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A SYSTEMATIC REVIEW OF THE THERAPEUTIC EFFECT OF ACUPUNCTURE ON MIGRAINE

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Migraine is characterized by recurrent, pulsating headaches and elevated intracranial blood flow caused by vasomotor and cerebrocortical dysfunction, vasospasm, and excessive stress. It can be triggered by stimuli such as light, sound, or physical activity. Symptoms such as nausea and vomiting can occur with the aggravation of the condition. In severe cases, patients may also develop neuropsychiatric symptoms. Migraine pathophysiology mainly involves functional changes occurring within the trigeminal neurovascular system, which includes the trigeminal ganglion, the meningeal vascular system, and specific nuclei of the brain stem, thalamus, and somatosensory cortex. The currently available pharmacological treatments for acute migraine are mainly aimed at controlling blood vessel dilation, trigeminal nerve activation, and serotonin (5hydroxytryptamine) signaling. However, these drugs seem to be unable to fully counteract the complex pathological mechanisms underlying the condition, making recurrence possible. Further, these treatments are associated to adverse effects that may negatively affect patient prognosis. In addition to these challenges, migraine treatment is associated with high medical costs and resource use. While acupuncture demonstrably attenuates and prevents migraine, and improves intracranial blood circulation, its curative effect in migraine remains controversial, due to the periodicity of the condition. In order to better understand the clinical effect of acupuncture on migraine and its influence on intracranial hemodynamics, we have performed a meta-analysis of randomized controlled trials (RCTs) of acupuncture treatment for migraine in the last ten years. Meta-analysis of 28 articles showed that acupuncture treatment has higher treatment efficiency than sham acupuncture treatment, and acupuncture can reduce the frequency of migraine attacks and ameliorate the visual analog scale (VAS) score more significantly. Compared with the medication (medication group), acupuncture treatment is more effective and the incidence of adverse reactions is lower. In addition, the transcranial doppler (TCD) analysis results suggested that the acupuncture group has a better hemodynamic improvement effect than the medication group, but the results need to be further verified due to the existence of heterogeneity.

Objectives: The purpose of this systematic review and meta-analysis was to look at transcranial doppler changes following acupuncture as well as the effectiveness and safety of the treatment for migraines.

Methods: We searched databases such as PubMed, Cochrane library, China National Knowledge Infrastructure, Chinese journal of Science and Technology, and China Biomedical for reports, conferences, and scholarly articles published before March 15, 2019. Included were randomised controlled trials (RCTs) that investigated the effects of medicine, sham acupuncture, and acupuncture on migraine.

Results: Twenty-eight RCTs were included. 15 RCTs included medication only, 10 RCTs included sham acupuncture only, and 3 RCTs included both. The study included 2874 patients, split into 3 groups: acupuncture treatment group (n = 1396), medication control group (n = 865), and sham acupuncture control group (n = 613). The results showed that treatment was more effective in the acupuncture group than in the sham acupuncture group (MD = 1.88, 95% CI [1.61, 2.20], P < 0.00001) and medication group (MD = 1.16, 95% CI [1.12, 1.21], P < 0.00001).

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Improvement in visual analog scale (VAS) score was greater in the acupuncture group than in the sham acupuncture group (MD = -1.00, 95% CI [-1.27, -0.46], P < 0.00001; MD = -0.59, 95% CI [-0.81, -0.38], P < 0.00001), and their adverse reaction rate was lower than that of the medication group (RR = 0.16, 95% CI [0.05, 0.52], P = 0.002). The improvement of intracranial blood flow velocity by acupuncture is better than that by medication, but the heterogeneity makes the result unreliable.

Conclusions: Acupuncture reduced the frequency of migraine attacks, lowered VAS scores, and increased the effectiveness of therapy. Acupuncture has shown better intracranial circulation and fewer side effects compared to medications. To confirm these results, a prospective multicenter RCT with a significant sample size due to heterogeneity between studies should be performed.

