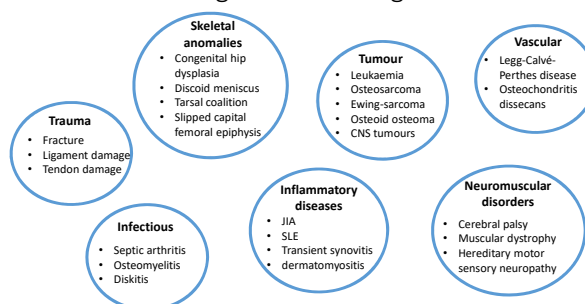




A child with a limp

Klara Horvath, MD, PhD

Differential diagnosis – 7 categories



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 site (*due to hip abductor weakness*)



Joints and musculoskeletal

General

Laboratory testing

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

Septic arthritis should be suspected in case of fever, refusing to bear weight, CRP > 20 mg/l, ESR > 40 mm/h and WBC > 12 G/l

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, diskitis, stress fractures, neoplasm, Legg-Calvé-Perthes



Slipped capital femoral epiphysis

Imaging

- CT
 - Boney 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



MRI – osteomyelitis
 Long arrow: signal change within the bone marrow
 Small arrow: subperiosteal abscess

CASE 1.

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

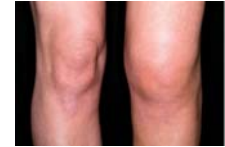


CASE 1. - History

- Trauma? **No trauma**
- Duration:
 - **Acute onset** – mechanical problem, specific hip disorder, transient infectious
 - Chronic (6 weeks <): 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: **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

TBC	
WBC	9.86 G/l
Neutrophil gran.	63.2 %
Lymphocyte	23.7 %
RBC	4.12 G/l
Hemoglobin	117 g/l
Hematocrite	0.331
Platelet	305 G/l

Routine lab test	
CRP	74 mg/l
ESR	46 mm/h
LDH	391 U/l

Fever
(37.7°C)

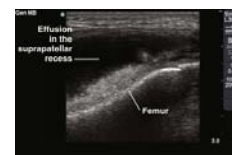
Blood culture

CASE 1. - Imaging

- X-ray - normal



- Ultrasound: anechoic fluid + slightly thickened synovia



CASE 1. – intraarticular puncture

- Synovial fluid is purulent
- Culture: Staphylococcus aureus



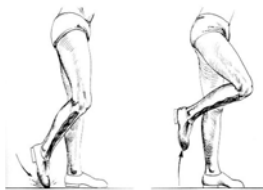
CASE 1. Diagnosis and treatment

Septic arthritis

Treatment: Flucloxacillin iv.

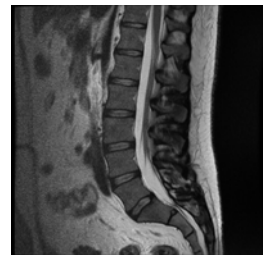
CASE 2.

- 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

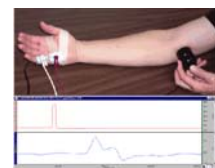
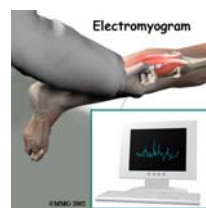


CASE 2. Physical examination

- 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

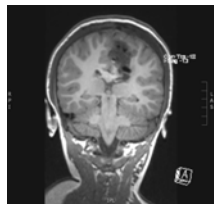
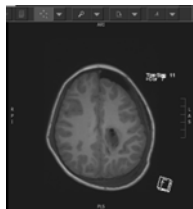
CASE 2. EMG-ENG

- ENG: normal nerve conduction
- 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

