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CASE REPORT

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Septic Arthritis of the Knee in a Neonate: A Case Report

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Abstract

We present a case of septic arthritis of the knee in an 18-day-old female patient diagnosed by ultrasound. The final diagnosis of septic arthritis of the left knee was confirmed by a microbiology examination, which found *Pseudomonas aeruginosa*. The patient was treated with arthroscopic drainage and appropriate antibiotic therapy.(**International Journal of Biomedicine. 2023;13(2):350-352.**)

Keywords: septic arthritis • *Pseudomonas aeruginosa* • arthroscopic drainage • antibiotic therapy

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Introduction

Septic arthritis (SA) is an inflammation of joints caused by an infection. The incidence of SA in children ranges between 5 and 12 cases per 100,000 persons.[1] The highest incident rates are seen among children aged between zero and four years old.[2] SA is 1.4 to 1.7 times more common in males than in females.[2-4] The pathogens implicated in pediatric joint infections commonly include methicillin-sensitive *Staphylococcus aureus* [5,6] and *Kingella kingae*[5,6-9] and, more rarely methicillin-resistant *Staphylococcus aureus*,[10,11] group A *Streptococcus*, group B *Streptococcus*,[12,13] *Escherichia coli*,[12,13] and *Streptococcus pneumoniae*.[14] *Pseudomonas aeruginosa* is a very rare causative organism, mostly in immunocompromised individuals.[15] The symptoms and signs of SA include fever, swelling, pain, and impaired range of movement.[16-18] In patients with SA, a diagnostic puncture of the joint typically finds purulent fluid with between 50,000 and 150,000 cells/μL of predominantly neutrophils.[19] Without proper treatment, SA could lead to joint destruction, growth failure, permanent dysfunction, or deformity of the limbs in many children affected.[20,21]

Case Presentation

We present an 18-day-old female patient who was born by normal delivery done by a midwife in one of the villages in Sudan. Her mother felt swelling and fever in the baby's left leg and came to the hospital in the emergency department. The GP, after examination, referred the patient to a pediatrician. The examination showed redness, a fever of 38°C, pain, and limited mobility in the left knee joint. A general blood test revealed elevated levels of white blood cells of 19.000µL and an erythrocyte sedimentation rate of 70 mm/h. The x-ray showed a normal bone and joint space, no periosteal reaction or lytic bone lesion, and no evidence of osteomyelitis (Figure 1). After that, the clinician requested a left knee ultrasound which showed enlargement of the hypoechoic area in the joint capsule, indicating fluid retention (suprapatellar bursal complex joint effusion) with internal turbidity and synovial thickening; ligament, tendons, and subcutaneous tissue were normal (Figures 2 and 3). The pediatrician directly referred the patient to an orthopedic surgeon who diagnosed the late stage of the process. Arthroscopy and partial removal of the synovium with drainage was performed, and an intraoperative sample taken. The final diagnosis of SA of the left knee was confirmed by a microbiology examination, which found *Pseudomonas aeruginosa*. The patient was prescribed appropriate antibiotic therapy.

Fig. 1. *Lower limb x-ray. Soft tissue is swelling around the left leg, especially around the knee joint. No periosteal reaction or lytic bone lesion, and no evidence of osteomyelitis.*

Fig. 2. *Knee ultrasound, sagittal scan. Enlargement of the hypoechoic area in the joint capsule, indicating fluid retention (suprapatellar bursal complex joint effusion).*

Fig. 3. *Knee ultrasound, sagittal scan. Synovial thickening.*

Discussion

SA is a dangerous condition that needs emergency treatment. Patient management involves joint drainage and empiric antibiotic therapy initially, which can later be specified according to test results.[22,23] Several studies [24-26] suggest that two weeks of targeted systemic antibiotic therapy after surgical drainage may be sufficient. The suggested duration for parenteral antibiotic treatment ranges from 3 days up to 6 weeks, resulting from several mainly observational studies with a relatively poor level of evidence.[27,28] Several pediatric textbooks recommend at least 4–6 weeks of treatment.[29,30] In general, antibiotics should be administered intravenously for 2 weeks and then orally for another 2 weeks. Then oral therapy should be stopped depending on the results of C-reactive protein (CRP) and white blood cell (WBC) count.[31] Delays in identification and treatment might result in major side effects, such as osteonecrosis and joint degeneration. On the other hand, SA discovered in time is no cause for alarm. Surgical drainage is recommended for early-diagnosed neonatal SA. A conservative approach may be more efficient for patients whose diagnosis and treatment have been delayed for more than 2 weeks. However, there is still a controversy regarding the management of SA in neonates. Early diagnosis and proper treatment of SA are essential to obtain good outcomes and avoid sequelae.

Informed Consent

The patient's parents consented to use the data from this case for publication.

Competing Interests

The authors declare that they have no competing interests.

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