

COMMENTARY ON THE COCHRANE REVIEW OF ACUPUNCTURE FOR PERIPHERAL JOINT OSTEOARTHRITIS

| Nadine E. Foster, DPhil |

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office is located at the Center for Integrative Medicine, University of Maryland School of Medicine, 2200 Kernan Drive, Kernan Hospital Mansion, Baltimore, MD 21207-6697. For more information, contact Eric Manheimer at emanheimer@compmed.umm.edu. The Complementary Medicine Field is supported by grant R24 AT001293 from the National Center for

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ABSTRACT OF THE COCHRANE REVIEW

Background: Peripheral joint osteoarthritis is a major cause of pain and functional limitation. Few treatments are safe and effective.

Objectives: To assess the effects of acupuncture for treating peripheral joint osteoarthritis.

Search Strategy: We searched the Cochrane Central Register of Controlled Trials (The Cochrane Library 2008, Issue 1), MEDLINE, and EMBASE (both through December 2007), and scanned reference lists of articles.

Selection Criteria: Randomized controlled trials (RCTs) comparing needle acupuncture with a sham, another active treatment, or a waiting list control group in people with osteoarthritis of the knee, hip, or hand.

Data Collection and Analysis: Two authors independently assessed trial quality and extracted data. We contacted study authors for additional information. We calculated standardized mean differences using the differences in improvements between groups.

Main Results: Sixteen trials involving 3498 people were included. Twelve of the RCTs included only people with OA of the knee, three only OA of the hip, and 1 a mix of people with OA of the hip and/or knee. In comparison with a sham control, acupuncture showed statistically significant, short-term improvements in osteoar-

thritis pain (standardized mean difference -0.28 , 95% confidence interval -0.45 to -0.11 ; 0.9 point greater improvement than sham on 20 point scale; absolute% change 4.59%; relative% change 10.32%; nine trials; 1835 participants) and function (-0.28 , -0.46 to -0.09 ; 2.7 point greater improvement on 68 point scale; absolute% change 3.97%; relative% change 8.63%); however, these pooled short-term benefits did not meet our predefined thresholds for clinical relevance (ie, 1.3 points for pain; 3.57 points for function) and there was substantial statistical heterogeneity. Additionally, restriction to sham-controlled trials using shams judged most likely to adequately blind participants to treatment assignment (which were also the same shams judged most likely to have physiological activity), reduced heterogeneity and resulted in pooled short-term benefits of acupuncture that were smaller and non-significant. In comparison with sham acupuncture at the six-month follow-up, acupuncture showed borderline statistically significant, clinically irrelevant improvements in osteoarthritis pain (-0.10 , -0.21 to 0.01 ; 0.4 point greater improvement than sham on 20 point scale; absolute% change 1.81%; relative% change 4.06%; four trials; 1399 participants) and function (-0.11 , -0.22 to 0.00 ; 1.2 point greater improvement than sham on 68 point scale; absolute% change 1.79%; relative% change 3.89%). In a secondary analysis versus a waiting list control, acu-

puncture was associated with statistically significant, clinically relevant short-term improvements in osteoarthritis pain (-0.96 , -1.19 to -0.72 ; 14.5 point greater improvement than sham on 100 point scale; absolute% change 14.5%; relative% change 29.14%; four trials; 884 participants) and function (-0.89 , -1.18 to -0.60 ; 13.0 point greater improvement than sham on 100 point scale; absolute% change 13.0%; relative% change 25.21%). In the head-on comparisons of acupuncture with the 'supervised osteoarthritis education' and the 'physician consultation' control groups, acupuncture was associated with clinically relevant short- and long-term improvements in pain and function. In the head on comparisons of acupuncture with 'home exercises/advice leaflet' and 'supervised exercise,' acupuncture was associated with similar treatment effects as the controls. Acupuncture as an adjuvant to an exercise based physiotherapy program did not result in any greater improvements than the exercise program alone. Information on safety was reported in only eight trials and even in these trials there was limited reporting and heterogeneous methods.

Authors' Conclusions: Sham-controlled trials show statistically significant benefits; however, these benefits are small, do not meet our pre-defined thresholds for clinical relevance, and are probably due at least partially to placebo effects from incomplete blinding. Waiting list-controlled tri-

als of acupuncture for peripheral joint osteoarthritis suggest statistically significant and clinically relevant benefits, much of which may be due to expectation or placebo effects.

COMMENTARY OF THE COCHRANE REVIEW

The review of Manheimer et al¹ of 16 randomized trials of acupuncture for peripheral joint osteoarthritis is a high-quality review following the rigorous Cochrane protocol for systematic reviews. The team used the new tool recommended by the *Cochrane Reviewer's Handbook* to assess the risk of bias in the available trials. Overall, the review of RCTs comparing needle acupuncture with a sham intervention, another active treatment, or a waiting-list control group in people with osteoarthritis of the knee or hip was very well conducted. The clinical bottom line of the review is that when compared with no treatment (waiting-list control), acupuncture provides statistically and clinically significant, short-term improvements in pain and function; when compared with sham interventions, acupuncture provides small, statistically significant improvements that are of questionable clinical importance, and when compared with other guideline-recommended clinical interventions (advice and exercise), acupuncture produces similar treatment effects. The authors of the review emphasize the heterogeneity across available trials and that the findings of the review can be explained, at least in part, by placebo and expectation effects. There are several key issues that deserve special consideration.

Heterogeneity

Firstly, as the authors highlighted, there was considerable heterogeneity in several of the main analyses (eg, for the comparison with sham interventions at short-term follow-up, there was substantial heterogeneity for pain [$I^2 = 64\%$], function [$I^2 = 69\%$], and symptom severity [$I^2 = 74\%$]). The authors point out that this may be explained by the differences in sham interventions, in acupuncture protocols, in treatment settings, and in the proficiencies of acupuncturists. This heterogeneity underlines a real challenge for future trials of acupuncture: the design and delivery of ideal sham acupuncture. This most likely

needs to be delivered using nonpenetrating needles for all of the reasons that Manheimer et al¹ describe in their discussion, which emphasize the need for sham interventions that are as physiologically inert as possible, yet which are credible to patients. The review recommends trials to use nonpenetrating needles as a sham and to at least consider maximizing patients' beliefs in the authenticity of the sham intervention by referring to different real treatments being compared without mentioning terms such as *placebo* or *sham*. This is the approach taken by at least one of the trials in the review,² which showed no differences between the treatment packages that involved real, penetrating acupuncture and nonpenetrating sham, and both were felt to be highly credible interventions by participants, all of whom were acupuncture naive. It is likely that many other context effects, such as the patient's perception of being listened to, and of having their problem adequately assessed and cared for over a series of treatments by an empathic health professional, contribute to the overall outcomes of these interventions, whether real or sham. What is clear is that we need better measures of these other contexts or nonspecific effects in trials³⁻⁵ and full reporting of informed consent procedures, rather than relying solely on rudimentary assessments of treatment credibility alone.

Choice of Comparison Interventions and Trial Design

A second issue relates to the comparison interventions with which acupuncture has been compared. Although it is useful to know that when patients agree to take part in a randomized trial of acupuncture, outcomes appear to be better if they receive the acupuncture (whether real or sham) than if they receive nothing in addition to what they have already been receiving (waiting-list controls or usual physician care controls), this is not particularly helpful for health professionals who want to know which patients they should consider recommending acupuncture to and which ones probably do not need it. Given that there is evidence that acupuncture is relatively safe, and some evidence that patients with higher expectations for acupuncture are more likely to have favourable outcomes,^{5,6} then using information about patient preference and expectation in the con-

sultation may be a reasonable route to take to help clinical decision making until we know more about which patients benefit most.

It also seems wise that future trials compare several different treatments head to head to try to avoid recruiting only a sample of individuals who may, for whatever reason, be particularly in favor of one specific treatment approach. Another option would be to consider using a cohort multiple-randomized trial design in which patients seeking care as usual form a new, large cohort that is followed up regularly over time. Within this cohort, there is the capacity for multiple RCTs over time. For each RCT, eligible patients are identified, from which some are randomly selected to be offered the intervention(s) under investigation, and their outcomes are compared with other eligible patients in the cohort who are not selected to receive the intervention. This design is thought to reduce attrition and the potential for selection bias, since patient information and consent replicate the real-world healthcare context.⁷

Where Does Acupuncture "Fit" into Healthcare for Osteoarthritis?

Despite the problems of delivering truly inert sham acupuncture, the current review did find that real acupuncture was better in the short-term for both pain and function, as have previous reviews.⁸ Hence, reviews seem to show that acupuncture "works," if this is taken to mean that acupuncture is more beneficial than sham, on average. One of the findings of this review is that the differences between acupuncture and the comparison groups were small, and for some comparisons, did not reach the level of clinical importance set by previous research,⁹ but this is a criticism that can be leveled at most of the available treatment options for peripheral joint osteoarthritis. Even exercise, one of the three "core" treatments recommended in recent UK guidelines for all patients with osteoarthritis,¹⁰ irrespective of pain and disability level, tends to show small treatment effects overall that decline over time.

It is most likely that knowing acupuncture works and is safe is insufficient to influence health policy. We also need to know that it is affordable. The only UK-based evidence on cost effectiveness for

peripheral joint osteoarthritis¹¹ shows that a package of advice and exercise plus acupuncture, delivered by National Health Service physiotherapists, provides a cost-effective use of healthcare resources despite an associated increase in costs. It will be interesting to see whether, over the next five years, acupuncture joins other interventions in the recommended suite of treatment options for peripheral joint osteoarthritis, as it has done already for the management of low back pain.¹²

Future Research

The Cochrane review provides sound advice regarding the implications of the results for the future. I would like to underline the authors' call for future trials to broaden their populations of interest to include osteoarthritis at sites other than the knee, given that 12 out of the 16 included trials focused on knee osteoarthritis alone. In addition, I would like to see the research and clinical communities getting better at identifying who, among patients with peripheral joint osteoarthritis, is likely to benefit most from acupuncture, and where, in the normal stepped care approaches for this patient population—starting with advice and education about self-management, exercise, and physical activity programs, weight loss, and safe pharmacological and topical treatments¹⁰—acupuncture is best positioned. To address these

questions, future trials are likely to be more complex in design and thus, larger in terms of both sample size and required collaborations.

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Nadine E. Foster, DPhil, is Professor of Primary Care Musculoskeletal Rehabilitation, Arthritis Research UK National Primary Care Centre, Primary Care Sciences, at Keele University, Staffordshire, England.