A child with a limp
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Differential diagnosis – 7 categories

Trauma
- Fracture
- Ligament damage
- Tendon damage

Vascular
- Legg-Calvé-Perthes disease
- Osteochondritis dissecans

Infectious
- Septic arthritis
- Osteomyelitis
- Diskitis

Tumour
- Leukaemia
- Lymphomas
- Ewing sarcoma
- Osteosarcoma
- CNS tumours

Inflammatory diseases
- JIA
- SLI
- Transient synovitis
- Arthritides

Skeletal anomalies
- Congenital hip dysplasia
- Discoid meniscus
- Tarsal coalition
- Slipped capital femoral epiphysis

Neuromuscular disorders
- Central poly
- Muscular dysrophy
- Hereditary motor sensory neuropathy

Evaluation - History

- Trauma?
  - Duration:
    - Acute onset – mechanical problem, specific hip disorder, transient infectious
    - Chronic (6 weeks <): JIA, malignancy
  - Location – hip pain often referred to the knee
  - Timing:
    - Morning, resolves during the day – inflammatory joint pain
    - Activity related – biomechanical
    - Wakes the child up – malignancy, infectious
  - Severity
    - Systemic symptoms:
      - Weight loss
      - Fever
      - Rash

Physical examination

Gait:
- Antalgic – shortened stance and swing (due to pain on weight bearing)
- Vaulting – straight-legged walking (due to joint pain, muscle weakness)
- Steppage – foot drop (due to peroneal nerve injury or weakness of the tibialis anterior muscle)
- Waddling/Trendelenburg – hip drops on affected side (due to hip abductor weakness)

Laboratory testing

- Total blood count
- Acute phase reactants
- Joint aspiration and cultures
- Lyme-titers
- Antistreptolysin-O titers

Imaging

- Radiographs:
  - fractures, hip and foot disease, spinal abnormalities
  - 2 views of the affected area (in case of hip AP and Lauenstein)
- Ultrasound
  - Joint effusions, synovial thickening, increased blood flow can suggest inflammation
- Bone scintigraphy
  - High bone turnover – osteomyelitis, diaphysis, stress fractures, neoplasm, Legg-Calve-Perthes

Slipped capital femoral epiphysis
Imaging

- CT
  - Bony pathology – tarsal coalition, spondylolisthesis, spondylolysis, osteoid osteoma
- MRI
  - Information about bone formation, inflammation, soft tissues
  - Arthritis, osteomyelitis, diskitis, stress fractures, osteoid osteoma, neoplasm, Legg-Calve-Perthes

CASE 1.

- 8 yr old boy
- Woke up during night because of knee pain
- Refuse to bear weight on his left knee

CASE 1. - History

- Trauma? No trauma
- Duration:
  - *Acute onset* – mechanical problem, specific hip disorder, transient infectious
  - *Chronic (6 weeks <)*: JA, malignancy
- Location – hip pain often referred to the knee
- Timing:
  - Morning, resolves during the day – inflammatory joint pain
  - Activity related – biomechanical
  - Wakes the child up – malignancy, infectious
- Severity:
  - Systemic symptoms:
    - Weight loss
    - Fever: no fever
    - Rash

CASE 1. - Physical examination

Gait:
- Antalgic – shortened stance and swing (due to pain on weight bearing)

Joints and musculoskeletal:
- Left knee is swollen, tender, extremely painful
- No other joints affected

General: negative

CASE 1. - Laboratory testing

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC</td>
<td>9.86 G/l</td>
</tr>
<tr>
<td>Neutrophil gran.</td>
<td>62.2 %</td>
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<tr>
<td>Lymphocytes</td>
<td>23.7 %</td>
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<tr>
<td>RBC</td>
<td>4.12 G/l</td>
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<tr>
<td>Hemoglobin</td>
<td>117 g/l</td>
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<td>Hematocrit</td>
<td>0.331</td>
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<tr>
<td>Platelet</td>
<td>305 G/l</td>
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</tbody>
</table>

CASE 1. - Imaging

- X-ray - normal
- Ultrasound: anechoic fluid + slightly thickened synovia
CASE 1. – intraarticular puncture

• Synovial fluid is purulent
• Culture: Staphylococcus aureus

CASE 1. Diagnosis and treatment

**Septic arthritis**

Treatment: Flucloxacillin iv.

CASE 2.

• 6-yr old girl with a limp

CASE 2. History

• Adenoidectomy 4 months ago
• Then she started limping
• Orthopaedic evaluation: hip and lower limb X-ray – negative, lumbar spine MRI – negative
• She takes B6 vitamin and uses transcutaneous electric nerve stimulation → improvement

CASE 2. Physical examination

• Very difficult to examine her – ADHD like symptoms
• General:
• Neurologic:
  • Steppage gait, can’t walk on her heels
  • Muscle strength: decreased in her right foot
  • Right calf is a bit smaller
  • Muscle tone: seems normal
  • Deep tendon reflexes – you are not sure as she doesn’t cooperate

CASE 2. EMG-ENG

• ENG: normal nerve conductance
• EMG: neurogenic lesion
CASE 2. Imaging

- MRI:

CASE 2. Diagnosis and treatment

- Acute neurosurgery – total resection of the tumour
- Histology: Choroid plexus cc.
- Therapy: CPT-SIOP protocol