



# Approach to limping child

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# Major cause

- **Bone**: OM, tumor, trauma, vaso-occlusive crisis
- **Joint**: toxic synovitis of hip, SA, ARF, HSP, serum sickness, reactive arthritis, viral arthritis, hemarthrosis, trauma, Slipped capital femoral epiphysis, leg calve perthes disease

# Major cause

- **Soft tissue**: trauma, viral myositis, foreign body, pyomyositis, cellulitis
- **Neurological**: cerebral palsy, peripheral neuropathy, spinal cord tumor
- **Intra abdominal**: appendicitis, testicular torsion, pelvic abscess

# Transient synovitis

- Most common cause of limping in children
- Most often in the 3-8 year age group
- 1-2 wk after URTI
- Quite acute painful hip, significant difficulties in ambulation
- Mild restriction of ROM
- No or mild fever
- NL or mild elevated WBC( < 15,000), ESR( < 40)
- No or mild effusion
- Improve within 7-10 days

# Reactive arthritis

- Days to weeks after GI (salmonella, shigella, yersinia and campylobacter) GU or GAS infection
- Common cause of acute arthritis in children
- Mono- or poly- arthritis of the large joints
- Typically quite painful
- Fever and leukocytosis are often absent or minimal
- ESR may be elevated
- Improve before 6 wks
- Aspirated to rule out bacterial infection

# Viral/post viral arthritis

- **Rubella infection and vaccination and HBV infection:** small joints
- **Varicella and mumps:** large joints
- **Erythema infectiosum:** arthralgia, symmetric joint swelling and morning stiffness in adult women
- **Postinfectious arthritis:** 1-2 wks after viral URTI, transient(<6wk) pain or joint swelling
- → Typically mild and resolves over **7-10 d** with only symptomatic therapy

# Malignancy

- **Leukemia and neuroblastoma**: the commonest, bone tumors
- **Bone pain**, sometimes true acute **arthritis**
- Frequently **wake the child** from sleep
- **Hepatosplenomegaly, lymphadenopathy, cytopenia, elevated ESR, prolonged fever**



# Serum sickness

- 8-12 days after drug ingestion( **ABs**)
- **Type 3 hypersensitivity** reaction
- **Triad( all):**
  - **Acute** quiet painful arthritis of the **large joints**
  - **Urticaria** or morbiliform rashes and pruritis
  - **Fever**
- Improve within 10-14 days

# Henoch Schölein Purpura

- After self limited viral infection
- Small vessel **vasculitis**
- **Palpable purpura plus one of:**
  - Painful arthritis of the **large joints**
  - colicky **abdominal pain** and
  - renal involvement(hematuria, proteinuria)
- Sometimes fever
- Improve within 10-14 days

# Henoch Scholein Purpura



# Trauma

- Muscle strain, sprain, greenstick Fx, hemarthrosis
- Immediately after trauma
- Sometimes without history of trauma especially in toddlers

# connective tissue disorders

- During the course of the **JCA, IBD, lupus**, juvenile dermatomyositis (**JDM**) and scleroderma
- Thorough clinical examination looking for **other features and follow up**
- **Uveitis, morning** stiffness or difficulty, **GI** symptoms, **gottrons papules, heliotrope rash, proximal muscle weakness, mucocutaneous changes, evidence of serositis**

# Serum sickness





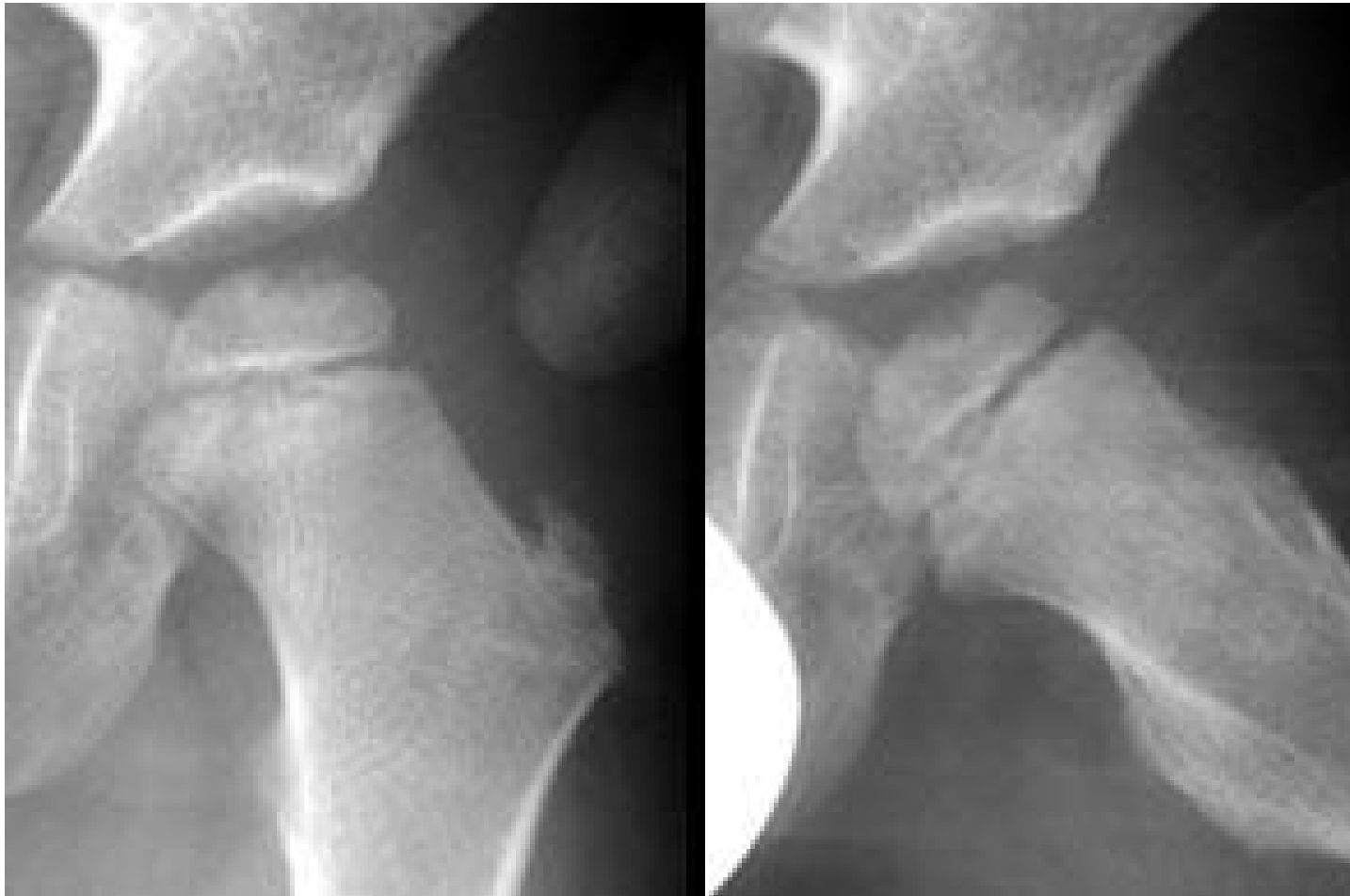
# Specific cause of Hip pain

# Perthes disease

- Avascular necrosis of the head of the femur
- More common in 5-10 yrs and in boys
- A recurrent painless limp
- Diagnosis by X ray, MRI, bone scan



# Perthes' Disease



# Slipped capital femoral epiphyses

- Teenage group
- Typically overweight boys
- Acute severe pain and limp
- Classically after trauma
- Diagnosis by X ray

# Slipped Capital Femoral Epiphysis



# Slipped Capital Femoral Epiphysis



# Approach to limping child

- **First step:** location of the infection by history and exam? Joint, bone, muscle, neuron, abdomen
- **Second step:** rule out emergencies and treatables

# Emergencies of arthritis

- **Septic arthritis:** Acute onset, fever, severe pain & limitation of ROM, monoarticular, high WBC,CRP, ESR    sonography, aspiration
- **Traumatic arthritis:** Immediate pain and limp after major trauma    X ray, Sonography, refer
- **Acute rheumatic fever:** Recent streptococcal infection, migratory arthritis, heart murmur, other jones criteris, ASO    refer

# Emergencies of arthritis

- **Malignancy:** Bone pain, lymphadenopathy, hepatosplenomegaly, ESR, cytopenia refer
- **Slipped capital femoral epiphysis:** Hip pain, gait abnormality, reduced ROM, abNL x ray refer

# Treatable causes of arthritis

- **Brucellosis:** Fever, consumption of unpasteurized dairy product, hepatosplenomegaly wright test, treatment
- **Henoch-schoenlein purpura:** Palpable purpura, abdominal pain BUN/Cr, U/A, BP, treatment
- **IBD associated arthritis:** Chronic bloody diarrhea, occult blood, anemia, FTT, thrombocytosis refer



# Treatable causes of arthritis

- **Clinical signs of CTD: rheumatologic disease** refer
- **Leg- calve perthes disease:** Painless limp, 4-8 yr old boy, chronic or intrmittent course refer

# Diagnostic tests in all articular limping child

- Hip sonography in hip involvement
- Hip X ray in hip involvement
- CBC, ESR
- Wright test
- Physical exam clues

# Other causes

- Transient synovitis
- Reactive arthritis
- Postinfectious arthritis
- Viral arthritis
- Start of rheumatologic disorders
- analgesis( NSAID, acetaminophen, F/u)

# Emergency causes of bone pain

- **Osteomyelitis**: fever, point tenderness, erythema, edema, ESR, WBC, usually NL x ray AB, MRI, bone scan
- **Trauma and Fx**: immediately after trauma, sometimes ignored trauma, echymosis ab NL or NL x ray, refer

# Emergency causes of bone pain

- **Bone crisis and necrosis:** acute severe pain, no/ occasionally fever, family or personal history, usually NL x ray    PBS, Hb-electrophoresis
- **Tumors:** hepatosplenomegally, cytopenias,    ESR, ab NL x-ray    refer
- **Referred pain** (testicular torsion, appendicitis, diskitis, toxic synovitis): complete PE

# Diagnostic tests in limping child with bone pain

- X ray: AP and lateral
- CBC, ESR
- Physical exam clues