

Late Presentation Of G.C.T. Of The Patella

G Chakraverty, U Chakraverty

Citation

G Chakraverty, U Chakraverty. *Late Presentation Of G.C.T. Of The Patella*. The Internet Journal of Orthopedic Surgery. 2008 Volume 12 Number 1.

Abstract

Primary giant-cell tumor of the patella is a rare entity with only a handful of cases reported in the world literature and none presenting at a late stage. Methods: A 23 years old female patient presented with a knee swelling at 2.5 years and was diagnosed as a primary giant cell tumor of the patella. Total patellectomy was done and the specimen subjected to histopathological investigation. The patient was put on post operative physiotherapy and was followed up regularly. Results: Histology reports suggested a primary giant cell tumor of the bone. The patient achieved excellent functional results at last follow up of four years. Conclusions: Giant cell tumor of the patella even if presenting late with massive involvement may be managed with total patellectomy to achieve good to excellent results.

INTRODUCTION

Giant cell tumor discovered nearly two hundred years ago by Sir Astley Cooper in 1818 [1] has always offered many dilemmas in its presentation, diagnosis, treatment and outcome. The classic location around the epiphyseo-metaphyseal ends of long bones, in a young person from the 3rd decade with a painful swelling is the commonest presentation. Anecdotal variation from this has been mentioned often in literature. Histopathological diagnosis has remained the corner stone for diagnosing tumors but again the Giant cell variants [23] lie in the grey area. Articles by Larrson S.E.[4] and Edward L Compere[2] emphasize the clinico-radiological correlation that must be made to support the histological findings to come to a conclusion of a giant cell tumor.

The complexities of such diagnosis are multiplied when the presentation is in a flat bone like the patella. Controversies still exists in defining the frequency of primary patellar Giant-cell tumor despite the older reports of its highest frequency in this bone [5]. With these conflicting facts the likelihood of giant cell tumor affecting the patella must be kept in mind by orthopaedicians when dealing with swellings around the knee.

MATERIAL AND METHODS

A 23 year old female presented to us with the presenting complaints of swelling over her right knee since 2.5 years. The patient had been taking off and on treatment for the last 2.5 years for the swelling from quacks in the form of

analgesics and massage. The swelling had been relentlessly progressive in size with off and on pain without any associated constitutional symptoms. The patient had been able to carry out her daily activities with a good range of knee function. The pain was occasional, low grade not affecting her daily activities and well tolerated by her. At no point during this course did the patient sustain any form of direct or indirect trauma, episodes of fever or severe pain in her right knee. The patient did not seek any opinion from a medical practitioner during this period of time. There was no past history of any swelling in the body or chronic illness. The family history was insignificant

Examination of the right knee showed a solitary well to ill defined swelling over the anterior aspect of the knee extending from the tibial tuberosity to the level of the femoral condyles. It measured 13.5 X 12.5 X 7 cm, with venous prominences, skin striations over the surface but without any evidence of redness, pigmentation, sinus or scarring. The temperature over the surface was normal, the swelling was hard in consistency and gave the feeling of egg shell cracking. The mass was in continuity with the extensor mechanism and appeared to be an expansion of the patella. The supra and infra patellar pouch seemed to be normal with minimal effusion in the joint. No form of synovial hypertrophy could be appreciated. The skin over the mass was freely mobile. The mass was tender on pressure. There was an active range of movement from 10° to 110° without any abnormal range in other planes. Pain was present at the terminal range of flexion without any patello-femoral

tenderness or ligamentous instability. There was no significant regional lymphadenopathy or any other bony tenderness over the body. There was no distal neurovascular deficit.

Figure 1

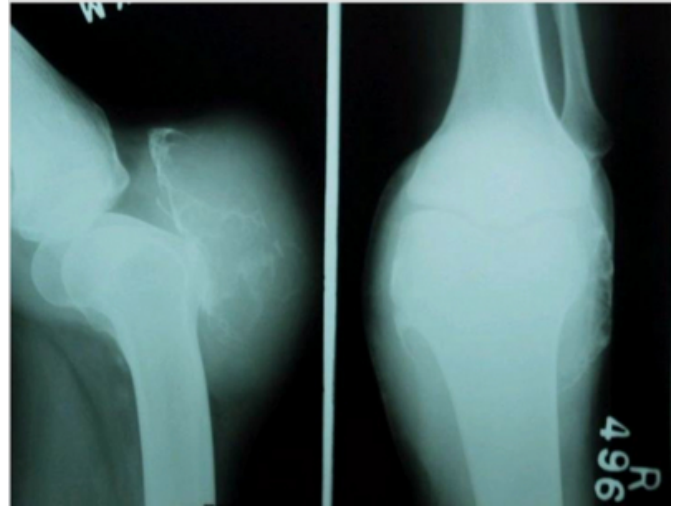
Figure 1: Clinical picture of the knee with tumor almost 70% of the girth of the tibial metaphysis extending from the tibial tuberosity to the suprapatellar pouch.



The history and examination suggested the likelihood of a benign growth from the patella or extensor mechanism, most likely neoplastic with a differential diagnosis of sub-acute or chronic infection. Radiological and hematological investigations were sought. The plain X-ray showed an expansile, lytic lesion involving whole of the patella with extensive destruction of the bone and near total loss of entire patellar trabeculae specially at the lower pole. There was no bony sclerosis around the lytic areas, only a few septa were present with an extensive cortical breach at multiple sites. The femur and the tibia appeared normal.

Figure 2

Figure 2: X-ray showing an expansile, lytic lesion involving whole of the patella with extensive destruction of the bone and near total loss of entire patellar trabeculae. In the AP view the tumor has a width larger than the femoral condyles.



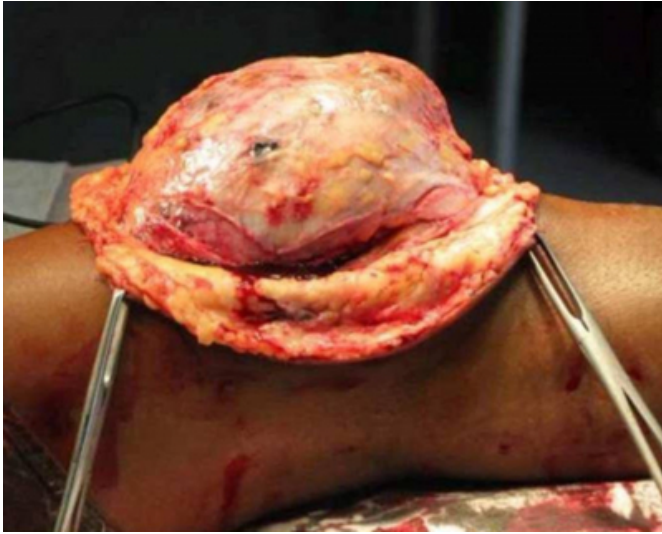
Blood investigations suggested only a marginal rise in the ESR 34 mm (Wintrobe).

With a slow growing but aggressive neoplasm of the patella in mind an MRI and bone scan for skeletal survey was advised. Despite repetitive persuasion the patient refused an MRI due to cost constraints. However a chest X-ray and a bone scan was obtained. The Tc bone scan and the chest X-ray did not suggest any other bone involvement. An exploratory arthrotomy, with an excision biopsy of the patella and quadriceps repair was then planned.

The surgery was done under spinal anesthesia with a tourniquet in place. A midline incision was used to expose the patella and the knee. The patella was hard to firm with prominent vessels over the surface and areas of softening and egg shell crackling. There was no adherence with the fascia or subcutaneous tissue. The tumor was well confined to the patella, the quadriceps and the patellar tendon seemed to be normal.

Figure 3

Figure 3: Per operative image of the tumor showing vessels over the surface of the patella. The outer surface is smooth without any breach of the anterior knee fascial plane.

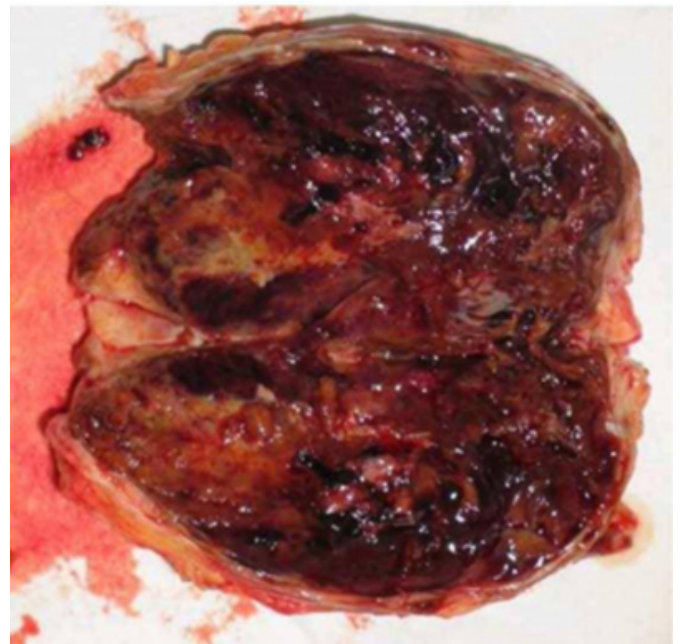


The knee joint was explored, the synovium, the supra and infra patellar pouch, the lateral gutters, the cruciates and the menisci appeared normal without any evidence of direct or indirect seeding of the tumor tissue. The articular surface of the femur was normal. The tumor was excised with a 2 cm margin of normal tissue with it. The joint was irrigated, stability checked and extensor mechanism repair was done. The knee was closed in layers over a drain.

On gross examination the tumor had a smooth surface with a few prominent vessels and haemorrhage but was well encapsulated. The articular surface was intact with no breach in the cartilage. After dividing the tumor longitudinally into two halves the interior of the tumor showed a brownish colour with areas of tumor tissue and haemorrhage interspersed with bone. The tumor was grossly well encapsulated except for a breach in the bony cortex over the lower pole.

Figure 4

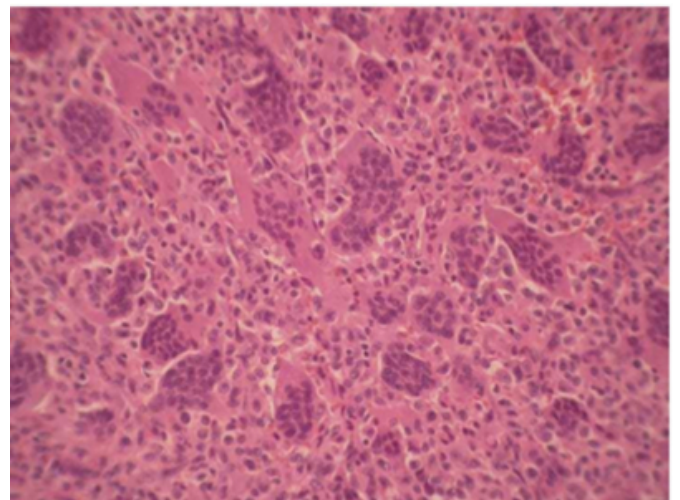
Figure 4: Cut section of the tumor showing smooth outer surface, intact articular surface with a brownish colour tumor tissue with haemorrhage interspersed with bone.



The patella was subjected to histological examination to two different pathologists. The histological examination showed aggressive Grade II tumor from both.

Figure 5

Figure 5: There was a compact stroma with atypia, frequent mitotic figures and hyperchromatism. The giant cells were present unevenly distributed.



Post-operative recovery was uneventful with quadriceps strengthening and knee bending exercises started at the outset of pain relief. Sutures were removed on the 12th day, with good wound healing. Active range of movement was 15° to 90° at 2nd week which went up to 10° to 120° by 5th

week. By 8th week full painless range of movement was achieved. The patient was followed up at 6 month, 1 year, 1.5 year, 2.5 year and now at 4 years is still in touch without any recurrence anywhere in the body.

DISCUSSION

Less than 50 cases of giant cell tumor of the patella have been reported in the international literature [6789]. Though this tumor has been long known as the commonest tumor of the patella worldwide, the diagnosis has always remained controversial. While in the developed world pain may be the only presenting symptom for which the patient seeks medical attention at a very early stage the scenario in the developing nations are very different due to ignorance, cost constraints and lack of good medical facilities.

Curettage with a combination of cryosurgery may be attempted in early stage of the disease but it still carries the risk of recurrence [9]. Resection may be the only form of treatment left in advanced cases which offers good to excellent functional results [9]. The risk of recurrence has also been less as compared to the other modalities of treatment [9]. Follow up in such cases have shown long term good function and no recurrence with patellar resection thus emphasizing the role of patellectomy in such advanced cases [9].

The rarity of the tumor with the peculiar scenario which we faced made us feel the need for reporting the case which would help in defining the role of patellectomy in neglected

advanced cases of patellar giant-cell tumor. Future reconstruction procedures using osteoarticular grafts after resection in such advanced cases may be a feasible option but only after validating the role and safety of patellectomy.

References

1. Cooper A, Travers B. Surgical Essays. Cox and Son: London; 1818. p. 186-208.
2. Edward L. Compere. The diagnosis and treatment of giant-cell tumors of bone; J Bone Joint Surg Am. 1953; 35:882-830.
3. Jaffe HL, Lichtenstein L, Partis RB. Giant cell tumour of bone: Its pathological appearance, grading, supposed variants and treatment. Arch Path 1940;30:993-1031
4. SE Larsson, R Lorentzon and L Boquist. Giant-cell tumor of bone. A demographic, clinical, and histopathological study of all cases recorded in the Swedish Cancer Registry for the years 1958 through 1968; J Bone Joint Surg Am. 1975;57:167-173.
5. Jaffe HL, Lichtenstein L, Portis RB. Giant-cell tumor of bone; its pathological appearance, grading, supposed variants and treatment. Arch Pathol 30:993-1031, 1940
6. Henelt, E.R., and Woughter, H.W. Giant Cell Tumor of the Patella Associated With Trauma. J. Trauma, 1 : 608-613, 1961.
7. Csink, L., and Sovenyi, E. Uber die in der Kniescheibe Vorkommenden Riesenzellgeschwulste (Osteoclastoma); Radiol.Clin. 30: 105-109, 1961.
8. Cameron G.W. Giant-Cell Tumor of the Patella. A case report . J. Bone Joint Surg.,37-A : 184-186, Jan. 1955.
9. Hampar Kelkian and Irvin Clayton. Giant-Cell Tumor of the Patella; J Bone Joint Surg Am. 1957;39:414-420.

Author Information

Gautam Chakraverty, M.B.B.S., M.S.(Orthopaedics)

Senior consultant, Chakraverty Clinic & Ram Krishna Mission Home of service

Unmesh Chakraverty, M.B.B.S., M.S.(Orth), DNB(Orth), MCh (Orth)

Junior Clinic- Chakraverty Clinic