

The Limping Child: An Irritable Hip

Contributors

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Overview

There are a number of musculoskeletal conditions which can result in a paediatric patient presenting in primary care or the emergency department with a limp. An antalgic gait can occur as a consequence of pathology in any of the lower limb joints and it is therefore important to examine each joint systematically. This educational piece for BASEM focuses on hip pathology in paediatric patients.

Slipped upper femoral epiphysis (SUFE), Perthes, transient synovitis and septic arthritis, are common causes of hip pain or limping in a child. Other causes of limping in a child include, but are not limited to; developmental dysplasia, trauma, tumours, juvenile arthritis¹.

Anatomy²

Each of the aforementioned conditions focused on in this resource, affect the 'ball and socket' type hip joint. It is a synovial joint which consists of the articulation between the pelvic acetabulum (Latin for cavity) and the head of the femur. The joint is strengthened by the labrum (fibrocartilaginous collar) and the joint capsule and is covered in articular cartilage. The intra and extracapsular ligaments provide extra strength, ensuring the joint is fit for purpose for weightbearing and stability.

The growth plate (physis) is located between the shaft of the bone (metaphysis) and the end of the bone (epiphysis). Long bones such as the femur, grow at each end of the bone around the growth plate.

Aetiology – Demographics – Clinical Features – Investigations – Management

	Transient Synovitis ^(3, 4)	Septic Arthritis ⁽⁴⁾	Perthes Disease ^(5, 8)	SUFE ^(7, 8)
Aetiology	Inflammation of joint synovium	Intra-articular bacterial infection, most commonly caused by staph aureus	Idiopathic avascular necrosis of the proximal femoral epiphysis	Epiphysis of femoral head displaces out of alignment with the rest of the femur
Demographics	4-8 - more common in males	0-4 no gender predominance	2-10 - more common in males	10-15 (adolescents) esp overweight boys
Clinical Features	- Gradual onset - Recent hx of URTI - May have a fever - Groin / thigh pain - Often hold hip in flexion, abduction, and external rotation (FABER) position with least amount of intracapsular pressure	- Acute onset of pain - Fever, systemically unwell - Red, hot and swollen joint - Immobile / reduced ROM	- Gradual onset - Often can be knee, hip or groin pain - Hip stiffness - classically loss of abduction and internal rotation - May have Trendelenburg gait	- Gradual onset - Pain with walking and passive hip movements - Drehman's sign - when passive hip flexion leads to external rotation and abduction of the hip (pathognomonic) - Can be bilateral
Investigations	WCC and inflammatory markers may be ↑ X-ray to rule out other pathology	WCC and inflammatory ↑ – important to culture X-ray often normal. Important to obtain joint aspirate	X-rays in AP and frog-leg lateral views Osteonecrotic changes to the femoral head will be seen	X-rays in AP and frog-leg lateral views Looks like ice cream sliding off a cone!
Management	Conservative Supportive therapy including analgesia	Medical IV antibiotics based on sensitivities Surgery Joint drainage and washout	Conservative Typically children < 8 Activity restriction + physio - until reossification complete. Surgical Typically children > 8 Femoral / pelvic osteotomy	Conservative. If stable (can weight bear) If unstable = Surgical Percutaneous in-situ fixation (↑ risk of osteonecrosis)

1. Timo is a 4 year old boy, who presents to the emergency department with his Mum. She reports Timo has woken this morning with a limp. Mum also reports he is usually fit and well, however recently has had a runny nose and cough. Observations reveal Timo is pyrexial at 39 degrees Celsius. On examination there is globally restricted movement of the right hip.

Differentials = Transient Synovitis vs Septic Arthritis

Kocher's Criteria ⁴

Can be used to differentiate between transient synovitis and septic arthritis in a child with an acutely irritable hip, and therefore guide further investigation and potential management.

Assessment criteria:

- Weight bearing
- Temperature >38.5
- ESR > 40
- WCC > 12

Where each of the present criteria increases the probability of septic arthritis.

- 1 criterion = 3%
- 2 criteria = 40%
- 3 criteria = 93%
- 4 criteria = 99.96%

2. Sam is an 8 year old boy, who is brought to see the GP by his father. His father explains that Sam is usually very active, taking part in a number of sports teams at school. Over the past week, Sam's dad states that Sam has been limping and on further questioning Sam complains of a generalised aching over his right thigh. They both deny any recent trauma to the affected side.

This could be Perthes due to the patient's age and the gradual onset of pain.

It is caused by disruption of the blood supply to the femoral head and hip x-rays should be taken to confirm the diagnosis.

Long term complications:

- Risk of femoro-acetabular impingement (CAM deformity).
- Subsequent premature osteoarthritis.^{5,6}

3. Kasper is a 14 year old boy who presents to the school nurse complaining of hip pain. He complains of pain in his left groin over the last month, when walking to get to his class. He doesn't particularly enjoy sport and admits he has put on some unwanted weight over the past couple of years after he started to take the bus to school.

This could be SUFE, which occurs during the period of rapid growth.

Obesity is a significant risk factor and it is also more common in Afro-Caribbean patients. Failure to appropriately manage SUFE can result in compromise to the blood supply of the femoral head and avascular necrosis.^{7,8}

References

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