Diagnostic accuracy of thoracic facet joint nerve blocks: an update of the assessment of evidence
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CRD summary
The authors concluded that there was good evidence for the diagnostic accuracy of thoracic facet joint nerve blocks in diagnosis of chronic mid and upper back pain. Evidence was sparse and the trade-off between accuracy and false-positives did not appear to have been taken into account. Given the limitations of the findings, the conclusions cannot be considered reliable.

Authors' objectives
To assess the diagnostic accuracy of thoracic facet joint nerve blocks in the diagnosis of chronic upper back and mid back pain.

Searching
PubMed, EMBASE and The Cochrane Library were searched from 1966 to March 2012. Search terms were reported. US National Guideline Clearinghouse and Clinical Trials websites were searched. Bibliographies of relevant articles and reviews were screened manually.

Study selection
Eligible studies were clinical studies that evaluated diagnostic accuracy of thoracic facet joint injections (performed under fluoroscopic or computerised tomography guidance) in adults (≥18 years) with chronic upper and mid back pain of at least three months duration. Eligible patients needed to have failed to respond to previous interventions. The primary outcome of interest was pain relief in accordance with the type of controlled diagnostic blocks performed. Secondary outcomes included measures on the ability to perform previously painful movements without significant pain or complications. Diagnosis for thoracic facet joint pain was defined as at least 50% pain relief for the duration of block and ability to perform previously painful movements.

All three included studies were performed by the same research group. Interventions included single or dual blocks; all used 1% lidocaine or 1% lidocaine followed by 0.25% or 0.5% bupivacaine. Dual blocks had to have concordant response with short-acting and long-acting local anaesthetics or placebo. All studies assessed 80% pain relief with the ability to perform previously painful movements.

At least two reviewers independently screened studies for inclusion. Any discrepancies were resolved by referral to a third reviewer.

Assessment of study quality
Study quality was assessed using the 12-item Quality Appraisal of Reliability Studies (QAREL) checklist. Criteria included patient representation, blinding and drop-out rates. Studies were not assigned an overall quality score. The overall strength of evidence was assessed according to US Preventive Services Task Force criteria. Each study was graded as good, fair or limited/poor.

At least two reviewers performed the quality assessment. Discrepancies were discussed with a third reviewer.

The clinical relevance of the included studies was assessed according to recommendations by the Cochrane Back Review Group. The five questions were scored as positive if the clinical relevance item was met, negative if the clinical relevance item was not met or unclear where data were not available.

Data extraction
Prevalence of thoracic facet joint pain and false-positive rates, with 95% confidence intervals, were extracted. At least two reviewers independently extracted data. Disagreements were resolved through consensus or referral to a third reviewer.
**Methods of synthesis**
Meta-analysis was considered when at least five studies per type of diagnostic criteria were available. Consequently, meta-analysis was not performed and data were presented as a narrative synthesis. Results were combined but details were not provided on the methods used to achieve this. The influence of confounding factors on prevalence of pain was evaluated where possible.

**Results of the review**
Two prospective studies and one retrospective study (183 patients evaluated in total) were included in the review. All three studies scored positively on 10 of 12 quality criteria and were considered high quality. The strength of evidence was considered good. All three studies scored 5 for clinical relevance.

Thoracic facet joints were diagnosed as the source of pain in 34% to 48% of patients with chronic back pain. Confidence intervals (95% CI) ranged from 22% to 62%. The combined prevalence rate was 40% (95% CI 33% to 48%).

False-positive rates ranged from 42% to 58%, with 95% CI in the range 36% to 78%. The combined false-positive rate was 42% (95% CI 33% to 51%).

The influence of psychological factors on prevalence of pain was reported in the review but this was extracted from a separate publication.

**Authors’ conclusions**
There was good evidence for the diagnostic accuracy of thoracic facet joint nerve blocks in the diagnosis of chronic mid back and upper back pain.

**CRD commentary**
The review question and supporting criteria were clearly defined. There was a satisfactory search of the literature. The quality of the studies was assessed using various criteria. Each stage of the review was performed in duplicate to reduce potential for reviewer error and bias.

Few patient and study details were reported and only three small studies were included. It was unclear how pain relief was measured and how valid the methods used to measure pain were. The criterion standard used in the review could also be criticised but this may be the only criterion standard available to diagnose facet joint pain. All three studies were reported to be high quality and of clinical relevance but (as the authors acknowledged) all three studies were performed by the same research group. The authors did not perform meta-analysis but did combine study results; it was unclear how appropriate the methods used to do this were. Only basic results were reported and the authors did not appear to allow for the trade-off between accurate diagnosis and false-positive rates.

There was a paucity of data and reporting of review methods and the evidence synthesis were limited. The authors conclusions did not appear to take into account the trade-off between accurate diagnosis and false-positive rates. The generalisability of the findings was unclear. Limitations in the review mean that the findings cannot be considered reliable.

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

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