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Title

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Journal

Proceedings of UCLA Health, 22(1)

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Publication Date

2018-07-20

CLINICAL VIGNETTE

Acupuncture for Migraine Prophylaxis

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Introduction

Migraines affect approximately 15 percent of the general population including 21 percent of women and 10 percent of men.¹ Migraine prophylaxis is indicated for episodic migraines with less than 15 headache days per month. In 50 to 75 percent of these patients, migraine preventive medication can produce a 50 percent reduction in frequency of headaches.^{2,3} Migraine prophylactic therapy includes pharmacologic and non-pharmacologic treatments as well as alternative treatments such as acupuncture. Presented here is a patient with a long-standing history of episodic migraines intolerant to prophylactic medications who underwent treatment acupuncture.

Clinical Case

A 41-year-old woman with a 20-year history of migraines presented for further management of episodic migraines. Her migraines occurred between 5 to 7 times a month and typically presented as severe, unilateral headaches, both frontal and occipital in location, severity of pain 10 out of 10, and lasting 2 to 3 days per episode. The headaches were aggravated by stress and heat and were associated with sensitivity to light, aversion to smells, nausea, and decreased appetite. Early use of rizatriptan was able to abort the headaches, however, she experienced medication related fatigue. She tried several migraine prophylactic medications, but could not tolerate them due to side effects. Sleep was unremarkable, while stress was present from her marriage and children. She reported already implementing lifestyle modifications in exercise and meditation.

Physical examination and medical imaging were unremarkable. Acupuncture was performed with variations of the points Yintang, ST8, GB20, LI4, ST36, GB34, SP6, and LV3. After 3 weeks, she was able to experience a full week without headaches. By her seventh treatment, she reported no headaches for over 10 days. She continued treatment and remained headache free for 49 days before having a mild recurrence lasting a couple days. As of her most recent follow up visit, she had been headache free for 15 days since her recurrence, which was her sole migraine episode in the past 2 months.

Discussion

The goal of migraine prophylaxis or preventive therapy is to reduce headache frequency, severity, and duration. Prophylactic treatment also aims to improve responsiveness to treatment of acute attacks, improve function, reduce disability,

and prevent progression or transformation of episodic migraines to chronic migraines, defined as 15 or greater headache days a month.^{4,5}

Current first-line migraine prophylaxis includes medications such as beta-blockers, antidepressants, and anticonvulsants, as well as lifestyle recommendations including good sleep hygiene, routine meal schedule, regular exercise, and minimizing migraine triggers. Calcitonin gene-related peptide inhibitors and non-steroidal anti-inflammatory drugs with limited data suggesting potential benefit from simvastatin 20mg twice daily plus vitamin D3 1000 IU twice daily which comprise second- and third-line pharmacotherapy.⁶⁻⁸ Herbal supplements such as butterbur (*Petasites hybridus*) and feverfew (*Tanacetum parthenium*) have demonstrated some efficacy.⁹⁻¹³ Coenzyme Q10, magnesium, and riboflavin have shown some benefit with some mixed results.¹⁴⁻¹⁸ Transcutaneous electrical nerve stimulation has also demonstrated reduction in headache frequency in a small trial.¹⁹

Acupuncture is used in many countries as an alternative treatment for migraines and various other conditions. It involves the insertion of thin, sterile, stainless steel needles into the skin at particular points on the body to achieve therapeutic results. There is no unifying theory for the mechanism of acupuncture, but current understanding suggest two hypothesis. Acupuncture stimulation results in the release of the endogenous opioid endorphin and has been shown to produce neural responses in various areas of the brain and increase vagal activity through the somato-autonomic reflex.^{20,21}

In evaluating the efficacy of acupuncture for the treatment of migraines, true acupuncture, also known as verum or real acupuncture, has been studied in comparison to no treatment, sham acupuncture in which needles are inserted at locations not associated with therapeutic benefit, and standard migraine prophylactic medications. True acupuncture has been shown to be superior to no treatment in decreasing headache frequency.^{22,23} When compared to standard migraine prophylactic pharmacotherapy, true acupuncture appears to be as effective as prophylactic medications at reducing headache frequency.^{23,24} When true acupuncture has been compared with sham acupuncture, the results have been mixed with some studies showing superiority of true acupuncture over sham acupuncture in reducing headache frequency while other studies showing no difference between the two.^{22,24-28}

A *Cochrane* review in 2017, reviewed 22 randomized trials totaling 4985 participants in minimum 8-week randomized trials. True acupuncture was compared with sham acupuncture, no treatment, and prophylactic medication. The trials were assessed as moderate quality. True acupuncture showed a ≥ 50 percent reduction in headache frequency of 41 percent compared to 17 percent in a no acupuncture control group (pooled risk ratio (RR) 2.40; 95% CI 2.08 to 2.76). Comparison of true acupuncture with sham acupuncture showed a small but statistically significant reduction in headache frequency by 50 percent in the true acupuncture group compared to 41 percent in the sham acupuncture group (pooled 1.23; 95% CI 1.11 to 1.36). Additionally, true acupuncture showed a significant reduction in migraine frequency by 50 percent compared to prophylactic drug therapy of 57 percent compared with 46 percent after 3 months (pooled RR 1.24; 95% CI 1.08 to 1.44). After 6 months, however, the reduction in headache frequency was 59 percent in the true acupuncture group compared to 54 percent in participants receiving prophylactic drug therapy (pooled RR 1.11; 95% CI 0.97 to 1.26). Notably, participants receiving acupuncture were less likely to drop out due to adverse effects or to report adverse effects compared to participants receiving prophylactic drug therapy.²³

Summary

Acupuncture appears to be an effective treatment for migraine prophylaxis. It has been shown to be superior to no treatment and appears to be comparable to standard prophylactic medications in reducing headache frequency. Mixed results have been observed in studies comparing true acupuncture with sham acupuncture, however, review of the data suggests that true acupuncture may show a small significant reduction in reducing headache frequency compared with sham acupuncture. For patients with episodic migraines who have failed standard migraine prophylactic treatments or experience adverse effects from such medications, acupuncture can be considered as an alternative treatment option.

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Submitted June 27, 2018