DHH unilateral or bilateral should always be considered when a child presents with any of the signs noted above and as a differential diagnosis for unusual gait pattern. Rapid progression to X-ray screening and orthopaedic intervention will improve the long term outcomes for the child.

A systematic review of unscreened populations estimated the prevalence of clinically diagnosed, established hip dysplasia to be 1.3 per 1,000 but in populations screened clinically with Ortolani and Barlow tests, the prevalence is higher at 1.6-2.8 per 1,000 and it is higher still with ultrasound screening.

The left hip is dislocated more often than the right and 20% of cases are bilateral.

It is more common in cultures that use swaddling of babies, forcing the hips into extension and adduction. About 8 in 10 cases of DDH are female. This may be due to oestrogen (the female hormone) that is made by the female foetus. This makes the ligaments more lax and means that the bones are more likely to move out of position.

About 6 in 10 cases of DDH occur in first born children. This may be because the uterus is tighter and less elastic than in future pregnancies so that the baby has less room to move.

There is a suggestion that the national screening programme in the UK, which has operated since 1969, has not resulted in any fewer operations for DDH.

However, studies have shown that clinical screening for neonatal instability of the hip by experienced orthopaedic examiners significantly reduces the incidence of late-presenting (walking) DDH.

A Cochrane review found that there was insufficient evidence to give clear recommendations regarding screening for DDH. There was some inconsistent evidence, that universal ultrasound results in a significant increase in treatment, compared to the use of targeted ultrasound or clinical examination alone. The review concluded that ultrasound strategies have not been demonstrated to improve clinical outcomes including late-diagnosed DDH and surgery.

Examination

The Ortolani and Barlow tests are the most common clinical tests for newborn babies:

In the Ortolani test, the examiner applies forward pressure to each femoral head in turn, in an attempt to move a posteriorly dislocated femoral head forwards into the acetabulum. Palpable movement suggests that the hip is dislocated or subluxed, but reducible.

In the Barlow test, backward pressure is applied to the head of each femur in turn, and a subluxable hip is suspected on the basis of palpable, partial or complete displacement.

Both the Barlow and Ortolani tests detect an unstable hip but do not detect a dislocated, irreducible hip, which is best detected by identifying limited abduction of the flexed hip, or a stable hip with abnormal anatomy - e.g., acetabular dysplasia.

Bilateral hip clicks, resulting from soft tissues snapping over bony prominences during hip movement, should be distinguished from the clunks produced during the Ortolani manoeuvre as the dislocated femoral head is reduced, and from the subluxation felt during the Barlow test.

The Barlow and Ortolani tests are useful in neonates but become difficult by 2-3 months of age. Stable hips may be dysplastic. Limited hip abduction (less than 60°) when the hip is flexed to 90° is the most important sign of a dislocated or dysplastic hip.

Most DDH requiring surgery are late diagnosis needing an open reduction.

Developmental dysplasia of the hip is an important cause of childhood disability and accounts for up to 9% of all primary hip replacements (up to 25% of those in people aged 60 years or younger).

Potential long-term complications include premature degenerative joint disease and low back pain.

Surgery can result in a number of complications including re-dislocation, stiffness, blood loss and avascular necrosis of the capital femoral epiphysis (which occurs in 5-15% of cases).

References


NHS Newborn and Infant Physiological Examination Programme; Public Health England


Moulder EH & Davies AG; The importance of asymmetric thigh creases as the sole referral complaint in developmental dysplasia of the hip. Bone Joint J 2013 vol. 95-B no. SUPP 6 B.
Developmental Dysplasia of the Hip (DDH)

What is DDH?
DDH is an abnormality in the hip joint that is usually present from birth. DDH was previously known as congenital dislocation of the hip (CDH). It was renamed to show better how there are different degrees of abnormality (not just dislocated hips).

Developmental dysplasia of the hip affects 1-3% of newborns.

In a normal hip, the head of the femur (thigh bone) is a smooth rounded ball and the acetabulum (in the pelvis) is a smooth cup-like shape. The head of the femur and the acetabulum are in close contact, a little bit like an egg in an egg cup.

In DDH, there is an abnormality either in the shape of the head of the femur, the shape of the acetabulum, or the supporting structures around them. As a result, the acetabulum and femur are not in close contact. It may be a mild abnormality where there is some contact between them. This is called subluxation. It may be a severe abnormality where there is no contact between them and this is called dislocation.

Risk Indicators
There are some known factors which increase the risk of DDH:
- Family history: Having a sibling with hip dysplasia increases risk by 5%.
- Gender: About 80% of cases are girls.
- Pregnancy: Restriction of movement as with oligohydramnios (too little amniotic fluid) increases the risk. The risk is also increased in multiple pregnancy and prematurity.
- Breech position: Vaginal delivery of babies with breech presentation is associated with a 17-fold increased risk of hip dysplasia; there is a 7-fold increase for breech babies delivered by elective caesarean section.

About 60% of cases are firstborn, compared with about 40% of all babies. It is more common with neuromuscular disorders, such as cerebral palsy, meningo(myelo)cele and arthrogryposis.

When to refer—examination and signs of DDH for Practitioners

Under 3 months old

Soon after birth, babies should be examined by a hospital doctor and/or midwife. The Ortolani and Barlow tests are the most common clinical tests performed in hospital. Newborns with clinical signs of unstable hip should be referred for an ultrasound along with the at risk group. Health Visitors should seek advice from the GP about any child who has not been screened who has strong risk indicators.

3 to 6 months

The physical signs are different and so are the requirements of examination. There is limited abduction when fully flexed and this is a key sign.

Some observational physical signs for late dislocation include decreased abduction on the affected side, asymmetry of the gluteal thigh and labial skin folds, discrepancy in leg length, a widened perineum on the affected side, buttock flattening, and asymmetrical thigh skin folds. Health Visitors should refer any baby with these signs promptly to the GP for hip x-ray.

Asymmetrical skin folds are found in 25% of normal babies and therefore not the most important clinical finding in isolation. It was shown in a recent study (Moulder & Davies—2013) to be irrelevant to DDH.

Older children with unilateral dislocation

There is limited abduction when fully flexed which is a key red flag.

The child may walk up on toes on the affected side (linked to the leg being shorter) or present with a painless limp. Health Visitors or School Nurses noting these signs should refer promptly to the GP for Orthopaedic assessment.

Bilateral DDH

DDH is bilateral in about 20% of cases. It can be difficult to diagnose, especially after the neonatal period as signs are equal on both sides.

There is often a waddling gait with hyperlordosis (an increased lumbar curve) and loss of abduction on both sides. The Galeazzi sign for hip shortening is often absent, as are asymmetrical thigh and skin folds, or asymmetrically decreased abduction.

If the child presents with an unusual gait, bilateral DDH should always be excluded before seeking help and advice from a physiotherapist. Health Visitors or School Nurses should refer promptly to the GP for Orthopaedic assessment when observing any of these signs.

Investigations

Ultrasound helps diagnosis in children under 4-5 months, but pelvic X-ray is more useful in older infants and children. Arthrography, CT and MRI scanning may also be needed. The GP should refer the child urgently for these tests with onward referral to the orthopaedic team, as the earlier the diagnosis the better the outcome for the child.

Management and treatment

Management is through the orthopaedic team. Early diagnosis and treatment of those most severely affected is important for a good outcome. Most unstable hips stabilise spontaneously by 2-6 weeks of age and any hip that remains dislocatable or pathologically unstable after this time requires prompt treatment.

Bracing is first-line treatment in children younger than 6 months. A dynamic flexion-abduction orthosis (Pavlik harness) is used to maintain hip reduction. Treatment should start as soon as the diagnosis has been confirmed.

Surgery is an option for children in whom non-operative treatment has failed and in children diagnosed after 6 months of age. The orthopaedic surgeon performs the hip in the correct way under anaesthetic most usually by open reduction and then applies a special...