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Whitney, Virginia R., "Acupuncture for Treatment of Acute Migraine: A Systematic Review" (2011). *School of Physician Assistant Studies*. 237.

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Acupuncture for Treatment of Acute Migraine: A Systematic Review

Abstract

Background: Acute migraine attacks affect 18% of women in the United States, and six to seven percent of men. The disabling nature of these attacks, in combination with their chronic patterns of occurrence, impact and disrupt multiple aspects of a person's life. There are many abortive medications available, but none are free from side effects. Migraineurs continue to explore alternative treatment options for this continuous battle against acute migraine attacks. This systematic review examines the efficacy of acupuncture for the treatment of an acute migraine attack when compared to a control. The evidence was reviewed and evaluated using GRADE.

Method: A comprehensive review of the current medical literature was executed using PubMed, Web of Science, Medline, EBM Reviews, and CINAHL.

Results: Two studies were reviewed. One study compared acupuncture to sham acupuncture, and found acupuncture to be more effective at 2 and 4 hours after treatment, but not at earlier time points. The other study compared acupuncture to a placebo sumatriptan and sumatriptan when given at first signs of an attack, and established acupuncture to be more successful than the placebo sumatriptan in preventing a full attack.

Conclusion: Due to an overall moderate GRADE of evidence, more research is needed before acupuncture merits a strong recommendation as an option for treatment of acute migraine attack. However, acupuncture did demonstrate superiority in the treatment of an acute migraine attack when compared with a control, and should be considered as an alternative treatment option.

Keywords: Acupuncture, migraine, acute

Degree Type

Capstone Project

Degree Name

Master of Science in Physician Assistant Studies

Subject Categories

Medicine and Health Sciences

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ACUPUNCTURE FOR TREATMENT OF ACUTE MIGRAINE:
A SYSTEMATIC REVIEW

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A course paper presented to the College of Health Professions
in partial fulfillment of the requirements of the degree of
Master of Science

Pacific University School of Physician Assistant Studies

January, 2011

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Biography

Virginia Whitney is a native of Oregon. She majored in biology at Concordia University. After completion of her undergraduate degree, she worked in a hospital as a nurse's aid in order to attain experience working with patients, required for physician assistant programs. She is now working towards her master degree in physician assistant studies at Pacific University. She is married with two children.

ABSTRACT

Background: Acute migraine attacks affect 18% of women in the United States, and six to seven percent of men. The disabling nature of these attacks, in combination with their chronic patterns of occurrence, impact and disrupt multiple aspects of a person's life. There are many abortive medications available, but none are free from side effects. Migraineurs continue to explore alternative treatment options for this continuous battle against acute migraine attacks. This systematic review examines the efficacy of acupuncture for the treatment of an acute migraine attack when compared to a control. The evidence was reviewed and evaluated using GRADE.

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Results: Two studies were reviewed. One study compared acupuncture to sham acupuncture, and found acupuncture to be more effective at 2 and 4 hours after treatment, but not at earlier time points. The other study compared acupuncture to a placebo sumatriptan and sumatriptan when given at first signs of an attack, and established acupuncture to be more successful than the placebo sumatriptan in preventing a full attack.

Conclusion: Due to an overall moderate GRADE of evidence, more research is needed before acupuncture merits a strong recommendation as an option for treatment of acute migraine attack. However, acupuncture did demonstrate superiority in the treatment of an acute migraine attack when compared with a control, and should be considered as an alternative treatment option.

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INTRODUCTION

Background

A migraine is a neurovascular dysfunction involving the dilation of blood vessels innervated by the trigeminal nerve (Aminoff, 2009). Eighteen percent of women in the United States, and six to seven percent of men suffer from migraines (Lipton, Stewart, Diamond, Diamond, & Reed, 2001). These attacks are episodic in nature, causing a dull or throbbing pain that can be generalized, but is most often lateralized to one side of the head. Nausea, vomiting, photophobia, phonophobia, anorexia, cognitive impairment, and blurred or other visual disturbances often accompany these menacing attacks (Aminoff, 2009). The combination of side effects is different for each person, so that every migraineur can endure his or her own personal flavor of migraine (Aminoff, 2009).

A migraine, not only affects an individual physically, but also has multiple other consequences. A person's entire life is interrupted when a migraine arises. Schedules are aborted, and responsibilities are put on hold as the migraineur flees society in search of a dark room devoid of noise. This habitual practice induced by the cyclical nature of these attacks can distress a person's whole life, therefore, greatly impacting a person's interpersonal relationships, perceived quality of life, and emotional status (Leonardi, Raggi, Bussone, & D'Amico, 2010).

Migraine attacks are usually triggered by a specific source. The avalanche of symptoms can be prompted by stress, either physical or emotional,

missed meals, sleep disturbances (either too much or too little sleep), certain foods, alcohol, bright lights, loud noises, menstruation, and use of oral contraceptives (Aminoff, 2009). Once initiated, the attack builds slowly, but demonstrates great stamina, and can persist for several hours (Aminoff 2009).

The key to successfully combating an acute migraine attack is early treatment. There are a variety of abortive medications available. For some suffering individuals, a simple analgesic like acetaminophen or Ibuprofen can alleviate a migraine if taken early when the first symptoms arise. For many though, stronger artillery is necessary.

One option is ergotamine, a vasoconstrictor. The ergot derivative dihydroergotamine is another possibility, but has the drawback of not being absorbed by the gastrointestinal tract, and therefore must be consumed through less popular routes via intranasal or intramuscular, subcutaneous, or intravenous injection. The triptans, serotonin agonists, have proved to be the trendiest weaponry, and are prescribed more often than any other abortive migraine therapies (Gallagher 2009). Triptans combat migraines by impeding the release of vasoactive peptides, stimulating vasoconstriction, and hindering pain pathways in the brainstem (Tfelt-Hansen, De Vries, and Saxena, 2000).

As the pain starts to dissolve a hope flickers, and begins to shape and form within the migraineur, that perhaps relief might actually be achieved at some time in the near future. At this point these abortive medications may seem like small miracles perfectly packaged, and sent with care from the pharmaceutical companies, but in reality assuagement is not without side effects. Ottervanger,

Valkenburg, Grobbee, and Stricker (1997) described some of the common side effects of subcutaneous sumatriptan as an injection site reaction, chest pressure or heaviness, flushing, weakness, drowsiness, dizziness, malaise, a feeling of warmth, and paresthesias. While it was reported that these symptoms usually diminish within 30 minutes, many individuals might choose not to tolerate such symptoms for any length of time, leading them to search for other treatments to manage their migraines (Ottenvanger, 1997).

Could acupuncture be the answer to these migraineurs' quest?

Acupuncture has been practiced in China and other Asian countries for thousands of years, and is considered one of the oldest healing practices known. According to Traditional Chinese Medicine in order for health to be maintained within the body there must be balance between yin and yang, two internal, opposing yet indivisible forces (National Center for Complementary and Alternative Medicine (NCCAM), 2009). Disease arises when there is an imbalance among these forces, resulting in the obstruction of the flow of qi (vital energy) along pathways in the body termed meridians. Traditional Chinese Medicine accesses these meridians using acupuncture at certain points of the body to release the qi, thereby restoring balance (NCCAM, 2009).

Utilizing acupuncture to treat ongoing pain issues like chronic back pain and osteoarthritis has been a growing trend in the United States within recent years. Many studies have been done in the U.S. and other parts of the world, investigating the use of acupuncture for migraines. In 2009, Linde et al. published a meta-analysis evaluating acupuncture for migraine prophylaxis. The

objectives of the review examined acupuncture versus no preventative treatment, acupuncture versus sham acupuncture, and lastly, acupuncture's efficacy compared with other preventative interventions (Linde et al., 2009).

After reviewing 22 trials, Linde et al. (2009) concluded that acupuncture was more effective when compared to no prophylactic treatment, and that according to the studies reviewed acupuncture was as effective, if not more so, than other preventative interventions. However, not enough evidence was established to determine acupuncture's superiority to sham acupuncture (Linde et al., 2009). Now that acupuncture has been established as a treatment for migraine prevention through careful investigation, tireless review, and thorough analysis, the question remains as to whether acupuncture could be utilized to treat acute attacks.

Purpose of the Study

The purpose of this paper is to implement a systematic review of the current medical literature on the use of acupuncture for treatment of acute migraine attack when compared to a control, using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) tool developed by the GRADE Working Group.

METHOD

A comprehensive review of the current medical literature was executed using PubMed, Web of Science, Medline, EBM Reviews, and CINHALL. These databases were accessed through the Pacific University Library system. The keywords applied in the search encompassed the combination of acupuncture,

migraine, and acute. Search limits were set, restricting the articles to those written in English, involving humans, and publication as of 2000 or more recent. Initially the search resulted in 3 to 15 articles depending on the database, however, many of these articles did not address acute migraine attacks. All articles that did not focus on treatment of acute migraine attacks with acupuncture were disregarded, resulting in two randomized controlled trials to review.

RESULTS

Acupuncture For Treating Acute Attacks of Migraine: A Randomized Controlled Trial.

The first study reviewed was a multicenter single-blind randomized controlled trial carried out in China, that investigated the use of acupuncture as treatment for an acute migraine attack. The patients enrolled in the study were between the ages of 18-65 years old, and had been diagnosed with migraines according to the measures set by the International Headache Society which stipulates, "One or more migraine attacks per month during the last 3 months, and acute migraine attacks for the last year (Li et al., 2009, p. 207)." Other requirements for inclusion included that the patients were having an attack at the time of enrollment, and that they had not consumed any migraine medications within 24 hours of the onset of the attack. Sham acupuncture was implemented as a placebo, applying the same filiform Huatao needles as the acupuncture group, but at nonacupoints (Ying et al., 2009).

The primary outcome was the difference between VAS (visual analog scale) scores from baseline and scores measured at 30 minutes, one, two, and four hours after treatment among the three groups. Secondary outcomes included time of relief, extent of relief within 24 hours, use of medication, relapse or aggravation within 24 hours, and general evaluation (Ying et al., 2009).

There were no significant differences in VAS scores among the three groups at 30 minutes ($p=0.103$), or one hour ($p=0.166$) after treatment. However, among the three groups there were significant differences found between the scores at two hours ($p=0.032$) and four hours ($p=0.028$) after treatment. From baseline to the second hour of treatment there was significant difference between the changes in VAS scores between the treatment and sham groups ($p=0.14$), but when the two sham groups were compared, no significant difference could be established (Ying et al., 2009).

There was a significant difference among the three groups in the change between the VAS scores taken at baseline and at four hours after treatment ($p<0.05$). In the fourth hour after treatment VAS scores had decreased considerably compared to baseline scores in all three groups, however, only the treatment group showed significant difference ($p=0.012$). There was no significant difference measured in the two sham groups ($p=0.600$) (Ying et al., 2009). As for secondary outcomes, significant difference was found among the three groups in complete relief ($p=0.003$), relapse or aggravation over 24 hours ($p=0.002$), and in general effectiveness evaluation ($p<0.001$) (Ying et al., 2009).

Ying et al. (2009) concluded that acupuncture did demonstrate effectiveness in the treatment of acute migraine attacks at two and four hours after treatment, when compared with two sham acupuncture groups. They maintain the idea that there are physiological effects at acupoints that cannot be reproduced at nonacupoints. In the future they would like to see more research on acupuncture when used as a longer-term treatment for patients suffering from acute migraines (Ying et al., 2009).

Acupuncture Versus Placebo Versus Sumatriptan For Early Treatment of Migraine Attacks: A Randomized Controlled Trial.

The next study reviewed was a partially double-blind randomized controlled trial from Germany that investigated whether acupuncture was an effective treatment for acute migraine attacks when compared with sumatriptan and a placebo sumatriptan. Patients between the ages of 18-65 years of age were recruited from two different hospitals in Germany. Recruitment was done in two stages (Melchart et al., 2003).

In the first stage, patients had to meet the requirement of the diagnosis of migraines using the criteria set by the International Headache Society, as explained above. Potential patients were then screened by a neurologist to ensure that they could identify the initial predictive symptoms of a migraine. It was also a requirement to have a clean ECG without any pathological signs. In the second stage of recruitment, prescreened patients would then come to the hospital when having early symptoms of a migraine attack (Melchart et al., 2003).

The Heller scale, a 50 point scale that resembles the VAS, was used to assess severity of pain. If the pain was rated at mild or less, the patient was included in the study. Patients who had taken sumatriptan or ergotamine within the last 24 hours were omitted from the study (Melchart et al., 2003).

Patients were randomized into three groups. The first group was treated with acupuncture. The second was treated with sumatriptan and the third group received a placebo sumatriptan. The placebo sumatriptan was packaged identically to the sumatriptan, therefore, this part of the study was double blinded (Melchart et al., 2003).

The primary outcome was the number of patients with whom a full migraine attack was prevented within 48 hours. In the acupuncture and sumatriptan groups a second round of treatment was given to patients who developed a full migraine attack after the first treatment. As for the placebo patients, sumatriptan was given when initial treatment of placebo failed (Melchart et al., 2003).

In 21 of the 60 patients (35%) in the acupuncture group, a full migraine attack was prevented within 48 hours. Twenty-one of the 58 patients (36%) in the sumatriptan group escaped the attack, while only 11 of the 61 (18%) individuals in the placebo group were that fortunate enough to evade an attack. A significant difference was determined between the placebo group and the acupuncture group ($P=0.028$). For acupuncture versus placebo the relative risk of developing a full migraine attack was 0.79 (95% CI, 0.64-0.99). When sumatriptan was compared to the placebo, the relative risk of having a full attack

was 0.78 (95% CI, 0.62-0.98). The relative risk of a full attack for acupuncture versus sumatriptan was 1.03 (95% CI, 0.64-1.68). No significant difference was found between acupuncture and sumatriptan, however, patients in the sumatriptan group evaded the attack longer ($p=0.218$). In the sumatriptan group the average time of attack was 19.9 hours (95% CI, 10.9-28.8). In the acupuncture group the average time to attack was 8.5 hours (95% CI, 0-17.8), while the placebo group averaged 4.6 hours (95% CI, 2.4-6.8) before a full attack (Melchart et al., 2003).

Using the Heller scale, at one hour after treatment one (2%) patient in the acupuncture group was completely pain free, and six (10%) individuals in the sumatriptan group were pain free, but no one in the placebo group was free of pain. For this first hour after treatment there was no significant difference found between acupuncture and sumatriptan ($p=0.059$), but there was a significant difference found between acupuncture and placebo ($p=0.496$) and sumatriptan between placebo ($p=0.012$) (Melchart et al., 2003).

At two hours after treatment, fourteen of the study participants found their pain to be completely alleviated in the sumatriptan group, while only four members in the acupuncture group were free of pain. At the two-hour time point a significant difference was found between acupuncture and sumatriptan ($p=0.057$). However, the placebo group did not have any pain relief at two hours following treatment (Melchart et al., 2003).

By six hours after treatment ten study participants in the acupuncture group, twenty in the sumatriptan group, and three in the placebo group had

experienced complete pain relief. A significant difference was found between the acupuncture and sumatriptan groups ($p=0.034$), and between the acupuncture group and the placebo group ($p=0.044$). A significant difference was found between the sumatriptan and placebo groups ($p<0.001$).

One hundred eight patients had a full migraine attack despite their first allocated treatment. Two hours after the second treatment of acupuncture four out of 31 (13%) patients experienced a relief of pain by 50% or more. Seventeen of 31 (55%) patients who received another dose of sumatriptan reported pain relief of 50% or more. As for the patients in the placebo group who received a sumatriptan injection 37 out of 49 (80%) individuals reported a reduction in pain by 50% or more (Melchart et al., 2003).

Adverse events were also accounted for. Twenty-three people in the sumatriptan group reported side effects, while only 14 participants in the acupuncture group and 10 in the placebo group complained of adverse events. All three groups reported elevated blood pressure, 22 patients in the sumatriptan group, 13 in the acupuncture group, and 8 in the placebo group. Four individuals in the sumatriptan group complained of chest pain, and 2 complained of heat sensation. No patients from either the acupuncture or placebo groups experienced these side effects. Two people in the sumatriptan group and only one person in the placebo group complained of dizziness or vertigo (Melchart et al., 2003).

Melchart et al. (2003) concluded that both acupuncture and sumatriptan were more effective in preventing a full migraine attack than the placebo

sumatriptan. The sumatriptan group proved to have more people pain free at two hours after treatment when compared with both the acupuncture and placebo groups. Sumatriptan also demonstrated its superiority to acupuncture in relieving a migraine once the attack was in full force (Melchart et al., 2003).

DISCUSSION

Migraine attacks can be relentless, and disrupt many aspects of a person's life including relationships, careers, and quality of life (Leonardi, Raggi, Bussone, & D'Amico, 2010). There are many treatment options available, but all are accompanied by various degrees of side effects, and therefore migraineurs continue the pursuit of other alternatives. This study reviewed two randomized controlled trials comparing acupuncture with a control to determine if acupuncture is effective in the treatment of acute migraine attacks.

The primary outcome evaluated in this systematic review was decrease in pain. The two trials measured this in different ways. Ying et al. (2009) compared verum acupuncture to sham acupuncture examining a change in VAS scores from baseline to half an hour, one, two, and four hours after treatment. Acupuncture was found to be superior to sham acupuncture at two and four hours after treatment, but not at early time points of half an hour and one hour post treatment (Ying et al., 2009).

Melchart et al. (2003) compared acupuncture with both sumatriptan and a placebo sumatriptan, observing the number of patients who found complete relief within 48 hours, evading a full attack when treated at the first signs of migraine.

Pain was assessed using the Heller scale, which is similar to the VAS scoring system. However, this systematic review only inspects acupuncture versus placebo sumatriptan in the GRADE comparison of evidence. Melchart et al. (2003) found that acupuncture was more successful in decreasing pain, with more people attack-free in 48 hours than the placebo group. It is also worth mentioning that just as many individuals were attack-free within 48 hours in the acupuncture group as the sumatriptan group (Melchart et al., 2003).

Another outcome measured was pain relief after one hour of treatment. Acupuncture was not able to demonstrate superiority to sham acupuncture at this time point (Ying et al., 2009). However, acupuncture did demonstrate more effectiveness than the placebo sumatriptan. Another result to be noted is that acupuncture did prove to be as successful as sumatriptan in relieving pain at one hour after treatment (Melchart et al., 2003).

Pain relief was also assessed at 2 hours post treatment. At this time acupuncture was able to demonstrate better pain relief than sham acupuncture with a significant difference in change of VAS scores from baseline to two hours (Ying et al., 2009). Melchart et al. (2003), measuring with the Heller scale showed acupuncture's superiority to placebo sumatriptan with more people free of pain at two hours. This evidence supports acupuncture as an effective treatment for an acute migraine attack, when compared to a control.

This review also evaluated the need for additional treatment as another outcome. Additional treatment in the verum acupuncture versus sham acupuncture study was defined as medication with no further clarification. No

significant difference was found in the necessity of this further treatment between the acupuncture and two sham groups (Ying et al., 2009). In the study comparing acupuncture to placebo sumatriptan, additional treatment was outlined as another round of acupuncture for those in the acupuncture group, and a sumatriptan injection for those unfortunate enough to be initially in the placebo group. A significant difference was found between the treatment and control group in the amount of patients requiring more treatment (Melchant et al., 2003).

Ying et al. (2009) carried out a randomized controlled trial with verum acupuncture as the treatment group and two sham acupuncture groups serving as controls. By comparing the three groups, Ying et al. were able to demonstrate the superiority of verum acupuncture when compared to its control, but this study was not without limitations. The first limitation to be noted was the inability to completely blind patients.

While researchers took great care to ensure everything about the treatment versus control procedures were identical, implementing randomization and utilizing the same filiform Huatao needles and well-trained acupuncturists, complete blinding was virtually impossible. When true acupuncture is preformed the patient senses *de qi*, a twinge or tingling sensation that occurs when the needles are inserted and rotated (Ying et al., 2009). The patients in the treatment group experienced *de qi*, while the patients in the control groups did not, eliminating any true blinding of the subjects. The individuals who analyzed the results were, nonetheless, blinded to patients' allocated groups and their ascribed treatments, designating this study as single-blinded (Ying et al., 2009).

Another limitation of this study that cannot be overlooked is the patient population size. While the groups demonstrated wonderful randomization with yet similar characteristics of age, diagnosis, and VAS scores at baseline, there were only 175 participants in the study. A greater sample size would have strengthened the evidence of this study, and future studies should attempt to recruit more participants.

The authors of this study also acknowledged two other limitations of their trial. One limitation being that there was no baseline values 4 weeks before randomization to compare, only the one baseline measured just before randomization. The other limitation is the duration of time the patients in each group had been suffering from migraine attacks. A significant difference was found between the groups, and the authors attributed this to the small sample size (Ying et al., 2009). The limitations of the trial are reflected in the GRADE given to each outcome examined within the study.

Melchart et al. (2003) conducted a well done randomized controlled trial that was not completely free of limitations either. The limitations of this study are very comparable to those of the first study. While the patients of the sumatriptan and placebo groups were blinded from each other, the acupuncture group was very much aware that they were receiving the traditional Chinese medicine and not the injection of sumatriptan. In this way there was a lack of blinding. The authors of the study acknowledged that a sham acupuncture control group would have strengthened their study (Melchart et al., 2003).

Much like the first study, this trial consisted of a small sample size totaling 179 participants. Melchart et al. (2003) also divulged that their patient population was quite a selected sample in that all participants were recruited from hospitals where they were seeking inpatient care. A larger and less selective sample could have strengthened the evidence of this study. The limitations of the trial are incorporated into the GRADE given to each of the outcomes discussed in the study.

GRADE is a grading system used to assess and compare outcomes from different clinical trials to evaluate the strength of the evidence found. There are four ratings that can be given to an outcome: very low, low, moderate, and high. All outcomes investigated by a randomized control trial started with a grade of high. As the outcome is evaluated it can be down graded due to discrepancies in study quality, consistency, directness, precision, and publication bias. An outcome that starts at high can only have points deducted, and not added. Any outcome examined by a study that is not a randomized controlled trial starts with a grade of low. This outcome cannot be further downgraded, but can gain points, increasing its mark by evidence strengthening effects like large magnitude, dose response, and confounders (Guyatt, Oxman, Vist, Kunz, Falck-Ytter, Alonso-Coello, & Schünemann, 2008).

This systematic review compares acupuncture with a control in two different randomized controlled trials to determine its effectiveness as a treatment for acute migraine attacks. GRADE was used to evaluate the four

outcomes discussed above. The GRADE table below illustrates how each outcome was graded.

The primary outcome: decrease in pain, started with a grade of high, because it was investigated by two randomized control studies. However, one point was deducted for study quality due to small sample size and incomplete blinding discussed in the limitations of each study. No points were deducted for consistency, directness, precision, or publication bias. The overall grade for this outcome is moderate. According to the GRADE working group website the mark of moderate indicates: “further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate” (Guyatt, 2008, p. 926).

The outcome of “pain relief found at one hour after treatment” started with the initial grade of high, due to the randomized controlled trials. A point was subtracted from study quality for the same limitations in the trials as discussed above. A point was also withheld from consistency, because of the mixed results between sham acupuncture versus placebo sumatriptan. At one hour after treatment, acupuncture was able to establish superiority over placebo sumatriptan, but not sham acupuncture. Since no clear explanation can be recognized for these varied results, the outcome must be downgraded due to this inconsistency. The final grade of evidence for this outcome is low. According to the GRADE working group website low implies “further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate,” (Guyatt, 2008, p. 926).

“Pain relief at two hours after treatment” also started at a grade of high. It too was downgraded under study quality due to the limitations of the trials as discussed above. However, no points were withheld under consistency, directness, precision, or publication bias. The overall grade of this outcome is moderate.

The last outcome appraised was “need for additional medication.” As with the other outcomes it started at high, because the study design utilized randomized controlled trials. This outcome also lost a point for study quality due to the same discrepancies as discussed above. Inconsistencies were found in the data between the two studies. A significant difference was found in the need for additional treatment when acupuncture was compared to placebo sumatriptan, but no difference was established when acupuncture competed against sham acupuncture. This unexplained variation of data resulted in a point deducted from consistency. The grade of evidence for this outcome is low.

The overall grade of evidence for this systematic review is moderate. While further research would increase confidence in the evidence, these outcomes were able to demonstrate that acupuncture is effective in treating acute migraine attacks when compared to a control.

It would have been helpful to compare side effects of acupuncture with controls, but not enough data could be retrieved from the studies. Ying et al. (2009) lists the number of each adverse event, but did not specify how many participants affected were from the treatment versus control groups. This made it impossible to compare between studies.

It was interesting to exam the differences in adverse events that Melchart et al. (2003) reported between acupuncture, placebo sumatriptan, and sumatriptan. There wasn't a large difference between acupuncture and the placebo sumatriptan, but acupuncture did have fewer adverse events than sumatriptan. While all three groups were shown to raise blood pressure in some patients, sumatriptan had a few patients who experienced chest pain, heat sensation, and dizziness or vertigo. None of the acupuncture patients experienced these side effects, and only one patient in the placebo group experienced dizziness or vertigo (Melchart et al., 2003). While these findings were not included in the GRADE evaluation of evidence, the results beautifully illustrate the drawbacks of standard treatment, and the necessity of an alterative treatment for acute migraine attacks, such as acupuncture.

So what does this mean for migraineurs in the event of an acute migraine attack? Acupuncture was shown to be superior to sham acupuncture in pain relief at two and four hours after treatment, better than placebo sumatriptan, and as effective as sumatriptan in preventing a full attack within 48 hours when treated at first signs of attack. Acupuncture also had fewer side effects than sumatriptan.

Due to an overall moderate GRADE of evidence, more research is needed before acupuncture merits a strong recommendation as an option for treatment of acute migraine attack. However, acupuncture should not be completely omitted from the arsenal. Acupuncture's limited adverse events compared to standard treatment make it an attractive alternative tactic for many migraineurs

as they combat these chronic, life-distressing migraines one attack at a time.

The benefits far outweigh the risks. As for the future, it would be interesting to see the results from more studies comparing acupuncture to standard treatments, with larger sample sizes.

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Comparison	Outcome	Quantity and type of evidence	Findings	Starting grade	Decrease GRADE					Increase GRADE			Grade of Evidence for Outcome	Overall GRADE of Evidence
					Study Quality	Consistency	Directness	Precision	Publication Bias	Large Magnitude	Dose-Response	Confounders		
Acupuncture vs. control.	Decrease in Pain	2 RCT	Decreased Pain	High	-1	0	0	0	0	0	0	0	Moderate	Moderate
	Pain relief within 1 hour of treatment	2 RCT	Treatment more effective placebo sumatriptan, but not sham acupuncture	High	-1	-1	0	0	0	0	0	0	Low	
	Pain relief within 2 hours of treatment	2 RCT	Treatment more effective than both controls	High	-1	0	0	0	0	0	0	0	Moderate	
	Need for additional treatment	2 RCT	Sig diff found in placebo sumatriptan vs treatment but none in treatment vs sham acupuncture	High	-1	-1	0	0	0	0	0	0	Low	