

Research Progress of TCM in the Treatment of Interstitial Lung Disease

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Abstract: *Interstitial lung disease (ILD) is a heterogeneous group of diseases. The most common clinical symptom of ILD is progressive exertional dyspnea, usually accompanied by cough, fatigue, etc. Physical examination showed shallow and rapid breathing, significant burst sounds in the lower lungs, cyanosis of lips and fingers, and clubbing fingers (toes). Pulmonary hypertension and pulmonary heart disease can occur in the late stage, which is a kind of refractory disease in clinic. There are some problems in modern medical treatment, such as limited curative effect and significant side effects. Based on the principles of 'holistic view' and 'syndrome differentiation and treatment', traditional Chinese medicine shows unique advantages by regulating the function of viscera and improving the airway microenvironment. This paper systematically summarizes the research on the theoretical characteristics and treatment ideas of interstitial lung disease by various doctors of traditional Chinese medicine in the past five years, and discusses the future development direction in combination with the application of clinical and cutting-edge technology, so as to provide reference for clinical practice and research.*

Keywords: Interstitial lung disease, Physicians, Etiology and pathogenesis, Treatment prescription.

1. Introduction

Interstitial lung disease (ILD) is a general term for interstitial lung disease, including more than 200 lesions. It is characterized by interstitial lung disease or fibrosis, causing impaired gas exchange, leading to dyspnea, decreased exercise tolerance, and even respiratory failure and death [1]. The median survival time of idiopathic pulmonary fibrosis (IPF) is only 3-5 years [2]. Clinically, immunosuppressive agents such as glucocorticoids are mainly used to treat patients with ILD. Prednisone is a common glucocorticoid drug. Although it can play a certain role in the treatment of the disease, long-term single-agent treatment is prone to drug resistance, inducing many adverse reactions, and the overall efficacy is not ideal. ILD belongs to the category of 'lung arthralgia' and 'lung flaccidity' in traditional Chinese medicine. Phlegm and blood stasis are the main pathological factors [3]. Traditional Chinese medicine has unique advantages in the treatment of interstitial pneumonia. It can not only improve symptoms, but also improve the quality of life of patients, prolong their life cycle, etc., and delay the progress of interstitial pneumonia to a certain extent. This paper mainly reviews the current situation of traditional Chinese medicine in the treatment of interstitial pneumonia, aiming to provide ideas and accurate and reliable basis for the clinical treatment of interstitial pneumonia.

2. The Theory of Kaixuanfu and Tongkuli

Cai Song [4] and others believe that interstitial lung disease (ILD) is located in the interstitial lung, in traditional Chinese medicine, it is the interstice of the lung, and it is the function of the triple energizer and the lung. The pathogenesis is not only the difference between deficiency and excess, but also the difference between the inside and outside of the disease: (1) If the disease occurs in the interior, it can lead to the deficiency of lung qi and body fluid due to diet fatigue or heavy death of body fluid, and the qi and body fluid can not be filled in the interstice of the lung. The lung leaves are lost in nourishment, and gradually fistula is not used, resulting in

'lung fistula', such as idiopathic pulmonary fibrosis; or due to other diseases, phlegm, blood stasis, fire and other internal evils are produced, and the internal evils block the operation of qi, blood and body fluid, resulting in qi and blood obstruction in the lung, which is called 'lung arthralgia'. For a long time, it can also lead to ILD, such as interstitial lung disease secondary to chronic obstructive pulmonary disease. (2) The disease originated from the outside, is due to lung disease, or external evil invasion of the muscle surface, Xuanfu lost in the open side, striae catharsis, evil through the triple energizer striae in the lung, resulting in lung qi stagnation in the lung's harmony, hair 'lung Bi', such as connective tissue disease-related ILD. Regardless of whether the disease starts inside or outside, ILD has the factors of internal obstruction of evil qi and unfavorable qi and blood, which is also the reason why ILD syndromes are mostly mixed with deficiency and excess.

In the treatment, to open Xuanfu, published to penetrate evil: from the muscle expression of evil, the main sweating to relieve the table, so that the evil from the muscle surface, while reconciling Ying and Wei, so that the Xuanfu of the muscle surface returned to normal opening and closing, while maintaining the striae. Choose different prescriptions according to the nature of pathogenic factors [5-6]; relaxing the striae, turning the pivot to get out of the table: running the Shaoyang pivot, dredging the triple energizer to help the evil to reach the table. In the treatment, Shaoyang should be reconciled and the pivot should be operated. According to the difference of disease qi, disease blood, disease water and disease fire, bupleurum prescriptions or combined with other prescriptions can be used to regulate qi and blood and relieve triple energizer. In the early stage, we should pay attention to tongbu, which can be given the method of tonifying qi and benefiting lung combined with clearing heat and detoxifying, promoting blood circulation and removing blood stasis, resolving phlegm and clearing turbidity; in the middle stage, both lung, spleen and kidney, or tonifying lung qi, or tonifying qi and yin; late or virtual easy to take off, is given priority to with solid off asthma [7].

3. Wenyang Tongluo Theory

Professor Wang Peng [8] believes that most patients with advanced secondary interstitial lung disease have Yang deficiency and collateral obstruction. Therefore, the theory of 'Yang deficiency and collateral obstruction' plays a key role in advanced secondary interstitial lung disease. It is mainly manifested in 'lung Yang deficiency', combined with heart Yang deficiency, spleen Yang deficiency, kidney Yang deficiency and other viscera Yang deficiency. 'Luobi' refers to phlegm, blood stasis, pathogenic toxin blocking lung collaterals. Obstruction of lung collaterals is the final outcome of this disease, or due to the blockage of evil, or due to deficiency and malnutrition, phlegm and blood stasis obstruction, toxic damage to lung collaterals, and ultimately lead to pulmonary atrophy. If there is an acute exacerbation of wheezing, increased sputum volume, fever and other acute exacerbations, it is manifested as a 'standard' state of 'collateral obstruction' leading to the accumulation of pathological products, including 'phlegm and blood stasis' and 'toxin damaging lung collaterals' as the main pathogenesis characteristics. 'Long illness into the network', interstitial lung disease in the late 'virtual', 'poison', 'stasis' mutual glue is easy to feel the evil of the six evils. Lung collateral disease can be caused by external toxin (secondary), or caused or aggravated by endogenous toxin (idiopathic). It is due to the damage of lung collaterals by toxin and the obstruction of collaterals, which can eventually lead to the pathological outcome of deficiency, phlegm, blood stasis and toxin, obstruction of collaterals or deficiency of collaterals.

In terms of treatment, 'warming yang and dredging collaterals' was taken as the overall treatment method. On the basis of the classic prescriptions of 'Guizhi Gancao Decoction' and 'Gancao Ganjiang Decoction' warming lung yang, combined with Yupingfeng Powder, Buyang Huanwu Decoction, Sijunzi Decoction, Linggui Zhugan Decoction, Guigan Longmu Decoction, Jingui Shenqi Pill, Yougui Pill isothermally tonifying lung qi, warming heart and spleen, and kidney yang. At the same time, 'nourishing yin, resolving phlegm, removing blood stasis, attacking evil' and other prescriptions were used to dredge lung collaterals. Clinically, according to the different clinical manifestations of patients, clinical addition and subtraction.

4. Fuyuan Juanbi Theory

Zhao Xiaoli [9] and others think that ILD is based on the deficiency of kidney essence. The lung is the mother of the kidney, the deficiency of kidney essence, the mother's qi is stolen, and the long-term disease is more than the deficiency of both spleen and kidney. The lungs are not nourished by the essence of the day, which eventually leads to the deficiency of the lungs, the loss of nourishment of the lung collaterals, the loss of Xuanjiang, the symptoms of dry cough, fatigue, shortness of breath, chest tightness, asthma, and movement. The lung collaterals do not nourish the kidney essence for a long time. If the qi and blood are blocked for a long time, the disease will not heal for a long time, showing a tendency of lingering. The obstruction of lung collaterals runs through the whole course of the disease. The lung governs qi to control respiration, and the evil qi blocks the lung collaterals. If the lung qi fails to disperse and descend, the treatment will not be

able to cure the disease. The defense is not solid, and it is easy to aggravate the disease after re-infecting the external evil. Environmental toxin is an important inducement for the occurrence and development of ILD. Lung opens to the nose, and environmental toxin [10] enters from the mouth and nose, or contacts with the skin, with qi and blood as the carrier, throughout the whole body, gradually invading the lung, damaging the lung qi, blocking the lung collaterals, affecting the function of the lung and inducing ILD.

In terms of treatment, Fuyuan Juanbi is the basic treatment. Fuyuan is to invigorate the lung, spleen and kidney to strengthen the root and consolidate the root. Juanbi is to restore the patency of lung collaterals by dispelling wind and dredging collaterals and removing symptoms and dredging collaterals. At the same time, it pays attention to the elimination of environmental toxins, so as to achieve the purpose of strengthening the body and eliminating evils and treating both symptoms and root causes.

5. The Theory of Regulating Cold and Heat, Nourishing Blood and Promoting Water

Professor Zhang Lishan et al. [11] believed that ILD is a lung disease, and the disease is located in the lung, but its occurrence and development are closely related to the liver, spleen and kidney. In patients with ILD, kidney deficiency is in the front, lung paralysis is in the back, spleen and stomach are damaged, and water in the body does not dissolve. Pathological products such as water and blood stasis are deposited in the body. In addition, hormone therapy is commonly used, and yang hyperactivity and yin injury are suspected of causing bad diseases. The disharmony of liver and lung qi, the disorder of lung and kidney uptake, the unfavorable rise and fall of liver and spleen, and many other factors affect each other. The patients with deficiency of body fluid and blood are most prone to the phenomenon of internal deficiency and heat, and the upper heat and lower cold are common, forming a pathogenesis of mixed cold and heat, blood deficiency and water abundance. Common clinical patients have bitter taste, upset, hypochondriac pain and other symptoms of liver and gallbladder stagnation, as well as loose stools, abdominal distension, anorexia and other symptoms of spleen and stomach deficiency, or skin ecchymosis, joint swelling and pain, chills and other symptoms of cold retention, as well as adverse urination, dry mouth and other symptoms of deficiency of body fluid and blood. Because of the difficulty in transporting and transforming water, patients often have different body shapes, greasy tongue coating, dark tongue texture and thin pulse.

The treatment should be used to regulate cold and heat, nourish blood and promote diuresis. Chaihu Guizhi Ganjiang Decoction [12] can adjust cold and heat, Danggui Shaoyao Powder [13] can strengthen spleen, nourish blood and promote diuresis. The two prescriptions are used together to play the role of regulating cold and heat, nourishing blood and promoting diuresis. ILD patients have deficiency in origin and excess in superficiality, complicated pathogenesis and symptoms, or are easy to cause bad diseases due to taking a large amount of hormones. The deficiency of ILD is in the front. The combination of Chaihu Guizhi Ganjiang Decoction and Danggui Shaoyao Powder can not only exert the original

prescription effect, but also have the function of regulating Ying and Wei. It can regulate cold and heat, promote blood circulation and promote diuresis as a whole. It is especially suitable for patients with connective tissue disease-related ILD. Because the lesions of connective tissue involve the skin, muscles and other parts of the surface, the combination of Guizhi and Shaoyao in the prescription can warm and dredge the surface, regulate Ying and Wei, and relieve the evil of the muscle surface.

6. Theory of Invigorating Spleen and Benefiting Lung, Warming Yang and Accepting Qi

Professor YAN Guizhen [14] believes that the main pathogenesis of interstitial lung disease is deficiency in origin and excess in superficiality. It is based on deficiency of lung and spleen qi and deficiency of kidney yang. Deficiency of lung qi and deficiency of lung gold involve spleen, and spleen is the acquired origin. Deficiency of spleen can not be irrigated around, and lung gold can not be nourished. Gold and water are born together, and kidney can be involved in lung disease for a long time. The spleen body Yin and Yang, spleen Yang root in the kidney Yang, spleen deficiency for a long time can also involve the kidney Yang Qi. Lung qi deficiency can not stimulate Ying qi, the blood in the pulmonary vein is slow, and it is easy to form stasis in the small pulmonary collaterals, resulting in blood stasis blocking the collaterals. The unfavorable blood is water, blood stasis and poor pulse, which further affects the fluid and blood, and eventually leads to water disease. The water stops in the pulmonary collaterals to form invisible phlegm, resulting in phlegm turbidity obstructing the lung. On this basis, when the external evil invades the lung, it is depressed and heat is transformed, and the lung fluid is burned, and the liquid is refined into phlegm. The phlegm and heat are combined to form the syndrome of phlegm heat obstructing the lung.

7. Treatment

In terms of treatment, combined with the pathogenesis characteristics of ILD, both symptoms and root causes should be treated in the treatment, but in different stages of disease development, emphasis should be placed on the treatment of symptoms in urgent cases, and on the treatment of root causes in slow cases. Invigorating the spleen and benefiting the lung, warming yang and accepting qi are the main methods. It attaches importance to promoting blood circulation and dredging collaterals, as well as clearing heat and detoxifying and resolving phlegm. It focuses on nourishing and dredging, nourishing and consolidating the root, promoting smooth circulation, and promoting the human body to achieve the organic overall state of yin and yang balance. In the course of treatment, the quality of life of patients is particularly emphasized, and the basic goals of treatment are to improve the patient's good treatment experience, reduce the psychological burden caused by the disease, and achieve better curative effect. Micro sweating, urination, Tongli Sanjiao theory

According to Sun Fang [15], dampness plays an important role in the pathogenesis of ILD. Although phlegm, fluid,

water and dampness are 'the source of syndrome', they have different pathogenic characteristics and treatment. [16] On the one hand, the external dampness attacks the surface, which is easy to be combined, resulting in pulmonary collateral obstruction. On the other hand, internal dampness is easy to be combined with qi, blood and phlegm, resulting in phlegm and blood stasis, blood and water diseases. Damp evil stops gathering, blocks meridians and collaterals, and the disorder of qi movement leads to the failure of lung qi, and the accumulation of dampness, stasis and phlegm. The three are mutually causal, forming the pathological characteristics of external impediment Xuanfu and internal impediment lung collaterals. Damp evil for a long time, damage healthy qi, lack of healthy qi, then unable to dispel evil, more difficult to dispel wet evil, the two are reciprocal causation, vicious cycle. Therefore, according to the patient's condition, at the same time of removing dampness, the method of warming yang and replenishing qi, nourishing yin and nourishing blood should be used to treat both the symptoms and the root causes, which is easier to make contributions. In the treatment, if the cold and dampness are trapped in the surface, the prescription is Mahuang Jiazhu Decoction and the dampness in the surface; the whole prescription makes the table closed, the water is wet and scattered, so as to achieve the purpose of sweating to dispel evil [17]. Wet stagnation turns into heat, and Ma Xing Yi Gan Decoction with sweet and light dampness is used to clear dampness. For those with cold-dampness stagnation and heat-transforming yin, Guizhi Shaoyao Zhimu Decoction was selected. The method of strengthening the body can be added and subtracted according to the patient's condition on the basis of removing dampness, so as to achieve the functions of benefiting qi, nourishing blood, warming yang and nourishing yin.

8. Three Burners Membrane Theory

Xu Qiuwen et al. [18] believed that the triple energizer membrane system theory believed that the triple energizer was composed of human viscera capsule, stroma and lymph. The human body's pectoral qi, nutrient qi, defensive qi, essence, body fluid, sweat, runny nose, saliva and guard essence are all internalized in the tri-jiao membrane system under the warmth of Yuanyang qi, the nourishment of water and grain essence and the promotion of qi movement [19]. The water in the body runs through the triple energizer membrane system, and the air machine drives the water to run, and the exchange of fine substances between the organs is completed through the triple energizer membrane system. According to the different forms of the membrane system of each viscera, the running state of the water is different, that is, the cloud of 'Lingshu · Yingweihui' is 'the upper energizer is like fog, the middle energizer is like retting, and the lower energizer is like blasphemy'. The gas and water are passed through the tri-jiao membrane pipeline, and the gas and liquid around the body are transported by it. The interstices are the true place of Sanjiao Tonghui Yuanzhen, which is injected by blood gas.'s interstice, refers to the gap between cells or intercellular substance [20]. Because the triple energizer membrane system can contact the upper and lower parts of the whole body, and the evil qi is transmitted along the triple energizer membrane system, it can be seen that the disease manifestations of connective tissue disease-related interstitial lung disease involve multiple organs and systems of the whole

body. The upper focal membrane system connects the lung through the interstitium and pleura, which is easy to be infected and retained, so a variety of immune-related diseases can lead to interstitial lung disease. Lung and kidney deficiency is the internal cause of this disease. Water dampness, phlegm and blood stasis blocking the triple energizer membrane system is the pathogenesis of this disease.

In the treatment, the principle of treatment is to soothe the triple energizer, tonify vital qi, regulate qi and dampness, remove blood stasis and phlegm, and soothe the triple energizer is an important part of treatment. The key to dredging triple energizer is 'pass', 'change' and 'adjust'. 'Tong' means unobstructed triple energizer, including Xuanshang Tongxia, dispelling wind and dampness, and dredging qi movement. 'Hua' is to promote the gasification of triple energizer, tonify the qi of lung and kidney, warm yang and transform qi, and promote the recovery of gasification function. "Regulating" is to regulate the qi and blood of the viscera, restore the gasification, and generate the active energy of the gasification. The triple energizer is unobstructed, and the qi movement is regulated. In addition, the products of promoting blood circulation, removing blood stasis and resolving phlegm are added to remove the blood stasis and phlegm turbidity that flow to the whole body with the tri-jiao membrane system during the disease process, and further relieve the stasis of the tri-jiao membrane system, and the lesions in multiple parts such as skin, joints and zang-fu organs can be cured.

9. Nodule

The etiology of ILD is complicated, involving multiple aspects such as genetics, environment, and immunity. Traditional western medicine therapy often focuses on controlling inflammation and slowing down the process of fibrosis. The addition of traditional Chinese medicine has brought a new perspective to this challenge. A major feature of traditional Chinese medicine treatment is 'syndrome differentiation and treatment'. It can subdivide complex ILD into different TCM symptoms according to the patient's specific condition, such as symptoms, constitution, and even psychological state, so as to formulate a personalized treatment plan. This approach not only makes the treatment path clear and orderly, but also provides a broad space for individualized treatment.

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