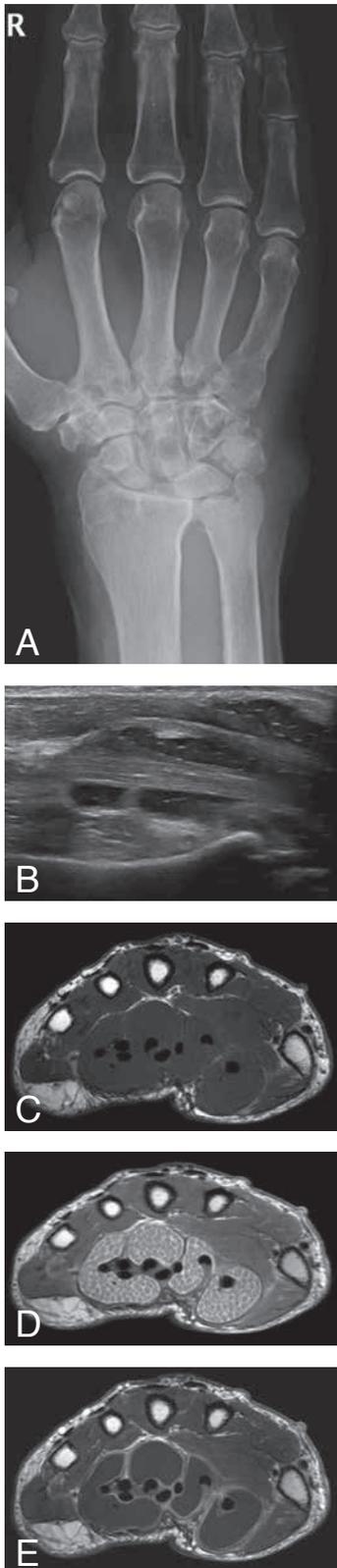


IMAGES IN CLINICAL RADIOLOGY



Flexor tendon tenosynovitis with rice body formation in rheumatoid arthritis

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A 69-year-old man, known with rheumatoid arthritis was admitted to the orthopaedic surgery department with swelling of the right wrist. Physical examination confirmed the swelling located at the palmar side of the wrist. There was a slightly decreased range of motion of the wrist. The patient was not aware of a recent trauma.

The patient is known with an erosive destruction of the wrist in the context of rheumatoid arthritis.

The initial X-ray of the wrist confirmed an erosive destruction of the carpus with SLAC wrist deformity (Fig. A), associated with a remarkable volar soft tissue mass obliterating the pronator fat pad on the lateral view (not shown).

Ultrasound of the wrist illustrated a hypo-echogenic polylobular mass in between the flexor tendons of the wrist (Fig. B).

Further assessment with MRI confirmed synovitis of all flexor tendons with multiple intrasynovial nodules, T1 iso-intense (Fig. C) and T2 iso- to slightly-hyperintense (Fig. D) compared to muscular tissue.

These intrasynovial nodules are avascular showing no enhancement on T1+ Gd (Fig. E), surrounded by a hyperintense synovial wall post contrast administration (Fig. E). Imaging findings are compatible with chronic synovitis associated with rice body formation.

Comment

Rice bodies resemble grains of polished rice and may present in varying sizes, shapes and composition but usually consist of amorphous material surrounded by collagen and fibrin. There remains discussion on the exact pathophysiological pathway but it is generally accepted that they represent a non-specific reaction to a chronic joint or synovial inflammation.

On ultrasound, rice bodies appear as hypo- to anechogenic spherical intrasynovial nodules but may be virtually indistinguishable from synovial pannus or synovial osteochondromatosis.

On MRI, rice bodies appear iso-intense on T1 and iso- to slightly hyperintense on T2 sequences compared to muscular tissue making them indistinguishable on T1 but clearly distinguishable on T2 from the surrounding hyperintense synovial fluid. Contrast enhanced sequences show rim enhancement of the synovial or bursal wall without any enhancement of the rice bodies.

The main differential diagnosis is an unmineralized stage of synovial osteochondromatosis consisting of multiple nodular and unmineralized metaplastic cartilage fragments of similar morphology. When unmineralized, these cartilage fragments appear iso-intense to slightly hyperintense on T1 and hyperintense on T2-weighted MRI sequences making them indistinguishable from fluid on T2 but clearly distinguishable on the T1 sequences. Mineralized cartilage fragments are visible on X-ray as local calcific hyperdensities and appear hypointense on all MRI sequences.

Rice body formation is frequently associated with rheumatoid arthritis (particularly involving the sub acromial bursa) or seronegative inflammatory arthritis. It was traditionally described in the context of tuberculous arthritis and synovitis.

However rice bodies are rarely seen in tendon sheaths among non-tuberculosis patients, so in a context of tenosynovial rice bodies one has to keep in mind the differential diagnosis of a tubercular aetiology. In this situation, histopathology will play a key role in detecting tubercular granulomas.

The presence of rice bodies does not correlate with disease severity or duration but once formed, rice bodies contribute to the chronic inflammatory process. Removal is associated with a significant clinical improvement of this inflammatory process.

Treatment consists of arthroscopic drainage however recurrence occurs and synovectomy may be needed in these cases.

We describe a rare case of tenosynovial rice body formation in all flexor tendon compartments of the wrist of a patient known with rheumatoid arthritis. The patient was successfully treated after diagnosis with synovectomy of the flexor tendons.

Reference

1. Chen A., Wong L.-Y., Sheu C.-Y., Chen B.-F.: Distinguishing multiple rice body formation in chronic subacromial-subdeltoid bursitis from synovial chondromatosis. *Skeletal Radiol*, 2002, 31: 119-121.

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