A meta-analysis on the efficacy of epidural corticosteroids in the treatment of sciatica

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Authors' objectives
To investigate the efficacy of epidural corticosteroids in the treatment of sciatica.

Searching
MEDLINE was searched from 1966 to the present. The terms searched were: ‘epidural, caudal corticosteroids’ or ‘methyl prednisolone’, ‘treatment of sciatica’ (‘lumbosacral radiculopathy’), in combination with ‘randomised, double blind, controlled prospective trial’. Published reviews were examined, as were reference lists from clinical trials. The makers of Depomedrol and recently published authors in the field were contacted to identify unpublished trials.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were included. The follow-up period varied between 24 hours and one year.

Specific interventions included in the review
Epidural methyl prednisolone 80mg, triamcinalone 80mg and hydrocortisone 25mg, mixed with either saline or local anaesthetic. The technique could be either lumbar or caudal.

Participants included in the review
Patients with sciatica. Studies included patients with sciatica predominantly due to lumbar disc disease of variable duration (1-63 months). One study included patients with arachnoiditis; however, all patients had clinical evidence of nerve root irritation or compression.

Outcomes assessed in the review
Overall relief of pain, short-term (1-60 days) and long-term (12 weeks up to one year). In most studies, pain relief was measured by a visual analogue scale. The authors considered participants who had 75% improvement or reduction in pain to be ‘responders’. Patients who became worse, required surgery, were lost to follow-up or had no improvement were regarded as ‘non-responders’. The authors also performed the analysis using a stricter definition of pain whereby ‘responders’ were defined as patients with complete relief of pain and all others were ‘non-responders.’

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 authors performed the selection.

Assessment of study quality
Quality was assessed on the quality of random allocation, the extent to which the primary analysis included every patient randomised to each group, and the extent to which those assessing the outcome were unaware of group assignment. A point rating scale ranging from a scale of one to three was used for each of these components (the maximum score therefore was nine points). The authors do not state how the papers were assessed for quality, or how many of the authors performed the quality assessment.

Data extraction
Two authors independently extracted data from the published reports with prior agreement on definitions of response and time course. Non-English language articles were examined with translations. A list of the categories and data extracted is given in the paper.
Methods of synthesis
How were the studies combined?
The typical odds ratio (OR) and its 95% confidence interval (CI) were calculated using a fixed-effect model.

How were differences between studies investigated?
Heterogeneity was tested for using the Mantel-Haenszel approach and it was non-significant for all outcomes. Subgroup analysis was performed on the route of the injection for the outcome of short-term relief.

Results of the review
There were 11 trials with a total of 907 patients. Two trials were excluded, one because the response data could not be extracted from the cross-over design and the other because the follow-up period was not stated. Ten trials examined the effect of epidural versus placebo in the short-term and 5 trials examined the long-term effect.

The quality assessment of trials was generally good with 5 studies scoring the maximum nine points.

Short-term effect of epidural steroids versus placebo on pain relief.
The pooled OR for >75% relief was 2.61 (95% CI: 1.80, 3.77) in favour of epidural. OR for complete relief was 2.79 (95% CI: 1.92, 4.06). The OR for caudal epidural steroids was 3.80 (95% CI: 1.36, 10.6) and the OR for lumbar steroids was 2.43 (95% CI: 1.77, 3.74).

Long-term effect of epidural steroids versus placebo on pain relief.
The pooled OR for >75% relief was 1.87 (95% CI: 1.31, 2.68).

Adverse events.
4 trials did not mention adverse events. Pooled data from the other trials (431 patients) reported 11 dural taps (2.5%), 10 transient headaches (2.3%), transient increase in pain (1.9%) and one patient complained of irregular periods (0.2%). No meaningful comparisons were made, however, between active and control group.

Authors’ conclusions
Epidural administration of corticosteroids is effective in the management of lumbosacral radicular pain.

CRD commentary
A well-structured and thorough review, with clear explanation of results and limitations. As two non-English language trials were identified using the MEDLINE search, a search of EMBASE may have revealed additional non-English language trials. The definition of sciatica was not clearly stated, and was used interchangeably with the term ‘radicular pain’ in the review. Diagnosis in individual studies, however, appeared to treat them as two separate conditions.

Implications of the review for practice and research
The authors state that confirmation of the findings and the safety of epidural steroids should be addressed in a further study of appropriate design and adequate size.

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