An updated systematic review of the diagnostic utility of selective nerve root blocks


CRD summary
This review assessed the accuracy of selective nerve root blocks (SNRB) for the diagnosis of spinal pain. The authors concluded that SNRBs may be helpful in the diagnosis of spinal pain but further research is required. Failure to appropriately summarise the results makes it difficult to determine the reliability of these conclusions.

Authors' objectives
To determine the accuracy of selective nerve root injections for the diagnosis of spinal disorders.

Searching
This review is an update of a previous review published in 2005 (see Other Publications of Related Interest), which was used as a source of relevant studies. EMBASE, PubMed, ISI Web of Science and Cochrane reviews were searched for studies published between 2001 and 2006. Full details of the searches were reported; these did not include diagnostic filters. The reference lists of retrieved articles were screened and common databases were searched for additional studies.

Study selection
Study designs of evaluations included in the review
Controlled and uncontrolled diagnostic clinical studies were eligible for inclusion. The included studies were both prospective and retrospective.

Specific interventions included in the review
Studies of selective nerve root block (SNRB) injections performed under fluoroscopic guidance were eligible for inclusion. Studies of non-selective nerve injections in which the route of administration was not described were excluded, as were therapeutic studies. The interventions assessed in the included studies were: SNRB alone or in combination with magnetic resonance imaging, radiculography, nerve stimulator and mechanical stimulation (usually with a needle). Where reported, the specific sites of SNRB were cervical, lumbar, facets, sciatic nerve, medial branch blocks and trigger point, and SNRB was carried out post laminectomy or prior to surgery.

Reference standard test against which the new test was compared
Inclusion criteria were not defined in terms of the reference standard. The reference standard, where one was used, in the included studies appears to have been surgery, myelogram, imaging and different blocks.

Participants included in the review
Studies of patients with pain of spinal origin were eligible for inclusion. The patients in the included studies had sciatica, leg pain, radicular symptoms, radiculopathy, disc protrusions and metastases.

Outcomes assessed in the review
Studies that assessed pain relief, correlation with other diagnostic tests, or therapeutic outcomes were eligible for inclusion. The outcomes reported in the review were visual analogue scales of pain, surgical outcome, pain mapping diagrams and sensory testing. For studies that provided data on accuracy, the sensitivity and specificity were reported.

How were decisions on the relevance of primary studies made?
Three reviewers assessed articles for inclusion then discussed them with all others in the review group.

Assessment of study quality
Studies were assessed for methodological quality using the Agency for Healthcare Research and Quality (AHRQ)
criteria for diagnostic studies and the QUADAS (Quality Assessment of Diagnostic Accuracy Studies) criteria. Studies were assigned a score out of 5 for the AHRQ criteria and 14 for the QUADAS criteria, according to the number of items fulfilled. The authors did not state how many reviewers performed the validity assessment.

**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 characteristics and findings of each of the included studies were summarised. The results were not combined across summaries either qualitatively or quantitatively.

How were differences between studies investigated?
Differences between the studies were not formally investigated.

**Results of the review**
Sixteen studies (984 patients) were included.

The quality scores ranged from 2 to 4 out of 5 for AHRQ criteria and from 7 to 12 out of 14 for the QUADAS criteria.

Eight studies provided data on sensitivity and/or specificity. The sensitivity ranged from 87 to 100% in 4 studies that included some form of surgery as the reference standard. One study that used different blocks as the reference standard reported a much lower sensitivity of between 9 and 42%. This study also reported a low specificity of 24%. Four other studies that used surgery as part of the reference standard provided data on specificity; this ranged from 90 to 96%.

**Authors' conclusions**
SNRBs may be helpful in the diagnosis of spinal pain with radicular features, but further research is required to clarify their role.

**CRD commentary**
The review addressed a focused question that was supported by clearly defined inclusion criteria. The literature search was adequate for published studies, but unpublished studies were not sought and it is unclear whether any language restrictions were applied. The review may therefore be subject to language and publication bias. A formal quality assessment was undertaken but the criteria used were for diagnostic accuracy studies; since only half of the included studies were diagnostic accuracy studies, these criteria were only appropriate for these studies. In addition, the results of the quality assessment were simply presented as summary scores with no details of the individual items fulfilled; this has been shown to be inappropriate for the QUADAS criteria. The validity of the primary studies therefore remains unclear. Steps were taken to avoid error and bias in the selection of studies, but it is unclear if such steps were also taken for other stages of the review process.

Details of the included studies were tabulated clearly but did not always match up directly with the results reported in the text. The synthesis of the results was very difficult to follow as the results of each individual study were simply described with very little attempt to synthesise them across studies. The lack of a synthesis of the results makes it difficult to comment on whether the authors' conclusions are supported by the data presented.

**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 is needed to investigate the accuracy of SNRBs in comparison with other established imaging and electrodiagnostic tests.

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Record Status
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.