Giant Cell Tumor of Calcaneum– A Case Report

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Abstract

Introduction: The Prevalence of Giant Cell Tumour (GCT) at a typical locations, like such as bones of the feet are rare, seen in <1% of cases. GCT may have aggressive features, including cortical expansion or destruction with a soft-tissue component. Difficult diagnosis most often followed with complicated management and high recurrence rate remains a challenge that is rarely reported.

Presentation of case: We presented a case of a 35-year-old female lady with giant cell tumour of the left calcaneus.

Discussion: Curettage with augmentation procedures like such as electric cautery and hydrogen peroxide washing and bone cement application was done. However, aggressive GCTs may require wide excision and reconstruction or may be amputation.

Keywords: GCT, Excision & Curettage, Densumab

Introduction

The foot is an uncommon location for osseous tumour types, which comprise approximately 3% of all skeletal tumour types [1]. In particular, primary malignancies located in the calcaneus are notably rare, accounting for 31% of benign and 35% of osseous tumour types in the foot. The current studies on calcaneus tumour types are limited, consisting mostly of individual case reports describing a single primary tumour of the calcaneus [2,4]. Due to the rarity and lack of familiarity with calcaneal tumour types, delays in diagnosis and inadequate treatment are frequently reported [2]. Furthermore, improper diagnosis and treatment even result in unnecessary amputation [1]. The differential diagnosis of GCT are is as follows: (1). Giant cell reparative granuloma contains a more uniform larger giant cell with more nuclei,.(2). Brown tumour of hyperparathyroidism (3). Non-ossifying fibroma (4). Aneurismal bone cyst, and(5). Telangiectatic osteosarcoma.

The purpose of the present review is to increase clinical awareness of primary tumour types in the calcaneus, as the stage of progression at which the tumour is at, at which it is identified, diagnosed, and treated. To the best of our knowledge, the present review represents a relatively exhaustive review describing the known spectrum of tumour types of the calcaneus. Numerous other, more comprehensive reviews of the calcaneus are expected to be reported in the future.

Clinical report

A 35-year-old lady female was referred to us with complaints of painful swelling of her left ankle since for 3 months. Pain was insidious in onset,; initially present on weight-bearing, gradually progressed to persistent pain even at rest.

Examination of the right ankle joint revealed a diffuse swelling over the heel. There was local rise of temperature mainly over the anterior and lateral aspect of ankle. Both dorsi flexion and plantar flexion were painfully restricted. Movements of sub-talar joint could not be appreciated well, as dorsi flexion of ankle was restricted and pain. Dorsalis paedis and posterior-tibial artery pulsations were felt and there was no neurological deficit appreciated. Inguinal lymph nodes were palpable but non-tender.

X-ray left ankle lateral view revealed an eccentric osteolytic lesion within the calcaneum. The osteolytic area was geographic in type and there were no intralesional septae also.MRI confirmed that the lesion. Magnetic resonance imaging was consistent with solid mass derived from calcaneal bone expanding to the soft

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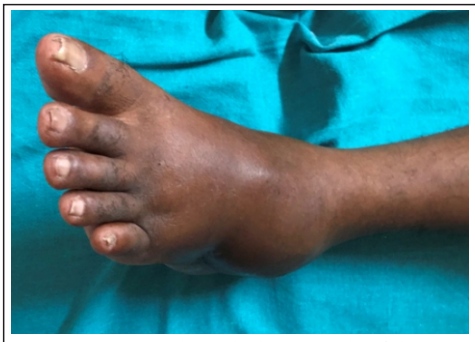

Figure 1: Clinical photograph of the condition.

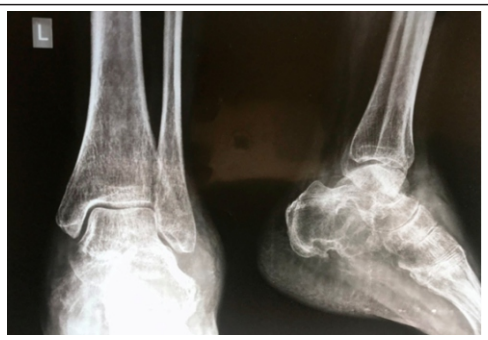

Figure 2: X-ray of the right ankle.

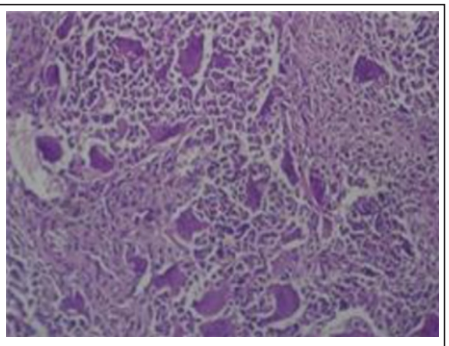

Figure 3: Histopathological findings were suggestive of benign giant cell tumor.

tissue. The radiological diagnosis was extra compartmental giant cell tumor. Chest radiography was normal. It is a Stage 3 GCT according to Ennecking Musckulo skeletal Tumor Society Surgical Staging System.

Treatment

Trucuta spiration cytology done and it suggests the diagnosis of giant cell tumor. Excision and curettage augmented with electrocautery application, hydrogen peroxide wash, and bone cementing was done through the lateral approach of calcaneum. Intraoperatively, the lesion was soft, grayish, well-defined lesion with extension to the soft tissues. Histopathology demonstrated characteristic multinucleated giant cells in a background of mononuclear stromal cells suggestive of GCT. The post-operative period was uneventful, and the patient was discharged on post-operative day 14. The patient was put on a below knee plaster of Paris cast for 6 weeks. She is now on follow-up. She started walking after 6 weeks with the help of MCR chapel.

Discussion

GCT of bone was described by Cooper and Travers, in 1818 [5]. The tumor is generally benign, locally aggressive with potency of recurrence as well as for malignant transformation. Malignant transformation occurs in 1.5–13% of cases and metastasis in <1% of situations primarily to the lungs. Malignant transformation to osteosarcoma has been reported in approximately 1% of cases [6]. They occur predominantly in metaphysis and epiphysis of long bones, the most common site being distal end femur followed by proximal end of tibia and distal end of radius. It is usually seen in the skeletally mature patients, peak incidence in the third decade with a male:female ratio of 1:1.5 [7]. GCT is very rare in the calcaneus. In a study performed by Campanacciet al., two cases were reported in the calcaneus out of the total of 327, whereas Dahlin reported 4 of 411 cases in his study; overall incidence being approximately 1% [8].

Clinically, GCT presents with non-specific symptoms such as local swelling, pain, and warmth. On gross pathology, typical GCTs are a soft friable dark tissue with associated areas of cystic and necrotic changes. Histologically, the tumor shows characteristic multinucleated osteoclastic type giant cells with round to oval or spindle-shaped nuclei and areas of mitotic activity. Radiologic features of GCT are usually distinctive, appearing as an expanding, eccentrically located radiolucent shadow typically toward the end of the long bone. The tumor has indistinct margins and at times, it may be multi locular. Secondary aneurysmal bone cysts or malignant transformations to osteosarcoma may sometimes be encountered [9]. Treatment of GCT is surgical. Conventionally, curettage with or without bone grafting or placement of bone cement is the first line of management. However, recurrence of the tumor is a known complication, most cases presenting within 3 years of primary surgery. Hence, the addition of mechanical burr drilling of the tumor and/or cryoablation is recommended. This patient should, hence, be regularly followed up not only for recurrence but also due to the small definitive risk of malignant transformation [10]. Recently, denosumab, a monoclonal antibody that targets

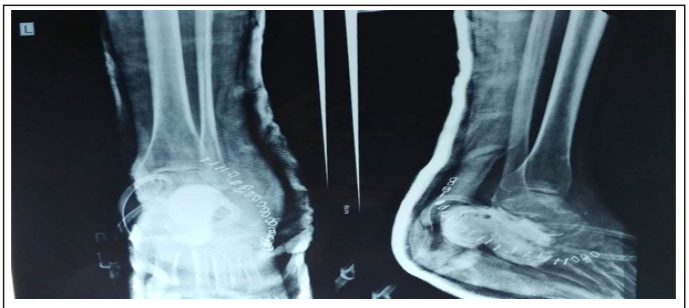

Figure 4: Post-operative picture.

receptor activator of nuclear factor k-B has been used to treat GCT of bone. It has been shown to inhibit the osteoclastic activity of GCT, hence is been used preoperatively to facilitate the recession of tumor as well as primary treatment for patients unwilling or unfit for surgery [6].

Conclusion

GCT presenting in the calcaneus is a very rare entity. A 35-year-old female was referred to us with complaints of painful swelling of her left ankle for3 months. Clinically and radiologically was confirmed the diagnosis, GCT. Excision and curettage augmented with electro cautery application, hydrogen peroxide wash, and bone cementing was done through the lateral approach of calcaneum. Intervention in early stages can avoid radical procedures such ascalcanectomy or amputation. Were commend an aggressive surgical approach with close follow-up to detect recurrence if any, at an early stage.

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Conflict of Interest: NIL
Source of Support: NIL

How to Cite this Article

Abdul Rahman, VinodKumar B.P, Vikraman C. S | Giant Cell Tumor of Calcaneum–A Case Report | Kerala Journal of Orthopaedics | July - Dec 2019; 32(2): 53-55.