

The limping child — when to worry and when to refer:

a GP's guide

INTRODUCTION

A paper by the King's Fund in 2010 identified that GPs were more likely to refer younger children than older children with equivalent needs, suggesting lower confidence levels and lower thresholds for referrals.¹ An estimated 30% of GP consultations are musculoskeletal² and a quarter of all patients who visit their GP each year are aged <18 years.³ It is, therefore, important that GPs have a comprehensive understanding of common paediatric orthopaedic pathologies.

A limp is a common reason for a child to present to the GP. It is also one of the commonest referrals to the on-call orthopaedic team, due to the long list of differential diagnoses, some of which require urgent treatment.

This article outlines an approach to assessing a child with a painful limp and indications for referral to specialist services.

HISTORY

There are many causes for a limp in a child; many are age specific (Box 1).

It is important to take a detailed history from the patient, if possible, and parents. A key starting point is establishing whether the limp is secondary to trauma or atraumatic. Non-accidental injury (NAI) should always be considered in children presenting with trauma.

If the limp is atraumatic, the important cause to rule out is septic arthritis. A common dilemma is to differentiate between septic arthritis and transient synovitis (that is, irritable hip). Septic arthritis is an infection of the synovium and joint space, and is an orthopaedic emergency as it can lead to destruction of the joint within 24–48 hours and permanent loss of joint function. The incidence is 4–5 cases per 100 000 per year.⁴ Transient synovitis is a self-limiting (3–10 days) inflammation of the synovium of the hip that is thought to be triggered by viral illness. These two conditions can both present with similar signs and symptoms. It is, therefore, important to ask about current or recent (preceding weeks) systemic symptoms consistent with a viral infection, which would lean towards a diagnosis of transient synovitis. Children may be poor historians and may not be able to identify the location of the pain because of referred pain (for example, hip pathology presenting as knee pain). A common scoring system used to quantify the risk of septic arthritis is Kocher's criteria, from his paper in 1999.⁵ The higher the score using the four risk factors, the likelier it is to be septic arthritis (Box 2).

In younger children a birth and development history should be included. It is important to identify risk factors for developmental dysplasia of the hip

H Raja, BSc (Hons), AKC, MRCS, DHMSA, DPMSA, specialist registrar, trauma and orthopaedics; **SA Khan**, MRCS, specialist registrar, trauma and orthopaedics; **A Waheed**, FRCS, FRCS (Tr & Orth), MDip, consultant trauma and orthopaedic surgeon, Basildon University Hospital, Nethermayne, Basildon.

Address for correspondence

Shehzaad A Khan, Basildon University Hospital, Nethermayne, Basildon, Essex SS16 5NL, UK.

Email: shehzaad_khan@hotmail.com

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Box 1. Common conditions to consider when assessing a limping child, with age relevance

All ages		
Fracture/soft-tissue injury	Cellulitis	
Non-accidental injury (NAI)	Neoplasm	
Septic arthritis	Neuromuscular	
Osteomyelitis		
Age 1–3 years	Age 4–10 years	Age 11–16 years
Septic hip	Perthes' disease	Slipped capital femoral epiphysis (SCFE)
Developmental dysplasia of the hip (DDH)	Transient synovitis	Juvenile rheumatoid arthritis
Toddler's fracture		Osteochondritis dissecans
		Osgood–Schlatter disease

Box 2. Probability of septic arthritis depending on the number of positive findings on assessment

Kocher criteria to determine risk for paediatric septic arthritis⁵

Non-weight bearing on affected side	Probability dependent on number of findings:
Erythrocyte sedimentation rate >40 mm/hour	1 = 3%
Temperature >38.5°C	2 = 40%
White cell count >12 000 cells/ml	3 = 93%
	4 = 99%

Box 3. Red-flag symptoms for a limping child

Symptom	Potential cause
Pain waking the child at night	Malignancy
Signs of redness, swelling, or stiffness of the joint or limb	Infection or inflammatory joint disease
Weight loss, anorexia, fever, night sweats, or fatigue	Malignancy, infection, or inflammation
Unexplained rash or bruising	Haematological or inflammatory joint disease, or non-accidental injury
Limp and stiffness worse in the morning	Inflammatory joint disease
Severe pain, anxiety, and agitation after a traumatic injury	An evolving compartment syndrome

(DDH), which include: sex (9:1 female predominance); first born; family history of DDH; breech position; and oligohydramnios.

EXAMINATION

Clinical examination of a child can be challenging, but assessment of a child's limb starts from the moment they walk through the door:

Gait analysis

It is important to establish whether the gait is normal or abnormal for their age. This will give a clue to whether the problem is acute or chronic. Common gait abnormalities include: antalgic (painful), high stepping, tiptoeing, Trendelenburg, and circumduction.

An antalgic gait will usually lean towards an acute problem, whereas the others listed above imply a chronic problem.

Examination of the lower limbs

The examination of the lower limbs should be conducted using the usual 'Look, Feel, and Move' approach. Key joints to examine include the hip, knee, and ankle. Acute diagnoses, such as septic arthritis and fracture, should already have been made from the history and using Kocher's criteria. However, these small things to look for during examination will help guide a diagnosis for a chronic problem:

Look: quickly perform the Galeazzi test, which involves flexing both the hips and knees to place the feet flat on the examination table and look to see if the knees are at an equal height. This helps establish whether the shortening is in the femur or the tibia.

Feel: tenderness at the tibial tuberosity is suggestive of Osgood-Schlatter disease.

Move: any movement of a septic joint will be painful. Restriction in internal rotation of the hip is often noted in a slipped capitellar femoral epiphysis (SCFE).

WHEN TO REFER TO THE EMERGENCY DEPARTMENT

Referral to the emergency department (ED) should be made if the diagnosis is

thought to be acute. A chronic problem should be referred to the elective paediatric orthopaedic team.

Any suspicion of trauma, septic arthritis, or NAI should be referred immediately to the ED. A suspected SCFE should also be referred immediately, as this may be unstable and require surgical fixation.

National Institute for Health and Care Excellence guidance⁶ recommends urgent referral to the ED if a child has an acute-onset limp and is:

- <3 years of age;
- >9 years of age with painful or restricted hip movements (in particular internal rotation), to exclude an SCFE. Clinical judgement should be used in each case, for example, a younger child with risk factors would also need urgent investigation;
- unable to weight bear;
- pyrexial and/or has red-flag symptoms (Box 3) suggesting serious pathology;
- in severe pain, agitated, or has reduced peripheral pulses or muscle weakness that may indicate neurovascular compromise or impending compartment syndrome; and
- any suspicion of maltreatment/NAI.

WHEN TO REFER TO OUTPATIENT SERVICES

Children with no red-flag symptoms or suspicion of trauma/infection may be more suitable for referral to outpatient services. These include referral to a paediatric rheumatologist if suspicious of juvenile idiopathic arthritis (JIA), or paediatric orthopaedic services for limb length discrepancy or non-acute hip pathology such as DDH or Perthes'. In cases where neuromuscular conditions are suspected then referral to paediatric neurology as well as orthopaedics may be required.

TAKE HOME MESSAGE

A limping child can be caused by many things but it is important to exclude a septic joint using the above algorithm. Using the above systematic approach, it is hoped that referring clinicians become more confident in approaching a child with a limp and refer appropriately.

Provenance

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