

Acupuncture Treatment for Facial Nerve Palsy - Is It Effective?



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Abstract

Acupuncture treatment is under extensive investigation over the last years concerning its therapeutic potential in a wide range of diseases. Significant progress has been made recently in deciphering various mechanisms of action of acupuncture, especially regarding its neuroprotective effects in patients with neuronal injury, such as stroke. We present a mini-review of available experimental and clinical data about the efficacy of acupuncture treatment in patients with facial nerve palsy.

Introduction

Acupuncture has been extensively practiced in China over the last 3000 years, and more recently worldwide, for a wide range of diseases and conditions. Western medical acupuncture refers to the integration of this ancient treatment modality into modern clinical practice. As research in the field of acupuncture has exhibited a rapid progress, especially within the last three decades, many of its effects have been clarified in terms of neuroanatomy, neurophysiology and neurobiology. Acupuncture stimulation has been proven to induce various responses, such as autonomic, neuroendocrine, psychological and behavioral, through the activation of both peripheral and central nervous system. Recently, there have been reports that acupuncture treatment can promote and enhance adult neurogenesis and suggested mechanisms include upregulation of brain-derived neurotrophic factor (BDNF), glial cell line-derived neurotrophic factor (GDNF), basic fibroblast growth factor (bFGF) and neuropeptide Y (NPY) [1-5]. Neurogenic properties of acupuncture are currently under extensive investigation, especially regarding its therapeutic potential for cranial nerve palsies, such as those of the facial nerve.

Background

Neurophysiological investigations have shed light on the mechanisms of acupuncture-mediated recovery of nerve palsies. In particular, such mechanisms include regulation of neurotransmitters, neurohormones and various neuromodulators/neurotrophins. Neurotrophins are a family of growth and survival factors that regulate neuronal development and function [6,7].

Facial nerve palsy is a rather common condition that is clinically manifested with paralysis of the facial-nerve innervated structures. Specifically, there can be unilateral facial weakness, loss of taste sensation, hyperacusis, as well as decreased tear secretion and salivation [8]. There are various causes that can lead to facial nerve palsy, including infection, trauma, tumors and stroke, although other less frequent causes also exist (diabetes mellitus, neurosarcoidosis, Guillain-Barré syndrome and Moebius syndrome) [9]. Bell's palsy (the most common cause of acute facial nerve palsy) is idiopathic and thus, can only be diagnosed by exclusion. However, it has been associated with viral infections (such as herpes simplex virus). It may last from days to several months and it usually recovers spontaneously, but corticosteroids are often administered to speed up recovery [9].

Experimental & Clinical Data

Acupuncture has been shown to regulate glucose metabolism, as well as activate neuronal plasticity in ischemic stroke patients [10,11]. Its more potent form, electroacupuncture (EA), has also been found to exert anti-inflammatory actions through down-regulation of proinflammatory cytokines TNF- α , IL-1 β and IL-6 [12,13].

EA stimulation in experimental animal stroke models resulted in improved neuronal function and induced proliferation and differentiation of neuronal stem cells, as well as inhibition of neuronal apoptosis [14,15]. Furthermore, it seems to promote neuronal functional recovery via activation of the retinoic acid

signaling pathway, but also repair neurons under stress undergoing apoptosis via activation of heat-shock proteins [16,17].

In a randomized controlled trial in patients with central facial nerve paralysis after ischemic stroke, acupuncture stimulation resulted in significant clinical improvement, as evaluated with the House-Brackmann facial nerve grading system, Toronto facial grading system and physical function score in facial disability index [18].

In another study of patients with Bell's palsy, acupuncture treatment efficacy was found to be negatively correlated with the severity of facial nerve dysfunction, while the necessary period of treatment was positively correlated with the severity of facial nerve dysfunction [19]. Furthermore, EA exhibited significantly greater therapeutic potential and was associated with a shorter duration of treatment in terms of facial nerve function recovery, compared to manual acupuncture in patients with Bell's palsy [20].

Conclusion

Acupuncture treatment (and its more potent form electroacupuncture) seems to be an effective and safe adjuvant treatment modality (combined with standard medication) for patients with facial nerve paralysis, such as Bell's palsy. Since there is evidence that facial nerve function recovery can be achieved faster, without any treatment-associated adverse effects, acupuncture should be integrated in the clinical practice of each physician that treats patients with such disorders.

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