Case 9701

Calcific tendonitis of gluteus maximus insertion
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Section: Musculoskeletal system
Area of Interest: Musculoskeletal soft tissue
Procedure: Diagnostic procedure
Technique: Conventional radiography
Special Focus: Calcifications / Calculi
Case Type: Clinical Cases
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Patient: 57 years, male

Clinical History:
A 57-year-old man presented with a one-month history of severe worsening left buttock pain.

Imaging Findings:
Plain radiographs of the upper thigh show a mineralised density adjacent to the posterior aspect of the femur (Fig 1). No underlying periosteal reaction or erosion of the adjacent cortex was visualised. The linea aspera was seen in profile. CT showed an irregular amorphous focus of calcification at the insertion of the gluteus maximus muscle on the linea aspera of the proximal left femur with no associated soft tissue mass, and no adjacent fluid collection (Fig 2).

Discussion:
Calcific tendonitis is a frequently painful condition of unknown aetiology characterised by deposits of poorly mineralised hydroxyapatite (a crystalline calcium phosphate) in tendons, most commonly affecting tendons of the rotator cuff. While not always symptomatic, calcific tendonitis presents with pain and inflammation. It is proposed that calcific tendonitis progresses through four clinico-pathological phases:
1. Formulative: A portion of tendon undergoes fibrocartilagenous transformation due to an unknown trigger and chalk-like calcification is deposited in the transformed tissue.
2. Resting: Once the calcified deposit is formed it undergoes a resting phase that may or may not be painful. It may also cause mechanical symptoms at this stage.
3. Resorptive: An inflammatory response follows due to increased vascularity at the site of the calcific deposit. Macrophages and multinucleate giant cells attempt to absorb the calcific deposit. At this stage the calcific deposit resembles toothpaste and may leak into adjacent tissues including bursae, causing painful symptoms.
4. Postcalcific: Once the calcific deposit has been resorbed, the collagen pattern of the tendon is reconstituted by fibroblasts.

Two types of calcification have been described: a localized homogenous deposit with well defined borders and a more diffuse, amorphous deposit with an ill-defined periphery that has been associated with the more symptomatic resorptive phase. Although often subtle, plain radiographs may show calcific deposits in characteristic locations of tendon insertion. CT, Ultrasound and MRI are utilized to define the location, distribution and morphology of the calcification, the relationship to and integrity of the adjacent tendon and any associated inflammatory reaction occurring in the adjacent bone.
A number of published descriptions have shown calcific tendinitis at the gluteus maximus insertion (1-3), an
uncommon site for this disorder. Atypical and aggressive features have been described in association with calcific tendonitis at this location (4), which is often mistaken by those unfamiliar with this diagnosis for an aggressive process such as surface osteosarcoma.

Treatment includes conservative treatment exercise and physiotherapy and symptomatic relief with analgesic and anti-inflammatory medications. Needling and aspiration (barbotage) with injection of steroid and local anaesthetic has been used to good effect (5). Surgery has been performed in refractory cases.

In the correct clinical setting with the classical imaging appearances, there is rarely a differential diagnosis. Imaging appearances can be atypical however and the calcific deposit may cause underlying osseous erosion. In these cases CT and MRI can be used to further evaluate these lesions.

**Differential Diagnosis List:** Calcific tendonitis of gluteus maximus insertion, Myositis ossificans, Tumour

**Final Diagnosis:** Calcific tendonitis of gluteus maximus insertion

**References:**


Description: Oblique radiograph of the proximal left femur shows amorphous calcification in the infratrochanteric region. Origin: Department of Radiology, Vancouver General Hospital, Vancouver, British Columbia, Canada
Description: Transverse (A) and coronal (B) non-contrast CT images of the proximal left femur once again shows the amorphous calcification just lateral to the linea aspera. No cortical erosion is seen.

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Description: Transverse (A) and coronal (B) non-contrast CT images of the proximal left femur once again shows the amorphous calcification just lateral to the linea aspera. No cortical erosion is seen.

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