



SOFT TISSUE IMPLANTS OF GIANT CELL TUMOR

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ABSTRACT

Giant cell tumor (GCT) of the bone is a benign but locally aggressive and destructive lesion. GCT are prone to local recurrence. Although intra-osseous recurrence of GCT is a well-recognized complication, soft tissue recurrence are seen rarely and often have a peripheral rim of ossification, giving them a characteristic radiographic appearance. GCT may recur at the soft tissue after surgery in 2% of patients due to surgical implantation or tumor spread in patient with pathological fracture. Characteristically it is slow growing benign tumor most (80-90%) recur with in the first 3 years after initial treatment. In this case report we describe a very rare case of soft tissue implanted GCT which started to appear after two years of initial surgery for distal femur intra- osseous GCT.

INTRODUCTION

Giant cell tumor (GCT) is a relatively common skeletal tumor, accounting for 4-9.5 % of all primary osseous neoplasms. Although it is benign and locally invasive tumor, it has been associated with a rate of local recurrence around 27 percent after intralesional excision and 8 percent after marginal excision [1]. The high rate of local recurrence and the occasional development of pulmonary metastasis are manifestation of aggressive GCT.

Soft tissue recurrences are seen rarely and often have a peripheral rim of ossification, giving them a characteristic radiographic appearance [2]. GCT may recur at the soft tissue after surgery in 2% of patient due to surgical implantation or tumor spread in patient with pathological fracture. Characteristically it is slow growing benign tumor most in 80-90% recur with in the first 3 years after initial treatment. The purpose of this report is to remind the orthopedic surgeons and radiologists about the possible appearance of soft tissue implants of GCT.

Case report

A 28 year old female patient presented with a complaint of left knee area swelling of seven years duration. The swelling has been increasing in size over time with no preceding history of trauma or associated constitutional symptoms. She had limitation of movement of the affected joint. She appeared to our hospital first five years back and was diagnosed of intra-osseous GCT of the left distal femur by radiology and was also confirmed by histopathology.

She was operated and intra-operative the mass was found involving the distal femur and knee joint. The mass was excised and the knee joint was fused with circlage wire and supported with circular cast. The patient was doing well for two years after surgery without any further complaint after which time she started to notice a new swelling over the same area but more over the back of the knee and insidiously the swelling increased in size and was associated of severe pain and limitation of motion. Clinically she had huge swelling over the popliteal area with no local sign of inflammation. Conventional x-ray was taken and showed gross soft tissue swelling posterior to knee joint with two ill-defined masses and both mass has peripheral rim calcification. This imaging finding was characteristic for soft tissue implantation of GCT. Our patient was again taken to the operation theater where intra-operative was found to have two distinct lobulated

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masses in the popliteal area which were attached to the distal femur by a firm fibrous attachment and the neurovascular bundle was difficult to isolate as it was firmly adherent with the masses for which Above knee

Amputation of the affected limb done. Histopathology demonstrated a result consistent with our intra-operative finding. Currently the patient is on prosthesis and in good health condition.

Figure 1. AP & lateral knee X-ray showed knee joint before operation. Fig1. The initial AP&LatX-ray shows lytic expansile eccentric lesion adjacent to RT knee joint, the cortex is intact the radiological finding was characteristic for bone GCT



Figure 2. Post-operative AP & lateral knee X-ray showed knee joint fused with circlage wire; Primary lesion excised & no soft tissue mass seen



Figure 3. Two years post-operative x-rays, AP& Lateral



DISCUSSION

GCT of the bone are common, comprising 18 - 23% of benign bone neoplasms and 4 - 9.5% of all primary bone neoplasms [1]. They almost invariably (97 - 99%) occur when the growth plate has closed and are therefore typically seen in early adulthood, with 80% of cases reported between the ages of 20 and 50, with a peak incidence between 20 and 30 .There is overall a mild female predilection. The typical radiographic appearance of intra-osseous GCT is a well-defined, eccentric, lucent epiphyseal lesion with a non-sclerotic border abating the articular surface. The diagnosis of bone GCT is strongly suggested by radiologic finding and biopsy is used for confirmation [2].

Complete surgical eradication of benign GCT is difficult and recurrences are common. Local recurrence can be either intra-osseous or with in the soft tissue. GCT may recur at the soft tissue after surgery in 2% of patient due to surgical implantation or tumor spread in patient with pathological fracture. Characteristically it is slow growing benign tumor, most (80-90%) recur with in the first 3 years after initial treatment. Bone recurrence on radiography appears as lytic change at previously resected margin or resorption of bone graft [3-7]. The soft-tissue implants may or may not be visible on plain radiography. Cooper et al review available radiographs of 400 cases of giant cell tumor from the Mayo Clinic and 700 cases seen

in consultation yielded 17 cases of soft tissue recurrence. Peripheral rim of ossification was noted around all but one of the recurrent soft-tissue tumors. Other studies [1-6] have also demonstrated rim-like ossification surrounding a soft-tissue recurrence of giant-cell tumor, and this phenomenon is thought to be almost pathognomonic of recurrence. This recurrence pattern may mimic post traumatic heterotrophic ossification (myositis ossificans) on radiography. However myositis ossificans is seen earlier than GCT soft tissue implant and the ossified mass decrease in size whereas GCT soft tissue implants progressively increase and show absent maturation to bone center.

There is gross soft tissue swelling posterior to knee joint with two ill-defined masses both having peripheral rim calcification. This imaging finding was

characteristic for soft tissue implantation of GCT

CONCLUSION

The follow-up evaluation after operative treatment of giant-cell tumor usually includes clinical examination and plain radiographs of the involved bone. Radiographs of the chest should be made as well. The operative site should be examined carefully during the follow-up evaluation of patients who have a soft-tissue tumor.

If plain radiographs demonstrate a soft-tissue mass with a peripheral rim of ossification, a diagnosis of soft-tissue recurrence of giant-cell tumor must be strongly considered (1,4,5). We believe we have reported a rare case scenario of soft tissue implanted GCT after primary surgery for intra-osseous tumor.

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