



GIANT CELL TUMOUR OF SECOND METATARSAL BONE - A CASE REPORT ANBARASAN

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Abstract : Giant cell tumours are locally aggressive tumours occurring at epiphysio-mataphyseal region of skeletally mature individuals. Commonly occurs at distal femur and proximal tibia. Giant cell tumour of foot are rare. A 40 years old female patient, who came with a slowly growing osteolytic lesion at the second metatarsal bone. Her magnetic resonance imaging showed there was no extra osseous extension and incisional biopsy of the lesion confirmed it as giant cell tumour. Enbloc excision and fibular strut graft fixation with K-wire was done.

Keyword : Giant cell tumour, fibular graft, K wire fixation, Campanacci grading.

Introduction

Giant cell tumours are locally aggressive tumours in skeletally mature individuals with its peak incidence at 20 to 40 years of age¹. Distal femur and proximal tibia are the commonest sites, followed by distal radius². Giant cell tumour of foot represents only 1.5% of the incidence in entire skeleton. In this region they behave in a different manner than conventional GCT. Because 18% of them have multicentric foci with an high incidence of recurrence³.

Patient's history

A 40 year-old lady presented with swelling over the dorsum of right foot for one year, which is insidious in onset and slowly increasing in size. Pain over the swelling for 5 months. There was no constitutional symptoms like fever, loss of weight or appetite and there is no other swelling else were in the body.

Clinical findings

An ovoid swelling of 8 × 6 cm over the dorsum of right foot over the second metatarsal bone. The skin over the swelling was normal in colour but stretched and there was no scar or sinuses. It had poorly defined margins and it was merging with the host-bone. On palpation it was not warm, not tender and surface was smooth and uniformly hard in consistency. Skin over the swelling was pinchable. The swelling was not mobile and it was arising from the underlying bone. There was no popliteal or inguinal lymphadenopathy. The capillary filling of the second toe and sensation over the second toe were normal.



Fig 1 Clinical picture of tumour

Radiography of the foot Demonstrated well defined an expansile osteolytic lesion seen at the second metatarsal bone involving its head and majority of the shaft. The margins were well defined but thinned out. The matrix showed soap bubble appearance with no calcifications. There was no cortical breach. The articular surface of tarso-metatarsal and metatarso-phalangeal joints were not involved and there was no periosteal reaction. According to Campanacci grading, it was grade I. X-ray of the chest, pelvis, spine, left foot and both hands were taken for skeletal survey and there was no other lesions else were in the body.

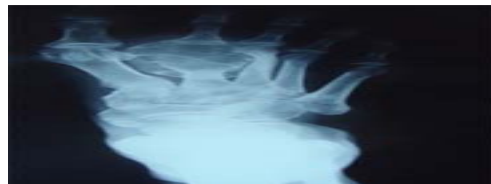


Fig 2 X ray of right foot AP view
Magnetic Resonance Imaging

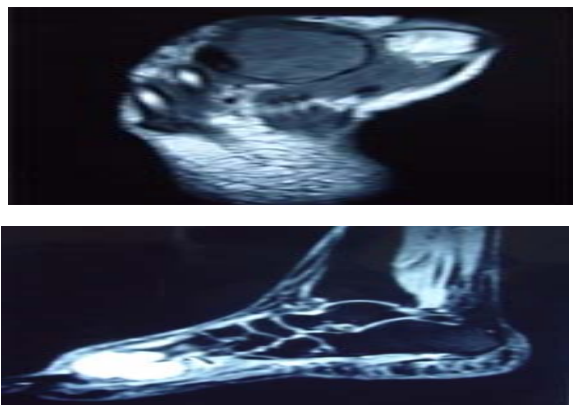


Fig 3: Transverse T1-weighted MR image Fig 4: Sagittal T2-weighted MR image Her MRI showed a low signal intensity lesion on T1 and intermediate signal lesion on T2 images. The signal intensity was homogenous and expanding the second metatarsal. There was no fluid level, no cortical destruction and there was no extra-osseous extent.

Histo-pathology

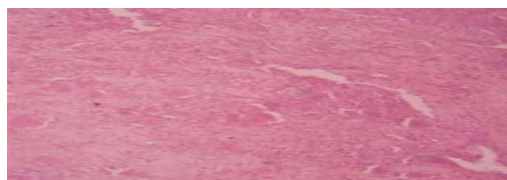


Fig 5: Low power microscopic view

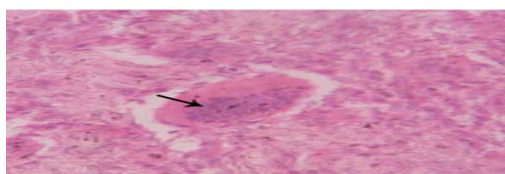


Fig 6: High power microscopic view showing giant cell (black arrow)

showing multiple giant cells in the background of stromal cells Her incisional biopsy specimen on haematoxylin and Eosin staining showed osteoclast like giant cells in the background of small round or oval shaped stromal cells with hypertropic nuclei, suggestive of giant cell tumour.

Management

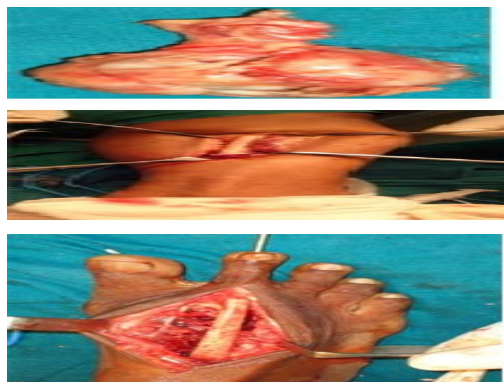


Fig 7 Skin incision
tumour with
graft

Fig 10 Harvesting of
at the site of 2nd metatarsal

Fig 8 Exposure of tumour
Fig 11 Fibular graft fixed with K
wire
2nd metatarsal

Fig 9 Excised
fibular

Under spinal anaesthesia, under tourniquet control with 10 cm incision over the dorsal aspect of the swelling the tumour was exposed and it was found to be with well defined margins. The surrounding soft tissues were carefully separated and the second metatarsal bone with the tumour was dissected from the tarso metatarsal and metatarso phalangeal joints and en bloc excision was done. Troughs were created by denuding articular cartilages of the middle cuneiform and base of the proximal phalanx of second toe. The length of the defect was measured preoperatively and fibular graft with the exact length was taken and inserted in a tight fitting manner in to the above troughs and fixed with a K-wire. Patient was put on below knee plaster for 3 months.

On follow up, the surgical wound healed well without any infection and K wire removal done after 2 months and below knee cast was continued for 3 months. After 3 months patient had cosmetically near normal foot and she is able to stand and walk without much discomfort and she is on 5 months followup



Fig 12: X ray showing fibular graft fixed with Fig 13: X ray showing fibular graft
Fig 14,15 : patient's clinical picture on 3 months followup K wire after K wire removal

Discussion:

The foot can be affected by various lytic lesions, which includes aneurismal bone cyst, giant cell tumour, giant cell reparative granuloma, chondromyxoid fibroma, brown tumour, angiosarcoma, myeloma, and an expansile metastatic osteolytic lesion etc. Their clinical features often overlap leads to difficulty in diagnosing these lesions. A differential diagnosis of giant cell tumour should always be borne in mind while dealing with swellings at the metatarsal bones. The Campanacci grading^{4,5} which is used to grade the giant cell tumour is based on radiological appearance. It includes three grades, Grade I: Tumour has a well defined border with thin rim of mature bone. Cortex is slightly thinned but not deformed. Grade II: Tumour has well defined margins but no radio-opaque rim. Grade III: Tumour with fuzzy border suggesting a rapid and possibly permeative growth and tumour bulges in to the soft tissues. The treatment of giant cell tumour is directed towards local control without sacrificing the joint function. This has traditionally achieved by intra lesional curettage and packing of the cavity with bone-grafting⁶. Regardless of how thoroughly performed, intra lesional excision leaves microscopic disease in the bone and hence has a reported recurrence rate of as high as 60%⁷. Although a marginal or wide excision of the involved bone is curative, it is associated with reconstruction and disability problems. Although ray amputation⁸ may prevent recurrence, it decreases the functional efficiency of foot and it is cosmetically unacceptable by the patient. En bloc excision of the tumour with the host bone and reconstruction with fibular grafting is a better option for this patient⁹.

Conclusion:

Giant cell tumour of metatarsals though uncommon have to be considered in evaluation of foot swellings. As it is a locally aggressive tumour delay in diagnosis will allow the tumour to spread locally and will make the surgical excision to be difficult. Early diagnosis and en bloc excision of the metatarsal bone with fibular grafting is a better method of management for this condition.

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