Sacroiliac joint interventions: a systematic review

CRD summary
This review found moderate evidence for the accuracy of diagnostic sacroiliac joint injections, and limited evidence for the accuracy of noninvasive diagnostic tests and for therapeutic sacroiliac joint injections. These conclusions are unlikely to be reliable given the poor reporting and a number of limitations of the review, especially the application of the selection criteria.

Authors' objectives
To evaluate the role of diagnostic and therapeutic sacroiliac joint interventions in the management of sacroiliac joint pain.

Searching
MEDLINE, EMBASE, MD Consult and the Cochrane Library were searched up to December 2006; the keywords were reported. The bibliographies of articles reviewed were screened for additional studies.

Study selection
Study designs of evaluations included in the review
Controlled and uncontrolled studies were eligible for inclusion. Case reports and descriptive reports were excluded.

Specific interventions included in the review
Studies that assessed local anaesthetic injections, placebo- controlled injections, controlled comparative local anaesthetic sacroiliac joint injections, sacroiliac joint injections with local anaesthetic and steroid, and radiofrequency neurotomy (thermal and pulsed). Studies that assessed single injections, non-fluoroscopic/non-radiographically guided injections, and surgical interventions were excluded. All included studies on diagnostic sacroiliac joint injections involved a screening lidocaine injection performed under fluoroscopic guidance and used a comparative controlled local anaesthetic technique in patients with a positive response. Details about which provocation tests and in which combination these were used were not reported for the included studies. Therapeutic injections in the included studies involved steroids, corticosteroids, radiofrequency strip lesions, pulsed radiofrequency after local anaesthetic injection, or placebo.

Reference standard test against which the new test was compared
Inclusion criteria relating to the reference standard used to establish a diagnosis of painful lumbar sacroiliac joint were not specified. A variety of reference standards were used by the included diagnostic studies: >50%, >70%, >75%, >80%, or >90% pain relief to a single joint block alone or combined with concordant pain provocation or continued pain relief lasting at least 1, 2 or 4 hours.

Participants included in the review
Studies of patients with low back pain with or without leg pain of at least 3 months' duration, who had failed conservative management and had sufficient pain to be referred to a pain specialist or spinal injectionist, were eligible for inclusion.

Outcomes assessed in the review
Studies in which the main outcome was pain relief of at least 50% were eligible for inclusion. Studies with a duration of follow-up of less than 3 months were excluded. For therapeutic injections, the primary outcome measure was initially defined as significant (>50%) pain relief. Other outcome measures reported included functional improvement, psychological improvement and work status. For the included studies on intra-articular injections, short-term relief was defined as less than 6 weeks and long-term relief as greater than 6 weeks. For radiofrequency neurotomy, short-term relief was defined as less than 3 months and long-term relief as greater than 3 months. For diagnostic interventions, the
individual authors' description of pain relief was accepted.

How were decisions on the relevance of primary studies made?
The authors stated that one reviewer assessed studies for inclusion and that three reviewers evaluated the studies. It was unclear exactly what this meant.

Assessment of study quality
Studies were assessed for methodological quality using the criteria of the Agency for Healthcare Research and Quality (AHRQ), QUADAS (Quality Assessment of Diagnostic Accuracy Studies) and the Cochrane Back Group for randomised trials. The authors did not state how many reviewers performed the validity assessment.

Data extraction
A study was judged to be positive if the primary authors concluded that it was positive. If the primary authors concluded that a study was negative but there was evidence suggesting a positive effect, then the reviewers altered the conclusion. 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 results of the individual studies were described and an overall judgement on the strength of the evidence was provided.

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

Results of the review
Nineteen studies (n=937) were included. Five studies reported in seven publications were included for the evaluation of diagnostic sacroiliac injections (n=520). Eight studies provided data on the validation of provocation tests (528 patients). Four studies provided data on the therapeutic effects of intra-articular blocks: 1 randomised controlled trial (RCT; 10 patients), 1 prospective evaluation (10 patients) and 2 retrospective evaluations (64 patients). Five studies evaluating radiofrequency neurotomy met the inclusion criteria: two prospective (31 patients) and three retrospective (56 patients).

For diagnostic studies, QUADAS scores ranged from 7 to 11 out of 14 and AHRQ scores ranged from 3 to 4 out of 5. Scores for therapeutic studies ranged from 4 to 6 out of 8 on the AHRQ scale for non-randomised studies; the RCT scored 6 out of 10 on the AHRQ scale and 6 out of 10 on the Cochrane scale. Validation studies were not assessed for methodological quality.

Prevalence studies and accuracy (5 studies).
Prevalence ranged from 10 to 27%. The false-positive rate was reported in 2 studies: 20% and 22%.

Validation of provocation tests (8 studies).
Although it appeared that some studies provided data on accuracy, this was not reported for the majority of the studies.

Intra-articular blocks (4 studies).
One very small RCT found that after 1 month 5 out of 6 sacroiliac joints treated with corticosteroid injections showed a pain relief of over 70% compared with none of the 7 joints treated with placebo injections. A small prospective study and a retrospective study also showed beneficial short- and long-term effects of corticosteroid injections. A further retrospective study showed negative short- and long-term effects.
Radiofrequency neurotomy (5 studies).

One prospective study and 2 retrospective studies reported positive short- and long-term relief. The second prospective study reported only short-term relief, while the third retrospective study reported negative short- and long-term relief.

Safety and complications.

None of the studies reported complications.

Authors' conclusions
The accuracy of diagnostic sacroiliac joint injections for the diagnosis of sacroiliac joint pain is supported by moderate evidence. There is limited evidence for the accuracy of noninvasive diagnostic tests and for therapeutic sacroiliac joint injections in the management of chronic sacroiliac joint pain.

CRD commentary
This was a poorly reported review. The objective was clear and supported by defined inclusion criteria, however, these would have been clearer had they been defined separately for the different sections of the review (prevalence, diagnosis and therapy). In addition, a number of studies that appeared to meet the inclusion criteria were excluded, whereas studies that did not meet the inclusion criteria were included in the results for some sections of the review. The literature search was limited and did not include attempts to locate unpublished studies. It is unclear whether appropriate steps were taken to minimise bias in the review process. Methodological quality was assessed using appropriate criteria, but the results of this assessment were simply presented as summary quality scores and not discussed in any further detail. The validity of the included studies therefore remains unclear.

No attempts were made to synthesise the results of the primary studies; the authors simply presented a limited summary of each of the included studies followed by an overall statement on the strength of the evidence. This made the results very difficult to interpret. Given the limitations of this review, especially in terms of the application of the selection criteria, the authors' conclusions are unlikely to be reliable. In addition, the authors' conclusions appear to relate to the strength of the evidence based on study design rather than effectiveness, i.e. when they stated that there was 'moderate' evidence for accuracy this seemed to be based on the fact that there was evidence from a number of studies rather than that there was evidence that nerve blocks are accurate.

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

Research: The authors stated that further well-controlled studies on the diagnosis of sacroiliac joint pain using provocative measures are required.

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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.