Array Publishers
Open Journal of Case Reports
Case Report

Giant Cell Tumor: Unusual Presentation in the Immature Skeleton

Sayanthan B[1*], Gobyshanger T[2], Thiruvarangan S[1]
[1]*Department of Surgery, Faculty of Medicine, University of Jaffna, Sri Lanka*
[2]*Teaching Hospital, Jaffna, Sri Lanka*

Corresponding author: Sayanthan B, Department of Surgery, Faculty of Medicine, University of Jaffna, Sri Lanka.

Received Date: 02 April, 2022; **Accepted Date:** 09 May, 2022; **Published Date:** 13 May, 2022

Abstract

Giant cell tumor is a locally aggressive benign tumor and characteristically found in skeletally mature patient at the end of long bones. Although giant cell tumor is very rare in skeletally immature patient, we present a very rare case of giant cell tumor in skeletally immature patient in left tibia region. In this case, we concluded patient's age, the location and radiographic are essential but classical features are not always present. Therefore, the final diagnosis should be arrived based on the tumor's histopathological appearance.

Keywords: Giantcell tumor; Skeletal maturity; Diaphyseal location

Introduction

Giant Cell Tumour (GCT) of the bone is first described by Cooper in 1818 and later Nelaton presented their local aggressiveness, and Virchow publicised their malignant potential. GCT represents around 5% of all primary bone neoplasms. More than half of these tumours occur in the third and fourth decades of life [1]. GCTs are commonly locally aggressive benign tumors but they have potential to metastasize from local site called malignant GCT. Malignant giant cell tumour is comprise 10 % of primary bone malignancy [3], more than half of these lesions occur in the third and fourth decades of life with slightly female predominance (1.2: 1) [4]. Rarely can it be seen in children [2]. Ninety percent of GCT locate in the epiphyseal site and next to that metaphysis, infrequently involves diaphysis. Usual clinical presentation are pain at the affected part, swelling, decrease joint mobility if it closed to joint. Imaging with X-Ray and CT scan will help in diagnosis and histology will conform [4]. Local control is the main part of treatment in giant cell tumours. Curettage of the lesion and then fill the cavity with auto graft bone or bone cement is the traditional method of treatment [5].

Case Report

A 12 year old boy referred to orthopaedic unit with complaints of on and off pain and mild swelling on the distal aspect of the left leg for 1 month duration. He did not have past history of trauma on that leg. One month ago, he noticed aching type pain which was exaggerated on playing football. There was no history of fever, loss of weight, and loss of appetite present or contact history with tuberculosis patient. General examination was normal and on limb examination, minimal swelling was noticed over the anterior-lateral aspect of the lower leg. The skin over the tender area was normal. Neuro-vascular system examination revealed normal. Ankle movements were normal and no regional or systemic lymphadenopathy. X-ray film (Figure 1A) and CT films (Figure1B) showed well-defined expansile lytic lesion at diaphysis of distal end of left tibia. Biopsy was performed and specimen (Figure 2) which confirmed giant cell tumor. Other common giant cell-rich lesions such as aneurysmal bone cyst, osteosarcoma, and nonossifying fibroma were excluded. The patient underwent curettage and the cavity was filled pamidronic disodium pentahydrate. The patient is under regular follow up.

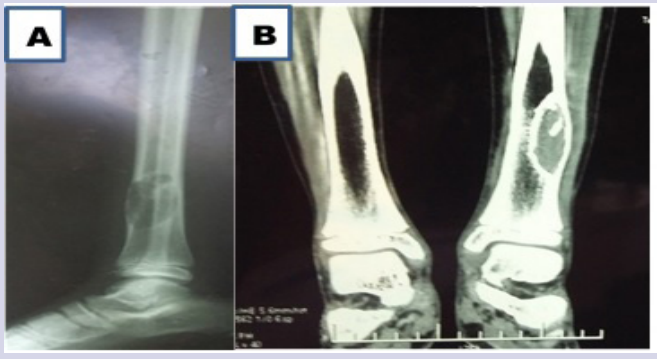

Figure 1: Radiological findings of left tibia A: X-ray film and B: CT scan.

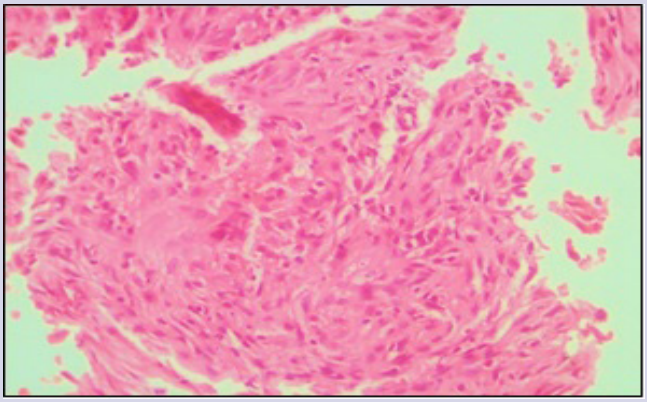

Figure 2: Histopathological appearance of Giant cell tumour.

Discussion

Giant tumors are locally aggressive and commonly benign lesion with the capacity to present as malignant. Giant Cell Tumors (GCT) almost always involves the epiphyses of mature long bones and also rarely involves metaphysis. But arising from diaphysis without epiphyseal extension is extremely rare [6]. In rare instances in which GCT occurs in a skeletally immature patient, in that situation the lesion is likely to be found in the metaphysis of immature bone [7]. The most common locations of the GCT, in decreasing order, are the distal femur, the proximal tibia, the distal radius, and the sacrum [6]. Fifty per cent of GCTs arise around the knee region. The worldwide only few cases were reported on GCT with diaphysis involvement [8]. Our case is the first documented case in Sri Lanka with unusual presentation. In this case the GCT involved in the diaphysis part of lower tibia, this is a rare location for GCT and additionally this occurred in a young boy which is not a typical age group for this disease.

The traditional method of treatment for this condition is curettage and wide of bone. Literatures say the adjuvants such as hydrogen peroxide, phenol used to apply the affected region after completion of curettage, may be of added benefit in lowering the recurrence rates after curettage. Complete removal of the affected bone fragment is the most important predictive factor for the outcome of surgery than the use of adjuvants. Additionally some cytotoxic agents such as methotrexate and Adriamycin have been incorporated with bone cement and other drug delivery systems practiced to reduce the recurrence [9]. Recent studies show that local or systemic use of pamidronate or zoledronate can be a novel adjuvant therapy for giant cell tumor. Bisphosphonates act by targeting osteoclast-like giant cells inducing apoptosis and limiting tumor progression. A recent study has shown that rinsing of morcellized bone grafts with bisphosphonates prevents resorption and is likely to reduce the risk of mechanical failure [10]. In this patient we used the option of local infiltration of pamidronate as an adjuvant therapy.

Conclusion

We concluded that patient's age, the location and radiographic appearance appearances are crucial to reach a precise differential diagnosis of any bony lesion. However, the final diagnosis should be arrived based on the tumor's histopathological appearance.

Acknowledgments

We express our sincere thanks to Department of Histopathology, Teaching Hospital Jaffna and Department of Microbiology and Parasitology, Faculty of Medicine, University of Jaffna to provide the histology pictures.

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