



Title	The Effectiveness of Diagnostic Tests for the Assessment of Shoulder Pain due to Soft Tissue Disorders: A Systematic Review
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Aim

To evaluate the evidence for the effectiveness and cost effectiveness of newer diagnostic imaging tests in addition to clinical examination and patient history for diagnosing soft tissue shoulder disorders.

Conclusions and results

Studies show that prevalence of rotator cuff (RC) disorders was high, partial verification of patients was common, and many patients were selected retrospectively. Sample sizes were small. Reference tests were often inappropriate (many studies used arthrography alone). Ten cohort studies were found that examined either the accuracy of individual tests or clinical examination as a whole. Individual tests were either good at ruling out RC tears when negative (high sensitivity), or at ruling in such disorders when positive (high specificity). However, the small sample sizes yielded no conclusive evidence. Ultrasound was investigated in 38 cohort studies and was most accurate when used to detect full-thickness tears. Sensitivity was lower in detecting partial-thickness tears. For MRI, 29 cohort studies were included. For full-thickness tears, overall pooled sensitivities and specificities were fairly high, and the studies were not statistically heterogeneous. However, the pooled sensitivity estimate was much lower in detecting partial-thickness RC tears. Results from 6 MRA studies suggested that it may be accurate in detecting full-thickness RC tears, but less consistent in detecting partial-thickness tears. Direct evidence comparing the performance of one test with another is limited.

Recommendations

The results suggest that clinical examination by specialists can rule out the presence of a RC tear, and that either MRI or ultrasound could be used to detect full-thickness RC tears, although ultrasound may be better at picking up partial tears. Ultrasound also may be more cost effective in a specialist hospital to identify full-thickness tears.

Methods

Studies were identified that evaluated clinical examination, ultrasound, magnetic resonance imaging (MRI), or magnetic resonance arthrography (MRA) in patients suspected of having soft tissue shoulder disorders. Outcomes assessed were detection of clinical impingement syndrome or RC tear. Only cohort studies were included. The methodological quality of test-accuracy studies was assessed. Findings were extracted in duplicate using a predesigned, piloted data extraction form to avoid errors. Sensitivity, specificity, and positive and negative likelihood ratios with 95% confidence intervals were calculated for each study. Pooled estimates of sensitivity, specificity, and likelihood ratios were calculated using random effects methods. Potential sources of heterogeneity were investigated by subgroup analyses.

Further research/reviews required

Large, well-designed, prospective studies of the diagnosis of shoulder pain. In particular, a followup study of patients with shoulder pain in primary care and a prospective cohort study of clinical examination, ultrasound, and MRI, alone and/or in combination.