

Geyser Phenomenon of the Shoulder

Patrick Graham

Introduction

Cysts of the acromioclavicular (AC) joint are rare. Sometimes referred to as ganglion cysts, they are classified as either being associated with AC pathology without the presence of rotator cuff pathology (Type 1) or being associated with chronic rotator cuff pathology (Type 2). This latter type, with imaging findings of glenohumeral joint fluid “erupting” through the AC joint, is known as Geyser phenomenon or Geyser sign. Patients may report a wide array of chronic shoulder symptoms but, in rare cases, may primarily note an asymptomatic shoulder mass (Cho, 2014; Cooper et al., 2011; Maziak et al., 2018; Negi et al., 2018; Purohit et al., 2019; Tshering-Vogel et al., 2005).

Case Presentation

A 64-year-old, right-hand-dominant male presented with a primary complaint of a shoulder “lump.” He had noted it about 1 month prior to evaluation while showering. By his report, it continued enlarging over the next week and then stabilized. He denied any trauma, bug bites, or other inciting incident. He did note “over 10 years” of waxing/waning shoulder pain, attributed to his former line of work as a carpenter. He would typically treat these symptoms with rest, use of ibuprofen, and “a few beers.” He had taken ibuprofen on occasion in previous weeks but did not note any difference in the appearance of the shoulder “lump” when taking medication. He had not tried ice. The “lump” was not particularly painful, rather described as a nagging discomfort with clothing. His wife had also reportedly verbalized concern about a mass spontaneously appearing about his shoulder. He denied any distal symptoms of the upper extremity.

Upon presentation was an alert, oriented, affect-appropriate male in no apparent distress. Inspection revealed an approximately golf ball-size mass of the superior shoulder, about the AC joint, without overlying skin changes. Upon palpation, this was found to be soft, non-pulsatile, nonmobile, and nontender. There were smooth, well-demarcated borders. The patient reported negative Tinel’s sign. Shoulder range of motion was uninhibited and painless, although did display positive empty can, lift off, and Hawkins signs. He was otherwise found to be distally neurovascularly intact.

Management

Imaging obtained at the time of evaluation included anteroposterior, lateral, Grashey, and Y-views (see Figure 1). There was no apparent fracture or dislocation.

There was appreciable AC and glenohumeral narrowing, osteophyte formation, and chronic calcifications about the greater tuberosity. There is also notable narrowing of the acromiohumeral interval, which is indicative of chronic rotator cuff pathology.

Given the primary complaint of a shoulder mass, along with the radiographic findings and positive rotator cuff signs on examination, the patient was referred for magnetic resonance imaging with and without contrast (MRI w/o contrast). MRI has become the gold standard in evaluating rotator cuff pathology and is the preferred primary diagnostic imaging tool in the evaluation of soft-tissue masses. The importance of contrast is in assessing for heterogeneous uptake, which is associated with internal vascularity, a concerning finding for malignancy (Cooper et al., 2011; Negi et al., 2018; Peabody & Attar, 2014; Tshering-Vogel et al., 2005).

Fortunately, this patient’s MRI w/o contrast was instead notable for a rounded lesion with only rim enhancement, findings consistent with a cyst (Peabody & Attar, 2014). This was clearly communicating with the glenohumeral joint through the AC joint (see Figure 2). The MRI scan also illuminated extensive rotator cuff pathology, chronic labral tearing, along with degenerative AC and glenohumeral joints, a constellation of findings known as Geyser phenomenon. Given the potential inadequacy of resolution, risk of infection, and the likelihood of recurrence with percutaneous treatment, the patient was referred to an orthopaedic shoulder specialist for consultation regarding surgical options. Although the specific technique may be debated, the evidence is clear that the underlying rotator cuff and/or AC pathology should be treated at the time of cyst excision to appropriately address this issue in its entirety (Cho, 2014; Cooper et al., 2011; Maziak et al., 2018; Negi et al., 2018; Purohit et al., 2019; Tshering-Vogel et al., 2005).

Discussion

Although some may be asymptomatic, it is more common for patients to report chronic shoulder symptoms, even if not acutely symptomatic, when presenting for

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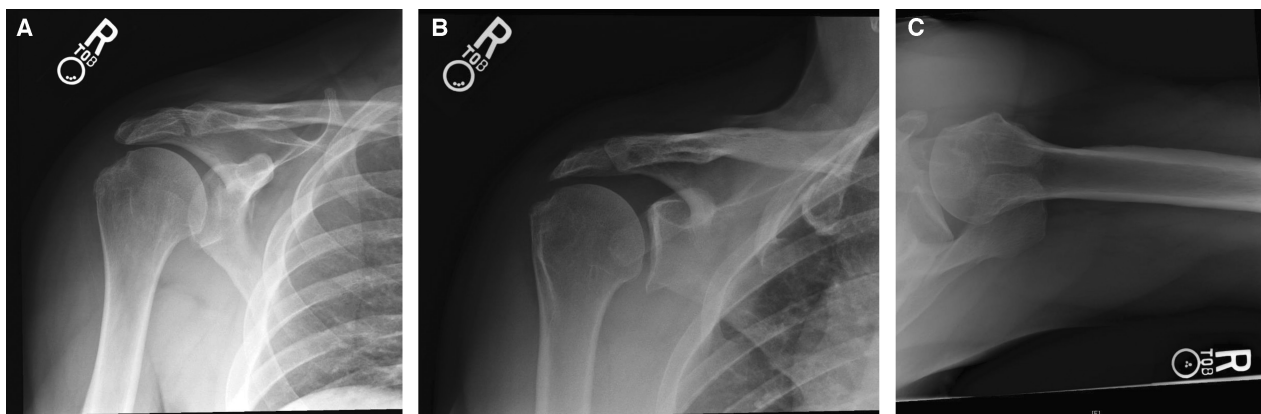


FIGURE 1. Shoulder radiographs—anteroposterior, Grashey, and axillary—notable chronic changes about the shoulder include acromioclavicular and glenohumeral narrowing, osteophyte formation, and chronic calcifications about greater tuberosity. There is also notable narrowing of the acromiohumeral interval, which is indicative of chronic rotator cuff pathology.

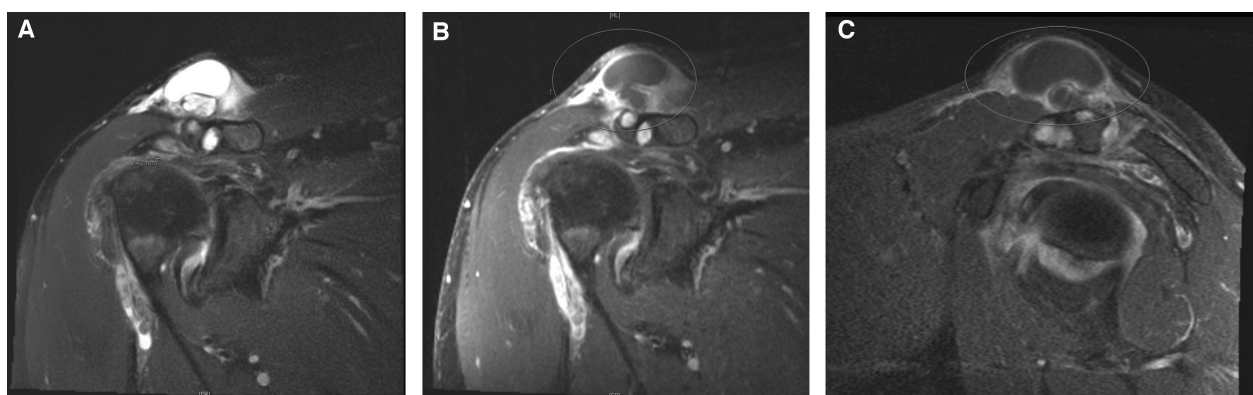


FIGURE 2. Coronal T2 with fat suppression (T2 + fatsat), coronal and sagittal T2 post-contrast (post-contrast). On T2 + fatsat, annotation denotes a chronic tear of the supraspinatus. Note the lobulated, well-circumscribed, bright fluid signal about superior aspect of the shoulder that communicates with the glenohumeral joint via the acromioclavicular joint. In post-contrast images, ellipse denotes the cyst—homogenous fluid signal with peripheral enhancement.

evaluation. These symptoms may be otherwise manageable, but the presence of a soft-tissue mass raises enough concern for them to seek evaluation and thus may likely be the presenting complaint. It is important to understand what the patient's goal is in seeking care. Geyser phenomenon is a rare finding that highlights select cases in which successful treatment requires the underlying pathology be addressed, even if it is not the primary presenting complaint. The orthopaedic nurse and the advanced practice provider play a key role in ensuring effective communication with the patient to facilitate their making an informed decision (Cho, 2014; Cooper et al., 2011; Maziak et al., 2018; Negi et al., 2018; Purohit et al., 2019; Tshering-Vogel et al., 2005).

The author would also note the importance of including contrast when ordering MRI to evaluate a soft-tissue mass. There may otherwise be ambiguity in the instance where a solid tumor is found. In such a case, the patient should be promptly referred to an orthopaedic oncologist for further evaluation and consideration for tissue sampling when appropriate (Peabody & Attar, 2014).

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