

Case report:

Chondroblastoma of calcaneus-A rare tumour at a rare site

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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. It is treated by curettage and grafting. Herewith we reported a case of a 19 year old male with pain and swelling in left foot since one year. It was diagnosed clinically and radiologically diagnosed as 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.

Background:

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.^[1] 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 centers 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.^[2] In chondroblastoma of the foot and ankle, recurrence is common, and outcomes are generally worse than in other locations in the skeleton.^[3] Few cases of Chondroblastoma of calcaneus have been reported. Wherewith we reported a case of chondroblastoma of calcaneus in a 19 year old male with the clinical

presentation, histological diagnosis and treatment by curettage.

Case report:

A 19 year old male presented to the outpatient department with complaints of swelling and pain in ankle since one year. The pain was insidious in onset and dull aching which aggravated on walking. There was no history of trauma. On clinical examination, the swelling was firm in consistency. Tenderness was present on deep palpation and there was no local rise of temperature. The skin over the swelling was normal. The range of movement of the ankle was decreased.

Radiology:

X-ray of ankle revealed a well-defined, heterogeneous lesion involving almost entire calcaneus with a thin sclerotic rim.

CT scan revealed an ill-defined, expansile lesion with lobulated margins in the calcaneus.

A curettage and bone grafting was performed.

Pathological findings:

Gross: The bone curettage specimen consisted of multiple fragments of creamish white, firm bits of tissue together measuring 6x4x1 cm(Fig i) .

Microscopy: Haematoxylin and eosin stained sections studied showed a tumour with characteristic polyhedral cells with well-defined cytoplasmic borders, clear to slightly eosinophilic cytoplasm and round to ovoid nuclei, i.e. chondroblasts, with some of the nuclei showing cleaved appearance . The chondroblasts arranged in sheets along with numerous multinucleate giant cells and islands of pink stained cartilage and 'chicken wire calcification' was seen. Occasional mitotic figures were also identified(Fig ii, iii &iv). A diagnosis of chondroblastoma was made.

Discussion :

The term *chondroblastoma* was coined by Jaffe and Lichtenstein to describe a benign neoplasm of bone.^[4]Chondroblastoma is a relatively rare benign bone tumor that tends to affect patients in the second decade of life with a slight male preponderance ^[5].The epiphyses in the long bones i.e. femur, humerus and tibia account for 70% of all chondroblastomas. Less common locations are foot bones^[6], scapula, patella^[7], fibula, radius and temporal bone in skull ^[8]. The calcaneum is an uncommon site for most bone tumors. Approximately 7% of chondroblastomas occur in the calcaneus.^[9,10]

Localized swelling, usually of several months duration and a decreased range of motion are common clinical findings, with the majority of patients having tenderness on direct palpation.

Rarely pathological fracture is the presenting feature in about 1-13% of patients.^[11] 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^[1].

Immunophenotype- Chondroblasts generally express S100 and vimentin and mostly cytkeratin^[1]. 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. ^[15].

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.



Fig.i- Gross specimen of bone curettage

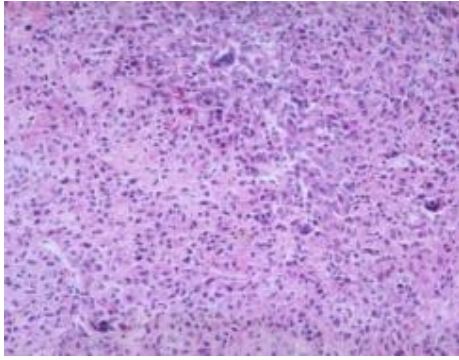


Fig ii- Microscopy showing giant cells with sheets of chondroblasts with giant cells(X 50x)

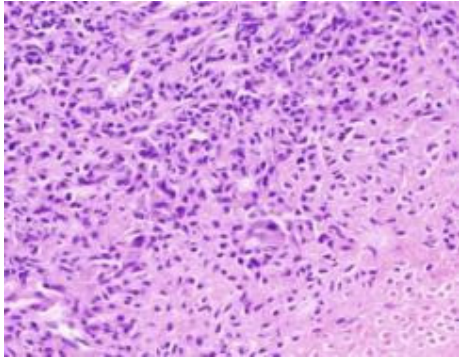


Fig.iii-Microscopy showing chondroblasts with islands of pink stained cartilage(X 100x)

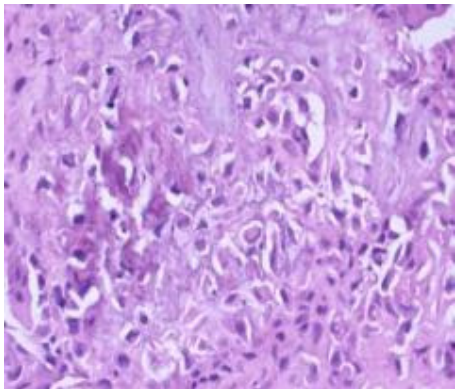


Fig. iv-Microscopy showing chicken wire calcification(X 400x)

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