

Case Report

Chondroblastoma in distal femur: a case report

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ABSTRACT

Chondroblastoma was first described as calcified giant cell tumor by Ewing. Chondroblastoma is a rare primary benign tumor of bone with a relatively high incidence in older children. Ninety percent of patients are between the ages of 5 and 25 years; males predominate with a ratio of 3 to 2. Metastasis of a histologically benign chondroblastoma is rare. The suggested treatment for aggressive chondroblastoma ranges from simple curettage to resection with a margin of surrounding normal tissue and structural reconstruction. In this report, our aim was to present a rare tumor chondroblastoma which was localized in the distal femoral epiphysis.

Keywords: Chondroblastoma, Epiphyseal tumour, Curettage

INTRODUCTION

Chondroblastoma was first described as calcified giant cell tumor by Ewing.¹⁰ It represents less than 1% of all primary bone tumors and most commonly originate from the epiphyses of long bones. Chondroblastoma is a rare primary benign tumor of bone with a relatively high incidence in older children.¹ Ninety percent of patients are between the ages of 5 and 25 years; males predominate with a ratio of 3 to 2. Since the tumor is usually localized near a joint or growth plate, functional impairment and growth disturbances may be expected. Recurrences also are a major concern. Metastasis of a histologically benign chondroblastoma is rare.⁴ The suggested treatment for aggressive chondroblastoma ranges from simple curettage to resection with a margin of surrounding normal tissue and structural reconstruction.¹

In this report, our aim was to present a rare tumor chondroblastoma which was localized in the distal femoral epiphysis.

CASE REPORT

This is a 14 years old teenager who presented to us with a 6 months history of right knee pain. He has severe pain over the right knee radiating up the thigh. It is associated with night pain and rest pain. Lately the pain has got severe, causing difficult in walking. There is no obvious swelling in knee joint.

He finds it difficult in squatting and standing for long period of time. There are no constitutional symptoms such as loss of weight or appetite. There is no history of exposure to tuberculosis.

Examination revealed tenderness around medial side of knee joint more in proximal part and there is no obvious swelling and active range of motion of the knee is 10 to 100 degrees.

Radiographs done showed an osteolytic lesion in medial condyle of femur. There is no involvement of soft tissue (Figure 1).

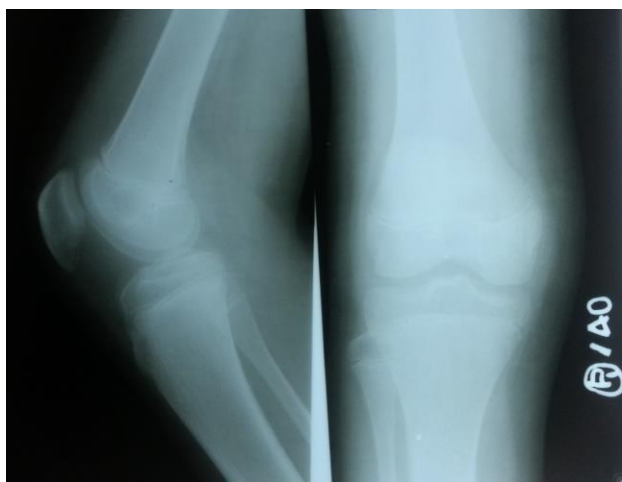


Figure 1: Radiographs shows an osteolytic lesion in medial condyle of femur.

Magnetic resonance scanning done showed a well-defined lobulated eccentrically located lytic extensile epiphyseal lesion in the postero lateral aspect of medial femoral condyle associated with significant surrounding oedema and few calcific foci in the matrix suggestive of chondroblastoma (Figure 2, 3 & 4).



Figure 2: Magnetic resonance scanning-1.

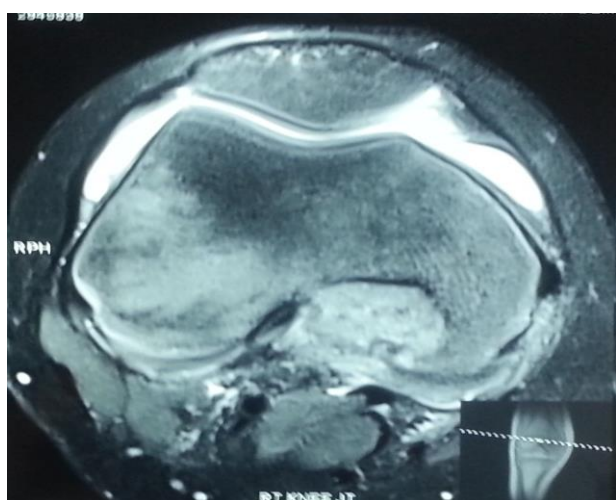


Figure 3: Magnetic resonance scanning-2.



Figure 4: Magnetic resonance scanning-3.

A wide needle biopsy was done under image intensifier guidance by hyper flexing the knee joint and the histopathological report confirms the clinical diagnosis of chondroblastoma. We proceeded with an intralesional bone curettage and autologous iliac crest bone grafting. Since tumor was on posterolateral aspect of medial condyle we hyper flex the knee joint and approached the lesion through inter condylar fossa (Figure 5 & 6).

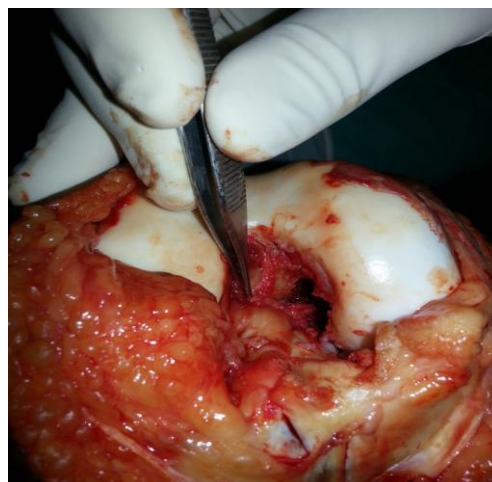


Figure 5: Wide needle biopsy.



Figure 6: Post-op X ray.

Postoperatively patient was put on knee brace. Isometric quadriceps muscle and straight leg raising exercises were initiated on the second postoperative day. The brace was removed two weeks after the surgery. Active and active assisted range of motion exercises were initiated at that time. Three months after the surgery, patient is ambulating full weight bearing with no pain.

Follow-up was done at 6 weeks, 3 months, 6 months, 9 months and 1 year after the curettage. The lesion resolved with resolution of pain and swelling. Knee movements were not affected. No radiological sign of recurrence was found at 1 year follow-up (Figure 7).



Figure 7: 1 year follow up X ray.

Histopathology confirms diagnosis of chondroblastoma (Figure 8).

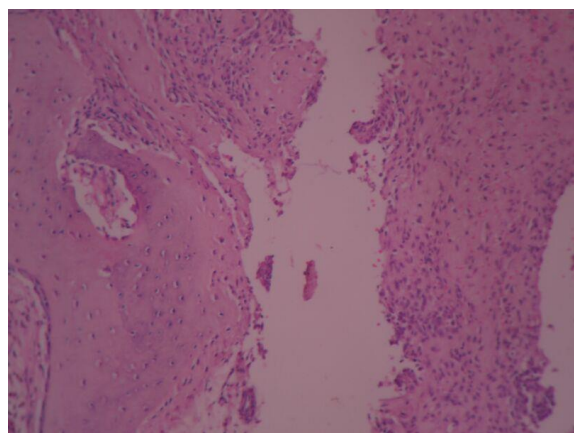


Figure 8: Histology slide.

DISCUSSION

Chondroblastoma was first described as calcified giant cell tumor by Ewing.¹⁰ Chondroblastoma constitutes a very rare bone tumor entity.^{1,5} It is the most common primary epiphyseal tumor in children. Most commonly arises between ages 10 to 30. These lesions are distributed widely in the skeleton, but mostly involving

the epiphyses or apophyses regions. Most lesions occur in the proximal part of the tibia (17%) and the proximal part of the humerus (15%). Other regions that are commonly affected are the distal femur and pelvis. It commonly affects males more than females.

In the literature, there are only three types of tumors that involve the physis. They are chondroblastoma, Giant cell tumor of the bone, and clear cell chondrosarcoma. Other possible differential diagnosis would be epiphyseal osteomyelitis. Chondroblastomas are generally well circumscribed lesions limited within the epiphysis. The radiographic appearance is usually suggestive of the diagnosis. The lesion is usually seen as an oval intramedullary tumor with distinct margins. A key diagnostic feature is its almost invariable location within an epiphysis or an apophysis. Other common features are expansion, sclerotic rim, and matrix calcification. Penetration through the cortex into the soft tissues is seen only in a small percentage of cases.⁶ The adjacent cortex is normal in only 15% of tumors (advanced and stage III lesions).⁶ Three fourths of the tumors result in erosion and thinning of the involved cortical bone. Cortical destruction is unusual, occurring in 10% of cases.^{1,7} The subchondral articular cortex is thinned to less than 5 mm in slightly more than half of the cases. The cortex is normal in 41% and completely destroyed in at least one region in up to 5% of cases.^{1,6,7} Regional epiphyseal plate expansion has also been observed. Thinning of subchondral bone and close proximity to the articular cartilage may cause excessive fluid collection in the knee. Chondroblastoma in soft tissues tends to be well circumscribed and usually has a shell of ossification.¹ Hence complete resection of the lesion is not difficult. Predominant secondary aneurysmal bone cyst like changes has been noted in up to 15% of chondroblastoma cases.⁸ Some authors have suggested that recurrences are more common when aneurysmal bone cyst changes are present.¹

Treatment for chondroblastoma consists of simple curettage, bone grafting, and possible cementation using similar techniques as for giant cell tumor surgery.^{7,8} After intralesional resection, reconstruction can be accomplished with autograft or allograft or both. When treated with curettage these tumors seem to have a higher rate of recurrence.⁹ Unni recommends that 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.¹ Vascularised or cancellous autogenous grafts would give maximum bone incorporation but donor site morbidity limits their use.

Secondary aneurysmal bone cyst-like changes were seen indeed in more than one-third of all lesions reported.¹¹ The term chondroblastoma suggests a benign cartilage-forming tumor, but in fact this epiphyseal lesion of childhood has a histological appearance that is more typical of the benign metaphyseal-epiphyseal giant cell

tumor seen in young adults.¹ Even though chondroblastoma is considered benign, on rare occasions it can metastasize to the lung.⁴ Local recurrences after curettage range from 10% to 38%.

In conclusion, chondroblastoma is a benign bone tumor that seldom causes cortex destruction. Curettage and grafting is an effective treatment modality and these patients must be followed-up on a regular basis for immediate diagnosis of recurrence.

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