

ARTHRITIS

Osteoarthritis

- is a *degenerative joint disease*
- is the most common joint disorder.
- It is a frequent part of aging and is an important cause of physical disability in persons older than 65 years of age.
- *The fundamental feature of osteoarthritis is degeneration of the articular cartilage*
- structural changes in the underlying bone are secondary.
- It is not an inflammatory disease
- the chondrocytes respond to biomechanical and biologic stresses that results in breakdown of the matrix.

Types of osteoarthritis

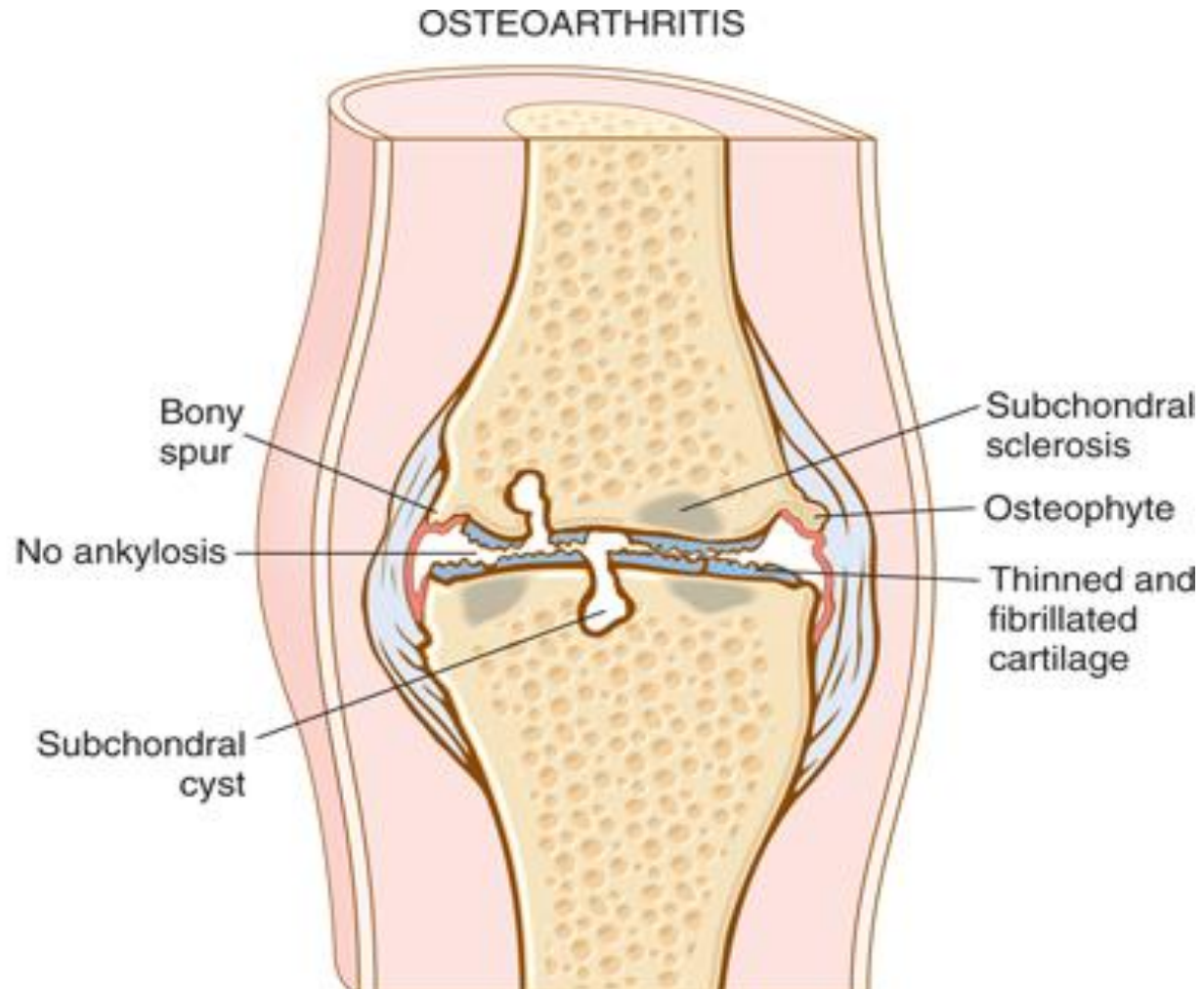
- **Primary osteoarthritis (95% of cases):**
- Old age
- Usu. is *oligoarticular* (affecting only a few joints)
- joints of hands, knees, hips, and spine are most common

- **Secondary osteoarthritis (less than 5% of cases):**
- young people
- There is a predisposing condition → previous trauma; congenital deformity; systemic disease ,or marked obesity.
- It often involves one or several joints.

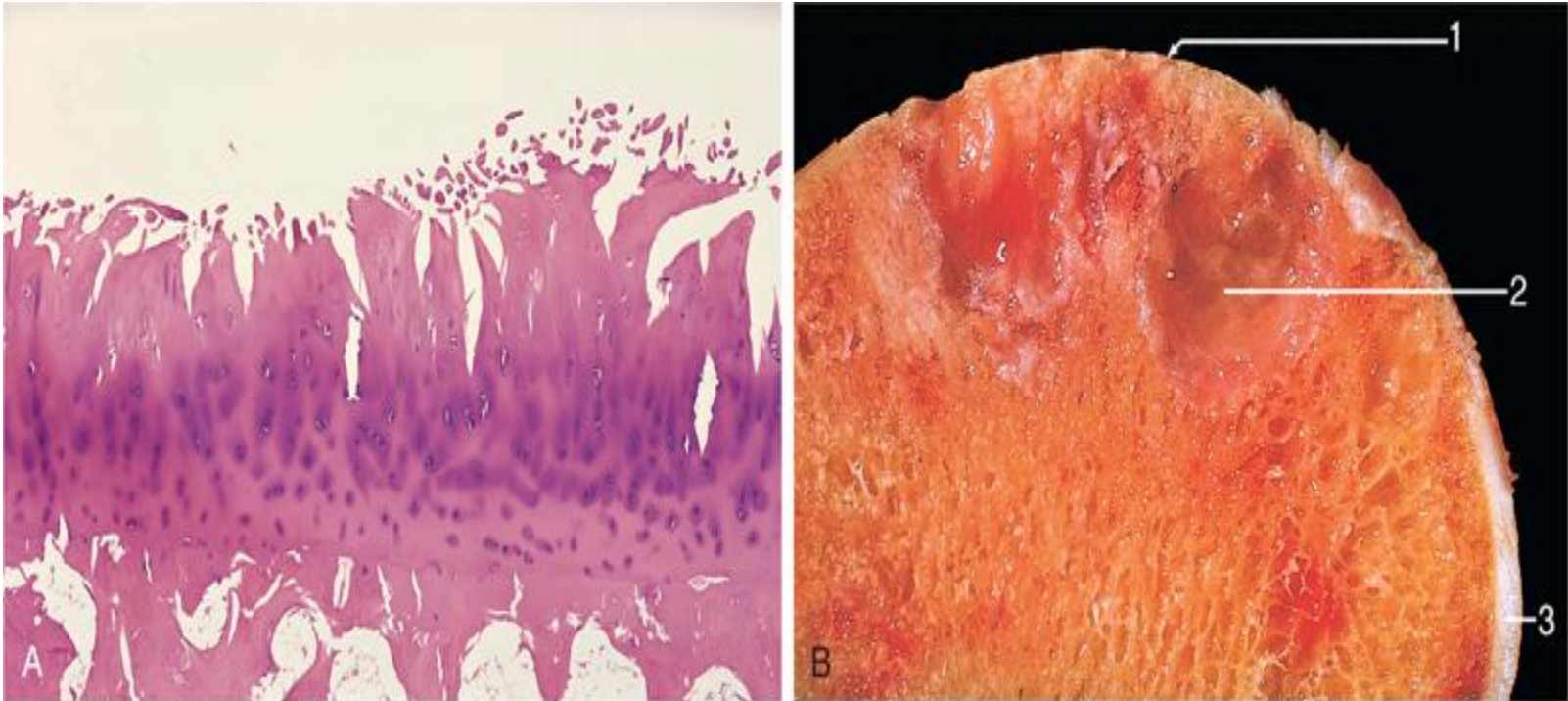
Clinical Course

- predominantly affects pts in their 50s and 60s.
- Characteristic symptoms and signs:
 - deep, aching pain exacerbated by joint use
 - morning stiffness
 - crepitus (grating or popping sensation in the joint)
 - limitation in range of movement.
 - nerve root compression with radicular pain
 - muscle spasms and atrophy.
- **Commonly involved joints:** Hips, knees, lower lumbar and cervical vertebrae, proximal and distal interphalangeal joints of the fingers, first carpometacarpal joints, and first tarsometatarsal joints of feet
- *Heberden nodes* in the fingers, represent prominent **osteophytes** at the distal interphalangeal joints, are characteristic in women.

Osteoarthritis-induced changes



Osteoarthritis. **A**, Histologic demonstration of the characteristic fibrillation of the articular cartilage. **B**, Severe osteoarthritis, with eburnated articular surface exposing subchondral bone (1), subchondral cyst (2), and residual articular cartilage (3).



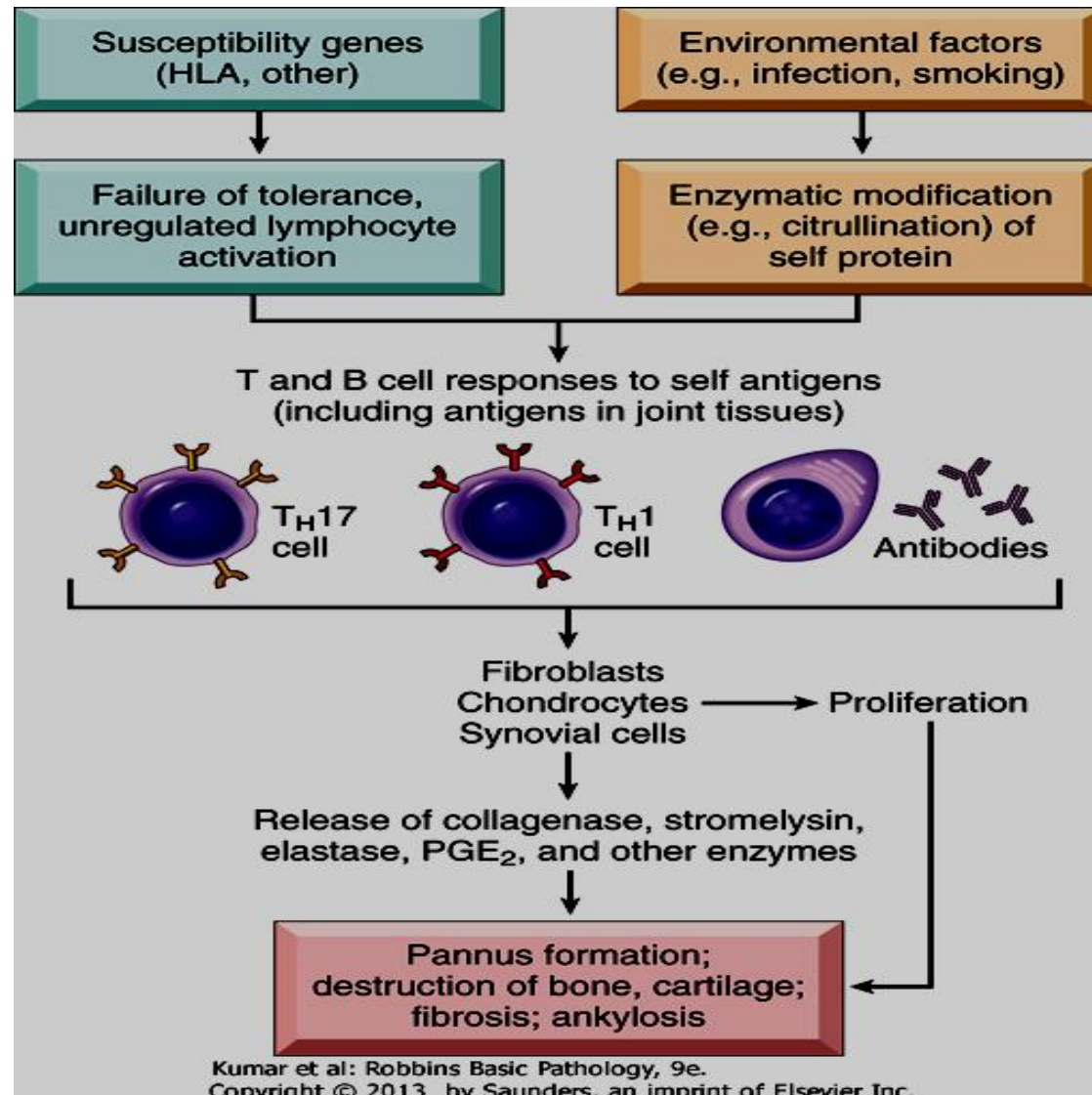
Kumar et al: Robbins Basic Pathology, 9e.
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Rheumatoid arthritis (RA)

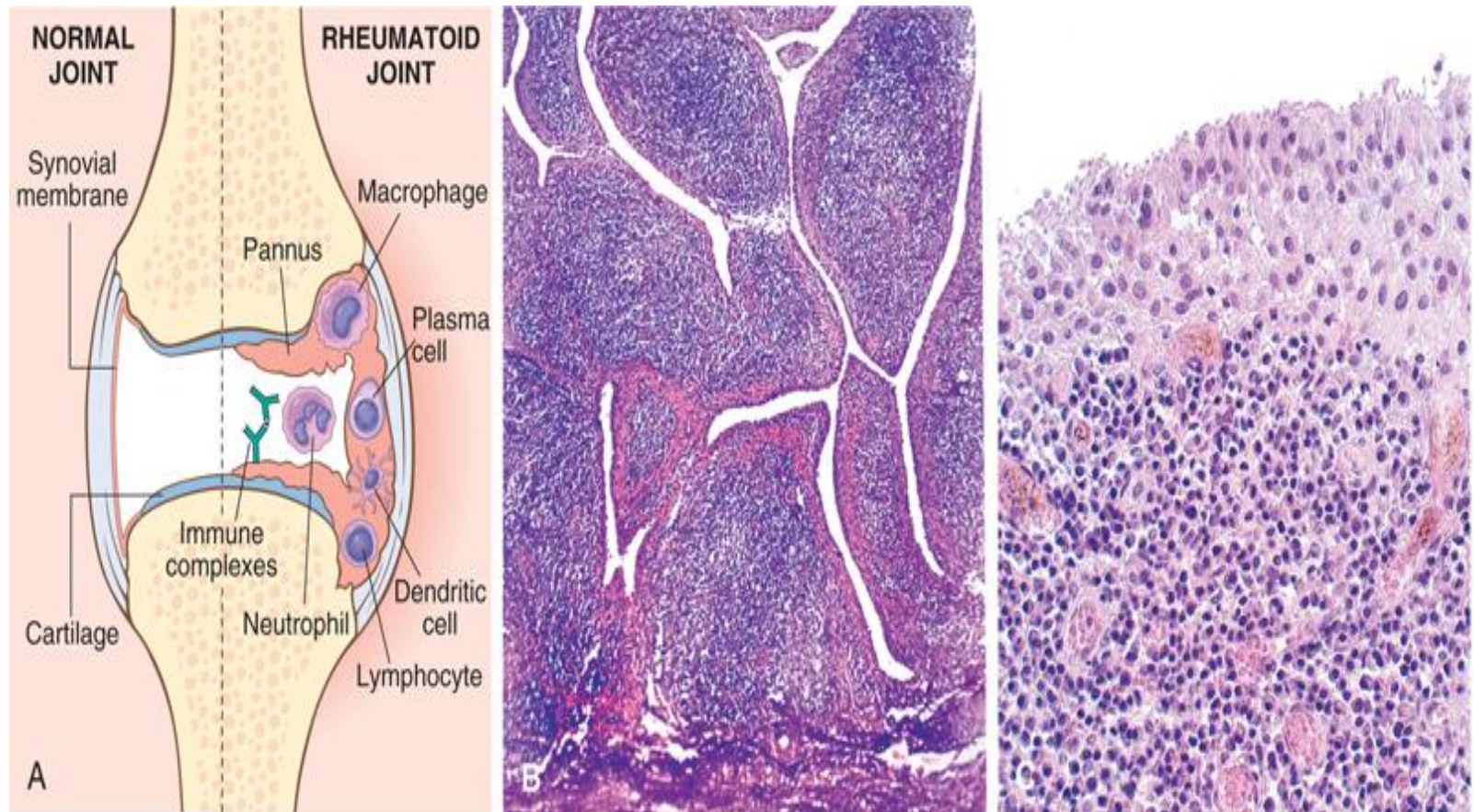
- is a systemic, chronic inflammatory autoimmune disease affecting many tissues, most commonly the joints.
- **non-suppurative** proliferative synovitis that destroy articular cartilage and underlying bone with resulting disability
- **Extra-articular** involvement: may include the skin, heart, blood vessels, muscles, and lungs.
- A common condition (prevalence 1%)
- (3 to 5)x more common in women than in men.
- The peak incidence 2nd-4th decades of life

- **Pathogenesis:**
- **cytokine-mediated inflammation** (e.g., IL-1, TNF),
mainly produced by CD4+ T cells
- 80% of pts → **serum IgM autoantibodies**=
rheumatoid factor that bind to the Fc portions of
their own (self) IgG (form immune complexes in
joints and other tissues, leading to inflammation and
tissue damage)
- Inflammation → activation of chondrocytes,
fibroblasts and synovial cells → enzymes that destroy
cartilage and cause fibrosis

Pathogenesis of rheumatoid arthritis



Rheumatoid arthritis. **A**, A joint lesion. **B**, Synovium demonstrating papillary hyperplasia caused by dense inflammatory infiltrate. **C**, Hypertrophied synoviocytes with numerous underlying lymphocytes and plasma cells



Clinical features

- **symmetric arthritis, principally of small joints** of the hands and feet, ankles, knees, wrists, elbows, and shoulders.
- proximal IP and MCP joints are affected, but distal IP joints are spared.
- Axial and hip involvement is extremely rare
- Constitutional symptoms: weakness, malaise, and low-grade fever → IL-1, TNF
- chronic, remitting-relapsing course
- Treatment: immuno-suppressive therapy, including biologic agents that antagonize TNF.
- **Complications of RA:**
 - Progressive joint destruction and disability
 - Secondary amyloidosis (5% to 10% of cases, esp. with long-standing severe disease)

Infectious Arthritis

- Routes of infection:
 - hematogenous dissemination
 - direct inoculation
 - contiguous spread from osteomyelitis or a soft tissue abscess.
- Infectious arthritis is serious because it can cause rapid joint destruction and permanent deformities

Suppurative Arthritis

- *Haemophilus influenzae* m/c in children <2 yrs
- *S. aureus* m/c in older children and adults
- **gonococcus** is prevalent in older adolescents and young adults.
- Patients with sickle cell disease are prone to *Salmonella* infection at any age.
- gonococcal arthritis is symptomatic mainly in sexually active women.
- immunodeficiency of certain complement proteins (C5, C6, and C7) → disseminated gonococcal infections and hence arthritis.

- The classic presentation:

1- sudden onset of pain, redness, swelling of the affected joint(s), with restricted range of motion.

2- Fever, leukocytosis, and elevated ESR.

- Gonococcal arthritis → more subacute course.
 - 90% of non-gon. arthritis → a single joint
 - Most common in **knee**, hip, shoulder, elbow, wrist, and StC joints (in descending order).
 - Joint aspiration → a purulent fluid (culture +ve)
- Treatment: antibiotics and joint aspiration