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Case Report

A rare case of tophaceous gout manifesting as an osteolytic lesion of the acromioclavicular joint[☆]

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ABSTRACT

An osteolytic lesion on imaging can be considered malignancy until proven otherwise. However, advanced stages of gout have presented with sclerotic rims and lytic lesions thought to be due to overexpression of osteoclasts. Patients have been found to demonstrate osteolytic lesions in patellar regions, which are common locations for gout to manifest; however, to our knowledge, no other cases of osteolytic gout in the acromioclavicular joint have been reported at this time. We report a rare case of a 56-year-old male who presented with acute-on-chronic left upper extremity pain and was found to have an osteolytic lesion of the shoulder on imaging. This lesion was later biopsied and found to be histologically consistent with gout. This case report aims to elucidate further understanding of the various ways that gout can present, to diagnose and treat these patients more effectively.

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Introduction

Gout is a common diagnosis made in medicine, with patients typically developing lesions in the great toe, knees, and ankles, and less commonly in the wrists and fingers. Imaging of later manifestations of gout can present with osteolytic lesions, secondary to tophi development. Lytic gout is a less common radiographic finding, even less common in the upper extremity shoulder joint. Here, we discuss a case of right

shoulder pain with an osteolytic lesion identified on X-ray, initially thought to be a malignancy, later confirmed to be gout.

Case report

This is a 56-year-old African American gentleman, with a past medical history of gout, colonic tubular adenoma, hyperlipidemia, hypertension, congestive heart failure, coronary artery

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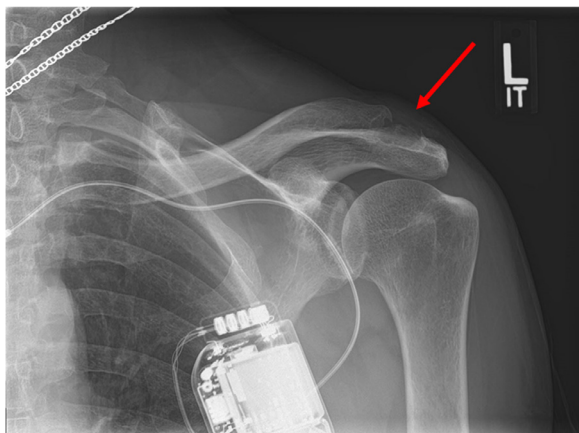


Fig. 1 – Left shoulder XR, significant for osteolytic lesion involving the acromial process of left scapula adjacent to the acromioclavicular joint, metastatic lesion not excluded.

disease, and chronic kidney disease, who presented to the emergency department (ED) with complaints of acute sudden onset of left hand, wrist, and shoulder pain for 2 days. The patient endorsed shooting pain radiating down his left arm, associated with paresthesias. At the time of presentation, the patient denied a history of trauma or injury to his left shoulder. The patient had been taking Allopurinol daily for his gout. He denied joint swelling, erythema, stiffness, subjective fever, chills, chest pain, dyspnea, or weakness. In the ED, the patient was hemodynamically stable.

X-ray (XR) imaging of the left wrist was significant for osteopenia without evidence of fracture, dislocation, periosteal reaction, or lytic lesion. XR of the left hand was significant for soft tissue swelling at the thumb, proximal index finger, proximal 3rd finger, and over the head of the 5th metacarpal bone without evidence of fracture, dislocation, periosteal reaction, or lytic lesion. XR of the left shoulder was significant for an osteolytic lesion involving the acromial process of the left scapula adjacent to the acromioclavicular joint with a metastatic lesion not excluded (Fig. 1). The patient was notified of the results and was discharged home with recommen-

dations to follow up with an outpatient provider for further workup of his imaging findings.

A computed tomography (CT) scan without contrast of the left shoulder was obtained outpatient, was significant for expansile, heterogeneous, lytic soft tissue lesion of the left acromioclavicular joint measuring approximately $2.8 \times 2.1 \times 1.6$ cm, with adenopathy of the mediastinum and a lymph node measuring up to 1.1 cm (Fig. 2). Additionally, the CT image was significant for a persistent subpleural density likely representative of lymph nodes of the left lung, with recommended clinical correlation for lymphoma. The patient also had an XR osseous survey completed which was significant for osteolytic lesion of the acromion process of the left scapula with extension across the acromioclavicular joint involving the distal left clavicle, with no other evidence of osteolytic skeletal lesions. The patient underwent a CT scan of the thorax without contrast, significant for stable mediastinal lymphadenopathy as well as stable reticulonodular interstitial thickening and peribronchial opacification most notably in the right upper lobe.

The patient was evaluated outpatient by the Hematology-Oncology team, and serum protein electrophoresis was obtained outpatient, which did not show an M-spike, and was significant for a polyclonal increase in immunoglobulins. The patient was recommended to undergo a CT-guided biopsy of the lytic lesion, which was completed with findings consistent with gout. Pathologic analysis of the specimen showed fibrous tissue with multiple gout tophi deposits and no evidence of a neoplastic process (Fig. 3).

Discussion

Gout has been shown to manifest in particular ways via radiographic imaging. For instance, in the early stages of gout, patients may have soft-tissue swelling findings on XR, versus in the intermediate stage, patients may have joint space narrowing secondary to tophi, as well as intracortical erosion development [1]. Later stages of gout have been shown to display more prominent calcifications as well as confluent para-

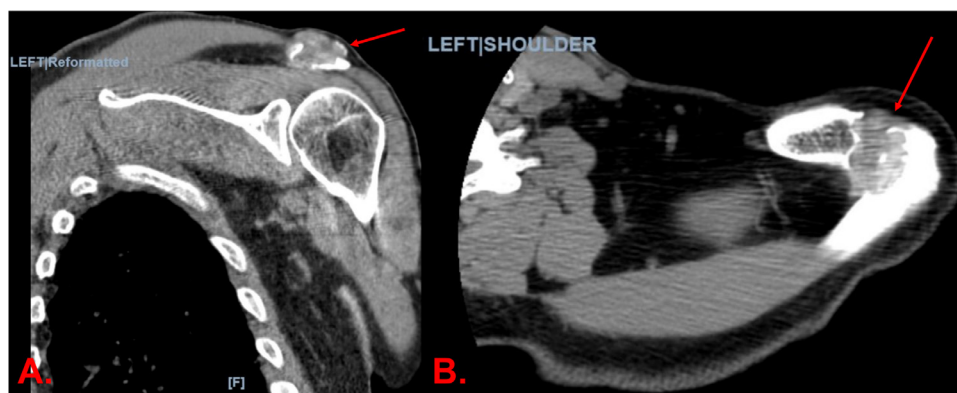


Fig. 2 – Left shoulder CT without contrast, demonstrating expansile, heterogeneous, lytic soft tissue lesion of the left acromioclavicular joint measuring approximately $2.8 \times 2.1 \times 1.6$ cm (AP x transverse x craniocaudal) indicated by the red arrows. (A) Coronal view, (B) axial view.

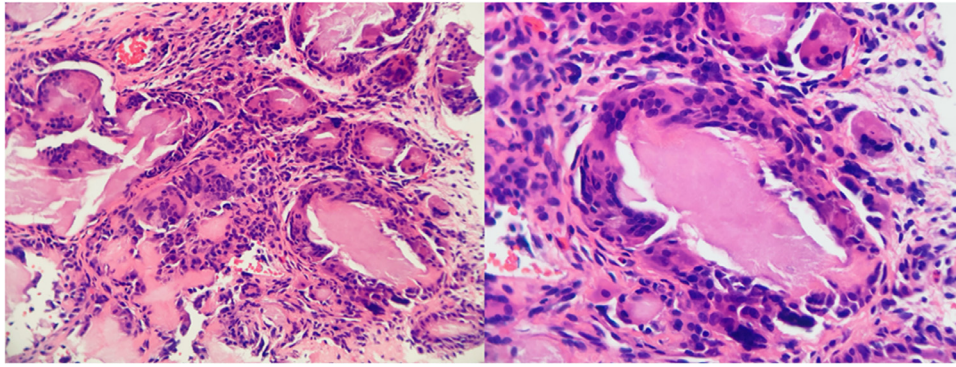


Fig. 3 – Surgical pathology of the left shoulder bone, consistent with gout (H&E stain significant for amorphous deposits surrounded by granulomatous inflammation with giant cells, no evidence of neoplastic process). (A) 200× magnification, (B) 400× magnification.

articular tophi with sclerotic rims on XR imaging [1]. There have been cases reported of osteolytic lesions of bone on radiographic imaging, representative of gout [2]. In our patient, XR of the shoulder was significant for osteolytic lesion of the acromion process, which has been reported as a rare finding on imaging associated with tophaceous gout. In our case, dual-energy CT was not performed; however, may have been able to quantify urate crystals in our patient.

The exact mechanism of how gout impacts the bones remains unclear; however, immunohistological studies have demonstrated cells expressing markers of osteoclast phenotypes that are closely associated with monosodium urate crystals which can be found in gouty tophi [3]. This may provide an explanation for the mechanism of rare osteolytic lesions found on imaging due to osteoclast upregulation. Our patient had a long-standing history of gout and therefore his shoulder lesion may have been a result of a chronic gout attack to the joint with the progressive development of punched-out lesion of the bone via osteoclast overexpression.

Patients with chronic gout and the development of tophi may demonstrate osteolytic lesions on imaging. In a retrospective study reviewing 7 patients with osteolytic patellar lesions consistent with gout, the majority of patients were males in their 50s, with characteristics similar to those who present with typical gout [4]. Following completion of the literature review, there have been no cases of osteolytic gout manifesting in the acromioclavicular joint. Our patient fit the typical age, and gender of patients associated with the study of osteolytic patellar gout; however, He presented with a shoulder lesion, rather than a lesion in the lower extremity.

There are a multitude of joints that can be impacted in patients with gout. More specifically, patients commonly develop tophaceous gout in cartilage, articular areas, sheaths of tendons, within subcutaneous layers, and in synovial spaces [5]. Gout presenting in the acromioclavicular joint is relatively rare. In a 30-year study observing over 2,000 patients with gout, only 4 patients were found to have acromioclavicular joint involvement [1]. Our patient presented with gout manifesting in his acromioclavicular joint, with no involvement in his lower extremities or hands.

Gout is generally not the first differential to be considered when a patient presents with an isolated osteolytic lesion

on imaging, especially when present in the acromioclavicular joint. Differential diagnoses with punched-out lesions are very dependent on the patient's age [6]. Some more common differential diagnoses associated with osteolytic lesions include proliferative processes such as multiple myeloma, granulomas, osteoblastoma, chondroblastomas, giant cell tumors, fibrous dysplastic lesions, fibromas, chondromas, metastatic cancer to the bone [6]. Additionally, patients can develop lytic lesions secondary to hyperparathyroidism, bone cyst, or chronic infection [6].

Conclusion

When patients are found to have lytic lesions on X-ray imaging, cancer is a diagnosis that must be excluded. Ultimately, not all lytic lesions are associated with a neoplastic process. In our case, our patient presented with findings concerning for malignancy, later found to be histologically proven gout. Although the patient had a history of gout, the location of the lesion and radiographic findings created a high clinical suspicion of malignancy, and therefore biopsy of the bone was obtained. There are limited studies regarding osteolytic lesions consistent with gout, especially in the location of the shoulder. Additional research is warranted in order to further understand the disease process and lead to an earlier diagnosis of chronic gout.

Patient consent

As this is a case report, consent was obtained for the purpose of this paper.

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