Acupuncture for osteoarthritis of the knee: a systematic review

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Authors' objectives
To assess the effectiveness and adverse effects of acupuncture for osteoarthritis (OA) of the knee.

Searching
MEDLINE (from 1966 to 1999), EMBASE, PsycLIT, MANTIS, the Science Citation Index, CAMPAIN, the Cochrane Controlled Trials Register, and the trials register of the Cochrane Complementary Medicine Field were searched. In addition, abstracts from 62 rheumatology conferences were searched for unpublished studies and the bibliographies of identified studies were examined. The search terms were stated.

Study selection
Study designs of evaluations included in the review
Randomised (RCT) and quasi-randomised trials were eligible for inclusion.

Specific interventions included in the review
Studies of acupuncture were included if the acupuncture points were stimulated by needle insertion and not by electrical stimulation, thermal stimulation or digital pressure. Where the information was reported, the included studies compared low-frequency electroacupuncture or manual acupuncture with waiting-list control, sham acupuncture or physical therapy. Acupuncture was given either two or three times a week over 3 to 8 weeks.

Participants included in the review
Studies that were exclusively of patients with OA of the knee were eligible for inclusion. The primary studies included (where stated): patients with OA defined according to the American College of Rheumatology criteria for at least 6 months; patients with OA awaiting knee replacement; and patients with radiological evidence of OA plus pain in one or both knees for 2 months, or pain for 2 months.

Outcomes assessed in the review
The inclusion criteria were not defined in terms of outcomes. The primary outcomes assessed in the review were pain, physical function and patient global assessment. In addition, the costs and medical utilisation were assessed. The intention was also to assess quality of life and imaging, but none of the included trials reported these outcomes. The outcomes were assessed from immediately post-treatment to 3 months post-treatment.

How were decisions on the relevance of primary studies made?
Two reviewers independently selected studies according to the inclusion criteria.

Assessment of study quality
Study quality was assessed and scored using the 5-point Jadad scale, which considered randomisation, blinding and withdrawals plus two additional criteria: cointerventions either avoided or controlled for, and level of compliance. The maximum possible validity score was 5 points. Scores from zero to 2 points were classified as low quality, while scores of 3 to 5 were classified as high quality. In addition, two experienced acupuncturists classified the adequacy of the acupuncture treatment (adequate, not adequate or insufficient information), and one reviewer compared acupuncture methods with guidelines reported in textbooks. The agreement between the acupuncturists' rating of acupuncture adequacy was assessed. Two reviewers independently assessed validity and achieved consensus through discussion.

Data extraction
Two reviewers independently extracted the data and achieved consensus through discussion. The data extracted included details of the intervention and control therapy, inclusion criteria, follow-up period and outcomes. The
outcomes were classified as positive (acupuncture significantly more effective than control), neutral (no significant difference between acupuncture and control) and negative (control significantly more effective than acupuncture). Significance was taken as a P-value of less than 0.05. The timing of the outcomes assessment was classified as short term (less than 1 month post-treatment), intermediate (1 to 3 months post-treatment) or long term (greater than 3 months post-treatment).

Methods of synthesis
How were the studies combined?
A meta-analysis could not be performed due to the variety of different treatments and control therapies, and insufficient reporting of the data. The studies were grouped by timing of the outcome assessment. Studies reporting short-term outcomes were then grouped by the type of control group and a narrative synthesis was undertaken. The strength of the evidence for each comparison was graded as strong (multiple high-quality RCTs with consistent results), moderate (one high-quality RCT plus at least one low-quality RCT, all with consistent results), limited (one high-quality RCT or multiple low-quality RCTs with generally consistent results), or inconclusive (only one low-quality RCT or no RCTs, or RCTs with inconsistent results).

How were differences between studies investigated?
The influence of study quality on the results was explored by examining the association between specified individual quality items (relating to blinding of the patient and outcome assessor, cointerventions and compliance) and the outcome (neutral compared with positive). The influence of the duration of disease on the results was also explored.

Results of the review
Seven RCTs (393 patients) were included.

Study quality.
Four of the seven RCTs were rated as low quality. The review found no association between trial quality and results.

Short-term results.
Acupuncture versus waiting list (2 low-quality RCTs): there was limited evidence that acupuncture was more effective than control for pain and function.

Acupuncture versus sham acupuncture (3 high-quality RCTs): there was strong evidence that acupuncture improved knee pain compared with sham acupuncture. There was inconclusive evidence for function. The RCTs did not assess the other outcomes.

Acupuncture versus physical therapy (2 low-quality RCTs): there was inconclusive evidence for acupuncture compared with physical therapy in terms of pain and function. The RCTs did not assess the other outcomes.

Adverse effects (2 RCTs): the adverse effects of acupuncture were considered to be relatively mild.

A short duration of disease was associated with a positive outcome for acupuncture.

Acupuncture treatment rating: few RCTs adhered to the guideline criteria for acupuncture treatment described in textbooks. Four of the five RCTs considered to use adequate acupuncture treatment found that acupuncture significantly improved pain compared with control.

Follow-up.

Intermediate follow-up (4 RCTs): two RCTs found that the benefits of acupuncture lessened after one month. One RCT found that the benefit of acupuncture was maintained at 3 months. The results for the fourth RCT were not reported.

Long-term follow-up: none of the RCTs followed all the enrolled patients beyond 3 months.
Cost information
There was inconclusive evidence from one RCT that acupuncture significantly reduces the medical costs or utilisation.

Authors’ conclusions
There was evidence that acupuncture may have a contribution to make in treatment of OA of the knee. The authors also concluded that there was a need for further research.

CRD commentary
The review question was clear in terms of the study design, intervention and participants. The literature search was adequate: it involved searches of several relevant databases, attempts to locate unpublished studies and applied no language limitations. The study selection, validity assessment and data extraction processes were performed in duplicate and this reduced the potential for bias and errors. Validity was assessed using defined criteria and relevant information on the included studies was tabulated. The studies were appropriately grouped by the timing of the outcome evaluation and then by the type of control group, and a narrative synthesis was undertaken. The level of evidence for each comparison was summarised, taking into account the quality of the studies. The influence of specified quality criteria and the duration of disease on the results were explored.

The evidence presented was limited with respect to the number of studies and participants; this should be taken into account when interpreting the authors’ conclusions.

Implications of the review for practice and research
Practice: The authors state that there is limited evidence that acupuncture is better than waiting list, usual care or no treatment.

Research: The authors state that further research is required to determine what is the optimal acupuncture treatment for OA of the knee, the effect of maintenance acupuncture treatment, and the effect of acupuncture used in combination with other therapies. They further state that future research should include the assessment and reporting of adverse effects.

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PubMedID
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10.1002/1529-0131(200104)44:4:819;CO;2-P

Other publications of related interest
This additional published commentary may also be of interest. White AR. Acupuncture is a very promising treatment for osteoarthritis of the knee. FACT 2001;6:251-2.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.