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Chondroblastoma in a distal phalanx of the great toe – A rare case report

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ABSTRACT:

Chondroblastoma is a rare benign appearing lesion arising in epiphysis of long bones in skeletally immature individuals. It is cartilage producing neoplasm constituting < 1% of all bone tumours. A 16 years old girl presented to orthopaedic OPD of tertiary care hospital with swelling of left great toe since past 3 years. The swelling was insidious in onset, gradually progresses to present size of 3.5x2.5x2 cm. Radiographic examination shows an osteolytic lesion and coarse trabeculation in the distal phalanx of great toe suggestive of benign bone tumour. Histopathological examination showed classical features of chondroblastoma. Post-operative follow up was uneventful and radiological examination was normal. Flat bones like pelvis, ribs, vertebrae and scapula and craniofacial bones are other uncommon locations. The tumour recurrence rate is increased when the tumour is having limited resection due to site of tumour. Turcotte et al reported highest recurrence rate of tumour in flat temporal bone with recurrence within 6 months to 8 years. Chondroblastoma, an uncommon primary bone tumour presenting at distal phalanx of great toe was extremely rare.

KEYWORDS: Chondroblastoma, Bone tumour, Distal phalanx of great toe, Osteolytic lesion,

INTRODUCTION

Chondroblastoma is a rare benign appearing lesion arising in epiphysis of long bones in skeletally immature individuals. It is cartilage producing neoplasm constituting < 1% of all bone tumours [1]. It may extend into metaphysis in nearly half of cases. Chondroblastoma is uncommon in short bones of hand and feet and arises in phalanx [2]. We report a case of chondroblastoma in a distal phalanx of the left great toe diagnosed on bone curettage followed by tumour excision.

CASE DETAILS

A 16 years old girl presented to orthopaedic OPD of tertiary care hospital with swelling of left great toe since past 3 years. The swelling was insidious in onset, gradually progresses to present size of 3.5x2.5x2 cm and overlying skin and nail were unremarkable. It was associated with pain on pressure. There was no history of trauma. No fever or any other co-morbidities were present. On systemic examination no abnormality was detected. Complete blood count, Renal function tests, plasma glucose and other routine laboratory investigations were within normal limit.

Radiographic examination shows an osteolytic lesion and coarse trabeculation in the distal phalanx of great toe suggestive of benign bone tumour [Figure 1].

An incisional biopsy and curettage from tumour were received in department of pathology. Biopsy shows tumour composed of islands of chondroid tissue surrounded by diffuse lying epithelioid type cells with grooved nuclei. Few osteoclastic giant cells are noted. A diagnosis of chondroblastoma was considered. Subsequent tumour excision and disarticulation of great toe was done and specimen was received in department of pathology for histopathological examination.

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Grossly specimen of disarticulated left great toe measures 3.5x2.5x2 cm. Externally unremarkable skin and nail was seen. On cut section, well demarcated, round, grey-white, soft, friable tumour with cystic cavities arising in distal phalanx was seen [Figure 2]. On microscopic examination tumour shows compact polyhedral chondroblasts with well-defined cytoplasmic borders with eosinophilic cytoplasm. Tumour cells are surrounded by lace like patterns of hyaline matrix and chicken wire pattern of mineralisation. Few osteoclastic giant cells are noted [Figure 3]. This showed classical features of chondroblastoma. Post-operative follow up was uneventful and radiological examination was normal.

DISCUSSION

Chondroblastoma was first described by Ewing [3] as calcifying giant cell tumour. It commonly presents as round to oval, eccentric, solitary lesion in young individuals. It commonly occurs at proximal femur or tibia, distal femur or proximal humerus [4]. Flat bones like pelvis, ribs, vertebrae and scapula and craniofacial bones are other uncommon locations [5]. It has gritty and chalky cut surface due to calcification. Chondroblastoma presenting on distal phalanx of great toe was unusual. Several studies have concluded that CB is derived from epiphyseal cartilage cells or in adult population it may be due to chondroid formation by multipotential mesenchymal cells of tendon sheath as suggested by Brien et al [6].

Other mimics like giant cell tumour, chondromyxoid fibroma, aneurysmal bone cyst and clear cell chondrosarcoma were differentiated on histopathological examination [7,8]. While our case showed classical histopathological findings of chondroblastoma, other features like cortical breach, soft tissue invasion, tumour necrosis, hemosiderin deposition and secondary aneurysmal bone cyst (ANC) formation are present in small percentage of cases [7,9]. Chondroblastoma is placed in the "intermediate, rarely metastasizing" category in WHO classification of bone tumours [10]. The tumour recurrence rate is increased when the tumour is having limited resection due to site of tumour. Turcotte et al reported highest recurrence rate of tumour in flat temporal bone with recurrence within 6 months to 8 years [7].

CONCLUSION:

Chondroblastoma, an uncommon primary bone tumour presenting at distal phalanx of great toe was extremely rare.

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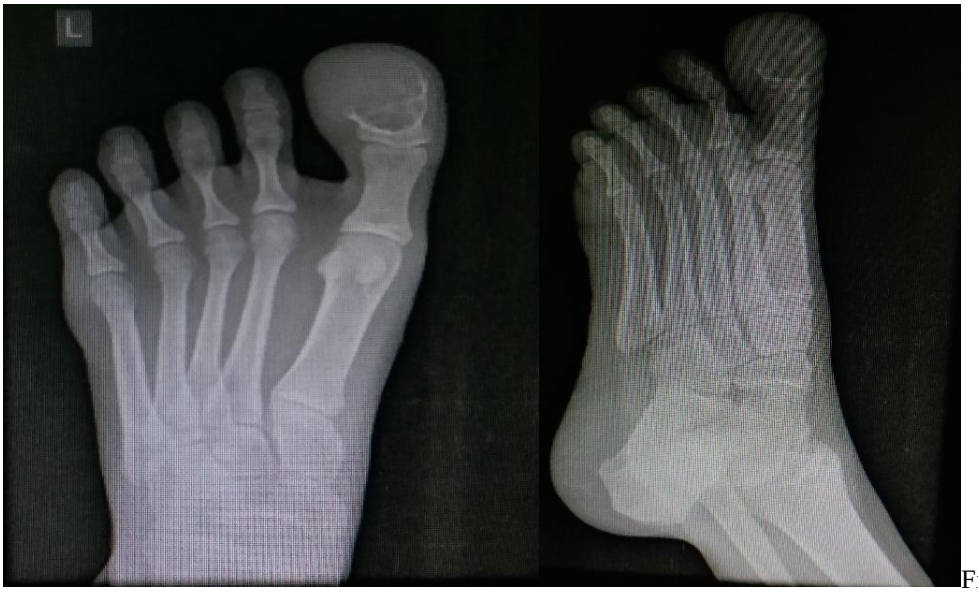

Figure 1. Radiograph (PA and Lateral view) of foot shows osteolytic lesion on distal phalanx of left great toe.

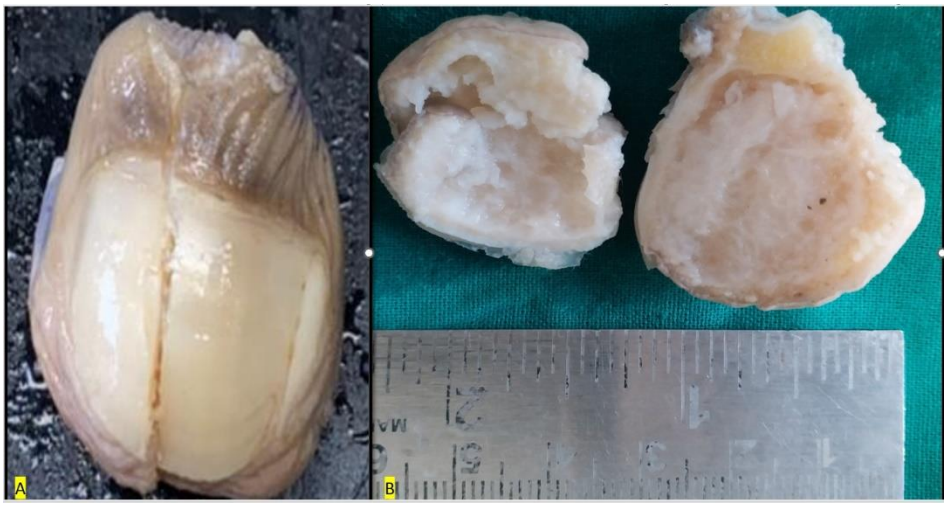

Figure 2 A. Disarticulated left great toe, externally unremarkable skin and nail was seen.

Figure 2 B. Cut section shows well-demarcated tumour measuring 3.5x2.5x2 cm in distal phalanx of great toe, greyish white in colour with small cystic spaces.

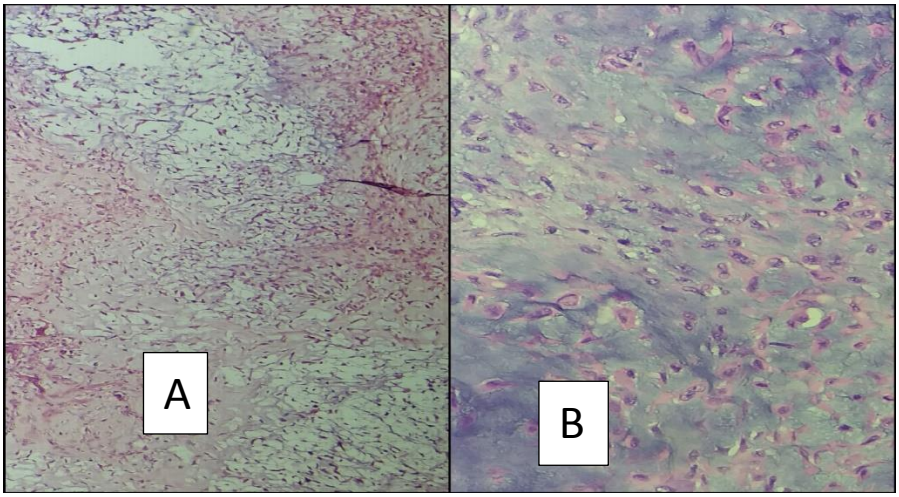

Figure 3 A. Section shows sheets of polyhedral chondroblasts with pink cytoplasm, hyaline matrix, myxoid material and chicken wire pattern of mineralisation.

Figure 3 B. Section shows chondroid tissue and epithelioid cells with grooved nuclei.