Conservative treatment of sciatica: a systematic review

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Authors' objectives
To evaluate conservative treatments of sciatica.

Searching
MEDLINE from 1966 to 1998, and EMBASE from 1984 to 1998, were searched using a strategy designed to optimise the retrieval of RCTs (see Other Publications of Related Interest no.1). Full details of the search terms used were given. Additional studies were located by examining the references of identified studies and by contacting experts in the field.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) with at least 20 patients in the smallest group were eligible. Diagnostic studies, descriptive and review studies, and case series or case reports, were excluded.

Specific interventions included in the review
Studies dealing with invasive procedures were excluded. No other inclusion criteria were specified. The actual placebo-controlled interventions included the following.

Non-steroidal anti-inflammatory drugs (NSAIDs), i.e. piroxicam (40 mg/day), indomethacin (dosage unclear) or phenylbutazone (600 to 1,200 mg/day), compared with placebo.

Traction, consisting of intermittent Tru-trac, Spina-Trac, greater than 45 kg traction daily, or autotraction and corset, compared with control therapy (fictitious traction, traction stimulation, infrared heat or corset alone).

Epidural steroids, i.e. methylprednisolone (2 to 10 mL of an 80 mg preparation), compared with control (epidural saline, intraspinal ligament saline, and sacral hiatus lignocaine).

Intramuscular steroids at two different dosing regimes, compared with neutral ampulla or saline injection.

Other therapies, comprising oral chymoral, manipulation or tizanidine, compared with placebo tablets or infrared heat.

The non-placebo-controlled interventions included: manual traction compared with isometric exercises; autotraction compared with manual traction; discectomy compared with physical therapy; comparison of various types of therapy (Maitland, manual traction, exercises, and corset); and tiaprofenic acid compared with ketoprofen.

The duration of therapy, where stated, ranged from one episode of therapy to 12 days.

Participants included in the review
Studies of patients with sciatica and/or nerve root compression as a well-demarcated main group or as a subgroup of the study were eligible. Studies that did not deal with lumbar disc herniation were excluded. The included studies were set in primary and secondary care. The patients included those with acute disease (less than 3 months’ duration) and those with nonacute disease.

Outcomes assessed in the review
The inclusion criteria were not defined in terms of the outcomes. Improvement was assessed and patients were regarded as successfully treated if they reported overall improvement, improvement of pain, or return to work. The included studies assessed overall improvement using global measures of improvement, and evaluated pain using visual analogue scales.
How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the reviewers performed the selection.

Assessment of study quality
Twenty-one criteria were used to assess and score validity, where the maximum possible scores attainable for each individual criterion ranged from 1 to 10. The criteria were based on the following: sample homogeneity; comparability of prognostic variables; adequacy of randomisation procedure; statement of intended sample size and justification; number and flow of participants; drop-outs and loss to follow-up; sample size; description of experimental and control interventions; control group; cointerventions; compliance; masking of patients; masking of caregiver; masking of assessor; relevant outcome measures; timing and description of timing; predefined primary outcomes and analysis stated; intention to treat analysis; presentation of frequencies and measures of variability; appropriateness of statistical technique; blinding of data entry and data analysis; and appropriate interpretation of results/controlled for unplanned comparison.

In addition, studies were considered to provide good differentiation of radicular pathology if information was given on the presence of at least two of the following findings: typically radicular pain distribution, positive straight leg raising, and neurological deficits. Three readers independently read the studies. No further details were reported.

Data extraction
Three readers independently read the studies. No further details were reported.

The following information was tabulated: author and year of publication; details of experimental and control interventions; measures used to assess the outcomes; number of patients reporting the outcome in each treatment group; and the validity criteria fulfilled.

Methods of synthesis
How were the studies combined?
The pooled odds ratio (OR) and the 95% confidence interval (CI) were calculated using the random-effects model of DerSimonian and Laird (see Other Publications of Related Interest no.2).

How were differences between studies investigated?
No formal test for heterogeneity was reported. Improvement results were presented in forest plots. A sensitivity analysis was performed for the epidural steroid intervention, by repeating the analysis after including studies with less than 20 patients in the smallest group. The influence of study characteristics on the results was examined for the following: acute versus nonacute sciatica; studies with poor versus good differentiation of non-radicular pathology; and lower versus higher quality studies. Higher quality was defined as studies meeting the criteria of comparability of treatment group, observer blinding, and intention to treat analysis.

Results of the review
Twenty-two RCTs, identified from 19 reports, were included in the review. There were 16 placebo-controlled RCTs (1,422 patients) and 6 non-placebo-controlled RCTs.

The validity scores ranged from 30 to 78. Twelve RCTs were judged to provide good differentiation from non-radicular pathology, and 9 RCTs focused on sciatica caused by radiologically proven disc herniation.

No significant effect was shown for NSAIDs, traction or intramuscular steroids. The forest plots did not show any evidence for heterogeneity. The OR was 0.99 (95% CI: 0.6, 1.7) for NSAIDs (3 RCTs), 1.2 (95% CI: 0.7, 2.0) for traction (3 RCTs) and 1.3 (95% CI: 0.5, 3.4) for intramuscular steroids (2 RCTs).

Epidural steroids (4 RCTs).
No serious side-effects were reported for 437 of the included patients. Twenty-six patients reported transient headache or transient increase in sciatic pain. A sensitivity analysis, conducted by including those studies with fewer than 20 patients in the smallest group, showed similar results with an OR of 2.0 (from 8 RCTs; 95% CI: 1.1, 3.7).

There was a non significant trend for a lower pooled OR for higher versus lower quality studies. This trend was also evident for nonacute versus acute studies, and for studies with poorer clinical differentiation versus those with better differentiation.

Only one placebo-controlled RCT was identified that examined chymoral, tizanidine, and manipulation treatment.

No RCT of the effectiveness of bed-rest therapy for nerve root compression was identified.

**Authors’ conclusions**
There seemed to be insufficient evidence supporting the effectiveness of most of the conservative treatments for sciatica, with or without underlying disc herniation. Only a few therapies were the subject of multiple placebo-controlled trials, and of these, only epidural steroids were shown to possibly have some benefit. There was no evidence to suggest that traction, exercise therapy and drug therapy were superior to placebo.

**CRD commentary**
The aims were stated and the inclusion criteria were defined in terms of study design, intervention and participants. The inclusion criteria were not defined in terms of the outcomes. The search included two relevant databases, and full details of the keywords were given. In addition, experts in the field were contacted. The possibility for publication bias was discussed. It was not stated whether any language restrictions were applied.

The methods used to select the studies for inclusion were not described. The primary studies were restricted to RCTs. A formal validity assessment was undertaken and the results were presented. Relevant information on the individual studies was tabulated.

Data were pooled in a meta-analysis, and homogeneity was illustrated graphically. A sensitivity analysis was undertaken to examine the influence of some study characteristics (including quality) on the results. However, a formal test for heterogeneity should have been provided.

The evidence presented supports the authors' conclusions.

**Implications of the review for practice and research**
Practice: The authors did not report any implications for practice.

Research: The authors state that further trials are required to examine the effectiveness of epidural steroids, especially in patient subgroups such as acute sciatica.

**Bibliographic details**

**PubMedID**
11132976

**Other publications of related interest**
Indexing Status
Subject indexing assigned by NLM

MeSH
Anti-Inflammatory Agents, Non-Steroidal /therapeutic use; Clinical Trials as Topic; Data Interpretation, Statistical; Databases, Bibliographic; Humans; Intervertebral Disc Displacement /therapy; Sciatica /therapy; Steroids /therapeutic use; Traction; Treatment Outcome

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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.