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Giant cell tumor of patella: A rare presentation

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Abstract

The patella is a rare site of primary tumors. Tumors in the patella represent 0.12% of all bone tumors. Majority of tumors are benign [1]. The most frequent benign patellar tumor is giant cell tumor (GCT). Here, we present case report of a giant cell tumor (GCT) occurring in the patella in a 32-year-old woman, who had presented to the Orthopaedic Department of B.P. Koirala Institute of Health Sciences, Dharan, Nepal with the complaint of occasional right anterior knee pain and swelling for 1 year. Considering its rarity and unique characteristics, we thought that this case needs to be reported. In this part of world (Nepal) patients commonly present late to the hospital.

Keywords: Patella, benign tumor, surgical excision

Introduction

Primary patellar tumors are uncommon. Tumors in the patella represent 0.12% of all bone tumors. Majority of tumors are benign [1]. The most frequent benign patellar tumor is giant cell tumor (GCT), followed by chondroblastoma and aneurysmal bone cyst (ABC) [2]. Benign GCT account for 33% of patellar tumours [3]. They generally present with anterior knee pain and swelling. Most of the cases are diagnosed easily however some atypical presentation may create dilemma.

GCT is a benign but locally aggressive bone tumor which comprises 5% of all primary bone tumors. Its tissue of origin is uncertain and it is found in mature bones. The most common sites are distal femur, proximal tibia, proximal humerus and distal radius [4]. GCTs are usually solitary lesions but they can be multifocal in 1-2% of cases. Pulmonary metastasis may be seen in 3% of cases. Out to the total cases around 5% can be malignant [5].

Patellar GCT usually present with anterior knee pain and swelling around the knee. Physical examination may show redness, local heat, swelling, effusion, tenderness, lump, crepitus, and the decrease in range of motion [6].

The differential diagnosis of the present case may include chondroblastoma, aneurysmal bone cyst and osseous haemangioma. Chondroblastoma accounts for <1% of all bone tumors and most frequently occurs in the second decade of life, with a male predominance

Case Report

A 32-year-old woman from remote hilly area of Nepal presented to the Department of Orthopaedics, B.P. Koirala Institute of Health Sciences, Dharan with 1 year history of occasional right anterior knee pain and swelling of patella. The patient had been experiencing increasing anterior knee pain for last 1 month. There was no history of trauma, fever, discharge or similar swelling elsewhere. The physical examination revealed mild swelling and slight tenderness in the anterior aspect of the right knee. Knee movements were restricted terminally. There were no skin adhesion, local heat, redness. Furthermore, no joint effusion was noted. The laboratory data were within normal limits. The patient's past medical history was unremarkable.

Plain radiographs revealed a well-defined, lytic lesion in the central portion of the patella. There was no periosteal reaction and cortex was intact. (Figure 1)

On magnetic resonance imaging (MRI), the lesion exhibited slightly higher signal intensity compared to skeletal muscle on T1-weighted sequences and heterogeneous signal intensity on

T2-weighted images. There was no obvious soft tissue or intra-articular extension. Based on these findings, a benign bone tumor was suggested and GCT was our provisional diagnosis. Post-operative X-ray was done



Fig 1: Pre-op radiograph

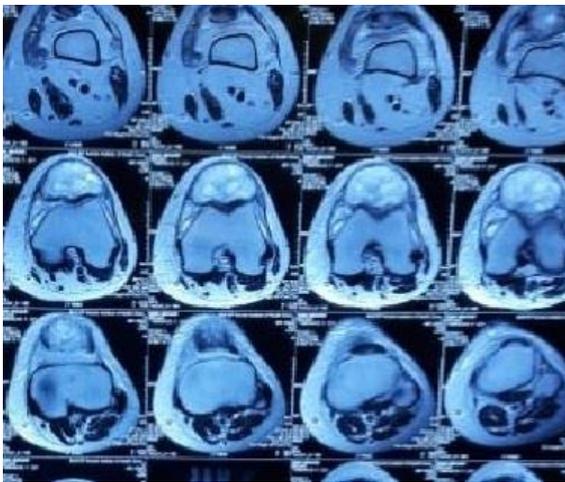


Fig 2: Pre op MRI

Chest x-ray was normal. After pre-anaesthetic evaluation and fitness, the patient underwent extended curettage with H₂O₂ and the cavity was packed with PMMA bone cement. Immediate post-up patient status was satisfactory. Post-operative X-ray was done and patient was discharged on 2nd post-op day (Figure 1)



Fig 3: Post-up radiograph



Fig 4: Surgical wound

Biopsy report confirmed our diagnosis. It showed stromal cells and multinucleated giant cells on H/E staining. (Figure 5)

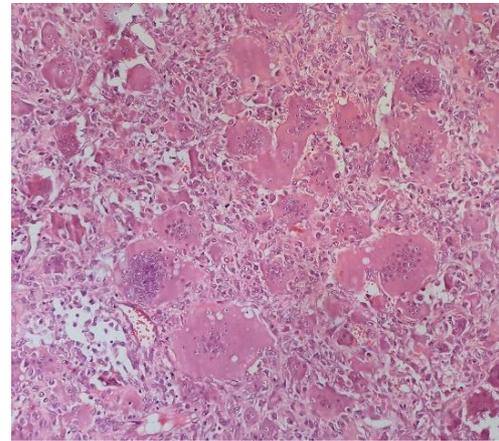


Fig 5: Biopsy

Sutures were removed on 14th post-operative day. Patient was in regular follow ups according to GCT guidelines. At 9 months follow up patient is currently asymptomatic and her knee ROM is also comparable with the normal side and there are no signs of recurrence.

Discussion

Patella is an uncommon site for primary bone tumors. Benign lesions are more frequent compared to malignant tumors. The most common benign tumor is GCT, followed by chondroblastoma and Aneurysmal bone cyst. Patellar GCT usually present with anterior knee pain and swelling around the knee. Physical examination may show redness, local heat, swelling, effusion, tenderness, lump, crepitus, and the decrease in range of motion [6].

Radiographs usually reveal an osteolytic lesion of the patella with destruction of the bone, and sometimes, soap bubble appearance, sclerotic and radiolucent lesion and pathologic fracture may also be found. Magnetic resonance imaging (MRI) show abnormal extension and lesion of the patella, and there may be some evidences of adjacent tissues spread. Chest radiography and bone scintigraphy are necessary for GCT patients to determinate the possible metastasis on the lung and other bones [6].

The differential diagnosis of the present case may include chondroblastoma, aneurysmal bone cyst and osseous

haemangioma. Chondroblastoma accounts for <1% of all bone tumors and most frequently occurs in the second decade of life, with a male predominance. Plain radiographs demonstrate a radiolucent lesion of the diseased patella with a well-defined sclerotic margin, lobulated rims, and thinned cortices. Peritumoral edema may be seen on MRI. Chondroblastoma is usually smaller in size compared to GCT [6].

The surgical treatment for patellar GCT includes curettage with bone graft, curettage with bone cement and patellectomy. Total patellectomy has been recommended as the preferred treatment for aggressive benign lesions with cortical breakthrough. Malhotra *et al.* [12] reported a case of aggressive GCT of the patella and its management with wide resection and reconstruction of the extensor mechanism using a patellar allograft. Archmad F *et al.* [13] reported a case of malignant GCT of patella treated with total patellectomy, extensor mechanism reconstruction.

In this case, extended curettage was performed with H₂O₂ and PMMA bone cement placement.

Conclusion

In summary, Patellar tumors, such as GCT, should be considered in patients with unexplained persistent knee pain. The surgical treatment for patellar GCT includes curettage with bone graft, curettage with bone cement and patellectomy.

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