

# *Treatment of Amyotrophic Lateral Sclerosis from “Treating Wei and Taking Yang Ming Alone”*

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**Abstract:** Amyotrophic lateral sclerosis (amyotrophic lateral sclerosis) is a neurodegenerative disease with muscle weakness and muscle atrophy as the main clinical manifestations, which is similar in symptoms to the “Wei Zheng” of traditional Chinese medicine; so many doctors classify it as “Wei Zheng” in traditional Chinese medicine. The etiology and pathogenesis of amyotrophic lateral sclerosis are complex and diverse, Modern medicine believes that gene mutation plays a significant role in the pathogenesis of ALS, which is related to a variety of gene mutations, mainly superoxide dismutase 1 (SOD1), and the therapeutic effect of current modern medicine is still not significant. “Huangdi Neijing” put forward the treatment method of “Treating Wei and Taking Yang Ming Alone”. Therefore, this paper attempts to treat amyotrophic lateral sclerosis from “Treating Wei and Taking Yang Ming Alone” by sorting out the relevant literature, and discusses the guiding significance of “Treating Wei and Taking Yang Ming Alone” on ALS, hoping to provide new ideas for traditional Chinese medicine treatment of ALS.

## 1. Introduction

Amyotrophic lateral sclerosis (amyotrophic lateral sclerosis, ALS) is a group of chronic central nervous system degenerative diseases mainly involved in the upper and lower motor neurons, is the most common type of motor neurone disease, is one of the most difficult to treat diseases of the nervous system. Its pathological range includes spinal cord anterior horn cells, brain stem motor neurons, cortical pyramidal cells and pyramidal tract. The proportion of onset sites is shown in the figure 1. The clinical manifestations are muscle atrophy and weakness caused by lower motor neuron damage and damage to the upper motor neurons. If the medulla oblongata is involved, symptoms of medullary paralysis such as dysarthria, choking on food and drink, and dysphagia may occur [1]. Riluzole (riluzole) was approved by the United States Food and Drug Administration (hereinafter referred to as FDA) for the treatment of ALS drugs, but only to prolong the survival of patients 2-3 months [2]. After the FDA approved edaravone can also be used to treat the disease [3], but the therapeutic effect is still not significant. Some scholars have concluded that ALS has the characteristics of unknown etiology, poor efficacy, and poor prognosis [4], and no other effective treatment methods have been found. Therefore, the search for traditional Chinese medicine

treatment will effectively improve the quality of life of ALS patients and reduce the family economic pressure.

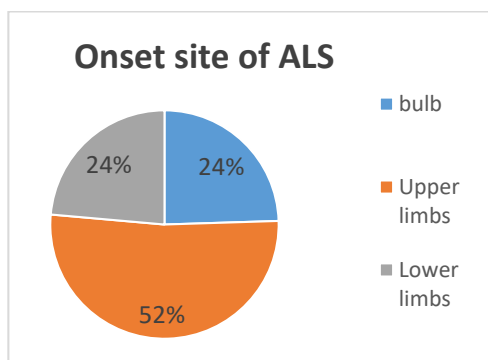


Figure 1: Onset site of ALS

There is no such disease named as ALS in Chinese medicine, and the ancients ascribe it to the category of “Wei Zheng” in Chinese medicine through its clinical manifestations. Wei Zheng is a disease of limb muscle slow, weak, unable to move freely, or accompanied by muscle atrophy, muscle atrophy of the lower extremities is more common in clinic [5]. Because the clinical manifestations of the two diseases are similar, the treatment of ALS can be based on syndrome differentiation and treatment of this disease. “Huangdi Neijing” set up a special article on Wei Zheng — “Su Wen • Wei theory”, put forward the etiology and pathogenesis of Wei Zheng, laid a theoretical foundation for the treatment of Wei Zheng, and put forward the therapeutic principle and method of Wei Zheng — “Treating Wei and Taking Yang Ming Alone”. This method has always been used as the criterion for the treatment of Wei Zheng, but not the only criterion. The doctors of later generations have their own understanding of this method, following on the onset of Wei Zheng, from “Treating Wei and Taking Yang Ming Alone” and ALS correlation combing, to explore the ALS traditional Chinese medicine treatment to launch a review.

## 2. Studies on the Correlation between ALS and Wei Zheng

As a common motor neuron disease, ALS is often a recessive onset, disease development is chronic progressive, with muscle weakness, muscular atrophy, muscle bundle fibrillation, and pyramidal tract signs, the sensory system are not invaded [6]. The clinical manifestations are similar to the discussion of “Wei Zheng” in traditional Chinese medicine. The chronic onset of Wei Zheng is mostly related to the deficiency of Qi, Blood, and Yin and Yang of the Zang and Fu, or the invasion of evil Qi on the basis of the body's positive deficiency, which is similar to the hidden onset and chronic progressive characteristics of ALS. “Medical forest correction · paralysis theory” aid: “Wei Zheng..... There was no pain throughout [7]”. Wei Zheng has not yet shown paraesthesia, no pain symptoms, so the clinical connection of the two treatments is reasonable.

### 2.1. Western Medicine Pathogenesis of ALS

As a fatal disease of the nervous system, most ALS patients die of pulmonary infection or respiratory paralysis within 3 to 5 years of illness [8], but its etiology and pathogenesis are still unclear. Studies have shown that the incidence of ALS is related to occupational exposure, such as long-term exposure to chemicals and metals, which can significantly increase the risk of ALS [9]. Modern medicine believes that gene mutation plays a significant role in the pathogenesis of ALS, which is related to a variety of gene mutations, mainly superoxide dismutase 1 (SOD1) in ALS [10]. Studies have shown that SOD1 gene mutation can damage the axon transport mechanism, and

misordered SOD1 genes cannot continue to transport through the mitochondrial membrane normally, and the accumulation of mutated SOD1 genes in the mitochondrial outer membrane triggers the mitochondria-dependent apoptosis program, thereby causing apoptosis of motor neurons [11]. Therefore, reducing the accumulation of SOD1 gene may be a new research target for ALS treatment. Hayashi Y [12] et al. believed that SOD1 gene variation is related to the role of a variety of proteins, including excitotoxicity mechanism, oxidative stress mechanism, mitochondrial dysfunction mechanism and other aspects. Chen [13] et al. also concluded that axon transport impairment, neurofilament accumulation, protein aggregation, viral infection, and environmental factors are also related to ALS pathogenesis.

## 2.2. Traditional Chinese Medicine Pathogenesis of ALS

ALS belongs to the category of “Wei Zheng” in traditional Chinese medicine. The causes of Wei Zheng are complex and varied, which can be summed up in several aspects, such as external warmth and toxic evil, eating disorders, exhaustion and internal injury, fall injury, etc. One or more causes at the same time impinge on the human body leading to limb activity limited, cannot carry out normal activity, resulting in the occurrence of Wei Zheng. The specific mechanism is as follows:

1) Exogenous, warm and heat toxic evils invade the human body, because the lung in the human body is in the upper, as canopy, its beauty is in its fur, its filling in its skin, so the external evil invades the human body, the first attack on the lung. That is, as Ye Tianshi [14] said: “*Warm evil, the first attack on the lung*”. “Su Wen · Wei Theory” [15] mentioned: “*Lung heat leaves scorch, then the fur is weak and urgent thin, then born atrophy and flaccidity also.*” “Lung heat leaves scorch” cannot be timely transfused bujin fluid, caused muscle loss of limbs and tendons and finally caused Wei Zheng. “Jing Yue complete book” said “*the meaning of Wei Zheng, Nei Jing has speaked in detail. View the five viscera listed in the evidence, all said to be heat. And the five viscera syndrome is always due to lung heat leaves scorch, resulting in gold dryness and water deficiency, which is a syndrome of Wei Zheng* [16]”. It shows that “Lung heat leaves scorch” is the main pathogenesis of the disease. one of the most common causes of death in ALS patients is lung infection, which proves that the function of the lung plays a decisive role in the development of the disease.

2) The long-term dietary disorders damage the spleen and stomach. Weakness of the spleen and stomach cannot transport the essence of water and grain to nourish the sinews and bones, so cause Wei Zheng, “Zheng Zhi Hui Bu” said: “*The Qi deficiency to Wei Zheng, due to hunger and fatigue, spleen and stomach Qi deficiency, the bones and valleys are all displaced, so that Zong tendon relaxation.....* [17]” ALS is mainly manifested as muscular atrophy, so at the same time of drug treatment, should also pay attention to diet adjustment, diet, spleen, and stomach protection, which can be at the root of the disease is the improvement of clinical symptoms;

3) Wei Zheng is mostly manifested in chronic onset, mostly caused by long-term strain injury of the viscera. Wang Shuangshuang [18] et al. summarized the deficiency of the liver, spleen, and kidney as the main pathogenesis by summarizing Professor Deng Tietao's experience in the treatment of ALS, which is similar to the theory of “*The liver is the fascia of the body, the spleen muscle of the body, and the kidney bone marrow of the body*” in “Su Wen·Wei Theory”. The damage of the three viscera or evil invasion of the three viscera can be caused by Wei Zheng. Zhu Danxi was inspired by “Nei Jing”, that the incidence of Wei Zheng should also pay attention to Yin deficiency, fire, flourishing, heart and kidney do not exchange, and other factors [19]. He believes that Wei Zheng is related to the lungs, spleen and kidneys, lung deficiency cannot transport the body fluid, spleen deficiency causes limbs muscles and bones and meat losing, kidney deficiency

cannot restrict the fire evil. The fire evil successively invades the five organs, the function of the five organs is impaired, and the five organs are damaged, resulting in the Wei Zheng. Although there is no clear indication of a cardiac cause, Chinese medicine believes that the heart opens in the tongue. And the tongue is the miao of the heart, which can be associated with the symptoms of tongue muscle atrophy, slurred speech, difficulty in swallowing, choking on drinking water, etc. in ALS patients who started from the ball. Although Wei Zheng is dominated by essential deficiency, the development of the disease to a certain stage, there will be a mixture of deficiency and reality. Xu Yunsheng [20] concluded Wei Zheng occurs on the basis of spleen and kidney deficiency, often mixed with wind, phlegm obstruction, blood stasis and other pathologic factors;

4) Blood stasis due to bruises and injuries. Blood flow is not smooth, the muscles and tendons lose their nourishment, and eventually the limbs become useless. An early foreign study summarized the significant correlation between trauma and the development of ALS through case-control statistical analysis [21]. There are also relevant studies in China, found that the history of trauma in ALS patients accounted for 6% of the total number of 238 and 95 ALS patient case reports after statistical analysis, respectively [22-23]. It can be seen that the history of trauma is related to the occurrence of the disease. The pathogenesis of ALS, between traditional Chinese, and Western medicine is summarized in the table 1.

Table 1: Summary of pathogenesis

Summary of pathogenesis	
TCM	external warmth and toxic evil
	drinking and eating disorder
	eating disorders
	falling and flapping injury
WM	gene mutation
	Axonal transport is impaired
	Accumulation of neurofilament
	Protein aggregate
	virus infection
	environmental factor

### 3. Study on the Correlation between “Treating Wei and Taking Yang Ming Alone” and “Wei Zheng”

The word “Wei” in “Treating Wei and Taking Yang Ming Alone” comes from “Nei Jing”, which was interlinked with “Wei” of Wei Zheng. “Su Wen · Wei theory” mentioned: *The emperor said: such as the master can say, why Theory said treating Wei with Yang Ming alone? Qibo said: Yangming the sea of five viscera and six fu organs, the main embellished Zong tendon, Zong tendon main bundle, bone and Li organ ... So Yang Ming vacuity Zong tendon longitudinal, with the pulse does not lead, So the foot flaccidity and cannot be used also.* Nei Jing said Yang Ming was the greatest of twelve meridians, it could be seen that it was closely related to the whole body meridians Qi and Blood. However, the “Yang Ming” not only refers to the foot Yang Ming stomach meridian, because the “Huang Di Nei Jing Su Wen - six yuan Zheng Ji Da Lun” said: “Where Yang Ming goes to, the dry birth.” Traditional Chinese medicine believes that Yang Ming has “the sea of five viscera and six fu organs”, “the source of Qi and Blood biochemistry”, “the root of acquired constitution” said. Thus, Yang Ming refers to a complete system of Yang Ming channel tendon, Yang Ming large intestine meridian, spleen, and stomach large and small intestine [24].

## 4. The Inspiration of “Treating Wei with Yang Ming Alone” on ALS

“Nei Jing” proposed the treatment of “Treating Wei with Yang Ming Alone” as the main method of treatment. It categorizes Wei Zheng into five kinds of Wei: tendon, pulse, meat, skin, bone. Because of its clinical manifestations are different, put forward “each fills its Xing yang and Tong Shu, regulate its deficiency and excess, reconcile the pros and cons, muscles and bones and flesh each in its own time, then the disease has not been carried forward”. That Yang Ming caused by Wei disease has the points of deficiency and excess, here “alone” is not “only taken”, that is, to emphasize the treatment of Wei Zheng attention to the necessity of Yang Ming.

### 4.1. From the Classic Interpretation of “Treating Wei with Yangming Alone”

“Nei Jing” said: *“If Yang Ming is deficient, the zong jin is vertical, the belt vein is not drawn, so the foot is wei and not in use.”* This sentence is easy to make people take out of context, mistakenly believe that Wei Zheng are due to Yang Ming deficiency. With the continuous improvement of traditional Chinese medicine on Wei Zheng, later generations of doctors found that wei zheng occurs in a variety of etiological factors, the specific etiology of Wei Zheng has to be further improved. Zhang Jingyue believes that *“the treatment of Wei Zheng, when taking Yang Ming, but also must be examined by the disease of the meridian and the treatment of the same.”* Zhu Danxi in the Nei Jing Wei Zheng treatment theory based on the proposed diarrhea south and fill the north method and in the “Danxi treatment method of the heart” said: *diarrhea in the south, the lungs and the east of the gold clear, not real, why the spleen injury? Complementing the north is the heart fire drop and the west is not weak, why lung heat there?* [25]. From this, Danxi will focus on the treatment of Wei Zheng by replenishing the kidney water in the north and diarrhea the heart fire in the south. But the root of the problem is also indirectly caring for the spleen and stomach in the middle jiao. Combined with the “treating Wei with Yang Ming alone” summarizes the treatment of Wei Zheng. That is to emphasize the importance of regulating Yang Ming at the same time, but also the need for evidence-based treatment, and distinguish between deficiency and excess of Yang Ming, then fill deficiency and reduce excess, and combine reinforcing and reducing. To supplement the deficiency of Yang Ming and diarrhea of Yang Ming's real heat stagnation is the main, so that the blood run smoothly, blood flow is smooth, the disease is cured.

Although the cause of Wei Zheng is not only Yang Ming, Yang Ming also plays a vital influence [26]. In this theory, Yang Ming is divided into hand Yang Ming and foot Yang Ming, and the stomach channel of foot Yang Ming and the spleen channel of foot Tai yin is the exterior and interior. The hand Yang Ming large intestine is the main source of fluid, and the hand taiyin conveys and distributes fluid. The source of fluid depends on the function of the spleen and stomach in the middle jiao to transport and transform water, grain and essence, so the spleen and stomach in the middle jiao can be used as the main line of discussion in the treatment of Wei Zheng. Su Wen - Ling Lan secret canon theory: *“the spleen and stomach, the official of the granary, the five flavors out of it”*. This sentence expresses the physiological function of the spleen in transporting and transforming water, grain and essence. “Su Wen - meridians and veins,” said: *“Drinking in the stomach, overflowing essence, up to the spleen. The spleen disperses the essence and returns it to the lungs, regulates the waterways and transports it down to the bladder .....”*. This clarifies that the metabolic pathway of fluid in the human body depends on the participation of the spleen, stomach, lungs, triple jiao, bladder and kidneys and other organs together. However, the role of the spleen and stomach in the middle jiao runs through the whole process and plays a pivotal role. It enables orderly elevation of qi and normal transportation of fluids to all parts of the body. This theory emphasizes the important role of the spleen and stomach in the transportation of body fluids. As a representative of the “earth-complement school”, Li Dongyuan, one of the four great physicians of

the Jin Yuan Dynasty, attached great Wei Zheng to the role of the spleen and stomach in the human body. He was good at treating various internal diseases with the theory of spleen and stomach, and his masterpiece “Treatise on Spleen and Stomach” fully demonstrated his academic thinking of treating spleen and stomach diseases. He put forward the theory of “internal injury to the spleen and stomach, all diseases are born from”, which laid the foundation for the treatment of diseases from the spleen and stomach.

#### 4.2. Acquired after Birth Spleen and Stomach and “ALS”

Chinese medicine believes that the spleen and stomach for the nature of the latter day, for the pivot of the qi lifting and lowering, the relationship is close. For example, “Su Wen - Taiyin Yang Ming” said: *the limbs are endowed with gas in the stomach, but not to the meridian, must be due to the spleen, is endowed also. Now the spleen disease cannot be for the stomach line its fluid, the limbs are not endowed with water and grain gas, gas day to day to decline, the pulse is not favorable, sinews and bones and muscles are no gas to produce, so cannot be used.* The spleen is the main transportation, the stomach is the main collection, the combination of transport, the production of micro-organisms, to provide energy for the body. On the contrary, Yangming spleen and stomach deficiency, qi and blood lack of source of biochemistry, Qi and blood deficiency is not moistened sinews and veins, does not honor the limbs and muscles Wei Zheng. This theory fully embodies the coordinated role of the spleen and stomach in the body to ensure the normal functioning of the body. And this theory provides a theoretical basis and important ideas for clinical Wei Zheng treatment. Professor Xie Jianguo proposed the “Five Methods of Treating Wei Zheng”, and one of the sources of treating Wei Zheng is to nourish the acquired body by strengthening the spleen and stomach. He believed that deficiency of the spleen and stomach was the origin of Wei Zheng, so he emphasized the use of Astragalus to replenish the spleen and Qi, and added Codonopsis and other qi replenishing drugs to strengthen the effect of replenishing the spleen.

To summarize, later generations of doctors treated ALS mostly from Yang Ming. Moreover, the spleen and stomach of the middle jiao are often used as the entry point for treating Wei Zheng. These theories and experiences are the inheritance and development of the theory of “treating wei and taking Yang Ming alone”.

#### 5. Conclusions

Based on the similarity of clinical manifestations, since ancient times, traditional Chinese medicine has mostly treated ALS with “Wei Zheng”. Due to its complex and diverse etiology and the pathogenesis is constantly updated, so modern medicine has made little progress in treatment. “Nei Jing” puts forward “treating wei and taking Yangming alone” as the main treatment method. Summarizing the experience of the above doctors, we conclude that the treatment of ALS should first emphasize the regulation of the spleen and stomach. The spleen and stomach are the foundation of the acquired constitution, the source of Qi and Blood. Therefore, the key to the improvement of the disease is to ensure an adequate source of qi and blood. Later generations of doctors have improved the theory of “treating wei and taking Yang Ming alone” on the basis of the Nei Jing, which provides a new reference idea for the treatment of ALS in the future.

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