



Osteosarcoma of the foot - an easily misdiagnosed malignant tumour

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Abstract : Osteosarcoma is the most common malignant tumour of bone. It is usually seen in metaphysis of long bones around the knee. The most common sites are femur 42 (75 in distal femur), tibia 19(80 in proximal tibia), humerus 10(90 in proximal humerus). The incidence of osteosarcoma in bones of the foot is extremely rare 0.2-2. This rarity may lead to delay in diagnosis or misdiagnosis which may prove fatal to the patient. We are presenting here a case report of osteosarcoma of the foot involving the metatarsal and phalanx and review on literature

Keyword : Osteosarcoma ,short tubular bones

INTRODUCTION:

Osteosarcoma is the most common primary malignant tumour of the bone(1).Osteosarcoma usually originates from primitive mesenchymal bone forming cells in the metaphysis of long bones. It is usually seen in individuals during the second decade of life. It most commonly involves Femur 42% (75% in distal femur), Tibia 19% (80% in proximal tibia), Humerus 10%(90% in proximal humerus) (1).It is usually histologically high grade. The involvement around the knee accounts for approximately 50% of all cases(2).Osteosarcoma rarely involves the foot 0.2-2% and this rarity may lead to delayed or misdiagnosis.First documented case of osteosarcoma of the toe phalanx was published by Joseph Mirra in 1988 (4).

CASE REPORT:

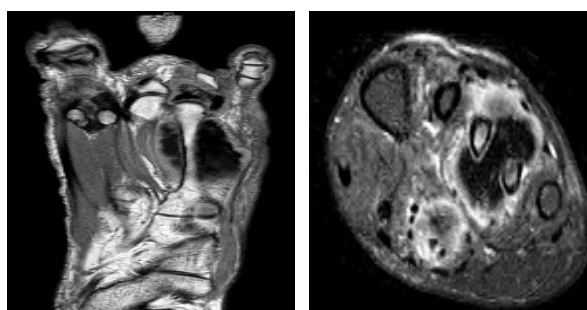
24 yr old male presented with history of pain in his left foot 3rd toe for past 5 years. No history of antecedent trauma or injury to the foot. No history of any constitutional symptoms. He was evaluated elsewhere and was diagnosed as subclinical infection. He underwent debridement of the 3rd toe. However he continued to have pain and when he revisited the hospital he was advised amputation of 3rd toe. He underwent amputation of 3rd toe left foot at the level of proximal interphalangeal joint. But he continued to have pain at the site of amputation and dorsum of foot. He visited our institution for further management. Plain radiographs of the foot were taken which revealed a bone producing lesion involving the 3rd metatarsal with cortical breach. The lesion was also seen extending into the soft tissues. An MRI of the foot was done

which showed a lobulated soft tissue with osteoid matrix seen in the fourth and third web space extending from the level of mid shaft of the third metatarsal till the proximal phalanx with associated periosteal reaction.His chest Xray revealed no pulmonary metastasis. He underwent an open biopsy of the 3rd metatarsal which confirmed it as osteosarcoma.It was a high grade tumour involving the 3rd metatarsal and proximal phalanx. Patient underwent a Symes amputation of the foot .He had minor wound related complications like wound edge necrosis which healed uneventfully after secondary suturing. The patient was referred to chemotherapy after wound healed.

PREOP X RAY OF LEFT FOOT AP AND OBLIQUE VIEWS



PREOP MRI CORONAL AND TRANSVERSE T2W IMAGES

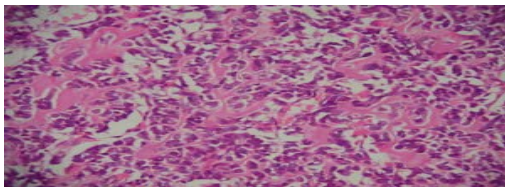


DISCUSSION:

Osteosarcoma of the short tubular bones of the foot and hand are rare. While Osteosarcoma in more conventional locations primarily affects children and adolescents, the mean age at diagnosis of osteosarcoma of the foot is 33 years, with a range of 17-64 years (5). Another distinguishing feature of the osteosarcoma of the foot is that the tumour is more often low grade than that is found in more typical locations. In a report of 12 cases of osteosarcoma involving the foot by Biscaglia et al (5), five were found to be grade 1-2/4. But biopsy of the foot in our case revealed a high grade osteosarcoma which again is a rarity. In the foot primary osteosarcoma has been reported in the calcaneus, cuboid, navicular, metatarsal and toe phalanx. Based on reviews of several large series of osteosarcoma, Wu reported an average frequency of primary involvement of the foot of 0.83% (3) and Sneppen et al (6) reported a frequency of primary osteosarcoma of the metatarsal bone of 0.46%. Unni (2) found only 25 of 1648 osteosarcomas distal to the ankle and wrist joints.

A study of 1929 cases of osteosarcoma seen at Rizzoli Orthopaedic Institute (5) found only 12 cases where the foot was the primary site, representing 0.6% of the study group. Regardless of the location, delayed diagnosis of osteosarcoma may not only decrease long term survival, but may also alter the treatment plan resulting in less favourable functional and cosmetic results. Initial misdiagnosis of osteosarcoma of the foot are not unusual representing 50% of cases reported by Biscaglia et al (5). This group found a mean interval between the onset of symptoms and diagnosis of osteosarcoma of the foot of more than 2 years. The interval between onset of symptoms and diagnosis in our case was 5 years. Several factors contribute to the misdiagnosis of osteosarcoma of the foot. First is the rarity of the tumour in this location. In addition, several misleading plain film features can compromise arriving at the correct diagnosis. Osteosarcoma can radiographically mimic benign conditions such as aneurysmal bone cyst, chondroblastoma and enchondroma.

POST OP PICTURE AFTER SYMES AMPUTATION
HISTOPATHOLOGY



Osteosarcoma of the foot is usually not amenable to limb sparing surgery because of the poor compartmentalisation of the tumour and the subsequent need to amputate to achieve sound oncological margins. In our case we did a Symes amputation to achieve tumour free margin and also to provide a better functional lower limb cosmetically owing to the age of the patient.

CONCLUSION:

When a painful swelling in a bone is observed, even if numerous benign conditions such as fractures, infections and benign bone tumours are far more likely to occur, Osteosarcoma must be ruled out to avoid delays in the treatment. Osteosarcomas of the foot may easily be misdiagnosed, especially because they almost always occur in adults, in contrast to osteosarcomas in general. High grade

tumours of the foot are as aggressive as other osteosarcomas and should be managed accordingly with use of a safe margin surgical procedure and chemotherapy.

REFERENCES;

1. Giulia Ottaviani NJ. The Epidemiology of osteosarcoma. *Cancer Treat Res.* 2009;152: 3-13
2. Unni K, Philadelph K, Dahlin D C, McLeod R A, Osteosarcoma. In: Dahlin's Bone Tumours. Lippincott- Raven 1996.143-84p
3. Wu K K. Osteogenic sarcoma of tarsal navicular bone. *J Foot Surg* 1989;363-9
4. Mirra, Joseph M: Kameda, Noriaki: Primary osteosarcoma of toe phalanx: First documented case review of osteosarcoma of tubular bones. *Am J Surg Path* 1988. 12(4)
5. Biscaglia R, Osteosarcoma of the bones of the foot. *Mayo Clinic Proc.* 1998;73(9):842-7
6. Sneppen O, Osteosarcoma of the Metatarsal bones: Review of Literature and Report of a case. *Acta Orthop* 1978 :49(2):220-3