

Osteomyelitis

PBL; Third case



KING SAUD UNIVERSITY

COLLEGE OF MEDICINE

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Osteomyelitis

Definition:

Inflammation of bone due to infection. **Acute osteomyelitis** occurs when bacteria enter the bone via the bloodstream and is more common in children. **Chronic osteomyelitis** may develop from partially treated acute osteomyelitis or after open fractures or surgery during which the bone is contaminated; tuberculosis is an occasional cause. Osteomyelitis can cause fracture and deformity of the bone.

Symptoms:

- Fever or chills.
- Irritability or lethargy in young children.
- Lost range of motion.
- Pain in the area of the infection.
- Drainage of pus through the skin.
- Swelling, warmth and redness over the area of the infection.
- Changes in gait (walking pattern that is a painful, yielding a limp).

Causes:

- Bacteremia. (mainly via **staphylococcus aureus** bacteria)
- An open wound over a bone.
- A recent surgery or injection around a bone.

Questions to Ask Your Patient:

- If the patient had broken bone before
- Ask about any strange symptoms appear on the patient and when it appear
- If the patient has osteoporosis or any chronic disease
- If the patient smoke or not
- If the patient has problems with immune system

Tests:

- Blood cultures
- Bone biopsy (which is then cultured)
- Bone scan
- Bone x-ray
- Complete blood count (CBC)
- C-reactive protein (CRP)
- Erythrocyte sedimentation rate (ESR)
- MRI of the bone (to confirm the presence of bone infection)
- Needle aspiration of the area around affected bones

Differential Diagnosis (Hypothesis):

- Bone infarction.
- Gout. (also pseudo-gout)
- Fracture.
- Gas gangrene.
- Hand infections.
- Infections of spinal cord.
- Neuropathic joint disease. (Charcot's joint)
- Bone Cancer.
- Brodie's abscess.

(which is a subacute osteomyelitis, which may persist for years before converting to a visible osteomyelitis)

- Cellulitis.

(which is a common skin infection caused by bacteria)

- Gaucher's disease.

(which is a genetic disease in which a fatty substance (lipid) accumulates in cells and certain organs, because Persons affected most seriously may also be more susceptible to infection)

- Inflammatory arthritis including:
 - Rheumatoid arthritis (autoimmune disease which attacks the membrane around your joints)
 - Ankylosing spondylitis (characterized by inflammation of the large joints and spine)
 - Lupus (affects your organs and connective tissue)
 - Reiter's syndrome (affects tendons, skeleton, mucous membranes and joints)
 - Psoriatic arthritis (your joints and skin become inflamed)

Risk Factors:

- Patients with conditions or taking medications that weaken their immune system.
- Cancer.
- Chronic steroid use.
- Sickle cell disease.
- Circulation problems
- Human immunodeficiency virus. (HIV)
- Diabetes.
- Hemodialysis.
- Intravenous drug abusers.
- The elderly.

Complications:

- Septic arthritis.
- Impaired growth
- Skin cancer
- Bone abscess (pocket of pus)
- Bone necrosis (bone death)
- Spread of infection
- Inflammation of soft tissue (cellulitis)
- Blood poisoning (septicaemia)
- Chronic infection that doesn't respond well to treatment

Prevention:

- Do not smoke
- Keep your vaccinations up to date
- Eat a healthy diet to help boost your immune system.
- Take regular exercise to help boost your immune system
- Wash your hands regularly with soap

Treatment:

- Antibiotics.
- Surgery may be needed to remove dead bone tissue.
- If there is an area of localized bacteria (abscess), this may need to be opened, washed out, and drained
- Hyperbaric oxygen therapy
- Skin grafts, if necessary.

Learning Objectives:

- Discuss the anatomy of the lower limb with particular emphasis on the lower region of the tibia, fibula, and ankle joint.
- Discuss the general principles about inflammation and the pathogenesis of infection.
- Discuss the role of body defense mechanisms in protecting the body.
- Discuss the microbiology and pathogenesis of osteomyelitis.
- Understand the role of investigations in finding out the cause and site of infection.

Best of luck,

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