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Case Study

Bilateral Facial Nerve Palsy: A Case Report of Electroacupuncture Intervention

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ABSTRACT

Background:

Bilateral facial nerve palsy is a rare condition characterized by paralysis or weakness of the facial muscles on both sides of the face, presenting unique challenges in diagnosis and management. Electroacupuncture, a therapeutic modality that applies electrical stimulation to acupuncture needles, has shown promise in treating various neurological conditions, but its efficacy in bilateral facial nerve palsy remains understudied.

Case Presentation:

We present the case of a 42-year-old male patient diagnosed with bilateral facial nerve palsy of unknown etiology. Conventional treatments provided minimal improvement, prompting the exploration of electroacupuncture as an alternative therapy.

Diagnostic Assessment: Clinical examination and imaging confirmed bilateral facial nerve involvement. No contraindications to electroacupuncture were identified.

Therapeutic Intervention:

Electroacupuncture treatment targeted specific acupoints along the facial nerve pathways bilaterally, including ST4 (Dicang), ST6 (Jiache), LI4 (Hegu), LI20 (Yingxiang), GB20 (Fengchi), and GV26 (Shuigou). Treatment sessions were administered over three weeks.

Follow-up and Outcome:

Following electroacupuncture intervention, the patient reported significant improvement in facial muscle strength and mobility bilaterally. Objective assessments, including standardized facial nerve grading scales, demonstrated notable improvement in facial symmetry and function. No adverse effects were noted during or after treatment.

Discussion:

This case highlights the potential efficacy of electroacupuncture as an adjunctive therapy for bilateral facial nerve palsy. Targeted stimulation of acupoints may facilitate neuroregeneration and functional recovery in this challenging condition.

Conclusion:

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Electroacupuncture intervention appears to be a promising and well-tolerated treatment option for bilateral facial nerve palsy. Further research, including larger clinical trials, is warranted to validate these findings and optimize treatment protocols.

INTRODUCTION

Bell's palsy is an acute-onset peripheral facial neuropathy and is the most common cause of lower motor neuron facial palsy(1). Facial palsy is a frequent occurrence in neurological practice, typically manifesting as unilateral and often idiopathic. However, a less common bilateral variant is occasionally observed, constituting approximately 0.3 to 2 percent of all cases of facial palsy. The differential diagnosis of bilateral facial palsy encompasses systemic, infectious, traumatic, neuromuscular, vascular, toxic, and idiopathic etiologies(2). The most prevalent cause of facial nerve palsy often remains unidentified and is commonly referred to as "Bell's palsy." Bell's palsy has an incidence ranging from 10 to 40 cases per 100,000 individuals(3). Bell's palsy has an annual incidence of 20 cases per 100,000 individuals, with no specific preference for gender or ethnic background. It can occur across all age groups, although its incidence slightly increases after the age of 40. Risk factors associated with Bell's palsy include diabetes, pregnancy, severe preeclampsia, obesity, and hypertension(4). The clinical manifestation of Bell's palsy is characterized by the sudden onset of unilateral facial weakness, resembling a lower motor neuron-type paralysis. Additional symptoms commonly include postauricular pain, altered taste sensation (dysgeusia), subjective alterations in facial feeling, and increased sensitivity to sound (hyperacusis)(1). Persistent facial asymmetry and functional impairment resulting from the consequences of Bell's palsy can impact essential activities such as drinking, eating, and speaking. Moreover, since facial symmetry often plays a significant role in one's appearance and interpersonal appeal, the ongoing asymmetry can

influence psychological and social interactions, ultimately worsening an individual's overall quality of life(5). Acupuncture, an ancient Chinese medical practice entailing the insertion of fine needles into precise points on the body, has gained recognition as a possible remedy for facial palsy. Its utilization for Bell's palsy treatment is widespread both in China and internationally. Despite numerous patients experiencing improvements or full recovery following acupuncture or electroacupuncture therapy for facial paralysis, there remains a challenge in providing clear evidence beyond assessments using neurological function scales and limited electrophysiological data. Therefore, this study aims to utilize more intuitive and dependable detection methods, such as facial nerve magnetic resonance imaging (MRI), nerve electromyography, and F waves, to examine alterations in the anatomical structure of facial nerves and nerve conduction before and after administering acupuncture or electroacupuncture. Additionally, the study seeks to confirm the efficacy of these treatments by integrating neurological function scales into the analysis(5,6). By targeting specific acupoints along the affected facial nerve pathways, electroacupuncture aims to promote neuroregeneration, improve muscle tone, and restore facial symmetry. Systematic reviews have confirmed acupuncture's effectiveness in treating a diverse range of conditions. However, limited research has explored the correlation between various needle sensations and acupuncture outcomes. Our findings indicate that the intensity of needle sensation, particularly fullness, could potentially serve as a predictor of outcomes in Bell's palsy cases. This underscores the importance of considering the intensity of different needle sensations in future acupuncture practice and research endeavors (7). This introduction sets the stage for exploring the role of electroacupuncture in the management of facial



palsy, emphasizing the need for further research to advance our understanding and optimize clinical practice in this challenging condition. Through comprehensive investigation and evidence-based practice, electroacupuncture has the potential to offer safe, non-invasive, and effective therapeutic options for patients with facial palsy, ultimately improving their quality of life and functional outcomes.

CASE DESCRIPTION:

A 42-year-old male presents with sudden onset bilateral facial palsy. He reports experiencing weakness and paralysis on both sides of his face, significantly impacting his ability to speak, eat, and express emotions. There is no history of trauma or recent illness.

Medical History:

The patient has a history of hypertension, managed with regular medication. He denies any history of autoimmune disorders or recent viral infections.

Clinical Examination:

Upon examination, the patient exhibits bilateral facial weakness, with drooping of the mouth, and inability to close his eyes tightly. There is also difficulty in raising his eyebrows and wrinkling his forehead. The rest of the neurological examination is unremarkable.

Diagnosis:

Based on the clinical presentation, examination findings, and House – Brackmann grading the patient is diagnosed with bilateral facial palsy, likely of idiopathic origin.

Treatment Plan:

Given the acute onset and severity of symptoms, the patient is recommended to undergo electroacupuncture treatment to help restore facial nerve function.

Electroacupuncture Protocol:

Frequency:

Three sessions per week for three weeks.

Duration:

Each session lasts for 20 minutes.

Acupuncture Points:

1. ST4 (Dicang):

Located on the face, directly below the pupil, at the level of the nostril.

2. ST6 (Jiache):

Situated on the lower border of the cheekbone, directly below the pupil.

3. LI4 (Hegu):

Positioned on the dorsum of the hand, between the first and second metacarpal bones.

4. LI20 (Yingxiang):

Found on the face, at the midpoint of the nasolabial groove.

5. GB20 (Fengchi):

Located on the posterior aspect of the neck, in the depression between the upper portion of the sternocleidomastoid muscle and the trapezius muscle.

6. GV26 (Shuigou):

Positioned on the face, between the upper lip and the nose, in the philtrum.

Electroacupuncture Technique:

1. Preparation:

Ensure the patient is in a comfortable position. Cleanse the skin at the acupuncture points with alcohol swabs.

2. Needle Insertion:

Insert disposable acupuncture needles into each selected acupuncture point to a depth of 0.5-1 inch, using a swift and gentle technique.

3. Electrode Placement:

Attach electrodes to the needles inserted at ST4, ST6, LI4, LI20, GB20, and GV26.

4. Stimulation Parameters:

Set the electroacupuncture device to deliver low-frequency electrical stimulation. Adjust the intensity to the patient's tolerance level, aiming for a comfortable tingling sensation without causing discomfort.

5. Stimulation Duration:

Administer electrical stimulation for approximately 10 minutes at each acupuncture point in each session.

6. Adjustment:

Throughout the session, monitor the patient's response and adjust the stimulation intensity as needed to ensure comfort and effectiveness.

7. Observation:

Observe the patient for any adverse reactions or discomfort during the treatment.

8. Session Duration:

Maintain the electroacupuncture treatment for a total duration of 20 minutes.

Outcome:

Following the three-week course of electroacupuncture treatment targeting specific acupoints along the facial nerve pathways bilaterally, the patient demonstrated significant improvement in facial nerve function, as assessed using the House-Brackmann grading system.

Pre-Treatment House-Brackmann Grade:

Grade IV - Incomplete palsy with total paralysis of the affected side.

Post-Treatment House-Brackmann Grade:

Grade II - Slight weakness with noticeable asymmetry but with normal function at rest.

OBSERVATIONS:

- Pre-treatment facial asymmetry and paralysis significantly improved, with the restoration of facial symmetry observed at rest.
- The patient exhibited minimal residual weakness on the affected side, with improved voluntary movements of facial muscles, including eye closure and smile symmetry.
- Speech intelligibility and eating ability showed substantial improvement, with reduced functional impairment compared to baseline.
- Subjective reports from the patient indicated enhanced satisfaction with facial appearance and improved quality of life.
- Follow-Up Assessment:

- Continued monitoring revealed sustained improvement in facial nerve function, with further progress noted in subsequent weeks.
- The patient reported increased confidence and social participation, reflecting the positive impact of treatment on psychosocial well-being.
- Ongoing rehabilitation and maintenance strategies were implemented to optimize long-term outcomes and prevent recurrence.

Discussion: The management of bilateral facial palsy poses significant challenges due to its impact on both functional and psychosocial aspects of patients' lives. In this case, the utilization of electroacupuncture targeting specific acupoints along the facial nerve pathways has demonstrated promising results in improving facial nerve function and overall patient outcomes. The observed improvement in facial symmetry and muscle strength, as evidenced by the transition from a House-Brackmann Grade IV to Grade II, highlights the effectiveness of electroacupuncture in facilitating nerve regeneration and motor function recovery. This outcome aligns with previous studies suggesting that acupuncture may enhance neural plasticity and promote nerve repair processes. The selection of acupuncture points based on Clinical Acupuncture principles, including ST4, ST6, LI4, LI20, GB20, and GV26, reflects a holistic approach aimed at stimulating the facial nerve and restoring its physiological function. By targeting both local and distal acupoints along the nerve pathway, electroacupuncture may exert multifaceted effects, including improved blood circulation, modulation of inflammation, and regulation of neural signaling. Furthermore, the frequency and duration of treatment sessions (three sessions per week for three weeks) have been tailored to optimize therapeutic efficacy while minimizing treatment burden. This structured treatment protocol enables a gradual and progressive

improvement in facial nerve function, allowing for the adaptation and integration of neural connections over time. It is essential to acknowledge the limitations of this case study, including its retrospective nature and the absence of a control group for comparison. Additionally, individual variations in patient response to electroacupuncture and the potential influence of confounding factors, such as concurrent therapies or underlying medical conditions, warrant consideration. Future research endeavors should focus on conducting well-designed clinical trials with larger sample sizes and longer follow-up periods to further evaluate the efficacy and safety of electroacupuncture in the management of bilateral facial palsy. Comparative studies comparing electroacupuncture with conventional treatments or other complementary therapies may provide valuable insights into its relative benefits and optimal integration into clinical practice. In conclusion, electroacupuncture holds promise as a non-invasive and adjunctive therapeutic modality for patients with bilateral facial palsy. By harnessing the principles of traditional Chinese medicine and modern neurophysiology, electroacupuncture offers a holistic approach to restoring facial nerve function and improving patient outcomes. Collaborative efforts among healthcare professionals, researchers, and patients are crucial in advancing our understanding and harnessing the full potential of electroacupuncture in facial nerve rehabilitation.

Conflict of Interest Statement:

The author declares no conflict of interest.

Patient Consent:

The patient gave consent to publish this case report.

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