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Congenital dislocation of the hip: a case report

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Congenital dislocation of the hip (CDH) is usually diagnosed in the newborn, however, a small number of cases develop later on between six to twelve months of age. Infants should have their hips assessed periodically throughout the first year of life in order to avoid the complications of late onset CDH. Early management of CDH is effective and minimizes the likelihood of disability in later life. (JCCA 1989; 33(1): 22–26)

KEY WORDS: hip dysplasia,congenital discloation, hip examination, chiropractic.

Même si la luxation congénitale de la hanche (LCH) est normalement diagnostiquée chez le nouveau-né, un petit nombre de cas débutent un peu plus tard, soit entre l'âge de six à douze mois. Les hanches des bébés doivent faire l'objet d'une évaluation périodique tout au cours de la première année afin d'éviter les complications d'un début tardif de la LCH. Un traitement institué au tout début de la LCH se révèle efficace et permet de réduire au minimum la possibilité d'invalidité par la suite. (JCCA 1989; 32(1): 22–26)

MOTS CLEFS: dysplasie (de la hanche), luxation congénitale, examen de la hanche, chiropraxie.

Introduction

Congenital dislocation of the hip (CDH) is a condition in which the femoral head is displaced from its normal position at, or shortly after, birth.[1] Various genetic, intrauterine, and immediate postnatal influences contribute to the actual dislocation.[2] The diagnosis is usually established at birth, however, a small number of cases may go unnoticed initially, or occur between six and twelve months of age.[3] Missed cases of CDH are still a frequent cause of litigation in some States.[4] For these reasons, it is important to maintain a high index of suspicion and to repeat the hip assessment a number of times during an infant's first year of life.[5] Early recognition and treatment is critical since timely reduction permits normal modelling of the acetabulum and femoral head with growth. If therapy is delayed, the potential for correction is decreased and reduction of the femoral head is further hindered by compensatory soft-tissue contractures.

Case presentation

A four month-old female was referred to the Pediatric Orthopaedic Outpatient Clinic by a family health nurse who had noticed asymmetry of the infant's thigh creases during a routine check-up. There was no family history of CDH or other hip disease. The pregnancy had been unremarkable and the delivery normal. There was no other evidence of congenital or teratologic anomalies.

On examination, the left leg was noticeably shorter than the right. Abduction of the left hip was limited to 25 degrees and the thigh was positioned in external rotation. An Ortolani manoeuvre was not attempted because of limited passive hip abduction.

Radiographic evaluation revealed dislocation of the left hip. (Figure 1) The ossification centres of the femoral heads were not visible, but the left proximal femoral metaphysis was displaced superiorly. The left acetabulum was shallow and hypoplastic.

Conservative treatment, including two weeks in a Pavlik harness and continuous lower limb traction, did not reduce the left hip dislocation. The infant went on to have an adductor tenotomy and closed reduction of the left hip. Following this she had a full and uneventful recovery.

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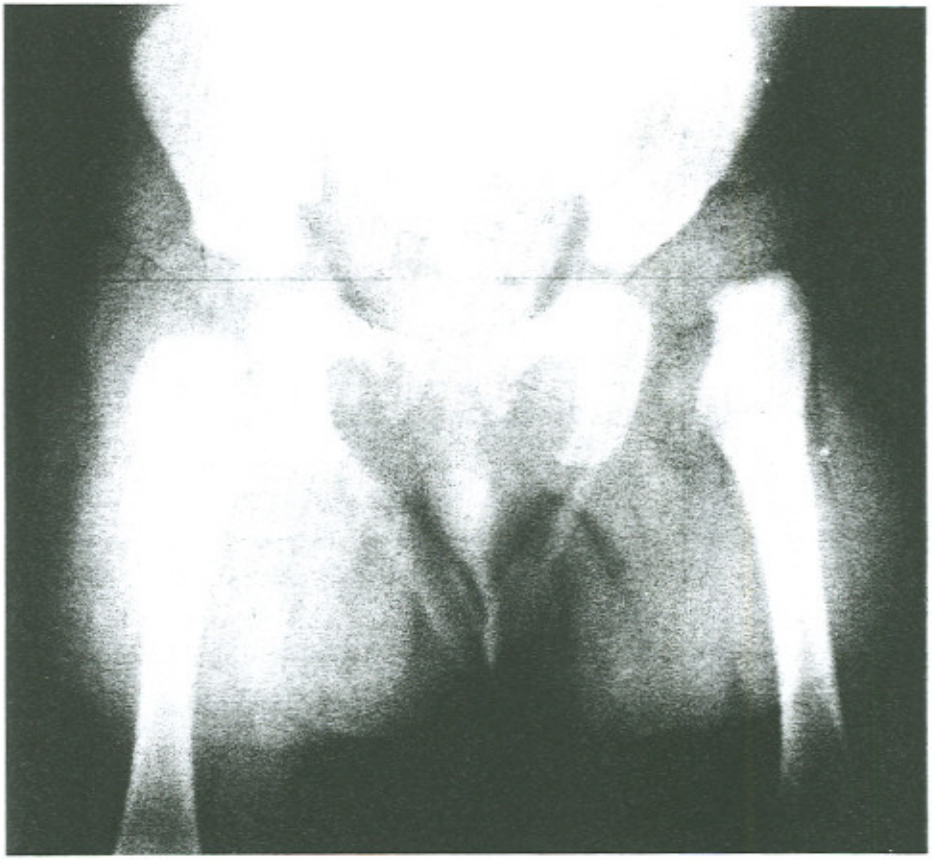

Figure 1 An anteroposterior radiograph of the pelvis. The left proximal femoral metaphysis is displayed superolaterally and the acetabulum is shallow and hypoplastic.

Discussion

CDH is present in between one and 1.5 per 1,000 live births in the general population, but this ratio is higher in select groups.[2] Six per 1,000 Caucasian, and 25 to 50 per 1,000 Lapp and North American Indian newborns are affected. A family history of CDH is present in up to 33% of cases.[3]

There is a high incidence of CDH among firstborn Caucasians.[6] It is theorized that in utero acetabular development relies on unrestricted fetal hip movements, and that the unstretched muscles of the primigravida uterus and abdominal wall inhibit this mechanism by unduly confining the fetus.[7] This crowding phenomenon is also associated with other anomalies such as metatarsus adductus and torticollis. Hip dysplasia is 11 times more common on the left because the left side of the fetus is most often crowded against the maternal sacrum during the time of acetabular development. Oligohydramnios, another condition which causes generalized restriction of fetal mobility, is a well-documented cause of CDH.[2]

CDH is commonly associated with breech, female, and firstborn infants. Twenty-three percent of infants with CDH present in the breech position.[8] This is six to 12 times higher than the rate among normal vaginal deliveries in general. Fifty-nine percent of all breech births involve firstborns. Breech births are also two to eight times more common in females, which might explain why females account for 80 percent of all cases of hip dysplasia.

The diagnosis of CDH is based on the physical examination. The clinician should look for the presence of accessory thigh creases, external rotation malposition, and apparent shortening of the limb on the affected side. CDH may be present bilaterally in 15 to 20 percent of cases, therefore, a symmetrical appearance of the lower extremities must not be mistaken for an absence of hip dysplasia.[5]

Ortolani's and Barlow's tests should be gently performed at birth and repeated at every subsequent check-up during the first year.[5] Infants older than six months can have dysplasia in the absence of positive tests due to restriction of hip movements by soft-tissue contractures. Abduction is limited on the abnormal side. The affected thigh may also telescope when lightly tractioned with the hip at 90 degrees of flexion.[9]

Radiographic evaluation is of minimal use in the early diagnosis of CDH, as the acetabulae and proximal femora are

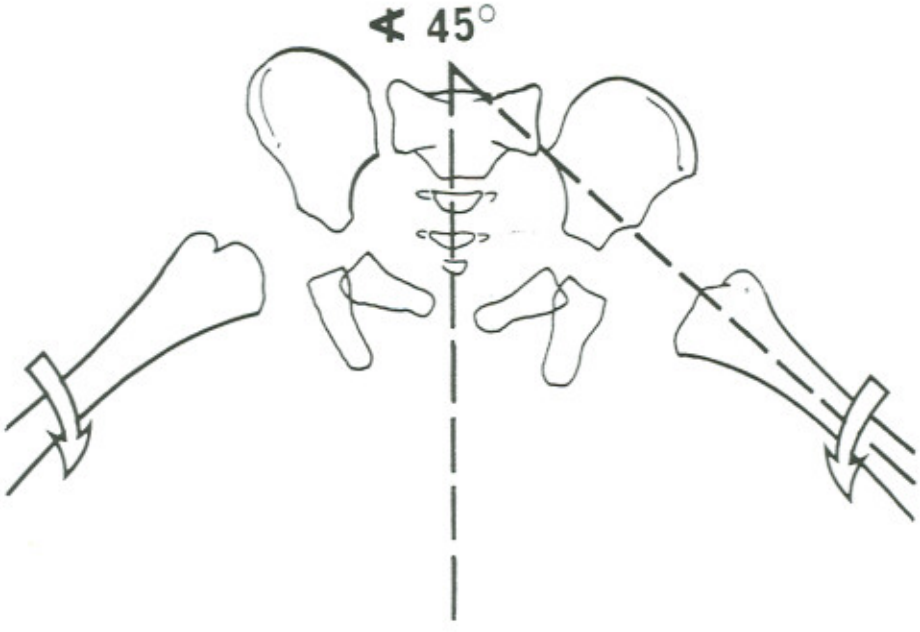

Figure 2 Diagrammatic representation of a von Rosen projection. The hips are abducted 45 degrees and internally rotated.

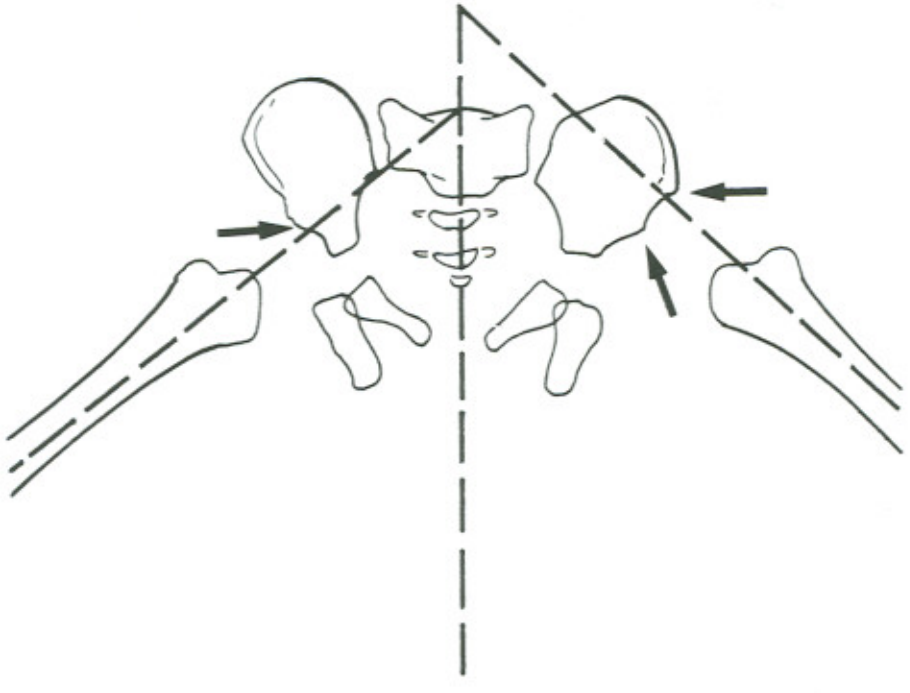

Figure 3 On the von Rosen projection, the axis of the femoral shaft intersects with the outer lip of the acetabulum if the femoral head is in its normal position. If dislocated it will intersect with the ilium in the region of the anterior superior iliac spine, as indicated by the double arrows.

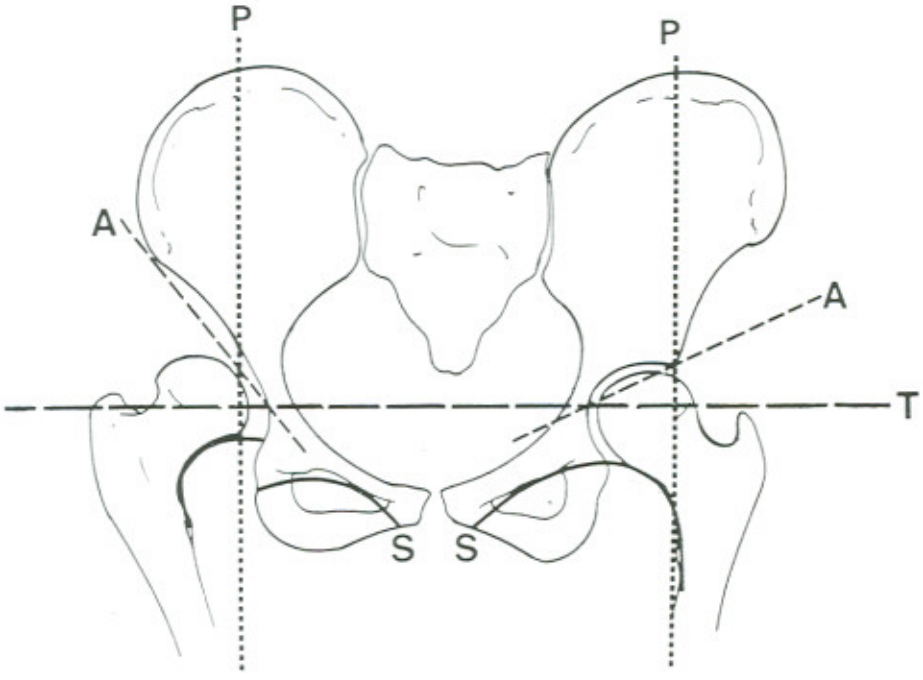

Figure 4 Radiographic interpretation in the older child with CDH. Transverse line – T; Perkin's line – P; Shenton's line – S; Acetabular angle – A. In CDH the femoral capital epiphysis migrates superolaterally above the transverse line and lateral to Perkin's line as illustrated on the left of the diagram. Shenton's line may be disturbed, the acetabular angle may be increased, and the size of the femoral head decreased.

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largely cartilaginous at this stage of development.[4] Nevertheless, a standard AP pelvic radiograph may reveal dislocation of a hip, or a von Rosen stress view may uncover hip instability in the absence of dislocation.[9] The latter view is obtained by radiographing the hips in a position of at least 45 degrees abduction and full internal rotation. (Figure 2) Normally, the axis of the femoral shaft passes medial to the outer lip of the acetabulum. In the presence of instability/dislocation the axis moves laterally and intersects with the ilium near the anterior superior iliac spine. (Figure 3) In older infants, a shallow acetabulum with a highly angulated roof, superolateral displacement of the proximal femur, and a decrease in size of the ossification centre of the femoral head are present.[4]

Perkin's and Shenton's lines, as well as the acetabular angle are useful in the assessment for CDH, (Figure 4) but again, radiography is of limited value in the assessment of newborns. Consequently, clinical findings must take precedence over a normal radiographic study in suspected cases of CDH.

Ninety percent of all newborns with clinical instability of the hip resolve spontaneously by two months of age.[4] However, there is no way to predict which infants will stabilize and which will develop CDH. Consequently, all newborns with instability must be treated without exception. Management is safest, quickest, and most effective when initiated shortly after birth.[10] The Pavlik harness induces flexion of the hips and maintains reduction of the dislocated femoral heads, while preserving passive abduction. If initiated early, this form of correction is continued for six weeks to three months. More elaborate procedures such as continuous traction and adductor tenotomy combined with closed reduction are often required for infants diagnosed later than three months or infants who are not helped by the Pavlik harness.

Patients left untreated after they begin to walk suffer permanent structural changes which will become evident on radiographic examination.[11] These patients are greatly predisposed to premature osteoarthrosis of the affected hip(s). With hip subluxation due to CDH, the mean age of symptom onset is 36.6 years in women and 54 years in men.[2] Radiographic evidence of severe degenerative changes appear approximately ten years later and signify the onset of continuous and rapidly progressive disability. Treatment of children after walking-age is aimed at improving the mechanics of the hip joint, thus delaying the onset of early osteoarthrosis. This usually involves extensive surgery, particularly in patients older than three years of age.

Conclusion

Hips can be normal at birth and become dysplastic at six to 12 months of age.[5] Careful, repeated assessment by any health-care provider in contact with the infant is essential throughout the first year of life.

Infants at high risk of developing CDH are females, firstborn, and breech presenters. Also at risk are babies with metatarsus adductus, congenital torticollis, a positive family history of CDH, or a history of oligohydramnios at birth. Lapps, North American Indians, and Caucasians are most frequently affected. Early diagnosis relies on gentle, meticulous handling of the infant. Early management is effective and minimizes the likelihood of severe disability in later life.

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