



Radiology Quiz

A big round hole in the elbow

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HISTORY

A 36-year-old man presented with atraumatic pain and swelling in the right elbow for the past 1 year, for which treatment was taken at multiple places in the form of pain medications that led to only transient relief. For the past 3 months, pain and restriction of elbow movement have affected his daily activities. Radiographs were followed by magnetic resonance imaging (MRI) of the elbow.

- What are the radiographic findings?
- What are the differential diagnoses?
- What is the pathology?

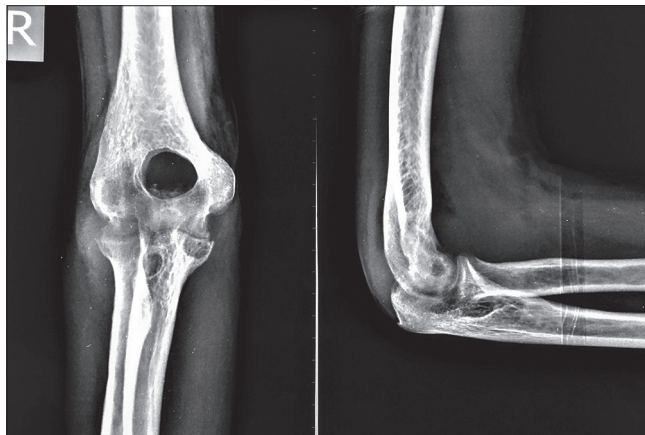


Figure 1: The elbow radiograph shows a round hole created by the enlarged coronoid (or olecranon) fossa by the disease process, along with a poorly defined joint outline and regional osteopenia. Two eccentric lytic lesions are appreciated in the proximal ulna, and a hazy olecranon tip can be seen within the round hole.

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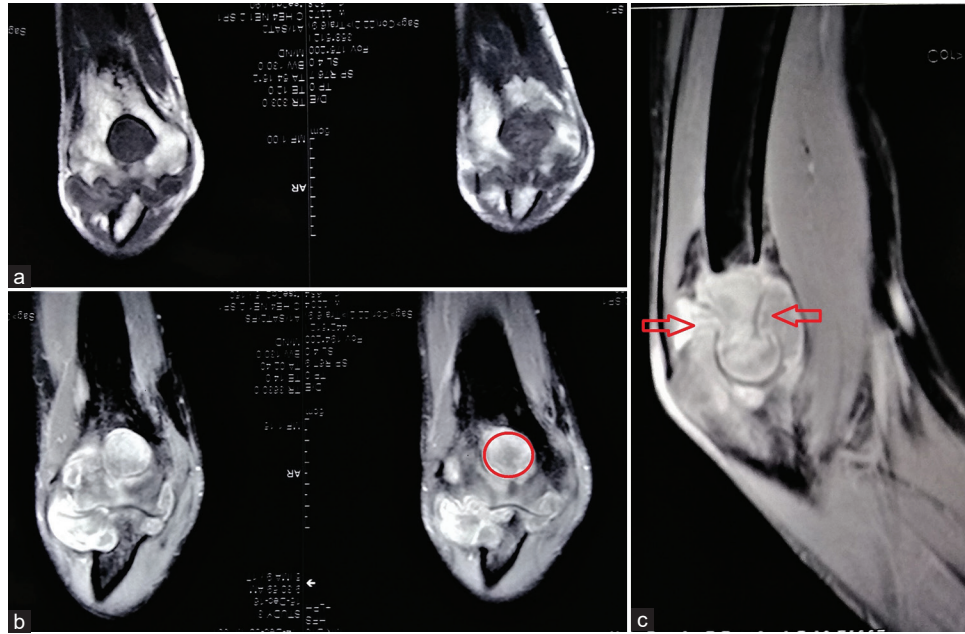


Figure 2: The magnetic resonance imaging coronal T1-weighted (a) and fat-suppressed (b) images show round coronoid fossa with associated synovial hypertrophy and surrounding marrow edema. The fossa has been eroded in a circular shape (denoted by the red circle) by the disease process. The sagittal image (c) shows the disease process involving the entire elbow region and engulfing the coronoid or olecranon fossa (denoted by arrows).

FINDINGS

Symmetric resorption of bones around the olecranon fossa (or coronoid fossa) due to a pathological process is noted, leading to the enlargement of the fossa [Figure 1]. There are also poorly defined articular surfaces of humeroulnar and proximal radioulnar joints, along with a few eccentric lytic lesions over the proximal ulna.

The MRI shows bone marrow edema along the distal humerus and proximal ends of the radius and ulna. Associated synovial hypertrophy and effusion [Figure 2] suggest an infective arthropathy.

DIFFERENTIAL DIAGNOSIS

Elbow arthropathy can have many common differential diagnoses that need careful exclusion. A few common ones are:

Pyogenic infection (to be excluded by a history of acute infective symptoms and absence of bony ankylosis), Brucellosis (to be excluded by a history of cattle exposure or use of unpasteurized dairy products along with appropriate laboratory tests), Inflammatory arthropathy like gout (to be excluded on the basis of acute symptoms and other relevant investigations. Chronic recurrent history of acute exacerbations also needs to be noted), Rheumatological arthropathy (to be excluded on the basis of a poly-articular disease and with other corresponding features or serological correlations).

The characteristic indolent course of the disease and inclusion of juxta-articular osteopenia, eccentric lesions, and joint space narrowing (“Phemister triad”) favors the diagnosis of the tubercular affliction of the joint.

DIAGNOSIS

Tuberculosis of the elbow.

PEARLS AND DISCUSSION

Elbow is an uncommon site for skeletal tuberculosis and accounts for 2–5% of all osteoarticular cases.^[1] It usually presents with insidious onset of pain, swelling, and varying degrees of restricted elbow motion. Radiological features lag behind clinical ones and are usually characteristic. Advanced imaging modalities like MRI may further delineate the pathology, but the final diagnosis requires isolation of the causative organism.

Coronoid lesion is a rare form and has been described in a few cases.^[2] The advanced stage of elbow disease has many features, including the presence of osteolytic cavities. However, bone erosions are part of disease progression, but strikingly circular enlargement of the coronoid fossa is not well described.^[3] Non-specific radiological features also do not mention the occurrence of a symmetrically enlarged coronoid or olecranon fossa. However, common features are described as a synovial thickening, intraosseous abscesses, and cavities.^[4]

Histopathological, molecular, or microbiological diagnosis should be sought in all cases. Resolution of swelling, tenderness, or sinuses is noted clinically, suggesting healing of the disease. Radiologically, re-mineralization and sharpening of the previously poorly defined articular surfaces of the joint denote a good response to anti-tubercular therapy. Diagnosis at an early stage of the disease ensures optimal outcomes.^[5]

AUTHORS' CONTRIBUTIONS

The TP did the literature search and wrote the first draft while GSD collected the data. All authors have critically reviewed and approved the final draft and are responsible for the manuscript's content and similarity index.

DECLARATION OF PATIENT CONSENT

The authors certify that they have obtained all appropriate patient-informed consent. The patient has given consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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CONFLICTS OF INTEREST

There are no conflicting relationships or activities.

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