

Hip disorders in childhood

Daniel Perry

Colin Bruce

Abstract

Disorders of the hip are encountered frequently in paediatric orthopaedic practice. They present initially to paediatricians, general practitioners and accident departments, and it is therefore important for both surgeons and generalists to have a good working knowledge of the common presentations. The challenge is to distinguish between disease processes that are benign and self-limiting (e.g. transient synovitis), acute and joint threatening (e.g. septic arthritis) or chronic and disabling (e.g. Perthes disease). This article primarily considers the epidemiology and aetiology of childhood hip diseases and provides a diagnostic framework, based upon age and risk factors. The important investigations and treatment options for each of the key differential diagnoses are also considered.

Keywords Developmental dysplasia of the hip; irritable hip; Perthes; septic arthritis; slipped capital femoral epiphysis; transient synovitis

Introduction

The hip is a common focus of pathology in children's orthopaedic surgery. The prevalence of various conditions changes at different stages in a child's development and therefore age is the key consideration when constructing a differential diagnosis for hip pathology in children (Figure 1).

Developmental dysplasia of the hip (DDH)

DDH represents a spectrum of disease ranging from a hip which is poorly centred within the acetabulum, to a hip which is completely dislocated. 'DDH' has replaced the old term 'congenital dislocation of the hip' to recognize the wide spectrum of disease encountered, beyond simply 'dislocated hips'.

DDH affects predominantly girls (80%), and is usually detected in the neonatal period. The incidence of true DDH in the UK population is approximately 1 per 1000 live births. In unilateral disease the left hip is affected three times more commonly than the right.

The aetiology of DDH is both genetic and environmental. The intrauterine environment is especially relevant, as 'packaging' disorders due to the limited space in-utero is thought to be an important aetiological factor (Box 1).

Routine clinical examination of newborn infant hips is mandatory in the UK, and must be carried out at or soon after

birth (within 72 hours), and again at 6–8 weeks of age.¹ A dislocated hip typically is typically identified by asymmetric skin creases and a short lower limb with limited abduction. Whilst asymmetric skin creases are a useful sign of DDH they are not specific, as these may be seen in around 25% of normal neonates, and therefore in isolation are of limited use. Hip stability may be tested using two specific movements of the hips termed the Barlow and the Ortolani manoeuvres (Figure 2). The efficacy of clinical screening is debated, as it lacks sensitivity (high false-negative rate), which is problematic as diagnostic delays necessitate greater degrees of operative and non-operative interventions.

Ultrasound is a more sensitive means of hip screening but, in contrast to clinical screening, has a higher false-positive rate resulting in potential for overtreatment. Ultrasound screening can be used to screen an entire population of newborns, or focus on selected groups who are abnormal on clinical screening, or are at particularly high risk of DDH. UK centres have adopted the 'selective screening' model. Ultrasound screening remains controversial on cost/benefit grounds and a meta-analysis of randomized controlled trials has failed to demonstrate a significant reduction in late presenting DDH.² Some countries (e.g. Germany and Switzerland) continue to use a population screening approach and therefore the debate of who to and how to screen continues.

Some children are inevitably not identified by current screening methods and their presentation is delayed. In children over 6 months old the diagnosis may be made with a plain antero-posterior (AP) pelvic radiograph. Children of walking age usually present with an abnormal gait – the result of having a shortened limb and altered joint mechanics, leading to a positive Trendelenburg sign.

Figure 3 is a radiograph demonstrating a dislocated hip on the left side in a 14-month-old-girl. An arrow indicates the position of the underdeveloped ossific nucleus of the femoral head. Two lines are helpful in assessing plain radiographs. Hilgenreiner's horizontal line (H) is drawn through the triradiate cartilage at the floor of the acetabulum on each side. Perkins perpendicular (P) line is drawn at the edge of the bony acetabular roof and perpendicular to Hilgenreiner's line. Together the lines create a 'cross-wire'. A normal ossific nucleus is located in the lower inner quadrant of these 'cross-wires'.

The treatment of DDH is largely dependent upon the age at which the disease is identified. A neonate in whom DDH is identified is generally successfully treated in a removable split (e.g. Pavlik harness) which is required for around 3 months. Presentation at 6 months would necessitate reduction under anaesthesia, along with 6 months in plaster trousers (spica cast). As identification is increasingly delayed treatment becomes more invasive and the short and long-term morbidity greater. Early identification and treatment of DDH is therefore important to facilitate successful treatment, and minimize patient morbidity (Figure 4).

Septic arthritis

Septic arthritis is an infection of the synovium and joint space (Figure 5). The hip is the most commonly affected joint.

Daniel Perry MB ChB (Hons) PhD FRCS (Tr&Orth) NIHR Clinical Lecturer, University of Warwick, UK. Conflicts of interest: none declared.

Colin Bruce MB ChB FRCS is a Consultant Paediatric Orthopaedic Surgeon and Honorary Senior Lecturer at Alder Hey Children's Hospital & University of Liverpool, UK. Conflicts of interest: none declared.

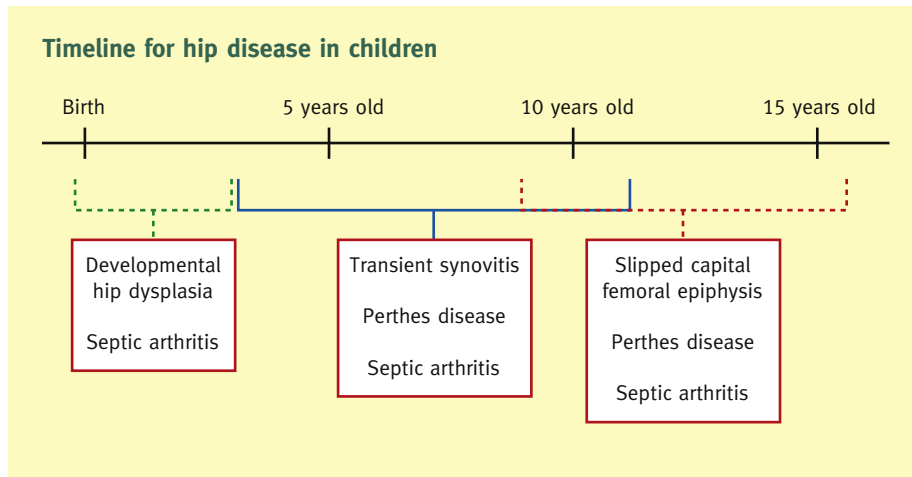


Figure 1

Infection usually begins as a focus of metaphyseal osteomyelitis. Infection reaches the bone by a blood-borne bacteraemia (Figure 5a). The vascularity of the metaphysis, and the anatomy of its thin walled blood vessel loops, is thought to facilitate bacterial spread and make the metaphysis particularly vulnerable to infection. The metaphyseal cortex is thin and easily breached to allow infection to enter the subperiosteal space to form an abscess (Figure 5b). The hip, along with several other joints (e.g. shoulder, ankle and elbow), have a metaphysis which lies intra-articular. If a subperiosteal abscess ruptures within these joints this then results in dispersion of the infection into the joint space, resulting in septic arthritis (Figure 5c).

Staphylococcus aureus is the most common infecting organism in septic arthritis,³ but the clinical context must be considered when predicting likely organisms; for example group B *Streptococcus* is common in neonates. Typically children are unwell, febrile and with a reluctance to move or put weight through the hip. Children may be immunocompromised or otherwise unwell due to systemic sepsis and often referred from intensive care environments. Ultrasound is useful to confirm a joint effusion, and joint aspiration is the gold standard means of diagnosis, based upon the presence of pus and organisms. Urgent treatment includes surgical washout and intravenous antibiotics, without which joint destruction and growth arrest may occur.

Risk factors for developmental dysplasia of the hip

- Positive family history (≥ 1 first-degree relative, or ≥ 2 second-degree relatives)
- Breech delivery
- Large for gestational age (birthweight > 5 kg)
- Neonatal foot deformity
- Oligohydramnios
- Prematurity
- Fetal moulding (e.g. torticollis)

Box 1

Clinical hip screening

Barlow manoeuvre	Dislocate	Ortolani manoeuvre	Reduce
	Legs held flexed and adducted Femurs axially loaded Examiner's index finger to feel over the child's buttocks to detect the femoral head dislocating		Hips are gently abducted Examiner feels for a 'clunk' to indicate that a dislocated hip has relocated within the acetabulum

Figure 2

Transient synovitis

Transient synovitis is a benign joint effusion. It usually occurs in boys between 4 and 8 years old. The typical presentation is a well

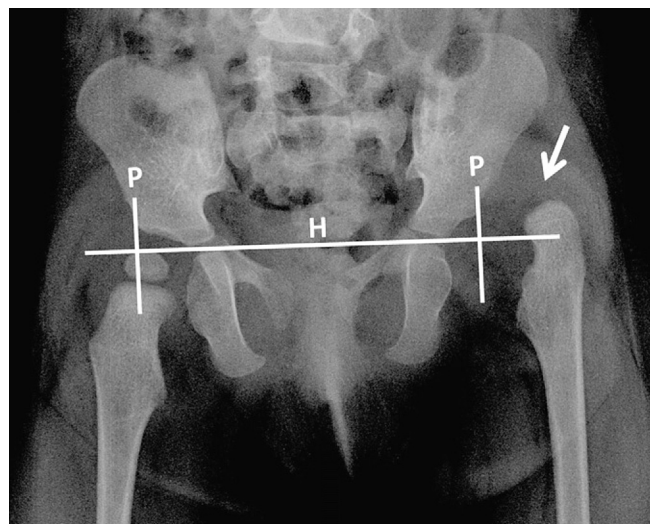


Figure 3 A dislocated hip on the left side in a 14-month-old girl.

Download English Version:

<https://daneshyari.com/en/article/3838726>

Download Persian Version:

<https://daneshyari.com/article/3838726>

[Daneshyari.com](https://daneshyari.com)