

# Lecture-13-

# Osteomyelitis

:by

Assistant lecturers

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**Adult Nursing**

- **Osteomyelitis** is an infection of the bone by one of three modes:
  - Extension of soft tissue infection from pressure ulcer or incision.
  - Direct bone contamination from bone surgery, open fracture, or traumatic injury.
  - Blood borne infection spread from other sites like tonsils, infected teeth, and upper respiratory infections).
- Patients who are at high risk for osteomyelitis include those who are poorly nourished, elderly, or obese, those with impaired immune system, those with diabetes, rheumatoid arthritis, and those receiving long-term corticosteroid therapy.

- Staphylococcus aureus causes 70% to 80% of bone infections.

Other pathogens found in osteomyelitis include Proteus, Pseudomonas species, Escherichia coli., and penicillin-resistant, nosocomial, gram-negative infections.

- The initial response to infection is inflammation, increased vascularity, and edema. After 2 or 3 days, thrombosis of the blood vessels occurs in the area, resulting in ischemia with bone necrosis. Unless the infective process is treated promptly, a bone abscess forms.

## **Clinical manifestation:-**

1-Chill & Fever

2-Malaise

3-Bone pain

4-Edema & redness

5-Painful

6-Warm area

7-Muscle spasm

8-Swelling

9-Extremity tender

10-Pulsation pain

ε 11-Increased pain with movement

- **Diagnostic Evaluation:**

1. Increase in WBCs.

2. Increase in ESR.

3. Positive blood culture.

4. Radiograph and bone scan

- Medical Management aims to control and halt the infective process, through IV antibiotic therapy (penicillin or cephalosporin) for 3 – 6 weeks based on the results of blood and wound cultures. After achieving infection control, the antibiotic may be administered orally for up to 3 months.
- General supportive measures (eg, hydration, diet high in vitamins and protein, correction of anemia) should be instituted.
- The area affected with osteomyelitis is immobilized to decrease discomfort and to prevent pathologic fracture of the weakened bone. Warm wet soaks for 20 minutes several times a day may be prescribed to increase circulation.

- **Assessment.** Physical examination reveals an inflamed, markedly swollen, warm area that is tender. Purulent drainage may be noted. The patient has fever. With chronic osteomyelitis, the temperature elevation may be minimal, occurring in the afternoon or evening.
- **Nursing diagnoses.**
  - Acute pain related to inflammation and swelling
  - Impaired physical mobility related to pain, use of immobilization devices, and weight-bearing limitations.
  - Risk for extension of infection: bone abscess formation
  - Deficient knowledge related to the treatment regimen

- **Nursing Interventions.**

- **Relief of pain.**

- Immobilize the affected part with a splint to decrease pain.
- Monitor the neurovascular status of the affected extremity.
- Elevate the affected part to reduce swelling and associated discomfort.
- Administer analgesics as prescribed.

- **Improving physical mobility.**

- The bone is weakened by the infective process and must be protected by immobilization devices and by avoidance of stress on the bone.
- Gently place the joints above and below the affected part through their range of motion. Encourage full participation in ADLs to promote general well-being.



- **Nursing Interventions**

- **Control and eradication of infection.**

- Monitor the patient's response to antibiotic therapy.
- Observe the IV access site for evidence of phlebitis, infection, or infiltration.
- With long-term, intensive antibiotic therapy, monitor the patient for signs of superinfection (eg, oral or vaginal candidiasis, loose or foul-smelling stools).
- Monitor the general health and nutrition of the patient. A diet high in protein and vitamin C promotes healing.
- Encourage adequate hydration.

- **Nursing Interventions.**

- **Knowledge of treatment regimen.**

- Teach the patient and family the importance of strictly adhering to the therapeutic regimen of antibiotics and preventing falls or other injuries that could result in bone fracture.
- Teach the patient how to maintain and manage the IV access and IV administration equipment in the home.
- Provide information on medication education.