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Article

Clinical Efficacy Analysis of Acupuncture Treatment in the Acute Phase of Peripheral Facial Paralysis

Beibei Wang [1,*]

[1] Zhejiang Chinese Medical University, Hangzhou, Zhejiang, China
* Correspondence: Beibei Wang, Zhejiang Chinese Medical University, Hangzhou, Zhejiang, China.

Abstract: Peripheral facial paralysis, caused by damage to the lower motor neurons of the facial nerve, is a neurological disorder characterized by partial or complete loss of facial expression. It typically manifests suddenly with symptoms such as post-auricular pain, diminished taste, excessive tearing, difficulty speaking, and facial muscle twitching. Depending on the underlying cause, this condition can be categorized into spontaneous facial nerve palsy, peripheral facial paralysis induced by Guillain-Barré syndrome, and peripheral facial paralysis caused by brainstem lesions. Among these, the most common type is Bell's palsy, which usually presents as sudden unilateral facial muscle paralysis. The incidence rate is approximately 20 to 40 cases per 100,000 people annually, with patients ranging in age from young to old, although it is most prevalent in those aged 20 to 40, and it tends to occur more frequently in men than in women. Conventional treatments for peripheral facial nerve paralysis include hormone therapy, antiviral medication, and surgical intervention. However, hormone therapy may not be effective for some patients due to its side effects, the efficacy of antiviral therapy remains controversial, and surgery is costly and may lead to postoperative complications. Traditional Chinese Medicine (TCM) acupuncture therapy, with a long-standing history, has been widely used to treat such facial nerve disorders as documented in the "Huangdi Neijing · Suwen."

Keywords: acupuncture treatment; peripheral facial paralysis; acute phase; clinical efficacy

1. Introduction

Peripheral facial paralysis is a common facial disorder caused by damage to the facial nerve nuclei in the brainstem or paralysis of the facial muscles. This condition can occur at any age and in both genders, but it is more prevalent among young and middle-aged adults. During the acute phase of peripheral facial paralysis, it is crucial to initiate rapid and effective treatment. At the acute stage of facial neuritis, characterized by sudden and severe symptoms, conventional medication therapies often show limited efficacy. Currently, there is no universally accepted standardized treatment strategy. Pain relief is a key consideration, and Western medicine primarily employs symptomatic treatment such as vitamin supplementation, neurotrophic medication, antiviral therapy, and anti-inflammatory agents, which have shown some effects but are often not comprehensive and are prone to recurrence. Given this, clinical practice frequently relies on a combination of herbal medicine and physical therapy to alleviate patient discomfort.According to TCM theory, peripheral facial paralysis is categorized under conditions such as "facial deviation" and "refractory facial paralysis." Ancient texts describe this condition as being caused by the invasion of pathogenic wind-cold into the facial meridians, leading to an imbalance of the meridians, obstructed circulation of Qi and blood, and subsequent onset of the disease. The "Ling Shu · Meridians" chapter mentions: "The Yangming meridian governs the lower eyelid, and the Taiyang meridian governs the upper eyelid... the meridian pathway starts at the clavicle, traversing the face and cheeks. Heat pathogens can cause muscle

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flaccidity, making it difficult to open the eyes; cold pathogens result in the inability to close the eyelids." Based on this theory, TCM attributes facial paralysis to meridian dysfunction, and acupuncture treatment, known for its precise acupoint selection and efficacy in unblocking meridians, has been widely applied in clinical practice.Western medicine treatment typically uses neurotrophic drugs, which can improve the condition to some extent, but they often have multiple side effects and a high recurrence rate, prompting the need for more effective therapeutic approaches. In traditional Chinese medical literature, the symptoms of peripheral facial paralysis are thoroughly documented and classified as "facial deviation" and "refractory facial paralysis." This disorder is often caused by the invasion of cold pathogens into the facial meridians or insufficient nourishment of the meridians, leading to obstructed Qi and blood circulation, which, over time, results in pathological changes. TCM considers the pathogenesis of facial paralysis to be meridian blockage, and acupuncture, a traditional TCM therapy, is highly regarded for its precise acupoint selection and efficacy in unblocking the meridians.To explore the clinical efficacy of acupuncture treatment in the acute phase of peripheral facial paralysis and its impact on the improvement of the condition, this study selected 200 patients for efficacy evaluation. The following is the research report [1].

2. Materials and Methods

2.1. Clinical Data

A total of 200 cases diagnosed with acute peripheral facial paralysis were included in this study, collected from April 2021 to July 2023. The subjects were randomly divided into two groups, with 100 cases in each group: the experimental group and the control group. In the experimental group, there were 61 males and 39 females, aged between 33 and 65 years, with an average age of (48.12 ± 2.75) years. The duration of illness ranged from 1 to 13 days, with an average duration of (6.05 ± 0.88) days. In the control group, there were 60 males and 40 females, aged between 32 and 65 years, with an average age of (48.08 ± 2.81) years. The duration of illness ranged from 2 to 13 days, with an average duration of (6.09 ± 0.91) days. Statistical analysis was conducted on the collected data from each group, and the results showed no statistically significant difference between the groups (P-value > 0.05). Inclusion criteria were as follows: cases meeting the diagnostic criteria set by Western medicine's "Guidelines for the Diagnosis and Treatment of Peripheral Facial Paralysis" and TCM's "Standards for the Evaluation of the Efficacy of TCM Syndromes"; patients aged 18 and above, with good cognitive function and daily communication ability; patients and their families must sign an informed consent form. Exclusion criteria included: individuals with substantial organ dysfunction in the heart, liver, kidneys, or other organs; facial paralysis caused by stroke or brain tumors; and patients with psychiatric disorders or cognitive impairment.

Diagnostic Criteria:In Traditional Chinese Medicine (TCM), the diagnostic criteria are based on the "Acupuncture Therapeutics" description of wind-cold invasion of the meridians. This condition commonly occurs in patients who sleep facing the wind, sit by an open window while driving, or are exposed to cold wind for extended periods. Symptoms include a pale red tongue, thin white coating on the tongue, and a floating and tight pulse. In Western medicine, according to the *2016 Chinese Guidelines for the Diagnosis and Treatment of Idiopathic Facial Nerve Palsy*, the acute onset of the condition reaches its peak within 3 days and presents as unilateral peripheral facial nerve palsy. This may be accompanied by post-auricular discomfort, decreased taste sensation, hypersensitivity to sound, and abnormal tear secretion.

2.2. Methods

Control Group: Patients in the control group received conventional Western medical treatment, which involved oral administration of specific medications as follows: Vita-

min B1 Tablets (manufactured by Guangdong Hengjian Pharmaceutical Co., Ltd., approval number H44020620, 10 mg × 100 tablets per box), with a dosage of 100 mg once daily. Prednisone Tablets (manufactured by Zhejiang Xianju Pharmaceutical Co., Ltd., approval number H33021207, 5 mg × 100 tablets per bottle), with a dosage of 100 mg once daily. Mecobalamin Injection (manufactured by Eisai Co., Ltd. Misato Factory, approval number J20040024, 0.5 mg per ml), administered via intramuscular injection at 0.5 mg once daily. The medication treatment was continued for two weeks (14 days).

Observation Group: In addition to the Western medication treatment provided to the control group, the observation group received adjuvant acupuncture therapy. The detailed description of acupoint selection and operational procedures is as follows:1. Acupoint Selection:The following main acupoints were selected for treatment: Yangbai, Sibai, Taiyang, Taichong, Dicang, Jiache, Xiaguan, and Yifeng [2]. Yangbai: Located above the eye, approximately three fingers' width above the eyebrow. Sibai: Located below the eye, in the depression of the infraorbital foramen. Taiyang: Located on both sides of the head, approximately one finger's width behind the midpoint between the outer canthus and the eyebrow.Taichong: Located on the dorsum of the foot, in the depression between the first and second metatarsal bones. Dicang: Located outside the mouth, approximately four fingers' width lateral to the pupil. Jiache: Located at the depression above the mandible. Xiaguan: Located below the zygomatic arch, in the depression at the junction of the zygomatic bone and mandible.Yifeng: Located below the earlobe, in the depression under the sternocleidomastoid muscle. Additional distal acupoints such as Hegu, Zusanli, and Wuzangshu were also selected. 2. Needling Technique: After disinfecting the selected acupoints, disposable acupuncture needles were inserted into the points to a depth of about 1 inch. The needles were retained for 30 minutes without manipulation, with needle twisting performed once every 10 minutes. Acupuncture treatment was administered once daily for 14 consecutive days [3].

2.3. Observation Indicators

Symptom Relief Assessment: The time required for symptom relief was recorded for various symptoms, and the average duration was used as a comparative benchmark. 2. Facial Function Assessment: Facial function was evaluated at different stages before and after treatment using the Facial Disability Index (FDI). The score ranges from 10 to 50 points, with higher scores indicating more severe facial disability. The House-Brackmann (H-B) grading system was also used to assess the severity of facial paralysis, which is divided into six levels, with higher levels indicating more severe paralysis. 3. Electromyography (EMG) Detection: EMG was performed using an electromyography evoked potential device to detect the latency and amplitude of the facial nerve, with average values used as the basis for comparison [4].4. Clinical Efficacy: The clinical efficacy was classified into four levels: Recovery, Significant Improvement, Improvement, and No Effect.Recovery: The signs of the affected side of the face were essentially restored, with symptoms completely resolved. H-B grade: Level I, TFGS score: 100 points.Significant Improvement: There was a significant improvement in the symptoms and signs on the affected side before treatment, with a reduction in symptoms by 50% or more. H-B grade: Level II, TFGS score: 75–99 points. Improvement: The signs on the affected side improved compared to before treatment, but the reduction in symptoms was less than 50%. H-B grade: Level III, TFGS score: 50–74 points. No Effect: There was little change in the signs on the affected side compared to before treatment, with no significant improvement in symptoms. H-B grade: Level IV–VI, TFGS score: 0–49 points. The overall efficacy rate was calculated as: (Recovery cases + Significant Improvement cases + Improvement cases) / Total cases × 100%.

2.4. Statistical Methods

The collected data were analyzed using SPSS 21.0 software. Measurement data were expressed as ($\bar{x} \pm s$) and analyzed using the t-test, while count data were expressed as percentages (%) and analyzed using the chi-square (χ^2) test. A P-value of less than 0.05 ($P < 0.05$) was considered to indicate statistical significance [5].

3. Results

3.1. Comparison of Facial Function Indicators Before and After Treatment in the Two Groups

The changes in facial function indicators before and after treatment were compared between the two groups. The results showed that the observation group was significantly better than the control group ($P < 0.05$), indicating a statistically significant difference. Specific results are shown in Table 1.

Table 1. Comparison of Facial Function Indicators Before and After Treatment in the Two Groups ($\bar{x} \pm s$)

Group	Cases	FDI (Points)		H-B (Grades)	
		Before Treatment	After Treatment	Before Treatment	After Treatment
Observation Group	100	30.43±2.43	19.12±0.43	3.46±0.53	1.89±0.91
Control Group	100	30.54±1.52	13.53±0.32	3.36±0.23	1.08±0.32
t		0.3838	104.2903	1.7308	8.3971
P		0.7016	0.0000	0.0850	0.0000

3.2. Comparison of Relevant Electromyography Indicators Between the Two Groups

The relevant electromyography indicators were compared between the two groups, and the observation group showed superior results compared to the control group ($P < 0.05$), indicating a statistically significant difference. Specific results are shown in Table 2.

Table 2. Comparison of Relevant Electromyography Indicators Between the Two Groups ($\bar{x} \pm s$)

Group	Cases	Latency of Facial Nerve (ms)		Amplitude of Facial Nerve (mV)	
		Before Treatment	After Treatment	Before Treatment	After Treatment
Observation Group	100	5.63±2.31	4.41±0.43	0.62±0.14	1.65±0.32
Control Group	100	5.23±2.42	4.92±1.35	0.62±0.19	0.83±0.23
t		1.1956	3.5996	0.4237	20.8079
P		0.2333	0.0004	0.6722	0.0000

3.3. Comparison of Symptom Relief Indicators Between the Two Groups

The symptom relief indicators were compared between the two groups, and the observation group showed significantly better results than the control group ($P < 0.05$), indicating a statistically significant difference. Specific results are shown in Table 3.

Table 3. Comparison of Symptom Relief Indicators Between the Two Groups ($\bar{x} \pm s$)

Group	Cases	Time to Disappearance of Forehead Temperature (days)	Time to Voluntary Movement of Facial Muscles (days)	Time to Normal Eyelid Closure (days)	Time to Disappearance of Mouth Deviation (days)
Observation Group	100	6.13 ± 2.31	7.41 ± 0.43	7.12 ± 2.14	7.35 ± 1.32

Control Group	100	9.23 ± 2.42	9.32 ± 1.35	10.32 ± 2.19	9.23 ± 0.23
t		9.2661	13.4808	10.4508	14.0310
P		0.0000	0.0000	0.0000	0.0000

3.4. Comparison of Treatment Efficacy Between the Two Groups

The treatment efficacy between the two groups was compared, and the observation group showed a significantly higher efficacy rate compared to the control group ($P < 0.05$), indicating a statistically significant difference. Specific results are shown in Table 4.

Table 4. Comparison of Treatment Efficacy Between the Two Groups (n, %).

Group	Cases	Recovery	Significant Improvement	Improvement	No Effect	Efficacy Rate
Observation Group	100	67	30	2	1	99 (99.00%)
Control Group	100	55	29	1	15	85 (85.00%)
χ^2						13.3152
P						0.0002

4. Discussion

The acute phase of facial paralysis, also known as the rapid development stage of neuritis, is characterized by a sudden onset and rapid progression. If treatment is delayed, the condition may worsen, leading to severe damage to the patient's daily life and facial appearance. Patients may present with symptoms such as inability to close the eyelids, drooping of the mouth with drooling, and impaired facial expressions, with the nasolabial fold deviating towards the healthy side. According to Traditional Chinese Medicine (TCM) theory, the onset of this disease is primarily attributed to wind pathogen invading the face, causing an imbalance of internal Qi, obstructed blood circulation, and the generation of internal phlegm, which results in blocked meridians that are deprived of nourishment, ultimately leading to muscle spasms [6]. In Western medicine, treatment mainly relies on medication, but the effects are not significant. TCM treatment advocates acupuncture therapy, which alleviates local inflammation and edema and accelerates the recovery of facial nerve function through methods such as dispelling wind and activating meridians, harmonizing Yin and Yang, and promoting blood circulation and removing stasis.

In Western medicine, for the acute phase of facial paralysis, medications such as Vitamin B1 can provide some therapeutic effects. Vitamin B1 is crucial for the functioning of the nervous system, as it helps alleviate nerve inflammation and damage, promoting the recovery and growth of nerve cells. Additionally, prednisone, as a corticosteroid, has anti-inflammatory and immunomodulatory effects, effectively reducing nerve damage caused by inflammation or immune responses, and alleviating symptoms by lowering the hyperactivity of the immune system. Mecobalamin, a form of Vitamin B12, promotes nerve recovery and growth. Given that facial paralysis is often accompanied by nerve damage, the supplementation of mecobalamin can provide the necessary Vitamin B12, which helps repair and regenerate nerve cells, playing a positive role in alleviating facial paralysis symptoms. However, in the acute phase of peripheral facial paralysis treated with Western medicine, the efficacy of drug therapy is not ideal, and patients often experience relapses after treatment, adversely affecting their prognosis [7].

In traditional Chinese medicine, peripheral facial paralysis is categorized as "facial deviation"or"difficult-to-cure facial paralysis." The "Ling Shu · Meridians" mentions: "Sudden facial deviation, where the eyes cannot close during acute episodes. If accompanied by heat symptoms, it leads to muscle flaccidity, causing the eyes to not open; if the cheek meridians are affected by cold, it results in muscle tension and mouth deviation; if

the meridians are affected by heat, it causes muscle weakness." When both cold and heat pathogens invade the Shaoyang and Yangming meridians, causing obstruction of Qi and blood circulation and resulting in meridians losing nourishment, facial deviation symptoms appear. The *Jin Kui Yao Lue* records: "When the meridians are empty, pathogenic factors invade and do not disperse, which may lead to deviation on one or both sides. The invasion of pathogenic factors weakens the body's Qi, and when Qi attempts to expel the pathogen, it results in exacerbated deviation symptoms." This emphasizes that physical weakness is the primary cause of the disease, while pathogenic invasion is secondary. Moreover, according to TCM theory, the root cause of facial paralysis lies in meridian imbalance; therefore, stimulating specific meridians to treat facial paralysis is particularly important [8].

In this study, we selected the acupoints Sibai, Hegu, Cuanzhu, Jiache, Yingxiang, Chengjiang, Dicang, Qianzheng, Xiaguan, and Yangbai for acupuncture intervention in the acute phase of peripheral facial paralysis. Sibai: Located on the dorsum of the hand, in the depression between the bases of the four fingers. Acupuncture at this point promotes blood circulation, dispels wind and toxins, which significantly aids in improving facial blood circulation and accelerating facial nerve recovery. Hegu: Located at the highest point between the thumb and index finger, acupuncture at this point enhances blood circulation and dispels wind pathogens, effectively relieving muscle tension and inflammation in the face. Cuanzhu: Hidden in the inner brow, below the zygomatic bone, acupuncture at this point can relieve muscle and bone discomfort, unblock meridians, and accelerate facial nerve recovery and function enhancement. Jiache: Located in the zygomatic groove, acupuncture at this point can relax muscles and dispel wind pathogens, effectively alleviating facial muscle paralysis and spasms.Yingxiang: Situated in the depression beside the nostril, acupuncture at this point can dispel cold pathogens, warm meridians, and promote facial nerve recovery and natural expression. Chengjiang: Located in the depression below the chin, acupuncture at this point can relax muscles, activate the meridians, and significantly improve facial muscle paralysis and spasms.Dicang: Located in the depression below the ear, acupuncture at this point can relax muscles, relieve pain, detoxify, and significantly alleviate facial muscle pain and inflammatory reactions.Qianzheng: Situated below the ear lobe, acupuncture at this point can promote blood circulation and remove blood stasis, which is highly beneficial for facial nerve repair and functional improvement.Xiaguan: Located at the lower end of the sternum, acupuncture at this point can facilitate the smooth flow of meridians and open up channels, alleviating facial muscle paralysis and spasms.Yangbai: Situated below the sternum, acupuncture at this point can activate blood circulation and dispel cold pathogens, improving facial blood circulation and reducing inflammation.Acupuncture treatment of these acupoints can harmonize Qi and blood, relax meridians, promote blood circulation, dispel wind, detoxify, and thus facilitate the recovery of facial nerves and restore facial functions. In this study, it was observed that the experimental group’s symptoms improved more rapidly. All participants experienced facial function improvement after treatment, with the experimental group showing significantly greater improvement. This indicates that using TCM acupuncture therapy can effectively improve clinical symptoms and promote earlier recovery of facial function in patients with acute peripheral facial paralysis. Electromyography (EMG) can also be used to assess facial function. In the experimental group, the improvements in latency and amplitude of facial nerves after treatment were significantly better than in the control group, demonstrating that combining Chinese and Western treatment approaches can effectively enhance facial nerve function in patients with acute peripheral facial paralysis, thereby improving their quality of life and showing high application potential.Based on these research findings, we can conclude that for patients with acute peripheral facial paralysis, combining Western medicine drug treatment with TCM acupuncture not only synergistically improves related symptoms but also promotes facial nerve recovery, optimizes patients' EMG indicators, and has significant clinical significance.

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