

Based on the Relationship between Lung and Five Viscera in Traditional Chinese Medicine to Explore the Mechanism of Sequelae of Pulmonary Epidemic Disease

Zhen Zhang¹, Longxing Jia¹, FangFang Meng¹, Yan Wang¹, YaoHui Li^{2,*}

¹Shaanxi University of Chinese Medicine, Xianyang 712046, Shaanxi, China

²Shaanxi Provincial Hospital of Chinese Medicine, Xi'an 710003, Shaanxi, China

*Correspondence Author

Abstract: *Pulmonary epidemic disease is a kind of disease with high incidence, high infectivity and high prevalence [1]. For example, atypical pneumonia, new coronavirus pneumonia, pulmonary tuberculosis, Influenza A, influenza B and so on. This article mainly discusses the sequelae of new coronavirus pneumonia as an example. Although it has been more than a year since the climax of the infection of the new crown, the mention of the new crown has been increasingly diluted, but now there are still many patients with two or even three Yang, and even many times the recovery of Yang, the sequelae of the patients infected with the novel coronavirus are different in degree and lasting in different time, among which the sequelae of the primary infection are the most prominent, which affect the health of the patients in different degree, this article will review the sequelae of the new coronavirus pneumonia from the angle of the relationship between the lung and the five zang-organs, in order to let us understand the sequelae of the new coronavirus from the angle of traditional Chinese medicine, we should pay more attention to the sequelae of pulmonary epidemic disease, provide the prevention and cure thought from the angle of TCM, and recover the patients' health as soon as possible.*

Keywords: COVID-19, Sequelae of COVID-19, The relationship between Lung and Five Viscera in Traditional Chinese medicine.

1. Modern Medical Background of COVID-19

COVID-19[2], named by the World Health Organization (who), is a new type of coronavirus pneumonia, which has a great impact on the worldwide spread and prevalence of COVID-19 during its peak period, the main symptoms were fever, dry cough, fatigue, smell, loss of taste, nasal congestion, runny nose, sore throat, conjunctivitis, myalgia and diarrhea. Is one of the world's largest public health events, society, families, individuals have been seriously affected [3]. However, COVID-19 pneumonia has been effectively controlled with the joint efforts of the predecessors of medicine, in which traditional Chinese medicine has made outstanding contribution in the process of COVID-19 prevention and treatment [4]. Although the clinical symptoms of coronavirus pneumonia have been effectively treated, but the sequelae of coronavirus pneumonia still haunt many patients. The World Health Organization (who) defined the long-term sequelae of the patients after their negative nucleic acid test as the symptoms of the people who were re-diagnosed or possibly infected with SARS-Co-2. All these have to arouse our attention and reflection. The treatment of COVID-19 pneumonia is not only the normal laboratory examination, but also the recovery of chest imaging, the occurrence of sequelae and the treatment of COVID-19 pneumonia belong to the prevention and treatment of COVID-19 pneumonia. At present, there is no systematic treatment for the sequelae of COVID-19, and most of them use the method of integrated traditional Chinese and Western medicine for rehabilitation treatment. Therefore, fully absorb the experience and lessons of ancient physicians, active prevention and treatment of the sequelae of the coronavirus symptoms, is the embodiment of the rehabilitation of coronavirus pneumonia. Based on the understanding of

plague disease and its sequelae by ancient physicians and combined with modern medical research, the sequelae of COVID-19 pneumonia and its prevention and treatment are comprehensively analyzed from the angle of the relationship between lung and five zang-organs, to provide a new idea of TCM treatment of the sequelae of COVID-19, and to improve the prognosis of pulmonary disease.

2. The Knowledge of Epidemic Disease and Its Sequelae by Ancient Chinese Physicians

According to the theory of traditional Chinese medicine, the occurrence of epidemic diseases is the result of the combined action of climate, environment, internal factors of human body, evil spirit and the spirit of time and action. "Plain ask · Thorn Law" said: "The five plague to, are easy to infect each other, regardless of size, similar symptoms." "Suwen · six Yuan Zhengji da lun" said: "Wen Li Daxin, far and near Xianruo", "Set rhyme · go sound on · six to" said: "Epidemic, "Word Lin": epidemic also. "Epidemic disease on the original disease," said: "The plague, the sense of the world's fierce, in the year of how much, in the corner of the weight, in the four ups and downs. This Qi, no young and old strong and weak, touch the disease, evil from the mouth and nose into" [5]. It can be seen that the ancient physicians believed that the epidemic disease was highly infectious, mainly transmitted through the nose and mouth, once it occurred, it spread rapidly in the population, the disease was fierce, and the symptom rate was similar regardless of the age. As for the sequelae of the disease, the ancient physicians believed that the sequelae of the disease, although the disease was cured, were still left uncured. As early as in "Synopsis of the Golden Chamber", there were discussions on the epidemic disease, such as Lily disease, yin and yang toxin, etc.. A brief explanation of

synopsis of the Golden Chamber edited by Wang Wanjie called Lily disease "The aftershock of febrile venereal disease" and "The aftershock of febrile venereal disease which failed to cure and was mistreated". Wang Mengying's treatise on epidemic diseases of Zhongjing (warm and hot warp and weft) contains: "Lily disease is caused by new cure of epidemic diseases of time", taking Lily disease as the hereditary syndrome of epidemic diseases of time. It can be seen that ancient physicians also believed that the sequelae of epidemic diseases were also an important part of the treatment of diseases, while the holistic concept of traditional Chinese medicine believed that the five zang-organs were mutually reinforcing and mutually exclusive, and participated in the development and outcome of diseases, it is very important to discuss the prognosis of lung disease from the relationship between lung and five zang organs.

3. COVID-19 Pneumonia is a Common Sequela

3.1 Pulmonary Sequelae

It has been reported that after the initial infection of coronavirus, there will be up to 4 weeks of dyspnea, cough, expectoration, immunity, the longest respiratory symptoms will be delayed for up to 1 year. Studies [6] have shown that in the convalescent stage, the common CT findings of the patients with coronary heart disease are: ground-glass, paving stones, consolidation/cord-like changes, and so on, the degree of lung lesion infiltration is especially severe in severe and critical type patients, which is easy to leave irreversible consolidation and fibrosis. From the point of view of traditional Chinese medicine, "New coronavirus pneumonia" belongs to the category of "Epidemic disease" in TCM, which is caused by many pathological factors such as "Damp, heat, toxin, blood stasis and deficiency", causes the evil Qi in the lung to be difficult to get rid of and produces the sequelae. First of all, evil from the mouth and nose into the lung Wei, lung for delicate dirty, susceptible to exogenous evil, lost in XUANSU, lung qi on the adverse, thus causing a cough, and because the Wei Qi is not solid, evil Qi in the accumulation of Phlegm, so there will be long-term expectoration, phlegm and Dampness Block Qi, lung qi and the outside of the Qi is not through, then difficult to exhale, shortness of breath. If it does not heal for a long time, the body's positive qi dissipates, and the function of resisting external evils decreases, then the condition will be repeated. It has been proved that Sanao decoction and resist decoction have good effect on respiratory symptoms of the sequelae of new crown [7].

3.2 Cardiac Sequelae

The report shows that new coronary pneumonia in the recovery period will appear myocarditis, hypertension and other cardiovascular diseases [8]. The main clinical manifestations were chest pain, palpitation, dizziness, tinnitus, etc. A cohort study of people recovering from COVID-19 infection showed that 20% of patients developed palpitations at 8-month follow-up [9]; UK multicentre cohort study found that, heart palpitations occurred in 23% of adult discharged patients who recovered from COVID-11 infection [10]; 2021 cohort study of Chinese discharged patients with COVID-19 infection in the Lancet, palpitations occurred in 9% of patients at 6 months of follow-up after onset [11]. From a TCM

perspective, as Wu You-ke said in the treatise on epidemic febrile disease: "The plague, the feeling of the air, this air, whether young or old, strong or weak, touch the disease." "Non-wind, non-cold, non-summer, non-wet, is between heaven and earth do not have a different gas The infection of COVID-19 is not the common external infection of six pathogenic factors.

It is characteristic of epidemic virus [12]. It is a highly infectious disease, and also has more damage than common exogenous diseases Sex. The epidemic virus entered the pericardium from the nose and mouth, first invading the lungs, then spreading back to the pericardium transmis [13], sion can damage the spleen and stomach, intestines, liver, kidney, bladder. The Positive Qi gathers and resists the evil, the positive and evil compete fiercely, and the positive qi is rapidly depleted. COVID-19 caused acute fever in all patients. The virus destroyed the vital energy and damaged the heart and lung. The Lung was attacked by the virus and was mainly cough. The heart was attacked by the virus and the heart was weak and palpitation and palpitation occurred. The heart and lungs live together in the upper jiao, the lungs are connected with the heart, the healthy and the evil contend with dampness-heat, the evil of dampness-heat and pestilence invades the heart, the heart is the main blood vessel, the pestilence dampness-heat enters the blood vessel quickly, the dampness-heat consumes the Yin blood of the heart, yin blood deficiency consumption blood flow viscosity is easy to form blood stasis, blood stasis [14]. Stagnation and astringency, heart loss, heart main blood weakness and palpitation, palpitation, chest tightness, shortness of breath, dark tongue, pulse knot generation, etc.

3.3 The Spleen and Stomach are Sequelae

New type coronavirus pneumonia (COVID-19) is characterized by fever, dry cough and fatigue. Some patients or children with COVID-19 have mild and atypical symptoms, such as vomiting and diarrhea, there may even be patients with gastrointestinal symptoms as the first manifestation [15][16]. But the spleen and stomach system symptom in the new crown prognosis has the patient long-term existence to be dazed, the fatigue, the diet is not good and so on. Wang Qi, a great master of traditional Chinese medicine, first put forward the theory of "Exogenous pathogenic factors of spleen and stomach" [17]. He emphasized that the diseases of the spleen and stomach were not only caused by "Internal injury", but also by "Exogenous pathogenic factors" such as "Exogenous pathogenic factors" passing through the lung or "Exogenous pathogenic factors", therefore, for the diagnosis and treatment of the spleen and stomach in mid-jiao, the method of dispelling pathogenic factors should also be paid attention to. New-type coronavirus pneumonia is the pathogen of epidemic disease in TCM. The cause of the disease is related to dampness, so the location of the disease is lung first, but it is closely related to spleen and stomach. The theory of lung and spleen in TCM mainly studies the relationship between mother and child, physiology, pathology and therapy. To explore the theory of lung and spleen correlation, and to use this theory to treat the related symptoms of Cooropneumonia in convalescent stage has a significant advantage. For example, chief physician Hu Guojun used sini decoction, dried turmeric, scutellaria, coptis root and ginseng decoction,

Lingui Zhugan decoction, Lizhong Pill, Erchen decoction and Sijunzi decoction to treat the patients with COVID from the spleen and stomach [18], clinically, it is very effective.

3.4 Hepatic Sequelae

About 2%~11% of sars-CoV-2 infected patients have the basis of chronic liver disease, which may cause liver biochemical abnormalities in different degrees [19]. During the COVID-19 pandemic, patients with chronic hepatitis and cirrhosis regularly visited hospitals, which increased their exposure to SARS-CoV-2 compared with the general population, a history of chronic liver disease has been reported in 2-11% of SARS-CoV-2 infected patients [20]. Patients with COVID-19 can have varying degrees of liver biochemical abnormalities, the incidences of alanine transaminase (ALT) > 40 u/l, aspartate transaminase (AST) > 40 u/l and total bilirubin elevation were 22.2%, 21.3% and 10.5% respectively in 1099 patients with COVID-19 in China [21]. Studies have reported that in patients with COVID-19, pathological changes such as steatosis, mild lobular and/or portal inflammation, hepatic sinusoidal congestion and microthrombosis can occur in the liver [22]. Retrospective studies from 13 Asian countries also confirmed a strong association between liver disease severity and coronary mortality. From the point of view of traditional Chinese medicine, the new coronavirus belongs to the disease of lung system, which is directly related to the physiological function of the lung, and this movement also can not be separated from the regulation of the liver-qi dispersal function. Therefore, the function of the lung can affect the liver, and the dispersing function of the liver-qi can smooth the whole body's Qi, making the movement of the zang-fu organs and meridians unimpeded. The function of liver-qi dispersing qi plays an important role in regulating the balance of the ascending and descending movement of Qi in the zang-fu organs and collaterals, is also an important condition. The function of liver-qi is normal, then the function of Qi and blood is smooth, the channels and collaterals are smooth, and the functions of viscera, body, organs and orifices are stable and orderly. The liver function is abnormal because of the deficiency of qi, so it is directly related to the liver function and lung diseases in the symptom and prognosis of the new coronary disease.

3.5 Renal Sequelae

Renal involvement in patients with COVID-19 was found to be common, which may be related to the expression of angiotensinogen-converting enzyme 2, the main entrant receptor of 2019-nCoV, in renal cells. Common renal involvement includes acute renal injury, proteinuria, hematuria, etc.. Renal injury is closely associated with poor prognosis in patients [23]. Multiple large-sample retrospective clinical studies currently show a 5.1% to 36.6% incidence of combined AKI in patients with COVID-19 [24][25][26][27]. One study from New York analyzed data from 5,449 local patients, of whom 38.8% were white, 20.6% were African n, and 8.6% were Asian n, with a median age of 64 years, the incidence of Aki [improved global kidney disease prognosis organization (KDIGO) diagnostic criteria] was 36.6%, of which 46.5%, 22.4%, and 31.1% were stage 1, Stage 2, and stage 3 of Aki, respectively [25]. It can be seen that COVID-19 patients have a higher incidence of AKI and

are closely associated with patient prognosis. According to the analysis of the correlation between lung and kidney in TCM, the lung and kidney belong to collaterals on meridians, and the kidney and lung are the most unique. The heart, liver, spleen, and kidney are the only four organs in which the kidney enters the lung through the main meridians. "The kidney foot shaoyin vein, its straight, from the kidney through the liver into the diaphragm, lung" "Ling Shu menstruation Jin. "The vessels of the lesser yin run through the kidney and collaterals and lungs" (plain questions: illness) [28]. Physiologically, the lung is the Master of Qi, the kidney is the root of Qi, the lung is the Master of Qi, the kidney accepts qi, the lung and kidney co-master, breath. Yang shiying in "Renzhai straight to the Fang Lun," said: "Whoever coughs heavily, causes a hundred bones, the Qi from the navel to run up, this kidney can not recover qi." Its "Kidney Qi," said, it provides a new theory for the therapy of tonifying the kidney.

4. Conclusion

To sum up, although the new coronavirus has been effectively controlled, the proportion of moderate and severe coronavirus pneumonia is becoming less and less, and the intensity of infection is gradually decreasing, mainly light, and the prognosis is getting better and better, however, there are also some patients with obvious "Sequelae", such as the obvious feeling of low immunity, repeated respiratory tract infections. For traditional Chinese medicine, it is necessary to see the micro-knowledge, from the dialectical overall thinking of traditional Chinese medicine, pay attention to the overall relationship of the five zang-organs, the relationship between the lung and the five zang-organs as a basis for the overall regulation of human zang-fu functions, it is helpful for the prognosis of COVID-19 pneumonia or other pulmonary disease to achieve better effect, relieve the pain of patients and improve the quality of life.

References

- [1] Qi Zheng, Song Du, Wei Yang, Zheng Yu. Concept, theoretical evolution, diagnosis and treatment of pulmonary disease [J]. Chinese Journal of Basic Traditional Chinese medicine, 2022, 1:18-22.
- [2] Huamin Wei, Yangfan Li, Jing Yu, Hai Lin. Prevention and control of sequelae of novel coronavirus pneumonia from the perspective of traditional Chinese medicine [J]. World TCM, 2020, 02:166-171.
- [3] The National Board of Health. Update on new coronavirus pneumonia as of 2400 hours on 7 February [EB/OI]. (2020-02-08) [2020-02-09]. [Http://www.NHC.Government.CN/XCS/YQFKDT/202002/6C305F6D70F545D59548BA17D79B8229.SHTML](http://www.NHC.Government.CN/XCS/YQFKDT/202002/6C305F6D70F545D59548BA17D79B8229.SHTML).
- [4] State administration of traditional Chinese medicine. The study of effective prescription of traditional Chinese medicine has made some progress. The clinical observation in pilot provinces shows that the total effective rate of Qingfei paidu decoction can reach more than 90% [EB/OL]. (2020-02-06) [2020-02-09]. [Http://bgs.SATCM.Government.CN/Gongzuodongtai/2020-02-06/12866.html](http://bgs.SATCM.Government.CN/Gongzuodongtai/2020-02-06/12866.html).
- [5] Lijuan Jiang, Yuan Ma, Yan Wei, Wenfeng Zhang. Origin and development of epidemic diseases in

- traditional Chinese medicine [J]. Journal of Changchun University of Chinese medicine, 2022, 4:359-362.
- [6] Xu Hui, Evidence-based study on integrated Chinese and Western medicine for the treatment of long-term symptoms of novel coronavirus infection [D]. Lanzhou University, 2023.
- [7] Huixia Yang. The clinical observation of SANAO decoction combined with tinder decoction in treating new type coronavirus infection (middle type) [D]. Chengdu University of traditional Chinese Medicine, 2023.
- [8] Qian Fu, Liangduo Jiang. Pathogenesis and treatment of palpitation in convalescent patients with coronavirus omicron infection [J]. Journal of Beijing University of Chinese Medicine, 1-7.
- [9] MONTANI D, SAVALE L, NOEL N, et al. Post-acute COVID-19 syndrome[J]. Eur Respir Rev, 2022, 31(163): 210185.
- [10] Sigfrid L, Drake T M, Pauley E, et al. Long COVID in adults discharged from UK hospitals after COVID-19: a prospective, multicentre cohort study using the ISARIC WHO Clinical Characterisation Protocol[J]. Lancet Reg Health Eur, 2021, 8:100186.
- [11] HUANG C L, HUANG L X, WANG Y M, et al. 6-month consequences of COVID-19 in patients discharged from hospital:a cohort study[J]. Lancet, 2021, 397(10270): 220.
- [12] Guan Yang, Xin Jiang, Xiaohong Gu. Prevention and treatment of novel coronavirus pneumonia based on membrane theory [J]. Journal of Beijing University of Chinese medicine, 2020, 43(8): 630-635.
- [13] Naiguang Song. Professor Guangyi Kong experience in treating febrile diseases with the lung-shaoyang-kidney system [J]. Journal of Beijing University of Chinese medicine, 2009, 32(5): 314-316.
- [14] Yuguang Wang, Wensheng Qi, Jiaju Ma, et al.. A preliminary study on the clinical characteristics and differential treatment of novel coronavirus pneumonia in traditional Chinese medicine [J]. Journal of Chinese medicine, 2020, 61(4): 281-285.
- [15] Huang C, Wang y, Li X, et al.. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China [J]. Lancet, 2020, 395(10223): 497-506.
- [16] State administration of traditional Chinese medicine. New coronavirus pneumonia diagnosis and treatment protocol (trial version 8) [J]. Chinese Medicine, 2020, 15(10): 1494-1499.
- [17] Cenxin Xiao. A brief analysis of novel coronavirus pneumonia [J] from "Exogenous infection of spleen and stomach". Journal of Jiangxi University of Traditional Chinese medicine, 2022, 03:18-20+23.
- [18] Longxiang Li, Li Zhang, Wei Fang, Bo Lian, Peng Jiang. Chief physician Hu Guojun used herbal medicine to treat COVID-19 pneumonia from the spleen and stomach [J]. Modern distance education in Chinese medicine, 2023, 22:62-64.
- [19] Po Cui, Shiming Dong, YueMin Nan. Impact of chronic basal liver disease on outcomes in patients with novel coronavirus pneumonia [J]. Journal of Practical Liver Disease, 2022, 06: 905-908.
- [20] Zhang C, Shi I, Wang Fs. Liver injury in COVID-19: management and challenges[J]. Lancet Gastroenterol Hepatol, 2020, 5:428-430.
- [21] Guan WJ, Ni Zy, Hu y, et al.. Clinical characteristics of coronavirus disease 2019 in China. N Engl J Med, 2020, 382(18): 1708-1720. 25(2): 97-99.
- [22] Tian s, Xiong y, Liu H, et al.. Pathological study of the 2019 novel coronavirus disease (COVID-19) through postmortem core biopsies. Mod Pathol, 2020, 33(6): 1007-1014.
- [23] Zhengying Fang, Jingyuan Xie, Nan Chen. Novel coronavirus pneumonia-associated nephropathy [J]. Chinese Journal of kidney disease, 2020, 12:961-964.
- [24] Chengy, LuoR, WangK, et al.. Kidney disease is associated with in-hospital death of patients with COVID-19[J]. Kidney Int, 2020, 97(5): 829-838.
- [25] HirschJS, NgJH, ROSSDW, et al.. Acute kidney injury in patients hospitalized with COVID-19[J]. Kidney Int, 2020, 98(1). DOI: 10.1016/J. Kint. 2020.05.006.
- [26] Lix, XuS, Yum, et al.. Risk factors for severity and mortality in adult COVID-19 inpatients in Wuhan [J]. J Allergy Clin Immunol, 2020, 146(1): 110-118.
- [27] Peig, ZhangZ, PengJ, et al.. Renal involvement and early prognosis in patients with COVID-19 pneumonia [J]. J Am Soc Nephrol, 2020, 31(6): 1157-1165.
- [28] Dazhi Li, Shiwei Ruan. Discussion on the relationship between lung and kidney in traditional Chinese medicine [J]. Guangming Chinese medicine, 2013, 12:2457-2458.