

Neonatal Acute Osteomyelitis and Septic Arthritis as Adverse Effect of Intramuscular Injection

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Abstract

We reported 19 days old baby boy in Nicu, Hera general hospital with the presentation of fever, crying, limited and painful movement of right lower limb. He had history of high fever for seven days that was treated by intramuscular injection of third generation cephalosporin. Along with complete septic profile urgent ultrasound and MRI established diagnosis of Osteomyelitis of right femoral head and proximal metaphysis, right hip septic arthritis with marked intra capsular collection and there is small abscess in the left thigh. Urgent surgical drainage was done after diagnostic joint tapping and the patient finished 6 weeks courses of antibiotics. In spite of good clinical, laboratory and radiological improvement of inflammatory process, true burden of morbidity started in the form of shortening right lower limb and same side hip dislocation.

Keywords: Neonatal Acute Osteomyelitis; Septic Arthritis; Hip Dislocation; Intramuscular Injection

Introduction

Osteomyelitis is an infection localized to bone. It is usually caused by microorganisms predominantly bacteria. Staphylococcus aureus is the most common cause of osteomyelitis in children. Osteomyelitis incidence approximately 1 in 5000 children. Boys are affected nearly twice as often as girls, however, osteomyelitis is uncommon in young infants less than 4 months without underlying risk factors. Known risk factors for osteomyelitis in neonates less than 30 days of age include complicated delivery, prematurity, skin infection, central venous catheter, urinary tract anomalies, and active maternal infection. In our case presentation we notice relation of intramuscular injection and neonatal osteomyelitis.

Case Presentation

The affected male baby was born to primigravida mother at 39 weeks' gestation after an uncomplicated pregnancy and normally discharged on his second day. There was no consanguinity or family history of autoimmunity or inflammatory skin, or bone disorders. He had a normal postnatal course with good growth and development on exclusive breast feeding. On 14 days of life he got fever, decrease oral intake with flu like illness, full blood count was ordered which showed mild leukocytosis with relative neutrophilia due to social situation intramuscular third generation cephalosporin's was ordered for 5 days. The fever subsided temporary but it rebound again with persistent cry, right hip joint pain and limitation of movement. The suspected osteomyelitis and septic arthritis is a rare condition in neonates that imposed a significant diagnostic and therapeutic challenge.

Vancomycin and Imipenem were empirically started after collecting full septic screen. Urgent ultrasound of the hips was done; it showed signs of right sided cloudy effusion in the hip joint suggesting septic arthritis (Figure 1). Urgent ultrasound guided tapping of right hip was done which showed pussy cloudy effusion with staph aureus growth in culture and sensitivity. MRI study of the hips showed septic arthritis with right sided osteomyelitis with accompanied changes at head of the femur which include the growth plate (Figure 2). Urgent surgical drainage was done and the patient finished 6 weeks courses of antibiotics. In spite of good clinical, laboratory and radiological improvement of inflammatory process, unfortunately baby has got morbidity in the form of shortening right lower limb and same side hip dislocation.

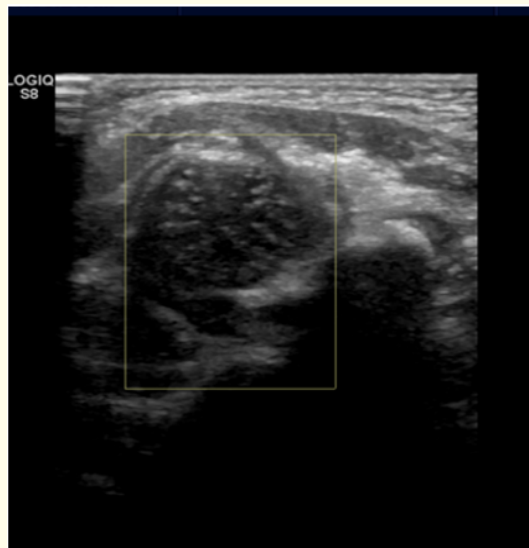


Figure 1: Ultrasound Right hip joint showed right femoral head surrounded by turbid infected fluid of joint effusion, and deep soft tissue swelling.

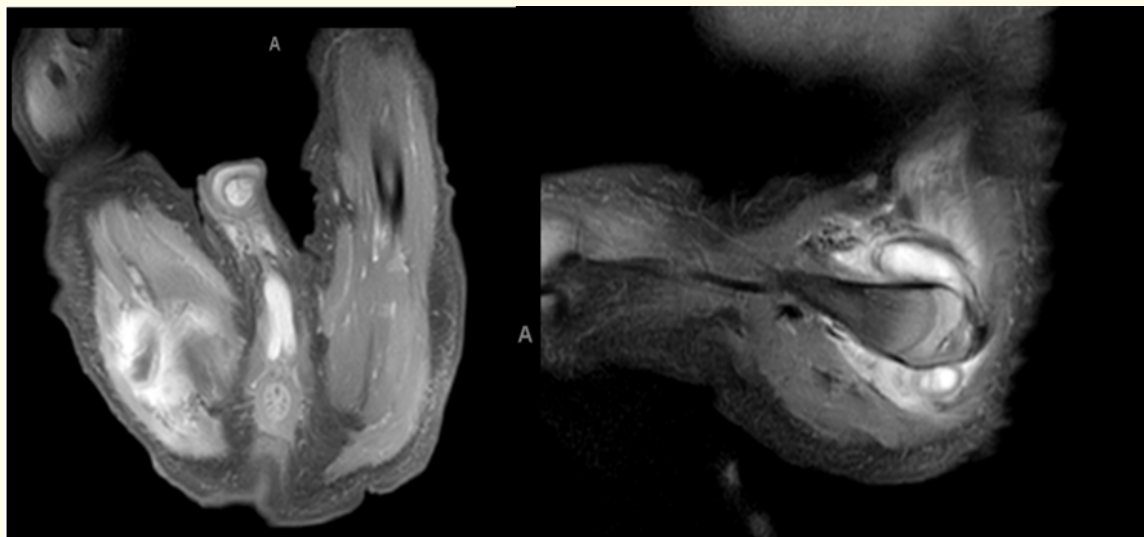


Figure 2: Osteomyelitis of right femoral head and proximal metaphysis, right hip septic arthritis with marked intra capsular collection and small abscess in the left thigh.

Discussion

Osteomyelitis is an infection localized to bone that result in inflammatory destruction, necrosis, and bone deformation [1]. It is usually caused by microorganisms; Staphylococcus Aureus remains the most common pathogen [2]. Other pathogenic mechanisms include direct inoculation usually traumatic, but also surgical, or local invasion from a contiguous infection as sinusitis and periodontal disease. Risk factors for non-hematogenous osteomyelitis include open fractures that require surgical reduction, implanted orthopedic hardware as pins and puncture wounds [3]. Along with other risk factors discussed nowadays as use the Centre of the heel for obtaining capillary blood samples in neonates [4] and Neonatal osteomyelitis: An unusual complication of natal tooth extraction [5].

The incidence of osteomyelitis ranged from approximately 1 in 5000 to 7700 children in developed countries and 1 in 500 to 2300 children in developing countries [6]. Some countries have noted a decrease in the incidence over time, whereas others, including the United States, have noted an increase, particularly with the emergence of community-associated methicillin-resistant *Staphylococcus aureus* [7].

Symptoms of osteomyelitis in young infants may be mild and nonspecific. Many infants are afebrile and continue to feed well. The classic presentation of acute osteomyelitis is sudden onset of bone pain and toxicity with high fevers, rigors, and diaphoresis. Concurrent septic arthritis was revealed in association with osteomyelitis of the proximal femur or the distal humerus. Most patients present with symptoms of less than three weeks duration. Children and infants may be symptomatic for less than 1 week [8].

Initial blood tests for children with suspected diagnosis and follow up for response to treatment in osteomyelitis include a complete blood count (CBC) with differential, ESR, and/or CRP and blood culture [9]. Plain radiographs usually are obtained in the initial evaluation of suspected osteomyelitis, however, plain radiographs may be normal early where's MRI abnormalities of osteomyelitis are apparent earlier so MRI or scintigraphy typically is performed to substantiate the diagnosis [10]. The ultrasonic findings in osteomyelitis of the limb bones was deep soft-tissue swelling, periosteal elevation and a thin layer of sub periosteal fluid and sub periosteal abscess. Concurrent septic arthritis was revealed in many patients, most frequently in association with osteomyelitis of the proximal femur or the distal humerus [3].

Sequelae of neonatal osteomyelitis result from the extension of infection into the sub periosteal space and soft tissue, involvement of the growth plate, and the spread of infection into the adjacent joint space. Destruction of the growth plate may be associated with growth disturbance (angular deformity, shortening or overgrowth of the affected bone) [11]. Other burden neonatal osteomyelitis includes osteonecrosis (avascular necrosis) of the femoral head and bony deformities. Among newborns with vertebral osteomyelitis, collapse or complete destruction of one or more vertebral bodies may occur, with kyphosis or spinal cord compression and resultant paralysis as late complications [5,12].

Conclusion

Neonatal osteomyelitis is uncommon in neonates, a risk factor usually presents. It needs a high index of suspicious for early recognition and caution about precipitating cause as intramuscular injection and heel prick. Most newborns, infants, and children who receive prompt, appropriate antimicrobial therapy before extensive bone necrosis develops have excellent outcomes. Delay in diagnosis may result in high morbidity and mortality. Timely treatment of a hip infection in a child is important. Because the hip is still growing, it is of utmost importance to protect the cartilage. Patients who sustain damage to their cartilage are risking permanent hip joint damage that may require hip replacement later in life.

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