principle of "treating impotence only by Yangming" in acupoint selection. The acupoints on the Yangming meridian have the function of nourishing qi and blood and nourishing the limbs. Zusanli is the He point of the Stomach meridian and the Xia He point, which have The power of generating stomach qi helps nourish the acquired essence and is the most frequently used. In addition, the acupoints on the bladder meridian of Foot and Taiyang and the two meridians of Ren and Du are also frequently used. Song Yangyang et al. [22] treated MG with acupuncture methods to refresh the brain, regulate the mind, and regulate the triple burner. They selected the main acupoints such as Baihui, Neiguan, Tanzhong, Zhongwan, and Qihai, and combined them with Cuanzhu, Yangbai, and Sizhu. Use empty and other points for syndrome differentiation and

treatment. Liu Chang et al. [23] selected 55 patients with MG epicellular ptosis and adopted acupuncture treatment. They acupunctured Baihui, bilateral Cuanzhu, Yuyao, Yangbai, Sibai, Hegu, Zusanli and other points, and lit them. Moxa sticks were hung on Zusanli on both sides, and the treatment was continued for 3 courses. Results: Among the 55 patients, 48 were cured, 7 were improved, and 0 were ineffective. The total effective rate was 100%.

#### **4.4 Integrated Traditional Chinese and Western Medicine Treatment**

Li Genghe [24] compared hormones to kidney-tonifying drugs, believing that they can restore vitality and act quickly. Traditional Chinese medicine is mainly used for clinical treatment, supplemented by 30-60 mg of pyridostigmine tablets to ensure that patients can live and work normally in the short term. If the condition is critical, use 2.5 to 20 mg of hormones with caution, and gradually adjust the dose to stabilize the condition. Wang Liangguang [25] advocated the use of Shengjiang Tiaoqi prescription to treat ocular muscle type MG. A total of 68 patients were included and randomly divided into 2 groups (ie, control group and experimental group), with 34 cases in each group. The control group was treated with simple Western medicine prednisone, and the experimental group was treated with the Shengjiang Tiaoqi prescription on the basis of the control group (prescription: 20 g of Astragalus membranaceus, 15 g of Poria cocos, 15 g of Atractylodes macrocephala, 15 g of Codonopsis pilosula, 10 g of White Bombyx spp., 10 g of cicada slough, 10 g of turmeric, 10 g of bupleurum, 3 g of rhubarb, and 6 g of cohosh. After treatment, the total effective rate of patients in the experimental group reached 91.2%, and that in the control group reached 91.2%. 70.6% ( $P < 0.05$ ). The total incidence of adverse reactions was 8.8% in the experimental group and 11.8% in the control group ( $P < 0.05$ ). It can be seen that the clinical efficacy of Shengjiang Tiaoqi prescription in the treatment of ocular muscle type MG on the basis of conventional hormone therapy is accurate and safer. Wei Yumei [26] observed the clinical efficacy of a self-made flavored Yiqi Bushen Huazhuo prescription combined with pyridostigmine bromide and prednisone in the treatment of MG and found that the combination of traditional Chinese and Western medicine treatment has the ability to improve patients' immune function and acetylcholine receptor antibody levels. Peng Xiaoyan et al. [27] conducted a meta-analysis on randomized controlled trials of pure Western medicine combined with traditional Chinese medicine in the treatment of MG, and screened 22 randomized controlled clinical trials from January 2000 to December 2017, with a total of 1972 research subjects. The final finding was that Compared with western medicine treatment alone, the combined treatment of MG with Western medicine has significant advantages in improving the effectiveness, reducing the recurrence rate and improving the condition.

Li Qiaoqiao et al. used Shenqi Juxian prescription combined with electroacupuncture on the basis of conventional Western medicine treatment, and divided 95 patients with myasthenia gravis into a control group of 48 cases and a research group of 47 cases. Four patients dropped out of the control group, and the remaining 44 patients were treated with oral prednisone acetate tablets and pyridostigmine bromide tablets. Three patients dropped out of the research group, and the remaining 44 patients were treated with Shenqi Juxian prescription combined with electroacupuncture on the basis of the control group. The Shenqi Juxian prescription emphasizes the use of Astragalus to strengthen the spleen and replenish qi, raise Yang and Lixian; Codonopsis pilosula can strengthen the spleen and lungs, and enhance muscle strength; the two are used together as a monarch medicine. Rehmannia glutinosa and dodder seed can nourish the kidneys and essence; tangerine peel and atractylodes can strengthen the spleen and regulate qi; the four herbs are used as ministerial drugs; supplemented with angelica to promote blood circulation; achyranthes root, eucommia ulmoides, turtle gum, deer antler, and wolfberry nourish the liver and kidneys; bupleurum and cohosh can nourish the liver and kidneys. The rising yang lifts the qi and carries the qi upward. Electroacupuncture selects Yanglingquan, Zusanli, Pishu, Shenshu and Quchi as main points, which can strengthen the spleen and kidneys, warm the kidneys and replenish qi. The results showed that the total effective rate of patients in the research group after one month of treatment was higher than that of the control group, and the scores on multiple scales were significantly lower than those of the control group. It is suggested that the overall treatment effect of myasthenia gravis treated with Shenqi Juxian prescription combined with electroacupuncture is significantly improved, and it helps to further reduce the patient's multiple myasthenic symptoms, and has a positive effect on improving the patient's quality of life.

#### **4.5 Other treatments**

In addition to traditional methods for treating MG, other special therapies of traditional Chinese

medicine also play an important role. Kang Liping et al. [28] applied traditional Chinese medicine (TCM) characteristic external therapy (such as hot ironing physiotherapy, traditional Chinese medicine packets, acupoint application, auricular pressure application, etc.) to intervene or assist in the treatment of MG based on syndrome differentiation, which can improve the comprehensive treatment effect. Yan Yuying [29] used traditional Chinese medicine health Qigong Baduanjin to intervene in patients with MG- IIA type. Practicing Baduanjin improved their clinical symptoms, grip strength, and walking ability, and optimized the patient's quality of life.

## 5. Conclusion

MG is a typical autoimmune disease that affects many parts of the body. Compared with Western medicine, traditional Chinese medicine has accumulated a lot of successful experience in treating this disease from both basic theory and clinical practice. It has excellent curative effect, good prognosis and fewer adverse effects. Small MG is a common and frequently-occurring disease among flaccid diseases in traditional Chinese medicine. Due to its many types of lesions, long course of disease, and difficulty in clinical diagnosis and treatment, it is considered a difficult and critical disease among flaccid diseases. At present, the basic research and clinical treatment of MG show a trend of wide scope and multiple methods, and the curative effect has been greatly improved compared with before. The author believes that the onset of MG is not only related to abnormalities in the body's own immune function, but also closely related to various external influencing factors. With the integration of Chinese and Western medicine cultures, modern doctors combined the modern classification of MG and under the guidance of the overall concept of traditional Chinese medicine, carried out disease differentiation, syndrome differentiation, staged treatment, combined traditional Chinese medicine syndrome differentiation with western medicine individualized treatment, and used simple Chinese medicine or a combination of Chinese medicine Acupuncture can nourish and elevate the body, regulate yin and yang, harmonize qi and blood, and unblock the internal organs and the four ends. In summary, in the past, TCM treatments for MG were mostly based on clinical experience summaries, individual cases, or retrospective medical record series. There was a lack of large-sample prospective and randomized controlled trials to provide high-quality evidence for TCM. □

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