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## Case of professor Xu ZOU's acupuncture technique for “benefiting kidney and strengthening anti-pathogenic qi” in promoting the absorption of COVID-19<sup>☆</sup>

邹旭教授“益肾扶正”针法促进新型冠状病毒肺炎吸收案例一则

Lan-ting TAO (陶兰亭), Tao-liang HUANG (黄涛亮), Dan-wen ZHENG (郑丹文),  
Xu ZOU (邹旭)\*

Second Clinical School, Guangzhou University of Chinese Medicine, Guangzhou 510405, China (广州中医药大学第二临床医学院, 广州510405, 中国)

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## ABSTRACT

A case of the absorption of corona virus disease 2019 (COVID-19) promoted by professor Xu ZOU's acupuncture technique for “benefiting kidney and strengthening anti-pathogenic qi” is introduced. A female patient suffered from COVID-19, 64 years old, had been treated with acupuncture and Chinese herb granules for 10 days on the base of the oral administration of moxifloxacin. In the re-examination, the chest CT image indicated that the absorption of COVID-19 was obvious as compared with before, the nucleic acid test of novel corona virus was negative and the patient narrated no obvious discomfort. Acupuncture therapy plays its active adjuvant effect in the whole process of the treatment of COVID-19.

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A 64-year-old female patient, Wuhan citizen, Hubei province, China. Chief complaints: fever for over one month. Present medical history: she got fever since January 26, 2020, 38.2 °C at the maximal, with unknown reason, combined with cough, no expectoration, lassitude, no chills, no abdominal pain and diarrhea, no chest pain and oppression, no short breath and no frequent, urgent and painful urine. The patient received the symptomatic treatment in local hospital after onset, but no any improvement. On February 5, the patient was shifted to Xincheng Hospital and treated with medication, such as oseltamivir, and still, the symptoms as fever and cough were not relieved obviously. On February 13, the chest CT image in Xincheng Hospital suggested the infection of the lungs was presented and nucleic acid test of novel corona virus was positive. On February 14, the patient was shifted to Yangliu Chinese Medicine Hospital. On February 15, fever and cough were relieved, but the patient still felt tired and had shortness of breath on exertion. Her appetite, sleep, urination, and defecation were normal. In the afternoon on February 20, the patient was shifted to Leishenshan Hospital for a further treatment. Symptoms on admis-

sion: clear consciousness, lassitude, little cough with scanty white sputum, difficulty in expectoration, chest oppression, shortness of breath on exertion, SpO<sub>2</sub> 98%, the infection of the lungs suggested in the chest CT image (Fig. 1), appetite and sleep fair, urination and defecation normal. The tongue was slight red with white and slightly sticky coating and the pulse was deep and thready.

All the symptoms, i.e. lassitude, little cough with scanty white sputum, difficulty in expectoration, chest oppression, shortness of breath on exertion, slightly red tongue with white and slightly sticky coating and deep and thready pulse are the manifestations of *shaoyin* disease. The patient is aged over 60 years and dwells in the epidemic region. The duration of the disease is more than 20 days, in which, the anti-pathogenic *qi* and the pathogens are struggled with each other. The excessive pathogens damage the anti-pathogenic *qi*, resulting in kidney *yang* deficiency and weakness of warming and transforming. Hence, a series of deficiency and cold signs present, such as white and slightly sticky tongue coating and deep and thready pulse. Failure in the mutual promotion of the metal (lung) and the water (kidney) results in the floating of *qi* in the upper, thus, lassitude and shortness of breath occur. The pathogen is hidden inside of the body. “Warm pathogens received from the external environment first attack the lung”. Hence, the multiple “hazy” and “ground glass” shadows are scattered throughout the lungs in chest CT image. Novel corona virus nucleic acid is positive. It is diagnosed as COVID-19 in western medicine (WM) and as pestilence in traditional Chinese medicine (TCM). The syn-

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\* Corresponding author.

E-mail address: [kyozou@21cn.com](mailto:kyozou@21cn.com) (X. ZOU).

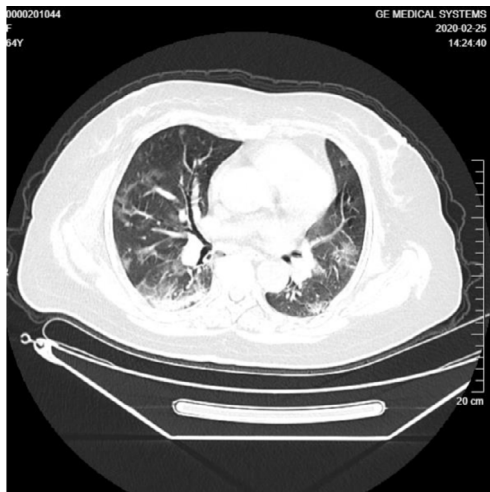


Fig. 1. Lung CT image when the patient was admitted.

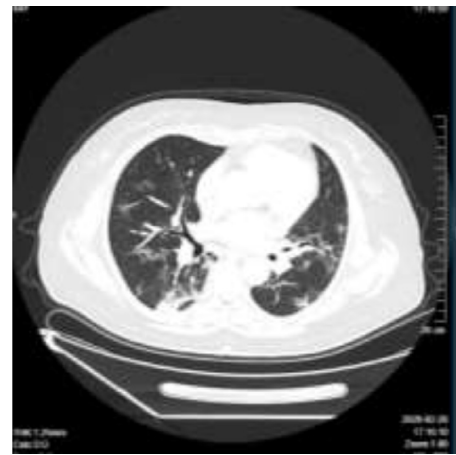


Fig. 2. Lung CT image when the patient was discharge.

drome of it is kidney *yang* deficiency and pathogen infection. In pathogenesis, kidney *yang* deficiency results in dysfunction of warming and transformation and the pathogen infects the lung. In this case, the immunity decreased in the elderly, and she lives in the epidemic area, according to the symptoms, signs and medical history, the case meets the diagnostic criteria of COVID-19 in WM and pestilence in TCM [1].

Treatment methods: since February 20, 2020, the patient was treated with acupuncture, moxibustion and Chinese herbal granules in *Leishenshan* Hospital and since February 21, in modern medical treatment, we only took moxifloxacin for the patient, oral administration, 0.4 g, once a day. Professor Xu ZOU adopted acupuncture therapy [2] at *Tàixī* (太溪KI3), *Dàixiè* (代谢Extra) and *Zhǐchǔǎn* (止喘Extra). All the acupoints were selected bilaterally. *Dàixiè* (代谢Extra) is an empirical point, located in the midline of the medial aspect of the leg, 8 *cun* above the tip of the medial malleolus, at the posterior border of the medial aspect of the leg, crossing with the liver meridian of foot-*jueyin*. *Zhǐchǔǎn* (止喘Extra) is also an empirical point, located on the palmar side of the forearm, on the line between *Qūzé* (曲泽PC3) and *Dàlíng* (大陵PC7) and on the upper 1/3 of the line between the transverse crease of the wrist and the transverse crease of the elbow. Manipulation: the 0.25 mm × 40 mm disposable filiform needles were selected. The patient was in supine and the treatment was given after routine sterilization at the local skin of acupoints. At KI3 on the left side, the needle was inserted obliquely, with the needle tip toward the proximal. At KI3 on the right side, the needle was inserted obliquely, with the needle tip toward the distal so that *qi* could be regulated by ascending on the left and descending on the right. At *Dàixiè* (代谢Extra) and *Zhǐchǔǎn* (止喘Extra), the needles were inserted perpendicularly and the depth of insertion was 12.5 mm to 25 mm. The strong stimulation was given by lifting, thrusting, and twisting technique. The needles were removed without retaining after manipulation.

Additionally, professor Xu ZOU has the experiences in the intervention with Chinese herbal granules to strengthen the anti-pathogenic *qi* and restore the lung functions. The ingredients:

*Zhífùzǐ* (制附子*Radix Aconiti Lateralis Praeparata*) 10 g, *Gānjiāng* (干姜*Rhizoma Zingiberis*) 15 g, *Zhīgāncǎo* (炙甘草*Radix et Rhizoma Glycyrrhizae Praeparata cum Melle*) 20 g, *Jīnyínhuā* (金银花*Flos Lonicerae Japonicae*) 10 g, *Zàojiǎocì* (皂角刺*Spina Gleditsiae*) 10 g, *Wúzhǎolóng* (五爪龙*Ipomoea Cairica*) 20 g, *Chénpí* (陈皮*Pericarpium Citri Reticulatae*) 5 g and *Huòxiāng* (藿香*Herba Agastachis*) 10 g. The granules were infused with warm water, one dose was taken in two separate times, once in every morning and the other is in

evening. On February 23, after acupuncture, the patient felt better. Cough was alleviated, with little sputum. Shortness of breath on exertion was relieved and the conditions of pulse and tongue were the same as before. The same treatment regimen continued. On March 1, in the re-examination, the patient narrated that she was recovered and could have a daily activity, without shortness of breath and cough. Tongue was slight red with thin and white coating. The pulse was getting forceful as compared with the previous. The novel corona virus nucleic acid test was negative and the lesions were absorbed obviously in the chest CT image as compared with the condition before treatment (Fig. 2). The patient met the discharge criteria. During the whole process of treatment, starting from February 20, combined with western medication (moxifloxacin, from February 20 to 29), acupuncture therapy was given consecutively for 10 days, once a day and the Chinese herbal granules were taken orally for 10 doses, one dose a day, taking in two separate times, once in every morning and the other is in the evening.

#### Note

In recent years, TCM has been applied as a common complementary therapy in clinic [3,4]. Many clinical trials [5–8] show that acupuncture is effective in the prevention and treatment of the epidemic. The combination of acupuncture and Chinese herbal medication may enhance the therapeutic effect. Professor Xu ZOU led Guangdong Chinese Medical Team, the 4th batch of the medical aid team to Hubei province and has discovered that in clinical practice acupuncture-moxibustion and Chinese herbal medication achieve a certain of effect in relieving the symptoms and promoting the prognosis during the whole process of intervention in COVID-19 patients. Specially, for the middle-aged patients and the elderly with COVID-19, such intervention may transfer the severe condition to be mild, delays the deterioration and promotes the lesion absorption and the negative conversion of novel corona virus nucleic acid so that the satisfactory complementary effect of TCM is achieved. Professor Xu ZOU believes that COVID-19 is caused by kidney *yang* deficiency, dysfunction of warming and transforming and the upward invasion of pathogen to the lung. Hence, the treatment principle should be benefiting kidney *qi*, tonifying the spleen and the spleen and preventing the deterioration.

In this case, since January 26, 2020, the patient had fever, 38.2 °C at maximal without clear inducing factor, combined with cough, no expectoration, lassitude, no chills, no abdominal pain and diarrhea, no chest pain and oppression, no shortness of breath and no frequent, urgent, and painful urine. CT image suggested that the multiple “hazy” and “ground glass” shadows were scattered throughout the lungs and nucleic acid test of novel corona virus

was positive. TCM syndrome differentiation: the patient is aged over 60 years, and she has the syndrome of kidney *yang* deficiency and pathogen infection. Kidney *yang* deficiency leads to dysfunction of warming and transformation and the pathogen affects lungs. Besides, during one-month treatment, the symptoms presented repeatedly, which indicates the excess of pathogens and the decline of anti-pathogenic *qi*. As a result, *qi*, blood, and body fluid are consumed in the body, leading to the impairment of kidney *yang*, the failure to the mutual promotion of the metal (lung) and the water (kidney), as well as the damage of lung *qi* eventually. Hence, the symptoms could not be relieved obviously, such as little cough, white sputum, difficulty in expectoration, chest oppression and short breathing on exertion. According to professor Xu ZOU's opinion, in pathological mechanism of TCM, COVID-19 is caused by *yang* deficiency and dysfunction of warming and transformation, as well as the upward invasion of pathogen to lung. Therefore, the patched "hazy" shadows are visible in the lung CT image.

It is pointed out in the Chapter 4 of *Sùwèn* (《素问》Basic Questions) that "essence is the root of the body and the well storage of it may keep away pestilence in spring" "the well storage of the anti-pathogenic *qi* may prevent from the pathogen invasion, and whenever the pathogens invade the body, *qi* must be deficient" [9]. It means that the adequate kidney essence and the anti-pathogenic *qi* may prevent from the febrile disease and pestilence in spring. Based on the theory of febrile disease in TCM, infectious disease refers to "warm pathogens received from the external environment first attack the lung". It is recorded in *Wēnyìlùn* (《温疫论》Treatise on Warm-Heat Pestilence) that the patient with pestilence is caused by the epidemic factors [10]. The etiology of COVID-19 is the pestilence pathogen, i.e. novel corona virus in this case. In the theory of febrile disease, "pathogen hidden in *shaoyin*" is mentioned. *Shaoyin* refers to kidney. TCM thinks that "the lung is the host of *qi* and the kidney is the root of *qi*". The respiration of human body is mainly related to the functions of the lung and kidney. The epidemic factors impair the lung, resulting in dyspnea, cough, asthma, and shortness of breath. When the kidney is invaded or impaired, kidney *yang* is consumed in a long term. For the person aged over 60 years, kidney essence is declining, resulting in *yin* failing to control *yang*. Eventually, kidney *yang* deficiency is aggravated. Hence, in treatment of epidemic disease, whether kidney *qi* is deficiency or not, and the infection of pestilence are the recognition of modern TCM and the two important aspects in treatment. Professor Xu ZOU believes that kidney *yang* deficiency, dysfunction of warming and transformation, as well as the upward invasion of pathogen to the lung are the essential pathogenesis of COVID-19. In treatment of COVID-19 with TCM, the treating principles of acupuncture-moxibustion include strengthening the anti-pathogenic *qi*, benefiting the kidney, tonifying kidney *yang*, enhancing the spleen, the stomach, *qi* and blood and cultivating kidney *qi* so as to prevent from the transmission of the epidemic. Hence, the acupoints are selected in terms of "benefiting kidney *qi*, tonifying the spleen and stomach and preventing disease transfer". Additionally, in the whole process of disease, acupuncture-moxibustion has been used till the relief of the symptoms. KI3 is the acupoint for rescuing *yang*, on the kidney meridian of foot-*shaoyin*. The Chinese name of KI3 means the great stream of kidney water. This acupoint acts to tonifying the primary *qi*, strengthening *yang* for water metabolism, receiving *qi* to relieve asthmatic breathing, tonifying the lung and benefiting the kidney, as well as promoting the lesion absorption [2]. *Dàixiè* (代谢Extra) is located on the running course of the spleen meridian of foot-*taiyin*, acting on regulating the spleen and stomach, tonifying *qi* and blood and cultivating kidney *qi*. *Zhǐchūān* (止喘Extra) is located on the running course of the pericardium meridian, acting on receiving *qi*, relieving asthma, protecting lung *qi* and blocking the pathogen transmitted reversely to the pericardium. In treatment, professor

Xu ZOU thinks that "warm pathogens received from the external environment first attack the lung". Hence, *Zhǐchūān* (止喘Extra) is used with strong stimulation to block the route of the pathogen transmission. Besides, the other two acupoints were taken as the reacting points and stimulated strongly to regulate *zangfu* organs, *qi* and blood of the spleen and stomach, tonifying kidney *qi*, promoting *qi* and blood circulation, eliminating the pathogens out of the body, and enhancing the absorption of pneumonia so as to cure this disease.

All the acupoints selected by professor Xu ZOU are located on the relatively thick muscles, thus, a certain of depth of needle insertion is required to ensure the therapeutic effect. Generally, after strong manipulation at the acupoints, the patient should feel strong sensations such as soreness, distention, pain and numbness, as well as the radiating sensation to the four limbs and the whole body among meridians. Such a strong stimulation may be taken as the indicator to determine the accuracy and effectiveness of acupuncture manipulation. In order to minimize the fear of patient induced by the strong needling stimulation, the needles are not retained. Additionally, the acupoints are distributed in the four limbs, easily located, close to the thick muscles and far from the important organs. Hence, manipulation at these acupoints are relatively safe. The researches by Zhang et al. [11,12] indicate that acupuncture relieves the clinical symptoms, promotes the absorption of patched "hazy" shadows and inflammation on CT image, improves blood pressure and blood oxygen concentration, regulates the defensive *qi* and enhances the immunity.

Other researches [13,14] show that acupuncture effectively reduces the levels of various of inflammatory factors, including interleukin-6 (IL-6), activates the anti-inflammatory factors in the body and increases the reactions of anti-inflammation. Acupuncture intervention obviously shortens the antipyretic time, cough relief time, the relief time of white and dilute sputum and the relief time of pale complexion. Besides, acupuncture reduces obviously the levels of C-reactive protein (CRP), IL-6, interleukin-10 (IL-10) and tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ), which proves that acupuncture can promote the prognosis of pneumonia [15,16] and there is no report showing the obvious adverse reactions induced by acupuncture-moxibustion in treatment of pneumonia. During the treatment of COVID-19 with acupuncture therapy, no side effect is found in patients. In this case report, acupuncture presents a rapid onset in the whole clinical treatment. Such result is different from the understanding of some physician that TCM may not be effective significantly in the treatment of acute and critical cases. However, further studies are required in future.

The empirical Chinese herbal formula administered by professor Xu ZOU is summarized based on the inheritance of the experiences of senior eminent Chinese medicine physician, the study of ancient literature and clinical practice, as well as the treating principles as benefiting kidney *qi*, tonifying the spleen and the stomach and preventing transmission. The treatment for COVID-19 focuses on regulating kidney *qi*, tonifying the acquired *qi* and blood from the spleen and the stomach to cultivate kidney *qi*. When the kidney *qi* is promoted, the metal and the water may be mutually generated, thus, the lung *qi* is produced and protected, the nutrient and the defensive are harmonized, the pathogens are eliminated and the epidemic transmission is blocked so that the anti-pathogenic *qi* is strengthened and the lung is rescued. Therefore, on the base of the treating principle mentioned above, the Chinese herbs are added to protect and moisten the lung to prevent from the impairment of the lung by the pathogens. In compliance with the same treating principle, Chinese herbs focus on repairing kidney *yang*, regulating kidney *qi* balance, tonifying *qi* and blood and improving body immunity in treatment. In this case, the treatment with acupuncture at regular interval is combined with Chinese herbal medication. After treatment, the clinical symptoms were relieved and the patched

shadows of pneumonia in CT image absorbed gradually. Besides, the novel corona virus nucleic acid was converted to be negative. It is indicated that acupuncture, as a complementary therapy, benefits the treatment of COVID-19 in patients.

In *Diagnosis and Treatment Plan of Corona Virus Disease 2019 (Tentative Seventh Edition)*, it is pointed that this disease is in the category of “pestilence” in TCM [1] and COVID-19 can be treated with TCM, as a complimentary therapy in terms of the diseases condition, local climatic characters and body constitution. With the combination of acupuncture therapy and the regular Chinese herbal medication, the outcomes of the patients at the critical stages may be improved ultimately. The combination of acupuncture and Chinese herbal medication relieves clinical symptoms and promotes the absorption of the patched “hazy” shadow in CT image and the negative conversion of novel corona virus nucleic acid. It is proved that the combined treatment with acupuncture and Chinese herbal medication is acceptable in COVID-19 patients. Such a combined treatment plays a proactive adjuvant effect in the whole process of treatment of COVID-19. It is worth exploring a complimentary approach of TCM to solve the difficulties in acute and critical stage of disease. However, the evidence level is relatively low in case report. In order to provide the high-quality evidence for the effectiveness of acupuncture and Chinese herbal medication in treatment of COVID-19, randomized controlled trials should be conducted so as to provide proofs of the evidence-based medicine for the effective intervention of the combination of acupuncture and Chinese herbal medication for COVID-19.

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