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## Two cases of corona virus disease 2019 (COVID-19) treated with the combination of acupuncture and medication in bedridden patients 针药结合治疗新冠肺炎卧床患者2例

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## ABSTRACT

The paper reports the experiences in treatment of two cases of corona virus disease 2019 (COVID-19) with the combination of acupuncture and medication in bedridden patients confirmed in C7 Inpatient Ward, Wuhan Leishenshan Hospital, China. The combined treatment of acupuncture with the oral administration of “Shanghai leishen No.1 formula” was given every day. The prescription was modified weekly according the symptoms of the patients. Besides, the antiviral, anti-infectious and symptomatic treatment of western medicine was combined. Both of the two cases were improved and discharged. It is anticipated that the treatment experiences in these two cases may provide the instruction and enlightenment for the prevention and treatment of COVID-19.

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In *Diagnosis and treatment plan of corona virus disease 2019 (COVID-19)* (Tentative Third Edition) issued by National Health Commission (NHC) of the PRC in January 2020, it is specified that COVID-19 is in the category of pestilence in traditional Chinese medicine (TCM). The basic pathogenesis of this disease is characterized by dampness, heat, toxin and stagnation. According to the illness condition, local climatic features and different body constitutions, the corresponding regimens and syndrome/pattern differentiation are recommended [1]. As the members of the fourth batch of national medical team of TCM and Shanghai University of TCM, the authors were stationed in Wuhan Leishenshan Hospital on February 16, 2020 and participated in the rescue and treatment of 43 patients of the ordinary and severe types. During treatment, in reference to *Diagnosis and treatment plan of corona virus disease 2019 (COVID-19)* (Tentative Fifth Edition, Revised) [2] issued by NHC, *Guidance for acupuncture and moxibustion intervention on COVID-19 (First edition)* issued by China Association of Acupuncture-Moxibustion (CAAM) and *Guidance for Acupuncture*

*and Moxibustion Interventions on COVID-19 (Second edition)* [3,4], in association with the characteristics of the patients, the combined therapy of acupuncture and medication was applied to the treatment of COVID-19 in Wuhan Leishenshan Hospital and had obtained the satisfactory effect [5]. The following report is the experiences of the combined therapy of acupuncture and medication for 2 cases of COVID-19 in bedridden patients in the Seventh Inpatient WARD, the Third Infection Department of Wuhan Leishenshan Hospital.

### Regimen of the combination of acupuncture and medication [5]

Both of the two patients received acupuncture combined with oral administration of the modified Chinese herbal decoction, Shanghai *leishen* No 1 formula and arbidol for antiviral, injection with moxifloxacin, intravenous drip with meropenem and methylprednisolone for antiinfection, intravenous drip with mucosolvan and doxofylline for resolving phlegm and relieving asthma, intravenous drip with omeprazole magnesium for acid suppression and stomach protection, the nutritional support with amino acid and albumin successively, as well as the symptomatic treatment for controlling blood pressure and blood glucose.

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## Acupuncture

Acupoint selection: Zúsānlǐ (足三里ST36), Sānyīnjiāo (三阴交SP6), Tàichōng (太冲LR3), Héngū (合谷LI4), Lièquē (列缺LU7), Nèiguān (内关PC6) and Qūchí (曲池LI11).

Operation: The patient was in recumbent. Each acupoint was sterilized strictly according to the requirements of disinfection and protection in the negative pressure ward. Hand sanitizer was used for hand hygiene. One disinfection cotton ball was applied to each acupoint. After disinfection, the cotton balls were put into the infectious contaminant bucket in the inpatient ward buffer area. The needles were put into the sharp instrument box in the inpatient ward buffer area. Acupuncture manipulation: using disposable tube needles, 0.25 mm × 40 mm, at ST36, SP6, LR3, LI4, PC6 and LI11, the needles were inserted perpendicularly, 90 degrees, 25 to 35 mm in depth. At LU7, the needle was inserted obliquely, 15 to 30 degrees, with the needle tip toward the elbow, 5 to 10 mm in depth. The needles were manipulated with even needling technique. The depth of insertion at each acupoint was determined by *deqi*, meaning that the patient felt soreness, numbness and distention. The acupoints on the unilateral side were stimulated and manipulated once every 10 min during the 30 min needle retaining every day. The acupuncture therapy was given once daily. The acupoints on the other side were stimulated in treatment on the second day. This therapy was given consecutively for 12 days till the patient was discharged. After every 12 treatments with acupuncture, at the interval of 3 days, the next course of treatment started. Such treatment lasted till the patients were getting better and discharged. Besides, it was suggested that the patient could take a shower only 2 h after the needles were removed each day.

## Chinese herbal decoction

The modified Shanghai *leishen* No.1 formula [*Huángqí* (生黄芪 *Radix Astragali*) 15 g, *Tàizǐ shēn* (太子参 *Radix Pseudostellariae*) 15 g, *Fúlíng* (茯苓 *Poria*) 15 g, *Chénpí* (陈皮 *Pericarpium Citri Reticulatae*) 9 g, *Pèilán* (佩兰 *Herba Eupatorii*) 9 g, *Fángfēng* (防风 *Radix Saposhnikoviae*) 9 g, *Jīnyínhuā* (金银花 *Flos Loniceræ Japonicæ*) 9 g, *Huángqín* (黄芩 *Radix Scutellariae*) 9 g, fried *Báisháo* (炒白芍 *Radix Paeoniae Alba*) 15 g, *Yùjīn* (郁金 *Radix Curcumae*) 12 g, *Cháihú* (柴胡 *Radix Bupleuri*) 9 g and *Dāngguī* (当归 *Radix Angelicæ Sinensis*) 15 g] was adopted, one dose a day. According to the concrete condition of illness, the formula was adjusted twice a week. For constipation, *Juémíngzǐ* (决明子 *Semen Cassiae*) 15 g and *Huǒmárén* (火麻仁 *Fructus Cannabis*) 30 g were added. For tidal fever and sweating, *Huángbǎi* (黄柏 *Cortex Phellodendri Chinensis*) 15 g and *Zhīmǔ* (知母 *Rhizoma Anemarrhenae*) 15 g were added. For loose stool, *Shānyào* (山药 *Rhizoma Dioscoreae*) 30 g and *Biāndòu* (扁豆 *Semen Lablab Album*) 30 g were added. For abdominal distention, *Dàfùpí* (大腹皮 *Pericarpium Arecae*) 15 g and *Mùxiāng* (木香 *Radix Aucklandiae*) 9g were added. For anorexia, fried *Gǔyá* (炒谷芽 *Fructus Setariae Germinatus*) 15 g, fried *Màiyá* (炒麦芽 *Fructus Hordei Germinatus*) 15 g and *Jīnèijīn* (鸡内金 *Endothelium Corneum Gigeriae Galli*) 15 g were added. For dark or purplish tongue, *Dānshēn* (丹参 *Radix et Rhizoma Salviae Miltiorrhizae*) 15 g and *Táorén* (桃仁 *Semen Persicae*) 9 g were added. For red tongue with little coating, *Pericarpium Citri Reticulata* and *Herba Eupatorii* were omitted, *Nánshāshēn* (南沙参 *Radix Adenophorae*) 30 g, *Běishāshēn* (北沙参 *Radix Glehniae*) 30 g and *Màidōng* (麦冬 *Radix Ophiopogonis*) 15 g were added. For no improvement in lassitude, the dosage of *Radix Astragali* changed to be 30 g. The herbal medication was taken orally consecutively till the patients were discharged. When discharged, the herbal medication for 2-week dose was prescribed.

## Typical cases

Case 1: Ms. WU, 81 years old, hospitalized on February 8, 2020 in Wuhan No. 672 Integrative Chinese and Western Medicine Orthopedics Hospital due to “repeated fever and cough for several days”. The chest CT image suggested infectious lesions and the case was confirmed as COVID-19 and treated with the oral administration of arbidol and the injection of ribavirin for antiviral. On February 13, 2020, the chest CT indicated the infectious lesions of the lungs and the lesion consolidation was shown as compared with the image on February 8, 2020. The treatment for antiviral with the oral administration of arbidol and the injection of ribavirin was continued, but the therapeutic effect was not satisfactory. On February 19, 2020, because of “repeated fever and cough for 4 weeks”, the patient was shifted by stretcher to the Ward Seven, the Third Department of Infection, Wuhan Leishenshan Hospital. On admission, the oxygen saturation of the patient was 69% and the symptoms were low spirits, fever, cough, chest oppression, shortness of breath, palpitation, dull pain in the chest, dull pain and discomforts in the epigastric region, poor appetite, constipation, lassitude, poor sleep (difficulty in falling into sleep, easy waking up), combined with obvious nervous and anxious emotions. The tongue was pale and dark with thin, white and slightly sticky coating. The pulse was thready.

This case was identified as severe type and differentiated as *qi* deficiency, liver stagnation and interaction of damp and stasis. On February 20, 2020, the decoction of the modified Shanghai *leishen* No.1 formula was taken, in which, the dose of *Radix Astragali* changed to be 30 g, *Lúgēn* (芦根 *Rhizoma Phragmitis*) 30 g, *Pípáyè* (枇杷叶 *Folium Eriobotryae*) 12 g, fried *Fructus Setariae Germinatus* 15 g, fried *Fructus Hordei Germinatus* 15 g, *Endothelium Corneum Gigeriae Galli* 15 g, *Huǒmárén* (火麻仁 *Fructus Cannabis*) 30 g, *Semen Persicae* 9 g and *Suānzāorén* (酸枣仁 *Semen Ziziphi Spinosae*) 15 g were added. Besides, acupuncture was also applied in combination and the regimen was same as the above case. Simultaneously, the treatments such as antiviral, antiinfection, symptomatic treatment and nutritional support were provided. After the comprehensive treatment for 1 week, fever, cough and chest pain were relieved, but the patient still had chest oppression, palpitation and epigastric discomfort occasionally. Lassitude was alleviated obviously, appetite fair, defecation and urination regular and sleep improved. The oxygen saturation was 99% (the flow of oxygen 5 L/min).

After treatment for 2 weeks, all of the symptoms were relieved, chest oppression was alleviated, palpitation appeared occasionally, shortness of breath and dull pain in epigastric region were presented on exertion, appetite was fair, defecation and urination regular and sleep normal at night. The oxygen saturation was 99% (the flow of oxygen 3 L/min). On March 4, 11 and 13, 2020, successively, RNA of COVID-19 was re-detected and the results were all negative. The re-examination of the chest CT image showed that the multiple patchy ground glass density shadows of the lungs and the bilateral pleural effusion were all significantly absorbed. On March 13, the oxygen saturation was 98% in the condition of no oxygen inhalation. Hence, the patient was discharged.

Case 2: Ms. JIANG, 72 years old, considered to be suspected COVID-19 by the chest CT image on January 13, 2020 because of “lassitude, repeated cough combined with poor appetite for 2 months”. The patient was quarantined at home after the nucleic acid detection was turned to be negative and the body temperature was normal. On February 16, the patient visited the Eighth Hospital of Wuhan City due to diabetic ketoacidosis. The chest CT image suggested that COVID-19 was progressed. After the treatment with arbidol and chloroquine phosphate and the symptomatic treatment, the nucleic acid detection was negative, but the chest CT image indicated that the patchy shadows of the lungs had not

been absorbed yet. Besides, the patient felt weakness of the lower limbs and lost the self-care ability. On March 11, 2020, the patient was shifted to C7 Inpatient Ward of Leishenshan Hospital by wheels for a further treatment with integrative Chinese and Western medicine. On admission, the patient had been lying on the bed for over 1 month and had cough, obvious lassitude, poor appetite, chest pain, mild chest oppression, dry stool and regular urination.

This case was identified as ordinary type and differentiated as *qi* deficiency, liver stagnation and interaction of damp and stasis. On March 12, 2020, the decoction of the modified Shanghai *leishen* No.1 formula was taken, in which, the dose of *Radix Astragali* changed to be 30 g, fried *Fructus Setariae Germinatus* 15 g, fried *Fructus Hordei Germinatus* 15 g, *Endothelium Corneum Gigeriae Galli* 15 g, *Juémíngzǐ* (决明子 *Semen Cassiae*) 15 g, *Fructus Cannabis* 30 g and *Semen Persicae* 9 g were added. Besides, acupuncture was applied in combination. On the 2nd day of hospitalization, the patient caught a cold and had a fever, 38.4°C and the routine acupuncture was given at Qūchí (曲池 LI11) with strong stimulation. With the symptomatic management combined, 3 days later, the body temperature was recovered to be normal and fever was not recurred till discharged. In 7 days of treatment, the patient could stand up and 9 days later, she could walk without help. Successively, on March 21, 25 and 27, 2020, the RNA of COVID-19 was re-detected and the results all indicated negative. On March 26, RNA detection of COVID-19 with sputum was negative and on March 27, the chest CT image suggested that COVID-19 was absorbed as compared with before. On March 28, 2020, the patient was discharged.

## Note

All of the cases were the elderly, of weak constitution and deficient in the antipathogenic *qi*. Hence, the retention of epidemic toxin resulted in the recurrence of illness. On hospitalization, by the analysis of four diagnostic method, the cases were differentiated as *qi* deficiency, liver stagnation and interaction of damp and stasis and the patients had obvious lassitude and poor appetite. The treatment focused on strengthening the antipathogenic *qi* and benefiting *qi*, in which the lung and spleen were mainly considered. In combination, for liver stagnation and damp and stasis, the treatment principle was smoothing liver *qi*, resolving damp and removing stasis. Simultaneously, detoxification was given on the base of disease identification. It is said in the *Chapter 72 of Sùwèn* (《素问》 *Plain Questions*) that “the pathogenic factors may have no chance to invade the body if the antipathogenic *qi* is strong enough inside body”. It indicates that the strength of the antipathogenic *qi* is the key for the human body consolidation and for the prevention from the invasion of exogenous pathogens. Youke WU (1582AD-1652AD), the famous epidemiologist of the *Ming* and *Qing* dynasties proposed that “if the antipathogenic *qi* is abundant, the pathogens may not invade the body easily, but whenever it is insufficient, the pathogens may invade at a time of breathing” “whenever the antipathogenic *qi* is slightly declined, the contagious disease may easily occur”. These statements determine the close relationship between the strength of antipathogenic *qi* and the occurrence of epidemic disease and also emphasize the importance of treatment for strengthening the antipathogenic *qi* and eliminating the pathogens. The pathogenesis of COVID-19 is characterized as the mixture with damp. Damp is lingering, resulting in the persistent retention of pathogen. Long-term illness leads to blood blockage and stasis and the interaction of damp and stasis. Because of long-term quarantine alone, the patient cannot communicate with the family and feel depressed. Consequently, *qi* deficiency, liver stagnation and interaction of damp and stasis occur. Spleen is the postnatal foundation, dominating transportation and transformation of body fluids in physiology. In the therapeutic regimens reported in this paper, ST36 is the key tonic points on the

stomach meridian of foot-*yangming*, acting on strengthening the spleen, harmonizing the stomach, resolving phlegm and tranquilization. SP6 is on the spleen meridian of foot-*taiyin*. These two acupoints co-act on benefiting *qi* and strengthening the spleen for the transportation and transformation of body fluids. LI4 is on the large intestine meridian of hand-*yangming*, acting on dispersing wind, eliminating the exterior, clearing the lung, harmonizing the stomach and stopping pain. LR3 is on the liver meridian of foot-*jueyin*, acting on smoothing liver *qi*, promoting collateral circulation, stopping pain and detoxification. The combination of bilateral LI4 and LR3 is taken as four-gate points, acting on smoothing liver *qi*, activating blood circulation, tranquilizing the mind and stopping pain and it significantly relieves depression [6]. Acupuncture at LR3, in combination with LI11 and ST36 is the adjuvant therapy for anti-hypertension [7–10]. LI11 acts on promoting *qi* and blood circulation and LR3 on smoothing liver *qi* and regulating blood. These two acupoints represent *zang* and *fu*, *yin* and *yang* respectively, acting on eliminating the exterior syndrome, stopping pain and relieving depression, as well as controlling blood pressure. Acupuncture at LR3 and ST36 may bidirectionally regulate meridian system, increase angiotensin converting enzyme (ACE) expression, inhibit renin-angiotensin-aldosterone system, up-regulate the expression of angiotensin, dilate vessels and reduce peripheral resistance so as to control blood pressure. Both of the patients reported in the paper suffered from hypertension and their blood pressure kept stable during treatment.

Acupuncture is effective on fever due to exogenous pathogens. In Case 2, for treatment of fever, the strong stimulation with acupuncture was given at LI11 daily. Acupuncture was applied mainly at LI11 and LI4. LI11 is the *he-sea* point of the hand-*yangming* meridian and is commonly used in clinic in combination with LI4 for reducing excess *yang* of *yangming* meridian. Animal experiment indicates that acupuncture at “LI11” reduces the levels of cyclic adenosine monophosphate (cAMP) and prostaglandin in cerebrospinal fluid and increases arginine vasopressin (AVP). It is deduced that acupuncture brings its role of defervescence by changing the levels of central febrile mediators [11]. *Taiyin* and *yangming* are related externally and internally. Simultaneously stimulating LU7 and LI4 may eliminate the pathogens and the exterior syndrome. LU7 is the *yuan*-primary point of lung meridian and also one of the eight confluent points, acting on dispersing lung *qi*, eliminating pathogens, stopping cough, relieving asthma, benefiting water metabolism and regulating intestinal function. In *Zhēnjiǔ Dàchéng* (《针灸大成》 *The Great Compendium of Acupuncture and Moxibustion*), it is mentioned that LU7 and ST36 are applicable for asthmatic breathing. ECMO is prohibited in the patients aged over 70 years. Pulmonary dysfunction in the elderly with severe case very easily progresses to be heart and lung failure. The combination of acupuncture and medication may prevent from the further deterioration of disease, reduce the fatality rate and improve the curative rate. In Case 1, the patient was aged 81 years old. She was in stretcher when hospitalization. Her digital oxygen saturation was 69% and she had obvious chest oppression and shortness of breath. Immediately after the first acupuncture treatment, the patient could breathe smoothly. For the other various symptoms, acupuncture focused on PC6, LI4 and ST36. After treated for 2 weeks, chest oppression was relieved and the flow of oxygen was reduced to be 3 L/min from 5 L/min. After treated for 23 days, the patient could walk without help and discharged. Besides, the imaging examination showed that the lesion foci were absorbed as compared with before. This case indicates the recovery of the lung for “dominating *qi* and respiration”. On the base of acupuncture, the modified Shanghai *leishen* No.1 formula was administered orally for benefiting *qi*, strengthening the spleen and smoothing liver *qi*, activating blood circulation in collateral, resolving damp and detoxification, and the intravenous nutritional

support was provided. All of these three therapeutic methods co-achieve the quick recovery of the physical strength, the regaining of ant pathogenic *qi* and the elimination of epidemic toxin in these two patients.

Traditional Chinese medicine (TCM) has accumulated a large amount of clinical experiences in prevention and treatment of pestilence since the ancient time and it has played an important role in the battle against COVID-19. Acupuncture is the feature of TCM in treatment. In the two cases reported in the paper, it shows that the combined regimen of acupuncture and medication displays the significant effect on the systematic symptoms in the bedridden patients with COVID-19. The quicker and better therapeutic effect has been obtained by TCM with the combination of modern medicine.

The combination of acupuncture and medication is feasible and effective in clinical treatment of COVID-19 and this therapy deserves to be promoted, under the premise of self-protection of medical staff, in the countries where COVID-19 outbreak has not been controlled yet.

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