Does this older adult with lower extremity pain have the clinical syndrome of lumbar spinal stenosis?

Suri P, Rainville J, Kalichman L, Katz JN

CRD summary
This review concluded that diagnosis of lumbar spinal stenosis required clinical and radiographic findings; absence of pain when seated and symptom improvement when bending forward were the most useful. Potential for publication and language biases, methodological limitations of the included studies and uncertainty regarding the generalisability of the results to clinical practice mean the results should be interpreted with caution.

Authors’ objectives
To systematically assess the accuracy of the clinical examination for the diagnosis of the clinical syndrome of lumbar spinal stenosis.

Searching
MEDLINE, EMBASE and CINAHL were searched for articles published in English from 1966 to September 2010. Search terms were available in an on-line appendix. Bibliographies of review articles were scanned. Experts in the field were contacted.

Study selection
Diagnostic accuracy studies that evaluated history and/or physical examination for the diagnosis of lumbar spinal stenosis in adults with or without spondylolisthesis were eligible for inclusion if they reported diagnostic outcomes or sufficient data to produce 2x2 tables of test performance. Index tests had to be clearly specified/described or used in common practice and performed in a routine clinic visit without specialised equipment. Studies had to use expert opinion based on combination of clinical assessment and either imaging (computed tomography (CT), magnetic resonance imaging (MRI) or myelography) or a clearly defined prospectively established protocol for intraoperative evaluation as the reference standard. Studies were excluded if they: recruited patients with stenosis in non-lumbar areas or red flag conditions (trauma, infection, malignancy); included only patients with scoliosis or congenital stenosis; were case series; used simple surgical confirmation or verification of a prior diagnosis without pre hoc criteria for inclusion/exclusion.

Prevalence of lumbar spinal stenosis in the included studies varied from 44% to 49%. Patients with lumbar spinal stenosis presented with either back pain or pain and numbness in the legs; all studies were conducted in specialist clinics. Index tests were either questionnaires or history and physical examination. Radiological examinations used to confirm the consensus decision in patients varied across studies: X-rays and MRI, X-rays and myelography, MRI or CT. Where reported, mean age of patients was 65 years and 54% were women.

It was unclear whether one or two reviewers assessed each title and abstract. Two reviewers applied the inclusion/exclusion criteria to full papers. Differences were resolved by discussion or a third reviewer.

Assessment of study quality
The authors assessed study quality using the criteria developed for the Rational Clinical Examination series; these criteria were cited but details were not provided in the paper.

Data extraction
Sensitivity, specificity, likelihood ratios (LR) with 95% confidence intervals (CIs) and prevalence were extracted or calculated by two independent reviewers; discrepancies were resolved by a third reviewer. Where necessary, study authors were contacted for missing data.

Methods of synthesis
The methods of synthesis were not described. Studies were combined in a narrative synthesis. Study details and results
Results of the review

Four studies met the inclusion criteria (n=741 with lumbar spinal stenosis). All studies recruited consecutive patients. The authors stated that studies were prone to selection and incorporation biases. One study used a consensus diagnosis of multiple expert spine clinicians, two used blinded examiners and two used patient reported data.

Lower extremity pain: The likelihood of lumbar spinal stenosis increased in individuals over 70 years (LR 2.0, 95% CI 1.6 to 2.5) and in individuals younger than 60 years (LR 0.40, 95% CI 0.29 to 0.57). Concomitant orthopaedic problems such as osteoarthritis, inflammatory arthritis and fractures increased the likelihood of lumbar spinal stenosis (LR 2.0, 95% CI 1.2 to 3.5).

Symptoms: The symptoms that most increased the likelihood of lumbar spinal stenosis were: no pain when seated (LR 7.4, 95% CI 1.9 to 30); unexplained urinary disturbance (LR 6.9, 95% CI 2.7 to 17); improvement of symptoms when bending forward (LR 6.4, 95% CI 4.1 to 9.9); presence of bilateral buttock or leg pain (LR 6.3, 95% CI 3.1 to 13); and neurogenic claudication (LR 3.7, 95% CI 2.9 to 4.8). Absence of neurogenic claudication decreased the likelihood of lumbar spinal stenosis (LR 0.23, 95% CI 0.17 to 0.31).

Clinical examination: A score of 7 or higher on a diagnostic support tool that included history and examination findings increased the likelihood of lumbar spinal stenosis (LR 3.3, 95% CI 2.7 to 4.0); a score lower than 7 made the diagnosis less likely (LR 0.10, 95% CI 0.06 to 0.16).

Authors’ conclusions

Diagnosis of the clinical syndrome of lumbar spinal stenosis required appropriate clinical picture and radiographic findings. Absence of pain when seated and improvement of symptoms when bending forward were the most useful individual findings. Combinations of findings were most useful for identifying patients who were unlikely to have the diagnosis.

CRD commentary

The authors addressed a clear review question supported by appropriate inclusion criteria. Several relevant sources were searched, but language and publication bias could not be ruled out. The review process was conducted in duplicate, which reduced potential for error and bias.

Study quality was assessed. The criteria used were cited and although details were not reported in the paper, these seemed appropriate. The authors acknowledged that the included studies had some methodological flaws. Studies were combined in a narrative synthesis, which seemed appropriate. The included studies reported a wide range of outcomes and it appeared that no outcome was reported in the same way in two or more studies; therefore, the conclusions were based on very small populations from single studies. All the studies were conducted in specialist centres, so it was unclear whether similar levels of accuracy would be achieved in non-specialist centres. The population was generally elderly and prevalence of lumbar spinal stenosis may have been higher in this higher risk population than in general clinical practice.

Given the methodological limitations of the included studies, potential for publication and language biases, the small populations on which the conclusions were based and the uncertainty over the generalisability of the results to general clinical practice, caution should be used when interpreting the results of the review.

Implications of the review for practice and research

Practice: The authors stated that a simple clinical diagnostic support tool may help synthesise the independent diagnostic value of a range of history and physical examination measures and be particularly useful for ruling out lumbar spinal stenosis. Clinicians may find guidance from sensitivities, specificities, and likelihood ratios presented to refine estimates of the likelihood of lumbar spinal stenosis and to plan management accordingly.

Research: The authors did not state implications for research.
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