Case 14230

Rare case of primary synovial chondromatosis of the shoulder joint with suspected traumatic aetiology
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Section: Musculoskeletal system
Area of Interest: Musculoskeletal bone Musculoskeletal joint Musculoskeletal soft tissue
Procedure: Diagnostic procedure
Procedure: Imaging sequences
Imaging Technique: MR
Special Focus: Trauma Arthritides Inflammation Case
Type: Clinical Cases
Authors: Dr A Janjua, Dr K Rana
Patient: 40 years, male

Clinical History:

A 40-year-old male patient presented to the GP in March 2008 with a history of recurrent left shoulder dislocations over the past four years.

Physical examination was unremarkable. Outpatient plain radiograph and an MRI was performed, but the patient did not attend follow-up appointments.

Imaging Findings:

Initial plain radiography (Fig. 1) showed calcification in the region of the supraspinatus and a slightly loose body inferior to the glenoid but no fracture or osteoarthritis. During the follow-up appointment in August 2008, MRI was performed and showed subcortical cystic degeneration in the humeral head and features of synovial chondromatosis (Figs. 2, 3) and small loose bodies along the biceps tendon and supraspinatus tendon.

The patient did not attend the follow-up appointments and returned eight years later when a repeated plain radiography (Fig. 4) showed multiple intra-articular loose bodies around the humeral head. A subsequent MRI in June 2016 demonstrated progression, with multiple large loose bodies, supraspinatus tear and partial thickness infraspinatus tear (Fig. 5) that were visible along with multiple loose bodies within the suprapsinatus tendon and the biceps tendon sheath (Figs. 6a, 6b, 7a, 7b).

Discussion:

Primary synovial chondromatosis (PSC) is an uncommon condition characterised by metaplasia of the chondroid along with multinodular proliferation of the synovial lining which can be of a diarthrodial joint, tendon sheath or bursa. The definite aetiology is unknown, although it was proposed that it is due to the reactivation of residual embryonal cells [3] present in the related area and, in some literature, trauma has been reported as the cause [2].

It is generally believed that PSC is not a neoplastic process, but a metaplastic process initiated by trauma or chronic
irritation [6, 7, 8]. An animal study showed that synovial chondromatosis has a relationship with osteoarthritis secondary to trauma [8]. It has a male predominance with an incidence of 1:100000 and it mostly occurs afresh in a healthy joint [4]. The most common joint involved is the knee joint, followed by the hip joint. Involvement of the shoulder joint is uncommon and extra articular involvement is rare [5]. Generally, these patients have chronic pain and stiffness in the affected joint [1].

Diagnosis is usually straightforward with plain radiographs which show osteochondral loose bodies distributed within the joint capsule, but which rarely involve the bursae or tendon sheath [9]. Additional imaging aids the diagnosis in atypical cases and also identifies any associated abnormalities. In this case, MRI was crucial in demonstrating the location of the loose bodies within the supraspinatus tendon which could have been mistaken for calcific tendinitis.

This was an unusual case of PSC effecting the shoulder joint along with tendon involvement and a causal relationship due to trauma and repeated irritation was hypothesised. Treatment is mainly aimed at symptomatic relief and, in complicated cases, surgical intervention may be necessary.

A combination of imaging techniques is required to reach the diagnosis and this particular case also highlights the importance of plain radiographs, particularly in musculoskeletal pathology. In this case, the diagnosis was made based on the radiological findings and the clinical history. The patient refused any surgical intervention and histological confirmation was not possible.

**Differential Diagnosis List:** Primary synovial chondromatosis, Degenerative joint disease, Calcific tendinitis, Rheumatoid arthritis, Osteochondritis ossificans

**Final Diagnosis:** Primary synovial chondromatosis

**References:**

Jeffreys TE (1967) Synovial chondromatosis Hip. 7:1 (PMID: 6037566)


Description: Calcification in the acromiohumeral space and subtle loose body inferior to the glenoid
Origin: Sandwell General Hospital, SWBH NHS Trust, Radiology; Lyndon, West Bromwich B71 4HJ Birmingham
Description: Multiple osteochondral loose bodies (green arrows) along the supraspinatus tendon and in the anterior axillary recess (green arrow) Origin: Sandwell hospital, UK
**Description:** Large osteochondral loose bodies (green arrow) along the supraspinatus tendon and intraosseous cystic changes in greater tuberosity (orange arrow). **Origin:** Sandwell hospital, Birmingham, UK.
**Description:** Multiple large loose bodies above humeral head (green arrows) and anterior to the humeral shaft as if within the biceps tendon sheath (orange arrows)

**Origin:** Sandwell General Hospital, SWBH NHS Trust, Radiology; Lyndon, West Bromwich B71 4HJ Birmingham
Description: Coronal view showing osteochondral loose bodies (green arrow) within the supraspinatus tendon, intraosseous cystic changes in the greater tuberosity (blue arrow) 

Origin: Sandwell General Hospital, SWBH NHS Trust, Radiology; Lyndon, West Bromwich B71 4HJ Birmingham
Description: Coronal view demonstrating multiple large loose bodies (green arrow) within the biceps tendon sheath. Origin: Sandwell General Hospital, SWBH NHS Trust, Radiology; Lyndon, West Bromwich B71 4HJ Birmingham
Description: Anterior supraspinatus tendon tear (Red arrow) and multiple large loose bodies within supraspinatus muscle along the tendon (Green arrows) Origin: Sandwell General Hospital, SWBH NHS Trust, Radiology; Lyndon, West Bromwich B71 4HJ Birmingham
**Description:** Loose bodies (Green arrows) in the biceps tendon sheath

**Origin:** Sandwell General Hospital, SWBH NHS Trust, Radiology; Lyndon, West Bromwich B71 4HJ Birmingham
Description: Intrasubstance loose bodies (green arrow) within the supraspinatus tendon

Origin:
Sandwell General Hospital, SWBH NHS Trust, Radiology; Lyndon, West Bromwich B71 4HJ
Birmingham