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Acupuncture for low back pain and migraine

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Abstract

Acupuncture has been increasingly used as an integrative or complementary therapy for pain. It is well-tolerated with little risk of serious adverse effects. Traditional acupuncture and nontraditional techniques, such as electroacupuncture and dry needling, often result in reported pain improvement. Acupuncture is an ancient Chinese medical practice that involves inserting thin needles into specific points on the body. Acupuncture can be used to treat a wide range of health conditions, including migraines and low back pain. Acupuncture works by stimulating the nervous system, releasing endorphins and increasing blood flow to the affected area. Acupuncture may also help to reduce inflammation and improve circulation in the body. Controlled trials have been published on pain syndromes, such as acupuncture for acute and chronic low back pain, knee osteoarthritis, headache, myofascial pain, neck pain, and fibromyalgia. For some conditions, enough data are available for systematic evaluations or meta-analyses. Acupuncture may provide modest benefits in the treatment of chronic low back pain, tension headache and chronic headache, migraine headache prophylaxis, and myofascial pain.The benefits of acupuncture for people with back pain has been well researched compared to many other conditions, with more higher quality clinical trials. This systematic review will focus on the use of acupuncture and its role in the treatment of low back pain to help better guide physicians in their practice. To determine the effects of a policy of 'use acupuncture' on headache, health status and chronic pain. The results of this study will determine if acupuncture, alone or as an adjunct to pharmacotherapy provides effective, safe and acceptable pain relief for patients.

Keywords: Acupuncture; Pain; Migraine; Therapy; Medicine; Complementary.

1. Introduction

Acupuncture is commonly used to treat pain. In traditional Chinese medicine concepts Meridian and vital energy Qi are part of the theoretical basis for the application of acupuncture in strictly specific acupoints. These studies demonstrate that the penetration of a needle through the skin, either acupuncturists point or not having physiological activities. The gate control theory and the release of endogenous opioids have been proposed as the causative mechanisms leading to obvious analgesic effect of acupuncture [1]. Back pain is a common condition that leads to a weakening and disability with an estimated prevalence length at a rate of 70-85% [2]. The non-specific back pain represents the majority of cases. Although 90% of patients show improvement at 1 month, the majority continues to be symptomatic for 1 year, with a rate of 21 to 25% on terms of pain and disability. In summary, the back pain is among the most costly diseases in the UK, which according to the findings in other countries, leading to a total cost of £ 10,668 million. (Including direct healthcare costs and indirect costs, such informal care and lost productivity) [3]. The Royal College of General Physicians suggests that back pain should be transferred from secondary to primary care and the goal should be a rapid return to normal functionality. There is intense debate how to achieve a return to normal activities. Meanwhile, the complementary and alternative medicine (CAM) has proven that acupuncture is a powerful treatment, which is associated with a clinically significant improvement in back pain. Two randomized controlled trials have evaluated the economic costs, one in the UK and one in Germany, show that acupuncture is relatively cost-effective in terms of quality

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of life for low back pain. These considerations seem to have translated into action, as a growing number of physicians in England offer their patients access to acupuncture. In addition, public health has a strong interest in the use of acupuncture, for example, a survey in the US showed that the most patients with back pain were most likely to experience acupuncture if they did not have to pay [3]. Acupuncture is of increasing importance for the treatment of headache in Western medicine [4]. In 2001 a major review of the Cochrane concluded that acupuncture is important in the treatment of idiopathic headache, but the quantity and quality of the evidence was not sufficient [4]. Little is known, however, about the relationship between the diagnostic criteria of the International Headache Society and the diagnosis of traditional Chinese medicine in primary headache disorders [4]. The authors reported that they needed well-designed, large-scale studies to evaluate the effectiveness and cost-effectiveness of acupuncture [4]. In 2005 two large, high quality studies in patients with headache noticed a slight difference between the effect of acupuncture and placebo, but there was a significant difference between acupuncture and placebo group with no intervention. This result differed from that of a large systematic review comparing all interventions of acupuncture [2].

2. Results

In research review of all types of placebo by Matia Madsen et al. [1], thirteen studies were selected (3025 patients), which included various pain conditions such as knee osteoarthritis, tension headache, migraine, low back pain, fibromyalgia, abdominal pain due to scars, postoperative pain, and pain during colonoscopy. They included all studies of acupuncture, as traditional acupuncture and electroacupuncture and excluded studies that used transcutaneous electrical nerve stimulation and applying pressure to acupuncture points (acupressure). The studies were not blinded (blinded) concerningthe application of acupuncture and «placebo» acupuncture by clinicians. The duration of treatment ranged from one day to 12 weeks. A small but statistically significant difference was found between the acupuncture and «placebo» acupuncture. A moderate difference was found between the «placebo» acupuncture and the control group, as large studies make reference both to small, and in the important actions of placebo. In a blinded randomized controlled study conducted in Germany (340 outpatients) by Michael Haake [2] and his collaborators, included 1162 patients aged 18 to 86 years with a history of chronic low back pain for an average of 8 years. Patients underwent 10 sessions of 30 minutes, either real acupuncture (according to the principles of traditional Chinese medicine), or sham acupuncture (where applied superficial acupuncture at non acupuncture points) or conventional treatment (a combination of medications, physical therapy and exercise). Primary endpoint was the response after six months, defined as a 33% improvement. Patients who have not followed the process blind or have recourse to other non-permitted concomitant treatments during the monitoring were classified as non-responders, regardless of symptom improvement. At six months, response rate was 47.6% in the real acupuncture group, 44.2% in the sham acupuncture group and 27.4% in the conventional therapy group. Almost half of the patients in the acupuncture group and only one quarter of patients in the conventional therapy benefited. This study also found clear superiority of acupuncture compared with conventional treatment guideline, but showed no superiority over «sham» acupuncture for at least six months. The authors of both studies concluded that acupuncture is an affordable and effective treatment for back pain. To evaluate the effect of acupuncture in nonspecific back pain conducted systematic review of randomized controlled trials (RCTs) from Jing Yuan et al. [3] twenty three studies (n=6359) were included and classified into 5 categories comparator (1. Acupuncture versus control group (no intervention), 2. acupuncture versus sham acupuncture, 3. acupuncture versus conventional treatment 4. acupuncture and conventional therapy versus conventional therapy, 5. acupuncture and conventional treatment versus sham acupuncture and conventional treatment). There is a moderate number of elements proving that acupuncture is more effective compared to the control group and strong evidence that there is no significant difference between the acupuncture and the sham acupuncture in terms of short-term pain relief. There is strong evidence that acupuncture may be a useful adjunct to other forms of conventional therapy for nonspecific low back pain, but the effectiveness of acupuncture compared with other forms of conventional therapies requires further exploration. A systematic review by Sidney Rubinstein et al. [5] evaluated the effect of chiropractic (SMT), acupuncture and herbal medicine in chronic nonspecific low back pain. Thirty-five randomized controlled trials (8 SMT, 20 with acupuncture, herbology 7) examined 8,298 patients. The major findings are based on low quality data suggest that chiropractic did not provide a most beneficial clinical effect compared to the sham, or any other intervention in the treatment of non-specific lower back pain. There are indications however, that acupuncture provides a short-term clinically significant effect when compared to the control group or when added to another intervention. Although there are some encouraging results for the use of herbs in single studies, the lack of homogeneity among studies did not allow a cumulative assessment of the effect. These results are also in agreement with recent reviews on acupuncture and herbology. It is necessary randomized trials with low risk of bias and adequate sample size. Thirty-five randomized trials (2861 patients) that include acupuncture in adults with nonspecific subacute or chronic low back pain, or dry needling for myofascial pain syndromes in the lumbar, included in a systematic review by Andrea Furlan [6]. Of the thirty-five RCT that included, 20 published in English, seven in Japanese, five Chinese, one Norwegian, one in Polish and one German. There were only three trials of acupuncture for treating low back pain. They did not make valid conclusions, because of small sample size and low methodological quality of the studies. There are signs of pain and

functional improvement regarding chronic low back pain after acupuncture therapy compared with no therapeutic intervention or sham-treatment. These effects were only observed immediately after the end of sessions and short-term monitoring. However, there are clear recommendations about the most effective acupuncture technique. Although, a growing number of clinical studies verify the effect of Chinese acupuncture on headaches, the relationship between the diagnostic criteria of the International Headache Society and the diagnosis of traditional Chinese medicine in primary headache disorders is not clarified. In a prospective, randomized, multicenter, double-blind, controlled trial by Hans-Christoph Diener [7] al, 960 patients had 2-6 migraine episodes per month randomized to real-acupuncture group (n=313); sham acupuncture (n=339), or conventional treatment group (n=308). Patients received 10 acupuncture treatment sessions in 6 consecutive weeks or prophylactic medicine. The proportion of responders, defined as a decrease of 50% in days with migraine, 26 weeks after randomization. The results showed 47% decrease in the real acupuncture group; 39% in the sham acupuncture group and 40% in the standard therapy group. The results of treatment for migraine did not differ between patients treated with sham acupuncture, real acupuncture or standard treatment. In a Cochrane review by Linde [8] and his associates included randomized trials with a follow-up period of at least eight weeks after randomization, compared the clinical results of acupuncture with a control group; a group of sham acupuncture or other intervention in migraine patients. It was evaluated in 22 studies (4419 participants), investigating whether acupuncture is effective in the prophylaxis of migraine. Six studies evaluated the addition of acupuncture to basic care (which usually includes treating only the acute headache), and found that patients who received acupuncture had fewer headaches. Fourteen studies compared real acupuncture with inadequate or false acupuncture, in which the insertion of the needles were in false places or needles did not penetrated the skin. In these studies, the patients in both groups had fewer headaches, but there was no difference between the two treatments. In four studies acupuncture compared with prophylactic treatment, the patients in the acupuncture group reported a greater improvement and fewer side effects. In summary, the studies show that migraine patients benefit from acupuncture, although the correct placement of the needle appears to be less important than normally considered by acupuncturists. An update of the Cochrane review by Klaus Linde [9] and coworkers included eleven (2317 participants) randomized studies in order to compare the clinical effects of acupuncture on the tension headache, compared to control group (treatment of acute single headache or standard therapy); group of sham acupuncture or other treatment. Two large studies regarding acute headache compared acupuncture with the standard treatment. Both were statistically significant and with short-term (up to 3 months) benefits of acupuncture in relation to the control group in terms of the response; the number of days with headache and pain intensity. Longterm benefits (over three months) are not investigated. Six studies compared acupuncture with sham acupuncture and five of the six provided data for meta-analysis. They found small but statistically significant benefits of acupuncture in relation to the sham needling in patient outcomes. Three of the four studies that compared acupuncture with physiotherapy, massage or relaxation methods had methodological or other reported shortages. The authors conclude that acupuncture may be a useful non-pharmacological tool in treating patients with frequent episodic or chronic tension headache. To evaluate acupuncture in osteoarthritis of the knee was performed randomized, controlled study by Hanns-Peter Scharf [10] and his associates and included 1007 patients who had chronic pain for at least 6 months (criteria of the American College of Rheumatology and score 2 or 3 with KellgrenLawrence). The treatment consisted up to 6 physiotherapy sessions and as needed anti-inflammatory drugs plus 10 sessions traditional Chinese acupuncture, or 10 sessions sham acupuncture or 10 medical visits within 6 weeks. The success rate was defined with at least 36% improvement in score index osteoarthritis of the University Western Ontario and McMaster (WOMAC) at 26 weeks. The success rates were 53.1% for the traditional Chinese acupuncture, 51% for the sham acupuncture and 29.1% for conservative treatment. Groups of acupuncture had higher success rates than conservative therapy groups. No difference between Chinese traditional acupuncture and sham acupuncture. There was no statistically significant difference between the traditional Chinese acupuncture and sham acupuncture, suggesting that the observed differences could be due to effects of placebo, a different doctor-patient relationship in various groups, or a physiological effect of acupuncture, whether made according with the principles of traditional Chinese acupuncture. Eight randomized clinical trials (RCT) of acupuncture were included in the systematic review by Lee [11] and his associates in order to evaluate acupuncture in the treatment of rheumatoid arthritis. Four RCT compared the effects of acupuncture or electro acupuncture with sham acupuncture or no penetration of needles and failed to demonstrate specific effects of acupuncture in pain or in other outcome measures. An RCT comparing acupuncture with indomethacin showed beneficial effects of acupuncture on the overall response rate. In conclusion, the RCT sham-acupuncture group (with or without penetration of the needles) failed to show specific effects of acupuncture compared to control group, in patients with rheumatoid arthritis. In summary, the findings provide no convincing evidence that acupuncture with or without moxa are beneficial in the treatment of rheumatoid arthritis. We assessed the methodological quality of primary studies, using a modified scale Jadad. The duration of the activities were low in most studies (<3 months), in addition to a study. The blindness weakness can lead to overestimation of the treatment effect. This systematic review did not found superiority of real acupuncture compared to sham acupuncture. The sham acupuncture without penetration of the needles was found to be superior to the placebo tablets. The major problem with clinical trials of acupuncture is to find the appropriate placebo. The placebo acupuncture include minimal or superficial introduction of needles or sham acupuncture or without penetrating

needles [12]. However there is no universally acceptable placebo. This data showed no evidence that the presence or absence of De Qi exerts a significant effect on clinical outcomes. The observed effects of sham acupuncture needle penetration may be due to a physiological activity of the insertion of the neeedle or therapeutic relationship. The Manheimer et al. [13] conducted a meta-analysis of 22 studies of acupuncture for back pain published before September 2004. This analysis found that acupuncture in a short time was statistically and clinically superior to sham needling (4 trials with 343 patients) and without any additional treatment (eight trials with 586 patients). They concluded that the evidence was insufficient to demonstrate the short-term efficacy of acupuncture compared with other treatment. The Ammendolia [14] carried out a systematic review on acupuncture for back pain, including studies published until July 2006. It included 19 studies (4998 patients), most of which included acupuncture by inserting needles. This review compared acupuncture with a control group - no intervention (three studies); with sham acupuncture (7 studies); with other therapies (4 studies) and as adjunctive therapy to other treatments (7 trials). Evaluate the improvement in the pain and the functional status at various points in time: immediately after treatment (<1 week), short term (up to 3 months), in the interval (3-12 months), and long term (>1 time). Immediately after treatment, three studies found that acupuncture is more effective compared to the control group in improving pain and functional situation. Acupuncture was rarely greater than sham acupuncture for pain relief (eg in one of the six studies immediately after treatment, in 2 of the 3 studies on short-term results). The functional status between the acupuncture and the sham acupuncture was similar in short-term observation. Acupuncture has been evaluated as an adjunct therapy in 7 studies. The primary treatment was exercise (two studies), standard treatment (3 studies), physical therapy (one study) and orthopedic treatment (one study). Briefly in all studies and in all time monitoring periods, the complementary application of acupuncture led to better results. In a systematic review with acupuncture and electroacupuncture on the common peripheral osteoarthritis, the Kwon [15] found that in 10 of 18 trials, acupuncture showed a greater reduction of pain compared with various other control groups. The studies showed a wide variation in terms of the number of sessions, ranging from 5 to 45 total sessions, within 2-26 weeks and 1-5 sessions per week. They found that acupuncture is more effective compared with no intervention (2 studies), or relative to the sham control group (3 out of 4 trials). The White [16] conducted a systematic review of acupuncture for chronic knee pain. They included 13 studies, of which 8 were considered sufficient and thus were included in a meta-analysis. They found that acupuncture is superior compared to the sham control group (five trials with 1334 patients) and compared with the control group without any additional treatment (4 trials with 927 patients), in improving the functional status and reduction of pain in the short and long term period.The Manheimer [17] published the most recent systematic review of acupuncture for osteoarthritis, including studies published prior to February 2007. They included 11 studies, of which 9 used for a metaanalysis. They found that acupuncture has relatively short clinical improvement in pain and the functional status compared to the standard treatment. Compared to the sham control group, acupuncture associated with clinically irrelevant (but statistically significant) and long-term improvement in pain and functional situation. They interpreted the difference of the results regarding the beneficial effect of acupuncture, as a consequential action of placebo or the expected expectations. Following the publication of Manheimer, two large studies published by Foster [18] and Williamson [19]. The study used counseling and exercise, also applied acupuncture, up to six sessions over three weeks or the same number of sham sessions acupuncture, without penetrating needles. There seemed extra pain reduction after treatment and at 6 or 12 months [18]. In patients who were standby for knee replacement, the application of acupuncture and physiotherapy for six weeks resulted in a brief decrease of osteoarthritis. However the beneficial effect of treatment was not maintained in monitoring (follow up) at 12 weeks [19]. According to Lizhou Liou and coll. (seven systemic reviews) acupuncture in treatment of chronic low back pain provides shortterm clinically relevant benefits for pain relief and functional improvement compared with no treatment or acupuncture plus another conventhional intervention [20].

The search by Li ZQ, Chen H et all, encompassed 7,190 relevant studies, including 1,263 randomized controlled trials (RCTs) and 1,293 systematic reviews and meta-analyses. The results indicated a gradual increase in the number of annual publications on acupuncture analgesia in clinical practice. Among countries and institutions, China (2,139) and Chengdu University of Traditional Chinese Medicine (258) ranked first. Liang FR (89 articles) was the most prolific author, while MacPherson H (604) was the most cited author. MEDICINE (455) was the most productive journal, and Pain (2,473/0.20) ranked first in both the frequency and centrality of cited journals. Notably, the most frequently cited reference was a systematic review of individual patient data on acupuncture carried out for chronic pain that was published by Vickers Andrew J in 2012 (156). Burst analysis identified frontier research areas for 2010-2020, encompassing network meta-analysis, case reports, dry needling, lumbar disc herniation, cancer, post-herpetic neuralgia, insomnia, and bibliometric analysis. These studies outlines current trends and potential future research hotspots in clinical acupuncture analgesia over the past decade. Findings emphasize the necessity for enhanced international collaboration to improve research output and translation [21-22].

3. Conclusion

In summary, studies show promising results for acupuncture as an alternative treatment for low back pain and migraine. Acupuncture appears to be superior compared with "no action" or usual care in patients with chronic low back pain, osteoarthritis, or headache. Acupuncture has a beneficial safety profile, with relatively few side effects. Data suggest that acupuncture is a cost-effective treatment. The results support the use of acupuncture as an alternative or adjunctive treatment with or without analgesic drugs in the context of a multifactorial treatment.

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