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OSTEOCHONDROMA OF THE TALUS: A CASE REPORT

Radio-Diagnosis

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ABSTRACT

Osteochondroma stands out as the predominant Benign bone tumor, typically manifesting in the metaphyseal region of long bones. This tumor manifests as bony outgrowth capped with cartilage on the bone's surface. The majority (85%) of Osteochondromas are solitary and nonhereditary. Typically emerging in children and adolescents, these lesions often present as painless, gradually expanding masses. However, complications such as Fractures, Bony deformities, Mechanical joint issues and Vascular or Neurological compromise can lead to significant symptoms depending on the location of the osteochondroma.

KEYWORDS

Osteochondroma, Bone tumor.

INTRODUCTION:

Osteochondroma stands as the prevailing Benign bone tumor accounting for 20-50% of benign bone tumours [1-3]. According to the WHO classification, it is characterized as a cartilage capped bony projection emerging on the outer surface of a bone, encompassing a marrow cavity that maintains continuity with the underlying bone [2,4]. Solitary osteochondromas commonly arise at the metaphysis of long bones, notably in the Femur, Humerus, Tibia, Spine and Hip [5].

However, atypical occurrences, such as in the Patellar or Tarsal region have also been documented [6]. Malignant transformation of a Solitary osteochondroma is a rare occurrence, observed in approximately 1-2% of patients [7].

The diagnosis of Osteochondroma necessitates Radiological imaging and in certain instances, when malignancy is suspected, Histological examination is also essential.

Case Description:

We are hereby presenting a case of Osteochondroma of the talus in a 17yr old male patient who presented with symptoms of pain and swelling on medial side of ankle of left leg since 6 months associated with difficulty in walking.

Plain Radiography which is the initial examination reveals characteristic features of the lesion as the bony outgrowth arising from the talus as shown in Figure 1. Computed tomography: A bony growth, measuring approximately 3.0x3.0x3.0 cm, was observed originating from the Infero-medial aspect of the talus. The growth extends towards the antero-medial aspect of the Talo-calcaneal joint.

Cortical continuity is maintained between the growth and talus bone with preserved trabecular bony pattern. Few lytic and sclerotic areas noted within the growth. No evidence of periosteal reaction as depicted in Figure 2. MRI showed a Large lobulated osseous growth seen arising from the Infero-medial aspect of talus. The cortico-medullary cavity of Talus is continuous with the osseous growth. Ill-defined subchondral T1 hypointense and STIR hyperintense areas [representing bony erosions, subchondral cysts and oedema] are seen involving the anterior aspect of the growth. Thin rim of fluid at Talo-navicular joint.

There is displacement of the tibialis posterior tendon and posterior tibial vessels with altered signal intensities in the tendon. The Deep layers of deltoid ligament [anterior Tibio-talar, deep posterior Tibio-talar] appear intact as illustrated in Figure 3.

Plain Radiograph showed a bony protrusion with large base on the Inferomedial aspect of the Talus.

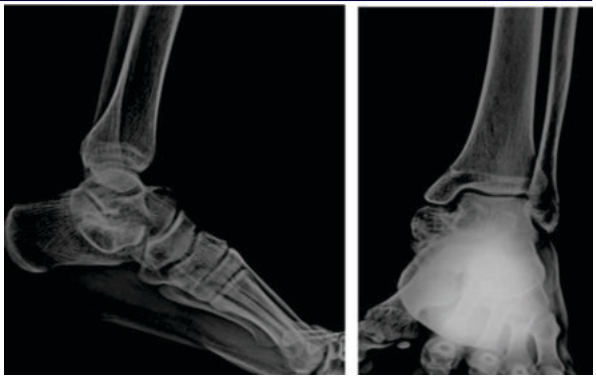


Figure 1: Plain Radiograph of Left Ankle (Lateral and Antero-posterior views)

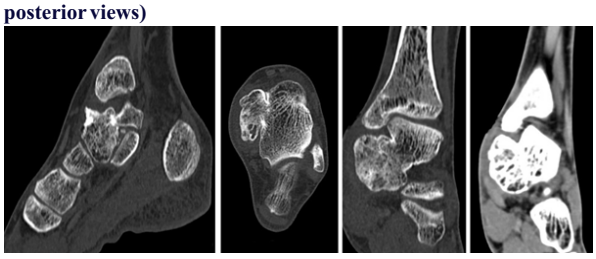
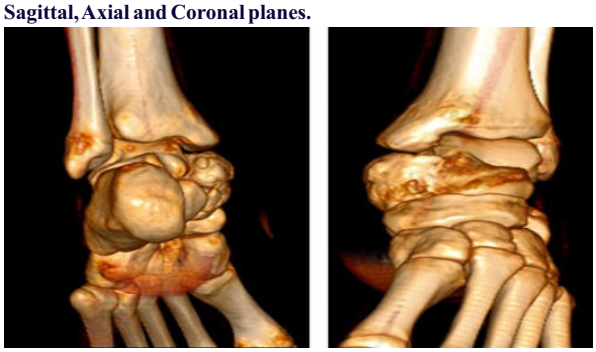


Figure 2: Plain CT of the Left Ankle with 3D Reconstruction in Sagittal, Axial and Coronal planes.



(i) a,b,c- Bone window, (ii) d- Soft tissue window, (iii) e,f- 3D Reconstruction

A bony growth, originating from the Infero-medial aspect of the talus extending towards the antero-medial aspect of the Talo-calcaneal joint.

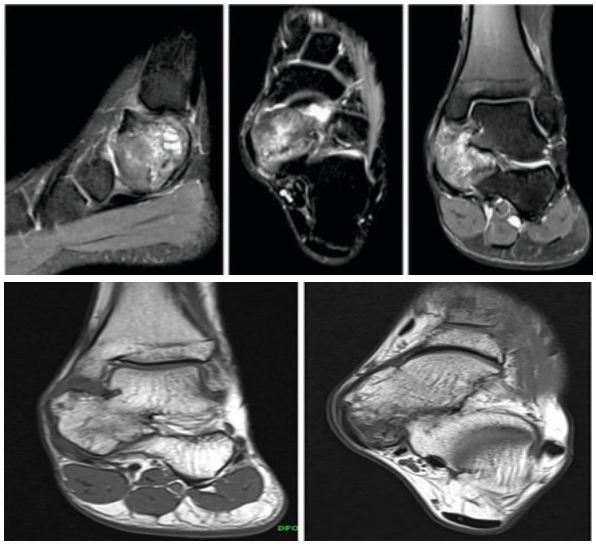


Figure 3: A comprehensive depiction of the tumor with MRI conducted in Sagittal, Axial and Coronal planes.

Large lobulated osseous growth seen arising from the Infero-medial aspect of Talus. Ill-defined subchondral T1 hypointense and STIR hyperintense are seen involving the anterior aspect of the growth. Thin rim of fluid at Talo-navicular joint

Procedure :
Following an incision over the swelling, the tumor, along with its base, was exposed. The tumor was excised in its entirety and sent for histopathological examination, which showed cartilaginous cap composed of chondrocytes arranged in linear pattern. Underlying the cartilaginous cap bony trabeculae intervened by hematopoietic elements are seen, thereby confirming the diagnosis of Osteochondroma as shown in Figure 4.

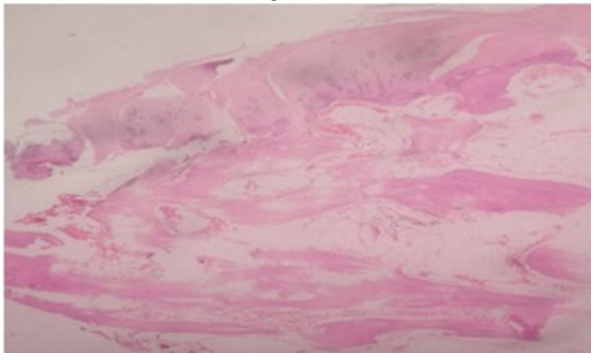


Figure 4: Histopathological examination of excised tumour

Microscopic examination showed Cartilaginous cap with underlying trabeculae with hematopoietic elements.

DISCUSSION:
Osteochondroma stands as the most prevalent benign bone tumor, typically observed in the young and adolescent population. Osteochondroma in tarsal bones in uncommon, and its occurrence in the talus is exceptionally rare. Osteochondroma of the talus was reported in 1984 by Fuselier et al [8]. Computed Tomography is a highly accurate method for visualizing osteochondromas in the Spinal column, Shoulder and Pelvis. It provides detailed visualization of the bony lesion, including the identification of calcifications. Current consensus suggests that CT may be unreliable in assessing this aspect, as its commonly underestimates the thickness of the cartilage. MRI is precise imaging method for the symptomatic cases of bone masses, as it can accurately depict the tumor's morphology, distinguishing an osteochondroma from other surface bone lesions, to assess vascular compromise and nervous involvement. To achieve a comprehensive depiction of the tumor MRI is conducted in Coronal, Sagittal and Axial planes. The cartilaginous cap, rich in water content, exhibits a high signal on T2 weighted MRI and a low signal on T1 weighted sequence. T2 weighted sequence is preferred as it offers superior differentiation of signal intensities. Additionally, a short time inversion recovery (STIR) depiction can reveal associated edema. Woertler et al. proposed that a cartilage cap thickness surpassing 2 cm in adults and 3 cm in children should prompt suspicion of malignant transformation [9].

CONCLUSION:
Osteochondroma holds the distinction of being the most prevalent benign bone tumor and serves as the primary precursor for secondary chondrosarcoma. The diagnosis involves a comprehensive approach, including X -Rays, CT, MRI and Histological examination.

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All authors contributed to the analysis of results, reviewed and approved the final version of the manuscript for submission.

Ethics Statement And Conflict Of Interest Disclosures
Human Subjects:
Consent was obtained from the participant in this study.

Animal Subjects:
All authors have confirmed that this study did not involve animal subjects or tissue.

Conflicts Of Interest:
In compliance with the ICMJE uniform disclosure form, all authors declare the following:

Payment/services Info:
All authors have declared that no financial support was received from any organization for the submitted work.

Financial Commitment:
All authors have declared that they have not received any financial gains from any organizations that might have an interest in the submitted work.

Other Commitments:
All authors have declared that there are no other activities that could appear to have influenced the submitted work.

Summary:
Osteochondroma, a benign bone tumor occupies a paramount position as the principal antecedent to secondary Chondrosarcoma. The diagnostic protocol embraces a meticulous methodology, encompassing various Radiographic modalities including X-rays, CT scans and MRI augmented by histological scrutiny to ensure a nuanced and comprehensive evaluation.

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