Science Education Collection

Shoulder Exam II

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Overview

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The shoulder exam continues by checking the strength of the rotator cuff muscles and biceps tendons. The rotator cuff muscles (supraspinatus, infraspinatus, teres minor, and subscapularis) act as compressors, holding the humeral head in place against the glenoid. Injury and degeneration of the rotator cuff tendons are the most common sources of shoulder pain.

The strength testing of the rotator muscle is performed by testing motions against resistance applied by the examiner. Pain with these resisted motions suggests tendonitis; weakness suggests a rotator cuff tear. The strength tested is followed by tests for impingement syndrome, shoulder instability, and labrum injury. It is important to test both of the shoulders and compare between the sides. The opposite shoulder should be used as the standard to evaluate the injured shoulder, provided it has not been injured as well.

Procedure

1. Strength Testing of the Rotator Cuff Muscle

Strength testing of the rotator cuff is assessed using resisted motion. The following resisted motions should be tested:

1. External rotation: Ask the patient to bend both elbows to 90^{o} with arms hanging at the side, and then to push both hands away from the midline against resistance. This tests strength of the infraspinatus and teres minor.
2. Internal rotation: Ask the patient to bend both elbows to 90^{o} with arms hanging at the side and then to push both hands toward the midline against resistance. This tests the strength of the subscapularis muscle.
3. Empty can test: Ask the patient to raise both arms at the side to 90^{o} with thumbs down and then move arms forward 30°. Ask the patient to hold the arms in this position while you attempt to push the arms down. This maneuver tests the strength of the supraspinatus muscle.
4. Speeds test: Have the patient raise both arms in front to 90^{o} with the palms up and elbows bent to 15^{o} flexion. Ask the patient to hold the arms in this position while you attempt to push the arms down. This maneuver tests the strength of the biceps.
5. Yergason's test: Ask the patient to bend the elbow to 90^{o} and hold while you attempt to pull the arm down, at the same time trying to twist it into pronation. This maneuver tests the strength of the biceps.
6. Triceps test: Ask the patient to bend the elbow forward to 90^{o} and then push hands forward against your resistance. This tests strength of the triceps

2. Impingement Signs/Impingement Test

Impingement signs are used to diagnose impingement syndrome. Three impingement signs are elicited by passively moving the shoulder into the following positions while watching for pain or lack of motion.

1. Neer's impingement sign: Passively raise the patient's affected arm in front (with the palm pointing down) as far as it can go overhead before significant pain is felt. Compare to the unaffected arm.
2. Hawkins' impingement sign: Raise the patient's arm forward to 90^{o} with the elbow also bent to 90^{o}. From there, passively rotate the shoulder internally and externally.
3. Crossover test: Passively raise the unaffected arm forward to 90^{o} and then move it across the body with the elbow bent as far as it can go toward the opposite shoulder. This maneuver also worsens AC joint pain.
4. The impingement test involves injecting local anesthetic (such as lidocaine) into the subacromial space. The impingement signs are then repeated and relief of pain confirms the impingement syndrome. Rotator cuff (RC) strength testing should also be retested after injection to relieve painful inhibition of strength and more accurately assess for RC tear.

3. Instability Tests

Several tests can be done to assess for glenohumeral joint instability. These include:

1. Apprehension tests: These are positive only when they provoke an unpleasant sensation of the shoulder coming out of joint. Simple pain with these tests may be from rotator cuff or labrum injury, rather than instability. The apprehension tests are done in both the anterior and posterior direction.
    1. Anterior apprehension test:
        1. Position the patient supine with shoulder raised up from the side to 90^{o} and the elbow bent to 90°.
        2. Apply an anterior force to the posterior aspect of the shoulder pushing the humeral head forward.
    2. Posterior apprehension test:
        1. Position the patient supine with the shoulder raised up from the side to 90^{o} and the elbow bent to 90°.

2. Apply a posterior force to the anterior aspect of the patient's shoulder pushing the humeral head backward.

2. Relocation test:
    1. Position the patient supine, with the arm raised from the side to 90^{o} and hanging off the edge of the exam table while the elbow is bent to 90^{o}.
    2. Rotate the patient's shoulder externally until discomfort is noted.
    3. Apply posterior pressure to the anterior humeral head. No change or worsening of discomfort with this maneuver suggests simple impingement; relief in the discomfort suggests anterior instability.

3. Sulcus Sign
    1. Have the patient to stand or sit with the arms hanging at the side.
    2. Grasp the patient's arm just above the elbow and pull it downward. A downward pull on the arm causes a prominent "sulcus" to form (between acromion and humeral head), with inferior instability (this often suggests multidirectional instability).

4. Labrum Tests

1. Clunk test:
   Position the patient supine and passively rotate the shoulder through a full overhead range of motion. A prominent clunk or pop may indicate a labrum tear.
2. Labrum grind test:
    1. Position the patient supine with the elbow bent to 90° and shoulder raised from the side to 90°.
    2. Grasp the patient's upper arm and compress the humeral head into glenoid while internally and externally rotating the humerus. Significant pain or clunking with this maneuver suggests labrum injury.

3. O'Brien's test (can be performed with the patient sitting or standing):
    1. Have the patient forward flex both arms to 90°, with 10° horizontal adduction and elbows extended.
    2. Ask the patient to rotate the shoulders so the thumbs are pointing up and apply a downward force to both arms.
    3. Repeat with the patient internally rotating the shoulder so the thumbs are pointing down. Increased pain in the thumbs down position (compared to the thumbs up) is suggestive of SLAP (superior labrum, anterior/posterior) injury to the labrum. Note that this maneuver will also aggravate acromioclavicular joint pain.

Summary

The clinical evaluation of the shoulder begins with inspection, palpation, and testing range of motion, followed by strength testing of the rotator cuff and biceps muscles. While assessing the strength of the rotator cuff muscles, it is essential to differentiate true muscle weakness from a painful inhibition of strength that can be seen with severe tendonitis. The next part of the exam is the assessment for signs of impingement, using the Neer's, Hawkins, and crossover tests. Pain or lack of motion with these maneuvers suggests impingement of the rotator cuff tendons in the subacromial space. Stability of the shoulder is then evaluated using the anterior and posterior drawer tests, the sulcus sign, and the relocation test. Finally, the labrum is evaluated for injury using the clunk test, labrum grind test, and O'Brien's test.