Septic Arthritis
Defined as: An inflammatory reaction of the joint space caused by an infectious agent.

→ Usually caused by bacteria but may be caused by mycobacteria or fungi.

→ Very common and hard to treat due to use of prosthetic joints (2-10% of all prosthetic joints!)

→ Also common among immune compromised and elderly (45% of people with Septic arthritis are above 65 years and 56% are male)
Etiology:

- **S. aureus**: commonest cause overall, especially in acute cases, the increase in incidence here matches that of increase use of Prosthetic joints.
- Streptococci → groups A, B, C, and G streptococci, + *S. pneumoniae* and viridans groups (20%) of all cases.
- CoNS.
- *E. coli*.
- *H. influenzae*.
- **N. gonorrhoeae** (the commonest cause in sexually active young adults)
- *N. meningitidis*.
- *P. aeruginosa* (sternoclavicular joints, sacroiliac joints)
- *Salmonella* spp.
- + other causes, brucella, polymicrobial.
Prosthetic joint infection

• According to presentation:

• Acute \((S. \textit{aureus})\) within 3 months
• Subacute within 3-24 months
• Chronic >24 months

• Overall \(S.\textit{aureus}\), but CoNS and G-ve aerobes cause the delayed cases more
Epidemiology

• The reported incidence of septic arthritis varies from two to five cases per 100000 population or 8–27% of adults presenting with painful joints (20,000 cases/year in US)

• Risk factors for septic arthritis include
  • Age >80 years,
  • Diabetes mellitus
  • Rheumatoid arthritis
  • Prosthetic joint
  • Recent joint surgery
  • Skin infection/ulcers
  • Intra-articular corticosteroid infection injection drug use, and alcoholism.
Pathogenesis

- Septic arthritis usually occurs after haematogenous seeding of pathogenic bacteria - this is the most common route.

- But like osteomyelitis contiguous spread or direct inoculation can also be causes.

- Healthy synovial cells have phagocytic activity and normally able to clear any seeding from outside sources.

- Any weakness to immune system (SLE, Rheumatoid arthritis..etc) increases risk (hence old age!)
• Previously **damaged** joints are most susceptible to infection *(arthritis)*

• These joints show **neovascularization** and and **adhesion** factors, which promote bacteremia and consequent infection.

• *S. aureus* especially, binds to articular **sialoprotein**, **collagen**, **elastic** and prosthetic materials visa tissue adhesion factors that they possess.

• Infection typically damages the cartilage (chondrocyte proteases of *S. aureus*, the inflammation in turn causes further damage to the cartilage)

• **Gonococcal arthritis** exhibits much less influx of WBC into the joint, which explains why it is **not as destructive** to joints as other bacteria.
Clinical features

• Children and adults with acute septic arthritis usually present with fever (60–80%) and monoarticular involvement (90%).
• The knee is the most commonly affected joint, followed by the hip.
• Clinical features include pain, swelling, and reduced mobility in the joint.
• Polyarticular infections occur in 10–20% of patients, especially those with rheumatoid arthritis and viral causes.
• Infections with mycobacteria or fungi usually have an insidious onset.
Diagnosis

• Laboratory investigations frequently show a raised WCC and inflammatory markers.

• Joint aspiration shows purulent synovial fluid, with an elevated WCC (50 000–100 000 cells/mm³), mostly neutrophils.

• Gram stain is positive in 29–50%, and culture is positive in 80–90% of cases (synovial fluids in blood culture bottles may improve yield)

• Samples should also be sent for microscopy for crystals. BCs are positive in 75% of cases.
Imaging

• Radiographs of the affected joint may be normal at presentation.
• Typical changes are periarticular soft tissue swelling, fat pad edema, periarticular osteoporosis, loss of joint space, periosteal reactions, erosions, and loss of subchondral bone.
• Ultrasound can be used to confirm an effusion and guide aspiration.
• CT and MRI are highly sensitive for imaging early septic arthritis. CT is better for imaging bone lesions.
• MRI may not distinguish septic arthritis from inflammatory arthropathies.
CLINICAL HISTORY

43-year-old female with a history of lupus treated with steroids, presents with developing left knee pain, swelling, and fevers.
Management

• **Drainage of the joint**, either by closed aspiration or arthroscopic washout, should be performed **urgently**.

• Open drainage may be required either when repeated drainage has failed to control the infection or for drainage of hip joints.

• **Prosthetic joint infections often require removal of the prosthesis.**
Antimicrobial therapy

According to the initial Gram stain findings.

Empirically - IV piperacillin–tazobactam ± vancomycin.

- Definitive therapy is tailored to culture and sensitivity results
- Adjunctive therapy with a short-course systemic corticosteroid treatment has been shown to be of benefit in children with haematogenous bacterial arthritis.
End
CELLULITIS
ECTHYMA
ERYSEPELAS
LYMPHANGITIS
IMPETIGO
WHITLOW
PARONYCHIA
HERPES LABIALIS
GAS GANGRENE AND DIABETIC FOOT
RING WORM
STEVEN JOHNSONS
TEN
GAS GANGRENE
CHICKEN POX
SHINGLES
MOLLUSCUM
MEASLES
**Chickenpox**
- Fever
- Headache
- Tiredness or fatigue
- Red spots first appear on the chest, face, and back
- Decreased appetite
- Spots turn into itchy blisters

**Measles**
- Fever
- Red, blotchy rash first appears on the forehead
- Red, inflamed eyes
- Runny nose
- Hacking cough and sore throat
- Koplik's spots inside the mouth
CANDIDIASIS
CUTANEOUS LEISHMANIASIS
• Images obtained from Dermnet.nz
• Image search
• Oxford handbook