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Case Report

Thoughts on Traditional Chinese Medicine Treatment of Novel Coronavirus Pneumonia Based on Two Cases

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Since December 2019, cases of unexplained pneumonia have been found in Wuhan, Hubei Province, China. Chinese scholars have identified the disease as caused by a new type of coronavirus. This disease is categorized as a plague in Chinese medicine (CM), and the academic community believes it is a dampness-toxin plague[1,2] or cold-dampness plague.[3] Prof. ZHANG Li-shan consulted patients with novel coronavirus pneumonia (COVID-19) in Hubei and Beijing following first-line treatment, and accumulated some experience and knowledge about the disease. Here we reported two effective cases.

Case 1

A 44-year-old female native of Beijing, presented at the clinic. Her husband had been working in Wuhan for many years and was diagnosed with COVID-19 on January 28, 2020 at a district hospital in Beijing. Being a close contact, she developed fever and weakness, without sweating or chills on February 1 and was transferred to a fever clinic for examination and treatment.

Chest radiographs showed an opaque patch on the right lower lung. Results of the viral nucleic acid test were positive. Her tongue was reddish, with a thick, glistening, and slightly yellow coating. Western medicine diagnosis: COVID-19 (common type). CM diagnosis: plague (wind-cold-dampness attack, combined with stagnated heat). The modified Mahuang Jiazhu Decoction (麻黄加术汤, MHJD) was prescribed as follows: *Herba Ephedrae* 45 g, *Ramulus Cinnamomi* 30 g, *Semen Armeniacae Amarum* 24 g, *Glycyrrhizae Preparata* 15 g, *Rhizoma Atracylodis* 60 g, and *Gypsum Fibrosum* 50 g. All herbal pieces of 5 packages were boiled in water for about 60 min to extract a total of 1,800 mL, 160 mL each time, once every 12 h. At 7:00 p.m. the same night, the patient's temperature was 39.1 ℃. She was given a tablet of buffered aspirin (Bufferin Plus) by Western medicine practitioners, and instructed to take 160 mL of the decoction at 7:10 p.m. Within 20 min after taking the decoction, the patient sweated heavily, and her body temperature dropped sharply from 39.1 ℃ to 37 ℃. The Western medicine practitioners recommended that she stopped using antipyretics and analgesics while taking the decoction. Since then, the patient's temperature has gradually risen, and has been fluctuating between 38 ℃ and 38.4 ℃, with continuous sweating.

At 6:00 a.m. February 3, her body temperature was 36.5 ℃. She sweated slightly with relieved fatigue. At 2:00 p.m., the patient telephoned to inform the doctor of the rebound in body temperature to 38 ℃, and that she had taken Lianhua Qingwen Capsules (莲花清瘟胶囊) 1.4 g once (0.35 g/capsule, Shijiazhuang Yiling Pharmaceutical Co., Ltd.), in addition to the decoction. She was not sweating, and had a slight chill. Her tounge was reddish, with white greasy coating. The patient was advised to stop using any other medicines, and take decoction alone. Furthermore, 30 g of *Rhizoma Zingiberis Recens*, and 60 g of *Fructus Jujubae* were added to MHJD, to imitate the Daqinglong Decoction (大青龙汤, DQLD).

All herbal pieces of 5 packages were boiled together in water contained in a decocting device for about 80 min to extract 3,000 mL, to yield individual doses of 600 mL (divided into 3 bags). After taking 1 bag of this decoction on the evening of February 3,

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the patient complained of palpitations, had a heart rate of 120 beats/min, and sweated moderately. The heart rate returned to normal after 1 h, and she continued to sweat slightly until 4:00 a.m., and her body temperature dropped to 36.5 ℃

On February 4, the patient's temperature was normal and her appetite was slightly improved. Three bags of the decoction were administered every 8 h. On the morning of February 5, the patient's body temperature was 35.1 ℃. The decoction dosage was reduced to 2 bags daily, and the patient's body temperature gradually rose to 36.4 ℃ at night (Figure 1). She no longer sweated, showed no obvious signs of discomfort, but had a poor appetite. On February 10, her tounge was reddish, with thin white coating. The treatment methods were subsequently changed to tonify qi and nourish yin, invigorate Pi (Spleen), and dissolve phlegm. She was discharged after the viral nucleic acid test results were negative. On March 12, the chest CT scan showed multiple patchy ground-glass densities in the lower lobe of the right lung, which were evidently absorbed than before treatment (Figures 2 and 3).

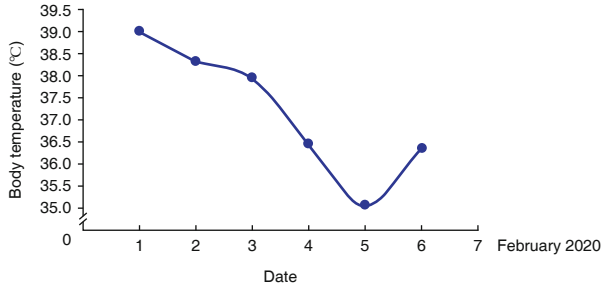

Figure 1. Patient's Highest Daily Body Temperature

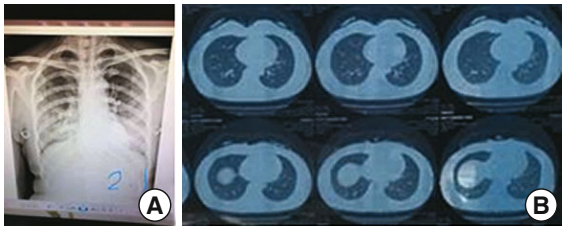

Figure 2. Chest Imaging Examination

Notes: A: Chest radiograph showed a patch on the right lower lung on February 1. B: Chest CT scan showed multiple patchy ground-glass densities in the lower lobe of the right lung, which were evidently absorbed than before March 12

Case 2

A 64-year-old male native of Wuhan presented at the hospital. The patient's wife was diagnosed with suspected COVID-19 on January 23, 2020 and was isolated at home. On January 25, the patient and his daughter developed symptoms of chest tightness, without any other symptoms such as fever. They did not visit hospital for treatment. On January 31, the patient's chest tightness became worse, and he had symptoms of cough and fatigue, without fever. Chest CT scans at the Wuhan Brain Hospital showed multiple ground-glass opacities in the lower lobe of both lungs. The viral nucleic acid test results were positive. The patient took umifenovir (Arbidol) tablets 0.2 g and Lianhua Qingwen Capsules 1.4 g, three times a day. On February 1, the patient came to the hospital to visit his wife, as she was hospitalized in the respiratory ward.

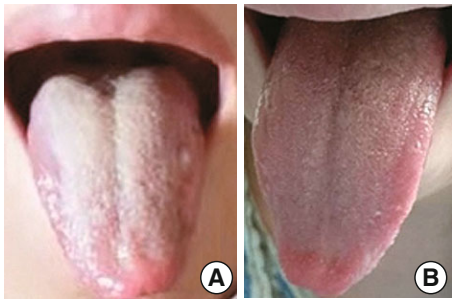

Figure 3. Images of Tongue

Notes: A: Reddish tongue with white greasy coating on February 3; B: reddish tongue with thin white coating on February 10

First visit: On February 4, the patient had an SpO_2% of 95%–96%, normal body temperature, chest tightness, shortness of breath, cough, fatigue exacerbated by activity, normal appetite, and normal bowel movements and urination. The tongue was reddish and corpulent, with a slightly white and greasy coating. The pulse was weak, superficial, and thready. Western medicine diagnosis: COVID-19 (common type); CM diagnosis: plague [external attack of wind-cold-dampness, qi insufficiency of Pi and Wei (Stomach)].

The aim of treatment was relieving wind, dispersing cold, dehumidifying, tonifying Pi, nourishing qi, and detoxifying. The modified Buzhong Yiqi Decoction (补中益气汤, BZYD) was prescribed as follows: *Radix Astragali* 20 g, *Radix Glehniae* 20 g, *Rhizoma Atracylodis* 15 g, *Radix Glycyrrhizae* 10 g, *Radix Platycodi* 10 g, *Herba Asari* 5 g, *Herba Menthae* 10 g, *Pericarpium Citri Reticulatae* 15 g, *Rhizoma Pinelliae Preparata* 10 g, *Spina Gleditsiae* 10 g, *Rhizoma Bletillae* 10 g, *Radix Saposhnikoviae* 20 g, and *Cyrtomium fortune* 6 g. The herbal pieces of 5 packages were decocted in water, and 1 package each was administered in the morning and evening daily. The patient was also advised to stop any other medications

besides the Chinese herbal medicine (CHM).

Second visit: On February 10, after 5 days of taking the decoction, the patient's chest tightness was relieved and fatigue was improved. Nevertheless, he still had a cough, bowel sounds in the abdomen, and passed unformed stools once daily. His tongue was reddish and corpulent, with a greasy and glistening coating. His pulse was weak and thready. On February 10, chest CT scans showed multiple foci of infection in both lungs (showing signs of absorption, compared to previous CT scans). The viral nucleic acid test results returned negative. The formula for the decoction was therefore adjusted based on the former prescription: *Radix Astragali* 30 g, *Rhizoma Atracylodis* 20 g, *Semen Nelumbinis* 20 g, *Rhizoma Dioscoreae* 20 g, *Rhizoma Atractylodis Macrocephalae* 15 g, *Radix Platycodi* 20 g, *Herba Ephedrae* 6 g, *Herba Asari* 5 g, *Radix Aconiti Lateralis Preparata* 6 g, *Radix Glycyrrhizae* 10 g, *Radix Bupleuri* 10 g, *Ramulus Cinnamomi* 15 g, *Radix Saposhnikoviae* 20 g, *Pericarpium Citri Reticulatae* 10 g, *Herba Menthae* 10 g, *Spina Gleditsiae* 10 g, *Rhizoma Bletillae* 10 g, *Rhizoma Zingiberis* 10 g, *Herba Cistanches* 15 g, and *Herba Houttuyniae* 30 g. Seven packages were decocted in water. The decoction was taken the same as before On February 17, the tongue was reddish, with a white thin coating. The patient was instructed to continue taking 5 packages of the former prescription.

Third visit: On February 24, the patient showed no obvious signs of discomfort. Chest CT scans showed that the lung infection was basically absorbed. The viral nucleic acid test results were negative (Figures 4 and 5).

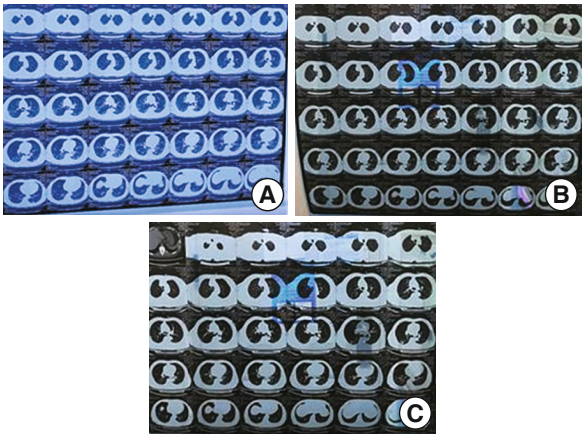

Figure 4. Chest CT Images on January 31, February 10, and February 24

Notes: A: Chest CT scan showing multiple ground-glass opacities in the lower lobes of both lungs on January 31; B: chest CT scan showing multiple foci of infection in both lungs on February 10 (and evidence of absorption, compared with previous images); C: chest CT scan showing that lung infection was basically absorbed on February 24.

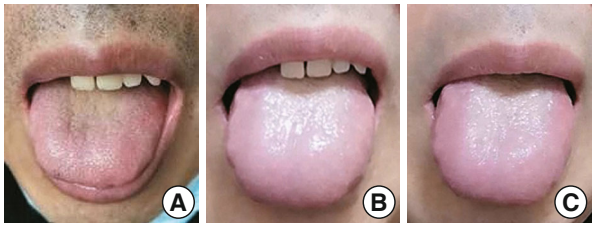

Figure 5. Images of Tongue on February 4, 10, and 17

Notes: A: tongue is reddish and corpulent, with a slightly white and greasy coating on February 4; B: tongue is reddish and corpulent, with a glistening greasy coating on February 10; C: tongue is reddish, with a white thin coating on February 17.

Discussion

CM practitioners have accumulated a wealth of experience in the treatment of plagues over thousands of years. From *Treatise on Febrile and Miscellaneous Diseases* (Shang Han Za Bing Lun) to *Treatise on Pestilence* (Wen Yi Lun) and the development of studies on epidemic febrile diseases, we have gained a unique understanding of the treatment of epidemic diseases.[4-6] By combining the recommendations of classical medical books, with present clinical practice and treatment of this COVID-19, we believe that the focus of CM treatment should be on early intervention to halt the progression of the disease.[7,8]

On one hand, at the onset, we should seize the opportunity to diffuse the Fei (Lung) to relieve external symptoms of the syndrome. As the COVID-19 is caused by an exogenous infection, wind-cold-dampness can strike externally, and Fei qi is inhibited.[9] Although some patients may have an insidious onset, and fever, chills, and body pain may not be evident, the existence of an exterior syndrome should not be ignored.

If examined carefully, most patients may show manifestations of an exterior syndrome, such as aversion to cold and body discomfort.[10,11] As Fei qi inhibition is the key to the pathogenesis of this disease, treatment should be first focused on restoring the inhibited Fei qi, dispersing cold, and dehumidification. This is consistent with the *Yellow Emperor's Canon of Medicine* (Huang Di Nei Jing) which means "treating a superficial syndrome with sweating therapy." In case 1, because the patient came to seek immediate treatment early in the illness, her healthy qi was sufficient. The struggle between healthy qi and pathogenic factors can cause fever. We applied

the MHJD, of which *Herba Ephedrae* and *Ramulus Cinnamomi* were mainly used to promote sweating. *Rhizoma Atracylodis* was used to relieve dehumidification and the exterior syndrome, so that the wind-cold-dampness was drawn out to the exterior through sweat, and symptoms were thereby quickly relieved.

On the other hand, we should also be focused on supporting qi and strengthening immunity to halt disease progression.[7] Invasion of pathogens is likely due to a deficiency of essential qi. The external cause of this disease is wind-cold-dampness, and the internal causes include weakness of Pi and Wei. The pathogenic factors of this disease are mainly cold and dampness. Although it is important to eliminate cold and dampness, the occurrence and progression of the disease are also closely related to deficiency of qi. Therefore, it is very important to tonify and replenish the middle qi.

To tonify and replenish the middle qi, prescriptions can be used to supplement qi and yang, such as LI Dong-yuan's BZYD, and commonly used herbs such as *Radix Astragali*, *Radix Codonopsis*, *Radix Glehniae*, etc. According to the first-line clinical experience, if the patient's blood oxygen saturation has been slightly reduced to between 95%–96%, we should apply a tonic medicine.

In elderly patients, *Radix Ginseng* should be used to supplement original qi as early as possible to prevent severe or critical illness. If there is a yang deficiency syndrome, *Radix Aconiti Lateralis Preparata, Rhizoma Zingiberis*, *Herba Cistanches*, etc. should be added to support yang. In case 2, the elderly male patient developed chest tightness and had been ill for 1 week when he was admitted to the hospital. Although the blood oxygen saturation had not reached a severe state, it was approaching that point. Therefore, CHM to benefit qi was used, as well as to eliminate wind, cold, and dampness. After taking the decoction, the patient's symptoms were significantly improved, the course of the disease was shortened, and their condition improved.

Conflict of Interest

None.

Author Contributions

Patients were treated with Chinese medicine by Chen YZ, Wu HY, and Zhang LS. Chen YZ, and Wu HY examined the patient on presentation and during follow-up. Ma J, Huang M, and Zhang LS contributed to writing of the manuscript and reviewing the literature. Zhang LS guided writing and revised the manuscript. All authors read and approved the final manuscript.

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