A systematic review of diagnostic utility of selective nerve root blocks
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CRD summary
This review concluded that selective nerve root injections may be helpful as a diagnostic addition in the evaluation of spinal disorders with radicular features, but that further research is needed. Limitations in the reporting and synthesis of the review mean that these conclusions should be interpreted with caution.

Authors' objectives
To evaluate the accuracy of selective nerve root injections in diagnosing spinal disorders.

Searching
MEDLINE (1966 to September 2004), CINAHL, EMBASE, EBM Reviews (Cochrane Library and Cochrane CENTRAL Register) were searched. Details of the search were reported in the paper. The review was limited to articles in the English language or for which an English translation was available. The reference lists of included studies were screened for additional relevant studies.

Study selection
Study designs of evaluations included in the review
No inclusion criteria relating to the study design were specified. Non-clinical studies, expert opinion, or clear therapeutic studies were excluded. The included studies were prospective cohort studies, prospective and retrospective studies, prospective and retrospective case series, and randomised controlled trials.

Specific interventions included in the review
Studies of selective nerve root injections performed under fluoroscopic guidance were eligible for inclusion. Studies of non-selective nerve injections, with the route of administration not specifically described were excluded. The specific interventions evaluated in the included studies were: nerve block with magnetic resonance imaging and surgical correlation; cervical nerve root mechanical stimulation; selective nerve root injections; selective nerve root block (SNRB) post laminectomy with surgical re-exploration; SNRB prior to surgery; mechanical stimulation with needle and SNRB compared with surgical exploration or myelogram and surgical exploration; mechanical stimulation followed by SNRB with marcaine; spinal blocks of the facets, sciatic nerve, medial branch blocks, and trigger point blocks; and SNRB and radiculography with surgery.

Reference standard test against which the new test was compared
No inclusion criteria relating to the reference standard were specified. The studies appear to have used surgical confirmation and clinical results as the reference standard, although this was unclear from the data presented.

Participants included in the review
Studies of patients with pain of spinal origin were eligible for inclusion.

Outcomes assessed in the review
The specific outcomes assessed in the review were pain relief following nerve root block, surgical outcome, and sensitivity and specificity.

How were decisions on the relevance of primary studies made?
Titles and abstracts were printed and reviewed for exclusion criteria. The authors did not state how many reviewers were involved in this process. Full journal articles of potentially relevant studies were ordered. These were reviewed by three reviewers.
Assessment of study quality

The studies were assessed for quality using the Quality Assessment of Diagnostic Accuracy Studies (QUADAS) criteria and Agency for Healthcare Research and Quality (AHRQ) criteria (see Other Publications of Related Interest nos.1-2). Both the QUADAS and AHRQ tools were used to produce quality scores. The authors did not state how this was done, but it appears to be simply the number of items on the tool that the study fulfilled.

The authors did not state how the quality assessment was performed.

Data extraction

Data on the study design, number of patients, outcome studies and duration of study were extracted. 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?
A narrative synthesis was presented. This considered various aspects of SNRBs in turn (principles, validity, criterion, accuracy and diagnostic validity).

How were differences between studies investigated?
The authors did not formally investigate differences between the studies; study details were tabulated.

Results of the review

Eleven studies (n=775) were included.

The studies were of differing designs and reported on different outcome measures. One study reported good pain relief post-block/surgery; one reported that dermatomal maps differ from dynatomal maps; one that hypesthetic areas post block are variable and larger than pre-block; and one that SNRB was helpful when negative but not when positive. Six studies found positive surgical pathology in patients with positive SNRB.

Authors’ conclusions

Selective nerve root injections may be helpful as a diagnostic addition in the evaluation of spinal disorders with radicular features. However, the role of this diagnostic test needs to be further clarified by additional research and consensus on technique.

CRD commentary

The review addressed a clearly defined objective and was supported by defined inclusion criteria. The literature search covered several relevant databases but the number of references retrieved was very small; without additional details of the search strategy it is not possible to determine whether the searches were adequate. The review was limited to studies in English and no attempts were made to identify unpublished studies, thus the review may be subject to language and publication bias. Few details on the review methodology were provided, so it is not clear whether appropriate steps were taken to avoid the introduction of errors and bias into the review process. Study quality was assessed using appropriate tools for diagnostic accuracy studies. However the included studies varied in design and it was unclear how the reported scores were determined.

Some details of the studies were tabulated and discussed in the text, but these are insufficient to give a full picture of the types of study included and, in particular, how values of sensitivity and specificity were calculated. The narrative synthesis is difficult to follow and appears to include at least one study that was not listed as an included study. Given these limitations, it is difficult to determine whether the authors’ conclusions accurately reflect the evidence presented. The review should therefore be interpreted with caution.
Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that further research to determine the role of selective nerve root injections as a diagnostic tool in spinal disorders, and the accuracy of SNRBs in comparison with other established diagnostic tests, is needed.

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Record Status
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