



ANEURYSMAL BONE CYST OF PATELLA TREATED WITH CURETTAGE AND CEMENTING – A CASE REPORT

Sports Science

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ABSTRACT

A aneurysmal bone cyst is a benign tumour whose pathophysiology is unknown. It represents less than 1% of all bone tumours with a tendency to develop in metaphysis of long bones, less frequently in spine and sacrum with patient aged less than 20 years with a female preponderance. Development in the patella is even rarer and accounts for less than 1% of all ABC. Treatment usually includes curettage of lesion with bone grafting. We present a case of 24 years old male with 6 months history of pain in knee which was evaluated as primary ABC of patella and treated with extended curettage and bone cementing and followed up for a period of 12 months. On follow up patient was asymptomatic.

KEYWORDS

Aneurysmal Bone Cyst, Patella, Cementing.

INTRODUCTION -

An aneurysmal bone cyst is a benign aggressive bone lesion first described by Jaffe and Lichtenstein in 1942⁽⁵⁾. It is typically an expansile osteolytic lesion consisting of blood-filled spaces and channels that are divided by connective tissue septa, which may contain osteoid tissue and osteoclast like giant cells⁽²⁾. Although benign, ABC can be locally aggressive, cause extensive weakening of the bony structure and impinge on the surrounding tissues⁽¹²⁾. Treating this lesion in the patella can be achieved through patellectomy⁽⁶⁾ curettage and filling the defect with autologous bone graft or allograft, or curettage and filling the defect with bone cement⁽¹⁰⁾. The type of treatment depends upon the stage of the disease.

CASE REPORT -

A 24 years old male college student presented with history of pain in the right knee of 6 months duration, with an increase in intensity for 1 month. There was no history of any significant trauma to his knee. There was no history of fever, loss of weight, or contact with patient of tuberculosis. He could carry his daily activities normally without difficulty. He complained of pain on running and heavy exercise without any rest pain. He had no history of any associated comorbidities or pain at any other site of the body.

His general physical examination was unremarkable and had no significant local findings. There was no swelling or scar, no tenderness and had full active range of movement. Contralateral knee was normal. His blood parameters were normal with normal ESR,CRP.On routine radiograph of the knee (Fig.1), a lytic multiloculated bony lesion of the patella was seen without involving the articular cartilage and cortical thinning. A provisional diagnosis of giant cell tumour was made and was followed by MRI. MRI (Fig. 2 & 3) revealed thinning of the cortex of the lateral patellar facet with few conglomerated subchondral cyst seen in the lateral patellar facet appearing hyperintense in T2W/STIR images with mild marrow oedema and intermediate to low signal intensity in T1W images. The articular cartilage appeared normal.



Fig. 1 Lat Xray of knee showing lytic bony lesion of patella.

Here a differential diagnosis of ABC was made and CT guided biopsy was done to confirm the diagnosis. Blood mixed tissue was obtained and findings were suggestive of giant cell lesion of bone consistent with ABC.

The patient was thoroughly evaluated and screened for any other bone lesions to rule out secondary aneurysmal bone cyst as they are considered to be more aggressive tumours and has a higher recurrence rate.

Surgical curettage and cementing was planned. Patella was exposed and surrounding soft tissue appeared normal. Small cortical window of size 3×1 cm was made on the anterior surface of patella and extended curettage done (Fig. 4) followed by chemical cauterisation with hydrogen peroxide and by argon beam cautery. Cavity was found to be blood filled with rim of tissue lining the wall. Wall appeared intact suggesting no cortical breach and articular involvement. Curetted material was sent for HPE. Cavity was filled with about 12-13 cc simplex bone cement manually with the help of a stilllet (Fig. 5).



Fig. 2 MRI : Sagittal section of patella showing multiloculated cystic lesion of patella without soft tissue extension.



Fig. 3 MRI : Axial section of patella showing lesion located to the lateral patellar facet without articular involvement



Fig. 4 : Post curettage



Fig 5 : Post cementing .

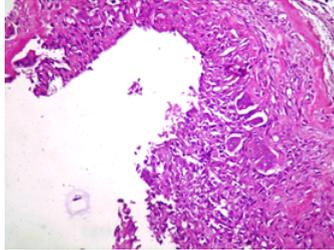


Fig 6 : Cystic cavity lined with endothelial cells and extravasated RBCs suggestive of ABC.

After clinical and radiological correlation and microscopic findings (Fig. 6) the case was diagnosed as primary aneurysmal bone cyst.

The patient was immobilised in a cylindrical slab for 2 weeks followed by passive and active exercises. 4 weeks post surgery patient was allowed full weight bearing. After a 2 years follow up there was no pain with full range of movement including kneeling and squatting. There were no signs of recurrence or bone cement lucency on xray (Fig. 7). Assessment of knee with Lysholm score was excellent(100 points).



Fig. 7: Follow up xray at 21 year.

DISCUSSION :

Patellar tumours are rare and almost 75% of these diagnosed in children and young adults are benign⁽⁶⁾. Giant cell tumour and chondroblastoma are most common primary benign patella neoplasms and osteosarcoma are the most common malignant primary tumours⁽⁶⁾. Metastatic tumours of the patella are less frequent than primary lesions⁽¹³⁾. Aneurysmal bone cyst (ABC) is an expansile cystic lesion, often occurring in the second decade of life. ABCs although benign can be locally aggressive. The etiology of this condition is not definitively known, although most believe it is a vascular malformation within the bone^(7,13). ABC are rare benign bone tumours with less than 1% incidence⁽⁵⁾. It most commonly occurs in long bones and has less than 5% incidence in flat bones⁽¹⁴⁾. ABC of patella is even rarer with less than 1% incidence⁽⁵⁾. Primary aneurysmal bone cysts are those with no other associated lesions.

Secondary lesions may occur along with benign or malignant lesions responsible for the aneurysmal cystic changes, and are considered to be more aggressive and have a higher recurrence rate. Primary lesions are more common than secondary lesions with a ratio of 2:1 and are most often associated with antecedent history of trauma, although no such history was present in our case. It has female preponderance and are more common in people of African descent^(6,9). Secondary cases are mainly due to giant cell tumour⁽⁷⁾ and chondroblastoma^(3,4). Symptoms vary according to the location of tumour and are mainly pain, swelling and rarely impairs functional capacity and may be diagnosed incidentally after pathological fracture.

Radiologically aneurysmal bone cysts appear as an eccentric or central osteolytic lesion with cortical expansion, giving a 'blown-out' appearance with extension into soft tissues. Trabeculae are rude at the periphery of the lesion but become delicate toward the center⁽⁹⁾. Osteolytic lesions are surrounded by bony septa and the surface of the intra-osseous border shows periosteal and new bone formation.

Benign chondroblastoma and bony giant cell tumour must be considered in the differential diagnosis of aneurysmal bone cyst since these tumors usually show the same clinical and plain X-ray features. CT scan and MRI clears tumour morphology and soft tissue extension, with MRI showing multiloculated cavities and fluid level, although no such fluid level was seen in our case. MRI helps in differentiating unicameral bone cyst and ABC⁽¹¹⁾.

Treatment depends upon stage of the disease, with bone curettage and bone grafting/cementing in Enneking stage I/II. Chemical adjuvants should be considered in stage I/II. Stage III is mainly treated with wide excision and reconstruction with joint sparing surgery with endoprosthesis, bone grafting, arthrodesis⁽⁹⁾. Bone cement packing lowers the recurrence rate in biologically comparable tumour such as giant cell tumour⁽⁹⁾. The average time between initial surgery and recurrence was 7.6 months found in a study by Cottalorda J in 2004⁽¹⁾. Recurrence rate is high and patient should be followed regularly. ABC of patella is rare and very few cases are mentioned in the literature.

Our case was Enneking stage I and was managed by extensive curettage and cementing the hollow cavity. Cementing can be used as an adjuvant and the exothermic reaction destroys the carcinogenic cells. Bone cement can be used as a filling agent and provides better mantle than allograft and autograft. In addition to its use as an adjuvant, it has the advantage of providing immediate stability, which makes rehabilitation easier and lessens the risk of pathological fracture. Although the detection of local recurrence is difficult to recognise after a tumour cavity is filled with bone graft, its relatively easier after cementing as an expanding radiolucent area adjacent to bone cement. Although curettage and bone grafting is a standard treatment option, we have successfully used cementing technique in our 2 year follow up.

We conclude that , cementing after curettage is also a good management option provided there is no cortical/articular breach, allowing easy/early rehabilitation and easy detection of recurrence. However, a larger case series may lead to a better validity of our conclusion.

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