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History and physical examination provide little guidance on diagnosis of rotator cuff tears

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Context

Accurate diagnosis of rotator cuff tears can be challenging even for experienced specialists, hence there is a heavy reliance on MRI for aiding diagnosis. This is not only expensive, but can also encourage misdiagnosis, since high percentages of people aged >50 can have cuff tears on imaging but be asymptomatic.^{1,2} Although the structural presence of a tear can be reliably demonstrated using imaging, symptomatic rotator cuff disease is a clinical syndrome, with diagnosis based on the physician's clinical impression alongside radiographical evidence. Herman and colleagues' article is important, because it aims to provide guidance to clinicians in establishing rotator cuff disease diagnosis based on patient history and physical examination findings.

Methods

The authors used MEDLINE, EMBASE and CINAHL databases for their literature search. The studies on sensitivity and specificity of history and physical examination for rotator cuff disease were included. Rotator cuff disease was defined as tendinopathy, subacromial bursitis and partial-thickness or full-thickness rotator cuff tear. Imaging (ultrasound or MRI) was used as the reference test for the included studies. Bias on studies was assessed using the QADAS tool. Results were expressed as likelihood ratios (LR).

Findings

Five level I and II studies were included in the meta-analysis. The prevalence of rotator cuff disease in these studies ranged between 33% and 81%. Infraspinatus muscle atrophy had an LR+ of 2.0 (95% CI 1.5 to 2.7). Painful arc test had an LR+ of 3.7 (95% CI 1.9 to 7.0). External and internal rotation lag signs had LR+ of 7.2 and 5.6, respectively for full-thickness tears. The drop arm test had an LR+ of 5.6 (95% CI 1.0 to 11) for diagnosis of rotator cuff disease.

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Commentary

Hermans and colleagues included studies that used imaging as a reference standard for diagnosis of rotator cuff disease. Symptomatic rotator cuff tear is a clinical diagnosis and although confirmation of diagnosis via imaging is helpful, it does not supersede or replace a physician's clinical opinion. A clinician's assessment becomes even more important in the diagnosis of rotator cuff syndrome (bursitis or tendinopathy without a tear), when imaging may reveal no abnormalities.

All except one of the level I and II studies presented combined diagnosis of bursitis, tendinopathy and full-thickness or partial-thickness tears. These pathologies are inherently different and, although presented elsewhere as a spectrum of degenerative disorders with aging,³ have different treatments. Patients with outlet rotator cuff syndrome secondary to bursitis or tendinopathy are treated with non-operative measures, except for a minority of cases. Moreover, these disorders usually cause pain rather than overt weakness; tests such as drop arm are primarily designed to test the weakness of the supraspinatus and may not be positive in patients with bursitis/tendinopathy (and intact rotator cuff) and confound the results of a study not designed to differentiate between these disorders. Conversely, the treatment of rotator cuff tears, especially full-thickness tears, is controversial,⁴ but can often involve surgery. Differentiation between these diagnoses is fundamental for assessing the diagnostic accuracy of history and physical examination. Ideally, a study should also differentiate between partial-thickness and full-thickness tears and differing sizes of tears.

The authors recommend the internal rotation lag sign, based on previous findings.⁵ This study assessed internal rotation lag sign based on three patients with subscapularis tears (6% of 46 shoulders presented in the manuscript). We advise caution when interpreting the value of a test based on such a small number of patients. The same holds true for the external rotation lag sign, which was assessed based on 12–15 instances of supraspinatus or infraspinatus tears—we say 12–15, because it is unclear whether patients with subscapularis tears also had supraspinatus or infraspinatus tears.

The painful arc test has little practical value in a clinical setting, since this test is based on pain sensation when passively abducting the arm. This test will likely be positive for a variety of shoulder conditions including bursitis, tendinopathy, rotator cuff tear and even non-impingement pathologies.

This is a sound meta-analysis that presents the best available evidence on the value of physical examination for rotator cuff disease diagnosis; however, this study offers little practical guidance for rotator cuff pathology diagnosis. The lack of clinically relevant studies on the utility of physical examination suggests the necessity of further research in this area.

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