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Case report

Giant cell tumor of the lower end of tibia. Curettage and cement reconstruction

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ABSTRACT

Bone giant cell tumor (GCT) is a rare, generally benign and locally aggressive tumor. It accounts for about 5% of all primary bone tumors and is located preferentially on the epiphyseal long bone. Ankle localization is rare. We present two cases of GCT of the lower end of tibia, presenting as gradually increasing pain and swelling in the tibial pilon over the course of 3 months. Standard radiology and MRI showed large eccentric, expansile lesion in the distal tibia with rupture of the cortex suggestive of a malignant tumor of the bone. A biopsy was performed which confirmed a GCT of bone. Curettage of the lesion and packing the cavity with bone cement resulted in disappearance of the tumor with good functional recovery. We conclude that intralesional curettage and cement packing is a good treatment option for Campanacci grade 2 and 3 GCT lesions of lower tibia.

1. Introduction

GCT of bone is the most common benign aggressive primary bone tumor, accounting for approximately 5% of all primary bone tumors. Usually, the patients' age ranges from 20 to 50 years, and the peak age incidence is in the third decade of life with slight female predominance [1]. The tumor is typically benign but can be locally aggressive. Usually, the tumor site is at the long bone meta-epiphysis, especially the distal radius and femur, proximal humerus and tibia. Nearly 6% of GCTs occur in the foot and ankle region, with the distal tibia being the most common location [2]. Clinically, GCT presents as a benign but aggressive lesion with a tendency toward local recurrence. The diagnosis of GCT of bones depends mainly on clinical and radiological examination (plain X-ray and CT scan) on the site of the lesion. The treatment of GCT is directed toward local control without sacrificing joint function. Surgical options include curettage and cement packing, curettage and bone grafting, or resection and reconstruction.

The authors report two cases of GCT of the distal end of the tibia, which were managed successfully by intralesional curettage and cement packing, and include a review of the literature.

2. Case reports

2.1. Case 1

A 43-year-old woman presented with a 12-month history of left ankle pain and swelling. She stated she had no previous trauma to the ankle. The pain had increased slowly during the previous 4 months to the point that she was limited to a few blocks of walking. She also noticed decreased range of motion and substantial swelling of the ankle. On examination, the patient had marked swelling of the left ankle. She had tenderness to palpation. Extension and flexion of the left ankle were limited. A radiograph of the patient's left ankle revealed a lytic lesion of the distal tibia (Fig. 1). CT scan showed a large eccentric, expansile lesion in the medial aspect of the distal tibia with rupture of the cortex suggestive of malignant tumor of the bone (Fig. 2). After an incisional biopsy, the diagnosis of GCT was finally made, although it was in an atypical site. She was treated with curettage and packing polymethylmethacrylate cement, resulting in disappearance of the tumor with good functional recovery.

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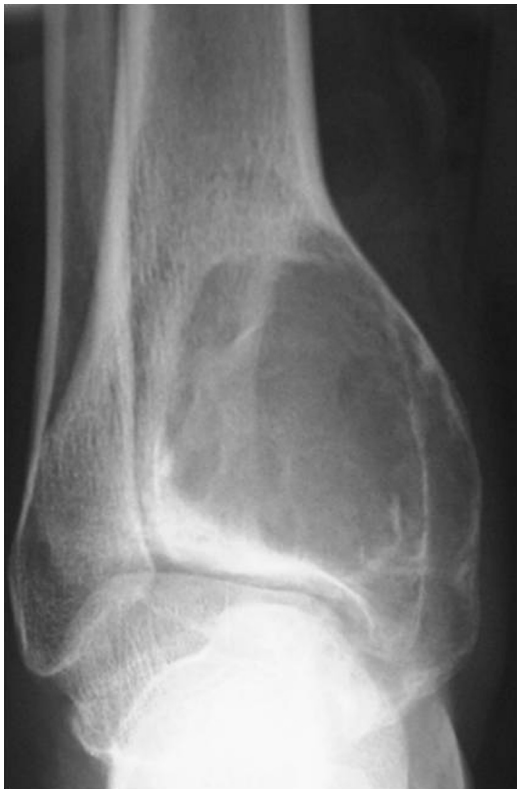

Fig. 1. X-ray showed a well-defined expansile lytic lesion suggestive of giant cell tumor of distal end tibia (patient 1).

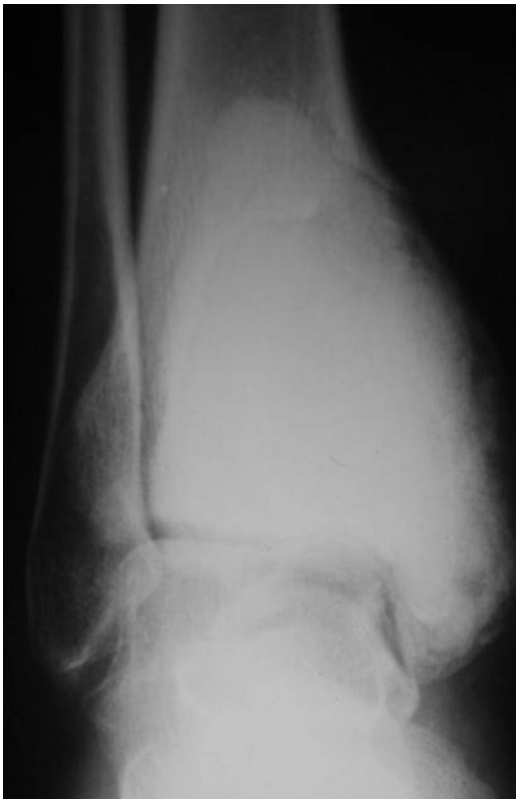

Fig. 3. Post-operative radiograph (patient 1).

At the time of final follow-up three years after the tumor resection, the patient had no discomfort and she had no limitation of daily activity. Follow-up radiographs showed no evidence of local recurrence of the tumor (Fig. 3).

2.2. Case 2

A 21-year-old woman presented with a painful mass of the left ankle, which had been gradually enlarging over a six-month period. On physical examination, swelling was present over the distal aspect of the leg. The skin over swelling was normal. Tenderness was present over distal tibia. Ankle movements were limited. Radiographs demonstrated a large osteolytic lesion involving the lower end of the tibia. MRI demonstrated a large expansile mass of low signal intensity on the T1-weighted images and mixed signal intensity on the T2-weighted images without joint invasion or neurovascular invasion and with a multifocal defect of the posterior cortex of the tibia (Fig. 4).

Using an anteromedial approach, an incisonal biopsy of the lesion confirmed the diagnosis of GCT (Fig. 5). The patient was treated with intralesional excision and curettage and the cavity was filled with bone cement. An iliac graft was interposed between cement and the subchondral area. Five years after the primary

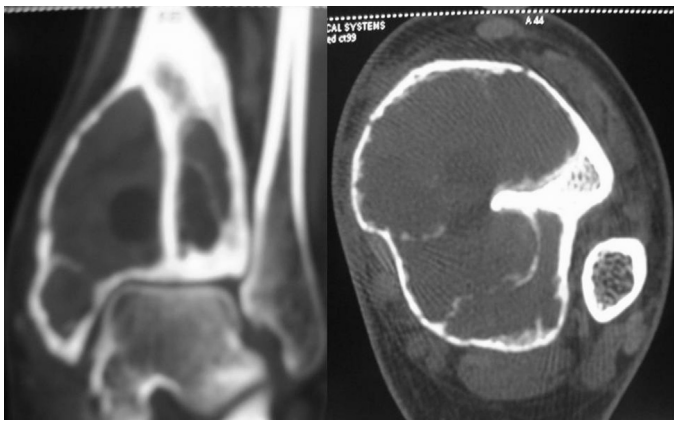

Fig. 2. CT scan of the ankle showed morphology of sub-articular expansile lytic lesion in lower end of left tibia suggestive of giant cell tumor (patient 1).

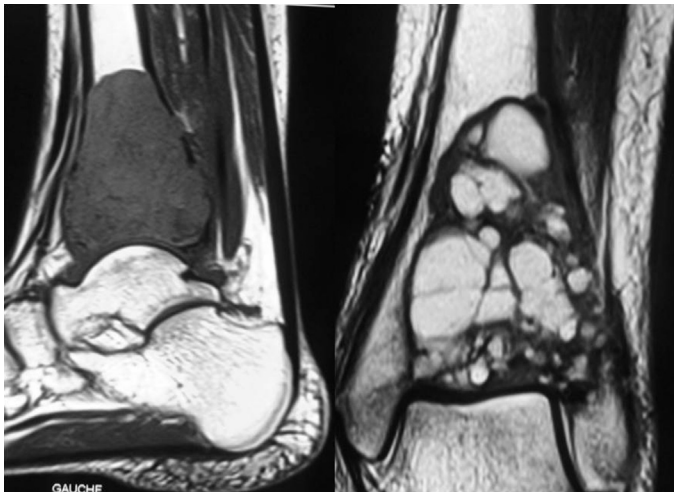

Fig. 4. Patient's 2 sagittal T1-weighted and T2 coronal MRI: the left ankle showed an expansile cystic lesion involving the metaphysis and epiphysis of the distal tibia. There is considerable thinning of the articular tibial plafond and posterior cortex of the tibia.