Research Article

Observation on the Clinical Effect of Acupuncture and Moxibustion Combined with Repeated Transcranial Magnetic Stimulation on Facial Paralysis

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In view of the difficulty in the treatment of facial paralysis and the poor effect of traditional methods, this paper proposes a strategy based on acupuncture and repeated transcranial magnetic stimulation. The three groups of patients were tested for efficacy using the H-B scale and the symptom characteristics and physical signs measurement scale. Acupuncture combined with repetitive transcranial magnetic stimulation can improve the clinical efficacy of facial paralysis. And it is significantly better than traditional paralysis and repetitive translational magnetic stimulation in the degree of healing.

1. Introductions

With the advancement of modern science and technology, modern physicians have inherited the essence of ancient physicians’ treatment of this disease. Through continuous exploration, acupuncture combined with cupping, moxibustion, electroacupuncture, puncture, massage, acupoint injection, and other comprehensive therapies is recovering. Facial paralysis is widely used in the period, the effect is significant, and it is relatively safe [1, 2]. In particular, acupuncture and moxibustion have advantages for the treatment of peripheral facial paralysis with its rich treatment methods [3, 4]. In terms of acupuncture techniques, simple acupuncture treatments such as penetration needling, giant needling, meridian needling, shallow needling, and stagnant needling are widely used in convalescent treatments, with significant curative effects and promoting facial nerve recovery; especially, special acupuncture methods such as fire needling therapy, three-sided needle pricking bloodletting therapy, plum blossom needling therapy, balanced acupuncture therapy, and wrist-ankle acupuncture are also used in the treatment of facial paralysis, which enriches the treatment methods and improves the clinical efficacy [5, 6]. However, how to optimize the TCM treatment plan through a rigorously designed multicenter large-sample clinical controlled study, improve the curative effect, improve its treatment evaluation plan, and clarify its mechanism through basic research are the focus of future research [7, 8]. Note that acupuncture means that under the guidance of traditional Chinese medicine theory, the needle (usually filiform needle) is inserted into the patient’s body at a certain angle, and acupuncture techniques such as twisting and lifting and inserting are used to stimulate specific parts of the human body, so as to achieve the purpose of treating diseases. The puncture point is called human acupoint, which is referred to as acupoint for short. According to the latest statistics of acupuncture and moxibustion textbooks, there are 361 meridians in the human body.

In the observation and study of the clinical efficacy of facial paralysis, some researchers have proposed that the exact cause of facial paralysis is not clear in Western medicine. It is still under research, including the theory of viral infection, immunology, microcirculation disorder, environmental damage, and steroid hormones [9]. Its pathological manifestations are nerve ischemia, edema, demyelination, and even axis degeneration. The susceptibility factors are
mainly related to cold wake, viral infection, and autonomic nerve dysfunction. Facial nerve function is often damaged due to local neurovascular spasm, nerve ischemia, and edema. In addition, due to the narrowing of the facial nerve canal, facial nerve ischemia or edema will definitely cause facial nerve compression injury, mild myelin damage, nerve conduction velocity block, severe nerve damage, degeneration, and irreversible facial paralysis [10]. Some researchers have also pointed out that due to differences in the degree of facial nerve degeneration, the location of facial nerve damage, the degree of inflammation, exudation, and absorption, physicians need to conduct a complete and comprehensive evaluation to develop a scientific and rigorous treatment plan [11], such as controlling the amount of hormones, time, medication time, intensity and frequency of acupuncture stimulation, and intervention time, to minimize or avoid the effects of sequela. Due to insufficient understanding of the disease, some clinicians are unable to make a correct diagnosis and provide a reasonable treatment plan, which delays the condition. Therefore, in the early treatment of traditional Chinese medicine, physicians should pay attention to the following issues: First, the nature and type of disease should be clarified. Second, the physical factors and types of patients should be understood. Third, early overstimulation and overdose should be avoided [12]. It should be noted that most of them showed paralysis of facial expression muscles on the diseased side, disappearance of forehead wrinkles, expansion of eye fissure, flat nasolabial groove, and drooping corners of mouth. When smiling or showing teeth, the falling of quarrel and facial skew are more obvious. The diseased side cannot wrinkle, frown, close eyes, puff air, and pout. When puffing and whistling, air leaks because the affected lip can not be closed. When eating, food residues often stay in the buccal space of the diseased side, and saliva often drips from this side. Because the lacrimal dots turn out with the lower eyelid, the tears cannot flow out according to the normal drainage. Facial paralysis caused by facial neuritis is mostly unilateral, and it is common on the right side. Most patients often suddenly find that one side of the cheek is ineffective, and the angle of mouth is crooked when washing and gargling in the morning. Some patients may have pruritus 2/3 taste disorder, auditory allergy, etc [13–15].

This article observes the clinical efficacy of acupuncture combined with repeated transcranial magnetic stimulation in the treatment of facial paralysis. First, we have a general understanding of the relevant theory and then conduct experiments to observe the clinical efficacy of acupuncture combined with repeated transcranial magnetic stimulation in the treatment of facial paralysis. The relevant results are obtained through experimental results.

2. Clinical Efficacy Study of Facial Paralysis

2.1. Understanding of Facial Paralysis. As we all know, there are a total of twelve pairs of brain nerves in the human body, and the seventh pair of facial nerves is considered to be the mixed nerve. The structure of facial nerves mainly includes parasympathetic fibers that manage the secretions of the epidermis, chin, oral cavity, and sublingual glands of the jaw, eyes and lips, as well as taste fibers and fibers that move the body. The main purpose of the fiber of the body movement is to control and regulate the normal activities of the human facial muscles and complete people’s facial movements such as smile and puffing. It passes through the inner ear canal to the central mastoid and then passes through the stylograss and then from the skull. Through the head and neck, the muscles that can be innervated by other branches on the way mainly include the secondary abdominal muscles, the pectoralis muscle, the abdominal muscles, the hyoid muscles, and also the buccal muscles and the stylohyoid muscles. Taste fibers are mainly responsible for the management of the human anterior 2/3 of the senses. Its starting point is the geniculate ganglion, and the distal branch follows the tympanic nerve to the tongue. The facial nerve travels from the upper pons and the middle part of the cerebellar angle to the outer brain through the medulla pontine groove. It also passes through the inner ear door on the way and then from the inner ear canal through the bone wall, into an extremely fine epidermal layer-the facial nerve canal. The posterior nerve passes through the cranial cavity at the stomata mammary foramen and then continues to advance into the parotid gland. All branches are intertwined and combined into a bundle. Immediately afterwards, the clusters branch out, showing a fan-shaped shape and orderly distribution on the face. The larger geniculate ganglion is located at the beginning of the facial nerve canal, where the cell body of sensory neurons also exists. The common causes of peripheral facial neuritis are as follows: infectious lesions, mostly caused by the activation of latent facial nerve sensory ganglion virus; otogenic diseases, such as otitis media; autoimmune response; tumor; neurogenic; trauma; poison, such as alcoholism and long-term exposure to poisons; metabolic disorders such as diabetes and vitamin deficiency; vascular insufficiency; and congenital hypoplasia of facial nucleus.

2.2. Application of Acupuncture in the Treatment of Facial Paralysis

(1) Modern medical research shows that acupuncture can improve the function of the facial nerve, promote blood oxygen supply, and regulate the body’s immunity. Acupuncture can improve the internal environment of peripheral nerves, reduce edema, and promote the regeneration of nerve myelin, so as to achieve the purpose of restoring nerve function and improving muscle atrophy. Acupuncture can greatly promote blood circulation during the treatment of facial nerve paralysis, so that damaged nerves and paralyzed muscles can be provided with adequate nutrition. At the same time, acupuncture uses the endogenous opioid peptide system and the parasympathetic nervous system to enhance the immune function of the body and can negatively regulate the immune function of the body through the sympathetic nervous system.
2.3. Selection Criteria of Acupuncture Points

2.3.1. Partial Selection of Acupoints. The local selection of acupoints is mainly based on the Yangming meridian of the hand and foot and the Sun meridian of the hand and foot. The Lingshu-Xiaozhenjie says “Those who have not seen the disease, the prophet is evil and right. The evil knows its origin, and the prophet The diseases of the meridians are also taken.” Therefore, clearing the meridian and collaterals can guide the treatment of diseases more effectively. The face is the place where the six yang meridians follow, and the occurrence of facial paralysis is also the closest to the function of the hand, foot, sun, and hand, foot, Yangming meridian. The foot sun meridian and foot Yangming meridian are considered to be the "Mushang Gang" and "Mia Xia Gang" that are responsible for eyelid closure. Any failure to close the eyelids is related to both; the dysfunction of the meridians in the cheeks is mainly caused by the hand sun and the muscles. Yangming meridian of the hands and feet Sibai, cheekche, and dicang are the meridian points of the foot Yangming, which belong to the local facial acupuncture points. Their anatomical positions are closely related to the facial nerves and blood vessels. Acupuncture can improve the local blood supply and accelerate the recovery of the facial nerve; Yangbai is the foot shaoyang meridian points, and acupuncture can dredge the muscles and collaterals and improve the movement of the forehead; Yifeng is the hand-foot-shaoyang junction point, which is the key point for the treatment of wind and can disperse the wind and dredge the collaterals. In addition, Yifeng acupoint is located at the stalk-mastoid foramen of the facial nerve, which has important clinical application value. Zygomatica is a point of the sun meridian of the hand. Acupuncture can dredge the sun’s energy of the hand and improve the movement of the cheek.

In addition, the principles of acupoint selection include acupoint selection along meridians, adjacent acupoints, and matched acupoints. Among them, the left and right matching is also called the double acupoint method, that is, take the left and right same acupoints of a disease made of bamboo at the same time. For example, for stomach diseases, take Zusanli or Neiguan on both sides, for headache, take sun or lack on both sides, and for gynecological diseases, take Sanyinjiao on both sides or blood sea on both sides.

2.3.2. Selecting Acupoints in the Far Part. The distal acupoints are mainly the Backshu points of the five internal organs. Intractable facial paralysis usually develops to the sequelae due to unreasonable pretreatment. The "Suwen-Comment on Fever" says, “If the evil is combined, the qi must be deficient.” Because the evil qi stays in the meridians for a long time, the qi and blood in the meridians are blocked, and the facial ischemia cannot be corrected in time and loses nourishment, forming the characteristics of chronic disease with blood stasis, and chronic disease with deficiency. Therefore, the treatment of this disease should be based on strengthening the body and eliminating evils; that is, on the basis of dredging the channels and collaterals, more attention should be paid to the cultivation of the viscera to replenish qi and blood and strengthen the body. Hegu is a point on the meridian of the large intestine, and acupuncture can disperse the evil qi and collaterals of Yangming, so as to dredge the meridians and ventilate qi and blood. Zusani is a point of the meridian of the stomach, and acupuncture can clear the meridian and activate the collaterals, strengthen the body, and eliminate evil. Wuzangshu has a specific hole where the qi of the five internal organs gathers in the back and waist. It has a special relationship with the internal organs and blood. It is the key point for regulating the functions of the internal organs. Acupuncture on the five internal organs can quickly and effectively

| Table 1: Sex ratio of experimenters. |
|-------------------------------------|
| Total | Male | Women | $\chi^2$ | $P$   |
|-------|------|-------|--------|------|
| Observation group | 50 | 25 | 25 |        |
| Control group 1 | 50 | 24 | 26 | 0.068 | 0.767 |
| Control group 2 | 50 | 27 | 23 |        |
stimulate the qi of the internal organs and promote the human body. Qi and blood can be adjusted, blood stasis can be reduced, and tendons can be softened. Xinshu point can improve the circulation of qi and blood in the face and accelerate blood circulation. Ganshu point can regulate the qi and blood of the liver organs and dredge the facial meridians. In addition, Ganshu point can also stop wind and stop spasm and prevent the occurrence of hemifacial spasm. Pishu point can enrich the acquired day, make the qi and blood biochemically active, and nourish the muscles and muscles of the face. Feishu points should respond to the lungs, can warm the flesh, fill the skin, fatten the body, strengthen the righteousness, and resist external evil. Shen- shu points can nourish the kidney and nourish the essence the growth and decline of the functions of the five internal organs, and the profit and loss of qi and blood are all related to the kidney essence. Therefore, the five points of Xinshu, Ganshu, Pishu, Feishu, and Shenshu are combined, and the effects of regulating the qi and blood and removing blood stasis are played together, and the five internal organs are regulated, qi and blood are supplemented, the meridians are smoothed, and the facial paralysis is naturally solved.

Besides, matching up and down is also called the corresponding method of upper and lower limbs; that is, the acupoints of upper limbs and lower limbs cooperate with each other. For example, Neiguan is equipped with foot Sanli to treat gastroenteropathy, Shenmen is equipped with Sanyinjiao to treat insomnia, Zhigou is equipped with Yanglingquan to treat bilateral rib disease, Hegu is equipped with Neiting to treat toothache, and Zhigou is equipped with Zhaohai to treat constipation. Exterior interior matching is also called yin-yang matching, that is, according to the relationship between the three yin and three yang of the meridians, that is, the combination of yin and yang meridians. For example, take the Hegu of the large intestine meridian and the lack of the lung meridian to treat colds, and take the Zusanli of the stomach meridian and the Sanyinjiao of the spleen meridian to treat dyspepsia.

2.4. Data Processing. The main meaning of a correlation relationship in the objective correlation analysis method is that there is a certain relationship between various objective phenomena, but they are not strictly corresponding to each other in quantity. There are two main forms of determining the relevant properties of objective phenomena here: qualitative analysis and quantitative analysis. The main purpose of qualitative analysis is to rely on the scientific theoretical knowledge and practical experience of the researcher to accurately determine whether there are correlations between various objective phenomena. Or what kind of factor, the subjectivity of this analysis method is relatively strong. Among them, the commonly used calculation formula is expressed as

\[ r = \frac{S_{xy}}{S_x S_y} = \frac{\sum (x - \bar{x})(y - \bar{y})/n}{\sqrt{\sum (x - \bar{x})^2/n} \sqrt{\sum (y - \bar{y})^2/n}}, \]

\[ r = \frac{n\sum xy - \sum x \sum y}{\sqrt{n\sum x^2 - (\sum x)^2} \sqrt{n\sum y^2 - (\sum y)^2}}. \]
When one or several interrelated variables take a certain value, although the value of the corresponding other variable is uncertain, it still changes within a certain range according to a certain law. This relationship between variables is called the correlation with uncertainty. According to the direction classification, it can be divided into positive correlation and negative correlation. The negative correlation indicates that the change trend of the two variables is opposite. It can be seen from the scatter diagram that the position of each point is the area from the upper left corner to the lower right corner; that is, when the value of one variable changes from small to large, the value of the other variable changes from large to small.

### 3. Clinical Trial of Acupuncture Combined with Repeated Transcranial Magnetic Stimulation in the Treatment of Facial Paralysis

#### 3.1. Experimental Materials

(1) Fiber needles: Wanneng brand, produced by Suzhou Acupuncture Supplies Co., Ltd., 0.25 mm × 40 mm (1.5 inches) filament needles (needles conform to GB2024-87 “Acupuncture Needles” and GB1220-75 “Technical Requirements” for stainless steel and acid resistance)

(2) Transcranial magnetic stimulator: produced by Magstim in the UK, model: MagstimRapid2

### 3.2. Acupuncture Location. The acupoints in this clinical study are selected according to the “Color Atlas of Acupuncture and Moxibustion Acupoints” compiled and published by China Traditional Chinese Medicine Publishing House in 2020.

### 3.3. Experimental Steps of the Observation Group. Observation group (acupuncture treatment+transcranial magnetic stimulator treatment) steps are as follows.

#### 3.3.1. Acupuncture Treatment

(1) Acupoint selection: according to the clinical research evaluation of acupuncture and moxibustion in the treatment of facial peripheral neuritis and the characteristics of acupoint selection, the following acupoints are selected

(2) Affected side: Yangbai, Sibai, Yifeng, Zygomatica, Xiaguan, Dicang, Cheek, Yifeng; healthy side: Hegu on both sides; Zusanli and Taichong on both sides; location: Yangbai: look directly, the pupils are upward, one inch above the eyebrows. Sibai: when the pupil is straight down when looking straight, the bone hole is sunken. Yifeng: at the lower end of the earlobe, between the sternocleidomastoid muscle and the lower part of the depression. Zygomaticus: on the face, when the outer beak is vertically downward, the lower edge of the cheekbone is sunken. Shimonoseki: on the face, the depression between the center of the lower edge of the cheekbone and the mandibular notch. Di Cang point: the corner of the mouth is about 4 inches, straight up to the pupil. Cheek: open acupuncture points and point to the depression in the upper front corner of the mandible. Hegu: between the first and second metacarpal bones on the back of the hand, the second metacarpal bone is in the middle of the radial side. Zusanli: 3 inches below the outer knee, 1 transverse finger from the anterior tip of the tibia, when the tibialis anterior muscle is activated. Taichong: on the dorsal side of the foot, the depression in front of the junction of the first and second metatarsals
(3) Acupuncture methods: (1) the patient takes the supine position, places the acupoints, and locally disinfects them with 75% alcohol. (2) The acupuncturist uses the left hand to correct the irritated part, and the right hand holds the sterilized 1.5-inch disposable acupuncture needle and quickly inserts the needle into the acupuncture point. After the patient has a sense of breath, hold the needle for 30 minutes/hour, 1 hour/day, the sixth time/week, and the course of treatment is 2 weeks. After each course of treatment, rest 2 days for continuous treatment for 2 weeks.

3.3.2. Transcranial Magnetic Stimulator. A transcranial magnetic stimulator is painless and a noninvasive green treatment method. Magnetic signals can stimulate brain nerves through the skull without attenuation. In practical application, it is not limited to brain stimulation, but peripheral nerves and muscles can also be stimulated. Therefore, it is now called "magnetic stimulation."

The detection shift limit is activated. The patient is lying on his back or on his side on the subject’s treatment bed. The center of the butterfly stimulation cycle “8” is placed on the best part of the subject’s right dorsal frontal lobe and is in contact with his scalp. Motor stimulation times of the tms therapy instrument: the motor’s excitation frequency is generally 1 Hz, the excitation intensity is generally 40% mt value (mt: the excitation threshold of the motor), and the number of starts is generally (10 pulses/row, training time interval 10 seconds), the interval time is generally 12 seconds, and the total number of stimulations per motor is about 800 times/d. One treatment is 1 time a day, 6 times a week, 1 day, and continuous treatment for 2 weeks, a total of 12 times.

3.4. Control Group. The control group refers to a randomly selected subset of the subjects, in which the individuals have no special treatment. The reason for the need for a control group is that without a control group, there is no way to determine whether such an operation or some other variables (or several joint variables) have an effect. In statistics, the control group refers to a subset of randomly selected experimental subjects. In this subset, each unit does not accept some special treatment accepted by the members of the experimental group.

(1) Control group 1: acupuncture alone was used except for the treatment with no transcranial magnetic stimulator, the acupoint selection, operation, and course of treatment were the same as those in the observation group

(2) Control group 2: treated with transcranial magnetic stimulator. The operation and course of treatment were the same as those in the observation group except that no acupuncture treatment was taken.

3.5. Observation Criteria

(1) General data analysis includes general data such as the patient’s gender, age, and disease course

(2) Curative effect index:

(i) Main evaluation indicators: this article can refer to the House-Brackmann facial neural organization grading test scale (hereinafter referred to as H-B) for evaluation. Note that the degree and grade of facial nerve injury are mainly divided
into normal, mild functional abnormality, moderate functional abnormality, moderate and severe functional abnormality, severe functional abnormality, and complete paralysis. Among them, the main absorption of mild functional abnormalities is as follows: mild weakness can be seen only after careful inspection, eyes can be completely closed after gently closing, and slight asymmetry occurs when smiling. Moderate and severe functional abnormalities include disfigurement, inability to raise eyebrows, forced closure of eyes, inability to close eyes, asymmetric quarrels, and serious complications.

(ii) Secondary evaluation index: refer to the peripheral facial nerve palsy scale agreed in the relevant data

(3) Efficacy evaluation criteria

(i) Recovery: the patient’s physical signs on the affected side have completely recovered, and the symptoms have completely disappeared; the H-B scale is rated as level I; the peripheral facial nerve palsy scale is scored as 100 points

(ii) The curative effect is obvious: the patient’s signs and symptoms before treatment have been improved significantly, and the symptoms have been reduced by more than half; the grade of the H-B scale is determined to be category II; the peripheral facial nerve palsy score table is 75-99 points

(iii) Effective: the patient’s physical signs on the affected side were slightly improved compared with before treatment, and the symptoms disappeared by less than half; the H-B scale was rated as grade III; the peripheral facial nerve palsy scale was scored 50-74 points

(iv) Invalid: the patient’s physical signs on the affected side improved little compared with before treatment, and there was no significant change in symptoms before and after treatment; H-B scale rating was graded IV-VI; the peripheral facial nerve palsy scale scored 0 to 49 points.

4. Analysis of Experimental Results

4.1. General Data Analysis

4.1.1. Sex Ratio of Experimenters. The data of the 3 groups of members to be experimented are organized. The statistics are based on gender, and the correlation results are obtained. The results of gender statistics are shown in Table 1.

It can be seen from Figure 1 and Table 1 that the gender comparison of the three groups of patients in this study is \( \chi^2 = 0.068, P = 0.797 > 0.05 \), and the difference is not statistically significant and comparable.

4.1.2. The Proportion of the Experimenter’s Age. The data of the 3 groups of members to be experimented are organized. The statistics are based on age, and the correlation results are obtained. The results of gender statistics are shown in Table 2.

It can be seen from Table 2 and Figure 2 that the age comparison of the three groups of patients in this study: the distribution of disease is \( P = 0.225 > 0.05 \), the difference is not statistically significant; the average age: \( P = 0.591 > 0.05 \), the difference is not statistically significant and comparable.

4.1.3. Statistics of Experimenter’s Disease Course. The data of the 3 groups of members to be experimented are organized. According to the statistics of the disease course, the correlation results are obtained. The gender statistics results are shown in Table 3.

From Table 3 and Figure 3, it can be seen that the three groups of patients in this study: the distribution of disease
course is $P = 0.778 > 0.05$, and the difference is not statistically significant and comparable;

4.2. Clinical Research Results and Analysis. After passing the experiment, the treatment effect of the three groups of people was statistically analyzed, and the relevant data results are shown in Table 4.

It can be seen from Figure 4 that in the observation group, 28 cases were cured, 10 cases were markedly effective, 8 cases were effective, and 4 cases were ineffective. The cure rate was 82.35%, and the effective rate was 94.12%. In the control group 1, 20 cases were cured, 12 cases were markedly effective, 9 cases were effective, and 8 cases were ineffective. The cure rate was 58.82%, and the effective rate was 85.29%. In control group 2, 17 cases were treated, 18 cases were effective, and 6 cases were ineffective. The cure rate was 56.71%, and the effective rate was 87.12%. It can be seen that the treatment rate of the observation group is significantly higher than that of the control group, and the effective rate is also higher than that of the control group. Both therapies have curative effects. Acupuncture and moxibustion combined with repeated transcranial magnetic stimulation have a better clinical effect on facial paralysis.

5. Conclusions

In view of the difficulty in the treatment of facial paralysis and the poor effect of traditional methods, the five zang organs combined with traditional acupoints were used to treat intractable facial paralysis. The effectiveness of the proposed strategy is proved by experiments. In addition, this paper has the following defects: the number of samples included is relatively small, there is no subdivision of acupoints, and there is a lack of objective index support.

Data Availability

The data underlying the results presented in the study are available within the manuscript.

Conflicts of Interest

There is no potential conflict of interest in our paper.

Authors’ Contributions

All authors have seen the manuscript and approved to submit to your journal.

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