

BRIEFING PAPER No 3

ARTHRITIS and ACUPUNCTURE

The evidence for effectiveness



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The Evidence Series of Briefing Papers aims to provide a review of the key papers in the literature which provide evidence of the effectiveness of acupuncture in the treatment of specific conditions. The sources of evidence will be clearly identified ranging from clinical trials, outcome studies and case studies. In particular this series of briefing papers will seek to present, discuss and critically evaluate the evidence.

ARTHRITIS AND ACUPUNCTURE: THE EVIDENCE FOR EFFECTIVENESS

Summary

This briefing paper presents a summary of the evidence for the effectiveness of acupuncture in the treatment of arthritis based on a review of the published literature. It is concluded that whilst the evidence for effectiveness is sparse, acupuncture can be helpful in alleviating pain in both osteo- and rheumatoid arthritis. There is also some evidence to suggest that acupuncture can influence the inflammatory aspect of rheumatoid arthritis

Introduction to Arthritis

Arthritis is not a single disorder but a generalised name for joint disease from a number of causes. This review covers both osteo- and rheumatoid arthritis.

Osteoarthritis is a disease essentially confined to the joint capsule. The cartilage lining the bone surfaces becomes roughened and thinned and the synovial lining in the capsule becomes inflamed. In severe cases the bone ends touch and start to wear away, and bony growths form that can change the shape of the joint. Osteoarthritis usually starts after the age of 40 and is more prevalent and severe in women. Hard repetitive activity and joint injury are common causes. Symptoms are pain and stiffness of the joint. About 8 million people in the UK are affected and of these about one million ask for treatment (ArthritisResearch Campaign Booklet-Osteoarthritis). Treatment includes pain killers, anti-inflammatory drugs, physiotherapy, losing weight, and in severe cases joint replacement. Puett & Griffin (1994) refer to the 'considerable (gastrointestinal) risks' associated with the use of non-steroidal anti-inflammatory drugs in older populations. Moreover these authors point out that it is uncertain whether the efficacy of anti-inflammatory drugs is superior to safer, pure analgesics. They quote clinical trials of anti-inflammatory drugs that show only a 30% reduction in pain and 15% improvement in function.

Rheumatoid arthritis is a completely different disease except in that it also affects the joints of the body. It is an autoimmune illness that causes inflammation of the lining of the joint capsule. Tendons can also be affected, and the lungs and blood vessels may become inflamed. The disease may be accompanied by anaemia causing fatigue. In Britain about 3% of the population are affected; of those about five in a hundred people develop severe symptoms with extensive disability (Arthritis Research Campaign Booklet – Rheumatoid Arthritis). Most sufferers experience symptoms that come and go with no apparent pattern. The most common age for the disease to start is between 30 and 50; again women are more at risk than men. Treatment includes painkillers, anti-inflammatory drugs, anti- rheumatic drugs, and joint replacement.

In Chinese medicine all forms of arthritis are covered by Bi syndromes, also known as painful obstruction syndrome, with further differentiation according to the signs and symptoms. Chinese disease patterns and Western disease categories do not always match. According to Legge (1990) trying to equate the various Bi syndromes with different forms of arthritis is not helpful or possible.

Literature Search

A search was made of the ARRCBASE database using the terms acupuncture and rheumatoid and osteoarthritis. From an initial 82 references articles were excluded if they were in a foreign language, related predominantly to treatment only, or were primarily concerned with TENS not acupuncture. This reduced the number to a total of 18 papers (10 osteo- and 8 rheumatoid) which form the basis of the following review.

Osteoarthritis

Papers describing individual trials, are summarised in Table 1. Over a 20 year period six distinct trials were carried out (some of the papers are different analyses of the same trial) involving a total of 191 patients.

Gaw et al (1975), compared real and sham acupuncture for a range of osteoarthritic joints. Sham points are described as contiguous with traditional points and were needled without obtaining deqi. Although there was no statistically significant difference between the groups, both the experimental (real acupuncture) and the control (sham acupuncture) groups showed an improvement in tenderness, pain and mobility as assessed by two independent, blinded observers.

Dickens & Lewith (1989), examined the effectiveness of acupuncture for osteoarthritis at the base of the thumb. In an attempt to side step the complications caused by sham acupuncture mock TENS was used for the control group. Again the difference between the experimental and the control groups was not statistically significant in this small sample, but acupuncture gave much better pain relief than the mock TENS.

Lundeberg (1991), Thomas (1991) and Eriksson (1991), all write on trials of acupuncture in the treatment of osteoarthritis of the cervical vertebrae. In Lundeberg's article patients were allocated randomly to four treatment groups, receiving manual acupuncture (with deqi obtained), sham acupuncture and electroacupuncture at low and high frequencies. One treatment was given and effects measured by visual analogue scales shortly after. All experimental groups showed significant reductions in pain intensity and affect. Thomas reports on another four arm study comparing real and sham acupuncture and standard (diazepam) and placebo pain medications. Acupuncture produced the most significant reductions in pain scores in this short term evaluation. As acupuncture afforded the greatest relief it should be considered routinely for a non-drug treatment option, especially when wishing to avoid the sedative side effects of benzodiazepines. In the final article relating to this project Eriksson reports that pre-treatment with diazepam and naloxone (which blocks endorphins) diminishes the impact of acupuncture.

Christensen (1992), reports a single blind trial of severe osteoarthritis of the knees with all 29 patients in the study awaiting surgery for their condition. It compares acupuncture to a control group receiving delayed treatment (nine weeks later). Six treatments were given with maintenance care available for a further 50 weeks.. Assessments included objective measures of distance walked and mobility as well as self assessed scales. In the treatment group improvement was recorded in pain levels, range of movement, mobility, and reduction in medication and a statistically significant difference was found between the treatment and control groups. The control group also recorded a

decrease in pain when it was treated. This is an impressive result. Seven patients were also able to avoid surgery (at a total estimated saving of \$60,000) and use of non-steroidal anti-inflammatory medications reduced significantly. The authors conclude mildly 'that acupuncture does work on knee osteoarthritis'.

Bulow (1992), reports a further analysis of the Christensen (1992) trial. The data from the trial are examined in an attempt to identify the factors likely to predict a positive outcome from acupuncture treatment. It concludes that it is not possible to pinpoint in advance which patients might best benefit. It is noted however that less chronic conditions responded better to treatment, yet increasing age and severity of the condition did not appear to negatively influence the outcome of the treatment.

Real and sham acupuncture for the treatment of pain in osteoarthritic knees were compared in a double blind trial of 40 patients by Takeda & Wessel (1994). Sham acupuncture was given by superficially needling points about one inch away from recognised acupuncture point sites. Outcome was assessed up to four weeks after termination of treatment using pain, stiffness and difficulty associated with various activities as measures. Both real and sham acupuncture decreased pain, stiffness and physical difficulty in this trial. The real acupuncture group showed a greater response but the difference between real and sham was not statistically significant. A number of interesting points come out of this study; men responded better than women; deqi was experienced by the majority of people in both groups and those who experienced deqi had a better response.

Berman (1995), reports an uncontrolled outcome trial of 12 patients treated for moderate to severe osteoarthritis of the knee. Low frequency electrical stimulation was given to points St35 and Extra-Xiyan, otherwise manual stimulation was given. Treatment effect was assessed in terms of pain, function and physical performance. . It is the only study that used more than one distal point in addition to local points .Two thirds of patients registered a 50% or better alleviation of their condition and there were no significant adverse side effects.

Discussion

Without exception the papers reviewed report an improvement following acupuncture treatment. In addition the reduced reliance on medications and surgery mean both possible cost savings and reduced side effects. Where side effects from acupuncture are mentioned, (Gaw (1975) and Berman (1995)), they are described as negligible or insignificant. The most impressive study in terms of outcome was that by Christensen et al (1992) where no sham acupuncture was used. For practitioners, doctors and indeed for prospective patients, this type of study is the most useful in that it compares acupuncture with standard treatment. Those studies which included a control group using sham acupuncture, Gaw (1975), Lundeberg (1991), Takeda (1994), were unable to find any statistically significant difference in outcome between the experimental and control groups. The use of sham acupuncture is much discussed in the literature (Birch 1997) and has particular disadvantages in trials where pain is concerned as even shallow needling at non traditional sites has been shown to activate qi and a healing response.

From the point of view of traditional acupuncture these trials still fall short of reflecting practice. Thus in addition to the issue of sham needling treatment courses were short, sometimes one-off, and concentrated around the use of local points. The effect of achieving deqi may also be necessary to enhance success. No study presented a diagnosis in Chinese terms or gave the basis of point selection, and none appeared to include treatment of any underlying condition. Given these shortcomings the results are even more promising.

Conclusion

Overall acupuncture is shown to give relief from the symptoms of osteoarthritis with negligible side effects and acupuncture practitioners should treat with high expectations of a worthwhile outcome. Neither the chronicity and severity of the condition nor the age of the patient should be seen as factors preventing a useful outcome. Acupuncture may also be more effective than standard care options (Christensen 1992) but practitioners should ensure that acupuncture treatment is complemented by other useful procedures, for example exercise and weight reduction.

Rheumatoid Arthritis

A total of eight papers are reviewed in this section, three overview papers and five trial papers.

Review of Overview articles

Given that rheumatoid arthritis is a more complex disorder than osteoarthritis it can be expected that treatment and demonstration of effectiveness are more difficult. The three overview articles on rheumatoid arthritis (Table 2) confirm this. In 1985 Bhatt-Sanders concluded that, in view of the lack of high quality trials, acupuncture is not a treatment for rheumatoid arthritis, and this was probably the mainstream view in the UK for many years. However opinions may be changing. Kenyon (1995) suggests that acupuncture can help with pain relief. MacPherson and Blackwell (1994) include evidence from China (albeit with considerable caveats) that support acupuncture for both pain relief and control of inflammation. This paper is extremely helpful in that it gives a treatment strategy for rheumatoid arthritis based on Chinese experience.

Review of Trials

The trial papers reviewed are summarised in Table 3.

Man and Baragar (1974), the single study undertaken in the West, gives impressive results, namely pain relief sustained over 2-3 months from one local treatment. They recorded no anti-inflammatory effect from the treatment. Surprisingly, in view of the results of the osteoarthritis studies, sham acupuncture gave only small and transient relief. This in spite of the fact that the sham acupuncture sites (above, in the middle of, and below the patella) would now be considered by some to be real acupuncture points.

All four remaining uncontrolled outcome studies are from China and specifically address the question of immune response along with 'improvement'. Luo (1987) treated 65 patients with moxa and claims, along with an overall success rate of 86%, that ESR (see note) levels fell and negative rheumatoid factor (RF) increased. Wang (1993), reports on 650 patients given long term TCM treatment for rheumatoid arthritis and describes a range of positive symptomatic changes. He also reports significant reductions in ESR and RF levels. As with many such reports the methodology is unclear but he mentions that acupuncture is given in combination with (unspecified) drug administration. Obviously this makes accurate interpretation of results impossible.

Liu (1993) attributes changes in immune function of his 34 patients to the acupuncture treatment. All patients improved and his findings reflect those of the earlier authors in relation to RF and ESR. Guan (1995) focused upon measuring immunoglobulin (Ig) antibody levels in his small study and describes a statistically significant change after a course of 15 acupuncture treatments. He also confirmed others' findings of positive changes in ESR and RF.

These are factors objectively recorded through serum tests and hence are significantly different from most results recorded in studies from China. However rheumatoid arthritis is a disease characterised by periodic flare-ups and without more explanation of how immune system

parameters might be expected to vary in such patients, and in particular in the trial patients, these data must be considered as interesting and worthy of further research rather than categorical proof.

Discussion

It is common for Chinese research relating to the treatment of Western disease categories with acupuncture to claim success rates of well over 80% with little or no information being provided on outcome measures. However in this review the Chinese evidence includes changes in immunological function as well as pain alleviation and the numbers of patients involved in studies make them difficult to ignore, especially in disorders where conventional treatment is limited. Methodologically there are shortcomings from the point of view of what is scientifically acceptable, clearly, for example, one would need to have a far greater understanding of how the reported trials were carried out and assessed. However, they are more likely than many Western trials to use treatment protocols acceptable to practising acupuncturists, for example Man & Baragar (1974) gave one treatment at 3 points, whereas Liu (1993) gave 30 daily treatments on 22 points. If there is a mechanism whereby acupuncture can bring about an immune response it is hardly surprising that the Chinese treatments find the effect and the more limited Western studies do not.

Conclusion

Acupuncture has been shown to give some pain relief in rheumatoid arthritis and an anti-inflammatory response may also be present. Treatment early in the disease is preferable but age and duration of the disease should not be seen as barriers to treatment. The research to date is limited and better trials, incorporating a diagnosis based on TCM differentiation along with pain scales and immune function measurements are advisable.

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Arthritis Research Campaign Booklet - Rheumatoid Arthritis

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ABBREVIATIONS USED

ESR Erythrocyte Sedimentation Rate; a form of blood test, ESR can be raised as a result of inflammation , for example in autoimmune diseases

Ig Immunoglobulin; a type of protein or antibody produced by the immune system in response to the presence of foreign proteins

RF Rheumatoid Factor; specific antibodies present in about 80% of rheumatoid arthritis suffers, one of several tests for the disease

TENS Transcutaneous Electrical Nerve Stimulation

Table 1 – Osteoarthritis: summary of papers reviewed

STUDY	PURPOSE & NATURE OF STUDY	PATIENTS & TREATMENT	RESULTS/CONCLUSIONS
1. Gaw, Chang, Shaw USA, 1975	Efficacy of acupuncture on OA of knee, hip, back, neck, hand Double-blind study with true & sham acupuncture	40 patients 8 weekly treatments manual stimulation	Modest but statistically significant improvement in tenderness and pain. No significant difference between true and sham groups
2. Takeda & Wessel USA, 1994	Double-blind study of acupuncture for OA of knees Control group given sham (superficial) acupuncture away from main points	40 patients 3 treatments per week for 3 weeks manual stimulation	Both true & sham acupuncture decreased pain & stiffness but the difference between true and sham was not statistically significant. Men responded better than women. Patients in both groups who experienced De Qi responded better than those who did not.
3. Christensen et al Denmark, 1992	Short & long-term study of acupuncture for severe OA of knee Single-blind study with “no treatment” control group	29 patients with 42 arthritic knees Initially twice weekly treatment for 3 weeks, manual stimulation Followed by monthly treatment	Acupuncture patients did significantly better than control group. 80% of patients treated experienced pain relief, and 56% improved walking. Long-term maintenance treatment needed. For some acupuncture may be an alternative to surgery.
4. Bulow et al Denmark, 1992	Further analysis of above study to see if it is possible to predict which patients will best respond to acupuncture	29 patients were assessed after 6 treatments over 6 weeks	People with less chronic conditions are more likely to benefit. Age & pain/disability levels are not success indicators.
5. Dickens & Lewith UK, 1989	Single-blind study on effectiveness of acupuncture for OA of thumb Mock TNS given as placebo for control group	12 patients 6 treatments over 2 weeks	Acupuncture gave significant reductions in pain. Acupuncture was more effective than mock TNS but small numbers mean difference was not statistically significant.

6. Lundeberg, Eriksson, Lundberg, Thomas Sweden, 1991	Comparison of true, sham & electro (2Hz & 80Hz) acupuncture in treatment of cervical OA	58 patients in 4 groups Short-term assessment of effects by patients up to 140 minutes	All groups experienced a significant alleviation of pain. No statistically significant difference between groups.
7. Thomas, Eriksson, Lundeberg Sweden, 1991	Comparison of acupuncture, sham acupuncture, diazepam & placebo diazepam in treatment of cervical OA	44 patients as a single group used in 4 separate trials Assessment of pain alleviation by patients over 2-hour period	True acupuncture gave the best result but there was no statistically significant difference between true and sham acupuncture and diazepam.
8. Eriksson, Lundeberg & Lundeberg Sweden, 1991	Interaction of diazepam & naloxone administered before treatment on cervical pain relief from 2Hz electroacupuncture	32 patients used as a single group in 3 separate trials Assessment of pain alleviation by patients over 2 hour period	Acupuncture gave significant pain relief. Pre-treatment with diazepam and naloxone reduced the effect
9. Berman USA, 1994	Treatment of knee OA with acupuncture; outcome study as pilot for wider study	12 patients, treated twice weekly over 8 weeks, combination of manual and electroacupuncture	Significant improvement in all outcome parameters. Around 2/3 of patients had moderate (50% better) or marked (75% better) improvement 4 weeks after treatment, as judged by a physician.

Table 2 - Rheumatoid Arthritis: overview articles

ARTICLE	PURPOSE/CONTENT	FINDINGS/CONCLUSION
Batt-Sanders D USA, 1985	Review of world literature to support claims of efficacy of acupuncture in the treatment of RA. Problems of trial design. Results of trials. In the 8 studies cited there were only 159 RA patients	No satisfactory double-blind trials to support claims of efficacy; Acupuncture should not be considered as an adjunct to therapy until appropriate, scientific trials have been conducted. Trials so far performed show a wide range of sometimes contradictory conclusions: Neither sham nor true acupuncture helpful. Acupuncture has no anti-inflammatory effect but can help with pain relief & stiffness. It does affect rheumatoid factor and immunoglobulin levels. Electroacupuncture is better than manual.
Kenyon JN UK, 1995	Reviews acupuncture, food sensitivities and homoeopathy as alternatives to drug treatment for RA	Evidence supports the use of acupuncture as an analgesic rather than as an anti-inflammatory. Dietary therapy may help some sufferers. Studies on homoeopathy in RA have been overwhelmingly positive,
MacPherson H, Blackwell R UK, 1994	Covers the nature, aetiology & treatment of RA in Western & Chinese medicine terms. Reviews some published trials, including Chinese observational studies. Reviews treatment strategy and overall management of RA	Results of controlled trials are questionable. Long-term studies with large numbers of patients are needed to demonstrate efficacy of treatment; such trials have not yet been achieved. An increasing body of research shows a clear effect of acupuncture and herbs in improving the functioning of the immune system in RA. Chinese studies impress with numbers treated and outcomes but disappoint with poor descriptions of the work.

Table 3 - Rheumatoid Arthritis: summary of papers reviewed

STUDY	PURPOSE & NATURE OF STUDY	PATIENTS & TREATMENT	RESULTS/CONCLUSIONS
Man S_C, Barager FD Canada, 1974	Single-blind study of acupuncture treatment for RA of knees. Comparison of true and sham electroacupuncture and steroid injection	20 patients/40 knees in 2 groups receiving true acupuncture in one knee & injection in the other; or sham acupuncture in one knee & injection in the other Single treatment only, assessed over 3 months	True acupuncture gave a moderate decrease in pain which declined gradually over 3 months. Sham acupuncture gave only a small transient relief from pain There was no effect on inflammation as measured by local swelling & heat
Wang et al China, 1993	Outcome study of acupuncture in treatment of RA in multiple joints	650 patients Points selected according to location of affected joints & according to TCM differentiation Acupuncture given in combination with drug administration (not defined) 'Tolerable' reinforcing stimulation	Symptoms disappeared 12%; symptoms markedly alleviated 31%; joint swelling & movement improved 54%; no change 3%. Improvements were best in those in the early or only moderately advanced stage of the disease. After 60 treatments 51 from 123 patients became RF negative; and 25 from 74 patients had a return to normal ESR.
Luo Shirong, Zhu Yuewei China, 1987	Outcome study of extended scarring moxibustion in the treatment of RA (joints not defined)	65 patients Moxa burnt on a layer of garlic extending from Du14 to Du2, repeated 2/3 times; blisters drained on subsequent days. One month rest; cold & fatty food, cold baths, & sex avoided	Overall success rate (cure+ remarkable improvement +improvement) 86%; success rate better for cold type & mild cases; age & duration of disease not factors; ESR levels fell & the number of cases with negative RF increased from 29% to 49%
Guan Zunhui China, 1995	Effect of acupuncture on immunoglobulin (Ig) levels in patients with RA (or asthma) Outcome study	12 patients with RA Mainly local points, treated daily/every other day Measurements after 15-45 treatments	In RA patients most raised Ig levels fell with treatment, especially in patients where the therapeutic effect was positive. Acupuncture exerts a modulating action on Ig levels
Liu Xinlian et al China, 1993	Effect of acupuncture (& point injection) on immunological function in RA Outcome study	54 patients given acupuncture Warm needling on 22 points, daily treatment for 30 treatments Same treatment given to people with no symptoms as control	All acupuncture patients improved. No change in Ig levels Reduction in ESR levels and number of patients RF positive NK levels increased

