Acupuncture for carpal tunnel syndrome: a systematic review of randomized controlled trials


CRD summary
This review concluded that existing evidence was not convincing enough to suggest that acupuncture was an effective therapy for carpal tunnel syndrome. The review was well-conducted. The available evidence was very limited and the authors' conclusion and recommendation of the need for further research seem appropriate.

Authors' objectives
To evaluate the effectiveness of acupuncture and acupuncture-like treatments for the treatment of carpal tunnel syndrome.

Searching
Eleven electronic databases (including MEDLINE, EMBASE, The Cochrane Library 2009 and CINAHL) were searched without language restrictions from inception to December 2009; search terms were reported. Bibliographies of retrieved articles and a relevant journal were searched. Dissertations and abstracts were included.

Study selection
Parallel and cross-over randomised controlled trials (RCTs) of acupuncture as a treatment for carpal tunnel syndrome in one or both hands were eligible for inclusion. Trials could use no treatment, sham acupuncture or relevant active interventions as the control. Diagnosis of carpal tunnel syndrome had to be made using electrodiagnostic parameters or clinical examination with definite clinical symptoms and physical examination results. Cointerventions had to be given to both arms of a trial. The trial had to report on nerve conduction study (NCS), responder rate, symptom severity scores, global symptom score, McGill pain questionnaire score and/or results of a modified symptomatic questionnaire.

Four RCTs were conducted in China, one in USA and one in Germany. Most of the RCTs evaluated needle acupuncture; laser acupuncture was also evaluated. The treatment regimen varied across studies; treatment duration ranged from 2.8 to 6.0 weeks. Most acupuncture treatments used the meridian points. Duration of carpal tunnel syndrome ranged from one to 84 months. Control groups included sham acupuncture, steroid nerve blocks or tablets, or tuina manipulative therapy.

The authors did not state how many reviewers selected studies for the review.

Assessment of study quality
Study quality was assessed by two independent reviewers using the Cochrane risk of bias tool. Disagreements were resolved by discussion or referral to a third reviewer.

Data extraction
Data were extracted by two independent reviewers in order to calculate relative risks (RR) for binary outcomes and mean differences for continuous outcomes, along with 95% confidence intervals (CI). Authors were contacted for missing data. Disagreements were resolved by discussion or referral to a third reviewer.

Methods of synthesis
Pooled relative risks were calculated for binary outcomes and standardised mean differences (SMD) for continuous outcomes, along with 95% CI. Heterogeneity was assessed using the X^2 and I^2 statistics. A random-effects model was used to pool studies where excessive statistical heterogeneity (definition not given) was not observed.

Results of the review
Six RCTs met the inclusion criteria (442 patients, range 26 to 140). Two RCTs used sham acupuncture as the comparator and four used active controls. Methodological quality was considered to be generally low; only two RCTs reported using an appropriate randomisation method, two trials blinded patients, one trial blinded the outcome assessor...
and two trials described drop-outs; none of the trials reported allocation concealment methods. All four RCTs from China reported positive results; the trials from Germany and USA did not.

Compared to steroid nerve blocks, response rate was significantly better with acupuncture (RR 1.28, 95% CI 1.08 to 1.52; I² 10%; two RCTs, 144 patients). Compared to sham acupuncture (using penetrating irrelevant meridian points) no significant benefit of acupuncture were observed (one RCT). Compared to steroid tablets, the only significant benefit of acupuncture was seen in distal motor latency in terms of nerve conduction study (mean difference -0.63, 95% CI -1.09 to -0.17). Compared to tuina alone, acupuncture plus tuina showed a significant benefit in terms of nerve conduction study of the median nerve (mean difference 1.05, 95% CI 0.51 to 1.59) but not the ulna nerve. Compared to sham laser acupuncture, laser acupuncture showed no benefit in terms of relieving night pain.

**Adverse events (two RCTs):** One RCT reported that 56 out of 173 adverse events were related to needle acupuncture. The second RCT reported an adverse event rate of 5% in the needle acupuncture group. No serious adverse events were reported in either trial.

**Authors' conclusions**
The existing evidence was not convincing enough to suggest that acupuncture is an effective therapy for carpal tunnel syndrome.

**CRD commentary**
The review addressed a clear research question supported by reproducible inclusion criteria. The search was comprehensive for published studies in any language. The authors stated that most Chinese acupuncture trials report positive findings which cast doubt on the reliability of these data. Publication bias could not be ruled out. Data extraction and the quality assessment were conducted in duplicate; it is unclear whether similar methods were used to reduce error and bias during study selection. Appropriate criteria were used to assess study quality. The analysis seemed appropriate.

This was a well-conducted review and the authors acknowledged the limitations of their review. The available evidence was very limited. The authors' conclusion and recommendation of the need for further research seem appropriate.

**Implications of the review for practice and research**

**Practice:** The authors did not state implications for practice.

**Research:** The authors stated a need for further rigorous studies with standardised methodologies to establish whether acupuncture has therapeutic value for this indication and that such RCTs should overcome the limitation of previous studies.

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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.