Disclosures

- I have no relevant financial relationships with the manufacturer(s) of any commercial product(s) and/or provider(s) of commercial services discussed in this CME activity.

- I do not intend to discuss an unapproved/investigative use of a commercial product/device in my presentation.
Child with a limp

- What is a limp?

1. a: to walk lamely; especially: to walk favoring one leg. b: to go unsteadily

2: to proceed slowly with difficulty
Child with a limp

- Describe the gait pattern:
  - Antalgic gait…painful
  - Trendelenberg gait…torso shifts
Child with a limp

- Localize:
  - Spine
  - Hip
  - Knee
  - Foot
Child with a limp

- Consider patient factors:
  - Age
  - PMH
  - Fam Hx
Child with a limp
Child with a limp

- Vascular (Legg-Calve-Perthes)
- Infection (septic arthritis, psoas abscess, diskitis)
- Neoplasm (tumor, lymphoma, leukemia)
- Developmental or Neuromuscular disorders
- Inflammatory (transient synovitis, RA, SLE)
- Congenital (DDH)
- Autoimmune
- Trauma
- Endocrine / Metabolic
Child with a limp
Case #1

- 18 month old female
- CC: limp
- No pain
- No trauma
Child with a limp
Case #1

Birth/Developmental Hx:

- Uncomplicated pregnancy
- Breech delivery
- 9.5# at birth
  - Sitting at 6 months
  - Walking at 13 months
Child with a limp

Case #1

- **PE:**
  - 50%-ile in height and weight
  - Painless Trendelenburg gait (trunk listing over the left hip during stance phase of gait)
  - 4 thigh folds on L; 3 folds on the R
  - Decreased L hip abduction compared to R
  - No pain on exam
Child with a limp
Case #1
Child with a limp
Case #1

Diagnosis:
Left hip dislocation
DDH (Developmental Dysplasia of the Hip)
Child with a limp
Case #1

- Treatment: Surgical reduction of the hip
  - Permits acetabular development due to femoral head deeply in acetabulum
Child with a limp
Case #1

- Factors associated with DDH:
  - Breech positioning (intrauterine molding)
  - High birth weight
  - Family history
  - Female
  - L hip
4 y/o male

CC: Limp

Painful limp for 3 months

Increased pain on weight-bearing for the past 2 weeks.
Child with a limp
Case #2

- **PE:**
  - Well-appearing child
  - Walks with an antalgic gait on his right leg, with a mild Trendelenburg component to the gait.
  - Unwilling to attempt single leg stance on the right foot.
  - Limited right hip abduction
  - No pain with palpation of the buttocks or thigh.
Child with a limp
Case #2

- Subchondral collapse of the femoral head
Child with a limp
Case #2

- Diagnosis: Legg-Calve-Perthes disease
- Idiopathic avascular/ischemic necrosis of the femoral head
Child with a limp
Case #2

- Treatment: Optimize sphericity (round vs. flattened) of femoral head during healing process
  - Limit weight bearing
  - Regain hip range of motion
    - Physiotherapy
    - Surgery
  - Surgical containment of femoral head in acetabulum
Child with a limp
Case #3

- 4 y/o female
- CC: Limp
- 3 day h/o of a left increasing groin pain and limp
- 2 weeks prior: uncomplicated URI that resolved 10 days prior to the onset of limp.
Child with a limp

Case #3

- **PE:**
  - T = 38.5 C
  - Does not appear sick/toxic.
  - Left hip is held in abduction, external rotation and slight flexion.
  - Resists pROM of the left hip
Child with a limp

Case #3

Slight widening of the left hip joint.
Child with a limp
Case #3

- Labs
  - CBC: Normal WBC, no shift
  - ESR: 19
  - CRP: 0.6
Child with a limp
Case #3

- Hip aspiration / arthrocentesis
  - Ultrasonographic guidance
  - Clear yellowish fluid
  - + Lymphocytes
  - Gram’s stain: no organisms
Case #3

- Diagnosis: Transient synovitis
  - Must r/o septic/bacterial arthritis of the hip and osteomyelitis of the proximal femur.
  - Toxic synovitis is a diagnosis of exclusion.

- Treatment:
  - Restriction of weight-bearing (short-term)
  - Gentle range of motion
  - NSAIDs and antipyretics.
7 y/o male

CC: Limp

Increasing left groin / buttock pain and limp for 5 days.

Now, unable to bear weight

Uncomplicated URI of one week’s duration that resolved ten days prior to the onset of his limp.
Child with a limp
Case #4

- T: 39.5°C
- Appears sick/toxic.
- Left hip is held in abduction, external rotation and slight flexion.
- Painful arc of hip motion (all planes), with the greatest discomfort felt on extension and internal rotation.
- Substantial active patient resistance to passive motion
Child with a limp
Case #4

- Labs
  - CBC neutrophilia, with left shift to immature cells in the peripheral smear.
  - ESR: 40
  - CRP: 3
Child with a limp

Case #4

- Hip ultrasound with aspiration if a hip effusion
  - Arthrocentesis:
    - Cloudy yellow (purulent) material.
    - Neutrophils >100,000/ml are present.
Child with a limp
Case #4

- Diagnosis: Septic or bacterial arthritis of the hip.
- Treatment: Emergent hip arthrotomy for irrigation and drainage (I&D).
- This is a surgical emergency!!
Child with a limp
Case #4
Child with a limp
Case #5

- 12 y/o male with 3 week h/o increasingly painful limp
- Right groin/knee pain increasing over the preceding 3 days.
- Pain localized to thigh and knee joint.
Child with a limp

Case #5

- Obese
- Afebrile.
- Unable to elevate right leg off exam table
- Passive motion of the hip joint causes severe knee, groin and buttock pain.
- Leg held in adducted and externally rotated position
Child with a limp
Case #5
Diagnosis: SCFE (Slipped capital femoral epiphysis)

Treatment: In-situ screw fixation

Complications of untreated SCFEs:
- LLD: limb length discrepancy
- Femoral retrotorsion (excessive external rotation)
- Early onset osteoarthritis,
- Ischemic necrosis of proximal femoral epiphysis
Child with a limp
Case #6

- 14 y/o female soccer player with a 4 month h/o a mild limp.
- Multiple episodes of painful locking of the knee (an inability to straighten out the knee because she feels that it is ‘stuck’)
- Knee swelling
- h/o a twisting injury 18 months ago while playing basketball
Child with a limp
Case #6

- Athletic female
- Normal hip and knee AROM/PROM
- Mild knee effusion
- Tender to palpation over medial femoral condyle adjacent to the patella.
- No ligamentous laxity
- No tenderness at medial or lateral joint lines.
Child with a limp
Case #6
Child with a limp

Case #6

- Dx: Osteochondritis dissecans (OCD)
  - Subchondral bone resorption
  - Initially cartilage is intact
  - Later stages cartilage may fracture and detach forming a loose body
  - A loose body is freely mobile and can cause locking and knee effusions.
  - In general terms, the treatment for OCD loose bodies is arthroscopic excision or repair.
Child with a limp
Case #7

- 16 y/o female volleyball player
- 4 month h/o mild limp associated with diffuse and poorly localized knee pain.
- No history of clicking, locking, or instability of the knee.
- Persistent mild swelling of the knee is present.
- No history of trauma.
Child with a limp
Case #7

- Athletic appearing female
- Normal hip and knee AROM/PROM
- Mild knee effusion is present.
- Tender to palpation over the distal femur 6 cm superior to the patella.
- No ligamentous laxity
- No tenderness at medial or lateral joint lines.
Child with a limp
Case #7

- Permeative osteolytic/osteoblastic lesion
- Indistinct borders
- Soft tissues invasion
- Periosteal elevation
Child with a limp
Case #7

- Work-up
  - Plain radiographs (ENTIRE bone)
  - Technetium bone scan
  - Chest CT
  - MRI
  - Biopsy (open vs. needle)
- Dx: Osteosarcoma vs. Ewing’s sarcoma
ALWAYS get an x-ray. Every patient with a musculoskeletal complaint deserves a normal x-ray, after all.

KNEE PAIN in an adolescent patient is SCFE until proven otherwise.

ALWAYS get a plain AP and lateral x-ray before vague ill-defined knee pain is ascribed to ‘idiopathic anterior knee pain of adolescence.’