

# Electroacupuncture combined with Qianzhengsan decoction for the treatment of peripheral facial paralysis

## A retrospective study

Wei-Qiang Chen, MM<sup>a</sup>, Qiang Li, MB<sup>b,\*</sup> 

### Abstract

This study retrospectively explored the effectiveness of electroacupuncture (EA) combined with Qianzhengsan decoction (QZSD) for the treatment of peripheral facial paralysis (PFP). This retrospective study included patients with PFP admitted to a single hospital between July 2018 and June 2020. Ninety patients were included and divided into treatment (n = 45) and control (n = 45) groups. All the patients in both groups received oral prednisone tablets and mecobalamin. In addition, patients in the treatment group received EA and QZSD. The outcomes were the overall response rate, facial nerve function, facial nerve electromyography, and adverse events. All outcome data were analyzed before and after treatment. Patients in the treatment group achieved better outcomes than those in the control group in improving overall response rate ( $P = .04$ ), facial nerve function ( $P < .01$ ), and facial nerve electromyography ( $P < .01$ ). Patients in both groups reported adverse events. The results of this study showed that patients with PFP and QZSD received better outcomes than those who did not. Further studies are required to confirm these results.

**Abbreviations:** EA = electroacupuncture, EMG = electromyography, GB14 = Yangbai, PFP = peripheral facial paralysis, QZSD = Qianzhengsan decoction, S118 = Quanliao, ST2 = Sibai, ST4 = Dicang, ST6 = Jiache, ST7 = Xiaguan.

**Keywords:** effectiveness, electroacupuncture, peripheral facial paralysis, Qianzhengsan decoction

## 1. Introduction

Peripheral facial paralysis (PFP), also known as bell palsy or facial neuritis, results from peripheral neuronal lesions in the facial nerve.<sup>[1-4]</sup> It manifests as facial asymmetry persisting for weeks to months, disappearance of forehead lines, inability to close eye clefts and frown, difficulties in drooping mouth, drooling, brushing teeth, gargling obstacles, eating, and chewing.<sup>[5-7]</sup> Some patients also experience ear pain and facial numbness. PFP is very common in clinical practice and predominately affects individuals aged 20 to 40 years with more males than females.<sup>[8,9]</sup> It has been reported that approximately 11.5 to 40.2 per 100,000 people experience this disorder annually.<sup>[10-13]</sup>

Current treatment modalities for PFP mainly consist of corticosteroids, antiviral drugs, surgery, Chinese herbal medicine, and electroacupuncture.<sup>[14-21]</sup> Previous studies have reported that oral prednisone tablets and subcutaneous injection of mecobalamin could improve PFP patients recovery. Prednisone is reported to improve the recovery of facial motor function, and has an anti-inflammatory action by reducing edema and inflammation of the attacked facial nerve in patients with acute PFP. Methylcobalamin, an endogenous vitamin B<sub>12</sub>, is found in blood and marrow. It is metabolized through a methyl-switching

reaction, which improves neuronal conduction and repairs injured nerve tissue in the face.

Although oral prednisone tablets and mecobalamin can benefit patients with PFP, their efficacy remains limited. Chinese herbal medicine, such as Qianzhengsan decoction (QZSD) and electroacupuncture (EA), have been reported to have beneficial effects on patients with PFP.<sup>[19,20,22-25]</sup> QZSD has been reported to regulate channels and collaterals, replenish *Qi*, promote *Blood* circulation, relieve pain, dispel wind and cold, and resolve phlegm in the face. EA at local acupoints can regulate the meridians and collaterals, harmonize *Qi* and *Blood*, strengthen metabolism and promote blood circulation. However, there are insufficient data to support the utilization of EA and QZSD in the treatment of PFP. Therefore, this study retrospectively investigated the effectiveness of EA in combination with QZSD in the treatment of patients with PFP.

## 2. Methods

### 2.1. Ethical statement

The ethical approval for this retrospective study was waived because it collected data from completed medical records and

The authors have no conflicts of interest to disclose.

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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How to cite this article: Chen W-Q, Li Q. Electroacupuncture combined with Qianzhengsan decoction for the treatment of peripheral facial paralysis: A retrospective study. *Medicine* 2022;101:37(e30740).

Received: 4 July 2022 / Received in final form: 24 August 2022 / Accepted: 25 August 2022

<http://dx.doi.org/10.1097/MD.00000000000030740>

performed data analysis. The requirement for written informed consent was waived.

## 2.2. Patient population

The inclusion criteria included patients aged  $\geq 18$  years who had PFP in accordance with the diagnostic criteria of peripheral facial paralysis in Neurology,<sup>[26]</sup> and Acupuncture and Moxibustion, first onset of the disease, the course of the disease ranging from 1 to 30 days, and unilateral facial paralysis.

The exclusion criteria were as follows: central facial paralysis; peripheral facial paralysis secondary to other diseases, such as infectious polyradiculitis, tumor invading the temporal bone, lesion of the posterior cranial fossa, parotitis or swelling of the parotid gland, and brain trauma; internal artificial pacemaker or other conditions that prohibit electroacupuncture treatment; severe diseases of the heart, brain, liver, kidney, endocrine, and hematopoietic system; age  $<18$  years; alcoholism, drug abuse, depression, or other mental disorders; and incomplete data.

## 2.3. Treatment approach

Patients in both groups received 25 mg/d oral prednisone tablets (Zhejiang Xianju Pharmaceutical Co., Ltd., Zhengjiang, China, National Medicine Permission No. H33021207), and 400  $\mu$ g/d subcutaneous injection of mecobalamin (Hebei Huarong Pharmaceutical Co., Ltd., Hebei, China, National Medicine Permission No. H20050167). Both medications were administered for 10 days during each session. At the end of each session, the patients were instructed to rest for 3 days and then continue the treatment for a total of three sessions.

In addition, patients in the treatment group received QZSD and EA. QZSD mainly consisted of Scorpion 15 g, Radix Aconiti Lateralis 20 g, Bombyx Batryticatus 15 g, Auxiliary herbs of Earthworm 15 g, Astragalus 30 g, Centipede 2 g, Angelica 5 g, and Saposhnikovia 10 g administered in accordance with the patient's condition. They were boiled to 100 to 200mL, twice daily, in the morning and evening. For EA, patients received acupuncture treatment first (Hanyi Brand needles, 0.3  $\times$  40 mm) at acupoints Yangbai (GB14), Dicang (ST4), Jiache (ST6), Quanliao (SI18), Xiaguan (ST7), and Sibai (ST2) on the affected side. The needles were then connected to a Hwato SDZ-II electronic acupuncture device. They were treated for 30 minutes each time, 5 times a week for a total of 4 weeks.

## 2.4. Outcome measurements

The outcomes were the overall response rate, facial nerve function, facial nerve electromyography (EMG), and adverse events.

The assessment criteria for effectiveness were as follows: cured, the clinical symptoms disappeared, the facial muscles returned to normal, no adverse reactions occurred; marked effectiveness, clinical symptoms, and facial muscle movement were significantly improved and invalid; no significant changes in the clinical symptoms. Overall response rate = (number of cured and markedly effective cases)/total cases  $\times$  100%.

Facial nerve function was evaluated using the House-Brackmann (H-B) scale before and 4 weeks after treatment. A lower score indicates better recovery.<sup>[27]</sup>

Facial nerve EMG was performed using an EMG analyzer (NeuroMax1004 Shanghai Food and Drug Monitoring Certified No. [20112210118]). We assessed the recovery of the frontal, buccal, and nasal muscles. Higher examination results indicate better muscle recovery.

## 2.5. Statistical analysis

All statistical analyses were performed using the SPSS Statistics software (SPSS 17.0; IBM Corp., Armonk, NY). All data are

presented as the mean (standard deviation) or number (percentage). Continuous data were analyzed using Student *t* test or Mann-Whitney *U* test, and categorical data were analyzed using the  $\chi^2$  test or Fisher exact test. Statistical significance was established at  $P < .05$  (2-sided).

## 3. Results

This retrospective study scanned the medical records of 205 PFP patients. Of these, 115 ineligible patients were excluded because of central facial paralysis ( $n = 23$ ), age  $< 18$  years ( $n = 15$ ), incomplete data ( $n = 36$ ), or inappropriate modality ( $n = 41$ ). Finally, 90 patients with PFP were included in this study and divided into treatment ( $n = 45$ ) and control ( $n = 45$ ) groups (Fig. 1).

The general characteristics of the 90 patients with PFP in both the groups are summarized in Table 1. There were no significant differences in age, sex, race, PFP duration, or affected location of the PFP (Table 1).

The overall response rates of patients with PFP in both groups are presented in Table 2. A significant difference in the overall response rate was observed between the two groups ( $P = .04$ ; Table 2).

Facial nerve function results are shown in Table 3. Before treatment, there were no significant differences in facial nerve function between the two groups ( $P = .61$ , Table 3). However, after treatment, there were significant differences in facial nerve function between the two groups ( $P < .01$ , Table 3).

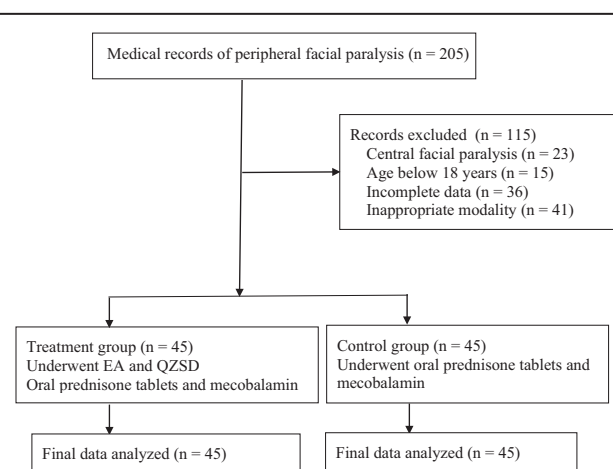
A comparison of facial nerve EMG results after treatment is shown in Table 4. There were significant differences in the enhancement of the frontal ( $P < .01$ , Table 4), nasal ( $P < .01$ , Table 4), and buccal ( $P < .01$ , Table 4) muscles between the two groups.

Additionally, patients in both groups did not report any adverse events associated with EA or QZSD.

## 4. Discussion

PFP is a common disorder associated with facial muscle dysfunction caused by facial nerve injuries. This can occur in any age group. If it cannot be treated in a timely and effective manner, it greatly affects the patient's physical and mental disorders as well as the quality of life in patients with PFP. Current pharmacological medications are responsible for the management of PFP. However, their efficacy remains unsatisfactory.

A study reported that EA at acupoints such as GB14, ST4, ST6, SI18, ST7, and ST2, can manipulate channels and collaterals, harmonize *Qi* and *Blood*, strengthen metabolism, and



**Figure 1.** Flow chart of patient case selection. EA = electroacupuncture, QZSD = Qianzhengsan decoction.

**Table 1**  
General characteristics of included patients with PFP.

| Characteristics         | Treatment group (n = 45) | Control group (n = 45) | P   |
|-------------------------|--------------------------|------------------------|-----|
| Age (yr)                | 36.2 (9.8)               | 34.7 (11.0)            | .36 |
| Gender                  |                          |                        |     |
| Male                    | 29 (64.4)                | 25 (55.6)              | .39 |
| Female                  | 16 (35.6)                | 20 (44.4)              | –   |
| Race (ethnicity)        |                          |                        |     |
| Han                     | 43 (95.6)                | 41 (91.1)              | .41 |
| Hui                     | 2 (4.4)                  | 4 (8.9)                | –   |
| Duration of disease (d) | 8.1 (3.8)                | 7.8 (4.2)              | .72 |
| Affected location       |                          |                        |     |
| Above CT                | 26 (57.8)                | 24 (53.3)              | .67 |
| Below CT                | 19 (42.2)                | 21 (46.7)              | –   |

Data are presented as mean ± standard deviation or number (%).  
CT = chorda tympani, PFP = peripheral facial paralysis.

**Table 2**  
Overall response rate.

| Groups                   | Cured     | Marked effectiveness | Invalid  | Overall response | P   |
|--------------------------|-----------|----------------------|----------|------------------|-----|
| Treatment group (n = 45) | 28 (62.2) | 16 (35.6)            | 1 (2.2)  | 44 (97.8)        | .04 |
| Control group (n = 45)   | 17 (37.8) | 20 (44.4)            | 8 (17.8) | 37 (82.2)        |     |

Data are presented as number (%).

**Table 3**  
Comparison of facial nerve function between the two groups.

| Facial nerve function         | Treatment group (n = 45) | Control group (n = 45) | P    |
|-------------------------------|--------------------------|------------------------|------|
| Before treatment              | 21.1 (3.5)               | 20.7 (3.9)             | .61  |
| After treatment               | 0.8 (0.3)                | 3.8 (0.9)              | <.01 |
| Difference between two groups |                          | –3.0 (–3.5, –2.6)      | <.01 |

Data are presented as mean ± standard deviation (range).

**Table 4**  
Comparison of facial nerve EMG between the two groups.

| Facial nerve EMG | Treatment group (n = 45) | Control group (n = 45) | P    |
|------------------|--------------------------|------------------------|------|
| Frontal muscles  | 0.81 (0.11)              | 0.74 (0.10)            | <.01 |
| Nasal muscles    | 0.79 (0.18)              | 0.68 (0.14)            | <.01 |
| Buccal muscles   | 0.84 (0.13)              | 0.73 (0.08)            | <.01 |

Data are presented as mean ± standard deviation (range).  
EMG = electromyography.

promote blood circulation. The QZSD has the effect of dispelling wind and resolving phlegm, which is helpful for the treatment of wind on the face. Scorpion and Bombyx batryticatus can dispel wind and relieve spasm, resolve phlegm and regulate collaterals. The combination of these three herbs can treat crooked mouth and eyes caused by wind and phlegm blocking collaterals. According to the patient's condition, adding auxiliary herbs, Saposhnikovia, and Centipede can enhance the effects of regulating collaterals and relieving spasm, dispelling wind and resolving phlegm. Angelica Sinensis and Salvia Miltiorrhiza can nourish the blood and promote blood circulation. Astragalus can replenish *Qi* and *Blood* circulation. The combination of these herbs can eliminate cold and wind and spread *Qi* through the channels of the face.

This retrospective study included 90 medical records of PFP, and investigated the outcomes using overall response rate, facial nerve function, and facial nerve electromyography. The results showed that the overall response rate of the treatment group (97.8%) was significantly higher than that of the control group (82.2%) ( $P = .04$ ). After treatment, the facial nerve function scores in the treatment group were lower than those in the control group ( $P < .01$ ). In addition, the values of the frontal, nasal, and buccal muscles in the treatment group were significantly higher than those in the control group ( $P < .01$ ). These results indicate that patients who received EA and QZSD were more effective in the treatment of PFP than those who did not receive them. No adverse events were reported in either of the groups.

This retrospective study has the following limitations. First, there may have been heterogeneity due to the nature of the study. Second, the results of this single-center study may not be generalizable to all PFP patients. Third, the subjective analysis of the overall response rate may have resulted in a confusion bias. Fourth, the limited number of medical records may restrict the multivariate analysis.

## 5. Conclusion

This study showed that EA combined with QZSD can be used to treat patients with PFP was found to be effective. In future, a prospective study is required to confirm this conclusion.

## Author contributions

**Conceptualization:** Wei-Qiang Chen, Qiang Li.

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## References

- Rath B, Gidudu JF, Anyoti H, et al. Facial nerve palsy including Bell's palsy: case definitions and guidelines for collection, analysis, and presentation of immunisation safety data. *Vaccine*. 2017;35:1972–83.
- Eksi G, Akbay E, Bayarogullari H, et al. The effect of width of facial canal in patients with idiopathic peripheral facial paralysis on the development of paralysis. *Eur Arch Otorhinolaryngol*. 2015;272:2283–9.
- Wu J. *Neurology*. Beijing, China: People's Medical Publishing House; 2010:118–20.
- Garro A, Nigrovic LE. Managing peripheral facial palsy. *Ann Emerg Med*. 2018;71:618–24.
- Tollefson TT, Hadlock TA, Lighthall JG. Facial paralysis discussion and debate. *Facial Plast Surg Clin North Am*. 2018;26:163–80.
- Wamkpa NS, Jeanpierre L, Lieu JEC, et al. Physical therapy for iatrogenic facial paralysis. *JAMA Otolaryngol Head Neck Surg*. 2020;146:1065–72.
- Ayoub NF, Abdelwahab M, Zhang M, et al. Facial paralysis and communicative participation: the importance of facial symmetry at rest. *Ann Otol Rhinol Laryngol*. 2020;129:788–94.
- Lassaletta L, Morales-Puebla JM, Altuna X, et al. Facial paralysis: clinical practice guideline of the Spanish society of otolaryngology. *Acta Otorrinolaryngol Esp (Engl Ed)*. 2020;71:99–118.
- Jiang C, Wu J, Zhong W, et al. Automatic facial paralysis assessment via computational image analysis. *J Healthc Eng*. 2020;2020:2398542.

- [10] Morales DR, Donnan PT, Daly F, et al. Impact of clinical trial findings on Bell's palsy management in general practice in the UK 2001-2012: interrupted time series regression analysis. *BMJ Open*. 2013;3:e003121.
- [11] Holland J, Bernstein J. Bell's palsy. *BMJ Clin Evid*. 2011;2011:1204.
- [12] Lorch M, Teach SJ. Facial nerve palsy. *Pediatr Emerg Care*. 2010;26:763-9; quiz 770.
- [13] Eviston TJ, Croxson GR, Kennedy PGE, et al. Bell's palsy: aetiology, clinical features and multidisciplinary care. *J Neurol Neurosurg Psych*. 2015;86:1356-61.
- [14] Gagyor I, Madhok VB, Daly F, et al. Antiviral treatment for Bell's palsy (idiopathic facial paralysis). *Cochrane Database Syst Rev*. 2019;9:CD001869.
- [15] Madhok VB, Gagyor I, Daly F, et al. Corticosteroids for Bell's palsy (idiopathic facial paralysis). *Cochrane Database Syst Rev*. 2016;7:CD001942.
- [16] Dedhia R, Hsieh T-Y, Chin O, et al. Outcomes from lateral eyelid coupling for facial paralysis using the modified tarsoconjunctival flap. *JAMA Facial Plast Surg*. 2018;20:381-6.
- [17] Yan HX, Sheng Y, Sheng CR. Professor SHENG Can-ruo's experience in treatment of peripheral facial paralysis with combined therapy of acupuncture-moxibustion and herbal medicine. *Chin Acupunct Moxibust*. 2021;41:792-4.
- [18] Wen X, Li SR. Medicine-waxing application method on facial acupoint area for 50 cases of peripheral facial paralysis. *Chin Acupunct Moxibust*. 2013;33:1036-8.
- [19] Wang WH, Jiang RW, Liu NC. Electroacupuncture is effective for peripheral facial paralysis: a meta-analysis. *Evid Based Complement Alternat Med*. 2020;2020:5419407.
- [20] Liu LA, Zhu YH, Li QH, et al. Comparison on efficacy and the safety evaluation on peripheral facial paralysis treated with electroacupuncture of different waveforms. *Chin Acupunct Moxibust*. 2012;32:587-90.
- [21] Baugh RF, Basura GJ, Ishii LE, et al. Clinical practice guideline: Bell's palsy. *Otolaryngol Head Neck Surg*. 2013;149:S1-27.
- [22] Xu SY, Zeng JY, Wang YL. Observations on the therapeutic effect of Qianzheng powder plus or minus acupuncture and moxibustion on facial paralysis of wind-cold type. *Liaoning J Trad Chin Med*. 2022;49:102-5.
- [23] Zhong WS, Liu YQ, Chen JL, et al. The effect analysis of peripheral facial paralysis treated with Qianzheng powder combined with Daotan decoction combined with acupuncture and moxibustion. *Clin Pract Integr Tradit Chin Western Med*. 2022;22:64-6.
- [24] Yang LN. Clinical observation on peripheral facial paralysis treated with modified qianzheng powder combined with acupoint injection. *Clin Pract Integr Tradit Chin Western Med*. 2021;21:102-3.
- [25] Wang B, Wang JW, Li H. Observation on therapeutic effect of peripheral facial paralysis treated by string puncture combined with electroacupuncture. *Chin Acupunct Moxibust*. 2011;31:47-50.
- [26] Cai ZG, Yu GY. *Peripheral Facial Paralysis*. Beijing, China: People's Medical Publishing House; 2005:53.
- [27] Mao JF, Zhang JB, Zhang SS, et al. The evolution of filiform needling method in successive editions of acupuncture and moxibustion textbook. *Chin Acupunct Moxibust*. 2018;38:761-5.