

# *Treatment of Novel Coronavirus Pneumonia based on the theory of "The stasis of metal should be adjusted"*

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**Abstract:** COVID-19 is a highly contagious respiratory disease caused by novel coronavirus infection. It belongs to the category of "epidemic disease" in Chinese medicine, and the key to the pathogenesis is "lung qi stagnation, loss of disperse and descending", so the treatment should be based on the main principle of "supporting the righteous and dispelling the evil", with the lung being the main focus and the five organs being harmonized. "The stasis of metal should be adjusted" is one of the "five Yu" treatment methods in Huangdi Neijing. With the extension and deepening of the connotation of "The stasis of metal should be adjusted" by later doctors, this method has been flexibly applied to the treatment of clinical diseases and opened up a new path for clinicians. Based on the exploration of the academic thought of "The stasis of metal should be adjusted", this paper discusses COVID-19 from different perspectives. Based on the connotation of "Jin Yu", the author analyzes the key pathogenesis of COVID-19 -- "Lung Yu" from three aspects of lung physiological function, clinical symptoms of COVID-19 and treatment based on syndrome differentiation. And based on the connotation of "Xie zhi" proposed xuan xie method, qing xie method, tong xie method, shu xie method, shen xie method, run xie method, kai xie method seven treatments. It is hoped to provide different perspectives and ideas for clinicians to recognize and treat COVID-19.

## 1. Introduction

COVID-19 is a respiratory disease caused by novel coronavirus, which is contagious and can be transmitted from person to person. Most of its clinical manifestations are fever, cough, fatigue and so on, and a small number of patients can see symptoms such as stuffy nose, sore throat, muscle soreness and diarrhea. At present, direct transmission, aerosol transmission and contact transmission are the main ways of transmission. In traditional Chinese medicine, COVID-19 belongs to the category of "epidemic disease". The main pathological factors are damp evil, warm evil, poison evil, dryness evil, heat evil, cold evil, phlegm heat evil, wind evil and deficiency evil, among which dampness evil, poison evil, heat evil and deficiency evil are more common [1]. According to the consensus of local experts, lung is the main dialectic Zang-Fu organs in each stage[2]. In terms of treatment, most doctors divide it into early stage, middle stage, severe stage and convalescent stage according to dialectics.

In clinical treatment, emphasize the importance of "supporting the righteous and dispelling the evil" and "regulating qi machine" [3] [4]. "The Stasis of Metal Should Be Adjusted" is one of the "five Yu" treatment methods, which was first recorded in the "Su Wen Liu Yuan Zhengji Da Lun". However, after the inheritance and development of doctors through the ages, its theory is often used to explain the pathological state of stagnation of qi and blood function and viscera function, and to guide the dialectical and treatment of clinical diseases. Combined with my own understanding of COVID-19 and the expositions of experts and teachers on the etiology, pathogenesis and location of COVID-19, the author thinks that COVID-19 's disease site takes the lung as the core, "lung Yu" as the key to pathogenesis, and "Xie zhi" as the treatment. Based on the thought of "The Stasis of Metal Should Be Adjusted", this paper explores the etiology, pathogenesis and dialectical treatment of COVID-19.

## 2. "Jin Yu" and COVID-19

### 2.1 The meaning of "JinYu"

"Yu" originally refers to the appearance of dense and luxuriant vegetation, and then gradually extends to the meaning of condensation, block and accumulation. Lei jing (Classified canon) said: "All the disease of Jin Yu, is blocking, is dry, the viscera is corresponding to the lung and large intestine, masters fur sound, its injury in qi fen. Because the five elements of the lung belong to Jin, so later on the "Jin Yu" is mostly understood as lung qi stagnation, lung qi block.

### 2.2 "Jin Yu" caused COVID-19

Lung Yu, that is, Jin Yu, refers to the lung qi stagnation, loss of disperseive and descending. The lung is Hua Gai, which is the highest and the most important of the five internal organs. Lung is clear and delicate, masters fur and externally it communicates with the nasal orifice, the most vulnerable to evil invasion, as the "The Treatise on Epidemic Febrile Diseases" said: "warm evil, the first to attack the lung." When the "Epidemic evil" (dampness, poison, heat, cold, dryness, phlegm-heat, wind, warm evil, etc.) enters the human body from the mouth and nose, invades the lungs, resulting in lung qi stagnation, loss of disperseive and descending, resulting in respiratory symptoms.

#### 2.2.1 Judging from the physiological function of the lung

The Suwen said: "All qi belong to the lung." As one of the basic substances that make up the human body and maintain its vital activities, qi is divided into different forms in the human body, such as yuan qi, zong qi, ying qi, wei qi, qi of the internal organs and qi of the meridians, according to its distribution location and physiological functions. The lung is the place of qi exchange, and through function of disperseive and descending, the lung inhales and exhales, and exhales the old and new, thus ensuring the normal respiratory movement of the body. Zong Qi' generation is directly related to the strength and weakness of the qi of the whole body. Yuan Qi is the most fundamental and important qi in the human body, and its generation is indirectly related to the lungs. In addition to the "respiratory qi," "zong qi," and "yuan qi," the "qi of ying and wei" "Qi of the internal organs" are directly or indirectly dominated by the lungs and are related to them [5]. Not only is the formation of all qi related to the lung, but also the operation of all qi is closely related to the lung. The lung transports essence, blood, and fluids throughout the body to maintain the normal physiological functions of the viscera, body, and organs through its disperseive and descending function. Some scholars believe that[6]malfunctioning of the lung qi in disperseive and descending function can lead to Qi dysregulation in the whole body, thus affecting the normal physiological functions of the heart, liver, spleen, kidneys and other five internal organs, resulting in a series of related diseases. The lung is also oriented towards the hundred veins, through which the blood of the whole body converges,

and after the respiration of the lungs, the blood rich in qing qi is then transported to the whole body through the hundred veins. Therefore, lung qi stagnation not only causes lung symptoms, but also a series of clinical manifestations other than lung. Such as gastrointestinal symptoms such as nausea and vomiting, abnormal stools, cardiosystematic symptoms such as palpitations, panic attacks, chest tightness, heartburn, and neurological symptoms such as headache, dizziness, insomnia, and taste or smell disorders.

### *2.2.2 Analysis of clinical symptoms of COVID-19*

From the relevant literature of traditional Chinese medicine, the analysis of the clinical symptoms of COVID-19 shows that the main symptoms of patients are fever and dry cough [7]. In the WHO Joint Investigation Report on Novel Coronavirus Pneumonia (COVID-19) in China [8], an analysis of 55 924 laboratory-confirmed cases revealed that the top typical symptoms and signs of COVID-19 were fever, dry cough, malaise, coughing sputum, and shortness of breath. All of these symptoms are mainly related to the stagnation of the lung qi and the loss of dispeiseive and descending. When the epidemic evil invades the lung, the lung qi is stagnated, and the function of the lung in dispeiseive and descending is not normal, so dry cough, sputum, wheezing, shortness of breath and other symptoms appear.

### *2.2.3 Analysis of Dialectical treatment*

In the early stage of COVID-19, in this stage, most of the evil poison was on the body surface. The epidemic evil invades Shangjiao or Zhongjiao, causing damage to the lung and spleen and stomach, resulting in aversion to cold and fever, cough, chest tightness, loose stools and other symptoms. At this stage, the main pathogenesis is cold-dampness evil attacking the body surface, cold-dampness evil and stagnation of the lung qi. Therefore, the treatment should be based on the principle of dispelling cold and dispelling dampness, xuanfeijiebiao.

In the middle stage, with the aggravation of stagnation of lung qi, qi stagnation turns into heat, heat is strong and injures fluid, refining liquid into phlegm, and symptoms such as body heat does not subside, cough and phlegm, chest tightness and shortness of breath, etc; or because of "Lung and Large Intestine Have Relevance", heat evil moves down to the intestines and bowels, the intestines and bowels lose nourishment, and symptoms such as constipation appear, the treatment in this stage should be to clear the lung and move toxin, purging fu-organs to eliminate heat.

In the late stage, the evil continues to penetrate deeper, the stagnation of the lung qi is further aggravated, the function of the lung towards the hundred veins is malfunctioned, the blood flow is not smooth, resulting in blood stasis. When heat evil is present and Ying-Yin is greatly damaged, heat evil forces blood to move freely and blood overflows outside the blood vessel, leading to stasis of Blood. Evil Qi injures the lung, and the lung Qi is deficient and unable to push the blood, resulting in stasis of blood. Blood stasis blocks the lung channels, which makes it difficult for evil toxins to exit, thus leading to impaired function of the lung. Or if stasis blocks the heart, the heart vessel does not flow smoothly and closes the Xiong Yang, then chest tightness and chest pain will occur. If the stagnant blood and phlegm are intertwined and the pericardium is internally closed, then there will be difficulty in breathing and delirium. In this period, treatment should be to help Yang qi to fix the stagnation, activate blood circulation, and especially to "eliminate stasis" from the perspective of treating the root of the disease.

In the recovery period, although the evil is gone, the healthy qi has been injured, and the evil toxin consumes qi and injures yin, resulting in deficiency of lung and spleen or deficiency of both qi and yin. Patients mostly show symptoms such as tiredness and fatigue, poor appetite and vomiting, fullness, weakness of stool, loose stools, etc. Treatment in this period should be based on supporting the healthy qi, and should strengthen the spleen and replenish qi, nourish yin and promote the the

secretion of body fluid.

### 3. Treatment of COVID-19 with "The Stasis of Metal Should Be Adjusted"

#### 3.1 The meaning of "Xiezhi"

The medical practitioners of the past generations have interpreted the term "xie" to mean the Catharsis or desludging[9]. "Leijing" believes that "Xie, that is, shuli", and it is believed that "jin yu" is related to the lungs, large intestine, and skin and hair, so the treatment is either to "relieving exterior syndrome", or to "dispelling qi", or to "defecating". The explanation of "Xie" by doctors of all ages provides a train of thought for later generations to treat the disease of "Jin Yu", and has important guiding significance in clinical application. For example, Jianjun Wu and so on [10], based on the connotation of "The Stasis Of Metal Should Be Adjusted" and combined with clinical lung diseases, put forward the treatment methods such as relieving exterior syndrome, xie fei, xuan fei, eliminating wetness, diuresis, Tongfu and so on.

#### 3.2 Treatment on the basis of "Xiezhi"

##### 3.2.1 Xuan xie method

The "Xuan xie method" means relieving the symptoms and xuanfei. In the early stage of COVID-19, most patients have fever, dry cough and other symptoms, so the main focus should be on relieving the symptoms and xuanfei. We can choose Yin Qiao San, which relieves exterior symptoms with pungent-cool drugs, clears away heat and toxin material. or add Qiang huo, Mint, Su Ye and Almond according to the clinical dialectical. The composition of Yin Qiao San is mostly traditional antipyretic and antidote medicines, and most of traditional antipyretic and antidote medicines have disease-resistant microorganism, anti-inflammatory, antipyretic and other effects [11]. Some animal experiments have shown that Yin Qiao San may repair inflammatory lesions of lung tissue in mice with severe pneumonia by inhibiting the secretion of inflammatory factors [12]. Xueshuai Cao [13] et al. suggested that the mechanism of Yinxiao San in the treatment of pneumonia may be to reduce the expression of tumor necrosis factor- $\alpha$ , reduce neutrophil aggregation, reduce the expression of interleukin-6 and interleukin-1 $\beta$ , reduce the toxic effect on vascular endothelial cells, reduce the release of lysozyme bacteria, and reduce the inflammatory response.

##### 3.2.2 Qing Xie Method

"Qingxie method" means clearing away heat and toxin material and clearing lung heat. In the middle and late stage of COVID-19, as stagnation of lung qi continues to worsen, the stagnation turns into heat, and the heat damages body fluid, and the liquid turns into sputum, forming excessive lung heat, phlegm-heat stagnates lung, and presenting symptoms such as high fever, yellow phlegm, wheezing and shortness of breath. The treatment should clear lung heat, clear heat and reduce phlegm. We can choose MaXingShiGan Decoction, and scutellaria baicalensis, gypsum, mulberry bark and Thunberg fritillaria can also be added according to the syndrome. Yunfei Qu et al.[14] found in the clinical observation of 40 cases of COVID-19 that after 7 days of treatment with MaXingShiGan Decoction combined with conventional Western medicine, the disappearance rate of fever and cough symptoms reached 96.8% and 81.8%, and interleukin-6 and C-reactive protein levels were significantly reduced, thus reducing the severe disease rate.

##### 3.2.3 Tong Xie Method

"Tong Xie method" namely purgating fu-organs to eliminate heat. In the middle and late stage of COVID-19, fever, yellow expectoration, shortness of breath, constipation and other symptoms occur,

which are mostly caused by heat poisoning evil closing the lungs qi and qi blockage in the fu-organs. The treatment should be clearing the lungs and resolving phlegm, and purgating fu-organs to eliminate heat. We can choose Xuanbai Chengqi Decoction, also can add almond, gypsum, trichosanthes, rhubarb and other traditional medicines according to the dialectical method. Chen-ying Dong et al. [15] conducted an in-depth study of Xuanbai Chengqi Decoction through network pharmacology and believed that its main mechanism of action in treating COVID-19 might be anti-inflammatory. Relevant studies have shown that Xuanbai Chengqi Decoction can reduce IL-6, TNF- $\alpha$  and hs-CRP levels, inhibit inflammatory response and improve clinical efficacy[16].

#### **3.2.4 Shu Xie Method**

"Shu Xie Method" means to regulate qi and blood. Blood stasis is one of the important pathological factors of COVID-19. After the heat evil enters the Ying and blood, it forces the blood to move in a wrong way, and burns the veins to cause bleeding. Heat evil enters the Ying and blood and burns the Ying and blood to cause blood stickiness, resulting in blood stasis [17] Therefore, in the treatment of COVID-19, promoting the circulation of qi, supplementing qi and promoting blood circulation can be used to remove blood stasis. We can choose ephedra, almond, ligusticum chuanxiong, Angelica, turmeric to promote the circulation of qi; Ginseng, Astragalus membranaceus, Atractylodes macrocephala, etc to supplement qi; Peach kernel, safflower, red peony root, salvia miltiorrhiza to promote blood circulation. Modern pharmacological studies [18] have found that medicines to cool blood and remove blood stasis, such as salvia miltiorrhiza, Red peony root and safflower, can effectively treat cough and asthma, and their mechanism of action may be achieved by inhibiting platelet activity in blood, improving microcirculation, inhibiting pathogenic microorganisms, improving ventilation function and hypoxia.

#### **3.2.5 Shen Xie Method**

"Shen Xie Method" namely invigorating the spleen seepage wet diuretic meaning. "Wet toxin" is one of the important causes of the occurrence and development of COVID-19, so attention should be paid to removing the pathogenic humidity during treatment. Here mainly from diuresis to talk about "dispelling dampness". We can choose poria cocos, talc, indigo naturalis and other medicines, the representative prescription is Haoqin Qingdan Decoction or Wuling San. Haoqin Qingdan Decoction is used for dampness and heat suppress shaoyang syndrome, and the prescription uses Biyu San and Poria cocos to make dampness and heat evil come out from urine [19]. Wuling San is composed of poria cocos, grifola, Alisma rhizoma, Atractylodes macrocephala and cassia twig, which can make the dampness go away from urine and achieve the effect of reducing heat and dehumidifying. When dealing with the "wet evil" of COVID-19, the rational use of "diuresis" may be a way of "removing dampness".

#### **3.2.6 Run Xie Method**

"Run Xie method" means nourishing Yin and moistening dryness. Dryness evil is one of the pathological factors of COVID-19, dryness evil belongs to cold, which provides survival conditions for the virus, dryness evil produces fire as the internal cause of inflammatory reaction, dryness evil and dampness evil transform as the pathogenesis of repeated pneumonia, and dryness evil produces wind as the embodiment of virus diffusion. Meanwhile, dryness evil does not stop autumn, suggesting the possibility of coexistence, and treatment should be moistened [20]. Therefore, in the treatment, we can flexibly use runfei method, nourishing Yin method to treat dryness evil. We can choose Qingzao Jiufei Decoction. Studies[21] have shown that Qingzao Jiufei Decoction may regulate water-liquid balance by alleviating lung inflammation, reducing MPN372 content and increasing AQP5 and SP-A content in lung tissue, thus achieving the effect of "moistening dryness".

### 3.2.7 Kai Xie Method

"Kai Xie Method", that is, the application of "Xinkai Kujiang method" to regulating qi machine. Lung qi stagnation is the core pathogenesis of COVID-19. Lung hosts all kinds of qi and has the function of disperse and descending. If the lung qi stagnate and loss of disperse and descending, the whole body qi will be affected. Therefore, in the treatment, we should apply the "Xinkai Kujiang method" to regulating qi machine. Bo-li Zhang et al. found that in the treatment of COVID-19, the combination of spicy and bitter medicines was the most commonly used [22] by analyzing the COVID-19 prevention and control plans of TCM issued by various provinces and cities in China. Representative prescription is Xuanfei Baidu Decoction, side with ephedra to xun lung qi, with almond to descend lung qi; In addition, artemisia annua, Atractylodes and Tangerine orange are used to regulate qi and remove evil, which reflects the importance of "Xinkai Kujiang method" in the treatment of COVID-19. Lei Zhou et al. [44] believed that Xuanfei Baidu Decoction could inhibit the storm of inflammatory factors and over-activated immune response caused by novel coronavirus infection by regulating the inflammatory factors such as INTERleukin-6 (IL-6), chemokine CXCL8 and related T cells (Th17, Th1 and Th2).

## 4. Summary

The outbreak of COVID-19 has had a great impact on individuals, families and even the whole country. Therefore, the prevention and treatment of this disease must be paid attention to. The prevention and treatment of COVID-19 is mainly based on the principle of "supporting the righteous and dispelling the evil", with the lung being the main focus and the five organs being harmonized. This paper mainly provides ideas from the perspective of "dispelling evil". Based on the theory of "The Stasis Of Metal Should Be Adjusted", the author understands COVID-19 from different perspectives. The core pathogenesis of "jin Yu" -- lung qi stagnation was discussed. Based on "xie Zhi", seven treatment methods were put forward, namely, xuan xie method, qing xie method, tong xie method, shu xie method, shen xie method, run xie method, kai xie method. It is hoped that different ideas can be provided for clinicians in dialectical therapy.

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