Infectious arthritis

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CHILD ORTHO CARE
SEPTIC ARTHRITIS
(Infectious Arthritis) in Children
Septic arthritis is an infection in the joint fluid (synovial fluid) and joint tissues. It occurs more often in children than in adults. The infection usually reaches the joints through the bloodstream. In some cases, joints may become infected because of an injection, surgery, or injury.
www.childorthocare.com

Learning objectives

- Describe etiology and pathogenesis of Suppurative Arthritis
- Discuss clinical features and morphological features of Suppurative arthritis.
- Enumerate complications of Suppurative arthritis
- Describe etiology and pathogenesis of Mycobacterial Arthritis
- Discuss clinical features and morphological features of Mycobacterial Arthritis
- Enumerate complications of Mycobacterial Arthritis

- Septic arthritis is also known as infectious arthritis, and is usually caused by bacteria. It can also be caused by a virus or fungus. The condition is an inflammation of a joint that is caused by infection. Typically, septic arthritis affects one large joint in the body, such as the knee or hip. Less frequently, septic arthritis can affect multiple joints.

Causative organisms

- **Staphylococci.** These are common bacteria that often cause skin infections.
- **Haemophilus influenzae.**These are bacteria that can infect the larynx, trachea, and bronchi.
- **Gram negative bacilli.** This is a group of bacteria that includes E. coli.
- **Streptococci.** This is a group of bacteria that can lead to a wide variety of diseases.
- **Gonococci.** This is the bacterium that causes gonorrhea.
- **Viruses.** Viruses such as HIV can infect the joints of people of all ages.

Etiological factors of suppurative arthritis

- Individuals with deficiencies of components of the complement MAC (C5, C6, and C7) are susceptible to disseminated gonococcal infections and hence arthritis.
- Other predisposing conditions include immune deficiencies (congenital and acquired),
- Debilitating illness,
- Joint trauma,
- Chronic arthritis of any cause,
- Intravenous drug abuse.

Pathophysiology

3 etiologies of bacterial seeding of joint

Bacteremia

Direct inoculation (trauma or surgery)

Contiguous spread (adjacent osteomyelitis)

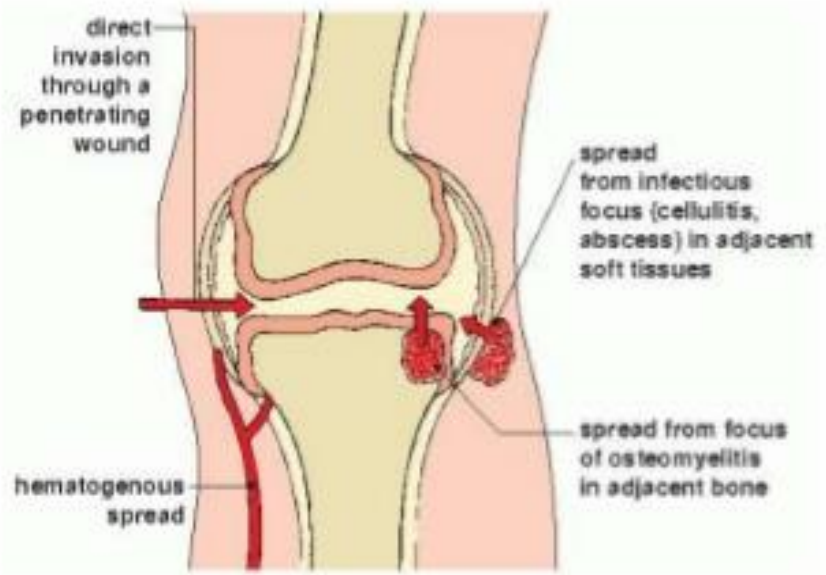
PATHOPHYSIOLOGY

HEMATOGENOUS SPREAD

Most common form of spread, usually affects people with **underlying medical problems.**

DIRECT INNOCULATION

May result from **penetrating trauma**, introduction of organisms during **diagnostic and surgical procedures**. E.g. intra-articular injection.



DIRECT SPREAD FROM ADJACENT BONE

More common in children. Osteomyelitis usually begins in the metaphyseal region, from which it breaks through the periosteum into the joint

Clinical features

- Chills
- Fatigue and generalized weakness
- Fever
- Inability to move the limb with the infected joint
- Severe pain in the affected joint, especially with movement
- Swelling (increased fluid within the joint)
- Warmth (the joint is red and warm to touch because of increased blood flow)

Complications

- Despite advances in diagnostic studies, powerful antibiotics, and early drainage, significant joint destruction commonly occurs.
- Septic arthritis can also cause many complications, including
- Osteomyelitis,
- Bony erosions,
- Fibrous ankylosis,
- Sepsis,
- Even death.

Synovial membrane is highly vascularised.

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Bacteria can easily enter synovial joint via blood stream.

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There will be inflammatory reaction with seropurulent exudate and increase in synovial fluid.

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As pus appear in the joint, the articular cartilage is eroded and destroyed. Partly by the bacterial enzyme, and partly by the enzyme released from synovium, inflammatory cell and pus

Infant

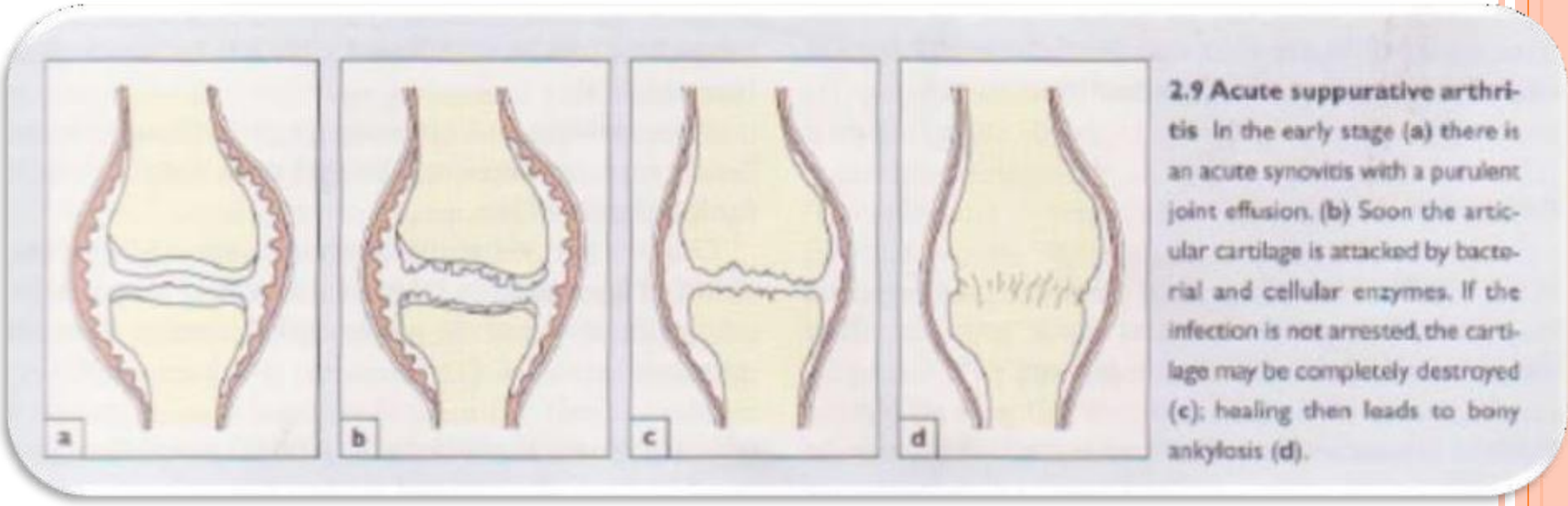
Destroy the epiphysis, which is still largely cartilaginous.

Children

Vascular occlusion lead to necrosis of epiphyseal bone

Adult

Effect confined on articular cartilage Extensive erosion can occur due to synovial proliferation and ingrowth



2.9 Acute suppurative arthritis In the early stage (a) there is an acute synovitis with a purulent joint effusion. (b) Soon the articular cartilage is attacked by bacterial and cellular enzymes. If the infection is not arrested, the cartilage may be completely destroyed (c); healing then leads to bony ankylosis (d).

a) In the early stage, there is an acute synovitis with a purulent joint effusion

b) Soon the articular cartilage is attacked by bacterial and cellular enzyme.

c) If infection is not arrested , the cartilage may be completely destroyed

d) Healing then leads to ankylosis

IF LEFT UNTREATED, IT WILL SPREAD TO THE UNDERLYING BONE AND OUT OF JOINT TO FORM ABSCESS AND SINUS.

Healing with:

1. Complete resolution
2. Partial loss of articular cartilage and joint fibrosis
3. Loss of articular cartilage and bony ankylosis
4. Bony destruction and permanent deformity

Mycobacterial arthritis

Overview

- Mycobacterial arthritis is a chronic progressive monoarticular infection caused by *M. tuberculosis,* which occurs in all age groups, especially adults.
- It is also called as Granulomatous arthritis.
- Mycobacterial arthritis is caused by a number of different organisms, including *M. tuberculosis, M. bovis, M. kansasii, M. marinum, M. avium intracellulare, M. fortuitum, M. chelonei, M. Haemophilum*, and *M. leprae*.

- A very small number of people who have TB will develop this form of arthritis. The joints most often involved are the:
- Ankles
- Hips
- Knees
- Spine
- Wrists
- Most cases involve just one joint.
- TB involving the spine is often referred to as Pott's disease. It makes up about half of all TB-related bone infections.

Pathogenesis

- It usually develops as a complication of adjoining osteomyelitis or after hematogenous dissemination from a visceral (usually pulmonary) site of infection.

Sign and symptoms

- Onset is often indolent,
- Decreased movement in the joints
- Excessive sweating, especially at night
- Joint swelling with warm, tender joints
- Low-grade fever
- Muscle atrophy
- Muscle spasms
- Numbness, tingling, or weakness below the infection (if the spine is involved)
- Weight loss or loss of appetite
- physical examination shows swelling and irritation (inflammation) of the joint

Morphology

- Mycobacterial seeding of the joint induces the formation of granulomas with central caseous necrosis,
- As mycobacteria do not produce collagenase, there is not rapid cartilage destruction .
- The affected synovium may grow as a pannus over the articular cartilage and erode the bone along the joint margins and the subchondral bone.
- Onset is often slow, with gradual swelling, mild warmth, minimal or no redness of the joint area, and aching pain that may be mild.
- Usually a single joint is involved.
- Chronic disease results in fibrous ankylosis and obliteration of the joint space.

Complications

- Collapse of the vertebrae, resulting in kyphosis
- Joint destruction
- Nerve compression
- Spinal cord compression

Thanks