

Short Communication

Acupuncture Technique Applied to the Facial Nerve Branches in Bell's Palsy

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Keywords

- Facial paralysis
- Electromyography
- Acupuncture
- Stomatognathic system

Abstract

Aim: The objective of this study was to evaluate an acupuncture technique applied to the facial nerve branches using electromyography (EMG) and facial photographs.

Methods: A 45-year-old man diagnosed with Bell's facial palsy on the left side about 1 month previously participated in this study. In electromyography, the electrodes were positioned on the orbicularis oris and orbicularis oculi muscles; facial expression images were taken prior to and after rehabilitation, which consisted of 10 sessions once a week of acupuncture applied along the facial nerve branches using Tsing needles.

Results: The EMG values obtained after the acupuncture sessions showed a decrease in the action potential of both muscles evaluated at rest, and greater activation of muscle fibers in the affected hemi-face while moving the mouth and eyes. In relation to the visual feedback provided by the obtained images, the facial symmetry was restored when both sides were compared.

Conclusion: Our results suggest that the acupuncture technique applied to the facial nerve branches can provide greater recruitment of the muscle fibers on the affected side and improve the flow of energy. Therefore, these results may allow for the restoration of functional movement, better symmetry and a positive response in the stomatognathic system.

ABBREVIATIONS

EMG: Electromyography

INTRODUCTION

Bell's palsy is an acute condition that causes trauma to the seventh (facial) cranial nerve and may result in either partial or complete paralysis of the facial expressions [1]. It is caused by a nervous influx interruption in any one of the segments of the facial nerve due to the invasion of exogenous pathogenic wind and cold, leading to an obstruction in the movement of energy and blood in the face. This condition results in malnutrition of the muscle tissues and motor impairment [2].

MATERIALS AND METHODS

A 45-year-old man diagnosed with Bell's facial palsy on the left side about 1 month previously participated in this study.

The study was approved by the Research Ethics Committee of

the CEP do Claretiano Centro Universitário (case N. 0012/2010). The participant was informed about the experiment and agreed to participate by providing his free and informed consent.

The subject presented with partially impaired facial expression caused by loss of muscular mobility; also numbness, changes in salivation and taste, making it very difficult to seal the lips and keep the food in his mouth while chewing and swallowing.

The rehabilitation process consisted of 10 sessions once a week, 20 min per session. In the acupuncture therapy, Tsing needles were inserted 0.5 cm deep into the Ashi point of the face, following the branches of the facial nerve course. The puncturing started in the temporomandibular joint, outlining three distinct parallel lines: the first toward the wing of the nose; the second at the corner of the mouth; and the third toward the mental foramen. A fourth line was applied on the upper orbicularis oculi muscle branch of the left hemiface, as shown in Figure (1).

RESULTS AND DISCUSSION

Photographs taken for comparison were used to provide a visual pattern of the morphological changes that occurred in the face to determine the existing asymmetries prior to and after the application of acupuncture, as shown in Figure (2).

The EMG recordings of the orbicularis oris and orbicularis oculi muscles obtained pre and post rehabilitation were used to show the effectiveness of the proposed treatment, as shown in Table [1].

After completion of the rehabilitation and according to electromyographic analysis, it was possible to observe greater activation of the muscle fibers of the orbicularis oris and orbicularis oculi muscles in all conditions, reduction of muscle action potential at rest, restoration of the facial expressions and functions of salivation, swallowing and chewing. These findings corroborate a previous study that showed improved facial movements in a patient after the first session. The study also

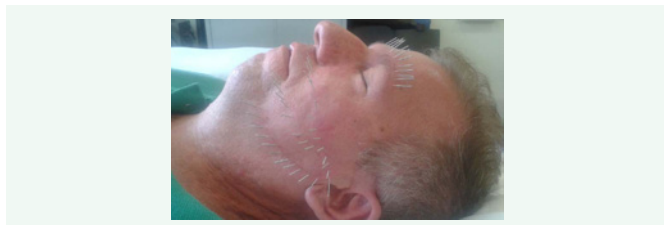


Figure 1 Acupuncture technique applied to the nerve branches.
Source: Personal collection



Figure 2 (a) Comparison of photographic images with eyes closed pre and post acupuncture, (b) Comparison of facial expressions while smiling pre and post acupuncture.
Source: Personal collection.

Table 1: Comparison of the EMG signals of the orbicularis ori and orbicularis oculi muscles of the left side. Values expressed as μV .

Muscle	Local	Condition	PreAcupuncture	Post Acupuncture
Upper Orbicular	Mouth	Rest	27.44	7.18
Lower Orbicular	Mouth	Rest	312.46	69.83
Upper Orbicular	Mouth	Beak	106.80	127.13
Lower Orbicular	Mouth	Beak	554.38	747.59
Upper Orbicular	Mouth	Projection	86.04	253.76
Lower Orbicular	Mouth	Projection	512.31	872.36
Upper Orbicular	Eye	Rest	31.09	18.38
Lower Orbicular	Eye	Rest	4.59	3.23
Upper Orbicular	Eye	Blink	15.55	31.99
Lower Orbicular	Eye	Blink	2.65	37.16

showed that after three sessions, there was a reduction of pain; after six sessions, the patient began to move the corners of the mouth and nose on the affected half of the face [3].

Some studies have proved that 53.3% of patients who were submitted to acupuncture treatment for facial paralysis had a full recovery. The best results were obtained from patients with shorter evolutions of paralysis [4]. However, it should be assured that the patient gets the amount of stimulation needed since an overload of stimuli is believed to cause some changes in the myelin layer, leading to reinnervation in undesirable areas, and consequently, spasms and synkinesis [5].

CONCLUSION

Our results suggest that the acupuncture technique applied to the branches of the facial nerve provides greater recruitment of the muscle fibers on the affected side, which can help restore the functional movement, provide better symmetry and a positive response in the stomatognathic system. The study proposes the use of acupuncture for the treatment of Bell's palsy. New randomized clinical trials are necessary to confirm its effectiveness.

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