Systematic review of caudal epidural injections in the management of chronic low back pain
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CRD summary
This review concluded that caudal epidural injections were effective for managing chronic low back or lower extremity pain and there may not be any significant difference with the addition of steroids. Due to some limitations in the reporting of the review methods and study results, the conclusions of this review need to be considered cautiously.

Authors' objectives
To evaluate the clinical effectiveness and related complications of caudal epidural steroid injections, with or without steroids, used to treat low back or lower extremity pain.

Searching
PubMed and EMBASE were searched from 1966 to November 2008, as well as the Cochrane Library and Clinical Trial Registry for studies published in English. Systematic and narrative reviews were also handsearched. Search terms were reported.

Study selection
Randomised and observational studies of the use of caudal epidural injections, with or without steroids, in patients with low back pain of at least three months duration were eligible for inclusion.

The primary outcome was pain relief which was classed as short term (less than six months) or long term (six months or more); secondary outcomes were functional and psychological improvement, return to work and opioid intake.

The included studies were mostly randomised double-blind trials, one was an equivalence trial, one a crossover trial, and the remaining studies were retrospective or prospective cohort studies. Caudal epidural injections varied but included lidocaine (0.5% or 1%), triamcinolone (40mg or 80mg), bupivacaine or prednisolone alone or in combination, compared with a placebo or different drug. Patients had pain resulting from disc herniation and radiculitis including sciatica with incapacitating chronic low back pain, lumbar nerve root; post-surgery syndrome after lumbar laminectomy or surgery, and surgery for a herniated disc; spinal or canal stenosis and discogenic pain (low back pain without disc herniation).

The authors did not report how many reviewers performed the study selection.

Assessment of study quality
Study validity was assessed using modified Cochrane criteria for randomised controlled trials (RCTs) which covered a number of items relating to the study population, interventions, effect measures, and data presentation and analysis. These were combined to give weighted score with a maximum of 100. Observational studies were assessed using criteria from the Agency for Healthcare Quality which covered the study question, population, comparability of subjects, exposure or intervention, outcome measures, statistical analysis, results discussion and source of funding. These were also combined to give a weighted score with a maximum of 100. Studies were also rated using levels of evidence, and for clinical relevance. Only studies scoring at least 50 points were included in the synthesis.

Studies were assessed by two reviewers, with disagreements resolved by a third.

Data extraction
Studies were classed as positive if the primary outcome showed a statistically significant benefit for injections compared with a placebo or active control (for RCTs), and if the injection showed positive results (for observational studies). Outcomes at three, six and twelve months were extracted.

The authors did not report how many reviewers performed the data extraction.
Methods of synthesis
Results were presented as a narrative, grouped by study design and the underlying cause of pain. Studies performed under fluoroscopy were given priority. Observational studies were only included if there were less than four RCTs in a particular category.

Results of the review
Ten RCTs (n=approximately 562 patients) and four observational studies (n=approximately 221 patients) were included in the synthesis, although it was reported that 18 RCTs and 20 observational studies were assessed in the review but some were excluded due to their poor quality (scoring less than 50). The RCTs were of variable quality scoring between 33 and 72 out of 100; observational studies scored between 46 and 76.

Pain caused by disc herniation and radiculitis: Five out of the six RCTs that assessed the effects of caudal epidural injections for disc herniation and radiculitis reported positive short-term relief for pain; four RCTs also reported positive effects for long-term pain relief. One trial reported positive long-term effects, but negative results for short-term pain. The results in the two trials that used fluoroscopy were superior to blind epidural injections.

Post surgery syndrome: Three RCTs assessed caudal epidural injections for post surgery syndrome. All reported positive results for short- and long-term pain relief compared with prednisolone, lidocaine or placebo injections.

Spinal stenosis/discogenic pain: One RCT reported positive short- and long-term relief for patients receiving lidocaine caudal epidural injections compared with caudal epidural injections of lidocaine mixed with Celestone. Three observational studies (two prospective and one retrospective) also reported positive short- and long-term results for caudal epidural injections. Two RCTs and one prospective observational study also reported positive short-term pain benefit for discogenic pain, with two also reporting long-term benefits (long-term results were not reported in the other study).

Results for complications caused by the injections were also reported.

Authors' conclusions
The authors concluded that caudal epidural injections were effective and there may not be any significant difference with the addition of steroids. Conclusions based on levels of evidence were also reported in the paper.

CRD commentary
This review specified study inclusion criteria for interventions, participants and outcomes, but had broad inclusion criteria for study designs. Restricting the search to studies published in English increased the risk of language bias and there was no search for unpublished studies. The assessment of study validity was thorough and performed by two reviewers to reduce the change of error or bias. However, the authors did not report whether study selection and data extraction were performed in duplicate.

Excluding some studies from the synthesis because of their low quality was a potential source of bias; results for these studies could still have been reported. In addition, the presentation of results as positive or negative, without providing corresponding effect sizes and confidence intervals, made it difficult to judge the reliability of the information presented.

Due to some limitations in the reporting of the review methods and study results, the conclusions of this review need to be considered cautiously.

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