Case Report

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Rare Case: Giant Cell Tumor of Patella and Review of Literature

Dinesh Kumar*, Ramvilas Nag, Amit Kumar**, Utkrisht Mandot****

Author Affiliation: *Ex Resident **Senior Resident, Department of Orthopaedics, Trauma Centre, IMS, Banaras Hindu University, Varanasi, Uttar Pradesh.

Reprint Request: Dinesh Kumar, Flat No. 503, Shanti Vimla Vihar Apartment, Rohit Nagar, Sundarpur, Varanasi - 221005 Uttar Pradesh.
E-mail: oyedinesh@gmail.com

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Abstract

Most common site of giant cell tumor is distal femur and proximal tibia. Patella is not a very common site of occurrence of GCT. This case report is of a 27 year old female having GCT of patella. She presented with 18 month history of anterior knee pain and 6 month history of mild swelling on anterior aspect. Radioclinicodiagnosis was made by doing X-ray & histopathology. Treatment consists of extended curettage with help of phenol, cottary & cavity is filled with bilateral autologous iliac crest bone graft and beta-tricalcium phosphate granules. Following 24 months of surgery patient is asymptomatic and there is no local recurrence was found clinicoradiologically.

Keywords: Giant cell tumor; Patella; Bone grafting; Anterior knee pain.

Introduction

Giant cell tumor (GCT) of bone was first described by Sir Astley Cooper in 1818. Historically, the tumor has been known by numerous names like myeloid sarcoma, tumor of myeloplaxus, osteoblastoclastoma, and osteoclastoma. GCT is a relatively common skeletal tumor, accounting for 4%-9.5% of all primary osseous neoplasm and 18%-23% of benign bone neoplasm [1]. It is characterized by the presence of multinucleated giant cells. Of these, the majority of cases occur in the epiphysis of long bones [2,3].

This is a case report of rare case of giant cell tumor of patella in a 27 year old female managed by surgical intervention. Written informed consent obtained from patient for publication of this case report and related images.

Case Report

Patient is a 27 year old female presented in OPD of trauma centre (B.H.U) with 18 months history of anterior knee pain on right side with 6 months of mild swelling on anterior aspect, On clinical examination skin overlying the patella is normal , no signs of effusion, Local temperature is not raised and there was mild pain on extremes of knee flexion. No history of similar illness in past or any family members was found. X-ray of knee joint AP/LAT was done with features suggestive of GCT. Radio logically the lesion was lytic with typical soap bubble appearance involving whole of patella with no periosteal reaction. There was no breach in the cortex and no soft tissue involvement.

For further workup MRI & CT was adviced but patient refused, so CORE Needle biopsy was done and conformed it to be a gct with numerous multinucleated giant cells of osteoclastic type with mononuclear stomal cells. Informed consent was taken.

Using straight longitudinal midline incision extended curettage of the patella was done. Tissue obtained during curettage was typical fleshy, reddish

brown, very fragile in touch. Overlying cortex is very thin and there was no breach in the articular surface of patella. Cottary was then applied throughout the cavity then properly washed with 1 litre of normal saline. 70 % phenol was irrigated properly for around 10minutes with help of small gauge peaces all inside the cavity and inner aspect of cortex while protecting the normal tissue by covering with thick pads. After proper washing with 4-5 litres of normal saline, bone graft was taken from bilateral iliac crest and filled the cavity along with beta-tricalcium phosphate granules (chronOS, DePuy, synthes). Suturing of anterior cortex was done with absorbable suture material. Tissue obtained was sent for histopathologic examination which shows giant cell tumor of bone having numerous multinucleated giant cells of osteoclastic type with mononuclear stromal cells.

Following surgery above knee slab support was given for around 6 weeks. Then she was allowed for partial weight bearing for next 6 weeks, and then full weight bearing was allowed.

At 24 month follow up she was asymptomatic and doing her daily activities without any recurrence of pain or restriction of knee movements.

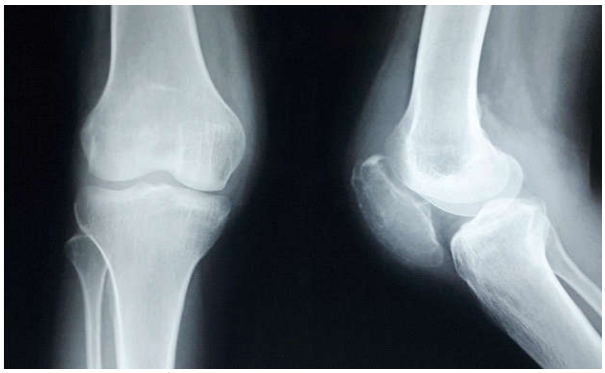

Fig. 1: Preop xray

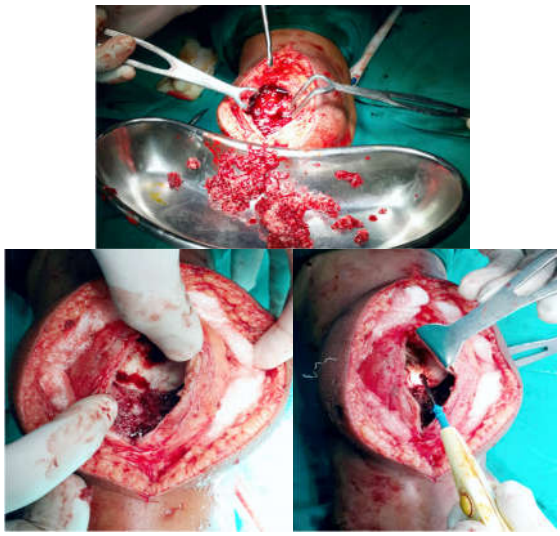

Fig. 1: Intraoperative Photographs

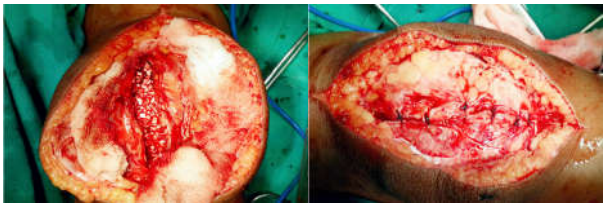

Fig. 3: Immediate Postop X-ray

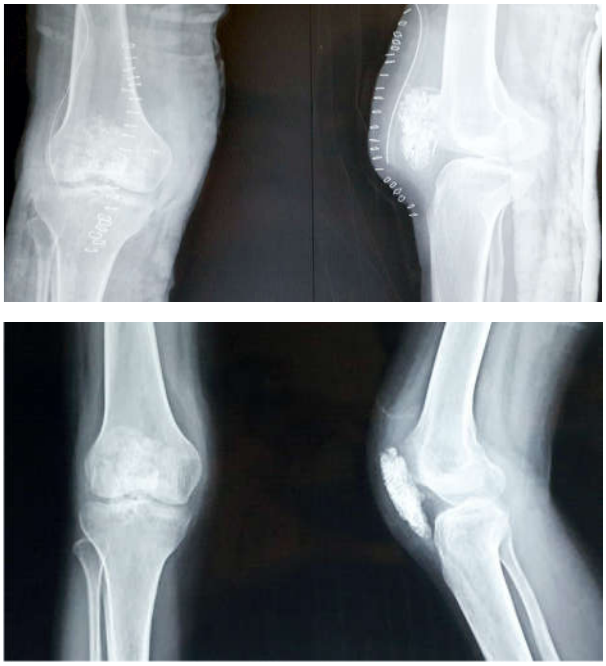

Fig. 4: 24 months of follow up

Discussion

The most common symptom of primary patellar tumors is anterior knee pain that usually lasts a long period of time from pain onset to determination upon diagnosis. For benign tumors, the feeling of pain is gaining slowly; for malignant ones, the feeling of pain enhances more rapidly. Sometimes, the immediate pain will present after injury history, resulting from a pathological fracture. Swelling-the secondary common complaint - occurs in several cases of both benign and malignant tumors. Upon physical examination, the impaired function of flexion and extension is easier to be determined than the patient's complaint is. Affected by pain and swelling, the motion range of the diseased knee is forced to decrease. With the limitation of motion and limp, patients may find muscle atrophy of the quadriceps.

GCT is a tumour of mesenchymal origin that appears in mature bone, most commonly at the distal femur, proximal tibia, proximal humerus or distal radius. GCT may be considered a benign although locally aggressive tumour [4]. The appearance of a

cystic lesion extending up to the subchondral plate in mature long bones is characteristic of GCT [5]. The patella is an exceedingly rare location for primary neoplasm. The Bone and Soft Tissue Tumour Committee of the Japanese Orthopaedic Association reported that of 27,403 primary bone tumours treated between 1972 and 2003, only 75 of involved the patella; 2126 cases of GCT were recorded, but only 22 cases of GCT of the patella (1.47%) [6]. The Mayo Clinic has presented a series of 671 GCTs of bone, only 1 of which was located in the patella [7].

Intralesional curettage and bone grafting is the mainstay of treatment for most GCTs, however the recurrence rate may be as high as 45% without local adjuvant therapy [8]. The mean interval between surgery and recurrence was 16.3 ± 12.4 months (range, 4–50 months)[13]. The use of adjuvants such as phenol, hydrogen peroxide, liquid nitrogen and bone cement reduces the recurrence rate to 17% [4]. High-speed burr extended curettage is associated with a 12% recurrence rate [9]; cryosurgery reduces the recurrence rate to 58%, however it is associated with pathologic fracture and vascular injury [10]. Wide surgical resection is the treatment of choice for aggressive and recurrent lesions; however it is associated with higher rates of complications as a result of the complex reconstructions that are often required [4]. Medical management using diphosphonates with an anti-osteoclastic effect reduce the recurrence rate to 4.2% [11]. Denosumab is a human monoclonal antibody to RANKL (receptor activator of nuclear factor-kB ligand), expressed by osteoclastic giant cells, and is a recent development in the treatment of GCT. Phase II studies have demonstrated the efficacy of denosumab in disease and symptom control, without adverse side effects [4,12] radical curettage, use of adjuvents (phenol, cottary) with aultologous bone graft and chronos granules came out with excellent outcome in this case. 24 months of follow up she was asymptomatic and no features suggestive of recurrence of the disease .

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