

Original Article

A prognosis analysis of the combination of acupuncture and jiawei qianzheng san to treat peripheral facial paralysis

Liping Li, Xue Jiang, Aiyan Jin, Xiaodong Hu, Shanshan Geng

Department of Otolaryngology, Cangzhou Central Hospital, Cangzhou 061000, Hebei, China

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Abstract: Objective: To explore the clinical efficacy and prognosis when using the combination of acupuncture and jiawei qianzheng san to treat peripheral facial paralysis. Methods: Based on the treatment each patient received, 113 patients with peripheral facial paralysis treated in our hospital from May 2015 to February 2019 were recruited for this study and divided into two groups. The patients in group A were treated with conventional Western medicine, and the patients in group B were treated with acupuncture and jiawei qianzheng san. The clinical efficacy of the two groups, the traditional Chinese medicine (TCM) syndrome scores before and after the treatment, the facial disability index (FDI) scale scores, the H-B facial nerve function scores, and the serum NO (nitric oxide) and ET (endothelin) levels were compared. Results: The total treatment efficiency in group B was 96.49%, higher than that of group A's 76.79% ($P < 0.05$). Compared with group A, group B had lower deviation of the mouth and eye, facial numbness, aversion to cold, and no sweat after treatment scores ($P < 0.05$). After the treatment, group B had higher FDIS and FDIP scores ($P < 0.05$), lower H-B facial nerve function scores ($P < 0.05$), higher serum NO levels, and lower serum ET levels ($P < 0.05$) than group A. Group B had higher health, environment, social relations, psychology, and physiology scores after the treatment than group A ($P < 0.05$). Conclusion: Treatment with a combination of acupuncture and jiawei qianzheng san for peripheral facial paralysis has a significant clinical effect, it improves the function of the facial nerves and the serum NO and ET levels, and it improves the quality of life.

Keywords: Acupuncture, jiawei qianzheng san, peripheral facial paralysis, prognosis

Introduction

Clinically, peripheral facial paralysis, also known as facial neuritis, is caused by a combination of various factors. Its primary clinical symptoms include a deviation of the mouth and eyes. Patients with peripheral facial paralysis usually present with motor dysfunction on one side of the face [1]. At the current stage, the clinical reports on the specific pathogenesis of the disease are inconclusive. However, the mainstream view holds that the onset of the disease is due to the body's state of stress and its autoimmune function. Also, colds and viral infections cause stylomastoid artery spasms and edema around the capillaries due to a lack of oxygen, which in turn causes facial nerve dysfunction [2, 3].

Western medicine mainly uses antivirals, improved microcirculation, nutritional nerves, glucocorticoids, etc. to treat peripheral facial pa-

ralysis. Although a certain therapeutic effect can be achieved, long-term medication may cause a series of drug side effects, leaving sequelae to a certain extent, which brings heavy burdens to patients physically and mentally and also reduces the quality of life [4, 5]. In recent years, with the deepening of traditional Chinese medicine research, Chinese medicine has been widely applied to the treatment of peripheral facial paralysis. In traditional Chinese medicine, peripheral facial paralysis is classified into the categories of "facial paralysis" and "sudden facial distortion". It is believed that the main cause of the disease is irregular living, an unclean diet, the weak and abnormal operation of the body, or excessive body fatigue, or an excessively lazy lifestyle and insufficient exercise; this in turn leads to defensive qi instability, and cold or wind invades the face, resulting in facial tendon dystrophy, blocking the meridian, and eventually causing the disease [6, 7]. The traditional

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Chinese medicine treatment of the disease includes Chinese herbs, acupuncture, etc. Acupuncture can effectively regulate the movement of qi and the blood and nourish the tendons and meridians, restoring facial nerve function [8]. Originating in *Yang's Family Formula* and with the function of dispelling pathogenic wind and eliminating sputum and warming the meridian to a free channel, qianzheng san has been widely used in the treatment of facial paralysis [9].

Accordingly, to further improve the therapeutic effect of peripheral facial paralysis, improve the facial nerve functions, reduce patients' physical and mental burdens, and improve patients' quality of life, this study combined acupuncture and jiawei qianzheng san in the treatment of peripheral facial paralysis, and compared the therapeutic effect with the conventional Western medicine treatment, which is innovative and feasible to some extent.

Data and methods

Data

Based on treatment, 113 patients with peripheral facial paralysis who received treatment in our hospital from May 2015 to February 2019 were retrospectively analyzed and divided into two groups: 56 cases in group A were treated with conventional western medicine, and 57 cases in group B were treated with acupuncture and jiawei qianzheng san. (1) Inclusion criteria: informed consent signed by the patients, patients who conform to the diagnostic criteria of peripheral facial paralysis in *Acupuncture Therapeutics* [10] and *Neurology* [11], patients who have unilateral facial disease, and patients for whom this is their first onset with the condition. This study was approved by the medical ethics committee of the Cangzhou Central Hospital. (2) Exclusion criteria: patients with mental or employment barriers, lactating women, patients with drug use or acupuncture contraindications, patients with facial paralysis caused by otitis media and trauma, patients with hematopathy or endocrine, kidney, liver, or cardiovascular diseases, patients with congenital malformations, patients suffering from alcoholism or epilepsy.

Methods

Group A: The patients were given oral prednisone glucocorticoid tablets (approval no. GYZ-

ZI: H31020675; manufacturer: Shanghai Sine Pharmaceutical Laboratories Co., Ltd.; specification: 5 mg), each dose: 30 mg, once a day, after 14 days of continuous administration, reduce the dosage to 20 mg once a day, and continue to take for 14 days; the patients were also given an intramuscular injection of 50 µg mecobalamin (approval no. GYZZI: J20170016; manufacturer: Eisai China Inc.; specification: 1 ml:0.5 mg× 10 injection), once a day, and continue the injections for 14 days.

Group B: (1) Acupuncture: acupoint-segment selection at side yifeng point, xiaguan point, dicang point, qianzheng point, jiache point, quanmiu point, sibai point, yangbai point, and bilateral hegu points. For those with insufficiency of vital energy and blood, add fenglong point and zusanli point. For those with wind-cold, add fengchi point, for those with rheumatic fever, add quchi point and dazhui point, for those with auditory hypersensitivity, add tinghui point, tinggong point, for those with numbness of the tongue, add lian quan point, for those with shallower nasolabial sulcus, add yingxiang point, for those with a deviation of the mentolabial sulcus, add chengjiang point, and for those with difficulty in eyebrow lifting, add chengjiang point. After the acupoint selection is made, guide the patient to take a supine position. After the routine disinfection of the selected acupoints, a filiform needle (0.25 mm × 40 mm) is used for oblique or direct needling. If the patient is in the acute phase, it is better to prick the acupoints shallowly and avoid overweight. Place the needle into the puncture and leave it for 30 minutes; do not close the pinhole. If the patient is in the sequelae or recovery period, it is better to prick the acupoints deeply. After the insertion, the twirling reinforcing method is used to promote the circulation of qi. Now connect the low frequency pulse therapy instrument (manufactured by Shanghai Medical Equipment High Tech Co., Ltd.); when the patient has feelings such as pain, numbness, swelling, acid etc., perform continuous wave stimulation, set the stimulation frequency to 1-2 HZ, and adjust the current output to "0" to prevent excessive irritation to the patient and the possibility of leading to a series of adverse reactions. After connecting the xiaguan with the dicang, temple, and yangbai points, turn on the power supply and adjust the output current to "0", and gradually increase it according to the actual situation. It is appropri-

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ate to have a slight rhythmic beat of the local muscles. Set each electroacupuncture to 30 min, once a day, and one course of treatment: 5 times, and continuously perform 4 courses of treatment. (2) Jiawei qianzheng san: the basic prescription is: Scorpio 6 g, *Bombyx batryticatus* 10 g, *Rhizoma typhonii* 6 g, and then perform jiawei treatment according to syndrome differentiation. For those with an insufficiency of the vital energy and blood, add licorice 10 g, turmeric 12 g, tuckahoe 10 g, *Rhizoma Atractylodis macrocephalae* 10 g, *Astragalus mongholicus* 20 g, Dangshen 15 g, rhizome of rehmannia 10 g, *Paeonia lactiflora* 10 g, Rhizome of Chuanxiong 9 g, the tail part of Chinese angelica root 15 g; for those with wind-cold, add licorice 6 g, Rhizome of Chuanxiong 9 g, 1 centipede, 10 g Cicada slough, 12 g *Tribulus terrestris*, 10 g *Bombyx batryticatus*, 12 g *Angelica dahurica*, 10 g *Notopterygium forbesii*, 12 g *Herba schizonepetae*, and 9 g *radix sileris*. For those with rheumatic fever, add 9 g Rhizome of Chuanxiong, 15 g *Radix Isatidis*, 10 g *radix sileris*, 12 g Daqingye, 12 g *Radix Bupleuri*, 10 g Baicalin, 12 g *Chrysanthemum*, 12 g *folium mori*, 12 g Phillyrin, and 15 g Honeysuckle. Boil all the above medicines in water, take one dose per day, and one course of treatment: one week, and continuously perform four courses of treatment.

Observation index

(1) Efficacy evaluation criteria [12]: facial motor function, the facial appearance is completely restored to normal, and the H-B facial nerve function grade is I. Recovery: the motor function of the facial muscles is slightly weakened, the eyelids can only be closed with slight force, there is a slight asymmetry at the corner of the mouth, and the H-B facial nerve function grade is II. Distinguished effect: the motor function of the facial muscles is significantly weakened, the two sides are asymmetric and have facial spasms, the eyelids can only be closed with force, and the H-B facial nerve function grades are III or IV. Effective effect: there is no activity in the upper forehead, the eyes can only be slightly closed, and the mouth can only be moved slightly, and the H-B facial nerve function grades are V or VI. No effect. Recovery + distinguished effect + effective effect = Total effective.

(2) TCM symptom scoring. The scores are based on the severity of the symptoms, such as aver-

sion to cold, not sweating, facial numbness, and deviation of the mouth and eyes before and after treatment. No score: 0, mild: 1, moderate: 2, severe: 3. The higher the score, the more serious the symptoms.

(3) FDI scale score [13]. The patients were assessed using the FDI scale before and after the treatment, including FDIS (social life function) and FDIP (body function). The highest scores were 37.5 and 40 respectively. The higher the score, the less the effect of the disease on the patient's physical and social life functions.

(4) H-B facial nerve function score [14]. The patients were assessed according to their physical signs, such as post auricular pain, hearing, taste of the anterior 2/3 of the tongue, puffing and whistling, deviation of the eyes and mouth, nasolabial sulcus, vestibule activity, close eyes, split eyes, and forehead lines before and after treatment. Score 0: normal, 1: mild abnormality, 2: moderate abnormality, 3: severe abnormality. The lower the score, the better the facial function.

(5) Serum NO and ET levels. Before and after the treatment, from each patient in the two groups of patients we extracted 3 ml of early morning, fasting venous blood, performed centrifugation for 15 min at a speed of 3000 r/min, and determined their serum NO and ET levels using the enzyme linked immunosorbent assay method.

(6) Quality of life [15]. Before and after the treatment, we evaluated the patients' quality of life in the two groups using the WHOQOL-BREF instrument, which includes five evaluation fields: health status, environment, social relations, psychology, and physiology. The percentage system is used for the evaluation, and the quality of life is directly proportional to the score.

Statistical methods

We carried out the data analysis using SPSS 22.0. The measurement data are expressed as the mean \pm standard deviation. For the data conforming to a normal distribution, t-tests were conducted. For the data that did not conform to a normal distribution, Mann-Whitney U tests were conducted. The count data are represented as [n (%)], and for the comparisons of the count data between groups, we used χ^2

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Table 1. Comparison of the general data in the two groups [n (%)]/($\bar{x} \pm s$)

Data		Group A (n=56)	Group B (n=57)	t/ χ^2	P
Gender (case)	Male	30 (60.00)	28 (56.00)	0.164	0.685
	Female	20 (40.00)	22 (44.00)		
Age (years)		36.12±1.29	36.19±1.25	0.293	0.770
Diseased side (n)	Left side disease	30 (52.63)	34 (59.65)	0.425	0.515
	Right side disease	26 (46.43)	23 (40.35)		
Symptomatic type (case)	Deficiency of Qi and blood	21 (37.50)	23 (40.35)	0.028	0.968
	Wind cold	19 (33.93)	16 (28.07)		
	Rheumatic fever	16 (28.57)	17 (29.82)		

tests, and $P < 0.05$ indicated that there is a significant significance.

Results

Comparison of the general data between two groups

Compared with patients in group A and B, the proportion of male and female patients and the average age were not statistically significant ($P > 0.05$). The proportions of patients with diseases on the left side and the right side in group A were 52.63% and 46.43%, respectively, compared with 59.65% and 40.35% in group B, so the differences were not significantly different ($P > 0.05$). The proportions of patients with a deficiency of qi and blood, wind, cold, and rheumatic fever in group A are 37.50%, 33.93%, and 28.57%, compared with 40.35%, 28.07% and 29.82% in group B, and is the differences are not statistically significant ($P > 0.05$) (Table 1).

Comparison of the clinical efficacy between the two groups

In group A, there were 18 cases, 15 cases, 10 cases, and 13 cases of patients who recovered, had a distinguished effect, an ineffective effect, and no effect, so the total effective rate was 76.79%. In group B, there were 26 cases, 18 cases, 11 cases, and 2 cases of patients who recovered, had a distinguished effect, an ineffective effect, and no effect, so the total effective rate was 96.49%. Group B had a total effective rate of treatment of 96.49%, higher than of the rate in group A (76.79%) ($P < 0.05$) (Table 2).

Comparison of the TCM symptom scores in the two groups

Before the treatment, we compared the patients in the two groups in terms of their deviation of the mouth and eyes, facial numbness, and aversion to cold and not sweating scores, and there is was significant difference ($P > 0.05$). Compared with before the treatment, the deviation of the mouth and eyes, facial numbness, aversion to cold, and not sweating scores for both groups decreased ($P < 0.05$). Compared with group A,

the deviation of the mouth and eyes, facial numbness, aversion to cold, and not sweating scores in group B were even lower ($P < 0.05$) (Table 3).

Comparison of the FDI scale scores between two groups

Before the treatment, there was no significant difference in the FDIS and FDIP scores in groups A, B ($P > 0.05$). Compared with before the treatment, the FDIS and FDIP scores were improved in both groups after the treatment ($P < 0.05$). The FDIS and FDIP scores in group B after the treatment were higher than they were in group A ($P < 0.05$) (Figure 1).

Comparison of the H-B facial nerve function scores in the two groups

Before the treatment, there were no significant differences in the H-B facial nerve function scores in both groups ($P > 0.05$). Compared with before the treatment, the H-B facial nerve function score were decreased in both groups after the treatment ($P < 0.05$). The H-B facial nerve function scores in group B after the treatment were lower than they were in group A ($P < 0.05$) (Table 4).

Comparison of the serum NO and ET levels in the two groups

Before the treatment, there were no significant differences in the serum NO and ET levels between group A and group B ($P > 0.05$). Compared with before the treatment, the serum NO levels increased and the ET levels decreased in both groups after the treatment

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Table 2. Comparison of the clinical efficacy in the two groups [n (%)]

Group	Case	Recovery	Distinguished effect	Effective effect	No effect	Total effective
Group A	56	18 (32.14)	15 (26.79)	10 (17.86)	13 (23.21)	43 (76.79)
Group B	57	26 (45.61)	18 (31.58)	11 (19.30)	2 (3.51)	55 (96.49)*
χ^2						9.528
P						0.002

Note: *represents compared with group A, $P < 0.05$.

Table 3. Comparison of the TCM symptom scores in the two groups ($\bar{x} \pm s$, score)

Group	Deviation of mouth and eye		Facial numbness		Aversion to cold and no sweat	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Group A (n=56)	2.85±0.12	2.06±0.09 [#]	2.75±0.22	2.16±0.15 [#]	2.69±0.27	1.99±0.18 [#]
Group B (n=57)	2.83±0.16	1.02±0.01 ^{#,*}	2.72±0.25	1.05±0.11 ^{#,*}	2.72±0.22	1.06±0.11 ^{#,*}
t	0.751	42.483	0.677	44.914	0.648	33.205
P	0.454	0.000	0.500	0.000	0.518	0.000

Note: [#]represents compared with before the treatment, $P < 0.05$; and ^{*}represents compared with group A, $P < 0.05$.

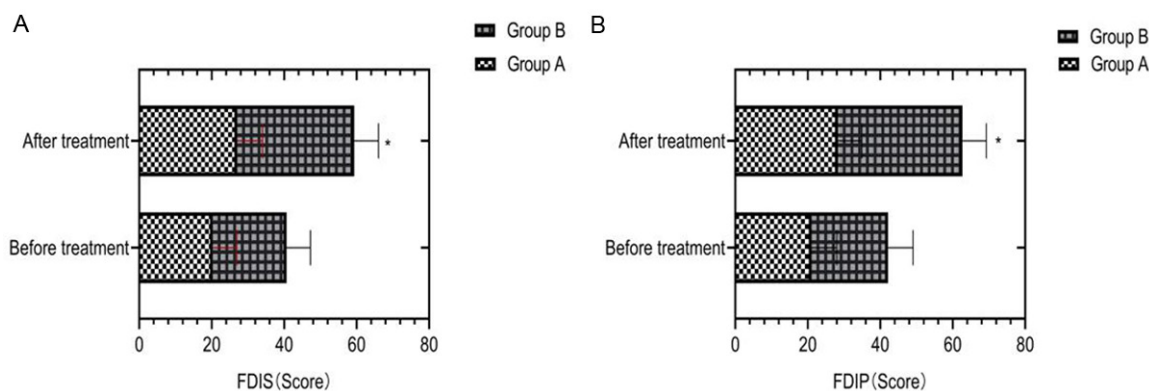


Figure 1. Comparison of the FDI scale scores in the two groups. The comparisons are made for the FDIS and FDIP scores in group A before the treatment with the scores in group B, $P > 0.05$. The FDIS and FDIP scores in group B after the treatment were higher than they were in group A, $P < 0.05$. * represents compared with group A, $P < 0.05$.

Table 4. Comparison of the H-B facial nerve function scores between the two groups ($\bar{x} \pm s$, Score)

Group	Before treatment	After treatment
Group A (n=56)	4.28±1.08	1.99±0.85 [#]
Group B (n=57)	4.32±1.05	0.82±0.15 ^{#,*}
t	0.199	10.232
P	0.842	0.000

Note: [#]represents compared with before the treatment, $P < 0.05$; and ^{*}represents compared with group A, $P < 0.05$.

($P < 0.05$). After the treatment, the serum NO levels in group B were higher than they were in group A, and the serum ET levels were lower than they were in group A ($P < 0.05$) (Figure 2).

Comparison of the quality of life scores in the two groups

Before the treatment, we compared the health status, environment, social relations, psychological and physiological scores between group A and group B, and there were no significant differences ($P > 0.05$). Compared with before the treatment, the health status, environment, social relations, psychological, and physiological scores of the two groups after the treatment were improved ($P < 0.05$). After the treatment, the health status, environment, social relations, psychological, and physiological scores in group B were higher than they were in group A ($P < 0.05$) (Figure 3).

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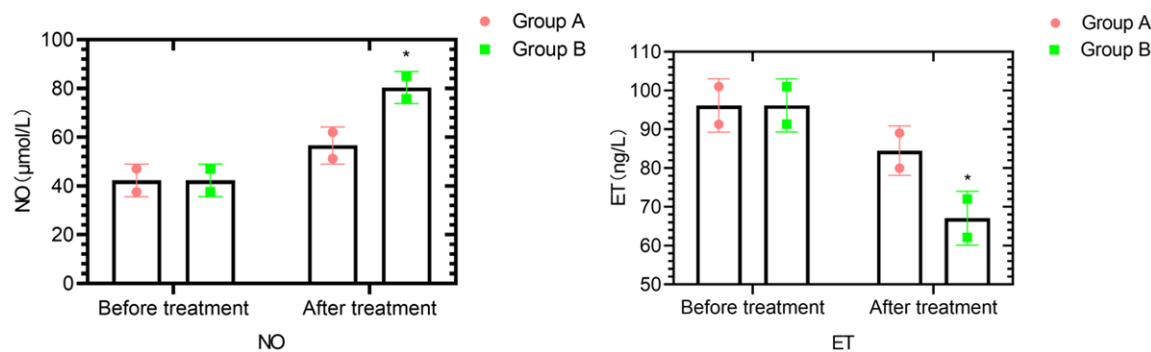


Figure 2. Comparison of the serum NO and ET levels in the two groups. The comparison is made for the levels of serum NO and ET in group A before the treatment with of the levels in group B, $P > 0.05$. The level of serum NO in group B after the treatment was higher than it was in group A, $P < 0.05$. And the level of serum ET in group B after the treatment was lower than it was in group A, $P < 0.05$. * represents compared with group A, $P < 0.05$.

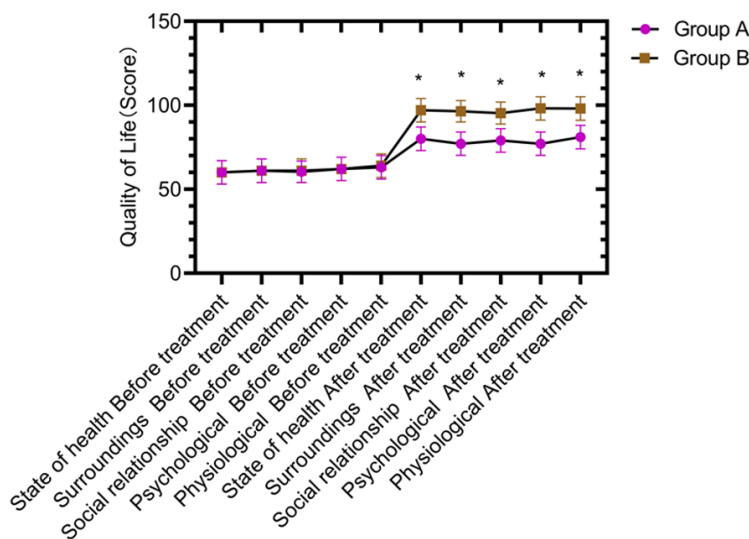


Figure 3. Comparison of the quality of life scores in the two groups. We compared the health status, environment, social relations, psychological, and physiological scores in the two groups before the treatment, $P > 0.05$; After the treatment, the health status, environment, social relations, psychological, and physiological scores in group B were higher than they were in group A, $P < 0.05$. * represents compared with group A, $P < 0.05$.

Discussion

Peripheral facial paralysis is a neurological disease caused by nonspecific inflammation. It has a diverse etiology and is closely related to many factors such as climate, abnormal immunity, viral infections, etc. Patients usually have difficulty completing actions such as frowning, puffing their cheeks, closing their eyes, etc. and suffer paralysis of the facial expression muscles. Patients with severe conditions even have symptoms such as taste disorders and intraauricular pain [16, 17]. In recent years, the num-

ber of patients with peripheral facial paralysis has increased significantly. Some patients may have a series of sequelae such as hemifacial spasms without receiving any effective treatment [18]. Therefore, it is necessary to actively explore a scientific and reasonable way to treat patients.

The treatment of peripheral facial paralysis in modern medicine includes hormone therapy, antiviral drug therapy, other drug therapy, physical therapy and surgical treatment, etc. [19]. In recent years, the research on TCM has intensified, and the rate of application of traditional Chinese medicine for the treatment of peripheral facial paralysis has become increasingly high [20]. Acupuncture is a traditional

Chinese medicine treatment. By examining the specificity of the acupoints, the mechanisms of acupuncture for the treatment of peripheral facial paralysis were explored, and particularly, in-depth research was done on the correlation between the acupoints and neurophysiology. The study found that there is a close correlation between peripheral nerves and acupoint anatomy [21, 22]. By carrying out acupuncture on facial acupoints, the pain and warm sensation can be directly or indirectly transformed into an electrophysiological signal, and it is transmitted to the central nervous system of

the brain through the trigeminal nerve fiber. When the signals are integrated, they stimulate the nerves of the face and promote the release of neuroactive factors, which in turn accelerates the repair of facial nerve damage [23]. Acupuncture can also promote local blood circulation, which improves the local oxygen supply and increases the excitability of the facial nerves [24]. Acupuncture can successfully treat peripheral facial paralysis; however, this study combined acupuncture and jiawei qianzheng san for the treatment of peripheral facial paralysis to further improve the clinical efficacy. The results showed that group B had a higher total effective rate and lower TCM symptom scores, H-B facial nerve function scores, and higher quality of life scores than group A did. This suggests that the clinical efficacy of the combination of acupuncture and jiawei qianzheng san for the treatment of peripheral facial paralysis is significant, which is beneficial for improving facial nerve function and improving the quality of life. Xiao [25] also found through research that the therapeutic effect of acupuncture combined with jiawei qianzheng san was better than it was in the control group, a finding highly consistent with the results of this study. To explore its mechanism, in the acupuncture treatment, acupoint was selected based on the Course of Lung Meridian and the basic theories of traditional Chinese medicine. All the selected acupoints belong to the yangming Channel. Except for hegu, the other acupoints are distributed on the face [26]. The yangming channel is gathered on the face, and it is a channel with multiples of blood and qi. Acupuncture on the above acupoints can activate the meridians to stop pain, regulate qi and the blood, and expel wind and clear away cold, so the facial nerve function can be improved [27]. Furthermore, qianzheng san is composed of scorpions, *Bombyx batryticatus* and *Rhizoma typhonii*. It has an extremely simple prescription. *Rhizoma typhonii* is the main drug, and it has the effect of dredging collaterals, resolving phlegm and expelling wind. Scorpions and *Bombyx batryticatus* are components of the insect medicine that dispels wind. Passing through the liver meridian, scorpion is the main medical drug that dispels wind and has the remarkable effect of dredging collaterals. *Bombyx batryticatus* can reduce phlegm, and it helps dispel

phlegm and wind [28]. The combination of the three drugs has the effect of dispelling wind and resolving phlegm, warming meridians and dredging collaterals. Based on this prescription and the principles of syndrome differentiation in traditional Chinese medicine, combining acupuncture and jiawei qianzheng san for peripheral facial paralysis was used to treat patients with different syndrome types in this paper. It is beneficial to improving the flexibility and relevance of the treatment. Therefore, it has a more ideal therapeutic effect.

ET is a vasoconstrictor, and it has a tight correlation with the occurrence and development of facial nerve paralysis. Clinical studies have suggested that increased ET release is significantly correlated with hypoxia and ischemia. The ability to contract arterioles and veins is adopted to improve the blood supply [29]. NO is a vasodilator. It can effectively maintain normal blood flow. A decrease of NO level in the serum indicates that there is a neurovascular diastolic disorder, which may lead to anoxia and ischemic injury [30]. Hence, an improvement in the serum ET and NO levels is of great significance in reducing the degree of nerve injury. In this study, group B had a higher level of serum NO and a lower level of serum ET than group A did after the treatment. This suggests that the patients had less nerve damage after undergoing the combination of acupuncture and jiawei qianzheng san for their peripheral facial paralysis treatment. This is because acupuncture can stimulate nerve fibers, so the facial blood circulation can be improved, and, at the same time, the oxygen supply is significantly improved.

In conclusion, the combination of acupuncture and jiawei qianzheng san has a significant clinical effect on the treatment of peripheral facial paralysis. It helps to improve facial nerve function and serum NO and ET levels, and it improve patients' quality of life. Scientifically and effectively, this treatment can be used as a clinical treatment for peripheral facial paralysis.

This study has made some achievements. However, it also has the limitation of a small study cohort. Further research using a larger cohort, a longer study time, and a more comprehensive analysis is still required in the future.

Disclosure of conflict of interest

None.

Address correspondence to: Liping Li, Department of Otolaryngology, Cangzhou Central Hospital, No. 201 Xinhua West Road, Cangzhou 061000, Hebei, China. Tel: +86-0317-2076239; E-mail: lipingli-PL@163.com

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