

Introduction :

Giant cell tumors (GCTs) of the bone are generally benign, but do carry the potential to metastasize. GCTs are composed of stromal cells and multinucleated giant cells, and account for approximately 5% of all primary bone tumors. GCTs are more common in young adults and generally affect long bones, with most reported cases around the knee. However, GCTs of the bone have been reported to undergo malignant transformation to undifferentiated sarcomas. Here we report the case of a middle aged male who presented with a pathological fracture in the diaphysis of the femur as a result of a GCT of the bone.

Objective :

To highlight that GCT can present as a pathological fracture in diaphysis and though it is known as a benign tumor, can undergo malignant transformation.

Case Description:

A 55-year-old male with history significant for HTN, DM Type 2, and L4-L5 disc herniation presented with left thigh pain with onset subsequent to a fall from standing. The patient reported that the fall resulted in immediate pain and inability to ambulate. The patient noted that he had slightly decreased sensation in the left lower extremity as his baseline. He had a history of left 1st toe amputation due to gangrene infection. The patient denied any oncologic history, numbness, tingling, head trauma, loss of consciousness or any other injuries.

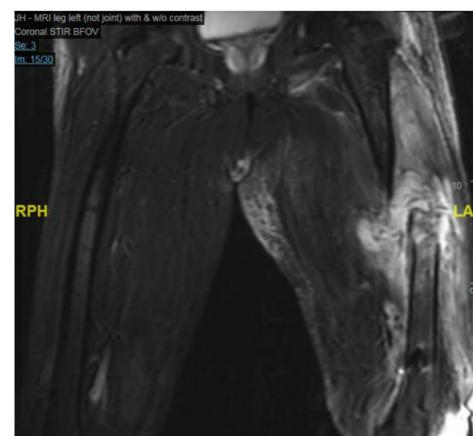
Radiological reports confirmed a mid-femoral shaft fracture and he was placed in skeletal traction. A bone biopsy of the left femur was performed due to suspicion of pathological fracture.

The pathology report was confirmed with histology and immunohistochemistry staining suggestive of malignant GCTs or Giant Cell rich undifferentiated pleomorphic sarcoma. The patient underwent closed reduction and external fixation of the fracture and was referred to another institution for further management. Physical therapy was initiated and the patient was discharged with enoxaparin for DVT prophylaxis and was advised to continue follow-up with his PCP and the orthopedic surgeon.



X-Ray of Left Femur:

Displaced fracture of the midshaft with a mottled appearance of the marrow, suggestive of a pathologic fracture.



MRI of left leg w & w/o contrast:

pathologic fracture in the left mid femoral shaft. There is proximal and lateral displacement of the fracture fragments. There is associated bone marrow edema.

Discussion:

Giant cell tumors have the predilection to occur in the epiphysis of long bones and they may extend to the metaphysis. Studies suggest that only 1.2% of GCTs involve the metaphysis or diaphysis without involving the epiphysis. Different studies suggest that, despite being a benign tumor with the potential to metastasize, Giant cell tumors of the bone can undergo malignant transformation to undifferentiated sarcomas. Most recurrent tumors have been found to undergo this transformation.

Here we report a case of a 55-year-old male with no history of cancer presenting with pathological fracture suggesting malignant GCT or Giant cell rich undifferentiated pleomorphic sarcoma. Different authors have tried to define malignancy in giant cell tumor as a sarcoma originating in association with GCT, either at the same time or at the site of previously occurred GCT.

Approximately 5% of patients with GCT's have been reported to present with pathological fracture and a pathological fracture caused by a GCT is usually associated with poorer prognosis. Joint salvage is a reasonable option for patients with GCTs that give rise to pathological fracture, as in our patient.

References:

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