Epidural steroids in the management of chronic spinal pain: a systematic review

CRD summary
This review assessed interlaminar, transforaminal and caudal epidural injections for the treatment of chronic spinal pain. The authors concluded that there is moderate evidence for epidural injections for long-term pain relief. Inadequate reporting of the review methods and differences between the studies make it difficult to confirm the reliability of the authors' conclusions.

Authors' objectives
To evaluate the effects of epidural injections in the management of chronic spinal pain.

Searching
PubMed, EMBASE and ISI Web of Science were searched from January 1966 to October 2006 for articles published in English; the search terms were not reported. References in relevant reviews, trials and peer-reviewed abstracts from scientific meetings were checked.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs), non-randomised prospective studies and other observational trials were included in the review.

Specific interventions included in the review
Studies of epidural injections (interlaminar, transforaminal and caudal) for the management of spinal pain were eligible. Three techniques of epidural injection (interlaminar, transforaminal and caudal) with local anaesthetic, steroid or other drugs provided were assessed.

Participants included in the review
Studies of patients with chronic spinal pain (axial, radicular, cervical and lumbar) for at least 3 months were eligible for inclusion. Studies involving only in-patients were excluded.

Outcomes assessed in the review
Studies providing outcome evaluations of 3 months or longer were eligible for inclusion. The primary outcome of interest was pain relief. Pain relief was evaluated on short-term (less than 6 weeks) and long-term (6 weeks or longer) bases. The secondary outcomes included functional or psychological improvement, return to work, and complications.

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
Three reviewers independently assessed the validity of the included studies using criteria from the Agency for Healthcare Research and Quality, and criteria for randomised trials as proposed by the Cochrane Review Group for musculoskeletal disorders.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative, grouped by epidural technique and levels of evidence hierarchy.
How were differences between studies investigated?
Differences between the studies were highlighted in the text. Differences in terms of control, injection site and timing of outcomes (long or short term) were considered.

Results of the review
Fifty-seven studies were included (number of participants unclear): 13 RCTs (11 lumbar and 2 cervical) of interlaminar epidural injections; 7 RCTs (6 lumbar and 1 cervical), 7 prospective studies (5 lumbar and 2 cervical) and 7 retrospective studies (6 lumbar and 1 cervical) of transforaminal epidural injections; and 8 RCTs, 5 prospective studies and 10 retrospective studies of caudal epidural injections.

The evidence for interlaminar epidural steroid injections in the management of cervical radiculopathy was moderate for short- and long-term improvement (both RCTs reported positive findings). The evidence for lumbar epidural steroid injections was strong for short-term improvement (8 of the 11 RCTs reported positive findings), but limited for long-term relief (2 of the 11 RCTs reported positive findings). The evidence was indeterminate in the management of axial neck pain, axial low back pain and lumbar spinal stenosis.

The evidence for cervical transforaminal epidural steroid injections in cervical nerve root pain was moderate for both short- and long-term improvement (all 4 non-randomised studies reported positive findings). The evidence of lumbar epidural steroid injections in managing lumbar nerve root pain was strong for short-term improvement (4 of the 6 RCTs and all 5 prospective studies reported positive findings) and moderate for long-term improvement (4 of the 6 RCTs and 4 prospective studies reported positive findings). There was limited evidence for the management of lumbar radicular pain in postlumbar laminectomy syndrome (1 RCT reported negative findings). The evidence was indeterminate in the management of axial neck pain, axial low back pain and lumbar disc extrusions.

The evidence for caudal epidural steroid injections was strong for short-term improvement (3 of the 5 RCTs and all 5 non-randomised prospective studies reported positive findings) and moderate for long-term improvement (2 of the 5 RCTs and all 5 non-randomised prospective studies reported positive findings) in managing chronic pain of lumbar radiculopathy and post-lumbar laminectomy syndrome. The evidence for caudal epidural injections in managing chronic low back pain was moderate for short- and long-term improvement (2 of 2 RCTs reported positive short-term improvements and 1 RCT reported a positive long-term improvement, while both of the non-randomised prospective studies reported positive findings).

The most common complications were related to the placement of needles and drugs. Complications were listed in the review.

Cost information
Two studies concluded that lumbar interlaminar epidural steroid injections were not cost-effective. The cost-effectiveness of transforaminal epidural injections was demonstrated by the avoidance of surgical intervention in 5 studies. One study found that the cost per 1-year improvement in quality of life for transforaminal epidural injections in the management of chronic low back pain was $2,927 per year. The cost-effectiveness of caudal epidural injections was reported in 2 studies: one reported a cost-effectiveness of $3,635 per year for fluoroscopically-directed caudal epidural steroids and $2,927 per year for transforaminal steroids; the other reported that the cost per 1-year improvement in quality of life was $2,550 in patients treated with caudal epidural with local anaesthetic and Sarapin or steroids under fluoroscopy.

Authors' conclusions
There is moderate evidence for interlaminar epidurals in the cervical spine, moderate evidence for cervical and lumbar transforaminal epidural steroid injections for long-term management of nerve root pain, and moderate evidence for caudal epidural for long-term relief in managing nerve root and chronic low back pain. There is limited evidence for interlaminar epidurals in the lumbar spine for long-term pain relief.

CRD commentary
The review addressed a clear objective and the inclusion criteria were defined in terms of the participants, intervention, outcomes and study design. Several relevant sources were searched but, by limiting the included studies to those reported in English, the authors might have missed some relevant studies. Methods were used to minimise reviewer error and bias in the validity assessment, but it was unclear whether similar steps were taken in the study selection and data extraction processes. Validity was assessed and reported, and studies were only included if they met minimum quality criteria. However, only the composite validity scores were presented, thus making it difficult for the reader to judge study validity for themselves.

The studies were combined in a narrative, which was appropriate given the diversity of the included studies. Efficacy estimates for the relevant outcomes were not reported; the studies were classified as positive or negative based on the original authors’ conclusions, which makes it more difficult to assess the strength of the evidence. Inadequate reporting of the review methods and differences between the studies make it difficult to confirm the reliability of the authors’ conclusions.

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

**Practice:** The authors stated that in order to improve safety and minimise complications, attention to detail and caution should be taken when performing any of the epidural techniques described.

**Research:** The authors did not state any implications for further research.

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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.