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Painful Enchondroma of the Tibial Tuberosity: A Case Report

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Abstract | **Case Report**

Enchondromas are defined as benign tumors of cartilaginous origin, often discovered incidentally. We report a case of a tibial enchondroma in a 40-year-old woman who presented with inflammatory-type leg pain. Standard imaging revealed a well-defined, multilobulated intramedullary osteolytic lesion centered on the tibial tuberosity, with no periosteal reaction or soft tissue involvement. CT scan confirmed the diagnosis of enchondroma. We will discuss the main clinical, radiological, and histological features, as well as therapeutic options. This case is notable for its unusual location at the tibial tuberosity, its painful presentation, and the absence of signs of complication.

Keywords: Enchondroma, Benign Bone Tumors, Inflammatory Pain, Osteolytic Lesion.

INTRODUCTION

Enchondromas are intramedullary benign tumors of hyaline cartilage origin, accounting for approximately 10–15% of all benign bone tumors. They typically arise in the metaphyseal regions of long bones such as the femur, humerus, and phalanges. Most lesions are asymptomatic and discovered incidentally. Pain, when present, may suggest complications such as pathological fracture or malignant transformation.

We report a case of a symptomatic enchondroma located at the tibial tuberosity, a rare and atypical site, diagnosed through radiological imaging and confirmed by histological examination.

CASE REPORT

A 40-year-old woman presented with inflammatory-type pain in her right leg, which had been evolving over several weeks, without any history of trauma or associated general symptoms. The pain, localized to the anterior aspect of the leg, was aggravated by physical activity and was resistant to common analgesics.

A standard X-ray of the leg was performed as an initial investigation, revealing a well-defined osteolytic lesion in the proximal tibia. To better characterize the lesion, a computed tomography (CT) scan of the leg was carried out without contrast injection.

The CT scan revealed an intramedullary osteolytic lesion centered on the tibial tuberosity, measuring 21 x 25 mm. The lesion had well-circumscribed, multilobulated contours, with internal calcifications within the spongy bone. There was no cortical thickening, periosteal reaction, or invasion of adjacent soft tissues. The thigh muscle group appeared preserved, and no fracture lines were observed.

The radiological appearance was suggestive of an enchondroma located at the tibial tuberosity. Given the painful symptoms and the unusual location, surgical curettage was performed, followed by histological confirmation of the diagnosis. The postoperative course was favorable and uneventful.

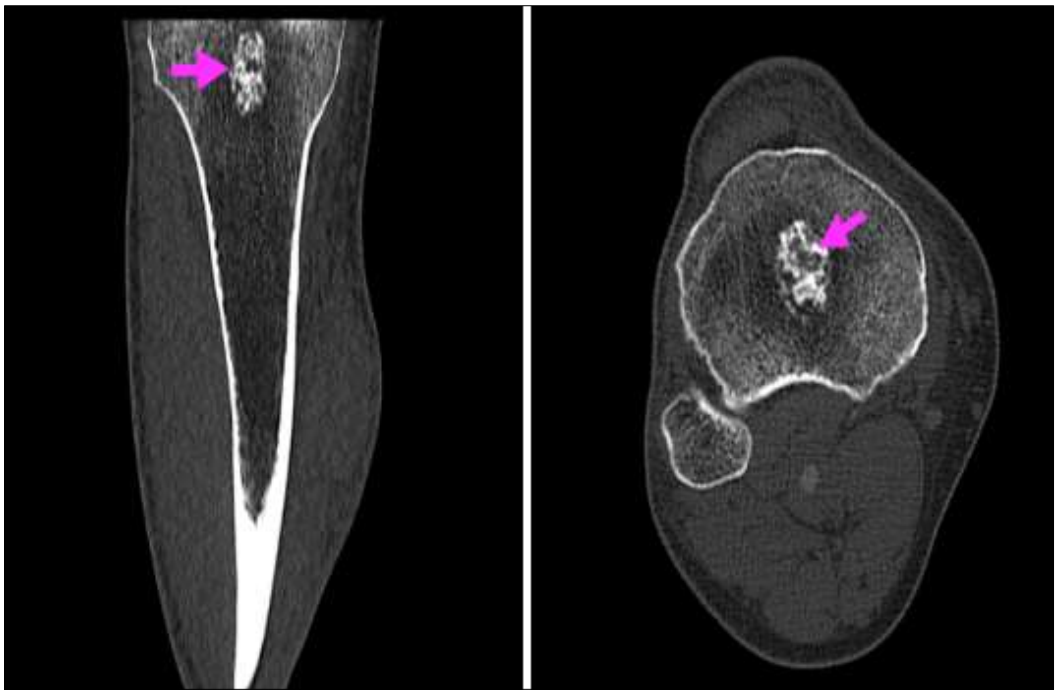

Figure 1: Sagittal and axial CT images of the leg (without contrast: bone window) showing a well-defined intramedullary osteolytic lesion centered on the tibial tuberosity, measuring 21 × 25 mm. The lesion displays multilobulated margins and internal chondroid calcifications, without cortical thickening, periosteal reaction, or soft tissue involvement

DISCUSSION

Enchondromas are among the most common benign cartilaginous bone tumors, accounting for approximately 10–15% of all benign bone tumors and 3–10% of all bone neoplasms. These tumors are typically discovered incidentally, as 70–80% of cases remain asymptomatic, and are usually localized in the metaphyseal regions of long bones such as the femur and humerus or in the small bones of the hands and feet—where they represent up to 60% of solitary enchondromas.

Painful presentations, as seen in 20–30% of cases, are less common and often raise concerns about complications such as microfracture or malignant transformation. The risk of transformation into chondrosarcoma remains low (<1% in solitary lesions), but increases significantly in syndromic cases such as Ollier disease (25–30%) and Maffucci syndrome (40–50%).

The tibial tuberosity is an exceptional site for enchondromas. To our knowledge, very few cases have been reported in the literature with this localization. The tuberosity is a traction apophysis subjected to mechanical stress, particularly from the patellar tendon. This may explain the occurrence of pain even in benign lesions without complications. In this patient, the pain had an inflammatory character, with no trauma history or systemic signs. In such cases, the possibility of malignancy (chondrosarcoma) must be carefully considered.

Imaging plays a central role in the diagnosis and follow-up of cartilaginous tumors. On plain radiographs, enchondromas typically appear as centrally located, well-defined osteolytic lesions with a lobulated contour. The presence of internal calcifications in the form of arcs and rings is highly suggestive of a chondroid matrix. In our case, the lesion exhibited all these classic features, but its location at the tibial tuberosity raised diagnostic concerns.

Computed tomography (CT) provided improved spatial resolution, clearly delineating the lesion's margins and showing the absence of cortical breach or soft tissue extension—findings in favor of a benign process. CT is particularly useful in characterizing the extent of matrix mineralization and the presence or absence of periosteal reaction.

Magnetic resonance imaging (MRI), although not performed in this case, could have provided additional information regarding soft tissue involvement, edema, and the tumor’s internal structure. MRI is especially helpful in differentiating benign from low-grade malignant cartilaginous lesions based on signal intensity patterns and perilesional features.

Treatment is typically conservative in asymptomatic cases. Surgical curettage is reserved for symptomatic lesions or when malignancy cannot be excluded.

The prognosis for solitary enchondromas is excellent when properly diagnosed and treated.

Malignant transformation is rare (<1%), particularly in lesions outside of syndromic contexts such as Ollier disease or Maffucci syndrome. Nevertheless, regular clinical and radiological follow-up is advisable, especially in patients with atypical symptoms or equivocal imaging findings.

CONCLUSION

This case illustrates a rare presentation of a painful enchondroma localized at the tibial tuberosity. Despite its unusual location and symptomatic presentation, imaging findings were consistent with a benign lesion. Radiological assessment remains pivotal in characterizing such lesions, guiding management, and ruling out malignant transformation.

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