A critical appraisal of the evidence for selective nerve root injection in the treatment of lumbosacral radiculopathy

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CRD summary
This review cautiously concluded that there is some inconclusive evidence to suggest that transforaminal epidural steroid injections and selective nerve root blocks are safe and effective in the treatment of lumbosacral radiculopathy. Given the limitations in review methodology, variability between the studies, lack of appropriate controls, and limited number of studies and participants, the authors' cautious conclusions appear reliable.

Authors' objectives
To assess the effectiveness of transforaminal epidural steroid injections (TFESIs) and selective nerve root blocks (SNRBs) in the treatment of lumbosacral radiculopathy.

Searching
MEDLINE, EMBASE and the Cochrane CENTRAL Register were searched from inception to 2003; the search terms were reported. The reference lists of retrieved articles were checked for additional studies. Only full manuscripts of studies published in English were eligible for inclusion in the review.

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

Specific interventions included in the review
Studies were eligible if they included a treatment group that received at least one fluoroscopically guided, selective nerve root corticosteroid injection (TFESI or SNRB) compared with either placebo or an alternative intervention. The participants in the intervention group were allowed other additional interventions if they were also given to the control group participants. Where reported, the mean number of injections given in the intervention group ranged from 1 to 1.7 per patient. Comparison groups included placebo (saline), anaesthetic, interlaminar epidural steroid injection and trigger point injection.

Participants included in the review
Only participants who were suffering from primarily lower-limb pain more than lumbar pain were eligible for inclusion in the review. Where specified, the required duration of symptoms before study enrolment ranged from 15 days to 3 months.

Outcomes assessed in the review
The authors did not specify which outcomes were eligible for inclusion in the review. The included studies reported both subjective and objective outcomes, including assessments of pain, disability and movement. Adverse events were also assessed.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
Study quality was assessed using a system developed by the Agency for Health Care and Policy Research. Studies were awarded a quality rating of 'good', 'fair' or 'poor', based on whether they were blinded; were truly randomised; used an intention-to-treat or per protocol analysis; length of follow-up; and had an appropriate control or placebo. The authors also considered whether the study used an appropriate number of injections and what outcome measures were used. How the authors derived the quality rating was unclear, as was the number of reviewers who performed the assessment.
Data extraction
One reviewer extracted the study data, which a second reviewer checked. The data were reported as percentage relief at follow-up, and each study was reported as showing an overall positive effect (where the intervention was more effective than the control treatment) or negative effect (where there was no difference between the intervention and control, or the intervention was not as effective as the control treatment).

Methods of synthesis
How were the studies combined?
The studies were combined using a narrative summary.

How were differences between studies investigated?
Some differences between the studies, such as outcome measurements and interventions, were discussed and were evident from the data tables and text of the review.

Results of the review
Six RCTs (n=373) were included in the review.

One study was of 'good' quality, four were 'fair' quality, and one was considered to be of poor quality. The poor-quality study was found not to be a true RCT.

The good-quality study along with two fair-quality studies and the poor-quality study showed an overall positive effect in favour of the intervention. The two remaining fair-quality studies showed an overall negative effect for the intervention in comparison with the control or placebo group. Only three studies reported rare complications, and no major complications or adverse effects were reported.

Authors' conclusions
There is some, but not conclusive, evidence to suggest that TFESIs are safe and effective in treating the symptoms of painful lumbosacral radiculopathy.

CRD commentary
This review is based on a clear research question. However, relevant data might have been missed as only published English language studies were included in the review. The authors used published methods to assess the quality of the studies, but it is unclear how the studies were selected and how many reviewers performed the validity assessments; it is therefore difficult to assess the reliability, in terms of reviewer error or bias, of these review methods. It does appear that one study was initially included in the review, but then subsequently excluded from the analysis as it was not a true RCT.

Given the variability between the studies, in particular differences between the outcome measures and interventions, the authors' decision to use a narrative synthesis appears reasonable. The authors also noted a number of design problems with the included studies: the lack of a true placebo-control group and the lack of a sham control group. The studies were also limited in size, with only two studies having over 50 participants. Given the variability between the studies, the lack of appropriate controls, and the limited number of studies and participants, the authors' cautious conclusions appear reliable.

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

Research: The authors stated that randomised placebo-controlled trials using sham procedures are required in order to provide more definitive conclusions.

Bibliographic details
DePalma M J, Bhargava A, Slipman C W. A critical appraisal of the evidence for selective nerve root injection in the

**PubMedID**
16003684

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Clinical Trials as Topic; Glucocorticoids /therapeutic use; Humans; Injections, Spinal; Lumbosacral Plexus /physiopathology; Nerve Block; Radiculopathy /drug therapy /physiopathology

**AccessionNumber**
12005004310

**Date bibliographic record published**
21/08/2006

**Date abstract record published**
09/08/2008

**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.