

SEPTIC ARTHRITIS IN A TEN DAY OLD NEWBORN: HOW LONG TO WAIT FOR ARTICULAR DRAINAGE?

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Objective – We present a case of osteoarthritis in a ten day old newborn who underwent aspiration and drainage on the fifth day after admission instead of on the first day. The aim of this case report is to describe the importance of a team approach and clinical management algorithms for the successful treatment of septic arthritis in newborns. **Case report** – We describe a 3580 g male baby, who underwent aspiration and drainage on the fifth day after admission to our Unit for septic arthritis of the right knee. After the surgical drainage of the joint, local signs of inflammation began to improve. Microbiological analysis did not reveal the causative agent. **Conclusion** – Septic arthritis requires early diagnosis, prompt administration of antibiotics and rapid removal of pus by surgical treatment, due to the possible development of serious and irreversible damage, and even lethal outcome. A team approach with treatment guidelines of septic arthritis in newborns is mandatory.

Key words: Septic arthritis ■ Newborn ■ Surgical drainage ■ Antibiotics.

Introduction

Although uncommon, osteoarticular infections represent a severe condition in neonates. Estimated incidence is one to three cases per 1000 admissions to Neonatal Intensive Care Units (1). Clinical features, microbiology, and outcome in neonates differ from older children. Diagnosis may be difficult and delayed due to the lack of signs and symptoms. The delay of surgical drainage may cause poor outcome and permanent sequelae. Septic arthritis or suppurative arthritis is an infection of the joints caused by a variety of microorganisms. Usually *Staphylococcus aureus* is the main isolated microorganism (2).

Infection may also result in synovial implantation of organisms in the course of septi-

caemia. Purulent synovial fluid, positive culture and positive Gram stain are all accepted as the gold standard for exact diagnosis, but 70% of children with clinical symptoms of septic arthritis have been described to have negative synovial fluid cultures (3). Most patients survive but with limitation of joint function (4). Due to the rarity of this condition in newborns, the diagnosis of septic arthritis is more difficult than in older children. A delay of five days in surgical treatment has been associated with a relative risk of 1.6 for the development of a poor outcome (5).

The purpose of the case report is to point out the importance of a team approach and the clinical management algorithms for the successful treatment of septic arthritis in newborns.

Case report

We describe a 3580 g male newborn, born at term by an uncomplicated vaginal delivery. The Apgar score was 9/9 at first and five minutes respectively. The amniotic fluid was stained. On the third day of life, the newborn



Fig. 1 Swelling and redness of the right knee.

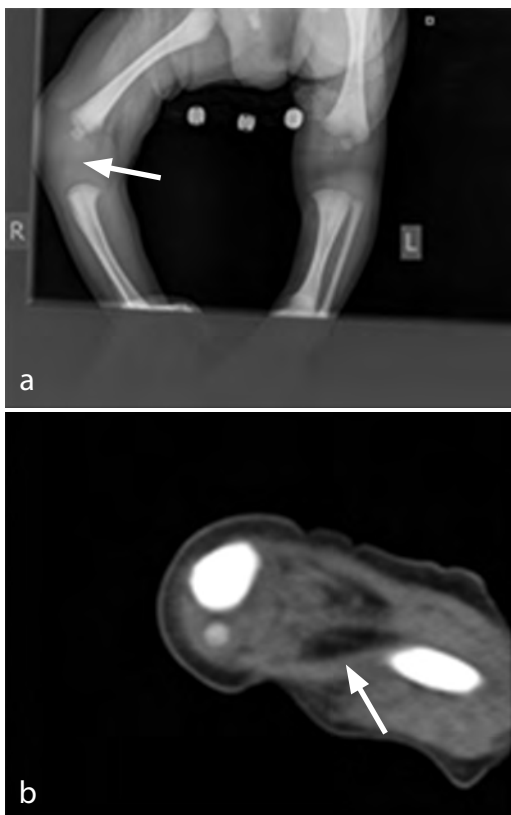


Fig. 2 Roentdenogram (a) and computed tomography (b) of the right knee show soft tissue changes, without a change in the bone.



Fig. 3 Open surgical drainage.

had jaundice with poor sucking. On tenth day he appeared febrile with a temperature of 37.8 °C, swelling, redness, heat and diminished movement in his right knee (Fig. 1).

Roentgenogram and computed tomography revealed soft tissue changes, without a change in the bone itself (Fig. 2, 3).

Hematologic parameters showed peripheral leukocyte count $18.44 \times 10^9/l$ (normal: $\leq 12 \times 10^9/l$) elevated C-reactive protein 49.5 mg/l (normal: ≤ 10 mg/l) elevated sedimentation rate 25/50 mm/h (normal: ≤ 6 mm/h). On admission we consulted the orthopaedist who did not indicate articular drainage. On the fifth day, the local and general status worsened. The newborn became febrile again, even under antibiotic therapy (Ceftazidime, 30 mg/kg and Amikacin, 15 mg/kg). We called the orthopaedist again for consultation and he decided to aspirate and drain the swollen joint (Fig. 3). By surgical drainage of the swollen joint, 50 ml of purulent fluid was collected. Microbiological analysis of the fluid did not reveal the causative microorganism. After the surgical procedure, local symptoms started to improve.

Discussion

Septic arthritis in children has devastating consequences, yet the initial clinical symptoms and signs may be subtle. According to the Welton et al. (6) initiation of appropri-

ate medical / surgical treatment four or more days after the onset of symptoms may be associated with poor outcomes. Most orthopaedics are aware of this problem and are on high alert in any case of suspected neonatal septic arthritis, while in many cases the improvement in the early management of septic arthritis in newborn period is warranted (4). In the opinion of Rutz and Spoerri (7) a septic joint condition should always be treated as an emergency at all times. As soon as the clinical data suggest the diagnosis of septic arthritis, a needle aspiration becomes mandatory for: cell count, Gram stain and culture. After finding pus by diagnostic needle aspiration, arthrotomy or arthroscopic irrigation should be performed immediately (7). Joint aspiration is important if diagnosis is uncertain, to differentiate other etiologies from osteoarticular pathology, such as labour trauma (8).

In our case presentation the orthopaedist opted for aspiration and drainage on the fifth day after admission instead of on the first day. As orthopaedists have different approaches to management of septic arthritis, a multidisciplinary approach between paediatricians and the paediatric orthopaedic team is mandatory. When it comes to the prognostic factors, a significant controversy can be seen in the literature. Is it age or delay in treatment which dictates poor outcomes? Research shows that the worst prognosis is seen in neonates; but we cannot confirm it as an independent factor from delay in diagnosis and treatment (9).

In the Neonatology Unit of the Department of Paediatrics, University Clinical Hospital Tuzla in the period from 1994-2001, we treated 11 newborns with septic arthritis with three surgical interventions (10). From 2002-2013 six newborns were treated without diagnostic puncture and drainage. Immediate diagnostic puncture is necessary if septic arthritis is suspected. After septic arthritis, follow-up for at least five years is necessary in order to detect complications, such

as growth arrest or avascular necrosis (11). Unfortunately we do not have information on long-term complications because of the large scale migration of people in the post war and transitional periods in Bosnia and Herzegovina. Blood culture and culture of joint aspirate yielded no bacteria with a positive clinical finding for neonatal sepsis. Thus, the bacterial load in the systemic circulation and the infected joint may not always be high as commonly believed. Appropriate antibiotic therapy in our case was given, in accordance with the epidemiological situation in the nursery. Gram negative bacteria are prevalent so a combination of cephalosporin and aminoglycoside was sufficient. Long-term results will be achieved by long-term monitoring of our patient.

Conclusion

Due to the possible development of serious and irreversible damage, and even lethal outcome, septic arthritis requires early diagnosis, prompt administration of antibiotics and rapid removal of pus by surgical treatment. Delayed surgical treatment may have serious consequences. A multidisciplinary approach is critical for successful treatment.

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Conflict of interest: The authors declare that they have no conflict of interest.

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