

# Analysis of Similarities and Differences between Coronavirus Disease 2019 and Severe Acute Respiratory Syndrome

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## Abstract

Both coronavirus disease 2019 (COVID-19) and severe acute respiratory syndrome (SARS) are epidemic, contagious, sudden, and publicly harmful diseases. The whole-genome nucleotide identity of the pathogens causing the two diseases reached 79.5%. The mechanism and treatment of COVID-19 are still under investigation. Combining the experiences of SARS prevention and treatment in 2003, and the case data and literature of COVID-19, the similarities and differences between the two diseases in terms of causes, susceptible people, characteristics, dialectical mode, and treatment were analyzed. The two diseases are both plagues in terms of Chinese medicine. The cause of SARS was “heat poison,” and its pathogenesis was “heat poison, stasis, and qi and yin deficiency.” Therefore the treatment regimen was mainly to clear away heat, detoxicate, and expel evil. While the cause of COVID-19 was “wet poison,” and its pathogenesis was “wet, poison, heat, stasis, close, syncope, and yang collapse.” Hence the basic treatment strategy was to declare lung and remove dampness. Treatment of COVID-19 was clearing away evil qi as soon as possible, with the basic treatment regimen, which was declaring lung, removing dampness, and dispelling the evil. Combined with Traditional Chinese medicine’s (TCM’s) understanding and experience in SARS prevention and treatment, and Chinese clinical cured cases, we try to provide strategies for people all over the world to understand and respond to COVID-19, through the analysis and comparison. To improve COVID-19 prevention and treatment regimen and give full play to the advantages of TCM.

**Keywords:** Coronavirus disease, differences, heat poison, severe acute respiratory syndrome, wet poison

## INTRODUCTION

Coronavirus disease 2019 (COVID-19) is spreading rapidly all over the world. It has brought new threats to human health and social stability. In China, COVID-19 has been classified as a Class B contagious disease and managed as a Class A contagious disease. There are now more than 80,000 patients who have been confirmed in China. Apart from China, the plague has spread to Italy, Japan, the United States, and other countries. As of March 26, a total of 388,088 patients have been confirmed abroad, so COVID-19 has become an international public health emergency. Recalling severe acute respiratory syndrome (SARS) in 2003, it was also an unprecedented disaster that spread across the globe. The spread of SARS and COVID-19 is extremely wide, which has a great impact on social stability and social psychology. This article intends to analyze the similarities and differences between SARS and COVID-19 through causes, susceptible people, characteristics, dialectical mode, and treatment.

## DIFFERENCE OF CAUSES

COVID-19 is a kind of pneumonia which is infected by the 2019 novel coronavirus (2019-nCoV). Contagious atypical pneumonia,<sup>[1]</sup> also known as SARS, is an acute respiratory contagious disease caused by the etiology of SARS-CoV infection. The two diseases have obvious characteristics of importation and aggregation, and they are extremely contagious and cause global epidemics due to the general susceptibility of the population. They belong to the category

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of “plague” in Chinese medicine. The epidemic gas spreads and affects one person, people in a room, or even people in an area. An ancient book named *Jingyue Quanshu Zazhengmo* recorded that “plague was the evil spirit between heaven and earth. If the human had enough healthy qi, then the evil qi couldn’t violate body, so the human couldn’t be affected by plague.” Therefore, people with deficiency of healthy qi are more susceptible to get infected. COVID-19 and SARS are mainly transmitted by respiratory droplets and close contact. People inhale air through the nose, eat grain and meat with mouth, while touch animals or things with the skin. Once a person, with deficiency of healthy qi, has contact with the plague through nose, mouth, or skin, the person will be easily invaded by the evil, depressed and disturbed, and sickened.

Concealment is unique to 2019-nCov, which means people infected without symptom can also become a kind of source of infection. Hence, it will be more complicated to determine the chain of transmission and track the subsequent contacts. The rapidly increasing number of cases and increasing evidence of human-to-human transmission suggest that 2019-nCov is much more contagious than SARS-CoV. Recent reports<sup>[2]</sup> demonstrate that 2019-nCov S and SARS-CoV S share the same functional host-cell receptor – angiotensin-converting enzyme 2 (ACE2). Moreover, the binding capacity of 2019-nCov and ACE2 exceeds that of SARS and ACE2 by more than twenty times, which may be the reason why 2019-nCov is more transmissible than the SARS. The etiology of COVID-19 is contagious qi with wet poison as its basic attribute. The evils of the epidemic all erupted from the damp soil. The wet poison virus infects people through the mouth and nose, and the function of spleen loses control and the water stops internally due to diet and emotions, and above all, the internal and external wet evils can together make people ill. An ancient Traditional Chinese medicine (TCM) book named *Zabing Yuanliu Xizhu* clearly recorded that “the wet evil is conceal when attack people, which is not like wind, cold and heat evils.” The wet evil lurks for a long time, so it is hidden at the first. High-efficiency human-to-human transmission and virus concealment are important reasons for the large-scale transmission of this virus. The 2019-nCov preventive measures should pay more attention to reducing crowd gathering, mobility, and ensuring personal protection and self-isolation. Hence, it is important to base on the yin and yang, have a regular life, not to work too hard, regulate emotions, and have a good rest.

## SUSCEPTIBLE PEOPLE

COVID-19 and SARS populations are generally susceptible, and people can be affected at all ages. However, the average age of onset of SARS<sup>[3]</sup> was  $37.1 \pm 15.8$  years, and the incidence rate was the highest among 20–29 years old. In a study of 123 patients with COVID-19,<sup>[4]</sup> the age of the mild group (102 patients) was  $43.05 \pm 13.12$  years, and that of the severe group (21 patients) was  $61.29 \pm 15.55$  years. The high incidence of COVID-19<sup>[5]</sup> was concentrated in the

45–50 years old, and the death rate of the elderly at 60 was relatively high.

Both are plague diseases, but SARS was predominantly affecting the young, and resistant patients with stronger immunity were easier to get worse. After exposure to pathogens, the body secreted a large number of cytokines within a short period of time, causing systemic inflammatory response syndrome, and even an excessive immune response that leads to multiple organ dysfunction, which induced the activation of lung injury–repair mechanisms and eventually led to pulmonary fibrosis. Eventually, dyspnea and acute respiratory distress syndrome appeared. In addition, young and middle-aged people were under heavy work and family pressure, and the pressure could lead to liver qi stagnation and liver yin loss. Hence, the internal wind and fire developed, and the disease was caused by internal wind plus exogenous poison. However, it could not be excluded that the population composition ratios caused data deviations.

For COVID-19, especially critically ill patients, age and basic disease were important risk factors leading to adverse outcomes.<sup>[6]</sup> Among 44,672 confirmed cases,<sup>[7]</sup> severe and critical cases accounted for 18.5%, the mortality rate of patients without underlying disease was 0.9%, the mortality rate of patients with cardiopulmonary disease was 16.8%, diabetes was 7.3%, and hypertension was 6.0%. Compared with mild patients, CD4<sup>+</sup>T and CD4<sup>+</sup>T levels were lower in severe patients.<sup>[8,9]</sup> “If healthy qi was deficient, the evil would attack people.” The elderly or those with basic diseases had insufficient qi inside and wet poison outside. Because of the weakness of healthy qi and strength of evil, the patients were more susceptible to get sick when heat and wet poison attacked. Or there were some asymptomatic patients who did not have fever, cough, or fatigue at the beginning. Patients did not have right treatment, or the evil qi was too strong to be cured, so the evil qi would damage the healthy qi, the condition worsens, and eventually endangers life. For middle-aged and elderly people or those with basic diseases, preventive measures should be strengthened, and early treatment should pay attention to the lungs and be more vigilant to basic diseases or other organ damage, which may aggravate the disease and endanger life.

## CHARACTERISTICS

In combination with *Diagnosis and Treatment Protocol for 2019-nCov (Trial Version 7)*<sup>[10]</sup>, patients with COVID-19<sup>[11,12]</sup> had fever (98% patients had this kind of symptom), thick tongue coating (80%), cough (76%), and fatigue (44%). Patients may also have atypical symptoms such as anorexia, thin stools, or constipation. There were some patients without symptom. The early chest computed tomography (CT) of COVID-19 patients showed multiple patchy ground-glass shadows, mostly in the lower lungs. Elderly patients with basic diseases had a rapid progression of disease and could quickly progress from common to severe or critically ill, even acute

respiratory distress syndrome, coagulation dysfunction, and multiple organ failure, which were life-threatening.

SARS<sup>[13,14]</sup> was most common in lung and gastrointestinal infections. Its main symptoms included fever, cough, shortness of breath, fatigue, headache, and muscle aches. Fever, chills, headache, and other exogenous symptoms were often seen in the early stage, and then quickly turn into persistent high fever with cough, shortness of breath, chest tightness, and dyspnea. Another 20% of the patients had obvious diarrhea, loose or watery stools, with clean stool microscopy instead. The chest radiograph showed different degrees of flaky, patchy, invasive shadows, involving more than two lung lobes, which progressed rapidly, and the lesions progressed more than 50% within 48 h. Severe cases could occur with respiratory failure, shock, and multiple organ failure.

### Fever

In the early stage of COVID-19, fever was the main symptom, which was characterized by low fever and body heat, especially in the afternoon. The severe and critically ill patients could have moderate-to-low fever during the course of the disease, and there might be no fever. This was consistent with the first outline of wet-heat disease in *Shire Bingpian*, another TCM book. For COVID-19 patients, wet-poison attacked body outside, while the internal wet came out because of the dysfunction of lung, spleen, kidney, and triple energizer. Wet inside and outside made people sick together, and made qi stagnation, that could lead to heat. Wet belonged to yin, whereas heat belonged to yang. As wet was heavier than heat, COVID-19 patients had low fever or even no fever.

In SARS fever, low fever was common in the early stage, accompanied by exogenous symptoms such as chills and headaches, and then persistent high fever occurred, and body temperature was usually higher than 38.5°C, or even as high as 39°C–40°C. SARS was a heat-poison epidemic, the heat poison would enter the lung by the mouth and nose, and invaded the health of lung. When the epidemic attacked human being, healthy qi and evil qi battled on the surface of body at the first stage, so the early manifestations were mainly low temperature and chills. The epidemic spread quickly, and the lungs were mainly affected, and persistent high fever was the typical symptom. Fever was one of the important indicators for early observation of disease changes.

### Dry cough

COVID-19 and SARS both had lung as the main lesion, and the clinical manifestations were dry cough and less sputum, but a large amount of secretions were seen in pathology. The anatomy results of patients with SARS<sup>[15]</sup> showed inflammatory exudation, diffuse alveolar injury, a large amount of secretions in the trachea, accompanied by exfoliation of bronchial epithelium, shedding of cilia, and squamous epithelial metaplasia. And most of the dead were alveolar and pulmonary macrophage infiltration. The anatomical results of lung in one COVID-19 patient,<sup>[16]</sup> showed severe inflammation; large amount of mucus; papillary, diffuse alveolar injury; and hyaline

membrane formation, but alveoli were still present without severe fibrosis. Considering that 2019-nCov and SARS-CoV mainly invaded the small airways and alveoli, which were too deep for patients to expel sputum, the main manifestation was dry cough. However, due to the adhesion of a large number of inflammatory factors and secretions in the small airways or alveoli, airway resistance increased, which could easily cause breathing difficulties and lead to critical illness.

TCM believed that it was the plague blocked the middle and upper energizer. The spleen and lung lost their function, and the water and liquid transport lost control and stopped gathering. The water and phlegm get together in the lungs and cannot be excreted. Therefore, both COVID-19 and SARS showed dry cough, and a large number of inflammatory exudations were seen in the pathology. In addition, the wet poison blocked the lungs, and the lung qi could not deliver fluid to the whole body. The lung belonged to gold and was droughty. When the wet poison entered the body of the yang excess, which facilitated dryness and hurt yin, the lung were injured first. Its “wetness-based, dryness is the standard,” the lung yin was damaged, the disorder was reduced, and the cough was dry. However, the water, wet, and sputum stopped in the lungs, affecting lung and the qi movement. For severe patients, a large number of alveolar injuries were shown, and patients died because of progressive respiratory failure.<sup>[6]</sup>

### Concurrent locations

Coronaviruses can invade other organs except lung. Studies had found that<sup>[16,17]</sup> 2019-nCov and SARS-CoV had similar spike protein three-dimensional structure, which had strong binding affinity to ACE2. Alveolar type 2 cells were the primary targets of virus invasion due to their high expression. Heart, kidney, ileum, etc., with high expression of ACE2, were susceptible to the entry, reproduction, and spread of coronavirus.

### Gastrointestinal symptoms

Twenty percent of COVID-19 patients had gastrointestinal symptoms such as diarrhea and abdominal pain, while 20%–25% of SARS patients also had the gastrointestinal symptoms which were mainly watery stools, vomiting, and diarrhea. The latest study<sup>[18]</sup> found that 2019-nCov and SARS-CoV could cause changes in ACE2 that caused intestinal inflammation. In stool, new coronavirus nucleic acids could also be detected. Hence, diarrhea might be an indicator of infection. It was the same with the theory of “lung and large intestine being interior-exteriorly related” in TCM.

The lung belongs to five-zang-organ, with the function of adjusting qi movement. The large intestine belongs to six-fu-organ, and can conduct dross and excrete stool. The lung can make the large intestine unblocked by lowering the large intestine qi. Another book of TCM, named *Zhengyin Maizhi*, recorded that “if lung qi was unclear, the large intestine would be affected.” Lung being the upper source of fluids can convey fluid, while large intestine governs the fluid. Hence, lung and large intestine control the metabolism of fluid together, and the intestine is nourished and fu-qi is

unblocked. In terms of meridian circulation, lung meridian communicates with the stomach and large intestine meridians. Once plague attacked people, lung would be hurt first, and the symptoms such as fever and cough would appear. Because of lung and large intestine being interior-exteriorly related, the evil qi would make the middle-energizer yang qi stagnation and excessive heat in the stomach and intestines. Therefore, COVID-19 and SARS had the gastrointestinal symptoms such as anorexia, diarrhea, and constipation.

### *Kidney damage*

Eleven percent of SARS patients had kidney damage,<sup>[19]</sup> and their serum creatinine, urea nitrogen, and urine-specific gravity were abnormal. The pathological results<sup>[20]</sup> showed that the glomerular capillaries were dilated and congested, the renal tubular epithelial cells were swollen, and some of them showed protein casts. Most of the renal damage was minor, and acute renal failure rarely occurred. It was found that<sup>[5]</sup> the incidence of kidney failure in COVID-19 was much higher than that of SARS, and the degree of damage increased with the course of the disease. Proteinuria was detected early in 64% of the 51 COVID-19 cases.<sup>[21]</sup> In 59 cases of COVID-19,<sup>[22]</sup> 27.1% urea nitrogen increased, 18.6% plasma creatinine increased, and urea nitrogen and plasma creatinine content reached peak before death. CT results of the kidney shown that the thickness of the renal parenchyma was significantly reduced. Considering that glomerular filtration function was damaged in the early stage of COVID-19, the renal tubular damage continued to increase.

The lung-gold and kidney-water are related to each other. If the lung yin is sufficient, then the kidney yin will be full. The kidney yin is the basic yin of body, when kidney yin is sufficient, the lung yin can be nourished. Kidney yin and lung yin nourish each other. The lung is the upper source of fluids, which regulates the waterways. While the kidney is water zang, which govern the bladder open and close, the water-liquid metabolism is controlled by the kidney and lung. The cause of SARS was heat-poison evil. Heat as the yang evil had its upward character. Hence, the evil mainly attacked lung. When the body's water metabolism was abnormal, the wet evil came out. For the wet evil tended to go down to the lower energizer where kidney located, the kidney was easy to be effected by wet evil. For this reason, the blood creatinine, urea nitrogen, and urine-specific gravity were abnormal. For COVID-19, wet-poison evil was the cause, it could make qi stagnation, and the heat evil came out. Wet and heat evils damaged the kidney together, and the kidney lost its function, so the substances, which should be maintained inside the body, were excreted in the urine. Hence, there were kidney inflammation and abnormalities of creatinine and proteinuria. Wet evil is sticky, and the disease is lingering for long periods of time. Qi and yin of kidney will be consumed, therefore, kidney damage increases with the course of the disease. This may be the reason why the damage of COVID-19 patients is much worse than that of SARS patients, as the cause of SARS is heat-poison, whereas the cause of COVID19 is wet-poison.

### *Heart damage*

SARS patients<sup>[23]</sup> had arrhythmia, and their lactate dehydrogenase, creatine phosphokinase, and creatine kinase isoenzyme rose abnormally. The degree of increase was closely related to the condition. The pathology was inflammatory changes such as myocardial cell degeneration, angioedema, and endothelial cell proliferation. Troponin was abnormally increased in COVID-19 patients, and the incidence of heart failure was much higher than SARS. In combination with previous experience in treating SARS, scholars had begun to study ACE2<sup>[24]</sup> at the early stage of COVID-19. It was speculated that the virus could also attack the heart through ACE2, and myocardial infarction could increase the expression of ACE2 in the heart and damage myocardial cells and the cardiac conduction system. The clinic data confirmed that the heart of COVID-19 patients was more severely attacked by the virus than SARS.<sup>[25]</sup>

Diseases caused by wet and heat evil were lingering and hard to heal. Lung controlled qi, heart governed blood, and wet and heat evil could block the operation of qi and blood, which was easy to cause blood stasis. Hence, it could cause arrhythmia, palpitations, and other discomforts. In the middle energizer, the evil affected the fine metaplasia of water valleys, so heartache or even myocardial damaged can occur, when heart lost nourishment. In the lower energizer, the evil hurt kidney consumed the qi and yin of kidney and caused kidney dysfunction and unfavorable urination, which increased heart load. Because of the wet evil, for COVID-19 patients, the long-term damage to qi and blood was more serious, so it had a greater impact on the heart.

## **DIALECTICAL MODE**

SARS was caused by heat-poison plague. The main pathogenesis<sup>[26,27]</sup> was heat poison, blood stasis, and qi and yin deficiency. *Wenyi Zhuiyan*, an ancient book of TCM, stated that “the epidemic was heat poison.” The heat poison run through the entire SARS process, with early, middle, and extreme periods being the most. Once plague entered the body, healthy qi was not strong enough to expel the plague, then people get sick. The acute onset is characterized by fever as the first symptom, accompanied by chills, headaches, and fatigue. The epidemic is strong and progresses rapidly. It quickly develops into the middle or even extreme period. Heat poison obstructs inside, and patients have persistent high fever (above 39°C), accompanied by dizziness, chest palpitations, and shortness of breath. It was like the theory of TCM that “warm pathogen attacked people, first committed the lung, and reversed the pericardium.” If plague was not strong to make people ill, and healthy qi cannot expel the plague, the disease could not occur straightly. Hunger, bad emotions, etc. could cause qi disorder, and the evil qi was stronger than healthy qi relatively, so people got sick. Hidden evil came from the inside and progressed directly to the middle and late stages, with the disease mainly in the lung spleen and stomach. Because of the plague, spleen and stomach were disordered, so the wet evil came out; combined

with heat evil; and symptoms such as anorexia, constipation or diarrhea, and severe acute symptoms occurred. Qi could move blood, and blood could carry qi, because of qi stagnation and blood stasis, patients had dark lips. The blood stasis was in the lung, stick to the wet and heat phlegm, and become pulmonary paralysis, so symptoms of patients were cough, chest tightness, and difficulty breathing. Chest radiograph showed the lungs exuding to varying degrees. Heat poison was most likely to consume qi and yin. During recovery, the evil qi damaged healthy qi, so lung and spleen were deficient, qi and yin were injured, and the remaining poisons were not exhausted. Symptoms such as general weakness, thirst, dry stool, and dryness appeared.

COVID-19<sup>[28,29]</sup> was caused by wet poison, and its basic pathogenesis were “wet, poison, heat, stasis, close, syncope, and yang collapse.” The wet poison hurt the lungs and reached the whole body. “Most diseases of wet and heat belonged to Yangming and Taiyin meridians.” that was, the Taiyin lung meridian of the hand, the Taiyin spleen meridian of the foot, the Yangming large intestine meridian of the hand, and the Yangming stomach meridian of the foot. Wet poison was the main cause of COVID-19, and was combined with heat poison. Wet–heat poison run through the entire course of disease. The external wet evil entered the body, wet poison deposited, and heat poison came out. The disease was slow and lingering, and it developed afterward (long incubation period). Therefore, the main clinical manifestations were low fever and thick tongue coating. The dampness of the spleen and spleen to close the lungs is the beginning of the disease. The disease is in the shade of the yin. The basic mechanism of COVID-19 was that wet poison trapped the spleen and closed the lungs. The disease was in Taiyin, and wet poison could stagnate the qi of upper and middle energizer, causing qi dysfunction. Hence, fatigue, drowsiness, and chest tightness appeared. The pathogenesis featured prominent poison. The epidemic poison was highly contagious and could affect one person, people in the same room, or even same area. Wet–heat evil was poisonous, and it was easy to invade the spleen and stomach in the middle energizer. When wet–heat evil spread to Yangming meridian, patients had these symptoms that showed the abdomen was full, the anxiety was heavy, and the moss was yellow and greasy. The wet–heat evil was becoming more harmful and could force blood to move out of vessels. Or the evil was gradually damaging the healthy qi, and finally, the qi was too weak to take the blood in vessels, so the blood overflows or stagnates inside. That may be the reason why hemoptysis and coagulation occurred. What’s more, multiple exuding shadows on lung imaging and severe patients could have disseminated intravascular coagulation, major bleeding, shock, etc. It was another pathogenesis of “stasis.” Blood that was separated by menstruation or stagnation was called stasis. Stasis could also cause qi stagnation, and there would be a vicious cycle between blood stasis and qi stagnation. A theory of TCM said “blood stasis does not go, new blood does not come up,” which meant the stasis affected new blood. Moreover, the

blood stasis was difficult to disperse, and hence the disease position was relatively fixed in the heart. If the qi and blood were not smooth, it would cause chest tightness and heartache. If the stasis stayed in the lung and damaged the lung tissue, chest pain, shortness of breath, and hemoptysis appeared. If it hurt the kidney, patients might have renal inflammation, urine creatinine, and proteinuria. “Closed, syncope and yang collapse” meant the disease was becoming bad, severe, and dangerous. Wet–heat evil poison invaded and stagnated in the lungs, so there were cough and shortness of breath, nasal agitation, and dyspnea (respiratory distress syndrome). Wet–heat–stasis poisons got together and become much more harmful. The function of qi was closed by wet–heat–stasis poison, phlegm stasis and evil poison obstructed the lung, and evil invaded pericardium, all of the above led to internal block and outward desertion, severe heat, and severe reversal and yin exhaustion and yang collapse, which were called respiratory failure, coma, shock, and multiple organ dysfunction syndrome in Western medicine.

## TREATMENT

SARS was a heat-poison plague. Lung was the main attacked organ of SARS, and heat poison run through the disease. Therefore, the principle of treatment was to clear heat and detoxify. Plague is different from normal, and it damages people most quickly, so it should be treated as soon as possible. At the early stage of disease, if doctors could clear the lung heat and detoxify in time, control the disease, and block its development to severe disease, disease could be prevented from changing, which is the key to the success of treatment. When the evil spirits went, healthy qi would work. However, at this time, The cool herbs which can make qi astringent should not be used too much during treating period, because once the evil qi is converged inside, it couldn’t be solved totally. So the treatment principle of dissipating lung qi and clearing heat is very important. In the mid-term, heat and stasis poison obstructed lung and occluded the qi. Heat evil always combined with wet evil, so clinically, there were main wet–heat and blood–stasis internal resistance syndromes. Therefore, the treatment should be based on clearing away heat and wet, subdividing dampness and heat, and moving qi and blood. In the mid-term, the evil matched healthy qi, so giving the way to evil was the focus of its treatment. In the later period, the evil would damage the healthy qi, and lung and spleen were deficient, the heart and blood were consumed, and the qi and yin were insufficient. Therefore, on the basis of chasing evils, the medicine of nourishing qi and yin should be appropriately added to dispel the evils. There were still evils in the recovery period, and the healthy qi was weak. It was characterized by qi and yin injuries, lung and spleen deficiency, and remained wet–heat–stasis poison. Not only qi and blood should be nourished, but qi movement should pay attention to. In order to treat SARS, we should pay attention to declaring heat and relieving the evil, and clearing the stagnation of the evil, to give the way out of the evil.

COVID-19<sup>[28-30]</sup> was a wet-poison plague. Lung was the main attacked organ for COVID-19, too. Moreover, it often endangered life when attacked the heart, kidney, spleen, and stomach. The disease caused by wet poison was pathogenic, and its condition was lingering, changeable, erratic, and often life-threatening. In the treatment of COVID-19, “dispelling evil” was the first priority. *Wenyi Lun*, an ancient book of TCM, recorded that “The evil qi had better be cleared away in the early stage, when the qi and blood were not disturbed, the muscles and fluid were not consumed. So that the patient was not in danger, the drugs of treatment were not restricted, and it was easy to recover after healing.” In the course of disease progression, heat poisons, stasis poisons, and other internal poisons could be generated, and those poisons could hurt qi and blood and even blind the pericardium. Hence, the basic treatment was to declare lung and remove dampness. Only when the evil was dispelled totally, the body could be healthy. So, the methods to remove the evil were sweating, declaring lung qi, clearing heat and stasis, and activating blood. It was vital<sup>[31]</sup> to prevent the disease from change and block disease progression, so critical illness and mortality rates could be reduced. Meanwhile, strong healthy qi was important, so it was also necessary to increase fluids, nourish qi and yin, warm yang, relieve desertion, induce resuscitation, and resuscitate therapy. Moreover, because the disease could progress to “heat caused by wet poison,” in clinical treatment, removing wet should be stressed and cold medicines should not be overused for cold medicines because they would aggravate wet poison and affect the curative effect. Beware of evil poison and the other organs which would be easily to be affected by evil poison. For example, lung and large intestine were interiorly–exteriorly related, so if someone had pulmonary diseases, there was a huge possibility to have problems of large intestine. Hence, in case of constipation, make the stool smooth or increase fluid to save yin, to protect the healthy or relatively healthy organs. According to the law of the five elements and the rule of conquering riding and insulting, pulmonary diseases would lead to kidney diseases or make kidney diseases worse. For elderly COVID-19 patients with or without renal insufficiency, warming kidney yang and nourishing kidney yin needed to be concerned. Therefore, it was pretty important to treat COVID-19 with holistic concept and dialectical treatment of TCM. Moreover, “dispelling evil” was the first priority to cure COVID-19, so it was the core of TCM treatment of the disease to clear away wet, heat, stasis, and poison, especially the wet.

## CONCLUSION

TCM has accumulated a wealth of experience in epidemic prevention and treatment in continuous practice and played an irreplaceable role in fighting contagious atypical pneumonia. It effectively protected public health and social stability and made important contributions to economic development. The COVID-19, as a new plague, has the characteristics of concealment, strong infectivity, and transmission. It has caused

great damage to many organs of the human body, especially the respiratory system. The plague has caused huge damage to public safety and economy. At present, the domestic epidemic situation has been controlled to a certain extent, and TCM has played a significant role in the field of contagious disease prevention and control. However, effective treatment measures for new types of coronavirus pneumonia by traditional Chinese and Western medicine are still being explored and put into practice.

There are many similarities between COVID-19 and SARS in causes, infected population, and clinical symptoms. By analyzing the similarities and differences between the two plagues, this article bases on the experience and lessons of SARS treatment, combines clinical literature and pathological knowledge, and analyzes COVID-19 from different perspectives. COVID-19 is a kind of highly contagious plague caused by wet poison, and protections and isolation measures need to be completed as soon as possible. The pathogenesis of COVID19 is wet, poison, heat, stasis, close, syncope, and yang collapse. TCM plays unique advantages in treating plague, and “dispelling evil” is a vital theory of TCM. So the basic treatment of COVID-19 is dispersing lung and clearing away heat and dampness. Treat patients as early as possible, to cut off the adverse situation, and reduce critical illness and mortality rate.

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## Conflicts of interest

There are no conflicts of interest.

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