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A Case of Neonatal Osteomyelitis

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ABSTRACT

Background: Acute hematogenous osteomyelitis of neonatal origin is rare in clinical studies. Diagnosing and treating it early to decrease the sequelae is essential. The aim is to give medical practitioners a particular and rare case so that readers know how to diagnose and treat exceptional cases like these**.** **Methodology:** Clinical presentation, blood investigations, imaging studies, and blood culture outcomes. **Results:** There have not been any adverse sequelae after effective antibiotic therapy. **Conclusion**: Early diagnosis and treatment of neonatal osteomyelitis are of significant importance.

Keywords: Acute hematogenous, Neonatal osteomyelitis

INTRODUCTION

Neonatal acute hematogenous osteomyelitis is very rare, but it has high morbidity. Therefore, early diagnosis and treatment to minimize sequelae are necessary. Because of conservative therapy, due to the high incidence of osteomyelitis and misdiagnosis by doctors, there is an increased risk of myeloma due to delayed therapy, and it can lead to limb paralysis and can endanger life. Therefore, the correct osteomyelitis diagnosis can gain time, and the treatment will provide a reference for relevant cases (Yeo and Ramachandran, 2014).

Case Reports

Boy baby, aged 21 days, came with complaints of left knee swelling with activity restricted since three days, no local skin redness, decrease in activity over the left lower extremity, easy crying on handling, no fever, and the child sucking and feeding well.

Admission examination: Temperature: 36.6°C, Pulse: 140 /min, Respiratory rate: 46 breaths /min, Weight: 4.8 kg, alert, afebrile, body skin, mucous membranes without jaundice, rash and bleeding point, the anterior fontanelle 2.0 cm × 2.0 cm, at level, the cardiopulmonary examination was normal, abdomen- soft, liver and spleen - normal, umbilicus - normal, normal bowel sounds. Left lower limb in mild flexion, left knee mild swelling, skin redness present, skin temperature is normal, tenderness present, activity limited, right lower extremity normal.

Admission diagnosis

left knee swelling reasons unknown

origin: 1) the left distal femur osteomyelitis? 2)

Sepsis?

Blood:

WBC 11200 cells/mm3 (65% neutrophils, 42% lymphocytes), urine, stool, CRP, anti-O were normal, ESR 18 mm/hr.

Radiographs of the left knee: left distal femur bone destruction and periosteal reaction

The child was started on Ceftriaxone sodium, 50 mg/kg, three weeks of treatment, and supportive care

Left distal femur CT: the local destruction of bone, lesions of the left distal femur see punctate high-density lesions, soft tissue swelling, consider infection.

Left distal femur MRI: abnormal signal intensity is seen in the left femur metaphyseal and epiphyseal cartilage, associated with soft tissue swelling, to consider infectious lesions.

Blood cultures: Staphylococcus aureus.

Left lower extremity activity in the child increased significantly after treatment, the swelling subsided.

After treatment for 1 week, blood investigations were reviewed,

CRP, erythrocyte sedimentation rate were normal.

Blood culture: negative.

After two weeks of treatment, the child was afebrile, alert, active,

Left knee - no swelling, no tenderness, no warmth, normal left, and right lower extremities.

The Child was followed up for 2 months after discharge, had normal movements, normal development and there was no limb length discrepancy or angular deformity.

Discussion

Children have a rich bone blood supply than adults and a rich metaphyseal capillary network, and the slow blood flow is beneficial for the deposition of bacteria, reproduction, and growth. So, bloodborne osteomyelitis occurs in young people. It affects the metaphysis of long bones. Osteomyelitis is also decided on the strength of the human resistance. Such resistance includes systemic resistance and local resistance. The cause of osteomyelitis is coupled with diseases due to congenital deficiency in frail health, malnutrition, exposure to cold, and other weakened body resistance factors (Kiechl-Kohlendorfer and Griesmaier, 2017). Low local resistance, pediatric skin, delicate bone, skin barrier function, immune function are not perfect. The children are vulnerable to injuries from falls, it causes small bleeding and rupture of the metaphyseal capillary network, or injury to nearby tissue and cell rupture, therefore, the bacteria easily stay colonized, and it may lead to osteomyelitis. Symptoms of osteomyelitis in children include, a decrease in the affected limb movement, tenderness, swelling, fever may be present or not, infection often involves multiple bone, adjacent joints, and soft tissue. In this case, the laboratory tests were normal or elevated WBC, ESR, and CRP (Castellazzi *et al.,* 2016).

About 14-day earlier films of swollen joints may be normal and so is prone to misdiagnosis. The radiographs CT of the left knee shows partial destruction of the

periosteum, the periosteal reaction after about 14 days, in line with osteomyelitis image manifestations. Synovial fluid and blood culture for etiological diagnosis are especially important but at a low positive rate. The white blood cell is not a reliable indicator of osteomyelitis, in this case, the white blood cell, even though in the presence of infection, is still within the normal range. ESR is raised in most cases, but it is not consistent with osteomyelitis (Brook, 2008). C-reactive protein as an inflammatory product can be considered as a reliable indicator. It began to increase in the hours after infection and returned to be normal within one week after the condition was well-controlled.

An X-ray found that bone destruction is often a certain lag for the infection appeared after 10 - 14 days of typical performance, CT findings of osteomyelitis include bone tissue, adjacent muscle, subcutaneous tissue swelling and also forms a cyst-like and subperiosteal hematoma in the soft tissue gas, the fat liquid plane, and sinus. MRI allows early detection of lesions of bone tissue, and therefore it is more suitable for the early diagnosis. In ultrasound, purulent fluid or infection is caused by a bone abscess, and providers include puncture, aspiration, biopsy, diagnosis, and treatment guidelines (Brady *et al.,* 2008).

The treatment of choice is the new penicillin III plus cefotaxime sodium, ceftriaxone, cefuroxime sodium; for MRSA infection, vancomycin or selection of intravenous clindamycin drug improved clinical symptoms, inflammatory markers returned to normal in 3 - 6 weeks. Joint cavity decompression, drainage of pus, and supportive therapy are important. Osteomyelitis can affect the growth of long bones, thus affecting the length and can generate angular deformity. So if present early surgical orthopedic deformity correction has to be done. Prognosis in neonatal osteomyelitis is closely related to early diagnosis and effective anti-inflammatory treatment. Early diagnosis is important as it directly impacts the growth, development, and quality of life of children. In this case, the effective anti-inflammatory treatment was conducted for three weeks and then was discharged after the left knee radiographs were completely normal.

Author contribution

Sushma1, Nandipatti2, Mary Chandrika3, Aljin V encouraged and supervised the findings of this work. All authors discussed the results and contributed to the final manuscript.

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Conflict of interest: Nil

Study significance

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