

Radiology for the surgeon

Musculoskeletal case 39

Presentation

A 27-year-old male volleyball player was referred for an orthopedic consult with a complaint of left shoulder pain. His pain had been present for 3 months and was more prominent with overhead activities. Over the last 2 months, he had taken nonsteroidal

anti-inflammatory agents, which helped reduce his pain. He had also undertaken a course of physiotherapy, which temporarily eased the symptoms. He had no history of trauma to the shoulder.

Clinical examination revealed posterior shoulder tenderness with slight external rotation weakness. There was no limitation in range of motion and no obvious muscle atrophy. Antero-posterior (AP)

and lateral plain radiographs of the shoulder taken at this time were normal. MRI of the shoulder was then performed.

Coronal T_1 -weighted sequence (Fig. 1) demonstrated a 3×1 -cm ovoid structure in the spinoglenoid notch. Axial T_2 -weighted sequence demonstrated the lesion was of uniform high signal, suggesting the lesion was cystic in nature (Fig. 2).

What is the diagnosis?

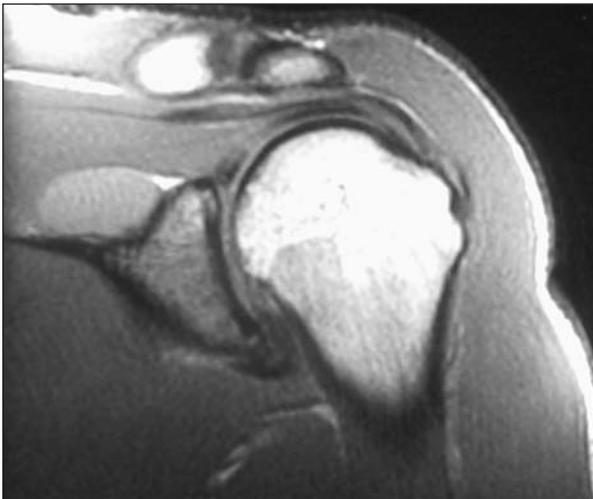


FIG. 1. Coronal T_1 -weighted sequence showing a 3×1 -cm ovoid structure in the spinoglenoid notch.

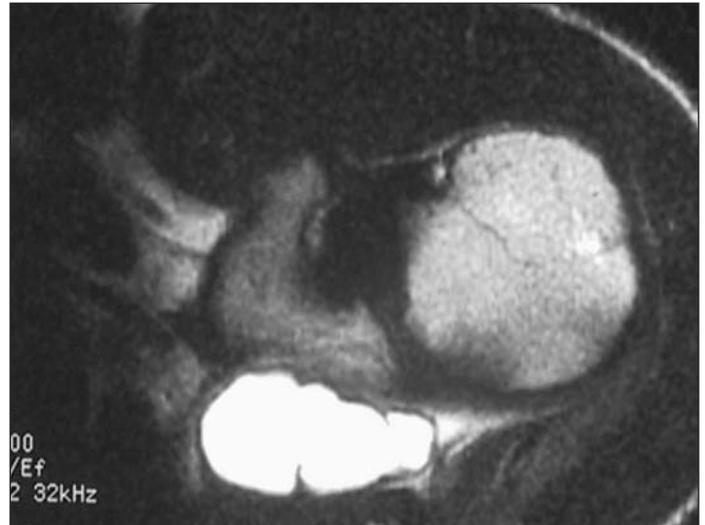


FIG. 2. Axial T_2 -weighted sequence showing the lesion.

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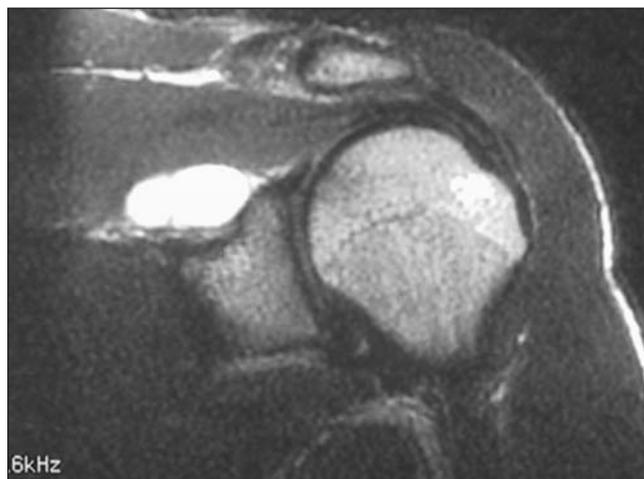
FIG. 3. Coronal T_2 -weighted sequence.

FIG. 4. Sagittal short tau inversion recovery sequence.

Diagnosis

Spinoglenoid notch ganglion cyst

Spinoglenoid notch cysts (SGNCs) are a rare entity that may result in compression of the suprascapular nerve at the spinoglenoid notch. With the advent of MRI in the diagnosis of shoulder pain, ganglions about the shoulder are being diagnosed with increasing frequency.^{1,2} Suprascapular nerve entrapment was first described in 1959 by Kopell and Thompson,³ who described entrapment at the suprascapular notch. Compression at this level usually results in denervation of both the supraspinatus and infraspinatus muscles. Seventy-five percent of ganglions causing compression of the suprascapular nerve reside in the spinoglenoid notch. This results in compression as the nerve traverses the lateral edge of the scapular spine with resultant denervation of the infraspinatus muscle.^{2,4,5}

SGNCs are more commonly diagnosed in men than in women. This may be explained by the more frequent absence of the inferior transverse ligament in women. They may occur at any age but are most commonly diagnosed between the ages of 20 and 40 years.^{2,4} Trauma may be an initiating factor, and SGNCs are more common in certain sports, such as baseball, volleyball and weightlifting.

In the case presented, MRI of the shoulder revealed a large lobulated ganglion situated in the spinoglenoid notch. This is well demonstrated on coronal T_2 -weighted sequences (Fig. 3), where it is of uniform high signal. In addition, on sagittal short tau inversion recovery

(STIR) sequence (Fig. 4), the infraspinatus muscle is oedematous, which is typical of early denervation.

The clinical features of SGNC include pain, which is most evident with overhead activities and sports. The suprascapular nerve is slack at rest but becomes taut against the spinoglenoid notch during forced movements involving adduction and external rotation, which explains increased symptomatology during these acts. The pain may also occur with activities of daily living or even at rest. On examination of the affected shoulder, the most significant findings are posterior shoulder tenderness and infraspinatus atrophy. There may be associated supraspinatus muscle atrophy because of extension of the ganglion into the supraspinatus fossa. Weakness in external rotation might also occur.^{2,4,5}

The pathology behind the formation of a spinoglenoid cyst is unclear, but it has been suggested that the mechanism involves a 1-way valve system. Fluid leaks out of the joint through a superior labral defect, forms a cyst and cannot get back into the joint. Superior labral pathology is found in association with SGNC in most cases, whether it be detachment, degeneration or discrete tears of the posterolateral superior labral complex.^{1,2}

The differential diagnosis in the case of shoulder pain includes rotator cuff tears, quadrilateral space syndrome, cervical disk disease, adhesive capsulitis, degenerative joint disease, brachial plexopathy, acromioclavicular joint disease and Pancoast's tumour.⁵

Imaging of ganglion cysts with MRI reveals low-intensity signal on T_1 -weighted images and high-intensity signal on T_2 -weighted images. The denervated

infraspinatus muscle may show high-signal intensity on T_2 -weighted images. This change in signal intensity occurs at about 15 days postdenervation and returns to normal 2 to 3 months after the cause of the nerve compression is removed. This signal change may also occur as a result of exercise-induced change, rhabdomyolysis and tumour involvement.⁴

Conservative treatment with non-steroidal medication and physiotherapy may be sufficient, and spontaneous resolution of the cyst has been described.^{1,2} Other treatment options include needle aspiration, arthroscopic débridement or surgical excision of the cyst. Surgical excision may provide satisfaction in up to 96% of patients, with total resolution of pain.²

Competing interests: None declared.

References

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