Rheumatology
Final Med revision programme 2007

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Rheumatology
AMNCH & TCD
Acute Monoarthritis
Multiple Causes

Differential: Soft tissue, juxta-articular, bone

Features suggesting arthritis:
1. Aggravated by movement
2. Loss of motion
3. Associated swelling / erythema
Aetiology/Differential

- Trauma
- Infection
- Crystalline Disease
- Lyme Disease
- Systemic disorders
Differential Diagnosis of Acute Monoarthritis

**Infection**
- Bacterial
- Fungal
- Mycobacterial
- Viral
- Spirochete

**Tumor**
- Pigmented villonodular synovitis
- Chondrosarcoma
- Osteoid osteoma
- Metastatic disease

**Crystal-induced**
- Monosodium urate
- Calcium pyrophosphate dihydrate
- Hydroxyapatite
- Calcium oxalate
- Lipid

**Systemic rheumatic disease**
- Rheumatoid arthritis
- Spondyloarthropathy
- Systemic lupus erythematosus
- Sarcoidosis

**Hemarthrosis**
- Trauma
- Anticoagulation
- Clotting disorders
- Fracture
- Pigmented villonodular synovitis

**Osteoarthritis**
- Erosive variant

**Intraarticular derangement**
- Meniscal tear
- Osteonecrosis
- Fracture
- Trauma
- Infection
- Crystalline Disease
- Lyme Disease
- Systemic disorders
Infection

- **Gonococcal**: DGI commonest cause
  1. Triad of tenosynovitis, vesiculopustular skin lesions & polyarthralgia without purulent arthritis
  2. Purulent arthritis without skin lesions

- **Non-gonococcal bacteria**: Most potentially dangerous & destructive form of monoarthritis
<table>
<thead>
<tr>
<th><strong>Organism</strong></th>
<th><strong>Clinical clues</strong></th>
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</thead>
<tbody>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>Healthy adults, skin breakdown, previously damaged joint (eg, rheumatoid arthritis), prosthetic joint</td>
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<tr>
<td><em>Streptococcal species</em></td>
<td>Healthy adults, splenic dysfunction</td>
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<tr>
<td><em>Neisseria gonorrhoeae</em></td>
<td>Healthy adults (particularly young, sexually active), associated tenosynovitis, vesicular pustules, late complement deficiency, negative synovial fluid culture and gram stain</td>
</tr>
<tr>
<td>Aerobic gram negative bacteria</td>
<td>Immune compromised hosts, gastrointestinal infection</td>
</tr>
<tr>
<td>Anaerobic gram negative bacteria</td>
<td>Immune compromised hosts, gastrointestinal infection</td>
</tr>
<tr>
<td>Mycobacterial species</td>
<td>Immune compromised host, recent travel to or residence in an endemic area</td>
</tr>
<tr>
<td>Fungal species (sporotrichosis, cryptococcus, blastomycosis)</td>
<td>Immune compromised hosts</td>
</tr>
<tr>
<td>Spirochete (Borreliia burgdorferi)</td>
<td>Exposure to ticks, antecedent rash, knee joint involvement</td>
</tr>
<tr>
<td>Mycoplasma hominis</td>
<td>Immune compromised hosts with prior gastrointestinal tract manipulation</td>
</tr>
</tbody>
</table>
Mycobacterial & Fungal infection

- Indolent, progressive arthritis
- Immune status, travel Hx, high index of suspicion
- Consider if failure to respond to treatment
● Trauma
● Infection
● Crystalline Disease
● Lyme Disease
● Systemic disorders
Gout

- Risk Factors:
  - Alcohol
  - Drugs: diuretics, low dose aspirin, allopurinol
  - Family History
  - Lymphoproliferative disorders
Gout: Precipitants of attacks

- Infection
- Dehydration
- Surgery
- Alcohol
- Chemotherapy
- Non compliance with allopurinol
Clinical features of acute Gout

- Intense inflammation
- Max severity over several hours
- Resolution: days – weeks
- 80% monoarthritic
- Lower extremity & distal joint predominate
Treatment of Gout

- NSAID
- Colchicine
- Steroids (PO / IA)

- Long-term prophylaxis with allopurinol
- Uricosurics (24 hr urinary urate 1st)
- Consider cardiac risks
Pseudogout

- Knee most commonly involved in pts with CPPD crystals
- Also wrist, shoulder, ankle & smaller joints
- Bilateral wrist involvement common in elderly inflammation;
- Almost as common as gout & may perfectly mimic gout during acute flare
- Pseudogout attacks occurring before age 50 are uncommon
Chondrocalcinosis

- Chondrocalcinosis of the meniscus occurs not only in otherwise healthy individuals in older age groups but also in definite association with several distinct metabolic disorders:
  - haemochromatosis;
  - hyperparathyroidism (most common) 30%
  - hypothyroidism;
  - gout
  - hypothyroidism
  - ochronosis
  - acromegaly
  - Paget's disease;
● Trauma
● Infection
● Crystalline Disease
● Lyme Disease
● Systemic disorders
Lyme Disease

- 10% develop monoarticular synovitis in later stages
- Knee typically
- ?Hx of tick bite ?Hx of rash
- Synovial fluid culture negative
- Serological testing for confirmation
- Trauma
- Infection
- Crystalline Disease
- Lyme Disease
- Systemic disorders
Systemic disorders

- **Seronegative spondyloarthropathies**: can present as monoarthritis, esp in lower limbs
- Large knee effusion
- “Sausage” swelling toe involvement
- **Sarcoid periarthritis**: pain & swelling ankle joints, EN
- **Rheumatoid**: early
- **Myelodysplastic d/os**: arthralgia or acute arthritis
Arthritis Associated with Infiltrative Systemic Diseases

- Amyloidosis
- Amyloid of immunoglobulin light chain or serum AA protein origin
- Sarcoidosis
- Granuloma composed of epithelioid cells and giant cells
- Haemochromatosis
- Iron storage disease
Osteoarthritis

- Usually as/w mild symptoms & non-inflammatory synovial fluid
- May present as acutely painful synovitis mimicking infection
Neoplasms

- Juxtaarticular benign & malignant tumours
- Tumours in synovium /other soft tissues
- Desmoplastic fibroma
- Pigmented villonodular synovitis
Approach to the patient with monoarthritis

History & Examination
Musculoskeletal Emergencies

- Hot, swollen joints $\rightarrow$ infection
- Constitutional sx (fever, wgt loss, malaise) $\rightarrow$ infection/sepsis
- Weakness $\rightarrow$ compartment syndrome $\rightarrow$ myelopathy
- Burning pain, numbness, parasthesia $\rightarrow$ Acute myelopathy/Radiculopathy/Neuropathy
Joint Symptoms

- Character
- Morning stiffness in inflammatory arthritis
- Pain aggravated by motion & weight bearing but relieved by rest: OA
- Hx previous joint pain or swelling
- Trauma
- Pain for weeks less likely to be acute gout or bacterial arthritis
- DDx: chronic tophaceous gout, TB, fungal arthritis, spondyloarthritis
Associated Symptoms

- Weakness
- Multisystem involvement: - fatigue, rash, adenopathy, alopecia, oral & nasal ulcers, pleuritic C/P, Raynaud’s, dry eyes & mouth
- Chills & malaise, high grade fever
- Gastrointestinal symptoms
- Genitourinary
- Recent sexual exposure
- Travel history
Physical Examination

- Ability to weight-bear
- Soft tissue swelling & inflammation
- Synovitis: Soft tissue swelling
  - Warmth over a joint
  - Joint effusion
- Range of motion
Fever suggests subset of infectious & rheumatic illnesses:

- Infectious arthritis
- Post-infectious or reactive arthritis
- Rheumatoid arthritis & Still’s disease
- Systemic rheumatic disease
- Crystal-induced arthritis
- Cancer, sarcoid, mucocutaneous disorders
Extra-articular Exam

- Subcutaneous nodules
- Skin rashes
- Eye signs: -keratoconjunctivitis, uveitis, conjunctivitis, episcleritis
Imaging Studies

- Plain film: -fracture, tumour, effusion
- Chondrocalcinosis, tophaceous erosions, joint space narrowing
- Ultrasound
- Computed Tomography
- Magnetic Resonance Imaging
Figure 5. MRI scan of a normal knee joint showing the bones, cartilage, tendons and muscles.
Joint Aspiration

- Arthrocentesis in all patients with effusion or signs suggesting inflammation within the joint
- Inflammatory/ Infected/ Bloody/ Crystals/ Bland
- Visual inspection:- xanthochromia, clear, cloudy
- Total WCC & differential
- Gram stain & culture
- Crystal analysis utilizing polarising microscopy
Normal Synovial Fluid

Rheumatoid

Gout
Evaluation for septic arthritis

- Non-inflammatory fluid: <2,000 wcc/mm³ <75% polymorphs
- Assume inflammatory fluid infected until proven otherwise
- Innoculate into blood culture bottles
- Higher WCC & higher polymorph% make septic arthritis more likely
- Chemistry (Gluc/LDH/Protein) limited value
Evaluation for Crystalline arthritis

- Polarizing microscope
- Monosodium urate crystals in 95% acute joint effusions in gout
- Intracellular crystal w/in PMN leucocyte is the hallmark of gout
- More difficult to detect calcium pyrophosphate
- Hydroxyapatite crystals most difficult to identify
Other Lab tests

- Coagulation screen
- Blood cultures
- ESR & CRP
- ANA
- Rheumatoid factor
- Anti-CCP (citrulline-containing peptide)
- Routine FBC, LFTs
- Specialised tests: HLA-B27, Lyme serology
Synovial Biopsy

- Rarely needed
- TB, Fungal, Sarcoid
- Indications:  - Refractory monoarthritis
  - Suspicion of atypical infection
  - Intra-articular tumours
- Arthroscopic
- Closed needle
Summary

- Trauma/Focal pain – X-ray
- Effusion/ signs of inflammation are infection until proven otherwise – Aspirate next
- Bloody effusion – coagulopathy, pseudogout, tumour, trauma, Charcot: PT, APPT, BT, Plts
- Bone marrow elements -? intra-articular #
- Non-inflammatory (<2000 WCC) – OA, soft tissue injury, viral infection
- Inflammatory fluid with crystals – gout, pseudogout
- Positive culture – infectious arthritis
- Sterile inflammatory joint fluid – systemic rheumatic disorders
Take-home messages

1. Priority is to out-rule infection – aspirate.

2. Gout is a common cause – very treatable!

3. Consider other diagnoses, especially in OPD
Thank You