Calcific Tendinosis: There are calcium deposits on a shoulder ultrasound, now what?

Calcific tendinosis is a condition that results in calcific depositions in the rotator cuff tendons of the shoulder. Many terms encompass this definition, these include calcific tendinopathy, calcific tendinitis, calcific shoulder periarthritis, calcific tendonitis, or rotator cuff calcification disease.

Contrary to popular belief, calcific tendinosis is not caused by trauma or overuse. While the exact etiology is unknown, there is evidence leading to an association with diabetes and thyroid disorders.[1,2] Furthermore, there is some evidence to say those with occupations that promote internal rotation and slight abduction (impingement position) are at higher risk for this condition: desk workers, cashiers, and production line workers.[3]

The formation of calcium deposits is thought to be due to incorrect healing of the tendon. There are 4 distinct phases of this condition[4]

1. Formative phase - formation of calcium deposits in the tissue
2. Resting phase - deposits remain stable
3. Resorptive phase - inflammatory reaction occurs, deposits are resorbed, this can cause extreme pain
4. Post-calcific phase - calcium deposits resorbed, tendon returns back to normal

Presentation and Exam
The onset of pain can be chronic or acute (during the resorptive phase). There is no trauma preceding this pain. On occasion, patients may complain of night pain and decreased range of motion. On exam, patients can present with positive impingement test (Neer's or Hawkings), painful abduction, and decreased ROM.[5]

Imaging
Ultrasound is the best and most cost-effective modality to assess calcifications of the rotator cuff. Ultrasound also allows one to assess for tears and dynamic rotator cuff impingement. Calcifications can also be seen on plain radiographs. In those patients whom you are suspicious of a bony pathology, a standard set of shoulder radiographs should be completed (AP, axillary, outlet view).[3] MRI is not recommended.

Treatment
Currently, there is no gold standard treatment for calcific tendinosis.

First-line treatment includes conservative measures. These include NSAIDs, physiotherapy, manual therapy, and corticosteroid injections into the subacromial bursa (for those with an acute attack). In those with no improvement in 6 months, further treatment can be considered.[3]

Second-line options include shockwave therapy and ultrasound-guided needling (barbotage). These treatments are performed by specialized providers. Shockwave therapy attempts to break down calcium deposits and stimulate healing. Ultrasound-guided needling involves

attempting to break up and aspirating the calcium deposits. This is complemented with a bursal injection to prevent subsequent bursitis.[3] For those who respond to the treatments above, surgery can be considered to remove the calcium deposits.[3]

In terms of prognosis, 50% of symptomatic patients become pain-free with conservative treatments in 3 months, 20% more pain-free in 1 year. Of the remaining 30%, 20% will improve with barbotage and shockwave therapy. The remaining 10% will likely require surgery.[6]

Bottom line, most patients will improve with conservative treatment, in those that don't respond you can consider referral to a provider for shockwave therapy or ultrasound-guided needling (barbotage).

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References

1. Harvie P, Pollard TCB, Carr AJ. Calcific tendinitis: natural history and association with endocrine disorders. *J Shoulder Elbow Surg*. 2007;16(2):169-173.
2. Mavrikakis ME, Drimis S, Kontoyannis DA, Rasidakis A, Moulopoulou ES, Kontoyannis S. Calcific shoulder periarthritis (tendinitis) in adult onset diabetes mellitus: a controlled study. *Ann Rheum Dis*. 1989;48(3):211-214.
3. Sansone V, Maiorano E, Galluzzo A, Pascale V. Calcific tendinopathy of the shoulder: clinical perspectives into the mechanisms, pathogenesis, and treatment. *Orthop Res Rev*. 2018;10:63-72.
4. Uhthoff null, Loehr null. Calcific Tendinopathy of the Rotator Cuff: Pathogenesis, Diagnosis, and Management. *J Am Acad Orthop Surg*. 1997;5(4):183-191.
5. Hawkins RJ, Kennedy JC. Impingement syndrome in athletes. *Am J Sports Med*. 1980;8(3):151-158.
6. Noël E. Treatment of calcific tendinitis and adhesive capsulitis of the shoulder. *Rev Rhum Engl Ed*. 1997;64(11):619-628.

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Plain radiograph of calcific tendinopathy of the shoulder in the resting (chronic) phase

This plain radiograph of the shoulder shows calcific deposits (arrow) in the region of the supraspinatus tendon. The deposit is dense and homogeneous with well-defined limits suggesting the tendinopathy is in the resting phase.

Courtesy of Tore Prestgaard, MD.

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