Prevention and Treatment of “Epidemic Toxin, Pathogenic Dampness, and Lung Deficiency” after COVID-19 Recovery Based on the Theory of “Preventive Treatment of Diseases” in Traditional Chinese Medicine

Jing Ai¹,², Linguangjin Wu¹, Ting Wang¹, Wanli Deng³, Xiaotian Zhang¹,²
¹Center for Preventive Treatment of Disease, Shuguang Hospital, Shanghai University of Traditional Chinese Medicine, ²Center for Preventive Treatment of Disease, Institute of Characteristic Diagnosis and Treatment Technology, Shanghai Institute of Traditional Chinese Medicine, ³Department of Oncology, Shuguang Hospital, Shanghai University of Traditional Chinese Medicine, Shanghai, China

Abstract

Due to the sequelae and recurrence in patients with COVID-19 after recovery. This article, based on the theory of “preventive treatment of diseases” in traditional Chinese medicine, which believes that the three pathogenic factors of epidemic toxin, dampness, and lung deficiency are the fundamental causes of the recurrence of COVID-19. The treatment strategies are to remove pathogenic factors, strengthen qi, nourish yin, clear heat, moisten dryness, and at the same time, reinforce the lung, spleen and kidney, and soothe the liver. Through a variety of treatments such as oral administration, external treatment, and skin absorption, it provides a new idea and method for the management of the recurrence of COVID-19.

Keywords: COVID-19, pathogenesis, preventive treatment of diseases, recurrence prevention, therapeutic principle

In December 2019, a new coronavirus disease (COVID-19) broke out in Wuhan. Moreover, it took nearly 2 months for the outbreak to drop to zero [Figure 1]. Until now, the pathogen has not been present in human society, and very little was known about it at the time of onset. COVID-19 is an acute febrile pneumonia. The disease is spread by both droplets and contact among the people. In addition to these two main routes of transmission, the disease may also spread through fecal or aerosol channel.[1] Moreover, the disease has the characteristics of susceptibility, making the virus have a strong human-to-human transmission property. Novel coronavirus patients mainly have fever, dry cough, fatigue, and other symptoms. Patients with severe conditions will have difficulty breathing and other critical signs 1 week after the onset, and even can rapidly develop into acute respiratory distress syndrome, sepsis shock, or end up in death, which seriously endangers the health of the general public. As of today, there are more than 80,000 confirmed cases of COVID-19. Antiviral treatment such as lopinavir/ritonavir regimen has been used in Western medicine.[2] The method to tonify qi and remove pathogenic factors in traditional Chinese medicine (TCM)[3] and symptom-oriented treatment has cured 67,000 people of the disease. With the number of patients cured increasing, the patients were released from isolation and met the outgoing criteria. However, due to the damage of new coronavirus to heart, liver, kidney, spleen and lung,[4,5] the corresponding organ function of some freed patients has not yet fully recovered, and...
some of them still have symptoms of deficiency of lung and spleen. At present, many countries are undergoing an outbreak of the epidemic; the number of infections increased sharply, while the number of imported cases is also increasing in China. Therefore, such groups of patients do not rule out the risk of re-infection. The National Health Commission issued the latest report in view of the fact that the problem of positive nucleic acid test was found in the re-examinations of a small number of discharged patients, and in order to strengthen the health management and isolation of the discharged patients, these patients should continue to be isolated and monitored for 14 days. Therefore, at present, it is urgent to prevent the recurrence after recovery, and it is crucial to find the corresponding treatment through the theory of TCM to protect the patients from being infected again.

Based on the theory of “prevention and recovery after treatment,” this article discusses the characteristics of pathogenesis and prevention and treatment strategies.

**Characteristics of COVID-19 Symptoms**

The *Su Wen* “Ci Fa Lun” (《素問·刺法論》Basic Questions “Discourse on Acupuncture Methods”) states that “the five plague are similar where they are easily transmitted no matter whether or not it is major or minor sickness where they share similar symptoms (五疫之至,皆相染易,无问大小,病症相似).” COVID-19 is characterized by similar symptoms in all patients, and the disease is developing rapidly. At first, there were only symptoms of fever and cough, or gastrointestinal reactions in the early stage. In severe conditions, patients may experience high fever, asthma, and even respiratory failure. After different treatments, most COVID-19 patients can be cured of, but after treatment, some patients will still have some changes in interstitial pneumonia, as well as varying degrees of cardiopulmonary dysfunction, and even pulmonary fibrosis.

Like other serious diseases, when the patients first recover, they often suffer from deficiency of qi, blood and body fluids, especially qi deficiency of the lung and spleen. The patients may have shortness of breath, fatigue, stomach fullness and loose stools. Most of them have an enlarged pale red tongue with a white, greasy coating. For patients with yin deficiency or patients living in dry, hot areas, the above factors may consume qi and further damage yin. The common clinical symptoms are fatigue, shortness of breath, palpitations, sweating, and thirsty. In addition, patients often complain of dry cough with little phlegm. They often have a dry tongue and a thin, weak pulse. In addition, there are some depressed and anxious patients often suffer from chest tightness and discomfort, frequent sighing, loss of appetite and insomnia and dizziness, which also need to be paid attention to from the point of view of “physical and mental treatment” [Figure 2].

**Pathogenesis of Recurrent Pneumonia after Coronavirus**

The occurrence of a disease is often associated with changes of weather and changes of horizon. In TCM theory, COVID-19 occurs because of an abnormal seasonal climate. Although the patient has recovered from the disease, the abnormal seasonal climate still exists. Therefore, patients still need to be careful after recovery.

*The external epidemic is not clear, the internal poison is still there*

The novel coronavirus pneumonia is caused by the SARS-CoV-2 virus. This epidemic began at the end of Ji Hai Year (2019), and the TCM theory of ‘five elements and six pathogens’ suggests that the climate this year will be very changeable. By the year of Geng Zi (2020), the dry nature of the climate will continue, whereas the second half of the year would be metal according to the five-element theory. The first half of the year would have excessive fire that would
result in higher temperature. The second half of the year would have dryness that would result in cooler weather. This shows that the current abnormal climate still exists. There is still a need to take precautions for those who are cured of COVID-19. At the same time, their bodies had not yet been cleared of pathological factors. This is not a moment to fully relax. *Jin Gui Yao Lu Xin Dian* (*金匮要略心典*; *The Experiential Scripture of the Synopsis of the Golden Chamber*) explains about “poison” where it is believed that the poison is the product of the accumulation of pathogenic qi. *Su Wen* “*Wu Chang Zheng Da Lun*” (*素问·五常正大论*; *Basic Questions “Comprehensive Discourse on the Five Regular Policies”*) states that “poison” is cause by over excessive and strong qi of the five elements. Over time, excessive pathogenic factors may accumulate and transform into toxic dampness or fire to block the flow of qi or consume qi, blood and body fluids and affect the zang-fu organs. Review of cases in the epidemic found that the novel coronavirus infection after rapid replication in vivo, high titer of the virus induced the body to produce excessive immune response. Some of the causes of severe pneumonia are not caused by viruses, but by an imbalanced cytokine system in the body. This phenomenon, known as “cytokine storm”[7-9] that accelerates lung injury, will work along with the abnormal “cytokine storm” that further leads to dysfunction and damage to multiple organs throughout the body.[10] [Figure 3] Chen Qian, et al.[11] reviewed 25 patients that died of the novel coronavirus. In the case of this study, 90.5% of the patients had elevated procalcitonin levels. Procalcitonin in the presence of bacterial infection will be significantly increased, but in viral infection there are no obvious increase or decrease that are applicable to the identification of bacteria and viruses. Bacterial infection may be an important factor in the death of coronavirus patients. In addition, the blood C-reactive protein and serum amyloid A content distribution increased significantly till the patient died, reaching 85% and 100% respectively. It suggests that there is a cascade of inflammation in the course of new coronary pneumonia. In TCM theory, these pathological products caused by stress reaction belong to the category of “internal poison” in TCM. “Internal poison” mainly includes heat toxin, blood stasis toxin formed by blood stasis for a long time, dampness toxin formed by dampness and turbid accumulation for a long time, and phlegm toxin formed by phlegm turbid depression for a long time. The prognosis of new crown patients is very important.

### 湿邪粘滞，缠绵难愈
Pathogenic dampness is the main cause of the epidemic, which is closely related to the geographical environment, climate change, and the physical fitness of the patients.

*Su Wen’s “Liu Yuan Zheng Ji Da Lun”* (*素问·六元正纪大论*; *Basic Questions “Comprehensive Discourse on the Policies and Arrangements of the Six Principla Qi ”*) states that “the sun rules the sky, dampness will occur during the exchange of qi and usually people will fall sick due to coldness and dampness (太阳司天之政……寒湿之气，持于气交，民病寒湿).” If the living environment is too humid, people will fall sick easily. In addition, nowadays, the spleen and stomach will be damaged due to the consumption of high-fat food and high-sugar ingredients and uncooked food as well as smoking and drinking, plus their sedentary lifestyle. This leads to health disorders. Experts from various regions said in terms of the clinical characteristics and tongue of epidemic patients, most people believe that the cause of the disease lies in “dampness” and “toxic”. This is also the reason that causes the death of too many people. The recent pathological report of postmortem examination confirmed this statement where on February 18, academician Zhong Nanshan released the report of postmortem examination which showed that COVID-19-infected patients’ lungs showed no serious fibrosis but a large amount of mucus. Recently, the team of Liu Liang’s research on a case of coronavirus exhibits that lung damage on the dead is the most obvious. A large amount of mucous secretions were found spilling out from the alveoli. Pathological changes and pathological products such as mucus, exudation, edema, and hyaline membrane in the lung are very similar to the characteristics of dampness and turbidity in TCM.

As mentioned in *Dan Xi Xin Fa’s “Zhong Shi”* (*丹溪心法·中湿*) “Dampness Stroke”) by Zhu Danxi of the Ming Dynasty, “when there is dampness, the dampness could come from outside and inside and should review its source (湿之为病，有自内出者，有自外入者，必审其方土之病源).” In the theory of traditional Chinese medicine, endogenous dampness is caused by body fluid metabolism disorders. It is one of the five endogenous evils and belongs to the category of pathogenesis. However, due to the dysfunction of the patient’s viscera, damp, as a pathological product of the intermediate link in the pathogenesis, can also be attributed to the category of etiology. Dampness belongs to yin pathogen, and it has the characteristic of turbid, heavy and sticky, which would block clear qi to move around. Dampness could hurt the body on its own but it could mix with wind, cold, heat, phlegm, and food retention. Dampness is diffuse in...
nature and could be found all over the body, which can reach the viscera, block up the viscera and qi, and the skin muscles and veins, limbs, and bones, leading to adverse qi. Irrespective of whether it is inside or outside, both the inside and outside as well as the San-Jiao can be invaded by dampness which is sticky glue and difficult to dispel in nature. The course of disease will be long while the symptoms tangled with each other, and the transmission is slow. The clinical treatment of the disease should not be too drastic, we should give slight sweating, moderate tonic, mild detoxification drugs to let the patient gradually recover the vital energy and complete recovery.

**Deficiency of Lung qi and Vital qi waiting to be restored**

The lung is the birthplace of qi and the leader of the five internal organs. The lung and the heart live together on the upper Jiao. And the lung covers other internal organs, hence the name canopy. Ye TianShi states that when warm pathogen invades it would firstly affect the lung. The coronavirus is an aspiration infection where the lung is the first organ to be affected in the whole course of disease. The lung is responsible for breathing; the formation and operation of the whole-body qi and blood are inseparable from the control of the lungs, so the lung plays a decisive role in the body’s vital qi production. *Supplement to Basic Questions* “Discourse on Acupuncture Methods” states that “when vital qi is strong, the pathogenic qi would not disturb the balance of the body (正气存内，邪不可干).” It means that the transmission of disease in the human body is conditional. In addition to the strength of the disease, the body’s vital qi also plays an important role. If vital qi could not contain the resist evil, then it will easily lead to febrile disease.

The transmission of the disease is in accordance with the law of transmission of febrile disease. Wu JuTong states in *Wen Bing Tiao Bian* (*温病条辨*) Systematized Identification of Warm Diseases that “febrile disease came from mouth and nose, and nose is connected to lung while the mouth connects to stomach. When lung disease propagates back, it also affects the pericardium. If the upper jiao is not treated, it will be transmitted to the middle jiao, which are stomach and spleen. If the middle jiao is not treated, then it will transmit to the lower jiao which includes liver and the kidney. It starts at the upper jiao and ends at the lower jiao.” Lung is located in the upper jiao and has the ability to regulate the water channels, which is the source of producing qi. The dispersing and descending of lung qi will generate distribution of body fluid. It is known as “the source of water”. The spleen mainly transports water and dampness, and has the closest relationship with water and liquid metabolism. If the lung loses its function, it will directly affect the formation and operation of qi, which includes “zong qi” and “whole body qi,” thus directly affecting the generation of vital qi, and could result in the deficiency of vital qi. When the coronavirus begins to heal, the lung is damaged and weak, and the vital qi is insufficient. In the course of the disease, the function of the zang-fu organs in the three jiaos is impaired, and the body fluid metabolism is impaired, while dampness comes from endogenesis, fatigue, anorexia, shortness of breath and cough can be observed clinically. For patients that are newly recovered from coronavirus, the disease would have reduced, but the vital qi is not strong yet. At this point, if there is lack of nursing care, lung qi cannot be restored; this will not only increase the possibility of recurrence, but will also affect the restoration of systemic body function. Therefore, only when the dispersing and descending functions of lung is at a normal level, can normal respiratory movement be maintained, so as to transport water grain essence and weiqi, participate in the regulation of water and liquid metabolism, and ensure the normal progress of human metabolism through continuous ascending and descending movements of qi mechanism.

**Strengthening Vital Energy and Dispelling Pathogenic Factors is the Treatment Principle of Prevention and Recovery after Corona virus**

Patients who meet the criteria for quitting isolation and discharge, but still have related symptoms, are the focus of attention. The pathological results of postmortem examination showed that CD8+T cells showed high concentration of cytotoxicity particles in the peripheral blood samples of novel coronavirus patients, suggesting that the immune mechanism in vivo was activated and led to serious immune injury in the patient.[2] Recent recommendations for the treatment of severe and critically ill patients with the novel corona virus should include the use of glucocorticoids in the treatment of these two groups of patients through their immunosuppressive effect to control the role of cytokine storm in patients to improve symptoms.[13] However, the use of glucocorticoids may induce or aggravate adverse reactions such as ulcer and infection, hypocalcemia, hypertension, osteonecrosis of the head, osteoporosis, psychosis, seizures, and hyperglycemia, and other adverse reactions occur after withdrawal of the drug.

Currently, the official release of discharge criteria for coronavirus treatment[10] is as follows: (1) the patient’s temperature should return to normal in at least 3 days; (2) respiratory symptoms should improve significantly; (3) the patient’s lung radiographs should show a significant improvement in acute exudative lesions; and (4) the nucleic acid test results of sputum and nasopharyngeal swabs should be negative in patients for two consecutive times. If patients meet the above conditions, patients can be discharged. After discharge, it is recommended that patients continue to be isolated for 14 days and undergo health monitoring. It is not difficult to see that there is a risk of recovery and reinfection after discharge from the hospital for critically ill patients. TCM believes that the coronavirus’s pathogenic qi is not clear yet. The pathological products in the process of pathological changes on the contrary will become a new pathogenic factor. Therefore, while dispelling the pathogenic factors, we should pay attention to protecting the vital qi. It is important to provide guidance for the rehabilitation intervention of patients in the recovery stage with the principle of supporting the healthy and dispelling pathogenic factors.
**Traditional Chinese Medicine Treatment of Coronavirus**

After the coronavirus, the main symptoms of the patients are fatigue, poor appetite, insomnia, anxiety, and so on. Reasonable syndrome differentiation and treatment can effectively improve the postoperative state of the patients and achieve the purpose of rehabilitation.

**Invigorating the spleen and removing dampness, warming the kidney, and benefiting the lung**

The novel coronavirus pneumonia is caused by exogenous pathogenic factors, including cold and dampness. It attacks the exterior of the lung, and it extends to Sanjiao, involving the spleen and kidney. The novel coronavirus pneumonia later, the damp poison evil damage the lung, the lung is the source of water, governing the dispersing and descending, while the external pathogen phlegm and retained fluid in the lung, leading to the dispersing and descending function of lung loses balance, cannot regulate the water channels. As a result, the body fluid is damaged and the lung qi is unfavorable; in addition, the son steals the mother qi, the spleen qi weakens, and the lung and spleen qi deficiency syndrome occurs. It is not difficult to analyze the diagnosis and treatment plans of TCM in various places. It is not difficult to find that most of the patients in the convalescent period of COVID-19 showed burnout and fatigue, chest tightness and shortness of breath, poor epigastric tolerance, cough and expectoration, inhabited defecation, and so on. The tongue is red with greasy coating, indicating lung qi stagnation, cold dampness and spleen stagnation [Figure 4]. At the same time, after the serious disease, dampness is difficult to clear: the treatment should be based on invigorating the spleen, removing dampness and detoxification, tonifying the lung, and warming the kidney and invigorating the qi. Xiang Sha Liu Jun Zi Decoction (香砂六君子汤), Ling Gui Zhu Gan Decoction (苓桂术甘汤), Shen Ling Bai Zhu Decoction (参苓白术汤), and San Zi Yang Qin Decoction (三子养亲汤) were used as the main prescriptions. The principle of individualized and dialectical treatment was advocated in order to achieve rapid recovery and prevent recurrence.

**Enhance qi and yin, clear the heat, and nourish the dryness**

Some patients with coronavirus not only have symptoms such as repeated coughing, expectoration, and dyspnea, but some have acute, life-threatening conditions. At this time, many patients were accompanied by hypoxemia, carbon dioxide retention, pulmonary hypertension, as well as cardiac insufficiency and other symptoms. The treatment of antibiotics and hormones mentioned in the coronavirus treatment plan has not only achieved good results but also left a lot of side effects, which includes shortness of breath, fatigue, dry mouth, palpitations, sweating, and other qi deficiency symptoms, as well as poor appetite, low or no fever, dry cough, and phlegm. After treatment, the patient’s pulse is thin or weak. Although the disease due to cold and dampness trapped the lung and spleen, the dampness evil enters into the interior depression and turns into heat, which consumes qi and damages yin. At the recovery stage, although the epidemic virus gradually subsides, the qi and yin consumption is serious in the whole process. And the toxin is not clean, the waste heat injures yin, the symptoms include lack of energy, shortness of breath, thirst and sweating. Therefore, the treatment is commonly used to replenishing qi and nourishing yin method, mainly with the Sha Shen Mai Dong Decoction (沙参麦冬汤), Sheng Mai yin Decoction(生脉饮).In addition, when a patient recovers from a serious illness, he or she must suffer from impairment of both qi and body fluid, so that he or she can not nourish his body and bones. Therefore, most of the patients are weak. In addition, qi deficiency will lead to lack of middle qi and lack of qi for breathing. The patient’s stomach yin will also have a certain degree of injury which will show in reverse qi, causing vomiting. These symptoms are due to qi and body fluid damage when the stomach heat has not yet been cleared from a serious illness. As stated in Shang Han Lun (《伤寒论》Treatise on Cold Damage Diseases) “when Shang Han is been clear, 虚赢少气, qi are inverse and causing vomiting where Zhu Ye Shi GaoDecoction (竹叶石膏汤) to mainly treat it (伤寒解后, 虚赢少气，气逆欲吐，竹叶石膏汤主之).” It can be seen that the theory of preventive treatment of disease has rich experience in the prevention and rehabilitation of serious illness.

**Dredging the liver and regulating qi and treating heart and body together**

Novel coronavirus pneumonia is highly infectious due to its high incidence rate, and is highly infectious and has a certain death rate.[14] The anxiety and impatience caused by isolation cannot be eliminated in time. However, some patients are prone to psychological problems, such as nervousness, fear, depression, and despair. For some coronavirus patients who have lost their relatives due to coronavirus. These patients will have emotional abnormalities, dryness and bitterness in mouth, irritability, palpitation, insomnia, fullness of chest and hypochondrium, always sighing, and low fever. The patient’s tongue is red and has a less coating [Figure 5]. According to the analysis of the causes, during the evolution of coronavirus, the
pathogenic factors spread from the outside to the inside. In the process, if the disease invades Shao Yang, contention between good and pathogenic will lead to the cardinal’s disadvantage and would result in Shao Yang gallbladder disease. *Su Wen* “Ci Jin Lun” (*Basic Questions “Discourse on Prohibitions in Piercing*) states that “liver ascending from left, lung descending from right, left side monarch the ascending while right side monarch the descending (肝生于左，肺降于右，左主升而右主降).” Liver and lung share the same complete circle of ascending and descending activity. If the lung qi is insufficient, the liver and lung qi will rise and fall abnormally. It can damage the liver yin due to the lack of lung qi decline function, but also cause lung yin damage due to the abnormal upward movement of liver qi and the lungs. Psychological counseling should be the main treatment, but we could still dredge the liver and regulate qi. For patients recovering from a serious illness and having a relapse due to overwork, *Treatise on Cold Damage Diseases* states that Zhi Shi Zhi Zi Chi Decoction (枳实栀子豉汤) could treat this. After the initial recovery of COVID-19 patients, there are still pathological factors in the body due to the poor physical condition of the patients at that time. If the patient at this time is in the lack of improper adjustment, or too tired, longitudinal diet, this may lead to the recurrence of the disease, fever, upset, chest tightness and other symptoms. The treatment should be based on the method of clearing away heat and exercising qi. Treatment should eliminate symptoms by clearing heat and exercising qi. After recovery from Shang Han and having fever, use Xiao Chai Hu Decoction (小柴胡汤). If the patient’s pulse is buoyant, sweating should be encouraged to restore vitality. For patients with pulse sinking, patients should be allowed to diarrhea for treatment. In clinical practice, we should choose the prescription according to the disease and use it flexibly to avoid treating the disease using only those prescriptions.

**Simultaneous treatment of the five-zang organs**

The holistic view of zang-fu organs in TCM is reflected in the fact that the physiology and pathology of the five zang-organs can influence each other, and the occurrence and development of diseases and their transmission have certain rules to follow. *Su Wen*’s “Ke Lun” (*Basic Questions “Discourse on Cough”) states that “the five depots and six palaces, they all may let a person cough, not only the lung (五藏六腑皆令人咳，非独肺也).” *Su Wen*’s “Yu Ji Zhen Chang Lun” (*Basic Questions “Discourse on the Jade Mechanism and the True Depots”) states that “five zang are connected to each other and there is sequence on transferring sickness. When five zang having sickness, they will pass to the fu organ that they control (五脏相通，移皆有次，五脏有病，则各传其所胜).” The clinical manifestations of this disease in critically ill patients are mostly seen in patients with high fever, dizziness and delirium. In severe cases, faintness, tongue numbness, cold limbs, and other symptoms may occur. The disease is a critical syndrome of “Retrograde pericardium febrile diseases epidemic” mixed with deficiency and excess, often involving the liver and kidney organs. This type of syndrome is caused by the invasion of the pathogen through the mouth and nose. In the first place, there is Weifen syndrome, which shows the symptoms of aversion to cold and fever. The normal sequence of transmission of the disease should be followed by transmission to Qifen. This is due to the patient’s body Yin deficiency or heart deficiency or blood stasis. At this time, the pathogenic qi is too strong and powerful, and it is difficult to overcome the evil, leading to the invasion of the evil poison by the evil poison, and heat-toxic invasion of the pericardium and phlegm turbidity obscure consciousness. The pathogenesis mainly focuses on the endogenicity of heat toxin and the blocking of phlegm stasis and turbidity toxin. The clinical treatment with high-dose antibiotics and hormones can partly turn the crisis into safety. The part that feels evil spirit must have qi deficiency expression. In some cases, the immune system may be disrupted. Even if the patient is out of danger, there are still many after-effects. Therefore, patients should take into account after the recovery of nourishing heart yin, filling organs qi, blood, yin and yang deficiency, so as to timely supplement and recuperate, and prevent relapse.

**Multi-dimensional, comprehensive treatment**

The treatment methods of TCM for diseases are various and based on the holistic concept of TCM and the theory of syndrome differentiation and treatment. Some suitable techniques are not only simple and feasible, but also effective, including acupuncture, moxibustion, massage, sachet, fumigation foot bath, traditional techniques, and diet therapy [Figure 6]. Selecting acupuncture and moxibustion at acupoints of lung meridians and bladder meridians can play an important role in warming the lungs and dissipating cold, and has a good promoting effect on the recovery of vital qi. Meridional massage can help to improve the symptoms of patients with lung and spleen deficiency, so as to promote the recovery of disease. The technique can be used to strengthen body and eliminate pathogenic factors. The way of drug action is multi-directional, and the use of TCM sachet can also play a certain role in promoting the recovery of the COVID-19. Often, Cang Zhu (*Rhizoma Atractylodis*), Ai Ye (*Folium Artemisiae Argyi*), Bai Zhi (*Radix Angelicae...*)
AI, et al.: Discussion on the prognostic treatment of COVID-19 by TCM theory

Chinese Medicine and Culture ¦ Volume 3 ¦ Issue 3 ¦ July-September 2020

The pathogenesis of coronavirus was discussed based on the concept that the pathogenesis of COVID-19 is at a good level. [15,16]

**CONCLUSION**

Although the coronavirus epidemic situation is fierce, due to the integrated TCM and Western medicine treatment, it has been effectively controlled. For many patients with coronavirus, full management is essential. The concept of TCM preventive treatment coincides with the treatment goal of recovery period, which is to improve the prognosis and promote rehabilitation at the same time and pay attention to the recurrence of disease. The characteristics of initial recovery of corona virus were analyzed in this article, which are closely related to “poison, dampness, and deficiency”. The pathogenesis of coronavirus was discussed based on the theory of “prevention of disease.” On prevention and cure measures, the TCM treatment focus in removing damp pathogens produced by the spleen, warming the kidneys and benefiting the lungs. On the basis of replenishing qi and nourishing yin, clearing away heat, and moistening dryness, it is emphasized to dredge liver and regulate qi and treat heart and body simultaneously. In the treatment method, it is effective by taking orally, external treatment, mouth and nose skin and so on, which enriches the treatment method of preventing the recurrence after COVID-19 recovery. This not only helps to improve the treatment of the epidemic patients, but also enriches the theory of COVID-19 disease prevention.

Translator: Lee Shinwei (李欣薇)

**Financial support and sponsorship**

1. Shanghai Health Commission/Shanghai Municipal Administration of TCM (ZY[2018–2020]–ZWB-1001)
2. Shanghai Municipal Health and Family Planning Commission Shanghai Pilot Project of Innovation of TCM Diagnosis (ZY (2018-2020)-FWTX-6026)

**Conflicts of interest**

There are no conflicts of interest.

**References**

1. Health Committee of the People’s Republic of China. “Coronavirus Diagnosis and Treatment Protocol (Trial 7th Edition)”. Available from: http://www.nhc.gov.cn/yyjg/s7652m/202003/a31191442e29474b9b986579d5a95.shtml. [Last accessed on 2020 May 25].
2. Zhao JP. Diagnosis and treatment of severe coronavirus; 2020. Available from: http://kns.cnki.net/kcms/detail/42.1293.R.20200303.1238.002.html. [Last accessed on 2020 May 26].
3. Zhang WJ, Guo SJ, Jiang XY. Case study of coronavirus treated by traditional Chinese medicine based on data mining. Modernization of Traditional Chinese Medicine and Materia Medica-World Science and Technology (2020-03-31). Available from: http://kns.cnki.net/kcms/detail/11.5699.R.20200331.0856.008.html. [Last accessed on 2020 May 28].
4. Liang QQ, Chen W, Xu H. The role of lymphatic system in immune regulation and the mechanism of lung injury induced by coronavirus and the intervention of traditional Chinese medicine. World Sci Technol Modernization of Tradit Chin Med (2020-02-26). Available from: http://kns.cnki.net/kcms/detail/11.5699.R.20200225.1653.002.html. [Last accessed on 2020 May 27].
5. Zhang Y, Tang DZ, Shu B, Evaluation of multiple organ injury induced by coronavirus by renin-angiotensin system and intervention of traditional Chinese medicine. World Sci Technol Modernization of Tradit Chin Med (2020-02-17). Available from: http://kns.cnki.net/kcms/detail/11.5699.R.20200216.1533.002.html. [Last accessed on 2020 Jun 11].
6. Mo ZS, Zhu JY, Sha LP, Chong YT, Zhang YF. Comparison and consideration of diagnosis and treatment plans for new coronavirus pneumonia. Guangdong Med 2020,41(08),757-761. Available from: https://doi.org/10.13820/j.cnki.gdyx.20200978. [Last accessed on 2020 Jun 04].
7. Mittal M, Siddiqui MR, Tran K, Reddy SP, Malik AB. Reactive oxygen species in inflammation and tissue injury. Antioxid Redox Signal 2014;20:1126-67.
8. Ahmad A, Ahsan H. Biomarkers of inflammation and oxidative stress in ophthalmascic disorders. J Immunassay Immunochem 2020;41:257-71.
9. Chousterman BG, Swirski FK, Weber GF. Cytokine storm and sepsis disease pathogenesis. Semin Immunopathol 2017;39:517-28.
10. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. JAMA 2020;323:1061-9.
11. Chen Q, Pei MH, Wang Y, Gong ZJ. Advantages and disadvantages of glucocorticoids used in new coronavirus. J Wuhan Univ (Med Sci Ed) 2020;41:560-564. Available from: https://doi.org/10.14188/j.1671-8852.2020.0136. [Last accessed on 2020 Jun 04].
12. Xu Z, Shi L, Wang Y, Zhang J, Huang L, Zhang C, et al. Pathological findings of COVID-19 associated with acute respiratory distress syndrome. Lancet Respir Med 2020;8:420-2.
13. Zhang JW, Hu X, Jin PF. Cytokine storm caused by novel coronavirus and its drug therapy. Chin J Pharm (2020-02-25). Available from: http://

Figure 6: Suitable techniques for patients with COVID-19
14. Chang L, Huang XB, Zhao MJ, Ma N, Sun W, Shi Y, et al. Suggestions on mental health of the general public during the epidemic period of coronavirus pneumonia. Chin J Ment Health 2020(03):282-3. Available from: http://kns.cnki.net/kcms/detail/11.1873.r.20200310.1528.068.html. [Last accessed on 2020 Jun 06].

15. Zhao L. Observation on the application of Wuqinxí exercise in patients with bronchial asthma in remission stage. Mod Diagn Treat 2019;30:4076-8.

16. Zhang G, Hao CY. Study on the effect of eight Duanjin combined with Wuqin exercise on lung function of college students. J Shanxi Coll Tradit Chin Med 2019;20:280-1.