⚖ FPIN's Help Desk Answers

Rotator Cuff Disease: Diagnostic Tests

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Clinical Question

Which physical examination tests are best for diagnosing rotator cuff disease in patients with shoulder pain?

Evidence-Based Answer

A positive lag sign with external rotation is the best test for full-thickness tears of the infraspinatus and supraspinatus (positive likelihood ratio = 7.2). A positive lag sign with internal rotation is best for assessing full-thickness tears of the subscapularis (positive likelihood ratio = 5.6). (Strength of Recommendation = B, based on diagnostic cohort studies.)

Evidence Summary

A meta-analysis of five diagnostic cohort studies (432 men and women, 442 shoulders) evaluated physical examination tests for rotator cuff disease.[1] Patients had a mean age of 44 to 58 years and a presenting symptom of shoulder pain; exclusion criteria included a history of neck or shoulder trauma. The prevalence of rotator cuff disease ranged from 33% to 81%, depending on the study. The diagnostic standard was ultrasonography or magnetic resonance imaging. Five strength tests used weakness as the response criterion for a positive result. A positive external rotation lag test was the most accurate strength test for identifying full-thickness tears of the supraspinatus and infraspinatus (one study with 37 patients and 46 shoulders; positive likelihood ratio = 7.2; 95% confidence interval [CI], 1.7 to 31). In this test, the elbow is flexed to 90 degrees, and the shoulder is externally rotated as far as possible. If the patient is unable to maintain that position, it is considered a positive result.

A positive internal rotation lag test was the best for detecting full-thickness tears of the subscapularis (one study with 37 patients and 46 shoulders; positive likelihood ratio = 5.6; 95% CI, 2.6 to 12). The internal rotation lag test was the most accurate of the strength tests when negative (one study with 37 patients and 46 shoulders; negative likelihood ratio = 0.04; 95% CI, 0.0 to 0.58). In this test, the elbow is flexed to 90 degrees, and the shoulder is internally rotated with the hand behind the back. In a positive test, the patient is unable to maintain the position when the hand is passively lifted away from the back.

A positive drop arm test increased the likelihood of rotator cuff disease (one study with 104 patients and 104 shoulders; positive likelihood ratio = 3.3; 95% CI, 1.0 to 11). Among the six pain-based tests, only the painful arc test for subacromial impingement (one study with 104 patients and 104 shoulders) had a positive likelihood ratio greater than 2.0 (3.7; 95% CI, 1.9 to 7.0) or a negative likelihood ratio less than 0.5 (0.36; 95% CI, 0.23 to 0.54). Composite tests (using weakness or pain to indicate a positive test) showed that resisted lateral rotation (testing the infraspinatus) was best for identifying rotator cuff disease (one study with 203 patients and 203 shoulders; positive likelihood ratio = 2.6; 95% CI, 1.8 to 3.6), with a negative test decreasing the likelihood of disease (negative likelihood ratio = 0.49; 95% CI, 0.33 to 0.72).

In 2014, a cross-sectional descriptive study evaluated the clinical relevance of 11 other tests for rotator cuff disease.[2] This study included 35 patients (39 shoulders) and used ultrasound findings from a single radiologist as the reference standard. The mean age was 59 years, and the mean duration of shoulder pain was 31 months. Exclusion criteria included limited passive range of motion, tendon calcification on

radiography, previous surgery, shoulder instability, humeral fracture, local steroid injections within 30 days, inflammatory joint disease, neoplastic disorders, and evidence of neurologic or cervical disease. For full-thickness tears, with weakness as the response criterion, the Jobe test (positive likelihood ratio = 2.08; negative likelihood ratio = 0.31), and full-can test (positive likelihood ratio = 2.0; negative likelihood ratio = 0.50) were best for evaluating the supraspinatus. Resisted lateral rotation (positive likelihood ratio = 2.42; negative likelihood ratio = 0.5) was best for evaluating the infraspinatus. The lift-off test (similar to the internal rotation lag test) was relevant for evaluation of subscapularis tears when using the lag sign as the response criterion (positive likelihood ratio = 8.50; negative likelihood ratio = 0.27).

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2. Lasbleiz S, Quintero N, Ea K, et al. Diagnostic value of clinical tests for degenerative rotator cuff disease in medical practice. *Ann Phys Rehabil Med.* 2014;57(4): 228-243. ∎