

Osteomyelitis of Femur Mimicking Ewings Sarcoma- A Case Report

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Abstract: Osteomyelitis in adult age group, i.e, after closure of epiphysis is usually non-hematogenous. Commonest causes of chronic osteomyelitis are usually compound fractures or secondary to surgical intervention. Suspicion of osteomyelitis in teenager is very important in absence of trauma. Usually whenever there is swelling in limb, first suspicion in absence of trauma is new growth. Often the diagnosis can only be made after carefully studying the histological features of the lesions. We came across such presentation where initially we were investigating the case with suspicion of ewings sarcoma which later on after histopathological examination, turned out to be chronic osteomyelitis of the femur.

Keywords: Osteomyelitis; Mimicking bone tumor; ewings sarcoma, Osteomyelitis;

INTRODUCTION

Ewing's sarcoma is a rare small round cell sarcoma most often occurs in bone [1]. It is a high-grade aggressive neoplasm with a poor prognosis if not treated [2]. In one study it is found that about 50% of patients had symptoms for more than 6 months before the tumor was diagnosed [3]. The most frequent initial symptoms for misdiagnoses in older patients with ES were tendinitis (21%) and sciatica (11%) and, in younger patients, coxitis simplex (9%) and osteomyelitis (6%) [4].

Bone infection in the adult is more likely to be exogenous rather than hematogenous in origin it partially because of the predilection for bacterial seeding of the bone ceases with closure of the epiphyses [5,6]. Therefore, hematogenous osteomyelitis is rare in individuals beyond their teens, occurring only in immunocompromised hosts. However, in the absence of trauma, systemic disease, or local infection, distinguishing between hematogenous osteomyelitis and a bone tumor is difficult [5,7].

Magnetic resonance imaging (MRI) is useful in the detection of pathologic changes in bone marrow and can provide precise information about the localization and extent of an infection, but not about any specific findings for osteomyelitis [5, 7].

However, it is still difficult to differentiate osteomyelitis from bone tumors, especially in long bones. Often the diagnosis can only be made after

carefully studying the histologic features of the lesions [8].

CASE REPORT

A 19 year old male presented with a slow growing swelling involving right thigh for the last 9 months. He was quite well till 9 months ago ,when he experienced limp and heaviness in right lower limb while walking.

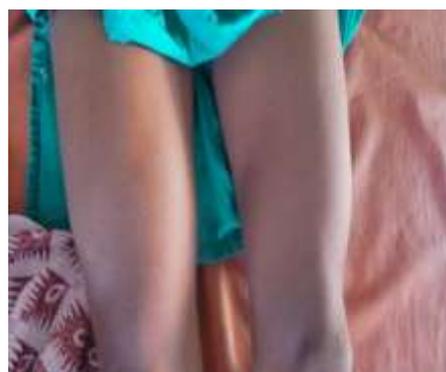


Fig1- Clinical Pre-Op Photograph

At that time there was minimal swelling. The patient was taken to the hospital where he was treated as having muscular pain with only simple analgesics. One month later, swelling in the thigh increased in size gradually and was associated with mild fever. He gives history of loss of weight and appetite since past 3 months. X-ray, USG and CBC were done .



Fig2- Clinical Pre-Op Photograph

Xray revealed periosteal reaction in diaphyseal region of shaft of femur with minimal sclerosis.



Fig3- Xray Of The Femur Showing Sclerosis And Periosteal Reaction And Radiolucency

Blood profile revealed increase in ESR (25mm at the end of 1st hour) and anaemia (Hb 7gm%), alkaline phosphatase was slightly raised. Chest xray was within normal limits. USG was inconclusive and patient was submitted for MRI which revealed soft tissue swelling with cortical defect, with differential diagnosis of Ewing's and infective pathology.



Fig 4- MRI Study Showing Bony And Extraperiosteal Soft Tissue Affection

Patient underwent incision biopsy of soft tissue swelling and tissue from diaphysis was retrieved after making window in cortex. Patient was put on post-op Antibiotics, suture removal after 15 days. Recovery was uneventful. Patient was advised non-weight bearing for 3 weeks. Biopsy report revealed Chronic Osteomyelitis of the femur.

Patient was put on Antibiotics for 6 weeks. He was advised follow-up to assess clinically and radiologically every month for 1st 3 months and every 3 months for a year. 9 months follow-up shows clinical and radiological improvement. However , long term follow-up is awaited.

DISCUSSION

In our case report, we relied on clinical judgment and a low level of suspicion of Ewing's. Osteomyelitis is difficult to differentiate from malignant bone tumors, as it lacks specific signs and symptoms. Distinguishing between the two potential diagnoses is important in order to initiate proper clinical management.

Shimose *et al.* [5] reported on 244 cases that were tentatively diagnosed as malignant bone tumor based on imaging results; however, 15 of these cases were osteomyelitis. The clinical symptom of pain was noted in all osteomyelitis cases, and swelling of the limb was present in eight cases. In this study, laboratory data showed elevated CRP levels in nine (60%) patients and leukocytosis in three (20%). Radiographs of the osteomyelitis cases showed osteolysis in 12 (80%) patients. Pathogens were found in 11 of 15 patients, including *Staphylococcus aureus* in eight patients,

Salmonella in two patients, and Staphylococcus epidermidis in one patient.

Cottias *et al.* [9] reported on 21 osteomyelitis cases mimicking bone tumor. Pain was also noted in all cases, but only half complained of nocturnal pain. Two of twenty-one (9%) patients had leukocytosis, and 30% had elevated ESRs.

Nocturnal pain was frequently misdiagnosed as a bone tumor. Weight loss is not uncommon. Although radiographic analysis is important, making a distinction between the two conditions is difficult. The radiographic appearances of osteomyelitis are well documented, but can often be mistaken for various benign and malignant bone tumors [10]. The most common radiographic appearance is permeative moth-eaten osteolytic lesion with partial cortical destruction, a cortical sclerotic rim surrounding the zone, and osteolysis with pathological fracture. All lesions may mimic malignant bone tumors, thus making diagnosis more difficult based on radiographic findings alone.

MRI is sometimes helpful in diagnosing osteomyelitis. However, MRI findings have been reported as nonspecific and variable depending on the anatomic location, cause, and duration [11]. It is also reported on the significance of the penumbra sign on T1-weighted images in subacute osteomyelitis. They defined the penumbra sign as a transitional zone with relatively high signal intensity located between the abscess and sclerotic bone marrow on unenhanced T1-weighted images. The penumbra is isointense relative to muscle on T1-weighted, enhances on contrast administration, and is hypointense on T2-weighted [6]. They identified the penumbra sign in 24 of 32 cases (75%) of subacute osteomyelitis in their studies. They concluded that the penumbra sign was a characteristic MRI finding of subacute osteomyelitis. Moreover, this sign was reported with high sensitivity and specificity to subacute osteomyelitis [5,9].

Most cases of hematogenous osteomyelitis are monomicrobial. Staphylococcus aureus has been found to be the most common cause of infection in athletes, Pseudomonas aeruginosa and Serratia marcescens are found more frequently in intravenous drug abusers, Salmonella and Propionibacterium has been well described in patients with sickle cell disease, Klebsiella pneumoniae has previously been observed in diabetes mellitus patients.

CONCLUSION

This presentation of osteomyelitis of the femur mimicking bone tumors emphasizes the importance of clinical history, laboratory investigations, and radiographic interpretations in the diagnosis of this condition, which is generally difficult to detect.

Moreover, it is difficult to distinguish between osteomyelitis of the femur and bone tumors by plain film radiography, and this condition commonly mimics Ewing sarcoma. Accurate diagnosis of this condition is also difficult by using MRI, which is believed to be a sensitive and useful modality. The penumbra sign on MRI, which is reported to be highly specific for osteomyelitis, is difficult to detect. However, elevated CRP levels and ESRs found to be consistent among the cases with this condition are relatively sensitive indicators for distinguishing osteomyelitis from bone tumors. But sometimes, Ewing sarcoma can present with similar laboratory data. Hence, it is recommended that open biopsy should be performed in all cases for accurate diagnosis and for obtaining an adequate specimen for culture.

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