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Chondroblastoma of Calcaneum: A Very Rare Tumour at an Unusual Site

[1]Dr.K. Hitesh Akshay Raj, [2]Dr. D. A. V. Suresh, [3]Dr.S. Chandra Sekhar, [4],Dr.P. Ashok Kumar

[1]Junior resident (JR2), Department of OrthopaedicsAndhra Medical College, Visakhapatnam[2], Junior resident(JR3), Department of OrthopaedicsAndhra Medical College, Visakhapatnam, [3]Associate Professor, Department of OrthopaedicsAndhra Medical College, Visakhapatnam. [4]Professor, Department of OrthopaedicsAndhra Medical College, Visakhapatnam. Professor and HOD, Department of OrthopaedicsAndhra Medical College, Visakhapatnam

Abstract: *Chondroblastoma is a rare, benign primary cartilage producing tumour of bone that accounts for approximately 1% of bone tumours. The usual sites are the epiphyseal ends of long bones. Herewith we report a case of a 13 year old male with pain and swelling in right foot since eight months. It was diagnosed radiologicallyas chondroblastoma of calcaneus and was confirmed on histopathology. Chondroblastoma of calcaneus is a rare tumour at a rare site and should always be included in the tumours involving calcaneum.*

Keywords: *Chondroblastoma, calcaneum*

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I. Introduction

Chondroblastoma is a benign, cartilage producing neoplasm usually arising in the epiphyses of skeletally immature patients. Chondroblastoma accounts for less than 1% of all bone tumours. In 1931, Codman classified it as a chondromatous variant of giant cell tumour when he described these lesions in the proximal humerus. Tumor seems to arise from secondary centres of ossification and the cell of origin arises from the epiphyseal plate or some remnant of it. About 12% of all chondroblastoma occur in the bones of the foot. Chondroblastoma in the foot most commonly occurs in subchondral areas of the talus and calcaneal apophysis. In chondroblastoma of the foot and ankle, recurrence is common, and outcomes are generally worse than in other locations in the skeleton. Few cases of Chondroblastoma of calcaneus have been reported. Wherewith we reported a case of chondroblastoma of calcaneus in a 13 year old male with the clinical presentation, histological diagnosis and treatment by curettage.

II. Case Report

A 13 year old male presented to the outpatient department with complaints of swelling and pain in ankle since eight months. The pain was insidious in onset and dull aching which aggravated on walking. There washistory of trauma eight months back. On clinical examination, the swelling was firm in consistency. Tenderness was present on the medial aspect of calcaneum and there was no local rise of temperature. The skin over the swelling was normal.

Radiology

X-ray of ankle revealed alytic lesion in the anterior process of calcaneum, below sinus tarsi with sclerotic rim.

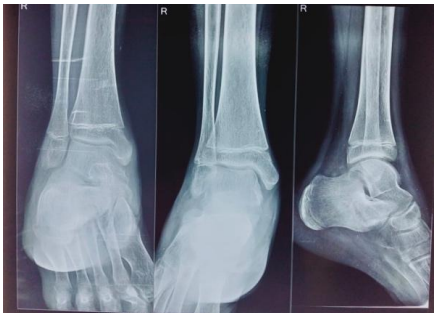

Figure 1. *X ray ankle AP and Lateral views.*

On CT screening , matrix of the lesion shows subtle tiny calcifications and thinning of anterior cortex and a sclerotic rim around the lesion.
MRI revealed expansile lytic lesion involving the anterior aspect of the calcaneum with thinning of the cortex with thickening of adjacent soft tissues. Marrow edema in adjacent calcaneum and talus.

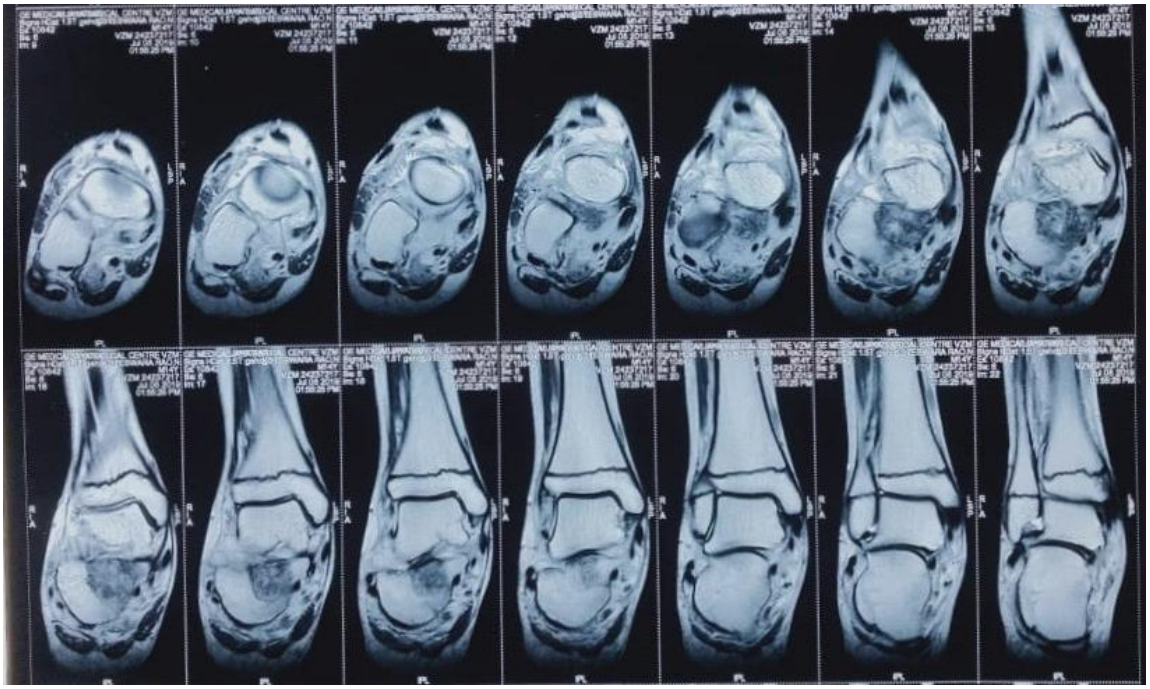

Figure 2. *MRI coronal cuts showing lesion in calcaneum.*

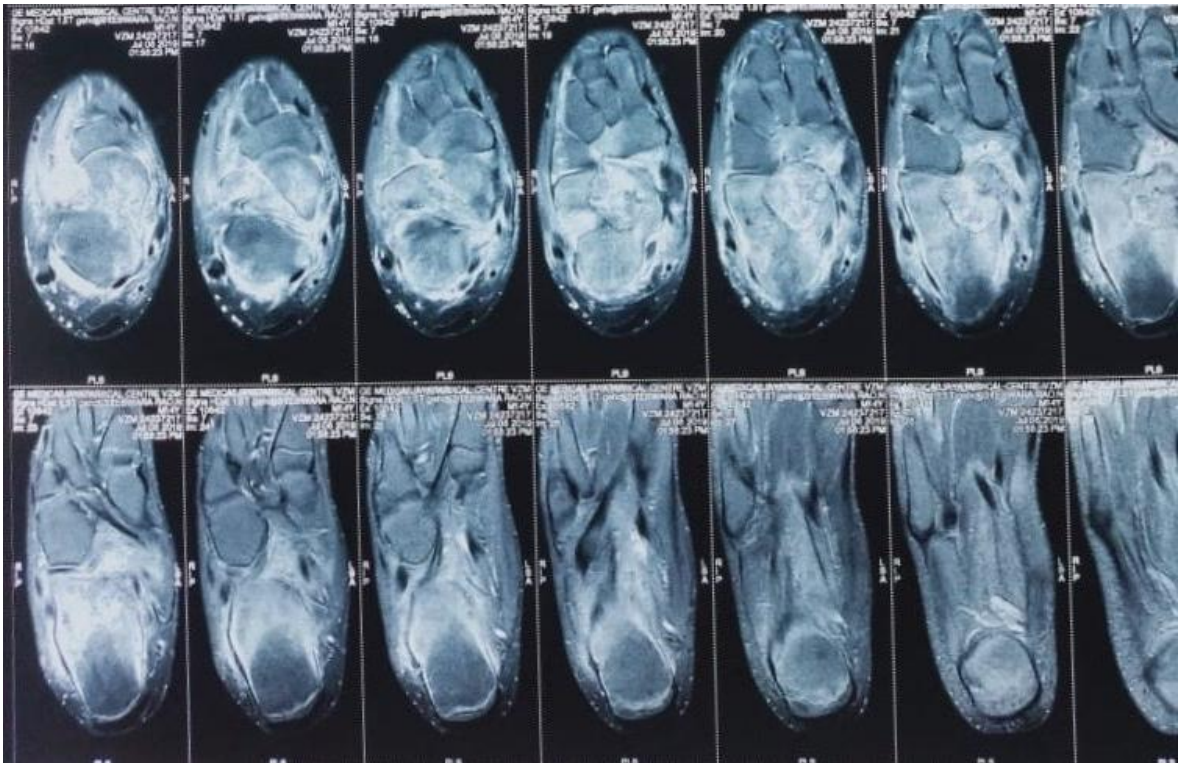

Figure 3. *MRI axial cuts showing lesion in calcaneum.*

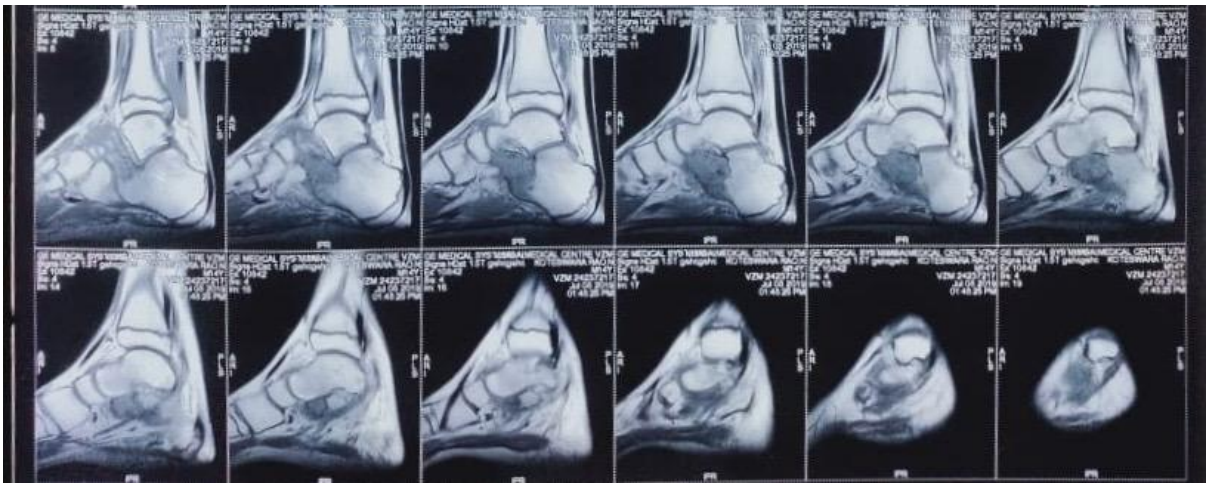

Figure 4. *MRI sagittal cuts showing lesion in calcaneum.*

Operative Technique

Through medial approach, skin incision given from posterior to medial malleolus extending to calcaneum. Superficial dissection done and tibialis posterior tendon retracted. Deep dissection done and flexor hallucis longus and flexor digitorum retracted. Lytic lesion identified over anterior calcaneum. Bone window made and thorough curettage done. Wound wash given and G-bone packed into the cavity. Wound closed in layers.

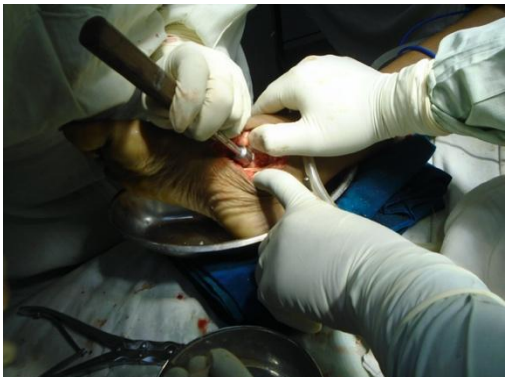

Figure 5. *Packing of the curetted cavity with G-bone.*

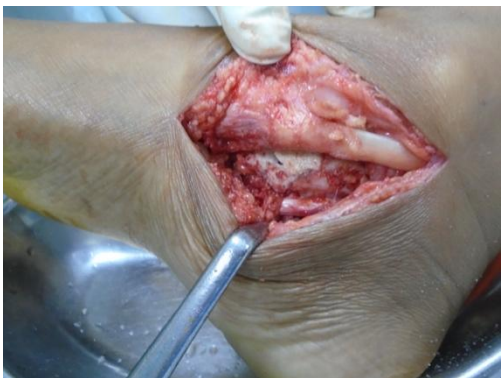

Figure 6. *Before closing the surgical wound.*

Pathological findings:

Gross: The bone curettage specimen consisted of multiple fragments of creamish white, firm bits of tissue together measuring 2x2x1 cm

Microscopy: Haematoxylin and eosin stained sections studied showed fragments of cartilage with cellular fragments of tumour tissue. Most of the cells are of small round cell type with higher nuclear cytoplasmic ratio.

Focal areas of calcification are seen. In addition bony trabeculae with focal inflammatory cell infiltrates present. Tumour mass has chondroid differentiation. A diagnosis of chondroblastoma was made.

III. Discussion :

The term *chondroblastoma* was coined by Jaffe and Lichtenstein to describe a benign neoplasm of bone. Chondroblastoma is a relatively rare benign bone tumor that tends to affect patients in the second decade of life with a slight male temporal bone in skulluncommon site for most bone tumors. Approximately 7% of chondroblastomas occur in the calcaneum. Rarely pathological fracture is the presenting feature in about 1-13% of patients. On radiological examination, the lesion is usually well- defined, eccentrically located[12], radiolucent with a thin sclerotic rim, exhibiting a geographical pattern of bone destruction[13]

On biopsy, the histopathological examination shows a highly cellular tumour with large chondroblasts that are round to polygonal with longitudinal grooves in nuclei and osteoclast type giant cells scattered in the matrix. A fine network of pericellular calcification defines the so called "chicken wire calcification" seen in many cases .

Immunophenotype- Chondroblasts generally express S100 and vimentin and mostly cytokeratin. The differential diagnoses include giant cell tumour, chondromyxoid fibroma, chondrosarcoma , clear cell chondrosarcoma[14] and aneurysmal bone cyst.

Chondroblastomas are generally treated by curettage with or without bone grafts. Local recurrence is more likely to be in a flat bones than in a long bones. Most local recurrences can be treated by repeat curettage and resection is rarely necessary. Occasionally, a chondroblastoma recurs aggressively and destroys the bone so that resection is required. .

IV. Conclusion:

Chondroblastoma of calcaneus is a rare tumour at a rare site and should be included in the differential diagnosis of calcaneal tumours with young patients presenting with a swelling in the foot.

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