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Giant Cell Tumor (GCT) of Distal Femur with Pathological Fracture - A Case Report

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Abstract | **Case Report**

Introduction: Giant cell tumor [GCT] is a relatively common, locally aggressive but most often a benign neoplasm that is associated with a large biological spectrum. The GCT accounts for 4-10% of all bone tumors and approximately 20% of all benign bone tumors. **Case Report**: We have a 35 year old male patient, who presented with right knee pain after a trivial trauma (history slip and fall while walking) and X ray revealed pathological fracture of the medial condyle of femur along with a lytic lesion. On further investigation with other modalities such as CT scan and MRI was suggestive of giant cell tumor in the distal femur confirmed with a biopsy, and the patient was referred to a higher centre for the management of the same with the pathological fracture of the medial condyle of the femur. **Conclusion:** The diagnosis of giant cell tumor, as seen, is made based on several factors taken into account including history, clinical examination, imaging techniques and finally the confirmatory biopsy of the lesion. This also helps in grading and staging of the tumor which helps in determining the prognosis and deciding the further treatment modalities.

Keywords: GCT, lytic lesion, pathological fracture.

INTRODUCTION

Giant cell tumor [GCT] is a relatively common, locally aggressive but most often a benign neoplasm that is associated with a large biological spectrum. The GCT accounts for 4-10% of all bone tumors and approximately 20% of all benign bone tumors [1, 2]. GCT is usually presents with non specific symptoms which are insidious in onset and include pain, swelling, decrease in the range of motion of the affected joint. An acute onset of symptoms most likely is suggestive of a pathological fracture following a history of trivial or no trauma. GCT is most commonly found in the epi-metaphyseal region of the long bones. Pathological fractures in a patient with GCT of the long bone occurs as a first presentation in around 9-30% of them with intra-articular involvement. Diagnosis involves various methodologies starting from history, clinical examination and imaging studies [3].

CASE REPORT

We have a 35 year old male patient who presented to us after a trivial trauma – history of slip and fall while walking. The patient sustained injury to the right knee, unable to bear weight over the affected limb. There was no history of fever/weight loss.

On examination, there was swelling and tenderness over right knee with restriction of range of motion at the knee joint.

On preliminary imaging with x-rays, the patient was diagnosed to have a medial condyle fracture of the femur along with an incidental finding of a lytic lesion in the distal femur (fig 1). The patient was asymptomatic and clinically unremarkable prior to the fall. Upon further imaging with CT scan of the right knee to look for intra-articular involvement, the patient was diagnosed to have a pathological comminuted fracture of the medial condyle with a well defined lytic lesion in the lower end of femur at the meta-diaphysial region (fig 2). A MRI was done to look for the extent of soft tissue involvement along with medullary involvement (fig 3). It was suggestive of well defined lytic lesion at the epimetaphysial region with findings favouring of Giant cell tumor, along with a pathological fracture of the medial condyle of the femur. A needle biopsy was done to confirm the diagnosis, which was suggestive of a primary giant cell tumor of the distal

femur (fig 4). The patient was managed initially with a long knee brace from orthopaedic side and was transferred to a higher centre for the management of the primary tumor.

Fig-1: X ray knee showing the lytic lesion of the distal femur with medial condyle fracture.

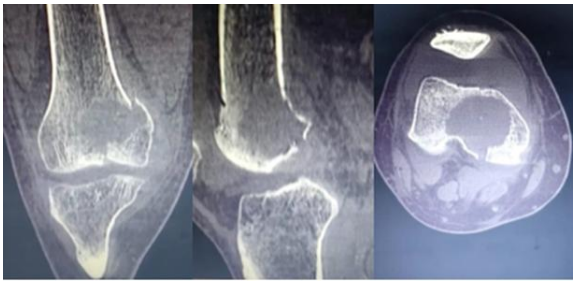

Fig-2: CT scan knee showed lytic lesion at the distal femur

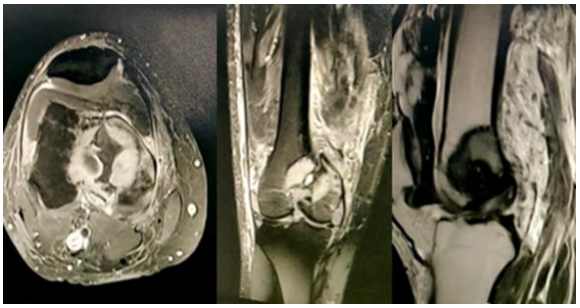

Fig-3: MRI knee suggestive of GCT

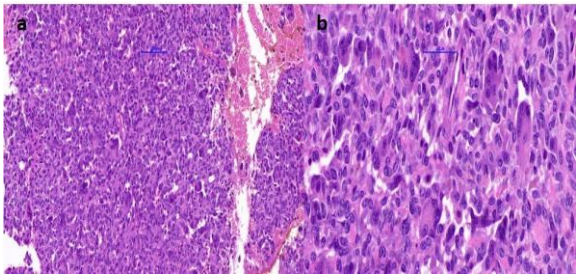

Fig-4: Histopathogical report suggestive of GCT.

DISCUSSION

Giant cell tumors are, as clear from ours, as well as various other studies, a locally aggressive benign tumors that seldom metastasise with a large biological spectrum. With the current available techniques, there are hardly any reliable predictors of recurrence, metastatic behaviour and malignant transformation. The diagnosis of GCT is based upon several modalities investigations along with a comprehensive history and clinical examination. Clinically, GCT presents as a benign but aggressive lesion with a tendency to cause local recurrence and seldom metastatic symptoms. After the initial evaluation, imaging modalities of different kinds are used for diagnosing and obtaining positive points of diagnosing a GCT. X rays are usually obtained initially, to rule out any obvious fractures, which are mostly pathological in nature. Although MRI is the investigation of choice, CT scan is often advised in order to look for intra-articular involvement of the fracture along with cortical thinning due to the local aggression of the tumor. GCT on MRI usually shows a low to intermediate signal intensity on T1 and a high signal on T2-weighted images. The intramedullary portion of the tumor is best seen on T1, whereas its extra osseous component is more clearly observed on T2-weighted images [1, 2]. The final investigation which will confirm the diagnosis is the biopsy of the lesion. The biopsy could be an open biopsy or a minimally invasive core needle biopsy. The appearance of giant cells on histopathological evaluation confirms the diagnosis. The pathological fracture of the giant cell tumor of the long bone is usually an infrequent complication, being an osteolytic primary skeletal lesion. It is believed that the pathological fracture has a chance of recurrence due to the contamination of the surrounding soft tissues. Although, it is a benign tumor, there are around 0-4% chances of pulmonary metastasis which calls for a comprehensive evaluation with a HRCT thorax to rule out the same [3]. The prognostic significance of pathological fracture though, still remains controversial with many authors believing that pathological fracture is associated with poorer outcomes in terms of functional outcomes, complications and overall survival and not just recurrence rates [4]. Your outcome after treatment will depend on a number of factors, including the age, size and location of the tumor. The method of treatment giant cell tumors can recur, so it is important to get regular follow-up visits for a number of years after treatment. Routine followup check-ups are done using x rays of the local site and chest x ray to rule out metastasis [5].

CONCLUSION

The diagnosis of giant cell tumor, as seen, is made based on several factors taken into account including history, clinical examination, imaging techniques and finally the confirmatory biopsy of the lesion. This also helps in grading and staging of the tumor which helps in determining the prognosis and deciding the further treatment modalities.

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