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CASE REPORT

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Chondroblastoma of distal femur in a child: A case report and review of literature

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ABSTRACT

The authors present a case of chondroblastoma in a 9-year old. The purpose of this case report is to make clinicians aware about the possibility of chondroblastoma in young population presenting with pain in extremities, irrespective of its rare presentation, so that early diagnosis and appropriate treatment can be started.

ARTICLE HISTORY

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KEYWORDS

Chondroblastoma; biopsy; bone cysts; chondrsarcoma

Introduction

Chondroblastoma is one of the few primary neoplasms that occur in epiphyseal region of a growing bone. It is an uncommon tumor, usually benign in nature. This tumor should always be in the list of differential diagnosis for evaluating lesions involving epiphyseal regions.

Case Report

A 9-year old girl presented to our outpatients department with complaints of pain in right thigh since 2 months. The pain was insidious in onset and increased gradually. There was no history of trauma or fever. The patient took treatment from local General Physician and was referred to us when the pain did not resolve. On examination, there was pain over anterior aspect of knee and knee joint range of motion was from 10° to 100° (Fig. 1). The patient had an antalgic gait. There was no distal neuro vascular deficit in the involved limb. The X-rays of patient were done which showed a lytic lesion in the epiphyseal region of right distal femur (Fig. 2). The Computed Tomography (CT) scan (Fig. 3) was done which confirmed the presence of lytic lesion in the middle third of epiphysis of distal femur. The differential diagnosis was made, namely, osteomyelitis, chondroblastoma, and clear cell chondrosarcoma based on clinical and radiological findings. The patient underwent percutaneous biopsy which was reported as chondroblastoma. The patient was planned for extended curettage and autologous bone grafting using medial para patellar approach of the knee (Fig. 4). A Window (Fig. 5) was created in the intercondylar notch for currettage and bone grafting and X-rays were done next day (Fig. 6). Regular weekly follow ups were done till suture removal at 2 weeks. After that, the patient was recalled at 6 weeks, 3 months interval, and at 6 months interval for the first 2 years and then yearly follow up will be required in future. At the last follow up of 17 months, the patient is doing well clinically and radiologically (Figs. 7 and 8). There is no pain at all and she has nearly full range of motion in her knee joint.

Discussion

Chondroblastoma is a rare benign chondroid matrix forming lesion which occurs in epiphyseal region of the bone [1]. It constitutes less than 1% of all primary bone tumors. The usual age of presentation is between 5 and 20 years when the physis of the long bones is still open [2]. The knee, hip, and shoulder are the most commonly affected areas [3]. The commonly affected bones are distal femur, proximal tibia, proximal humerus and proximal femur. The

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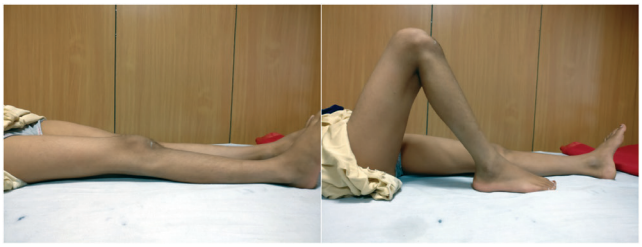

Figure 1. The knee joint range of motion.

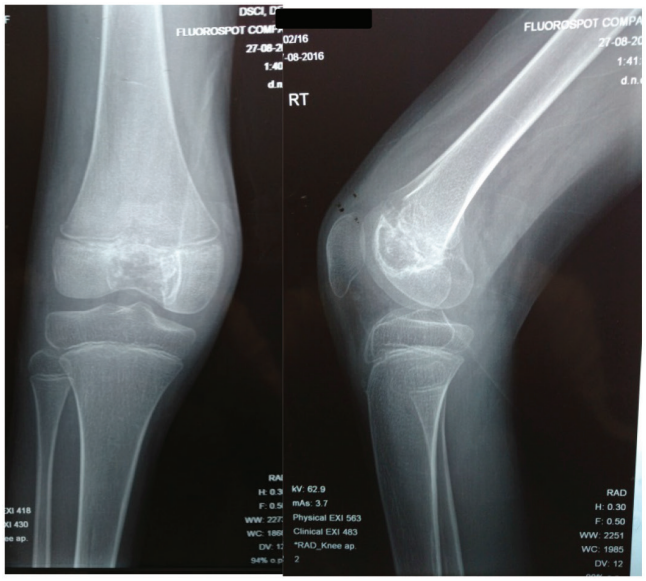

Figure 2. Antero-Posterior (AP) and Lat views of right knee showing lytic lesion extending subchondrally in the epiphysis of distal femur.

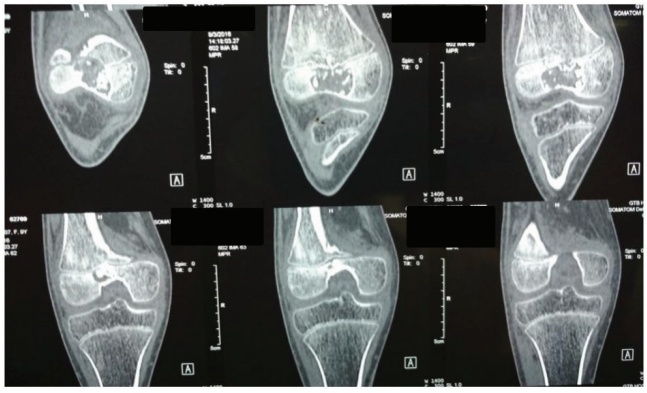

Figure 3. CT scan confirming subchondral extension of the tumor in one of the section (upper row far right).

tumor is epiphyseal in location; however, it may cross the physis in very few cases.

In 1927, Kolodny was the first to describe a bone tumor presenting as a "giant cell variant." Ewing called it a "calcifying giant cell tumor," and later, in 1931, Codman termed it as "epiphyseal

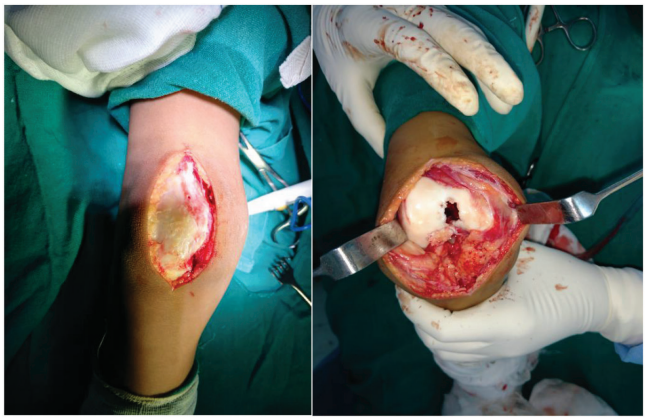

Figure 4. Anterior knee incision given and window made using medial para patellar approach.

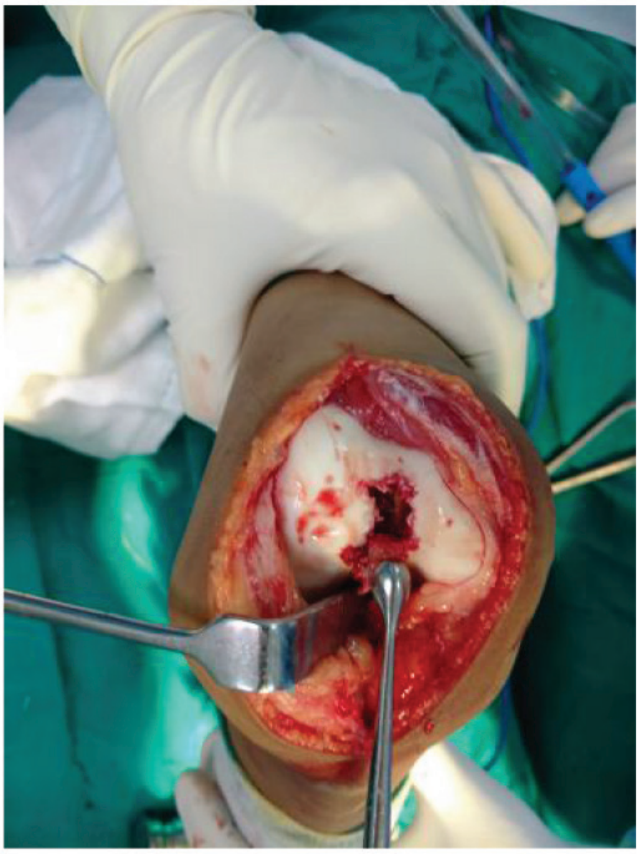

Figure 5. Graft inside the cavity.

chondromatous giant cell tumor." The term benign "chondroblastoma" was proposed by Jaffe and Lichtenstein in 1942 to describe this rare, benign, and distinctive tumor composed of immature chondroblasts with a scant chondroid matrix [4]. According to the World Health Organisation (WHO) 2002 definition, "chondroblastoma is a benign, cartilage-producing neoplasm usually arising in the epiphyses of skeletally immature patients."

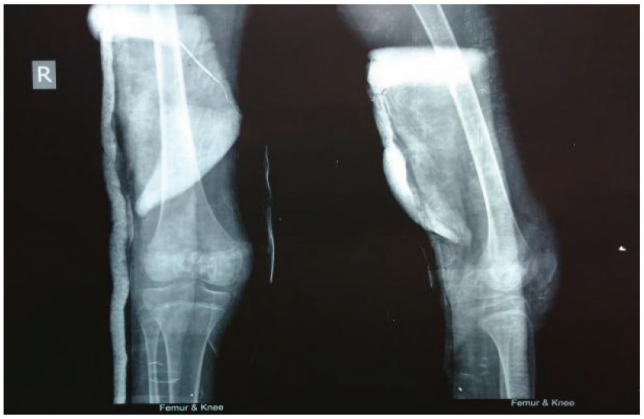

Figure 6. Immediate post op X-ray showing graft.

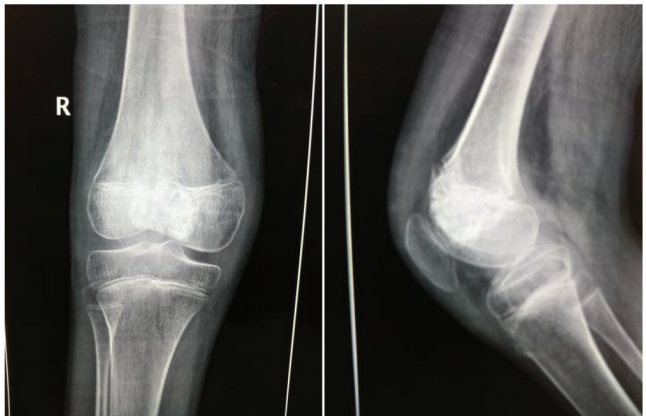

Figure 7. X-rays at 17 months follow up.

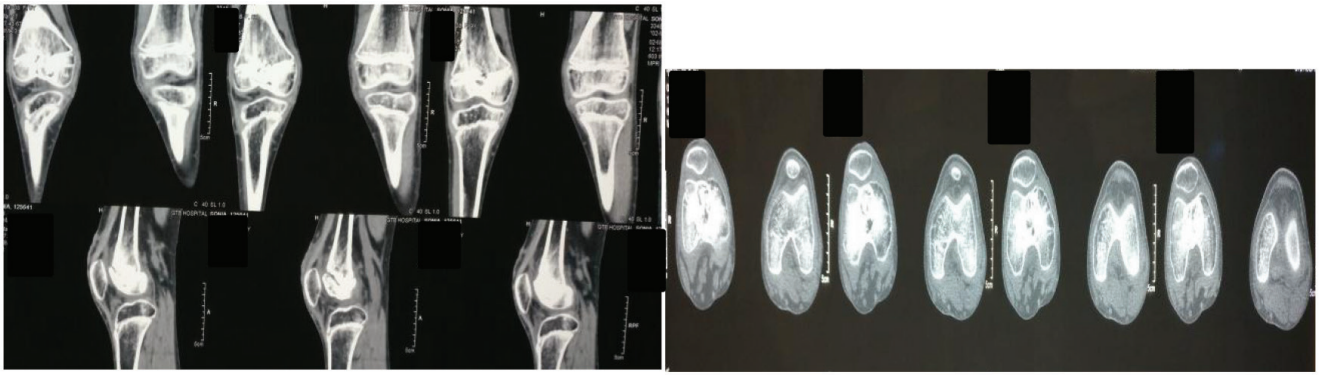

Figure 8. CT scans sections showing graft incorporation at 17 months post op.

There are only three types of tumor lesions that occur in epiphyseal regions of long bones. These are chondroblastoma, giant cell tumor, and clear cell chondrosarcoma. The other differential diagnosis that could be in such type of cases is osteomyelitis. We always consider this possibility on top of our differential diagnosis list as India being a developing country, the infections in bones are very common. In our case, we did full work up of the patient before planning her surgery.

Radiologically, chondroblastoma appears as generally well circumscribed lytic lesion in epiphysis of long bones. Apart from that, the other features that may present are sclerotic rim around the lesion and matrix calcification which were present in our case also. The CT scan is also useful for confirming the diagnosis. After getting CT scan, the patient underwent percutaneous biopsy under C arm which confirmed the diagnosis of chondroblastoma.

The Magnetic Resonance Imaging (MRI) can also be used for diagnosing chondroblastoma but CT scan delineates the bony details in a much clearer way. In our case, we did not do the MRI because of resource constraints. The secondary aneurysmal bone cyst like changes have been observed in up to 15% of chondroblastoma cases [5]. Some authors have suggested that recurrences are more common when aneurysmal bone cyst changes are present [2].

Histologically, the tumor comprises of small cells accompanied by osteoclasts. Sometimes, there is a presence of small zone of focal calcification ranging from thin lines “chicken wire appearance” to obvious deposits surrounded by giant cells [6].

The treatment usually consists of extended curettage along with bone grafting (either autogenous or allogenous) and potential cementation involving similar surgical techniques as for giant cell tumor [5]. The simple curettage treatment leads to high rate of recurrence [7]. According to Unni recommendations, aggressive lesions (lesions with cortical erosion or cortical breakthrough) should be treated with wide cortical saucerisation and curettage. Cryotherapy or phenol can be used as adjuvants [2]. In our case, we did extended curettage using phenol solution and lesion was grafted using autologous ipsilateral iliac crest graft. Non treatment of these tumors can lead to increase pain,

disability, or pathological fracture and in rare case, metastasis most commonly to lungs for which Non Contrast Computed Tomography (NCCT) chest has to be done for further evaluation.

Limb length discrepancy and deformity have been reported after curettage of physeal chondroblastoma in children [1,8]. Even though chondroblastoma is considered benign, on rare occasions, it can metastasize to the lung [9]. Local recurrences after curettage ranges from 10% to 38%.

Conclusion

The chondroblastoma is a benign cartilage forming tumor occurring in the epiphyseal region of the bone. Very rarely, it extends into the soft tissues or metastasize. However, proper clinico-radiological examination is necessary to diagnose this lesion. It is usually treated along the same lines of giant cell tumor. These patients should be followed up at regular intervals to diagnose recurrence as early as possible.

Disclaimer

The consent for publication of this case report has been taken from patient/both parents.

Conflict of interest

None.

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