

Osteomyelitis

Bone infection

Types (classification)

According to mechanism of infection

exogenous

open fracture

Surgery

Penetrating injuries

Endogenous (hematogenous)

bacteremia in blood

According to duration of the disease

Acute (less than 2 weeks)

Subacute (2-3 weeks)

Chronic (more than 3 weeks)

Acute hematogenous osteomyelitis

Incidence:

88% occurs in children

(Because the children is more subjected to trauma and the developed hematoma may acts as a media for bacterial growth)

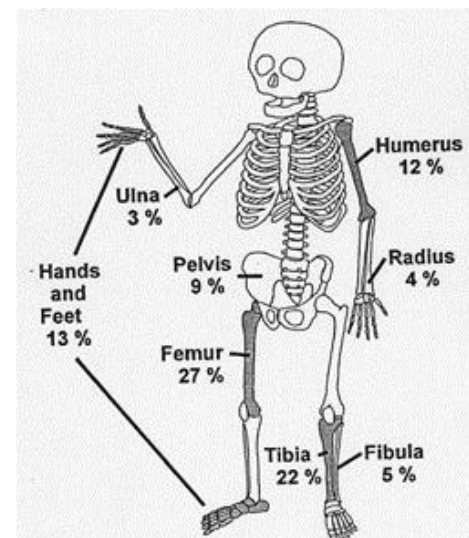
12% occurs in adults

(especially common in immune compromised adult patients)

It is common around the knee joint

Proximal tibia and lower femur

50% around knee

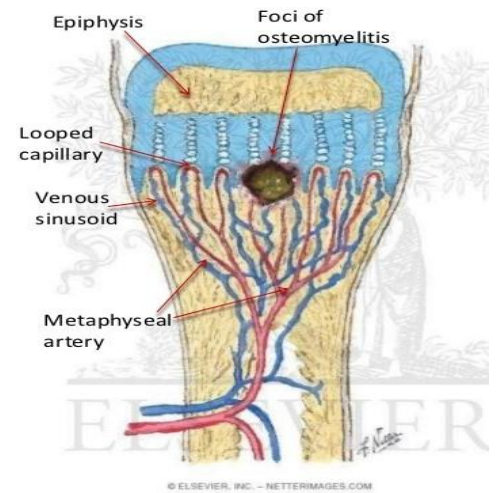


It is common in the metaphysis of long bones.

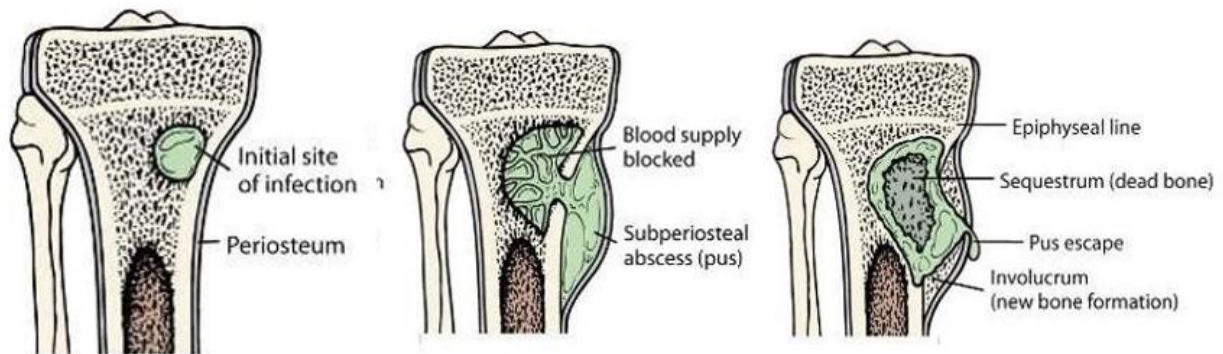
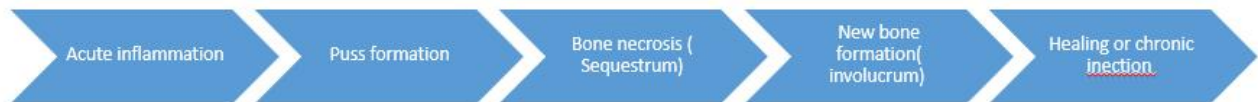
Pathogenesis :

1. Due to vascular stasis. The metaphyseal blood vessels twist back in sharp hairpin loops pattern before it enter large sinusoidal veins, it gives time for the bacteria to escape from the vessels to the bone.

2. Relative decrease in phagocytes number in metaphysis.



Pathology



Clinical features

High grade fever

Swelling(signs of inflammation)

Limitation of movement (pseudoparalysis)

Investigation

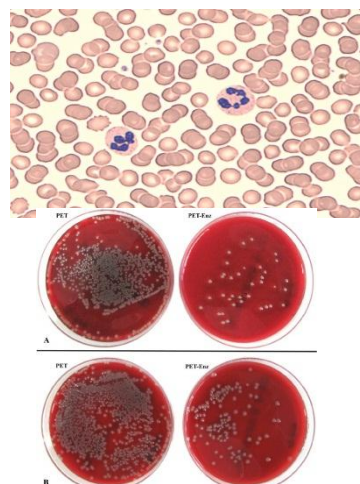
Increase WBC count (neutrophil series)

Increase ESR

Increase C-reactive protein level

Blood culture

Positive only in 60%

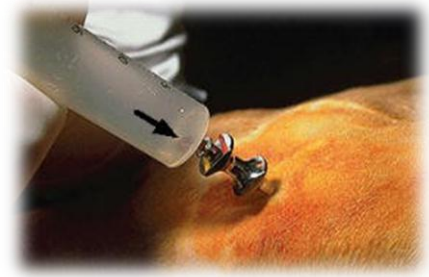


Bone aspirate

If purulent material is aspirated , this will confirm the diagnosis and necessitate surgical drainage and clearance .

The aspirate should be sent for :

- *White cell count
- *Gram stain
- *Culture and sensitivity



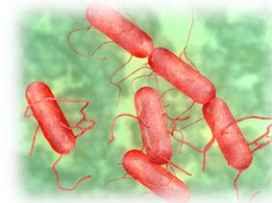
Staphylococcus aureus : 80% of cases



Streptococcus hemolyticus : 10%



Salmonella : common in patients with sickle cell anemia.



Hemophilus influenzae : common in patients below 5 years



Radiography

- * Early is negative only soft tissue swelling.
- * After 2 weeks will shows rarefaction of the bone
- * After 3 weeks new bone formation (periosteal new bone formation)(involucrum)



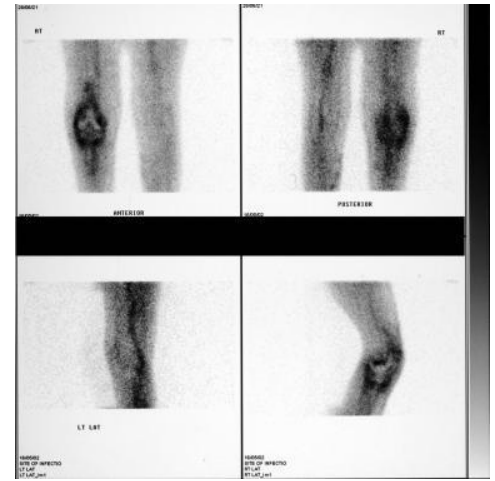
Bone scan

Will show increase uptake of radioactive material (hot spot).

it is 90% - 95% diagnostic and positive in the first 24-48 hours.

low specificity

Can not differentiate between infection and tumor.



MRI: better than x-ray, good in early stages.

Management

'RESTS'

R : rest in bed and splint to alleviate pain and prevent pathological fracture.

E : elevation of the limb.

S : systemic (fluid and blood transfusion).

T : treatment (antibiotics).

S : surgery

Antibiotics

* should be started according to the results of bone aspirate or blood culture

* empirical treatment should be started as early as possible according to the best guess (the most probable organism) and modified then according to the result of culture and sensitivity test.

* The principle of treatment is initial 2-4 weeks of intravenous antibiotics , followed by 4-6 weeks of oral antibiotics.

Indication of surgery

1. If there is no improvement after 36 hours from starting the conservative treatment.
- 2 . If pus comes out during aspiration.

Surgery

Drain any subperiosteal pus collection.

If you don't find pus: open the bone either by multiple drills or by making bone window.



Complications

1. Septic arthritis
2. Chronic osteomyelitis.
3. Pathological fracture.
4. Epiphyseal damage and growth disturbance.

Septic arthritis

especially in intraarticular metaphyses (shoulder , elbow , hip)



Pathological fracture



Chronic osteomyelitis

(persistent discharging sinus and bone sequestra)



Epiphyseal damage and growth disturbance, common in infants and neonates



Thank You,,,