Infectious Arthritis
Definition

Microbial invasion of the joint space not associated with bone involvement
Classification

- Non-gonococcal bacterial arthritis
- Gonococcal arthritis
- Brucella arthritis
- Tuberculous arthritis
- Mycoplasma arthritis
- Viral arthritis
- Lyme disease
- Syphilis
- Fungal arthritis
Non-gonococcal bacterial arthritis
Nongonococcal bacterial arthritis is the most potentially dangerous and destructive form of acute arthritis

*Staphylococcus aureus* is the most common agent

Yearly incidence:
- 2-10 / 100,000 (General population)
- 30-70 /100,000 (RA, joint prosthesis)

Mortality 10 – 25%

Morbidity 25 – 50%
Organisms in septic arthritis

- **Gram-positive cocci**
  - S. aureus
  - S. pyogenes
  - S. pneumonia
  - S. viridans group

- **Gram-negative bacilli**
  - E. coli
  - Salmonella
  - *Pseudomonas* species
1 - The hematogenous route.
2 - Dissemination from osteomyelitis.
3 - Spread from an adjacent soft tissue infection.
4 - Diagnostic or therapeutic measures.
5 - Penetrating damage by puncture or cutting.
Sources of Hematogenous Infections in Adults

- Skin: 42.2%
- Unknown: 33.3%
- URI: 8.9%
- UTI: 7.8%
- Non-sterile intervention: 7.8%
- URI: 8.9%

Kaandorp CJE, Ann Rheum Dis, 56:470-475; 1997
Risk factors

- Diabetes mellitus
- Immunodeficiency states
- Joint damage
- Skin infections
- Debilitated conditions
- Hemoglobinopathy
- Intravenous drug use
- Joint prostheses
- Indwelling catheter
- Neonate and elderly
Pathogenesis

- Hematogenous spread
- Infiltration by PMN
- Synovial membrane proliferation
- Neovascularization
- Granulation tissue
- Direct Inoculation
Clinical Manifestations

- Acute, monoarticular (knee most common)
- Chills, fevers, malaise, anorexia
- Painful warm, swollen, and fluid filled
- Approximately 20% oligoarticular or polyarticular
- There may be evidence of other site infection
A single (or less often 2 or 3) acute hot swollen joint(s)

Joint aspiration

Purulent

Crystals

Await culture

Non inflammatory Fluid

Gram stain

Negative Positive

Await culture

Negative Positive

Antibiotics

Culture

Negative

Alternative diagnosis

A diagnostic algorithm for the evaluation of a hot, swollen joint
Diagnosis

- Arthrocenthesis
- Appearance: purulent
- Cell count: 50000-150000
- Gram’s stain is positive in most cases
- Synovial fluid culture is positive in the majority of patients
- Blood culture, CBC, ESR
- Scintigraphy, CT scan, MRI
Staphylococcal arthritis: wrists (radiograph)
Septic arthritis: early and late changes, hip (radiographs)
Parenteral antibiotics

Positive gram stain

Yes

Hip, shoulder axil joint

No

Await culture

Arthroscopy or open drainage

Gram + cocci

Community-acquired

No

Vancomycin Cefazolin

Yes

Final antibiotic choice based on culture, sensitivity

Gram - bacilli

Other joints

Needle aspiration

Inadequate response

Arthroscopy or open drainage
Prognosis

- Mortality 10-15%
- Residual abnormality 30-50%
Risk Factors For Poor Prognosis

- Older age
- Preexisting joint disease
- Infected prosthetic material joints
- Polyarticular
- Delayed diagnosis
- Microorganisms
Gonococcal arthritis
Epidemiology

- Disseminated gonococcal infection
- Most common cause of acute septic arthritis in young sexually active individuals
- In 1-3% of patients infected with NG
- M/F: 1/3
- The majority have arthritis
- Recent menstruation
Epidemiology

- Pregnancy
- Terminal complement deficiencies
Clinical Manifestations

Two syndromes:

- A triad of tenosynovitis, dermatitis, and polyarthralgia without purulent arthritis
- Purulent arthritis without skin lesion
Clinical Manifestations

- Fever, chills and malaise
Clinical Manifestations

- Monoarthralgia, oligoarthralgia, or polyarthralgia
- Diffuse migratory pattern
- Knees, wrists, hands, and ankles are most involved
Clinical Manifestations

- Tenosynovitis: multiple tendons: writ, fingers, ankle, and toes
Clinical Manifestations

- Rash: macules, papules, necrosis, pustules, hemorrhage papules
- Few in number
Clinical Manifestations

- Pericarditis, endocarditis, myococarditis, aortitis
- Meningitis
- Osteomyelitis
Gonorrhea: rash, pustule, and bulla
Purulent Arthritis

- Most are afibrile
- Knee, wrist, ankles
- One or more joints
- Other clinical signs of DGI are rare
Differential diagnosis

- Reiter’s syndrome
- Bacterial arthritis
- Juvenile Rheumatoid Arthritis
- Meningococcemia
- Bacterial Endocarditis
- Acute rheumatic fever
Diagnosis

- History and physical examination
- Culture genitourinary tract, rectum, pharynx
- Organism rarely found in synovial fluid, blood, or skin
- PCR
Management

- 3rd-generation β-lactamase-resistant cephalosporin e.g. Ceftriaxone
- Cefotaxime, ceftizoxime, spectinomycin
- Quinolones
- Concomitant doxycycline
Septic Spondylitis
Definition

- infection of a vertebra.
Osteomyelitis and disc space infection: lumbar spine (MRI and radiograph)
Osteomyelitis and disc space infection: cervical spine (MRI)
Management

- Parenteral antibiotics including β-lactamase-resistant penicillin or first generation cephalosporin
- Vancomycin for MRSA
- Surgical drainage