Case Report

Bilateral Septic Hip Epiphyseal Detachment in Children: A Case Report and Review of the Literature

Ferdinand Nyankoue Mebouinz[1], Serge Etoundi Bekoé[1], Rose Bengono[1], Bertine Manuela Ndjeunga[2], Cathy Bebey Engome[3], Fabrice Arroye Betou[4]


Dr Ferdinand Nyankoue Mebouinz


Dr Serge Etoundi Bekoé


Dr Rose Bengono


Dr Bertine Manuela Ndjeunga


Dr Cathy Bebey Engome


Dr Fabrice Arroye Betou

Address of Correspondence
Dr Ferdinand Nyankoue Mebouinz,
Estrada do Forte do Alto Duque, 1449-005, Lisbon.
E-mail: ferdinandmebouinz@gmail.com

[1]Department of Orthopaedic Trauma Surgery, Aristide Le Dantec Hospital, Cheikh Anta Diop University, Dakar, Senegal
[2]Obstetrics Gynecology Clinic, Aristide Le Dantec Hospital, Cheikh Anta Diop University, Dakar, Senegal
[3]Albert Royer Children's Hospital University teaching Hospital of Fann, Cheikh Anta Diop University, Dakar, Senegal
[4]Department of Cardiovascular and Thoracic Surgery, University teaching Hospital of Fann, Cheikh Anta Diop University, Dakar, Senegal

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Abstract

Background: Diagnosed and treated fairly early, children's septic arthritis of the hip has few or no complications. Septic epiphyseal detachment of the hip in children is a rare complication due to delayed treatment. Unilateral forms have been reported, but bilateral involvement has never been described in the literature.

Case presentation: We report the case of an 8-year-old girl who presented with hip pain associated fever and diminished lower limb movements, approximately 4 months after the onset of symptoms. The diagnosis of bilateral septic epiphyseal detachment of the hips was made and computerized tomography (CT) scan revealed osteonecrosis of both femoral heads. The necrotic epiphyses required removal in order to control the infection.

Conclusion: This report highlights the importance of early diagnosis of septic arthritis of the hip in the neonatal period. Any delay in presentation, diagnosis or management can result in irrecoverable sequelae for the developing hip and seriously impact long-term function.

Keywords: Septic arthritis, Bilateral, Epiphysis detachment, Hip, Ablation

Introduction

Septic arthritis in children is a diagnostic and therapeutic emergency that responds favorably to well-managed treatment[1]. Any delay can lead to serious complications. Management must be initiated as soon as possible in order to prevent disastrous anatomical and functional sequelae [2, 3]. The hip is a favoured location for septic arthritis in children. According to Teklali et al [4], the hip and knee joints account for 79% of joint infections and with the hip alone responsible for 48.8% [5]. Septic hip epiphyseal detachment is one of the rare complications that occurs due to the diagnostic and therapeutic delay of childhood septic hip arthritis [6, 7]. The literature is sparse on this complication whose functional prognosis of the hip and walking is guarded. Only a few cases of unilateral involvement have been reported. We report a case of bilateral septic epiphyseal detachment managed in our institution.

Case presentation

A previously healthy 8-year-old girl presented with inability to weight bear and bilateral hip pain. There was a history of penetrative injury to the leg by an

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Figure 1: X-ray of the pelvis showing bilateral epiphyseal detachment and a pathological sub trochanteric fracture with periosteal reaction.

Figure 2: Frontal (A) and axial (B) sections of the hips showing the necrosis of the detached epiphyses

Figure 3: X-ray of pelvis control after removal of necosed epiphyses

unspecified object. After 3 weeks of management by a traditional bone setter, she was referred to a rural health center. Diagnostic aspiration of the hip revealed pus. The child underwent drainage and antibiotic therapy. There was an open wound discharging pus with persistent fever and pain. The child was brought to our tertiary level institution approximately 4 months from the onset of symptoms. Radiographs of the pelvis showed bilateral detachment of the proximal epiphyses of the femurs, associated on the right with a healing, pathological sub-trochanteric fracture (Figure 1). CT scan showed bilateral necrosis of the femoral epiphyses (Figure 2). The child underwent arthrotomy, removal of the necrotic epiphyses and thorough debridement of the hip. The intraoperative findings were bilateral purulent intracapsular collection of approximately 250 ml each, with detachment of the femoral epiphyses which were necrotic. Pus culture revealed Staphylococcus aureus (methicillin sensitive) and Klebsiella pneumoniae producing broad-spectrum B-lactamase, sensitive to aminoglycosides and third generation cefalosporins. She received ceftriaxone and gentamicin at an appropriate dose. Radiographic examination of the pelvis showed an emptiness of the acetabulum and proximal migration of the femur on the left. On the right, the femoral neck migrated into the empty acetabular cavity (Figure 3).

Discussion

The frequency of septic arthritis is particularly important in the first decade of life. The hip is the most frequently affected joint in children. This predilection is found by the majority of authors [4, 5, 8]. In Mali, Coulibaly et al [5] find this predilection at 48.5%, Mue et al [9] at 50% in Nigeria and Gajdobranski et al [8] at 60%. Slightly higher preponderance (55%) in girls has been reported [5]. Septic hip arthritis in children remains a grave clinical problem in the developing world due to its association with delayed diagnosis, resulting complications and their disabling sequelae. Septic detachment of the hip is a rare complication [6, 10]. A few authors have reported unilateral cases. In this article, we describe a bilateral form never previously communicated in the literature.

Septic arthritis of the hip can cause an epiphyseal detachment by two mechanisms, either mechanically by increasing the intra-articular pressure, or bacteriologically as a pathogenic effect on the proliferation zone of the physis [2]. In children, the sinusoidal channels are wide, the metaphyseal spongy structure is loose, the epiphyseal cortex is thin and the periosteum is poorly attached to it [2]. Destruction of bone in the juxta-epiphyseal region with increased intra-articular pressure and beginning of cortical perforation leads to septic detachment of the epiphysis [2, 11, 12].

Clinical history and examination reveal a persistent fever, limp and painful restriction of hip movements in most cases [13,

14]. Staphylococcus aureus is the causative organism in more than 90% of cases, due to its capacity to adhere to cartilage [15]. Radiographs show epiphyseal detachment, periosteal reaction or pathological fracture [10]. In our case, we found an associated sub-trochanteric pathological fracture. Ultrasound of the hip is only useful to confirm and quantify an intra-articular collection but not necessary for the diagnosis of epiphyseal detachment in the older child [10].

In the newborn, where the epiphysis is not yet visible radiographically, Sferopoulos et al [16] recommend ultrasound to preclude early epiphyseal detachment in cases of suspected hip arthritis. Once an effusion is confirmed by ultrasound, the need for advanced imaging should not delay arthrotomy and debridement [17]. Computed tomography is useful for the localization of the detached epiphysis, since the necrotic epiphysis necrosis is sequestrum that contributes to prolonging the sepsis [10]. Magnetic resonance imaging provides anatomical information on the topography, extent of the lesions and specifies the existence of necrosis of the detached epiphysis which can guide the subsequent management [10]. In patients with septic detachment, it is indicated in those who do not respond clinically to an initial hip arthrotomy and to appropriate antibiotics [17].

The treatment of septic arthritis is a medical and surgical emergency. On the medical level, antibiotic therapy must be started immediately after collecting blood and pus for microbiology.

Most authors recommend continuing intravenous antibiotic therapy for 7 to 15 days, followed by oral treatment for a total of 4 to 6 weeks if there is good clinical response [1, 2, 5, 18]. Surgically, early and uncomplicated septic arthritis of the hip can be managed by drainage of the joint through aspiration with a needle or a percutaneous catheter, and in the event of difficulty in controlling sepsis, by surgical debridement [1, 5, 19]. Fernandez et al [20] recommend abundant arthroscopic irrigation if the diagnosis of arthritis is made early. Arthroscopy has advantages including less operative morbidity and greater reliability in obtaining deep tissue samples for culture [21].

Schavion et al [11] repositioned and stabilised the epiphysis with Kirschner wires after joint debridement, followed by traction, in cases of septic hip epiphyseal detachment in newborns diagnosed within 48 hours. The response was favorable. In our case, excision of the femoral epiphyses was carried out on the basis of CT scan and intra-operative findings. A necrotic and avascular epiphysis behaves like a foreign body. Daffe et al [22] reported a case of unilateral septic detachment of the proximal hip epiphysis with migration of into the thigh. The epiphysis required removal.

Conclusion

Septic arthritis of the hip in children is an emergency whose delayed management leads to serious complications. Septic epiphyseal detachment is a rare complication of this pathology. At the stage of necrosis, re-implantation and fixation of the detached epiphysis is no longer possible. Removal of the epiphysis is therefore necessary in order to control the infection.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil; **Source of support:** None

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