Clinical Case Reports International

Case Report
Published: 21 Feb, 2020

Giant Cell Tumor of Clavicle in an 8 Year Old Girl: A Rare Case Report

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Abstract

Giant Cell Tumors (GCT) is one of the different types of neoplasms, and the clavicle is a one of the rare site of tumors. The Metastatic tumors are more common than benign. An 8-year-girl was admitted with a one year history of rapidly increasing swelling and pain over the right lateral third of the clavicle. The plain radiograph showed a radiolucent lesion in the clavicle. CT scan showed cystic lesion arising from right clavicle with evidence of air-fluid level suggestive of Osteoclastoma. There was no periosteal reaction or soft-tissue component. Histopathologically was used to confirm the diagnosis. A wide excision of the mass, including 2.5 cm of healthy tissue of the clavicle was performed. The presence of an expansile lytic lesion of the clavicle should be taken seriously and complete radiological and histopathological investigation should be done and giant cell tumor of the bone should be kept in mind despite its rarity.

Keywords: Giant cell tumour; Clavicle; Expansile lytic lesion; Bone tumor

Introduction

Giant Cell Tumors (GCT) or osteoclastoma are benign locally aggressive neoplasm formed by the fusion of stromal cells with large numbers of osteoclast-like giant cells in background of epithelioid to spindle shaped mononuclear cells. The occurrence of clavicle bone tumors reported is from 0.40% to 1.01% of all bone tumors and the incidence of GCT in the Asian population is higher than that in the Caucasian population and may account for more than 20% of all skeletal neoplasms [1]. GCT is predominated in female [2] Clavicle, ribs, skull and sternum rarely seen in a child so it is unique [3]. The incidence and relative occurrence of tumors of the clavicle resembles those of flat bones and not exclusively in the end portion of long bones [4]. Metastatic tumors are more common than primary tumors in this region. Among primary lesions, malignant tumors are more common than benign [5].

Case Presentation

An 8-year-old girl was admitted to department of orthopedics, Indira Gandhi Institute of Medical Sciences, Patna, India with a one and half year history of progressively increasing swelling and pain at the junction of medial and lateral end of the clavicle (Figure 1). There was no history of trauma to the localized area. Pain was prominent, increases with the movement, non-radiating and localized to the lateral half of the clavicle. Pain increases on slight movement of the shoulder. Fine Needle Aspirate Cytology (FNAC) from the lesion revealed features suggestive of GCT. Hemogram, fasting blood sugar, urea, creatinine, serum calcium, alkaline phosphatase and liver function test were not significant. She had swelling of a 6 cm × 3 cm bony mass arising from the clavicle at the junction of middle and lateral third, which was lobulated and tender. Signs of "egg-shell cracking" were noticed. Superficial veins were engorged, and the local temperature was increased. The overlying skin was mobile not adherent. There was no sensory loss nor any regional lymphadenopathy reported in the left upper limb. The exact cause of Giant cell tumors of bone is unknown and occurs spontaneously. They are not influenced by any environmental factor nor inherited. In rare cases, they may be associated with hyperparathyroidism.

The plain radiograph (Figure 2) revealed a lytic, expansile radiolucent lesion in the clavicle at the junction of metaphysis and diaphysis. Probably arise from zone of osteoclastic activity in

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Received Date: *27 Jan 2019*
Accepted Date: *18 Feb 2020*
Published Date: *21 Feb 2020*

Citation:
Kumar S, Haque SS, Muzaffar MA, Kumar I, Kumar A, Tanweeruddin Md, et al. Giant Cell Tumor of Clavicle in an 8 Year Old Girl: A Rare Case Report. Clin Case Rep Int. 2020; 4: 1141.

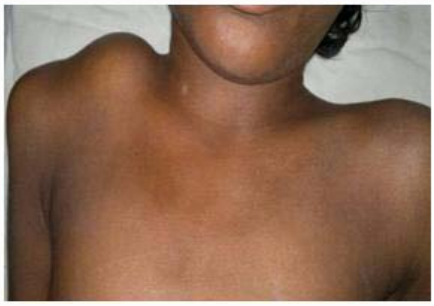

Figure 1: Swelling on Clavicle region.

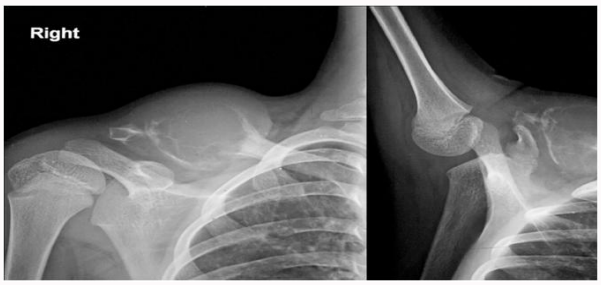

Figure 2: X-Ray chest showing mass arising from clavicle.

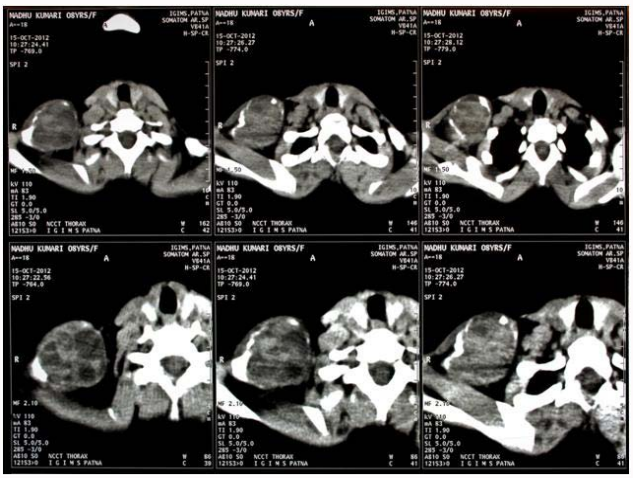

Figure 3: CT scan showed cystic lesion arising from right clavicle with evidence of air-fluid level suggestive of osteoclastoma.

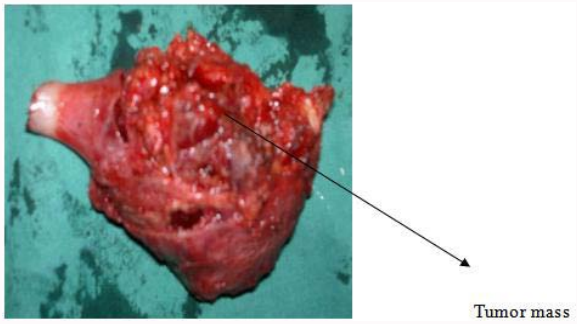

Figure 4: Tumor mass arising from clavicle.

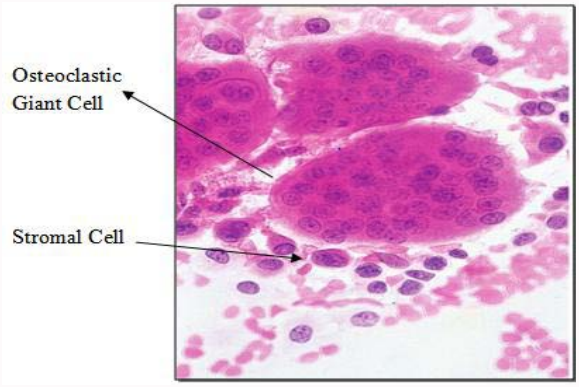

Figure 5: Histopathological examination showing stromal cell and giant cell.

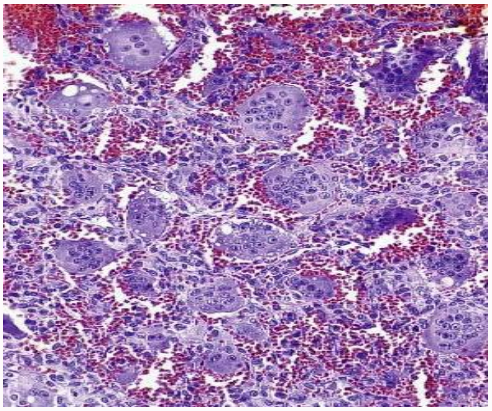

Figure 6: Numerous multinucleated giant cells resembling osteoclasts scattered in tissue.

skeletally immature patients. It demonstrated a geographical type of destruction with a narrow zone of transition. There was no periosteal reaction or soft-tissue component. The tumor matrix did not show any calcification. CT scan (Figure 3) showed cystic lesion and soft-tissue attenuation arising from right clavicle with evidence of air-fluid level suggestive of osteoclastoma. It has well-defined margins and may have thin rim of sclerosis.

Grossly, the tumor is 5 cm × 4 cm × 3 cm (Figure 4). The cut surface is solid and tan or light brown admixed with area of hemorrhage. Microscopically (Figure 5 and 6) composed of two components, so called stromal cells and giant cells. The giant cells are large, have thirty or more nuclei, most of them arranged towards the centre. Histopathological examination confirmed the diagnosis.

At the time of operation, the left acromioclavicular joint and its cartilages were found to be free from any involvement. The tumor was not adhering to the underlying structures. A wide excision of the mass, including 2.5 cm of healthy tissue of the clavicle, was performed. The postoperative period was uneventful. At the follow-up 1.5 year later, the patient was doing well and did not have any local recurrence or distant metastasis.

Discussion

Cooper and Travers [6] first reported Giant Cell Tumors (GCT) in 1818, Jaffe and Lichtenstein [5] defined GCT properly to distinguish it from other tumors [7]. GCT of bone is a rare non-mineralized, lytic, eccentric metaepiphyseal lesion, representing between 4% and 9.5% of primary bone neoplasm's and is thought to originate from undifferentiated cells of the supporting tissues of bone marrow and most commonly seen in early adulthood with female preponderance;

it is usually seen in the skeletally mature patient. In around 90% cases GCTs reported in the long tubular bones adjacent to joints, very few cases of Flat bone is involved [8]. Common sites of GCT involvement are distal femur and the proximal tibia. Apart from that involvement of distal radius and the sacrum are also reported.

Giant cell tumor of bone is best described as a true neoplastic condition with multinucleated giant cells scattered throughout stroma of mononuclear cell [9]. The histopathological findings are often a mixture of all components, and the differential diagnosis of GCT, not surprisingly, would include central giant cell granuloma, Aneurismal Bone Cyst (ABC), and osteitis fibrosa cystica (brown tumor).

Analysis of the distribution of bone tumors within the clavicle revealed that the lateral third was the most frequent site of involvement in our study (51%), followed by the medial third (44%). Bone tumors of the middle third were rare in this series (5%) [10].

Conclusion

We have reported this case to emphasize that GCT of flat bones, especially of the clavicle, is very rare and the imaging features or fluid-fluid levels and can mimic or be mimicked by a variety of other bone lesions, and there is a high index of suspicion. The presence of an expansile lytic lesion of the clavicle should be taken seriously and complete radiological and histopathological investigation should be done. Giant cell tumor of bone should be kept in mind, despite its rarity, for any expansile lytic lesion.

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