Effectiveness of conservative treatments for the lumbosacral radicular syndrome: a systematic review


CRD summary
The authors concluded that corticosteroid injections and traction are not recommended for patients with the lumbosacral radicular syndrome, and that no recommendations could be made about physical therapy, bed rest, manipulation or medication. Overall, the review was well-conducted and clearly reported, and the authors’ conclusions are likely to be reliable.

Authors' objectives
To evaluate conservative treatments for the lumbosacral radicular syndrome (LRS).

Searching
PubMed/MEDLINE, EMBASE, the Cochrane CENTRAL Register, CINAHL, PsycINFO and PEDro were searched from inception to May 2004 for studies published in English, Dutch, French and German. In addition, the reference lists of selected studies and reviews were screened. Studies published only as abstracts and unpublished studies were excluded.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion in the review.

Specific interventions included in the review
Studies that compared any type of conservative treatment with placebo, inactive or no treatment, other types of conservative treatment, or surgery were eligible for inclusion. The included studies evaluated injections (e.g. intramuscular non-steroidal anti-inflammatory drugs, epidural and extradural corticosteroids, and anaesthetic agents), traction, physical therapy, bed rest, manipulation, medication (piroxicam or tizanidine) and acupuncture.

Participants included in the review
Studies of patients with acute (less than 6 weeks), sub-acute (6 to 12 weeks) or chronic (12 weeks or more) LRS were eligible for inclusion. Patients had to be treated in a primary health care or occupational setting. Patients with rare causes of the LRS (e.g. tumours or radiculitis) were excluded.

Outcomes assessed in the review
Studies that assessed symptoms, overall improvement, function or return to work were eligible for inclusion. The secondary review outcomes included physiological or physical examinations, quality of life, psychosocial outcomes, medical consumption and side-effects. The review assessed short-term (less than 3 months after randomisation), intermediate (between 3 months and 1 year after randomisation) and long-term (1 year or more after randomisation) outcomes.

How were decisions on the relevance of primary studies made?
Two reviewers independently selected the studies. Any disagreements were resolved by discussion, with the aid of a third reviewer where required.

Assessment of study quality
Two reviewers independently assessed validity using the 9 items of the Delphi list. Studies scoring 5 or more out of the maximum 9 points were considered to be high quality. Any disagreements were resolved at a consensus meeting, with the aid of a third reviewer where required. Studies with an adequate description of patients and interventions, and the measurement and reporting of all clinically relevant outcomes, were considered to be clinically relevant. The balance of treatment benefits and harms was also assessed.
Data extraction
One reviewer extracted the data and a second reviewer was consulted where there was uncertainty. For each study, relative risks with 95% confidence intervals (CIs) were presented for dichotomous data, and effect sizes with 95% CIs presented for continuous data.

Methods of synthesis
How were the studies combined?
The studies were too heterogeneous to combine statistically. The studies were grouped by intervention and control treatment, outcomes and timing of outcome assessment, and combined in a narrative. The level of evidence for each intervention was graded using a hierarchy of evidence: strong evidence from consistent (80% of findings in the same direction) multiple high-quality (HQ) RCTs; moderate evidence from consistent results from multiple low-quality (LQ) RCTs and/or one HQ RCT; limited evidence from one LQ RCT; conflicting evidence from inconsistent findings among multiple RCTs; and no evidence where there were no RCTs.

How were differences between studies investigated?
Differences between the studies were noted with respect to study quality and duration of follow-up.

Results of the review
Thirty RCTs (n=2,780) were included. Of these, fourteen evaluated injections, nine evaluated traction, four evaluated physical therapy, two evaluated bed rest, two evaluated manipulation, two evaluated medication and one evaluated acupuncture.

Twelve studies were classified as high quality. The quality scores ranged from 2 to 9 out of 9 points. Methodological flaws included small sample size (in 18 studies the treatment arms contained fewer than 30 patients), inadequate description of allocation concealment (27 studies), lack of blinding of the care provider (26 studies) and lack of intention-to-treat analysis (23 studies). Ten studies were considered to be clinically relevant. Six RCTs were considered to be clinically relevant and of high quality.

Injections versus placebo: there was conflicting evidence for corticosteroid injections versus placebo for pain and overall improvement at short-term follow-up, and strong evidence of no difference at long-term follow-up (2 HQ and 1 LQ studies). There was strong evidence of no difference in disability or return to work at short- and long-term follow-up (3 HQ studies).

Injections versus no treatment: there was limited evidence of no difference in short-term overall improvement (1 LQ study) and moderate evidence of no difference in return to work at intermediate follow-up (1 HQ study).

Injections versus other injections: there was conflicting evidence for epidural or intramuscular corticosteroid injections versus an injection of non-steroidal anti-inflammatory drug or anaesthetic in short-term pain. There was moderate evidence supporting injection under radioscopic control versus no radiographic control in pain at intermediate follow-up and short-term disability (1 HQ study). There was moderate evidence of no difference between injections in short-term return to work and long-term pain (2 LQ studies).

Traction versus inactive or sham treatment: there was moderate evidence of no difference between treatments in short-term pain and disability (1 HQ and 2 LQ studies).

Traction versus other conservative treatments: there was conflicting evidence for short-term improvement. There was limited evidence of no difference in short-term return to work (1 LQ study).

Physical therapy versus inactive treatment: there was moderate evidence of no difference in short- and intermediate-term pain and disability (1 HQ study).

Physical therapy versus other conservative treatments: there was moderate evidence of no difference in short-term overall improvement, pain and return to work (2 LQ studies).

Physical therapy versus surgery: there was limited evidence of no difference in overall improvement at 4 and 10 years.
Bed rest versus no treatment: there was moderate evidence of no difference in short-term overall improvement (1 HQ and 1 LQ study) and of no difference in short-term and intermediate pain and disability (1 HQ study).

Manipulation versus other conservative treatments: there was limited evidence of no difference in short-term overall improvement, pain or return to work (1 LQ study).

Manipulation versus chemonucleolysis: there was limited evidence of no difference in pain and disability in the short and long term (1 LQ study).

Medication (i.e. piroxicam or tizanidine) versus placebo: there was moderate evidence of no difference in short-term overall improvement, and sick leave (1 HQ and 1 LQ study).

The only study that evaluated acupuncture did not present any data.

**Authors' conclusions**

Corticosteroids injections and traction are not recommended for patients with LRS. No recommendations could be made about physical therapy, bed rest, manipulation or medication. Currently, there is no evidence that one treatment is superior to another treatment (including no treatment).

**CRD commentary**

The review addressed a clear question that was defined in terms of the participants, intervention, outcomes and study design. Several relevant sources were searched and attempts were made to minimise language bias. Limiting the search to fully published reports raises the possibility that publication bias might have resulted in the omission of other relevant studies. Methods were used to minimise reviewer error and bias at the study selection and validity assessment stages; however, the lack of duplication at the data extraction stage might have led to reviewer error and bias. Validity was assessed using specified criteria and the results of this assessment reported. In view of the diversity of the studies, a narrative synthesis that took account of study quality was appropriate. Overall, the review was well-conducted and clearly reported, and the authors' conclusions are likely to be reliable.

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

Practice: The authors stated that they do not recommend corticosteroid injections or traction for patients with LRS. No recommendations could be made about physical therapy, bed rest, manipulation or medication. There was no evidence about acupuncture.

Research: The authors stated the need for adequately powered, high-quality RCTs with long-term follow-up to evaluate the effects of physical therapy, manipulation and medication on overall improvement, patient satisfaction, severity of leg pain, functional health status, quality of health status, return to work and side-effects.

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