Limping Child

Dr Kiranjeet Singh FACEM PEM
WDHB Emergency Departments

AETIOLOGY

Atraumatic

Multiple and classified based on age

Rare but devastating

Difficult to find

Limited history

Challenging exam

Age 1 to 4

Late presentation of developmental dysplasia of hip

Measuring tape

    ASIS to medial malleoli

Galeazzi sign

? bilateral pathology

Galeazzi sign

FIGURE 2
Positive Galeazzi Sign

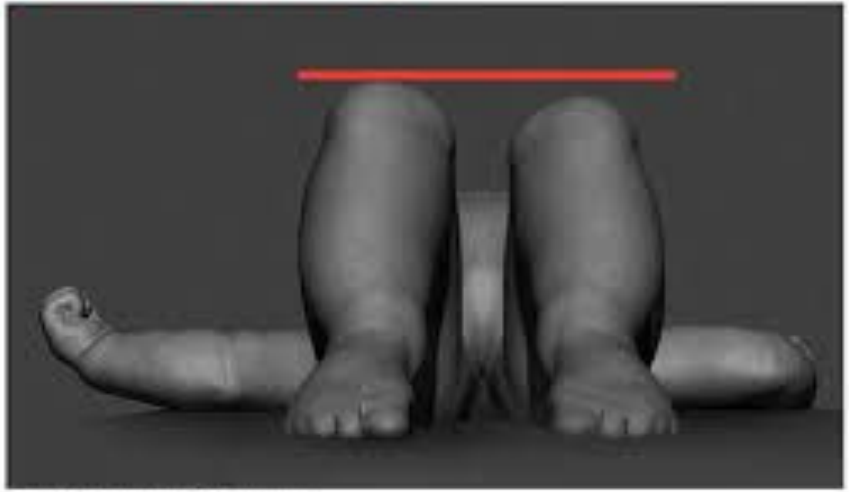


Illustration by Walt Shumway.

Age 1 to 4

Transient synovitis

Commonest cause - URTI?

Self limiting, diagnosis of exclusion!

Boys

20% recurrent

USS - > Effusion ? cause

Bedside 90% sensitivity, 100% specificity

Age 1 to 4

Occult trauma

Toddlers fracture

Neuromuscular

Age 4 to 10

Perthes Disease (Legg Calve Perthes Disease)

Idiopathic femoral head necrosis

Boys

20% bilateral

Slowly worsening antalgic gait, shortening of limb(s)

Pain on internal rotation and abduction

MRI & bone scan

Age 4 to 10

Transient synovitis

Neuromuscular

Age 10 and beyond

Slipped Capital Femoral Epiphysis (SUFE)

Overweight boys

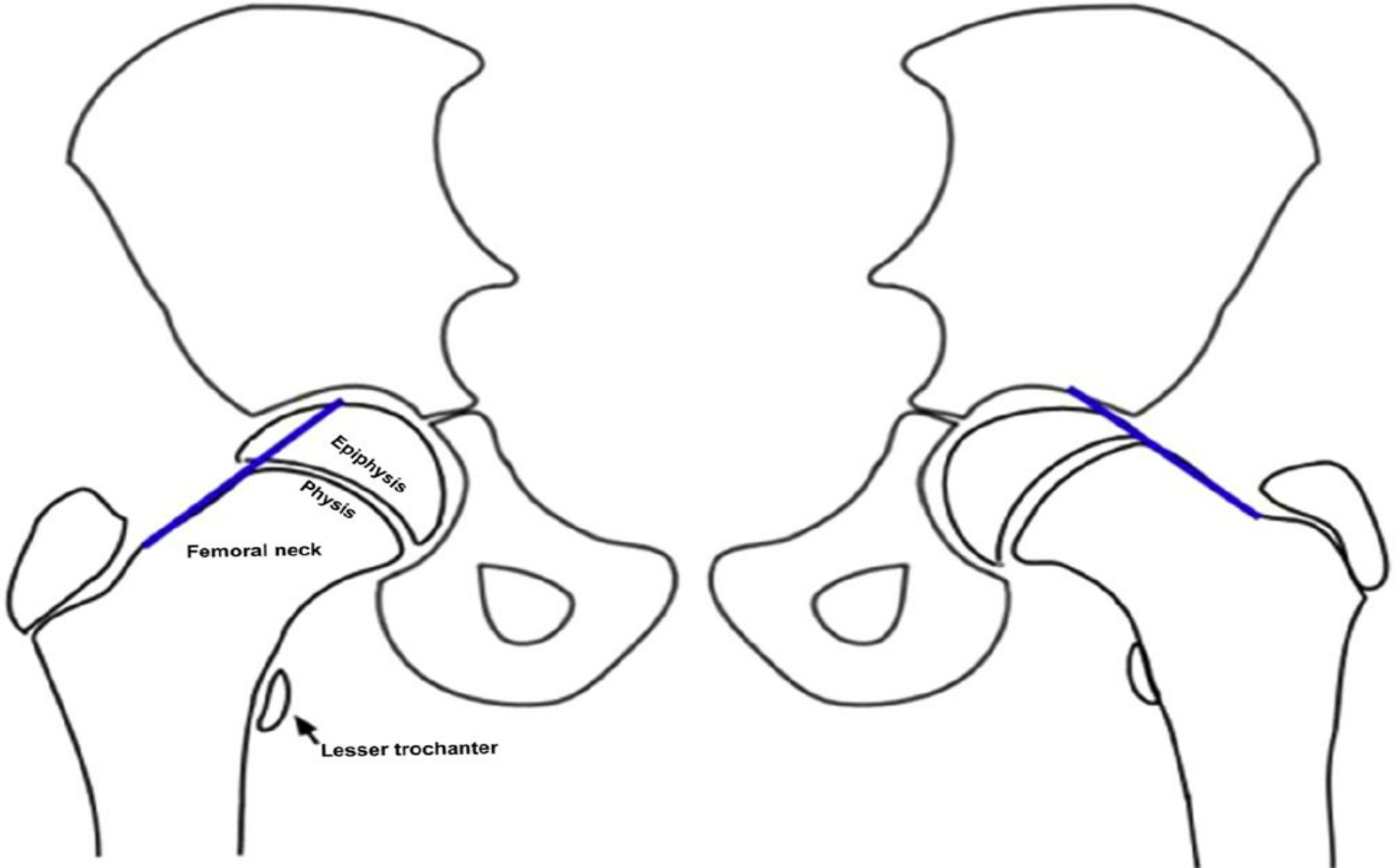
Hypothyroidism, renal osteodystrophy - commoner

Medial obturator nerve pain - knee pain

Early fixation to prevent long term complications

? lateral hip X-Ray. XXXX -> frog leg

Klein's line



Septic arthritis

Across age groups

Hips - haematogenous spread

< 2 year olds, immunosuppressed, asplenic children highest risk

S aureus, Group B Strep

Kingella kingae, Salmonella - sickle cell disease

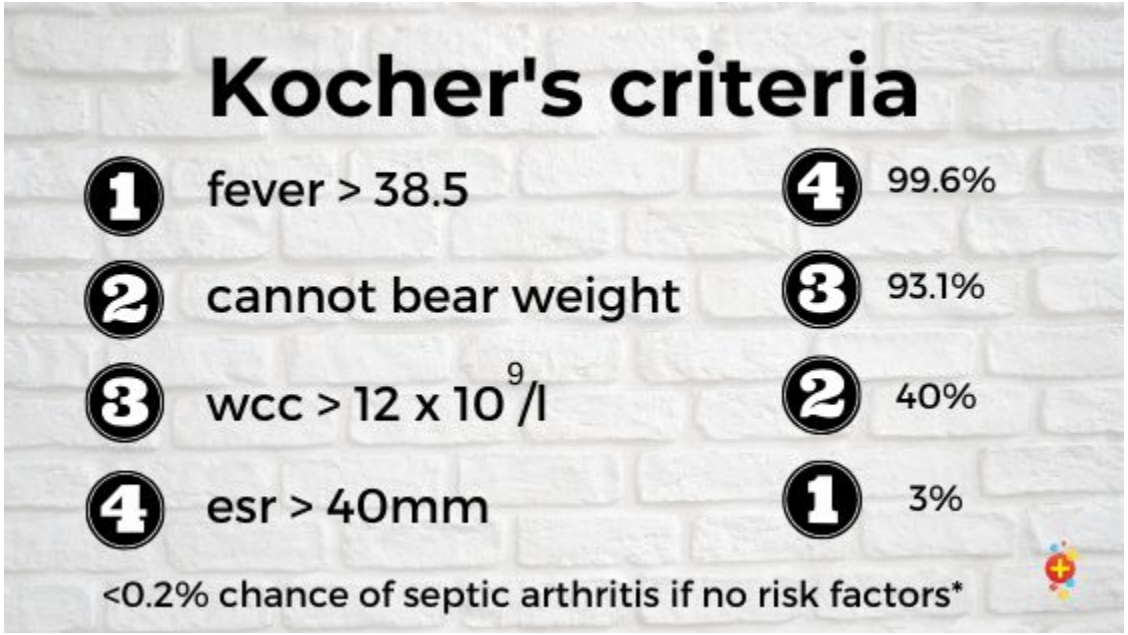
Septic arthritis

Hip in external rotation, abduction and flexion

Maximum amount of joint space

Kocher’s Criteria

Kochers Criteria



Kocher's criteria

Kocher MS, Zurakowski D, Kasser JR. Differentiating between septic arthritis and transient synovitis of the hip in children: an evidence-based clinical prediction algorithm. JBJS. 1999 Dec 1;81(12):1662-70.

17 years of retrospective data in one hospital with hip irritability

282 cases. Only 168 aspirated

26 had septic arthritis-> + aspirate with culture or

> 50 000 cells with blood culture +

Kocher's criteria

Trying to validate - 93% (Kocher)

Luhmann et al - external validation

→ 59%

Caird et al added CRP

-> 97.5 positive predictive value but only 19 cases

14 septic arthritis, 5 transient synovitis

Septic arthritis

Complications:

- Capsule damage
- Chronic arthritis
- Osteonecrosis
- Growth Arrest
- Sepsis

OSTEOMYELITIS

1.5-2% of atraumatic joint pains

Indolent course - difficult to pick up initially

hips 25%, tibia/fibula 25%, humerus 13%

Periosteal changes on X-ray need at least 7-10 days to start showing up.

MRI/ Bone scan in early stages

Osteomyelitis and septic arthritis can co exist!

Pyomyositis

Commonest is viral myositis - influenza

-> bilateral calves with self resolution

Bacterial myositis

- Sick looking, needs antibiotics, necrotising fasciitis!

Other dermatomyositis of childhood.

- Longer duration, atypical history and involvement outside of calves only.

Iliopsoas abscess

Primary abscess from bacteraemia

In adults usually secondary from Crohn’s, appendicitis etc.

Vague generalised symptoms - back pain, flank pain, ongoing fevers, hip pain etc.

Median time to diagnose in children is 20+ days

MRI/CT

NEUROLOGICAL

Strokes

- Multi system involvement

Guillain Barre syndrome

- Pain and difficulty walking
- Distal to proximal, bilateral and insidious.
- Well looking otherwise

Muscular dystrophy / peripheral neuropathy

GI / GU

Appendicitis

Testicular torsion

Ovarian Torsion

Hernia

Malignancy

Most concerning to parents!!!!!!!!!!!!!!!

Least commonest!!!!!!!!!!!!!!!

Most devastating to the family!!!!!!!!!!!!!!!

Benign and malignant bone tumours

- Ewings sarcoma & osteogenic sarcoma commonest
- (second decade of life)

Leukaemia

Malignancy

Bone pain

Persistent pain

Constitutional symptoms

-> night sweats, night pain, weight loss

Further investigations

STOP LIMPING

S - Septic Arthritis

T - Toddler’s Fracture

0 - Osteomyelitis

P - Perthe’s Disease

STOP LIMPING

L - Limb Length Discrepancy

I - Inflammatory

M - Malignancy

P - Pyomyositis

I - Iliopsoas Abscess

N - Neurological

G - GI/GU

Red flags

History

-> symptoms > 7 days

-> severe localised joint pain

-> urinary/bowel habit changes

-> complete inability to walk/weight bear

-> nocturnal pain/symptoms

Red flags

-> systemic symptoms (fevers, chills, rigours, night sweats, rash)

-> constitutional symptoms (unexplained weight loss, fatigue/lethargy, anorexia

Red flags

Examination

-> generalised wasting

-> fever

-> petechiae/purpura/ecchymosis

Discharge without investigations ?

All of the following apply : (RCH guidelines)

-> no red flags in history / physical exam

-> ambulating with mild/no discomfort with simple analgesia (paracetamol/NSAIDs)

-> clear working diagnosis and/or a plan for review within 7 days of onset of limp.

APOPHYSITIS

Term used to describe a group of overuse traction injuries which commonly cause pain in adolescents.

Osgood Schlatter Disease - commonest

PATHOPHYSIOLOGY

Apophysis is an area of bony growth separate to the ossification centres.

It acts as a site of tendon or ligament attachment and will eventually fuse with the bone as the body matures.

Rapid growth and relative bone weakness combined with repetitive movements cause increased traction forces at the point of attachment.

The apophysis is the weakest point in the muscle-tendon-bone junction; repeated strain at this point leads to bone fragmentation and micro-separation.

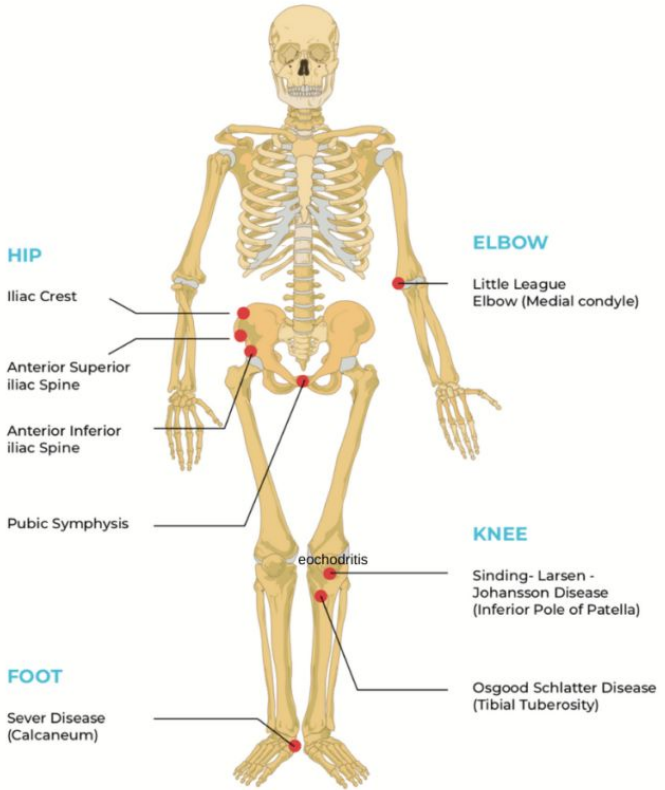
This abnormal growth leads to swelling and pain at the site.

Boys : 12-16 years

Girls: 10 - 14 years

	location	associated painful movements
Osgood-Schlatter	tibial tuberosity	jumping, running, kicking
Sever's	calcaneal tuberosity	jumping, running
Sinding-Larsen-Johansson	inferior pole of patella	jumping, running, kicking
Little League Elbow	medial condyle	valgus stress
Iliac Apophysitis	iliac crest	running, kicking, twisting

COMMON SITES OF APOPHYSITIS



APOPHYSITIS

Gradual onset focal pain over affected site

Highly active athletes and going through an acute increase in their training levels.

Progressing to higher levels of training, competing in multiple sports at different grades.

Initially pain at start of activity and then resolves after warming up and returns after activity cessation.

Later persisting pain throughout the activity

APOPHYSITIS

Focal tenderness and swelling at site

Reproducible pain with resisted contraction of affected muscles.

Eg: Resisted knee extension in Osgood Schlatter disease

Apophysitis

Self limiting

Resolves after 4-6 weeks of rest, reduction of activity or modifications.

Resolves permanently after epiphysis fusion.-