

Role of Acupuncture in the Treatment or Prevention of Migraine, Tension-Type Headache, or Chronic Headache Disorders

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Objective.—To summarize the current evidence that evaluates the effectiveness of acupuncture for the treatment or prevention of migraine, tension-type headache, and chronic headache disorders.

Methods.—Findings from selected systematic reviews and meta-analyses are summarized.

Results.—Recently published systematic reviews and meta-analyses demonstrate that acupuncture is associated with improved clinical outcomes compared to routine care only, medical management, and sham acupuncture 2 months after randomization. The evidence in support of acupuncture's comparative effectiveness at longer follow-up periods is mixed. Cost effectiveness analyses conducted in the United Kingdom and Germany suggest that acupuncture is a cost-effective treatment option in those countries. There are few or no cost-effectiveness studies of acupuncture in the United States.

Discussion.—This brief review of the current, published evidence does not include a discussion of potential risks or adverse events associated with acupuncture. There is also the question of the extent to which placebo effects might contribute to acupuncture's clinical effectiveness. From a purely comparative effectiveness perspective, however, the evidence from clinical trials and meta-analyses makes a compelling case in support of a potentially important role for acupuncture as part of a treatment plan for patients with migraine, tension-type headache, and several different types of chronic headache disorders.

Key words: acupuncture, headache disorders, migraine, tension-type headache, chronic daily headache

The purpose of this article is to summarize the current evidence that evaluates the effectiveness of acupuncture for the treatment or prevention of migraine, tension-type headache, and chronic headache disorders.

ACUPUNCTURE FOR MIGRAINE

A Cochrane database systematic review of the effectiveness of acupuncture for migraine prophylaxis was published in 2016.¹

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To be eligible for inclusion in this review, studies had to be randomized clinical trials (RCTs) that compared an active acupuncture intervention that lasted 8 or more weeks to one or more other interventions for the prevention of migraine headaches among patients with migraine. Twenty-two studies representing 4985 participants met eligibility criteria. Of these, 5 studies included a routine care only arm, 15 included a sham acupuncture control, and 5 compared acupuncture to proven prophylactic drug treatment (metoprolol, flunarizine, or clinical guideline-informed medical prophylaxis).

The authors of the systematic review conducted meta-analyses with migraine frequency at treatment completion and follow-up and clinical response (at least 50% frequency reduction) as outcomes of interest (with the caveat that there was significant heterogeneity across studies in how these outcomes were defined and reported). The meta-analyses included four follow-up periods after randomization: 2 months; 3-4 months; 5-6 months; and greater than 6 months. These meta-analyses demonstrated that acupuncture was associated with statistically significant improvement in both headache frequency and response when compared with routine care only and with prophylactic drug treatment at 2 months. Acupuncture was associated with better response and lower headache frequency at 3-4 months and 5-6 months compared with usual care, but not compared with drug treatment at those time points. Compared to drug prophylaxis, fewer participants dropped out of acupuncture interventions due to adverse effects. True acupuncture showed statistically significant effects over sham acupuncture both at the end of treatment and at follow up, though findings were statistically heterogeneous.

The authors of the systematic review concluded: "...acupuncture should be considered as a treatment option for migraine patients needing prophylactic treatment because of frequent or inadequately controlled migraine attacks, particularly in patients refusing prophylactic drug treatment or experiencing adverse effects from such treatment."¹

ACUPUNCTURE FOR TENSION-TYPE HEADACHE

The published literature pertaining to the effectiveness of acupuncture for tension-type headache was summarized in a

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Cochrane Database systematic review published in 2016.² This review included 12 trials representing 2349 patients with tension-type headache who participated in RCTs that compared acupuncture to routine care only (2 trials), sham acupuncture (7 trials), or physiotherapy, massage, or relaxation (4 trials). Meta-analyses demonstrated that acupuncture was statistically significantly superior to both routine care and sham acupuncture for both “response” and reduction in the number of headache days at 2 months, 3-4 months, and 5-6 months after randomization. The risk ratio reported by the single, small study that reported outcomes greater than 6 months for the comparison of acupuncture and sham acupuncture was 1.50 (95% CI: 0.53 to 4.26) in the direction favoring acupuncture. The authors of the systematic review concluded: “The available results suggest that acupuncture should be considered as an option for treating frequent episodic or chronic tension-type headaches.”²

ACUPUNCTURE FOR CHRONIC HEADACHE

Vickers et al published the results of an individual patient data meta-analysis of acupuncture for several pain conditions in 2012. In this seminal study, the authors analyzed the raw, patient-level data from 29 RCTs of acupuncture for back and neck pain, osteoarthritis, chronic headache, and shoulder pain.³ The term “chronic headache” was used because some of the included RCTs were conducted prior to widespread adoption of the more precisely defined term, “chronic migraine.” In this meta-analysis, the effect size associated with acupuncture was statistically significantly larger than the effect size associated with sham acupuncture (effect size coefficient of 0.38, with a 95% CI of 0.22 to 0.55).

DISCUSSION

The three papers summarized briefly above are arguably the most important and informative systematic reviews of the effectiveness of acupuncture for primary headache disorders, but they are not the only ones. There are also individual RCTs that were not included in any of these three reviews that further inform the potential role of acupuncture in the treatment or prevention of primary headache disorders. For example, acupuncture has been shown to be superior to sham acupuncture for relieving pain and reducing the use of medication for acute migraine attacks.^{4,5} Another RCT demonstrated that acupuncture was associated with a greater decrease in the mean monthly number of moderate or severe headache days relative to medical prophylaxis with topiramate.⁶ Acupuncture has also been shown to improve clinical outcomes with patients with chronic daily headache as an adjunct to headache specialty care.⁷ There is also a growing literature that

demonstrates that acupuncture is a cost-effective treatment option in the United Kingdom and Germany.^{8,9}

This brief review of the current, published evidence does not include a discussion of potential risks or adverse events associated with acupuncture. There is also the question of the extent to which placebo effects might contribute to acupuncture’s clinical effectiveness. The findings from the patient-level meta-analyses provide strong evidence that the clinical effects associated with acupuncture for the treatment of chronic headache disorders are not readily explained by placebo effects alone; yet, none of the reviews discussed above shed light on the extent to which placebo effects may contribute to observed clinical benefits associated with acupuncture (and the other treatment approaches to which acupuncture was compared in the individual RCTs). From a purely comparative effectiveness perspective, however, the evidence from clinical trials makes a compelling case in support of a potentially important role for acupuncture as part of a treatment plan for patients with migraine, tension-type headache, and several different types of chronic headache disorders.

Our assessment of the current state of the literature is that there is a sufficient number of published trials that compare acupuncture to either usual care only or sham acupuncture. Those studies provide ample evidence that acupuncture is effective as an adjunct to usual care in the management or prevention of common headache disorders, and additional sham-controlled trials are not likely to definitively clarify the extent to which nonspecific effects contribute to observed clinical benefit associated with acupuncture. We believe that this area of research and practice would be well served by comparative effectiveness, safety, or cost-effectiveness trials. Such trials could provide clear guidance to patients and their healthcare providers who seek to better understand what benefits, potential harms, and economic costs they might expect from acupuncture relative to other therapeutic approaches for treating or preventing migraine, tension-type headache, medication overuse headache, or other common headache disorders.

References

1. Linde K, Allais G, Brinkhaus B, et al. Acupuncture for the prevention of episodic migraine. *Cochrane Database Syst Rev*. 2016 (in press).
2. Linde K, Allais G, Brinkhaus B, et al. Acupuncture for the prevention of tension-type headache. *Cochrane Database Syst Rev*. 2016;4:CD007587. doi:10.1002/14651858.CD007587.
3. Vickers AJ, Cronin AM, Maschino AC, et al. Acupuncture for chronic pain: Individual patient data meta-analysis. *Arch Intern Med*. 2012;172:1444-1453.
4. Wang LP, Zhang XZ, Guo J, et al. Efficacy of acupuncture for acute migraine attack: A multicenter single blinded, randomized controlled trial. *Pain Med*. 2012;13:623-630.
5. Li Y, Liang F, Yang X, et al. Acupuncture for treating acute attacks of migraine: A randomized controlled trial. *Headache*. 2009;49:805-816.

6. Yang CP, Chang MH, Liu PE, et al. Acupuncture versus topiramate in chronic migraine prophylaxis: A randomized clinical trial. *Cephalalgia*. 2011;31:1510-1521.
7. Coeytaux RR, Kaufman JS, Kaptchuck TJ, et al. *Headache*. 2005; 45:1113-1123.
8. Wonderling D, Vickers AJ, Grieve R, McCarney R. Cost effectiveness analysis of a randomized trial of acupuncture for chronic headache in primary care. *BMJ*. 2004;328.
9. Witt CM, Reinhold T, Jena S, Brinkhaus B, Willich SN. Cost-effectiveness of acupuncture treatment in patients with headache. *Cephalalgia*. 2008;28:334-345.