

Ostor AJK, Richards CA, et al. Validation of clinical examination versus magnetic resonance imaging and arthroscopy for the detection of rotator cuff lesions. Clin Rheumatol 2013;32:1283–1291.

Design: diagnostic accuracy study

Brief summary of results:

- 94 patients with suspected rotator cuff pathology had clinical examinations, MRI, and diagnostic arthroscopy for the detection of tendinosis, partial thickness tears, full thickness tears, and complete tendon ruptures
- MRI was done within 6 weeks of the performance of the diagnostic arthroscopy; the clinical examinations (by one rheumatologist) were done on the day of the arthroscopy

Reasons not to include as evidence :

- With a single clinical examiner, no data on interrater reliability can be obtained for this population of patients
- The results section, in addition to sensitivity and specificity, report positive and negative predictive values
 - Predictive values are sensitive to the prevalence of the condition in the study sample, and may be different in a different setting
 - Positive and negative likelihood ratios (LR), on the other hand, are more useful indicators of the informativeness of any diagnostic test
 - The positive LR is equal to the fraction sensitivity/(1-specificity)
 - The negative LR is equal to the fraction (1-sensitivity)/specificity
 - The positive LR indicates how informative a positive test result is; it indicates by how much the odds of the diagnosis are multiplied when the test is positive
 - For example, if the positive LR is 10, and if the probability of the test was 50% prior to the test (odds of 50:50 or 1:1) prior to the test, the odds of the diagnosis with a positive test result are 10:1 or 91% probability; this is an informative test; the patient probably has the diagnosis
 - The negative LR indicates how much less likely the diagnosis with a negative test result; it also involves a multiplication of odds
 - For example, if the negative LR is 0.1, and the odds of the diagnosis were 50:50 (or 1:1) before the diagnosis, the odds of the diagnosis with a negative test are 0.1:1, or 1:10, which is a probability of only 9%; the patient probably does not have the diagnosis

- A positive LR of 10 or more is desirable and a positive LR between 2 and 5 is a fairly weak test
- A negative LR of less than 0.1 is desirable and a negative LR between 0.2 and 0.5 is a fairly weak test
- None of the clinical examinations have even a weak positive or negative LR, with the exception of rupture or tear
 - For this diagnosis, the positive LR was 12.5 and means that a positive clinical exam greatly increases the odds that the patient has a rupture or tear
- The only test with a good positive LR (and a good negative LR) is MRI for a tear or rupture: the sensitivity was 100%, the specificity was 96%
 - The positive LR is 25 and a positive exam practically rules in the diagnosis of a rupture or tear; the negative LR is 0 and a negative exam practically rules out the diagnosis of a rupture or tear
- The practical implication is that a rupture or full thickness tear can be diagnosed without arthroscopy; any lesser pathology cannot be reliably ruled in or ruled out with clinical exam and MRI
- Table 2 appears to be blank this is not due to an omission of data but is because the Table simply represents the form which participating clinicians were asked to complete for each patient (confirmed by e-mail from author)