Can acupuncture reduce the frequency of migraine attacks?

Literature overview

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Abstract

Introduction

Approximately 11-16% of the population in the world are affected by migraine and, although not life threatening, it can seriously affect quality of life. There is no curative treatment for migraine, but there are various treatment modalities, but with conflicting reports on their efficacy. Pharmacotherapies often give some relief, but they can be associated with adverse events. Therefore, many prefer nonpharmacotherapy, including acupuncture. Many studies have shown that acupuncture has a short term effect on many variables relevant to analgesia, but it is not clear how good the effects are for long term. Its effectiveness on migraine is still controversial.

The aim of the study was to investigate if acupuncture could reduce the frequency of migraine attacks.

Material and methods

Search was conducted in october 2016 using Pubmed library database. Search was limited to publications in the English language only. Articles were excluded if they contained no abstract, and if it costed to get full article. Other exclusion criteria were if the article was built on animal study and if the title/abstract/article was irrelevant for the research aim. Review articles were searched independent of age, but original research articles only from the past five years. The following search phrases were used to find review articles: „migrane + acupuncture + prevention“ „migrane + acupuncture + treatment“, migrane + acupuncture + prophylaxis, and „migrane + acupuncture“.

Results

Search according to above gave a total of 134 titles. Titles were first reviewed, and for relevant titles the abstracts were then reviewed and judged if appropriate. This gave a total of 4 articles for a final review, one Cochrane systematic review and three randomized controlled trials (RCT). The Cochrane review found that adding acupuncture to the treatment of migraine reduces headache frequency, and may be as effective as treatment with prophylactic drugs. Two high quality studies comparing acupuncture to sham acupuncture found real acupuncture to be more effective. One moderate quality study comparing acupuncture to flunarizine treatment found acupuncture to be more effective.

Discussion

The results imply that patients reciving acupuncture have less frequent migraine attacks compared to those not reciving the treatment. True acupuncture seems to have effect over sham (fake) acupuncture. Acupuncture may be at least as effective as treatment with prophylactic drugs. Longterm studies on acupuncture for migraine prevention are lacking.
Introduction

Approximately 11-16% of the population in the world are affected by migraine and, although not life threatening, it can seriously affect quality of life (1,2). It is the most common neurological condition in the world, and ranked in top 20 of the causes for disability in life. Those with migraine have repeated attacks of headaches which can be disabling, often one sided, and present with any combination of nausea, vomiting, pain, sound and/or light sensitivity (1,3). There is no curative treatment for this disease, but there are various treatment modalities, albeit with conflicting reports on their efficacy (3). Pharmacotherapies often give some relief, but they can be associated with adverse effects, such as low blood pressure, drowsiness, nausea, depression and rarely renal damage. Therefore, many prefer nonpharmacotherapy, including acupuncture (2).

Acupuncture, originated in China over 3000 years ago, has a long tradition for the treatment of different pain conditions including headaches (1,4). Its purpose of treatment was to bring the patient back to equilibrium state postulated to exist prior to illness (3). In Chinese medicine they see the body as a balance of Yin and Yang, which are two inseparable forces. By maintaining the body in a state of balance, you achieve health (4). Acupuncture is a term describing a procedure that stimulates anatomical points of the body. Metallic needles are stimulated by hands or electrical devices, and are used to penetrate the skin (3,4). It is not fully understood how the acupuncture relieves pain. One theory is that the acupuncture may suppress the nociceptive trigeminal nucleus caudalis and spinal dorsal horn neurons via modulation of the release of neuropeptides and neurotransmitters (4).

Many studies have shown that acupuncture has a short term effect on numerous variables relevant to analgesia, but it is not clear how good the effects are for long term. However, its effectiveness on migraine is still controversial (3).

The aim of this review was to investigate if acupuncture could reduce the frequency of migraine attacks.
Material and methods

Search was conducted in October 2016 using Pubmed library database. Search was limited to publications in the English language only. Articles were excluded if they contained no abstract, and if it costed to get full article. Other exclusion criteria were if the article was built on animal study and if the title/abstract/article was irrelevant for the research aim. Review articles were searched independent of age, but original research articles only from the past five years. The following search phrases were used to find review articles: “migrane + acupuncture + prevention“, “migrane + acupuncture + treatment“, migrane + acupuncture + prophylaxis, and “migrane + acupuncture“.
Results

Description of studies

The literature search gave a total of 57 review articles and a total of 95 articles from the last 5 years. This yielded in a total of 134 titles (18 articles came up in both searches). Titles were first reviewed, and for relevant titles the abstracts were then reviewed and judged if appropriate. This gave a total of 4 articles for final review (table 1).

Table 1. Studies included in the review.

<table>
<thead>
<tr>
<th>Article and author</th>
<th>Design</th>
<th>Research group/Used articles</th>
<th>Intervention</th>
<th>Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acupuncture for the prevention of episodic migraine Linde K et al. 2016</td>
<td>Syst. Review acc. Cochrane</td>
<td>22 trials</td>
<td>Acupuncture</td>
<td>Systematic review and meta analysis</td>
<td>Adding acupuncture to symptomatic treatment of attacks reduces the frequency of headaches. Acupuncture may be at least similarly effective as treatment with prophylactic drugs. Effect over sham acupuncture.</td>
</tr>
<tr>
<td>Acupuncture for Frequent Migraine: A Randomized, Patient/Assess or Blinded, Controlled Trial with One-Year Follow-Up. Wang et al. 2015</td>
<td>RCT</td>
<td>50 patients with migraine</td>
<td>Real acupuncture or Sham acupuncture</td>
<td>Patients were randomised to recieve either real acupuncture or sham acupuncture. Migrane relief estimated.</td>
<td>Acupuncture is effective and safe treatment for short term relief of frequent migraine attacks in adults.</td>
</tr>
<tr>
<td>Comparison of effectiveness of acupuncture therapy and</td>
<td>RCT</td>
<td>60 patients with migraine</td>
<td>Acupuncture</td>
<td>Patients randomised to two groups, one reciving</td>
<td>Acupuncture better treatment option in relieving pain</td>
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conventional drug therapy on psychological profile of migraine patients. Vijayalakshmi et al. 2014

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<th>Quality evaluation according to SBU</th>
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Acupuncture for migraine prophylaxis: a randomized controlled trial. Li Y et al. 2012

RCT 480 migraine patients Acupuncture (3 types) and sham acupuncture 480 patients randomly assigned to 4 groups (3 types of acupuncture and 1 sham acup.) 20 treatments over 4 weeks. Acupuncture had clinically minor effect on migraine prophylaxis compared with sham acupuncture.

Quality evaluation was done according to SBU, the „Swedish agency for technology assessment of health and social service“. See table 2.

Table 2. Quality evaluation of included articles

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Research article nr 1 (Cochrane review from 2016)
The aim was to investigate the effectiveness of acupuncture for migraine prophylaxis, if it is more effective than no prophylactic treatment or routine care only. Also if it is more effective than sham (placebo) acupuncture and third, if it is as effective as prophylactic treatment with drugs in reducing frequency of migraine attacks.

This is a systematic review, published in 2016. This is an update of a Cochrane review from 2009. Included were randomized clinical trials that compared acupuncture intervention that lasted 8 weeks or more, to one or more other interventions for prevention of migraine among migraine patients that had had migraine for at least 12 months. Focus was on episodic migraine, which was classified as migraine with fewer than 15 days with migrainous headaches per month.

Twenty-two studies, including 4985 participants totalt, met selection criteria. Of these, 5 trials had a no-acupuncture control group, 15 had a sham acupuncture control group and 5 trials compared with a group receiving prophylactic drug treatment.

A meta-analysis was conducted.

The results showed that patients receiving acupuncture had a moderate reduction of headache frequency compared to those not receiving acupuncture. 41% of participants receiving acupuncture had at least halved headache frequency, compared to 17% of those not receiving acupuncture. The number needed to treat for an additional beneficial outcome (NNTB) was 4.

True acupuncture showed a statistically significant effect over sham (fake) acupuncture, both after treatment and at follow-up. Headache frequency at least halved in 50% of participants after receiving true acupuncture, compared to 41% after receiving sham (fake) acupuncture, and at follow-up in 53% and 42% respectively. The NNTB was 11.

The review also showed that acupuncture reduced migraine frequency significantly more than prophylactic drug after treatment but the significance was not maintained at a later follow-up.

**Research article nr 2 (Yanyi Wang)**

The aim of this study was to evaluate the short- and longterm effects and safety of manual acupuncture as a prophylaxis for frequent migraine attacks (more than 5 per month), compared with sham acupuncture. 50 patients with migraine were randomised to receive either real acupuncture (26) or sham acupuncture (24) for 20 weeks. 48 participants completed the 20 weeks treatment, with one withdrawal from each group. At a 12 weeks post-treatment follow-up one additional participant dropped out, and at 1 year follow-up 22 dropped out. Results showed a significant reduction in the number of days with migraine over the 20 weeks treatment period and at 3 months follow-up in both groups, but with a greater reduction in the real acupuncture group. At one year follow-up, no statistically significant group difference was detected in any outcome measurement, based on data from about 50% of the participants in the study.

**Research article nr 3 (Vijayalakshmi 2014)**

The aim of this study was to compare the effectiveness of electro acupuncture therapy and the conventional drug therapy on the psychological profile of patients with migraine. The WHO Quality of life questionnaire and the migraine disability assessment (MIDAS) questionnaire were used. Altogether 60 patients with migraine were randomly assigned to 2 study groups, of
30 patients each. These 60 patients were in age 20-40, of both genders, and had more than 5 migraine attacks per year for the past year. Group A underwent electro acupuncture therapy 10 times, over 30 days, and group D received tab. flunirazine 20 mg and tab. paracetamol 500mg for 30 days. All were tested before and after the 30 days period. Results showed a significant improvement after treatment in both groups. Acupuncture gave a better response than drug therapy.

**Research article nr 4 (Ying Li 2012)**

The aim of this study was to investigate if real acupuncture was more effective in migraine prevention than sham acupuncture. 480 patients with migraine were randomly assigned in 4 groups (three different acupuncture groups and one sham acupuncture group). All groups got 20 treatments, with electrical stimulation, over 4 weeks period. Patients completed diaries on frequency of migraines and intensity, at baseline (4 weeks before treatment), at treatment (1-4 weeks), and at follow-up (5-8 weeks and 13-16 weeks). The study showed that the frequency of migraine attacks during weeks 13-16 in all tree treatment groups was significantly lower than for patients in control (sham) group. No significant difference was found in days with migraine in the four week period after the treatment (in weeks 5-8) but some difference in frequency and intensity.

The results indicate that the style of acupuncture, and if it is point specific, does have a minor effect on the outcome.
Discussion

The result of the Cochrane systematic review from 2016 suggests that migraine attacks frequency can be reduced significantly with adding acupuncture to symptomatic migraine treatment. The result also suggests that there is a better effect of true over sham acupuncture, but the effect is small. The result also suggests that acupuncture may be at least similarly effective as treatment with prophylactic drugs. Similar results came from the 3 randomized controlled trials analysed in this review.

When comparing the result from the Cochrane review from 2016 to the result from the older Cochrane review from 2009 (6), the results are similar, except that the new review shows statistically significant difference between results for true over sham acupuncture. The main reason for this difference is thought to be increased power (3).

Acupuncture is a good alternative for migraine patients that are willing to undergo this treatment. Acupuncture seem to have less adverse effects compared to drug prophylaxis therapy. Trials show more dropout for patients taking prophylactic drugs compared to acupuncture (3).

Difference between true acupuncture and sham acupuncture was statistically significant but with small difference. Possible explanations for the lack of larger effects of true over sham acupuncture is discussed in the Cochrane review from 2016. Few factors may explain these findings. Sham acupuncture may have direct physiological effects on migraine symptom relevant mechanisms. Also, evidence suggest that sham acupuncture has stronger placebo effects than other placebo interventions. Its effects are maximized with repeated sessions, close provider contact, associated relaxation during session and slightly painful procedure. Thirdly, lack of blinding might lead to bias. Bias can’t be ruled out in unblinded studies (3).

Long term studies (over a year) are lacking (3). Since migraine is a chronic disease, it is important to investigate for how long time improvements associated with acupuncture treatment lasts. It is also important to know if intermittent treatment sustains the effect of prior acupuncture treatment, and even to know which type of acupuncture treatment works best, and how often patients should get acupuncture. There are differences between countries who gives acupuncture, and it would be important to know who is thought to be sufficiently qualified to deliver acupuncture.

The studies had some limitations. The study by Wang et al (2) had small sample size, which can skew findings. The study only took in participants who had five days or more of migraine per month, which could lead to having a group of participants with higher expectations of acupuncture than those less affected by there condition. In the study by Vijayalakshmi et al (1) the inclusion criteria were (among other things) having more than 5 migraine attacks per year for the past year, but the follow-up time for the group was only 30 days. This can lead to a selection bias.

Conclusion
Acupuncture is a treatment option for migraine patients needing prophylactic treatment, particularly for patients refusing prophylactic drug treatment or if they have experienced adverse effects from such treatment. Studies on long term effects are lacking.


