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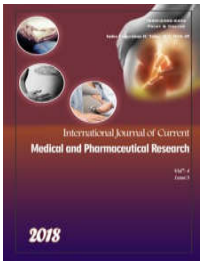

RARE CASES OF EPIPHYSEAL OSTEOMYELITIS

Hari Prasath., Ambica Nambiar and Venkatachalam.K

Department of Orthopaedics, Sree Balaji Medical College and Hospital, Chromepet, Chennai 600044, Tamil Nadu, India

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ABSTRACT

We present two cases of primary acute epiphyseal osteomyelitis we managed at our hospital. Primary acute epiphyseal osteomyelitis is very rare and treatment is usually delayed owing to its subtle symptoms and inconsistent laboratory reports. But in our cases with the help of prompt MRI imaging, the diagnosis was made in time and the appropriate treatment was given thus avoiding the physeal plate injury.

INTRODUCTION

Primary acute epiphyseal osteomyelitis is a rare disease. Owing to its insidious onset, mild symptoms, and inconsistent supportive laboratory data, diagnosis and treatment are usually delayed.(1) The occurrence of acute primary osteomyelitis is rare in children, but over the recent years an increasing number of cases have been reported in literature. The diagnosis is often delayed due to the slow onset, non-specific symptoms, absence of general malaise, intermittent pain and subtle radiological changes. A delay in diagnosis of epiphyseal infection may allow it to then spread from the epiphysis into the adjacent joint converting the situation into septic arthritis. By virtue of its position it could lead to physeal plate injury and joint articular surface destruction. (2,3)

Case 1

A 15 year old girl presented with a history of fever, pain and swelling over her right shoulder for 2 weeks. The symptoms initially began with an multiple episodes of high grade fever (101-103 Celsius was recorded), followed by pain and difficulty in moving the shoulder leading to pseudo paralysis of the right upper limb. In the beginning she was treated symptomatically with analgesics, antibiotics and antipyretics. She was admitted to the hospital 14 days after her symptoms began. On examination, she was found to be febrile, while movements of her right shoulder were grossly restricted due to pain (flexion: 20, extension 10, abduction 25, adduction 10, external rotation and internal rotation were reduced to a jog of movements) and routine investigations were done which revealed:

Blood tests - ESR 52/hour, CRP 82, Total count 13,800 with neutrophilic predominance while other blood parameters were within normal limits.

X ray - Lytic lesion was noted in the proximal humerus epiphyses with no evidence of fracture. Moderate amount of soft tissue swelling was noted.

MRI - Lytic lesion in the humeral epiphyses with abscess noted in the coronal plane view with extension into the physis.

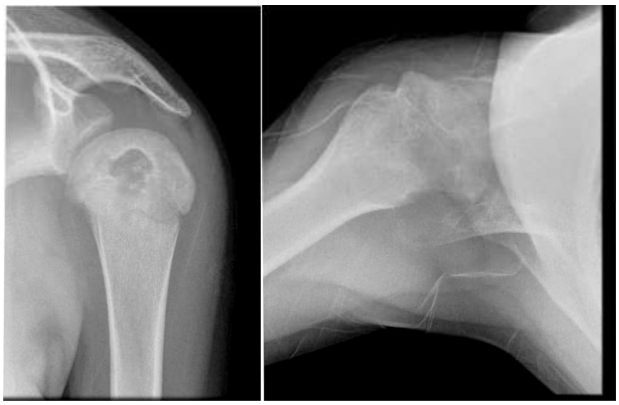

Figure 1 X rays of the Right shoulder and proximal humerus showing a lytic lesion in the epiphyseal region

Corresponding author:* **Hari Prasath
Department of Orthopaedics, Sree Balaji Medical College and Hospital, Chromepet, Chennai 600044, Tamil Nadu, India

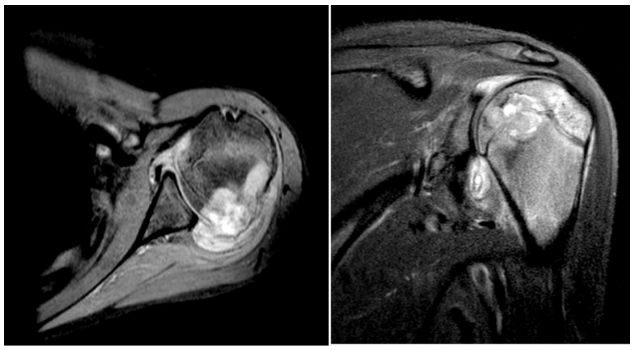

Figure 2 MRI images of the right shoulder showing an abscess collection in the epiphyseas of proximal humerus

She was treated with IV antibiotics Cefoperazone with Sulbactum 1.5GM IV BD. The lytic area was curetted and irrigated. Following which the patient became afebrile by the 3rd day post operatively. The IV antibiotics were stopped on the 21st day post operatively at the time of which she was clinically stable and she had regained complete movement of her shoulder by 3 weeks. She was continued on oral antibiotics T.Linezolid 300MG BD and T.DALACIN C BD for an additional period of 3 weeks. 6 weeks following the surgery the patient was reviewed and blood investigations were repeated which showed normalization of ESR (8mm/hr) CRP was negative and total counts had returned to 6700cells/mm. Radiograph at ten months showed remodeling at the epiphyses and showed no physeal growth arrest.

Case 2

A 7year old was brought to our hospital with history of fever for 8 days and right knee pain and limping for 3 days. On Physical examination mild swelling, tenderness, and local warmth over the right knee was present. The knee was in flexion position and range of motion was 30˚-70˚ restricted by pain.

Lab Blood values were elevated. WBC count of 12,400/cmm and a CRP value of 94.7 mg/L. radiographs showed no abnormal findings at the right knee, and blood culture showed no organism growth. Intravenousceftriaxone was given but the fever still continued after 1 week. There was also progressive swelling of right knee. A bone scan after 8days revealed a mildly increased uptake involving the medial epiphysis of the right distal femur. Repeat radiographs 12 days later showed osteolytic lesions of the medial epiphysis of the right distal femur. Arthrocentesis was done, and synovial fluid was sent for culture which showed no organism. The antibiotics were shifted to vancomycin and gentamicin, but the symptoms did not improve. The repeat the CRP was 86.1 mg/L , WBC count was 14,900. The lytic area of the epiphysis was curetted and irrigated under C-arm guidance.

Tissue culture obtained during surgery grew Staphylococcus aureus. Ceftizoxime was given and continued for 5 weeks. The patient was afebrile by the 10th postop day. The knee was put on splint for 4 weeks, then range-of-motion exercises were begun. Six weeks after the operation, the WBC count was 6700/cmm, and the CRP was < 2 mg/L. after Ten months operation, radiographs showed a 0.7 0.6-cm lytic lesion in the medial epiphysis. Sixteen months after the operation, xrays showed remodeling of the epiphysis and no physeal growth arrest. Range of motion of the left knee was 0˚ to 120˚ and patient was able to walk normally.

DISCUSSION

Before physeal closure, the blood supply to the epiphysis is separated from that of the metaphysis by the avascular growth plate. Thus, it is widely taught that pyogenic osteomyelitis rarely crosses from metaphysic to epiphysis without mechanical disruption of the growth plate. Ogden (1979) reached the conclusion that transphyseal spread of infection occurs in older children. Literature has very little to offer regarding the spread of infections through the transphyseal route due to the anatomic arrangement of these vessels even though evidence of epiphyseal osteomyelitis have been reported.(4,5). It is suspected that the vascular supply to the epiphysis and the microscopic structure of the epiphyseal venous sinusoids provide locations that favourlodgement of blood borne organisms. Thus the epiphysis of the child should be recognized as another site of haematogenousosteomyelitis(6). Common sites noted in previous studies for epiphyseal osteomyelitis are knee as the most common, followed by distal tibia, proximal femur and distal fibula. Differential diagnosis includes chondroblastoma, osteoid osteoma, aneurysmal bone cyst, clear cell chondrosarcoma and chondromyxoid fibroma. Each of these lesions may occur in childhood and can involve the epiphysis of long bones and should be ruled out depending on the clinical presentation, blood investigations and radiological picture (7,8). Upon aggressive treatment and debridement under antibiotic coverage, most cases resolve and show no sequelae of joint damage or growth disturbances(9). Functional and radiological outcome show return of normal function and growth pattern (7,8,9) as also seen in the cases above.

Epiphyseal osteomyelitis can present as either a subacute or acute form. The acute form is characterized by rapid onset and progression. Pain and limping are often accompanied by systemic signs like fever, Leukocytosis and elevated ESR. Xrays can be normal early in the course of the disease, but a lytic lesion in the epiphysis will present at a later stage. The subacute form is slow at onset, characterized by mild pain in the infected area, and symptoms often aggrevated by exertion. There are usually no systemic symptoms. Laboratory examination often are normal, and radiographs reveal a lytic lesion. Factors, such as increased host resistance, decreased bacterial virulence, or antibiotics given during the pre-symptomatic period, may alter towards a subacute form. Most cases of primary epiphyseal osteomyelitis are reported in the subacute form. Our 2 cases are also of the acute form of osteomyelitis

CONCLUSION

Epiphyseal osteomyelitis is a distinct entity which can have either an acute or a subacute presentation. Due to the varying and non specific clinical presentation, diagnosis is often delayed. Blood investigations along with radiology findings can clinch the diagnosis, provided other more commonly seen conditions in the said age group are ruled out. The condition should be aggressively treated with thorough surgical debridement and aggressive antibiotic therapy. If treated appropriately, no long term morbidity is expected

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