Does My Patient Have Rotator Cuff Disease?: Evidence-based Approaches to Shoulder Pain

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Learning Objectives

- Review rotator cuff anatomy
- Name and know how to perform the most accurate clinical exam findings for Rotator Cuff Disease (RCD)
JAMA Rational Clinical Exam Series
Epidemiology

- 3rd most common MSK complaint that causes adults to seek medical care
- Rotator Cuff Disease (RCD) is the most common cause of shoulder pain in adults
- Prevalence:
  - 2.8% of adults older than 30yo
  - 15% of adults older than 70yo
  - 33% to 50% in a referral population
- Vast majority of patients improve without surgery
Abduction

External Rotation

External Rotation and Adduction

Supraspinatus muscle

Infraspinatus muscle

Teres minor muscle

Scapular spine

Deltoid muscle
Adduction and Internal Rotation
Clinical Presentation

- Shoulder and arm pain, especially during overhead activities
- Often described as dull pain in the region of the deltoid muscle
- Night pain especially when laying on the affected side
- Weakness or stiffness (usually weakness is from pain, not true muscle weakness)
Methods for Literature Review

- Study was eligible if:
  - Described hx, pe or clinical tests for RCD
  - Detailed specificity and sensitivity of tests
  - Used a reference standard (surgery/MRI/US)

- 2 reviewers assigned Level of Evidence using standardized JAMA Rational Clinical Exam approach

- 4641 results, 76 articles for full text review

- 28 studies used
Likelihood Ratios (LR)

\[
LR = \frac{\text{probability of finding in patients with disease}}{\text{probability of same finding in patients without disease}}
\]

Example: 80% of patients with ascites have bulging flanks

40% of people without ascites have bulging flanks

\[
LR = 2
\]

The bigger the number, the more suggestive that a finding will indicate the disease.
Positive Values Increase the Likelihood of Disease

<table>
<thead>
<tr>
<th>Likelihood Ratios</th>
<th>Estimates of Increased Probability</th>
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<tbody>
<tr>
<td>2</td>
<td>15%</td>
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<tr>
<td>3</td>
<td>20%</td>
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<tr>
<td>4</td>
<td>25%</td>
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<td>5</td>
<td>30%</td>
</tr>
<tr>
<td>6</td>
<td>35%</td>
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</tbody>
</table>

McGee, S. Simplifying Likelihood Ratios, JGIM, August 2002, 17 (8), 647-650.
So which are the best shoulder tests?

Drum Roll Please...
Only pain provocation test of the 6 studied that had LR >2.0

LR = 3.7

Neer and Hawkins tests performed poorly.

LR Neer = 1
LR Hawkins = 1.5 with wide CI
Strength Testing to Detect Full Rotator Cuff Tear
LR = 5.6 for full thickness tear of the rotator cuff
LR = 7.2 for full thickness tear of the rotator cuff
Strength Test for Any RCD
Drop arm test (supraspinatus muscle)

*Patient is asked to lower the arm slowly from abduction.*

Positive test result: immediate drop of the arm accompanied by pain

LR = 3.3 for any Rotator Cuff Disease
Composite Tests
(positive when the patient experiences pain or weakness)
C Composite test: external rotation resistance test (infraspinatus muscle)

Examiner applies pressure proximal to the patient’s wrist against external rotation by the patient.

Positive test result: patient experiences either pain or weakness during the maneuver.

LR = 2.6 for any RCD
Limitations

- All studies came from ortho/sports med literature
- Do the LRs apply to the primary care setting?
- No evidence that these tests perform better as a group
References

- From: Does This Patient With Shoulder Pain Have Rotator Cuff Disease?: The Rational Clinical Examination Systematic Review. JAMA. 2013;310(8):837-847

- JAMA Network: jama.jamanetwork.com