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Osteomyelitis of The Left Humerus with Secondary Septic Arthritis of the Shoulder Joint in Neonate: A Case Report

Marsheila Harvy Mustikaningtyas[1], Yvonne Sarah K. Bintaryo[2], Juniarita Eva Santy[3]
[1]Internship General Practitioner
[2]Head of Orthopaedic and Traumatology Department, Jombang General Hospital, Jombang, East Java
[3]Staff of Orthopaedic and Traumatology Department, Jombang General Hospital, Jombang, East Java

Abstract:- The presence of acute osteomyelitis andseptic arthritis are uncommon in neonate. Recognition and treatment of adjacent septic arthritis is a matter of urgency and importance, as it may result in severe sequalae such as sepsis, joint destruction and growth failure if it is not diagnosed andtreated promptly.

In this paper we report a case of a 21-days-old neonate girl presented with left humeralosteomyelitis and secondary septic arthritisof the shoulder joint following hepatitis B vaccination. She received medical treatments including supportive care, antibiotics and a surgical drainage procedure.

The 3 months follow-up shows scleroticchanges to the proximal humerus in radiograph examination, without clinical manifestation. A long follow up of 1 – 2 years is required to detect all possible sequalae.

Keyword:- *Osteomyelitis, Neonate, SepticArthritis.*

I. INTRODUCTION

Septic arthritis of the shoulder joint in the pediatric population is a rare condition, with a prevalence of 3-5 % of all septic joint. (1).

Septic arthritis of the shoulder joint might occur simultaneously with humeral osteomyelitis, particularly in children younger than 2 years of age, whose transphyseal vessels are instrumental in spreading infection. In addition, the joint capsule extends beyond epiphyseal plate inyounger neonatess, permitting easier hematogenous spread from metaphysis to adjacent joint space (2).

Early diagnosis and treatment are crucial. Delays in diagnostic and treatment could result in disastrous complications, including sepsis, destruction of the articular cartilage and the underlying epiphysis, lossof adjacent growth plate and dislocation of joint. These conditions might hinder neonates' movement and cause growth failure in the future (3,4,5).

The aim of this paper is to present a case ofneonate humeral osteomyelitis withsecondary septic arthritis of the shoulder joint and to highlight our diagnostic and therapeutic approach to this disease.

II. CASE REPORT

We present a case of 21-days-old neonate girl who presented to the pediatric emergency department with swelling and decreasing movement of the upper left armsince the last 9 days after receiving Hepatitis type B vaccine. The patient also presented with a mild fever since the last 9days. She had been delivered spontaneously, 3100 g in weight and 49 cmin length.

The patient was active and alert, with a mildfever of 37.3 degree Celsius. Physical examination revealed swelling and redness of the left shoulder joint. There was decreasing movement of the left shoulder joint as well.

Plain radiographed showed a widening of shoulder joint space, periosteal reaction and lytic lesion along the left humerus. Laboratorium result revealed increase level of leucocyte (36.42) and low level of hemoglobin (9.0). CRP was 90 and ESR was 30-42. A D10 0,18% fluids were administered in the Emergency room. Sultamicillin and Cloxacillin was given viaan IV drip. The child was admitted to the pediatric ward and was treated by apediatrician for 5 days. No significant clinical nor laboratory improvement were achieved, thus orthopedic consult wasmade.

Fig 1:- Clinical appearance of the leftshoulder joint

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Fig 2:- Plain X-ray of the left humerusand shoulder joint.

The decision was taken to perform athrotomy of the left shoulder immediatelyafter taking inform consent from the parents. A deltopectoral approach was usedto exposed the shoulder joint and the proximal humerus. The area was thoroughly debrided. Necrotic bone and tissue were removed. Pus was drained and sent for culture and sensitivity.

Pus culture result was positive for Staphylococcus aureus which were sensitive to clindamycin, erythromycin, gentamicin, linezolid, oxacillin, rifampicin and vancomycin. Cloxacillin was thengiven as the antibiotic of choice.

After 2 weeks the lab results had improvedsignificantly (Leu 16,010 and CRP 5,7).Surgical wound was nicely healed. The patient presented no sign of fever. Clinical examination showed no joint swelling nor tenderness.

The clinical examination on final follow-upat 3 months showed full range of motion present on both shoulder joint comparable. Radiologic follow-up showed shows sclerotic changes to the proximal humerus.

Fig 3:- Plain X-ray of the left humerus and shoulder joint at 3 months follow-up

III. DISCUSSION

Septic arthritis in neonates is rare and can be difficult to diagnose. The classic presentation of septic arthritis is the presence of acutely swollen, red, painful joint with limited motion and fever (6). Thepresence of pseudo paralysis in neonates isa crucial warning symptom of joint or bone infection (7). Though according to some studies, fever is not always present as the common signs of sepsis in neonates, thus careful clinical assessment is needed. (7,8).In this case, the patient presented with swelling, pain, limited movement of upper left arm and shoulder, accompanied by mildfever.

This patient received Hepatitis Bvaccination that was administeredintramuscularly on the deltoid muscle. It could be argued that in our case shoulder joint infection is due to contamination caused by poorly disinfected skin prior to injection. Thinner patients, in our cases a neonate, has a higher risk of bursal penetration, that could lead to osteomyelitisand septic arthritis (9).

Laboratory tests are necessary to help confirm the diagnosis of osteomyelitis and septic arthritis in neonates. The role of CRPas a diagnostic marker for neonatal sepsis has been widely studied and analyzed. Onlya low amount of CRP passes through the placenta, making a slight rise in serum CRP in neonates always represent endogenous synthesis, with serum concentration rising above 5 mg/l in 6 hours, and peaking at 48 hours (10).

Although CRP has a particularly lowsensitivity in the early stage of disease, its sensitivity increases when perform in a serial manner. Series CRP measurement,combined with clinical status, is useful to monitor treatment response (10).Accordingto a study by Zhan, et al (11), most neonates with osteomyelitis showed higher levels ofWBC and CRP, which also present in this case. In our case, the blood work shows an elevated CRP of 90 mg/l. This along with the clinical presentation of the patient strongly indicates the presence of joint or bone infection.

At 2 weeks follow-up, clinical symptoms and lab result had improved signifaicantly,with CRP serum level at 5,7 mg/l. Thisindicates that the patient's response to treatment was sufficient.

Management of septic arthritis in neonates remain controversial. A retrospective studyby Gao et al stated that surgical interventionresult in better outcomes with higher rate offull recovery, shorter course of intravenous antibiotics and better shoulder ROM compared to conservative approach (12). However, another study concluded that a conservative approach might be more beneficial for patients whose diagnosis andtreatment had been delayed for 2 weeks(13).

We decided to perform a surgical exploration and debridement for our patient despite the 2 weeks delay, considering no sign of clinical and laboratory improvement after 5 days of conservative treatment, in order to obtain isolated pathogen andprevent further damage of bone and cartilage.

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IV. CONCLUSION

Acute osteomyelitis with secondary septic arthritis of the shoulder joint in neonates isuncommon. Timely diagnosis and prompt treatment are quintessential to prevent complications. Decision to open the joint should be taken as soon as the conservative treatment failed to relieve the symptoms and intraarticular pressure to prevent the ischemic bony changes.

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