



Rotator cuff disorders

A clinical image of overuse injuries to the shoulder

BY SUZAN M. ATTAR, MD

Shoulder pain is the third most common musculo-skeletal pain after the back and neck. The causes of shoulder pain can be classified as either articular or non-articular. The latter include rotator cuff disorders, sub-acromial bursitis and bicipital tendonitis. Rotator cuff disorders range from impingement syndrome and mild transient tendonitis to complete full thickness tear.

Etiology

The rotator cuff consists of four muscles that serve as the dynamic stabilizers of the shoulder joint. The supraspinatus muscle provides abduction, the infraspinatus and teres minor muscles perform external rotation and the subscapularis muscle allows internal rotation.

Impingement syndrome is a chronic, painful condition of the shoulder that results from compression of the rotator cuff tendons, most commonly the supraspinatus, and so can occur with shoulder abduction. With continued motion, the tendon will be inflamed (rotator cuff tendonitis) and may lead to rotator cuff tear.

Causes include athletic or occupational overuse, leading to glenohumeral instability and degenerative changes of the tendons or the joint; curved or hooked acromion; calcific deposits in the tendon; and trauma with post-traumatic inflammation.

Rotator cuff injuries present with an insidious onset of dull aching pain, commonly located over the deltoid area and to a lesser extent over the anterior shoulder. Aggravated by overhead activities, individuals may have difficulty combing their hair, holding a hair dryer and removing a wallet from their back pocket. The pain frequently awakens the patient at night. A rotator cuff tear is suspected when this pain is associated with weakness and inability to abduct the arm.

Physical examination

On palpation, point tenderness is often present over the greater tuberosity and the distal rotator cuff. There's pain with active shoulder movement and a painful arc in the mid-range of abduction between 70° and 120°. Patients have no discomfort during the initial stage of abduction, but before reaching 90°, they usually stop raising their arm because of pain. If you convince the individual to continue abducting the arm despite the pain, the pain will diminish and disappear toward the end of abduction.

The diagnosis is confirmed by reproducing pain when resisting

movement of the affected tendon. Supraspinatus is tested (Figure 1) with the arm abducted to 90°, flexed to 30° and internally rotated (i.e. thumb downwards). The examiner then resists abduction at this point. Subscapularis is tested by resisting internal rotation. To test infraspinatus and teres minor, resist external rotation (Figure 2).

If the supraspinatus tendon is torn, the deltoid muscle is unable to maintain abduction at an angle less than 90°, and a gentle tap of the arm abducted to 90° will cause it to fall to the patient's side. This is known as the drop arm test.

Investigations

Plain radiography — anteroposterior (AP) and axillary views — may show calcification of the tendons in chronic cases, as in the x-ray above, or osteoarthritic changes at the glenohumeral or acromioclavicular joint. The axillary view is necessary to exclude the possibility of dislocation. Ultrasound can detect a full thickness tear and, to a lesser extent, a partial tear. Magnetic resonance imaging is 100% sensitive for full thickness tear and 95% for impingement syndrome,

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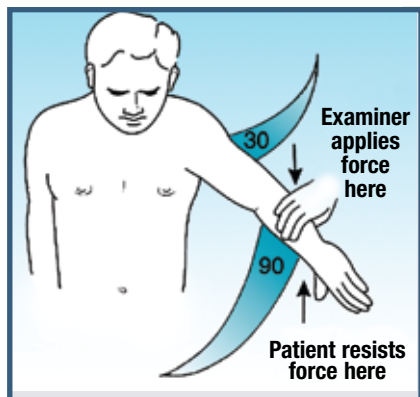


Figure 1: Reproducing pain at the supraspinatus tendon. From Harris.

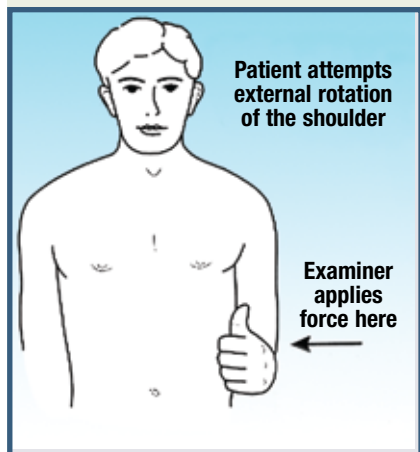


Figure 2: Resist external rotation: test the infraspinatus and the teres minor tendon. From Harris.

but it's not specific and it's difficult to differentiate between tendonitis, partial tear and small complete tear without magnetic resonance arthrography.

Treatment

Conservative treatment involves rest and modification of activities to prevent the problem from becoming chronic. Non-steroidal anti-inflammatory drugs should be used to reduce the inflammation. Allow a trial period of 6-8 weeks. If this fails, then a steroid injection can



Figure 3: Site of injection of the shoulder joint: posterior approach, 1 cm below and 1 cm medial to the posterior corner of the acromion, pointing anterior to the coracoid process. From Hochberg.



Figure 4: Site of injection of the subacromial bursa: posterolateral approach, under the acromion with needle pointed anteromedially. From Hochberg.

be given — either 80 mg of methylprednisolone into the shoulder joint (Figure 3) or 40 mg into the subacromial bursa (Figure 4). Never administer medication directly into the tendon. Prescribe physiotherapy to restore the range of motion and strengthen the muscle. Massage and acupuncture can often offer permanent relief.

With conservative treatment, 70% of individuals with impingement syndrome respond well, as do 50% of patients with tear. Prognostic factors for poor response are age and duration — the older the person with degenerative rotator cuff and associated joint pathology, the more resistant to conservative treatment. Duration of symptoms for more than 6-12 months and low muscle power are associated with poorer outcome.

The indications for surgical repair vary according to the age of the patient, severity of the pain and the stage of impingement. Acute post-traumatic injury is an absolute indication in young patients. Relative indication includes failure to respond to conservative treat-

ment after 9-12 months. Among those undergoing repair, 85% can expect pain relief and partial restoration of strength.

In summary, rotator cuff problems are a frequent cause of shoulder pain, ranging from tendonitis to impingement to tear. It can be easily diagnosed and successfully treated. Younger patients with post-traumatic weakness require early diagnostic intervention to rule out rotator cuff tear and should be referred to a shoulder specialist for repair. **PE**

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