



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Contents lists available at ScienceDirect

World Journal of Acupuncture – Moxibustion

journal homepage: www.elsevier.com/locate/wjam

42 cases of coronavirus disease 2019 of the ordinary type with the adjuvant treatment of heat-sensitive moxibustion 热敏灸辅助治疗普通型新冠肺炎42例[☆]

Xian-bao HUANG (黄仙保), Ding-yi XIE (谢丁一), Qi QIU (邱祺), Yang SHEN (沈洋), Lin JIAO (焦琳), Qiao-lin LI (李巧林), Ri-xin CHEN (陈日新)^{*}

Affiliated Hospital of Jiangxi University of Traditional Chinese Medicine, Nanchang 330006, China (江西中医药大学附属医院, 南昌 330006, 中国)

ARTICLE INFO

Article history:

Available online 15 August 2020

Keywords:

Coronavirus disease 2019 (COVID-19)
Heat-sensitive moxibustion
Deqi of moxibustion
Negative emotions

ABSTRACT

Objective: To observe the clinical therapeutic effect of adjuvant treatment with heat-sensitive moxibustion for coronavirus disease 2019 (COVID-19) of the ordinary type.

Methods: A total of 42 patients with COVID-19 of the ordinary type were adopted. Shénquè (神阙 CV8) and Tiānshū (天枢 ST25) were selected. Heat-sensitive moxibustion was operated according to the required standard, 40 min to 60 min each time, once daily. Before and after moxibustion, the improvements in clinical symptoms were evaluated, such as chest oppression, poor appetite, lassitude and negative emotions.

Results: (1) The number of cases and the incidence was 21 cases (50.0%), 24 cases (57.1%) and 26 cases (61.9%) for chest oppression, poor appetite and lassitude before heat-sensitive moxibustion. The number of cases was reduced to be 10 cases (23.8%), 7 cases (16.7%) and 4 cases (9.5%) after the 1st treatment of heat-sensitive moxibustion for chest oppression, poor appetite, and lassitude. It was reduced to be 11 cases (26.2%), 8 cases (19.0%) and 4 cases (9.5%) after the 2nd treatment of moxibustion and it was reduced to be 18 cases (42.9%), 10 cases (23.8%) and 6 cases (14.3%) after the 3rd treatment of moxibustion. The incidences of the symptoms were all reduced obviously as compared with those before treatment. (2) Before treatment with heat-sensitive moxibustion, there were 24 cases of negative emotions (57.1%). It was reduced to be 16 cases (38.1%), 11 cases (26.2%) and 3 cases (7.1%) after the 1st, 2nd and 3rd treatment of heat-sensitive moxibustion successively. The incidences were all reduced obviously as compared with those before treatment. (3) After the 1st treatment, the active acceptance rate of heat-sensitive moxibustion was 100% (42/42) in the patients, higher than 11.9% (5/42) before treatment.

Conclusion: Adjuvant treatment with heat-sensitive moxibustion effectively relieves the symptoms of COVID-19 such as chest oppression, poor appetite and lassitude, and alleviates the negative emotions, such as tension and anxiety. This therapy improves the therapeutic effect of COVID-19 and deserves to be promoted in clinical practice.

© 2020 Published by Elsevier B.V. on behalf of World Journal of Acupuncture Moxibustion House.

Since December 2019, a kind of unknown pneumonia started to draw the attention in public. In January 7, 2020, this kind of pneumonia was determined to be infected by a novel coronavirus (SARS-CoV-2). Since that time, coronavirus disease 2019 (COVID-19) was spread rapidly all over the world. Till May 14, 2020, over 4.36 million of people had been infected by this virus cumulatively in the world [1] and over 80,000 people were infected in

China [2]. Acupuncture-moxibustion is an important component of traditional Chinese medicine (TCM) and has made great contributions in the history of anti-epidemic in China. Si-miao SUN, the medical master of the Tang Dynasty pointed out in *Bèijī Qīānjīn Yàofāng* (《备急千金要方》 *Important Formulas Worth a Thousand Gold Pieces for Emergency*) that “whenever traveling in the cities in the south of China, the scarring moxibustion should be applied to several acupoints constantly to prevent from epidemic diseases”. It is stated by Shi-zhen LI, the medical master of the Ming Dynasty in *Běncāo Gāngmù* (《本草纲目》 *The Grand Compendium of Materia Medica*) that “moxibustion with artemisia argyi, may penetrate to all of meridians and treat various of diseases, bring health

[☆] Supported by Key Research and Development Project of Traditional Chinese Medicine in Jiangxi Province: 2020J007.

^{*} Corresponding author.

E-mail address: 515495321@qq.com (R.-x. CHEN).

care and have great contributions to the treatment of chronic and lingering diseases". All of these records indicate that acupuncture-moxibustion is effective in the prevention and treatment of infectious diseases [3,4]. In February 2020, the authors had joined the medical team and actively participated in the treatment of COVID-19. Heat-sensitive moxibustion has been adopted as an adjuvant therapy in treatment. The report is as follows.

Clinical data

General data

A total of 42 patients were collected from February 11, 2020 to March 9, 2020 and treated in the Affiliated Hospital of Jiangxi University of Traditional Chinese Medicine, Fusheng Branch, the designated hospital of provincial integrative Chinese and western medicine for COVID-19 treatment in Jiangxi province (28 cases) and County People's Hospital, the designated hospital for COVID-19 treatment in Qichun county, Hubei province (14 cases). All of the 42 patients with COVID-19 of the ordinary type received the adjuvant treatment with heat-sensitive moxibustion. Of them, there were 28 males and 14 females, aged from 29 to 76 years old, averagely (47 ± 11) years old. 11 cases of them had underlying diseases, i.e. 5 cases of hypertension, 2 cases of diabetes, 2 cases of the complication of hypertension and diabetes, 1 case of the complication of diabetes and coronary atherosclerotic cardiomyopathy and 1 case of asthma. This trial has been approved by the Ethnic Committee of the Affiliated Hospital of Jiangxi University of Traditional Chinese Medicine (Approval No.: JZFYKYLL20200210002).

Diagnosis criteria

The diagnosis criteria and clinical classification were in compliance with *Prevention and Control Plan of Corona Virus Disease 2019 (Tentative fourth edition)* issued by National Health Commission of the People's Republic of China (NHC) [5].

Inclusion criteria

(1) In compliance with the diagnosis criteria of COVID-19 and the clinical classification belonging to the ordinary type, (2) aged 18–80 years old, (3) being able to cooperate with moxibustion treatment and can give a correct expression of moxibustion sensation and (4) being willing to take part in the trial and having signed the informed consent form.

Exclusion criteria

(1) Body temperature over 38.0 °C, (2) suffering from severe systemic diseases (such as heart, liver, lung, kidney and blood diseases), mental diseases, (3) fainting moxibustion or being fearful of moxibustion and (4) ulcers or skin lesions on the exerted site of moxibustion that may affect the moxibustion sensation.

Treatment methods

On the base of the treatment of Chinese herbal medication and the routine symptomatic treatment [6], heat-sensitive moxibustion was supplemented. The patient was in supine comfortably, keeping relaxation of the whole body and with the sites of Shénquè (神阙 CV8) and Tiānshū (天枢 ST25) exposed. The moxibustion device was placed transversely by taking CV8 as the center. The two sections of moxa stick, 2.5 cm in diameter and 4 cm in length were ignited and inserted into the device. The smoke outlet of the device was connected with the portable smoke eliminator. The moxibustion device was shifted slowly up and down as well as side



Fig. 1. Heat-sensitive moxibustion was applied on the patient with COVID-19.

to side to search the right site in which heat, penetration, transmission and dispersion sensation were presented, and then, the device was placed on the site for moxibustion treatment (Fig. 1). During moxibustion, the heat temperature was controlled through adjusting handle so that the patient could feel even and comfortable heat sensation, without burning pain in the sites of acupoints on the abdomen. Each treatment of moxibustion was continued for 40–60 min. The standard of therapeutic effect were the responses of penetrating heat, dispersing heat, transmitting heat, no sense of heat, hot flashes in the body, sweating on the forehead, heat on the extremities and gastrointestinal peristalsis. Moxibustion was given once daily for 3 days totally.

Observation indicators

Improvements in chest oppression, poor appetite and lassitude

In reference to *Guiding Principles for Clinical Research of New Chinese Medicines (Trial)* [7], the conditions of chest oppression, poor appetite and lassitude were evaluated. The point 0, 1, 2 and 3 represented no symptom, mild, moderate and severe respectively. The higher the score was, the more severe the symptom would be. The incidence of chest oppression, poor appetite and lassitude referred to the percentage of the number of cases of chest oppression, poor appetite and lassitude (score ≥ 1 point) in the total number of cases successively. The assessment was conducted before treatment and after the 1st, 2nd and 3rd treatment separately.

Alleviation of negative emotions

The positive and negative affect scale (PANAS) [8] was adopted to evaluate the negative emotions of the patients. The incidence of negative emotions referred to the percentage of the number of cases with negative emotions (score ≥ 10 points) in the total number of cases. The assessment was conducted before treatment and after the 1st, 2nd and 3rd treatment separately.

Active acceptance rate of heat-sensitive moxibustion

The active acceptance rate of heat-sensitive moxibustion referred to the percentage of the number of cases with active acceptance in the total number of cases. The acceptance and recognition of heat-sensitive moxibustion were classified as three situations, i.e. no acceptance (rejection for moxibustion treatment), passive acceptance (recommended by the physician and the patient

Table 1

Comparison of the cases and incidence in chest oppression, poor appetite and lassitude before and after treatment in the patients with COVID-19 [Cases (%)].

Symptoms	Before treatment	After treatment		
		1st treatment	2nd treatment	3rd treatment
Chest oppression	20 (50.0)	10 (23.8)	7 (16.7)	4 (9.5)
Poor appetite	24 (57.1)	11 (26.2)	8 (19.0)	4 (9.5)
Lassitude	26 (61.9)	18 (42.9)	10 (23.8)	6 (14.3)

Table 2

Comparison of cases and incidence in negative emotions before and after treatment in the patients with COVID-19 [cases (%)].

Symptoms	Before treatment	After treatment		
		1st treatment	2nd treatment	3rd treatment
Negative emotions	24 (57.1)	16 (38.1)	11 (26.2)	3 (7.1)

expressed his/her willingness) and active acceptance (the patient asked for moxibustion treatment actively). The evaluation was conducted before treatment and after the 3rd treatment, respectively.

Results

Cases and incidence in chest oppression, poor appetite and lassitude before and after treatment in the patients with COVID-19

Before treatment, there were 21 cases of chest oppression, accounting to 50% in incidence. After the 1st, 2nd and 3rd heat-sensitive moxibustion treatment, the number of cases was reduced to be 10 (23.8%), 7 (16.7%) and 4 (9.5%) successively.

Before treatment, there were 24 cases of poor appetite, accounting to 57.1% in incidence. After the 1st, 2nd and 3rd heat-sensitive moxibustion treatment, the number of cases was reduced to be 11 (26.2%), 8 (19.0%) and 4 (9.5%) successively.

Before treatment, there were 26 cases of lassitude, accounting to 61.9% in incidence. After the 1st, 2nd and 3rd heat-sensitive moxibustion treatment, the number of cases was reduced to be 18 (42.9%), 10 (23.8%) and 6 (14.3%) successively. See [Table 1](#).

Cases and incidence in negative emotions before and after treatment in the patients with COVID-19

Before treatment, there were 24 cases of negative emotions, accounting to 57.1% in incidence. After the 1st, 2nd and 3rd heat-sensitive moxibustion treatment, the number of cases was reduced to be 16 (38.10%), 11 (26.20%) and 3 (7.14%) successively. See [Table 2](#).

Comparison of the active acceptance rate of heat-sensitive moxibustion before and after treatment in the patients with COVID-19

Before treatment, the active acceptance of heat-sensitive moxibustion treatment was 11.9% (5/42). After the 1st treatment, the active acceptance was increased to be 100% (42/42). After communicated with the patients who had been benefited by the heat-sensitive moxibustion treatment, 7 patients who rejected for this treatment got to accept heat-sensitive moxibustion. Because they had experienced the comforts of the sensation generated by heat-sensitive moxibustion, all of 30 patients who accepted the treatment passively at the beginning got to accept it actively afterwards. See [Table 3](#).

Discussion

A total of 42 cases of COVID-19 of the ordinary type were included in this trial and all of them had not been transferred to

Table 3

Comparison of the active acceptance of heat-sensitive moxibustion before and after treatment in the patients with COVID-19 [Cases (%)].

Item	Before treatment	After three treatments
Rejection	7 (16.7)	0 (0)
Passive acceptance	30 (71.4)	0 (0)
Active acceptance	5 (11.9)	42 (100)

be severe. After treatment, parts of the symptoms were relieved and the negative emotions alleviated. The reasons are explored as follows.

First, heat-sensitive moxibustion acts on eliminating cold and resolving damp by its warming effect, which is coincident with the etiology of pathogenesis of COVID-19. Eliminating cold and resolving damp is the key point of heat-sensitive moxibustion in treatment of COVID-19. It is generally recognized in TCM that COVID-19 refers to damp-toxin pestilence. The pathogenic damp is the source of this outbreak and runs through the whole process of the disease. Hence, eliminating damp becomes one of the essential parts of the treatment. It was found in clinical research [9] that the heat-sensitive sites present highly in CV8 and ST25 in the patients with COVID-19. The combination of these two acupoints co-act on warming the middle *jiao*, strengthening the spleen, dispersing lung *qi* and resolving damp. It displays the role of heat-sensitive moxibustion on eliminating cold and resolving damp. The application of two acupoints is in compliance with the characteristics of COVID-19, in which, damp is predominated in the pathogen and the lung and the spleen are chiefly involved in the location of disease. It effectively relieves chest oppression, poor appetite and lassitude. Hence, heat-sensitive moxibustion plays a satisfactory effect on the disease.

Second, heat-sensitive moxibustion acts on warming up *yang* and benefiting *qi* and effectively relieves patient' symptoms. Warming *yang* and benefiting *qi* is the foundation of the effect on COVID-19 treated by heat-sensitive moxibustion. *Yang qi* is the driving force of vital activity in the body. More *yang qi* is, more vitality will be. *Artemisia argyi* is pure *yang* in nature and moxa fire is mild heat, pertaining to *yang*. Both supplement with each to supplement fire, warm up *yang*, benefit *qi* and promote *qi* and blood circulation. Eventually, the effect is obtained for warming and tonifying *yang qi*, strengthening the antipathogenic *qi* and eliminating pathogens. In this trial, it was found that the patients with COVID-19 of the ordinary type had chest oppression, poor appetite and lassitude, which refers to *qi* deficiency of the lung and spleen caused by cold damp consuming *yang* and *qi* or the deficiency of antipathogenic *qi* after pathogen elimination. Heat-sensitive moxibustion generates the *deqi* of moxibustion, such

as heat penetration, heat expansion, heat in the deep layer, hot flashes in the body, gastrointestinal peristalsis response and comfortable sensations. It gives play to warming up *yang*, benefiting *qi* and dispersing and resolving damp and turbidity, as well as promoting circulation of three *jiao*. Hence, after moxibustion, the clinical symptoms, i.e. chest oppression, poor appetite and lassitude, were relieved. It is very important to note that all of 42 patients with COVID-19 in this trial were not transferred to be severe while the remission of their symptoms, which may be closely related to the effect of heat-sensitive moxibustion for warming *yang*, benefiting *qi*, strengthening the antipathogenic *qi* and eliminating pathogens, as well as improving the body's immunity.

Third, heat-sensitive moxibustion acts on warming up *yang* and regulating the spirits and effectively alleviates the negative emotions of the patients. Warming up *yang* and regulating the spirits is the important link of heat-sensitive moxibustion in treatment of COVID-19. In treatment, TCM focuses on regulating the physical functions of patient rather than disease itself. In order to regulate the physical functions of patient, his/her spirits should be adjusted basically. Spiritual tranquilization ensures the healthy condition of the body. Spiritual disturbance must affect nerve-endocrine-immune network function. The patient may feel hot flashes in the body and physical and mental relaxation when *deqi* of heat-sensitive moxibustion presents, which is the concrete manifestation of the regulation of spirits of moxibustion and also the unique advantage of heat-sensitive moxibustion. Modern medicine has proved that the negative emotions may seriously affect the nerve-endocrine-immune functions of human body during illness. A research [10] indicates that anxiety and depression may affect the secretion of cytokines such as interleukin-6, interleukin –8 and interleukin –2 in immune system and participates into the pathogenesis of ulcerative colitis by altering the secretion of neurotransmitters such as 5-hydroxytryptamine and brain-gut axis function through the nerve-endocrine-immune network. Therefore, it is worthy of clinical attention and application to fully attach importance of heat-sensitive moxibustion in regulating spirits, alleviating negative emotions and enhancing disease resistance function in the patients. In this outbreak, the patients present tension, anxiety, panic, palpitation, insomnia, depression, low spirits or irritability. After *deqi* of heat-sensitive moxibustion, the patients feel hot flashes, comfortable and relaxing physically and mentally, which improves patients' confidence in conquering the disease, helps to reduce their negative emotions and promotes nerve-endocrine-immune regulation. Hence, the regulation of spirits is the important link of moxibustion in treatment of COVID-19.

In summary, heat-sensitive moxibustion is supplemented in treatment of COVID-19, which is beneficial for acupuncture-

moxibustion in treatment of COVID-19. In this trial, the included sample size was small, the randomized controlled trial had not been conducted yet, additionally, the intervention could not be applied independently, hence, it was difficult to evaluate outcomes individually. However, it is suggested that moxibustion is feasible and effectively in treatment of COVID-19 and enlightened that moxibustion supplemented in the therapeutic regimen may be the new approach to clinical treatment. While, the designated hospitals involved in this trial did not receive the critical cases of COVID-19 because of the restriction of the existing conditions, heat-sensitive moxibustion had not been applied in treatment for the severe cases. The current clinical and experimental researches indicate that moxibustion improves the body immunity and effectively inhibits inflammatory response [11]. It is speculated that heat-sensitive moxibustion can also play a certain role in the treatment of severe cases of COVID-19, which is worthy of clinical attention.

References

- [1] China News. <http://www.chinanews.com/gj/2020/05-14/9184640.shtml>. 2020.
- [2] National Health Commission of the People's Republic of China. Outbreak Brief. <http://www.nhc.gov.cn/xcs/yqtb/202005/d2059dd74f8e4e469c1ad3fb6cf0e3af.shtml>. 2020.
- [3] China Association of Acupuncture-Moxibustion Guidance for acupuncture and moxibustion interventions on COVID-19 (First edition) issued by CAAM. *Chin Acupunct Moxibust* 2020;40(2):111.
- [4] Liu WH, Guo SN, Wang F, Hao Y. Understanding of guidance for acupuncture and moxibustion interventions on COVID-19 (First edition) issued by CAAM. *World J Acupunct Moxibust* 2020;30(1):1–4.
- [5] National Health Commission of the People's Republic of China. Prevention and control plan of corona virus disease 2019 (Tentative fourth edition). <http://www.nhc.gov.cn/yzygj/s7653p/202001/4294563ed35b43209b31739bd0785e67.shtml>. 2020.
- [6] Prevention and control plan of COVID-19 of Jiangxi Province (Tentative third edition). <http://hc.jiangxi.gov.cn/doc/2020/02/21/139515.shtml>. 2020.
- [7] Zheng XY. Guiding principles for clinical research of new Chinese medicines (Trial). Beijing: China Medico-Pharmaceutical Sciences and Technology Publishing House; 2002. p. 113–14.
- [8] Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: the PANAS scales. *J Pers Soc Psychol* 1988;54(6):1063–70.
- [9] Huang XB, Xie DY, Qiu Q, Shen Y, Jiao L, Li QL, et al. Clinical observation of heat-sensitive moxibustion treatment for coronavirus disease 2019. *Chin Acupunct Moxibust* 2020;40(6):578.
- [10] Zhao CD, Zhao HY, Ke XQ, Zhang XJ, Zhang H, Wang SF, et al. Investigation of the relationship between anxiety and depression and immune-neuroendocrine network in patients with ulcerative colitis. *J Gastroenterol Hepatol* 2019;28(7):791–5.
- [11] He W, Shi XS, Zhang ZY, Su YS, Wan HY, Wang Y, et al. Discussion on the effect pathways of preventing and treating coronavirus disease 2019 by acupuncture and moxibustion from the regulation of immune inflammatory response. *Chin Acupunct Moxibust* 2020;40(8):799–802 809.