

Pseudoparalysis of the Lower Limb: Differential Diagnosis in the Neonate

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Editorial

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Pseudoparalysis of the lower limb during the first month of a child's life is usually a clinical manifestation of a painful hip lesion [1]. The most likely entities that have been associated with the presentation of pseudoparalysis in the neonate are septic arthritis-dislocation of the hip and traumatic fracture-separation of the proximal femoral epiphysis. In contrast to developmental hip dysplasia, these lesions are severely painful if the lower limb is manipulated. Septic arthritis-dislocation of the hip may be associated with prematurity or umbilical catheterization [2], while fracture-separation of the proximal femoral epiphysis usually follows energetic traction during delivery, unrecognized obstetric trauma or child abuse in cases of multiple injuries [3,4]. Septic dislocation of the hip joint may be occasionally complicated by a pathological physeal fracture-separation secondary to osteomyelitis [5]. The differential diagnosis is not easy, since history may not be helpful and the cause is not initially apparent clinically or radiologically. On physical examination, the neonate holds his leg still, avoiding active movements, in a flexed, abducted and externally rotated position. Considerable pain is elicited by leg motion and swelling of the inguinal crease, gluteal area and proximal thigh is obvious. On plain radiographs both lesions may appear as subluxation or dislocation of the hip, since only an upward and lateral displacement of the femoral shaft may be evident, but with a normal acetabulum (**Figures 1 and 2**).

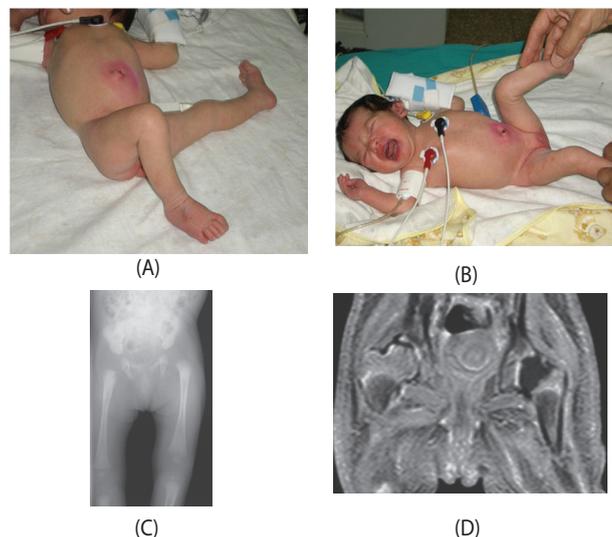


Figure 1. (A) Clinical appearance of a 7-day-old girl with pseudoparalysis of the left leg. (B) Passive movements elicited severe pain. (C) Anteroposterior pelvis radiograph indicated upward and lateral displacement of the left femoral shaft. (D) Magnetic resonance imaging with fat suppression indicated hip joint effusion, extensive soft tissue swelling and lateral displacement of the left femoral epiphysis.

The proximal femoral epiphysis at birth is comprised of the femoral head, neck, greater trochanter, and lesser trochanter. In neonates and infants the proximal femoral physeal plate is curved, apex proximally, and most of it is located outside the joint capsule. The proximal physeal epiphysis is entirely cartilaginous and, therefore, radiolucent with conventional x-ray imaging.

In neonates, septic arthritis of the hip joint may be primary or secondary to osteomyelitis. It may be characterized by atypical clinical picture, often causing delayed diagnosis. There may be no evidence of systemic disease, the neonate may be feeding normally, the rectal temperature may be normal and the laboratory tests may be within normal limits [6,7].

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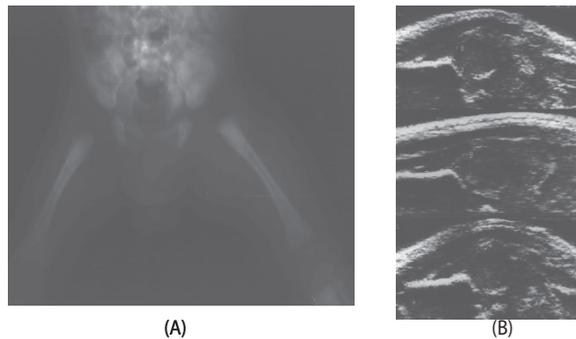


Figure 2. (A) Anteroposterior pelvis radiograph of a 1-day-old boy, born by caesarian section due to a breech presentation, indicated upward and lateral displacement of the left femoral shaft. (B) The diagnosis of an obstetrical fracture-separation of the left proximal femoral epiphysis was based on the ultrasound findings, which revealed soft tissue swelling due to the extracapsular hematoma, loss of continuity of the femoral shaft and proximal growth plate, normal hip joint congruency, no joint effusion and physal plate widening.

Fractures through the proximal femoral physal plate usually occur during a difficult delivery such as those involving breech or footling presentations or in "large-for-dates" babies [8]. Such fractures have also been reported after a delivery with cesarean section. The diagnosis should be made before fracture callus is evident as any anatomic deformity is undoubtedly irreducible at that stage. Usually, such callus formation is evident after the first post-injury week. The existence of a traumatic dislocation of the hip joint has never been described [3,9].

A septic hip may also be difficult to distinguish from a traumatic lesion due to child abuse particularly because both conditions can cause fever (blood in a joint may cause a temporary febrile response) [3].

Pseudoparalysis of the lower limb is always sufficient to exclude congenital dislocation of the hip. However, the use of devices to treat developmental dysplasia of the hip in infants may be associated with a true paralysis, indicating neuropathy (femoral nerve palsy) or a pseudoparalysis of the lower limb, most likely due to improper use of the harness [10,11].

When plain radiographs indicate a dislocated hip the true location of the proximal femoral epiphysis within or outside the confines of the acetabulum is the most critical point to differentiate between trauma and infection. Arthrography has been used to outline the proximal femoral epiphysis and acetabulum. Any joint fluid removed at the time of arthrography should be cultured to rule out an infectious process [12, 13].

Ultrasonography is a powerful diagnostic imaging tool for evaluating lower extremity anatomy and pathology in infants and children [14]. Ultrasonographic findings are more useful compared to radiological findings, due to relatively late appearance of radiological signs of infection or trauma. It is an easy and valuable bedside procedure that may be carried out without anesthesia. It may reveal a normal acetabulum, a dislocated femoral head, joint effusion and osteomyelitis of the proximal femoral metaphysis in cases of septic dislocation of the hip joint. The detection of an extracapsular hematoma and physal widening may be indicative of a fracture-separation of the proximal femoral physal plate, while longitudinal images along the axis of the femoral neck may reveal loss of alignment of the epiphysis in relation to the metaphysis [9].

Magnetic resonance imaging clearly delineates any hip pathology; however, it is an expensive procedure that requires sedation [15].

Early diagnosis with prompt and adequate treatment is essential to diminish the incidence of potential complications and achieve good outcome.

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