TITLE: Epidural Steroid Injections to Treat Nonoperative Lumbar Radiculopathy: Clinical and Cost-Effectiveness and Guidelines

DATE: 20 August 2008

RESEARCH QUESTIONS:

1. What is the clinical effectiveness of epidural steroids for the treatment of nonoperative lumbar radiculopathy in adults?

2. What is the cost-effectiveness of epidural steroids for the treatment of nonoperative lumbar radiculopathy in adults?

3. Are there clinical guidelines available that specify the clinical criteria for candidates to receive this treatment?

METHODS:

A limited literature search was conducted on key health technology assessment resources, including PubMed, the Cochrane Library (Issue 3, 2008), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, EuroScan, international health technology agencies, and a focused Internet search. Results include articles published between 1998 and August 2008, and are limited to English language publications only. Filters were applied to limit the retrieval to health technology assessments, systematic reviews, guidelines, randomized controlled trials, and economic studies. Internet links are provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

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RESULTS:

HTIS reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, observational studies, and evidence-based guidelines.

The literature search identified three systematic reviews/meta-analyses, one report with cost information, five randomized controlled trials, and two guidelines/recommendations. Other articles of interest are also included in the Appendix.

OVERALL SUMMARY OF FINDINGS:

Systematic reviews and meta-analyses

Three systematic reviews/meta-analyses were identified.

The review by Abdi et al.\(^1\) assessed the efficacy of various type of epidural injections including interlaminar, transforaminal and caudal for the treatment of chronic spinal pain. The authors concluded that there is moderate evidence for epidural injections for long-term pain relief.

DePalma et al.\(^2\) reviewed the best available trials of the utility of transforaminal epidural steroid injections or selective nerve root blocks to treat lumbosacral radiculopathy. The authors found that the evidence is strong for short-term relief and limited for long-term relief in managing lumbar radicular pain with interlaminar lumbar epidural steroid injections.

Boswell et al.\(^3\) assessed the effectiveness of epidural injections in the treatment of chronic spinal pain. The authors concluded that the evidence of effectiveness of transforaminal epidural injections in managing lumbar nerve root pain was strong, whereas, effectiveness of caudal epidural injections in managing lumbar radiculopathy was moderate, while there was limited or inconclusive evidence of effectiveness of epidural injections in managing chronic spinal pain without radiculopathy, spinal stenosis, post lumbar laminectomy syndrome, and cervical radiculopathy.

Economic analyses and cost information

One report with cost information was identified.

Friedly et al.\(^4\) evaluated the trends in lumbosacral injection use for low back pain, including the specialties providing the injections and the costs of care. They used Medicare Physician Part B claims for 1994 through 2001 to examine the use of epidural steroid injections. They found that, between 1994 and 2001, the total inflation-adjusted reimbursed costs (professional fees only) for lumbosacral injections increased from $24 million to over $175 million. Also, costs per injection doubled, from $115 to $227 per injection.

Randomized controlled trials

Five randomized controlled trials were identified.

Ackerman and Ahmad\(^5\) determined the efficacy of different epidural steroid injection techniques for the management of radicular pain associated with lumbar disk herniations. The conclusion was that the transforaminal route of epidural steroid placement is more effective than the caudal or interlaminar routes.

Ng et al.\(^6\) determined the treatment effect of corticosteroids in periradicular infiltration for chronic radicular pain. Patients with radicular pain who had unilateral symptoms and failed conservative management were randomized for a single injection with bupivacaine and methylprednisolone.
or bupivacaine only. The authors concluded that clinical improvement occurred in both groups of patients, and corticosteroids did not provide additional benefit.

Wilson-MacDonald et al.\textsuperscript{7} assessed whether an epidural steroid injection is effective in the treatment of symptoms due to compression of a nerve root in the lumbar spine. A prospective, randomized, controlled trial was carried out in which patients received either an epidural steroid injection or an intramuscular injection of local anaesthetic and steroid. The authors’ conclusions were that there was a significant reduction in pain early on in those having an epidural steroid injection but no difference in the long term between the two groups, and the rate of subsequent operation in the groups was similar.

Buttermann et al.\textsuperscript{8} determined the efficacy of epidural steroid injection in the treatment of patients with a large, symptomatic lumbar herniated nucleus pulposus who are surgical candidates. Patients who had no improvement after a minimum of six weeks of noninvasive treatment were enrolled in a prospective, non-blinded study and were randomly assigned to receive either epidural steroid injection or discectomy. The authors concluded that epidural steroid injection was not as effective as discectomy with regard to reducing symptoms and disability associated with a large herniation of the lumbar disc.

Vad et al.\textsuperscript{9} compared transforaminal epidural steroid injections with saline trigger-point injections used in the treatment of lumbosacral radiculopathy secondary to a herniated nucleus pulposus. The results showed that after an average follow-up period of 1.4 years, the group receiving transforaminal epidural steroid injections had a success rate of 84%, as compared with 48% for the group receiving trigger-point injections (P < 0.005). The authors concluded that fluoroscopically guided transforaminal injections serve as an important tool in the nonsurgical management of lumbosacral radiculopathy secondary to a herniated nucleus pulposus.

**Guidelines and recommendations**

Two reports that provide guidelines and recommendations were identified.

The Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology\textsuperscript{10} made the following recommendations based on the available evidence:

- Epidural steroid injections may result in some improvement in radicular lumbosacral pain when assessed between 2 and 6 weeks following the injection, compared to control treatments (Level C, Class I-III evidence).
- Their routine use for these indications is not recommended (Level B, Class I-III evidence)
- There is insufficient evidence to make any recommendation for the use of epidural steroid injections to treat radicular cervical pain (Level U).\textsuperscript{10}

The Institute for Clinical Systems Improvement Health Care Guideline\textsuperscript{11} has made the following recommendations:

- Epidural steroid injections should only be considered after initial appropriate conservative treatment program has failed.
- Successful epidural steroid injections may allow patients to advance in a conservative treatment program.
- Epidural steroid injects should be performed under fluoroscopy with contrast for best results.(p21)\textsuperscript{11}
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REFERENCES SUMMARIZED:

Systematic reviews and meta-analyses


Economic analyses and cost information


Randomized controlled trials


Guidelines and recommendations


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APPENDIX – FURTHER INFORMATION:

Observational studies- other indications


Review articles


Additional references


See also structured abstract:
