Synovial Osteochondromatosis of Subacromial Bursa

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Clinical History: A 44-year-old woman presented to our institution with tumefaction on the lateral side of her left shoulder, referring a clinical history of psoriatic arthritis. Range of motion was painful and severely restricted in all planes; these symptoms had been present for a few years. MR and US examinations were performed.

Imaging Findings: MR and US examinations (Figs. 1-4) revealed no signs of rotator cuff tendons or biceps tendon injuries. On MR sequences and on US images we can observe a massive distention of the subacromial bursa, filled with synovial effusion and with multiple loose bodies; such nodules present various signal intensity characteristics at MR examination and result movable at US evaluation. There was no evidence of joint effusion.

Figure 1. Axial Fat-Sat (A) and FRFSE (B) T2-weighted images of the left shoulder showing multiple hypointense nodules and bursal effusion.
Figure 2. Coronal Fat-Sat (A) and FRFSE (B) T2-weighted image of the left shoulder confirming the presence of multiple hypointense nodules and bursal effusion.
Figure 3. Sagittal Fat-Sat T2-weighted images of the left shoulder confirming the presence of multiple hypointense nodules and bursal effusion.
Figure 4. Long (A) and short axis (B) US images of the left shoulder confirming the presence of multiple hypoechoic nodules.

Discussion: Synovial osteochondromatosis is a benign metaplastic proliferative disorder of the synovium with development of cartilaginous nodules which may detach from the synovial membrane and drift in the joint; calcification or ossification of the cartilaginous bodies may afterward occur. Three histological phases of synovial osteochondromatosis were defined: an active intrasynovial phase, a transitional lesions phase and a quiescent intrasynovial phase. It is an unusual disease and it rarely affects the shoulder joint; occasionally the process can extend into adjacent soft tissue. It presents with pain and rigidity of the joint. The loose bodies may lead to a severe obstruction of the range of motion. In respect to shoulder joint synovial osteochondromatosis has been reported in the subacromial bursa, subdeltoid bursa, subclavicular region and along the brachial plexus, and it usually involves the glenohumeral joint.

Osteochondromatosis can be primary or secondary. In secondary osteochondromatosis, the presence of osteochondral bodies is due to osteoarthritis, osteochondral fractures or osteochondritis dissecans. In primary osteochondromatosis the origin of the loose bodies is the synovial proliferation.

The MR imaging findings of synovial osteochondromatosis are variable. In cases of unmineralised synovial chondromatosis the signal intensity is fluid-like and it has to be distinguished from joint effusion; the lobulated appearance of the joint process and its inhomogeneous nature are consistent with non-calcified or ossified cartilage nodules. In some cases the nodules have signal intensity characteristics different from those of fluid. On T1-weighted images non-calcified cartilage nodules have intermediate signal intensity with adjacent fluid of lower signal intensity. On T2-weighted images these nodules show similar or increased signal intensity while adjacent fluid presents high signal intensity. Calcification regions present low-signal intensity on all sequences. After intravenous administration of paramagnetic contrast media, enhancement of the thickened synovium can be observed.

US findings consist of multiple small echogenic nodules within the joint, the bursae or along the tendon sheath. When calcifications are present, a peculiar posterior shadowing can be seen on T1-weighted images.

Loose bodies must be removed to avoid further injuries to articular surfaces. Treatment of synovial chondromatosis is surgical. Arthroscopic intervention is performed with resection of the synovium and removal of any loose intra-articular bodies. Since recurrence is frequent after partial synovectomy, total synovectomy has been proposed as the preferred treatment. Synovial
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Osteochondromatosis does not resolve spontaneously and complications like degenerative osteoarthritis and bursitis are not rare. Though suggested in some reviews sarcomatous degeneration has not been settled.

References

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