

# Rheumatoid Arthritis

- Objectives:

By the end of this lecture student should know:

- Pathology,
- Clinical features,
- Laboratory and radiologic changes
- Line of management

# Rheumatoid Arthritis

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Systemic chronic inflammatory disease

Mainly affects synovial joints

- Variable expression
- Prevalence about 3%
- Worldwide distribution
- Female:male ratio 3:1
- Peak age of onset: 25-50 years

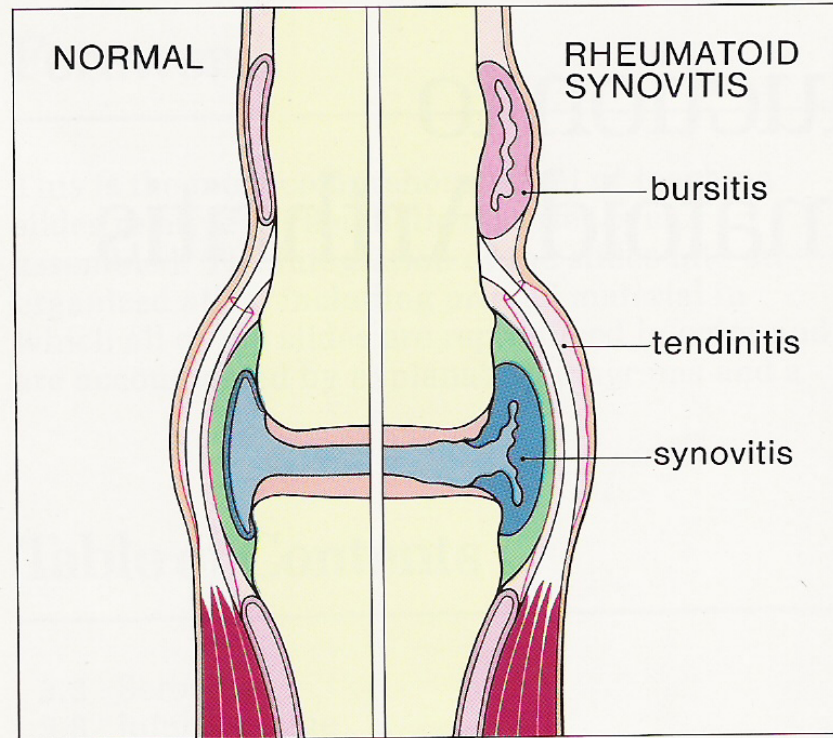
# Rheumatoid Arthritis

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- Unknown etiology
  - Genetics
  - Environmental
  - Possible infectious component
- Autoimmune disorder

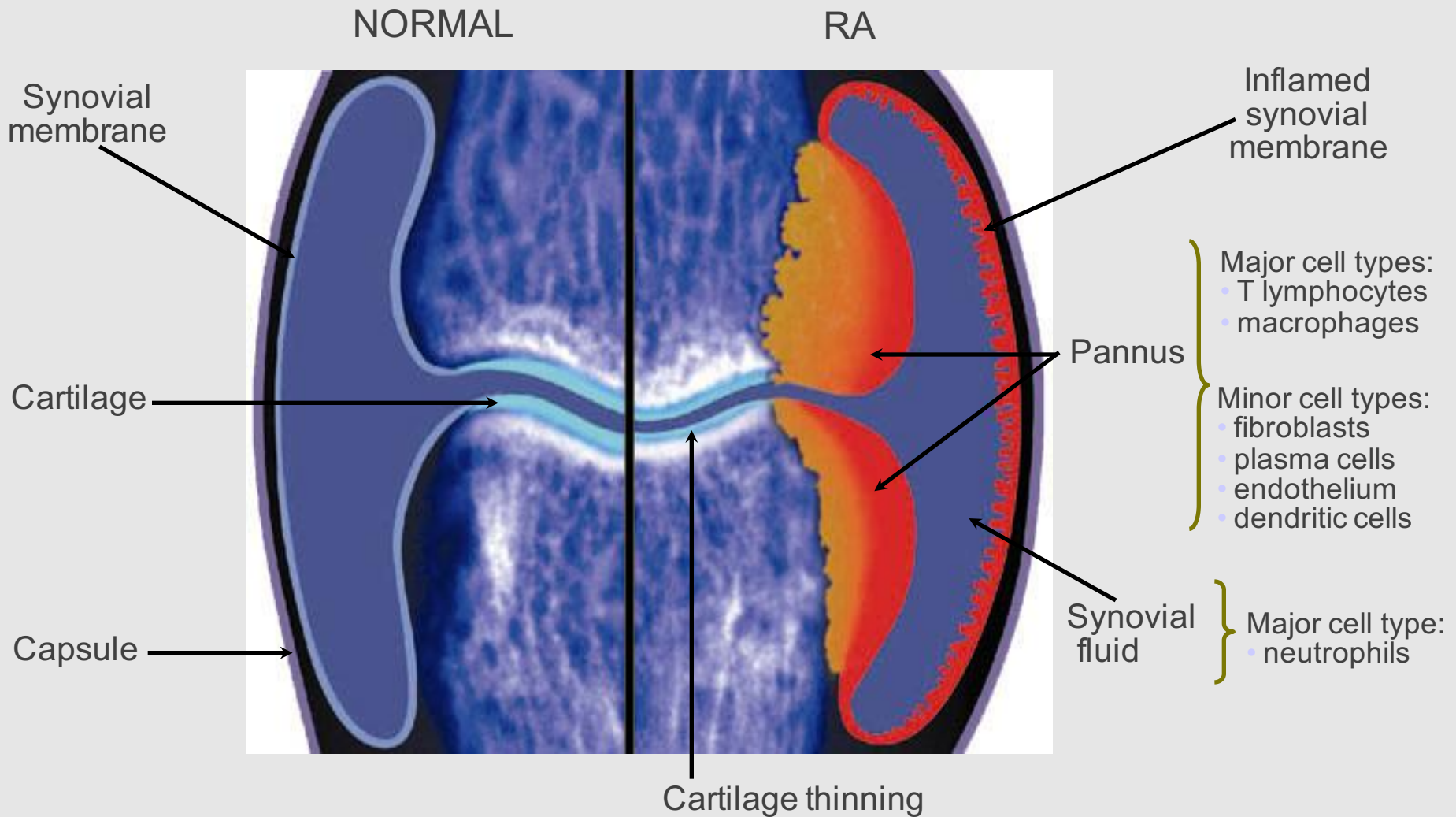
# THE PATHOLOGY OF RA

- Synovitis
  - Joints
  - Tendon sheaths
  - Bursae
- Nodules
- Vasculitis



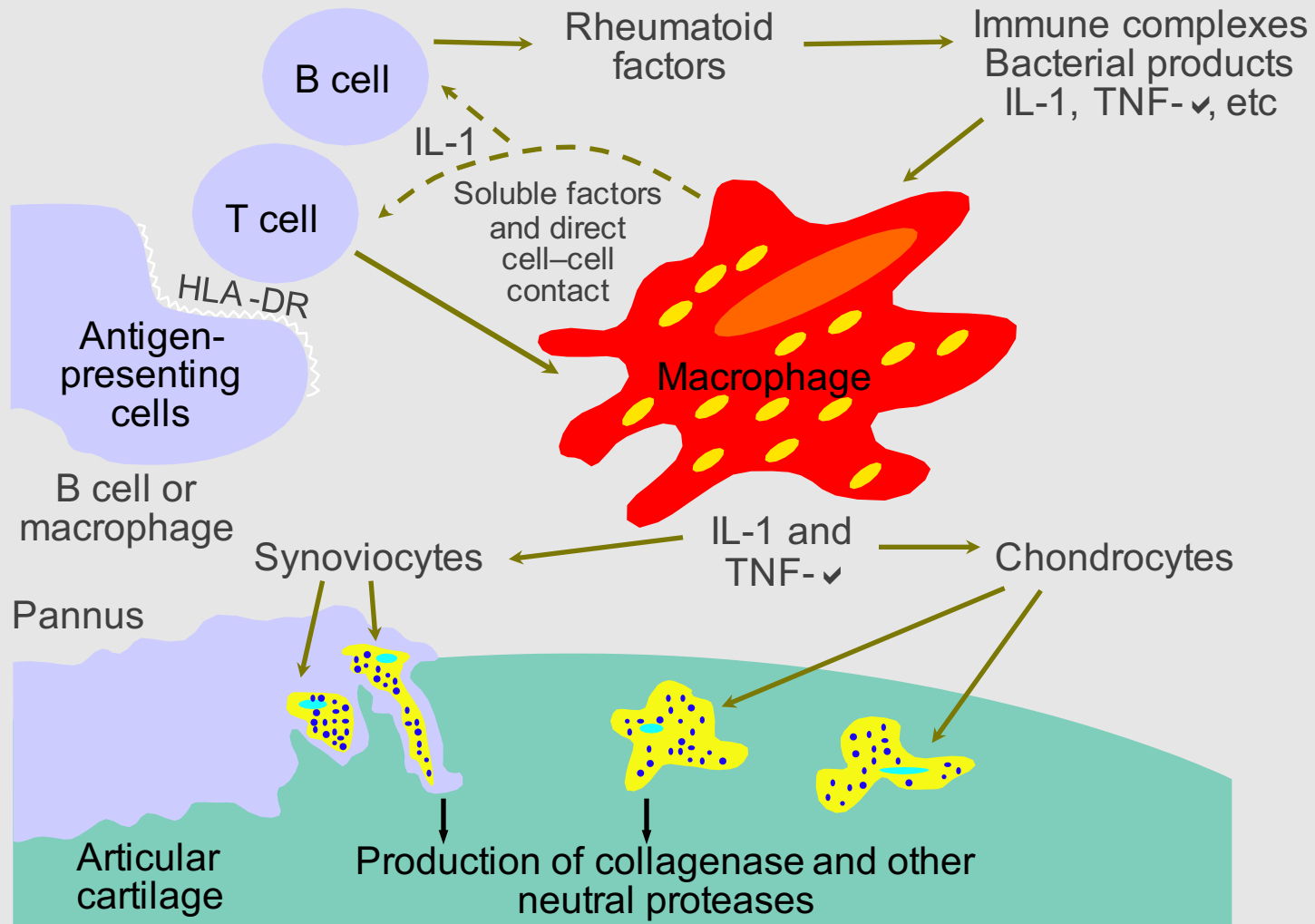
**Fig. 3.3** The three major sites of rheumatoid synovitis.

# RA Is Characterised by Synovitis and Joint Destruction



Adapted from Feldmann M, et al. *Annu Rev Immunol.* 1996;14:397-440.

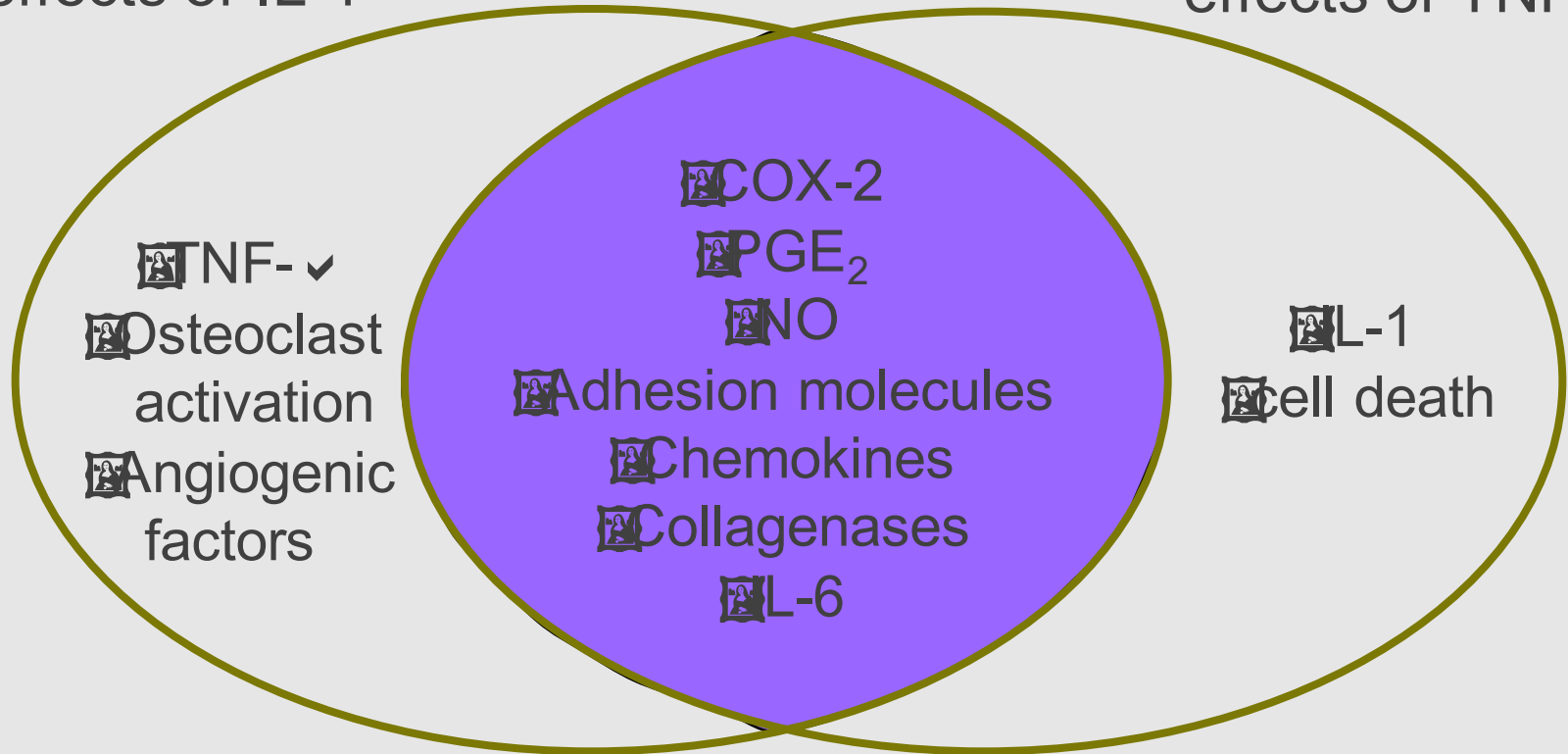
# Numerous Cellular Interactions Drive the RA Process



# IL-1 and TNF- $\alpha$ Have a Number of Overlapping Proinflammatory Effects

Proinflammatory effects of IL-1

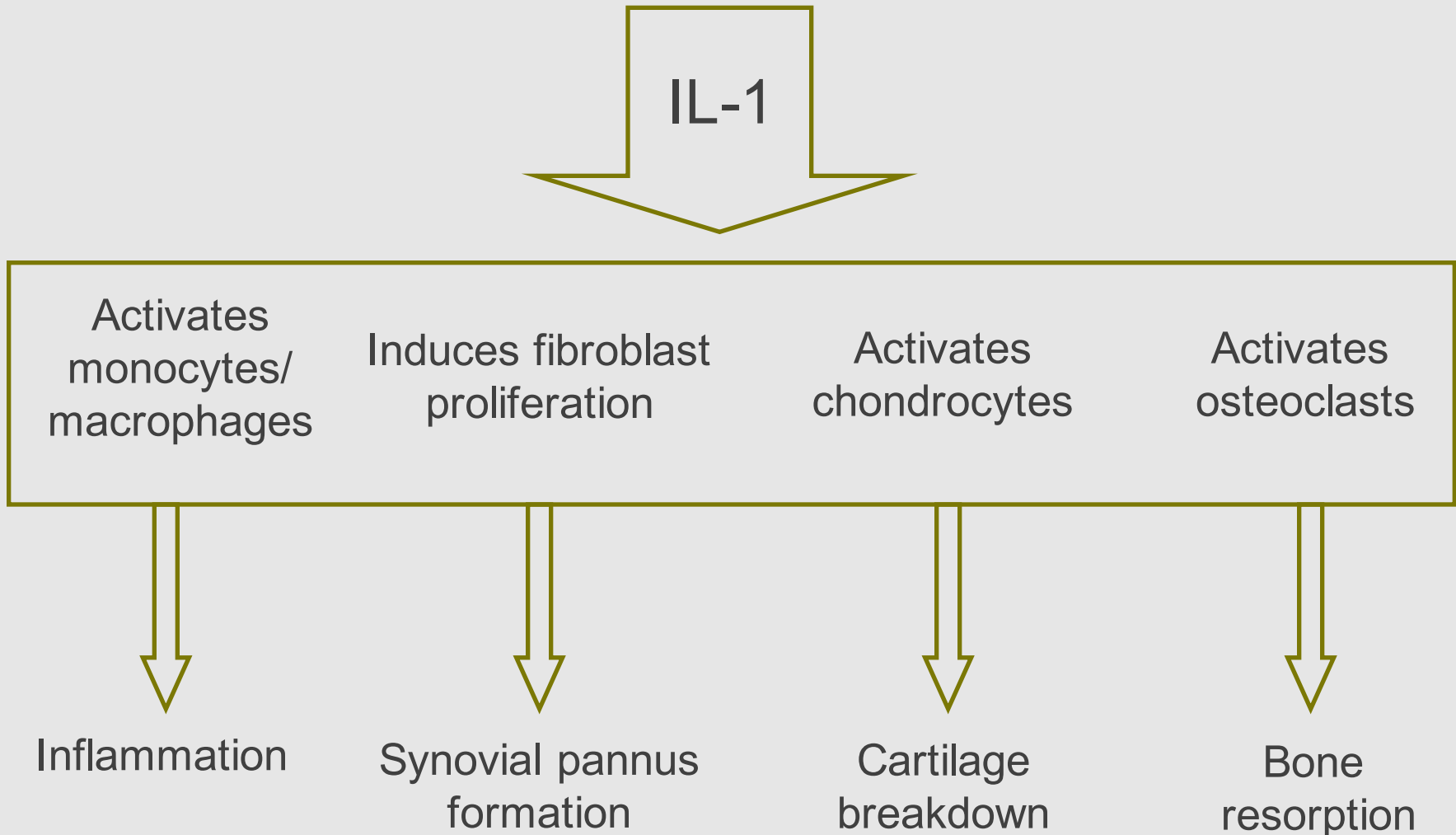
Proinflammatory effects of TNF- $\alpha$



COX-2 = cyclo-oxygenase type 2; PGE<sub>2</sub> = prostaglandin-E<sub>2</sub>; NO = nitric oxide



# IL-1 Plays a Pivotal Role in the Inflammatory and Destructive Processes of RA



# Signs and Symptoms

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- Joint inflammation
  - Tender, warm swollen joints
  - Symmetrical pattern
- Pain and stiffness
- Symptoms in other parts of the body
  - Nodules
  - Anemia
- Fatigue, occasional fever, malaise

# JOINT INVOLVEMENT ON PRESENTATION OF RA

**Polyarticular 75%**

Small joints  
of hands and feet 60%

Large joints 30%

Large and  
Small joints 10%

**Monoarticular 25%**

Knee 50%

Shoulder }

Wrist }

Hip } 50%

Ankle }

Elbow }

# Articular features seen in the Rheumatoid Hand

## WRIST:

- Synovitis
- Prominent ulnar styloid
- Subluxation and collapse of carpus
- Radial deviation

## MCPs:

- Synovitis
- Ulnar deviation
- Subluxation

## PIPs:

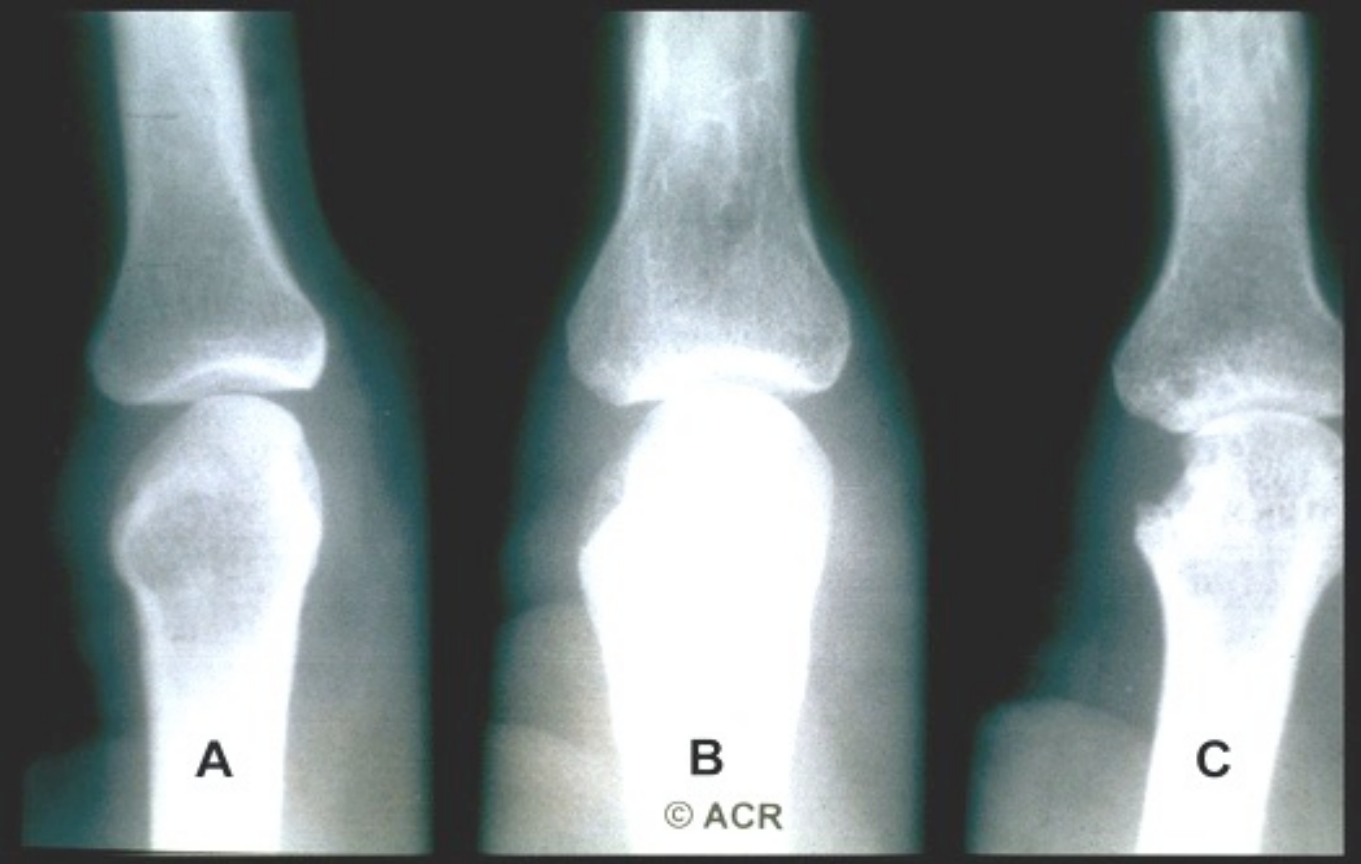
- Synovitis
- Fixed flexion or extension deformities  
(Swan neck or boutonniere deformity)

## THUMBS:

- Synovitis
- 'Z' deformity





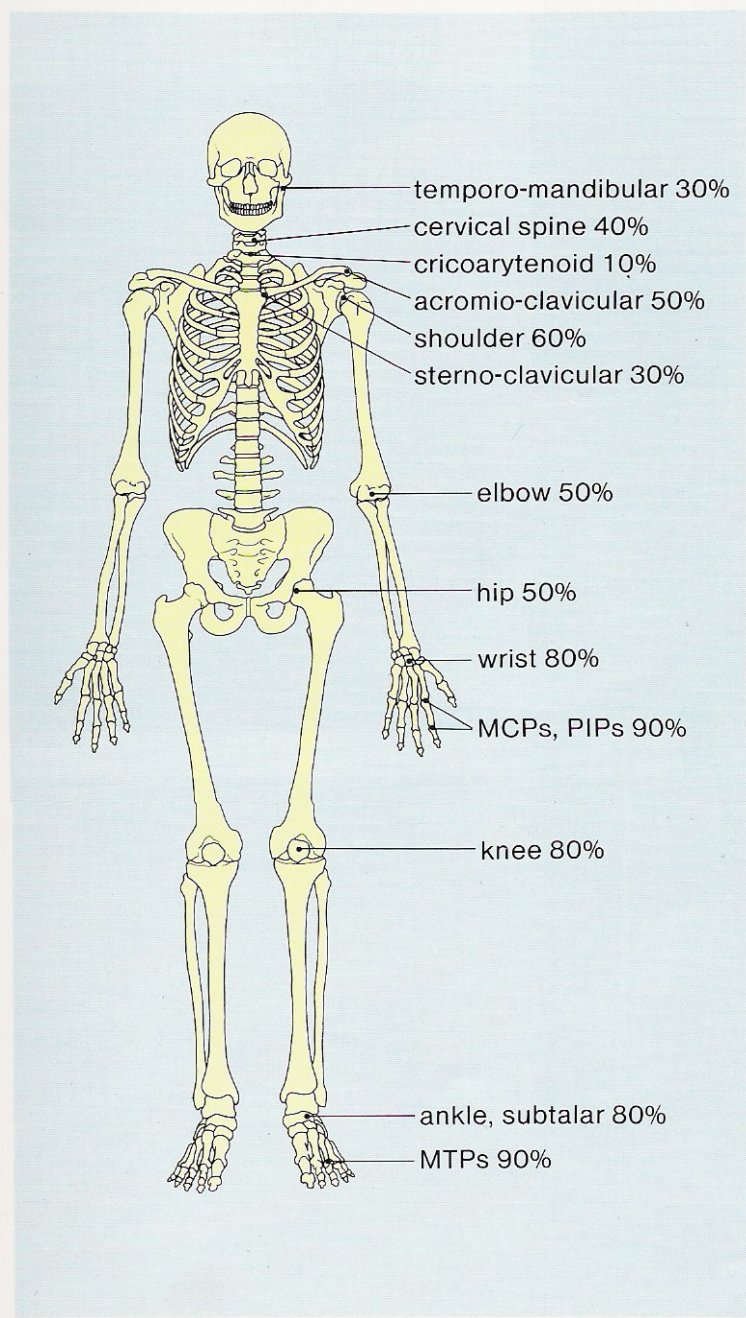


# Joint Destruction

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**Fig. 3.6** Frequency of involvement of different joint sites in established RA.

# Extra-articular manifestations

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- General
  - fever, lymphadenopathy, weight loss, fatigue
- Dermatologic
  - palmar erythema, nodules, vasculitis
- Ocular
  - episcleritis/scleritis, scleromalacia perforans, choroid and retinal nodules

# Extra-articular manifestations

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- Cardiac
  - pericarditis, myocarditis, coronary vasculitis, nodules on valves
- Neuromuscular
  - entrapment neuropathy, peripheral neuropathy, mononeuritis multiplex
- Hematologic
  - Felty's syndrome, large granular lymphocyte syndrome, lymphomas

# Extra-articular manifestations

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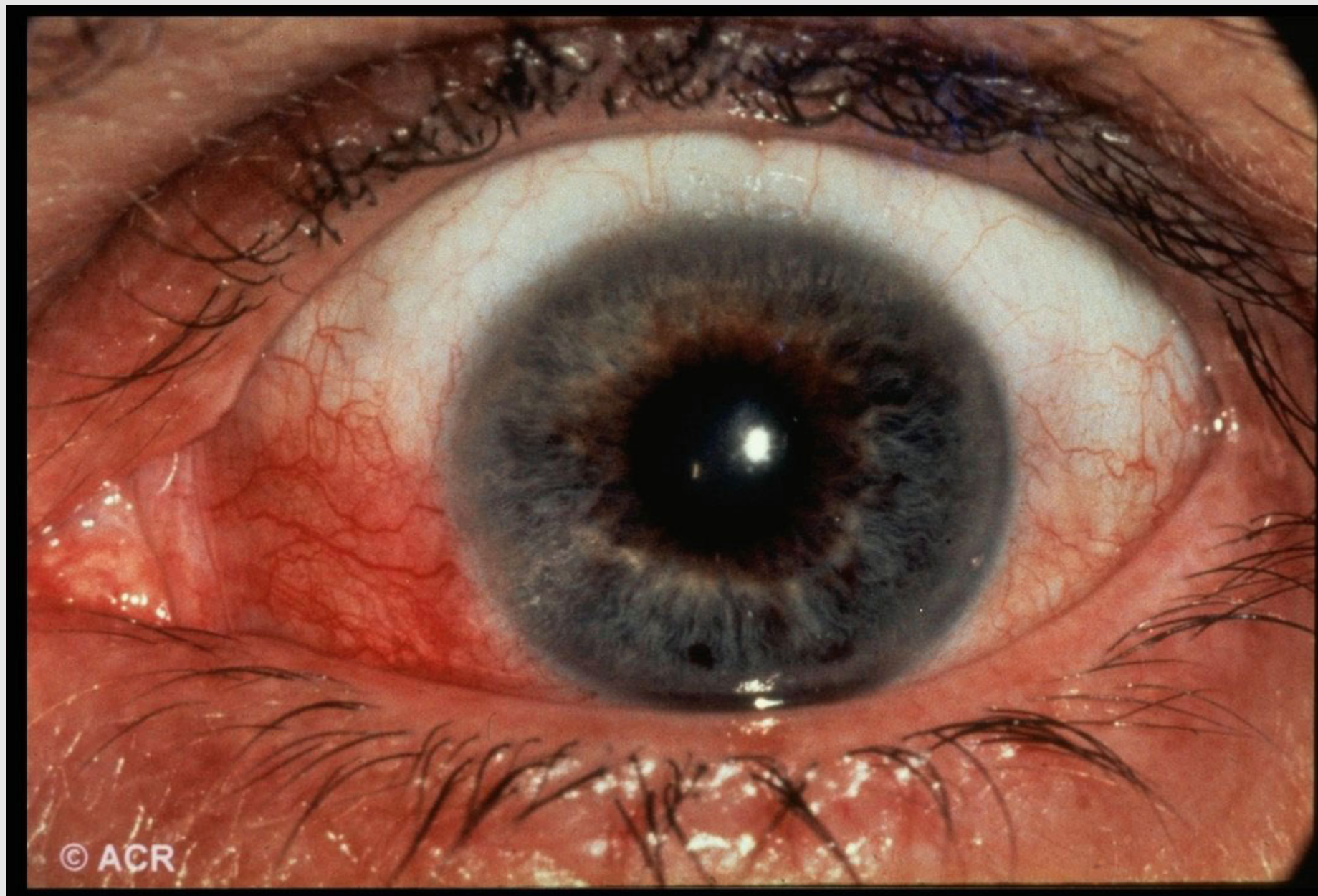
- Pulmonary
  - pleuritis, nodules, interstitial lung disease, bronchiolitis obliterans, arteritis, effusions
- Others
  - Sjogren's syndrome, amyloidosis





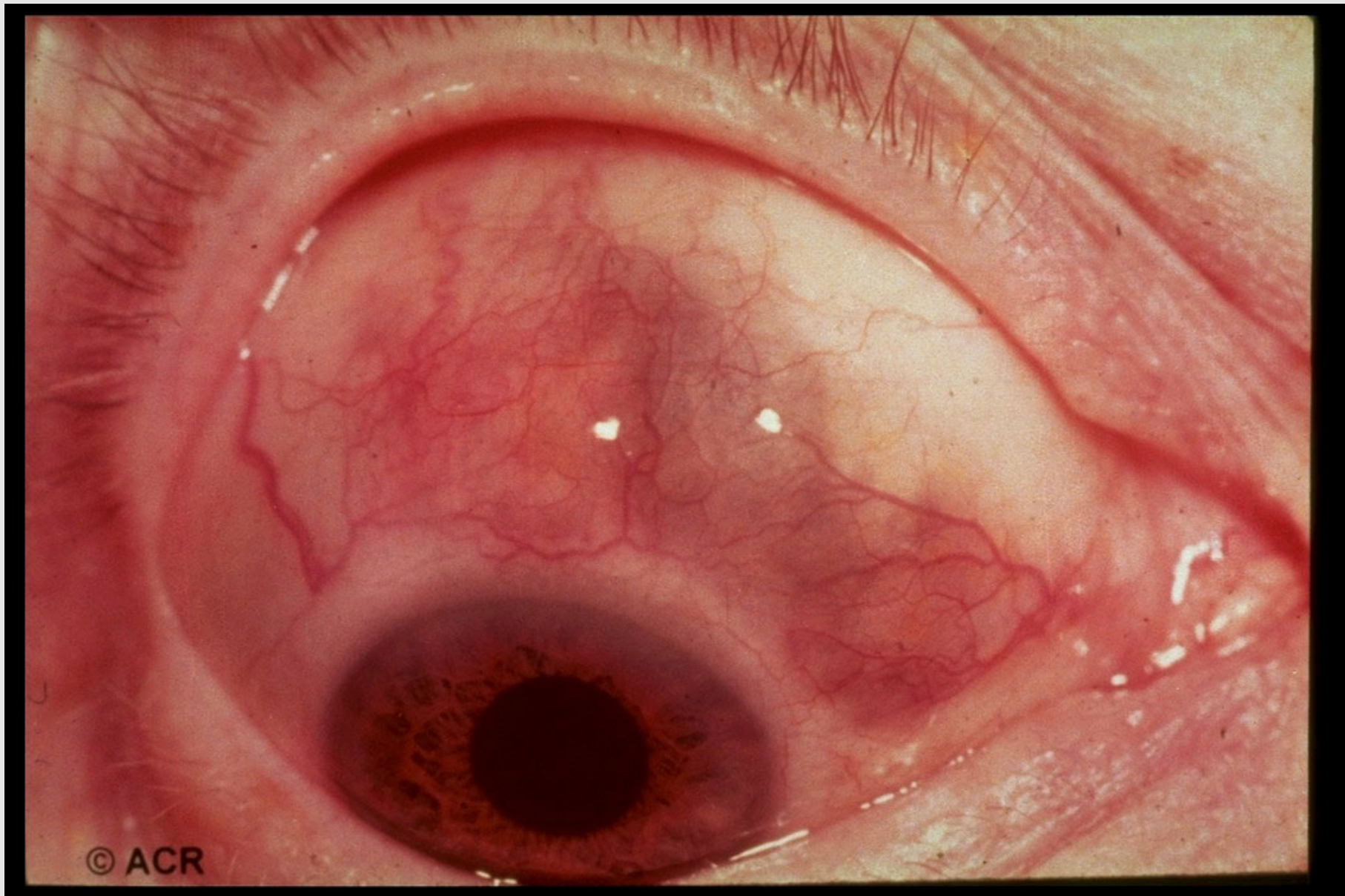


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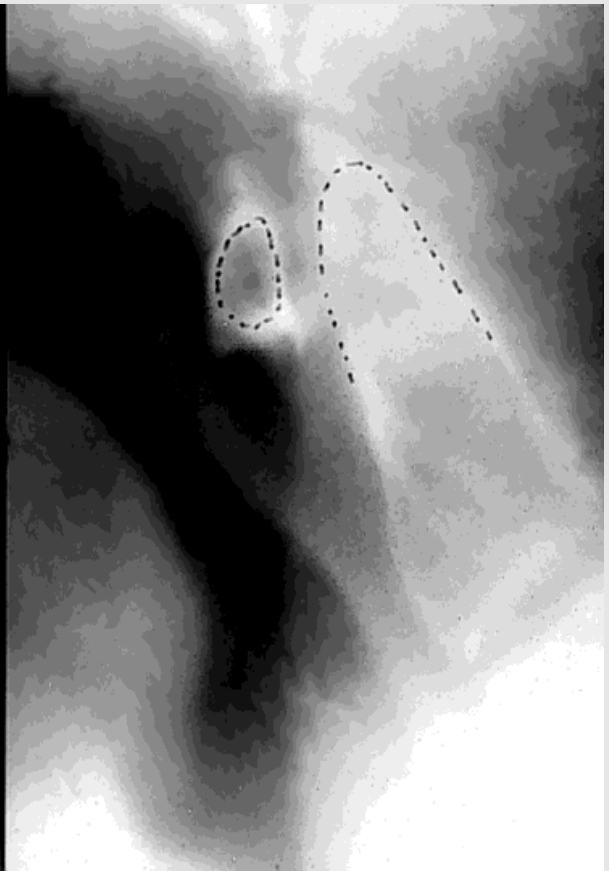
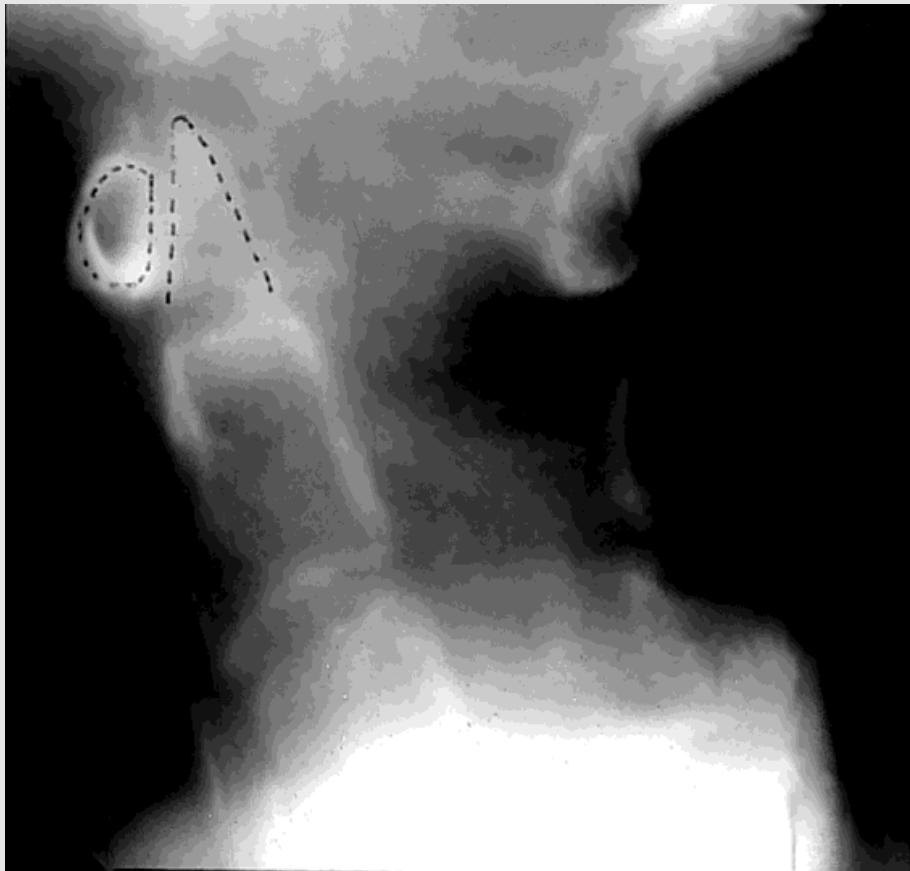


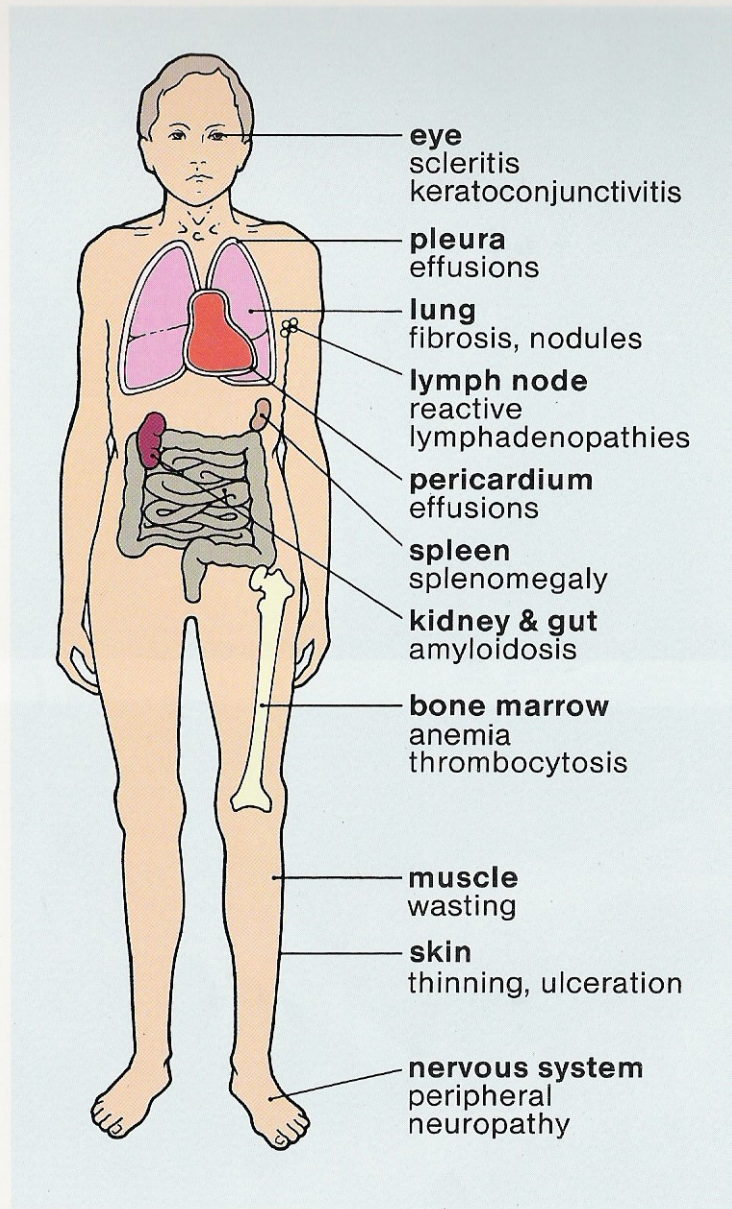
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**Fig. 3.27** Other organs commonly involved in rheumatoid disease.

# Investigations:

- Hematology : CBC , ESR
- Biochemistry : LFT , Renal profile
- Serology : RF , Anti-CCP
- Radiography : Joints , Spines , Chest

# ACR 1987 Classification Criteria for Rheumatoid Arthritis

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Patients Must Have Four of Seven Criteria:

Morning Stiffness Lasting at Least 1 Hour\*

Swelling in 3 or More Joints\*

Swelling in Hand Joints\*

Symmetric Joint Swelling\*

Erosions or Decalcification on X-ray of Hand

Rheumatoid Nodules

Abnormal Serum Rheumatoid Factor

\* Must Be Present at Least 6 Weeks.

## The 2010 ACR / EULAR classification criteria for rheumatoid arthritis

Target population (Who should be tested?): Patients who

- 1) have at least 1 joint with definite clinical synovitis (swelling)
- 2) with the synovitis not better explained by another disease

Add **A–D**; a score of 6/10 is needed to classify patient as having definite RA

### A. Joint involvement

- |   |   |
|---|---|
| 1 large joint.  | 0 |
| 2-10 large joints   | 1 |
| 1-3 small joints (with or without involvement of large joints)  | 2 |
| 4-10 small joints (with or without involvement of large joints) | 3 |
| 3-10 joints (at least 1 small joint)                            | 5 |

### B. Serology (at least 1 test result is needed for classification)

- |   |   |
|---|---|
| Negative RF <i>and negative ACPA</i>          | 0 |
| Low-positive RF <i>or low-positive ACPA</i>   | 2 |
| High-positive RF <i>or high-positive ACPA</i> | 3 |

### C. Acute-phase reactants (1 test result is needed for classification)

- |                                     |   |
|-------------------------------------|---|
| Normal CRP <i>and normal ESR</i>    | 0 |
| Abnormal CRP <i>or abnormal ESR</i> | 1 |

### D. Duration of symptoms

- |          |   |
|----------|---|
| 6 weeks  | 0 |
| >6 weeks | 1 |

# Treatment Goals

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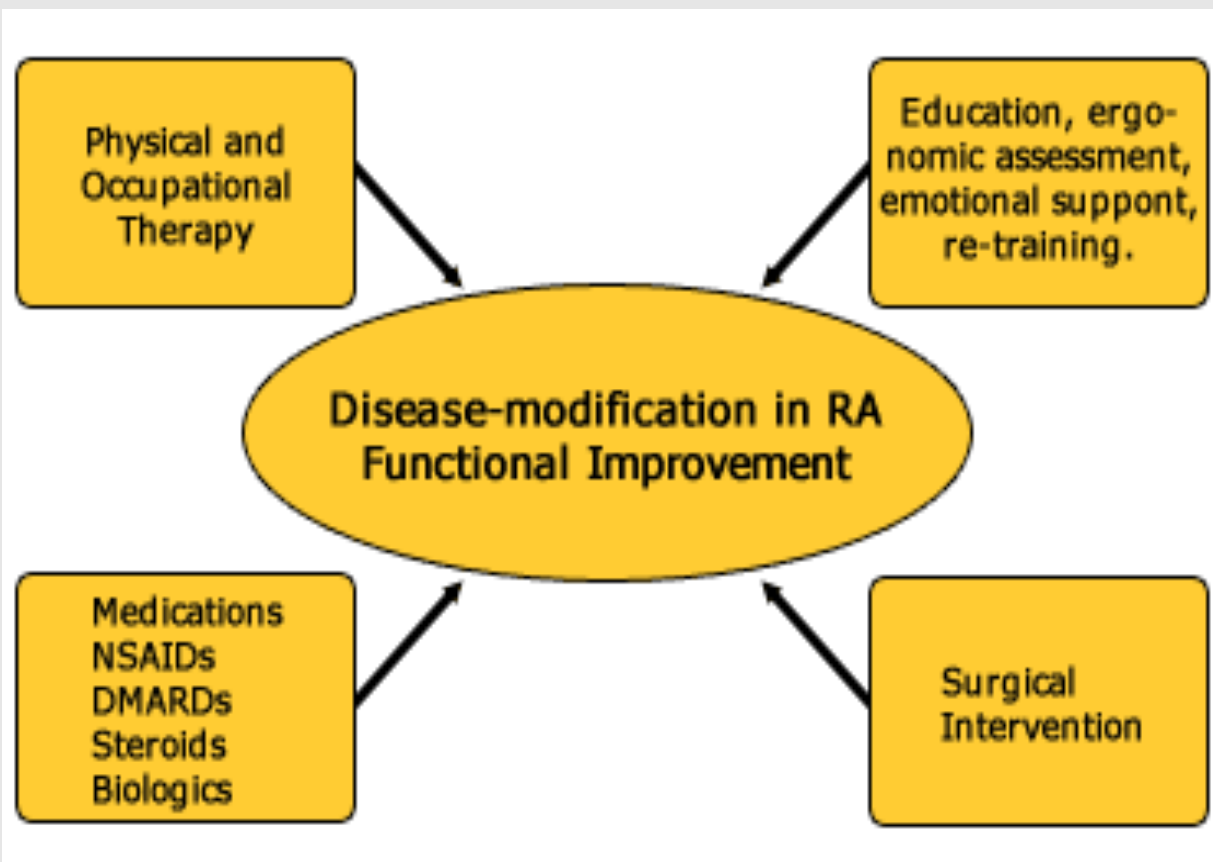
- Relieve pain
- Reduce inflammation
- Prevent/slow joint damage
- Improve functioning and quality of life

# Treatment Approaches

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- Lifestyle modifications
- Rest
- Physical and occupational therapy
- Medications
- Surgery







# Rationale for the Early Treatment of R.A.

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- Erosions develop early in the disease course
- Destruction is irreversible
- Disease activity is strongly associated with joint destruction later in the disease course
- Early treatment can slow down radiographic progress
- Disease activity must be suppressed maximally in its early stages to prevent destruction and preserve function

# Drug Treatments

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- Nonsteroidal anti-inflammatory drugs (NSAIDs)
- Disease-modifying antirheumatic drugs (DMARDs)
- Biologic response modifiers
- Corticosteroids

# Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)

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## Traditional NSAIDs

- Aspirin
- Ibuprofen
- Ketoprofen
- Naproxen

## COX-2 Inhibitors

- Celecoxib
- Etericoxib

# Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)

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- To relieve pain and inflammation
- Use in combination with a DMARD
- Gastrointestinal side effects

# Disease-Modifying Antirheumatic Drugs (DMARDs)

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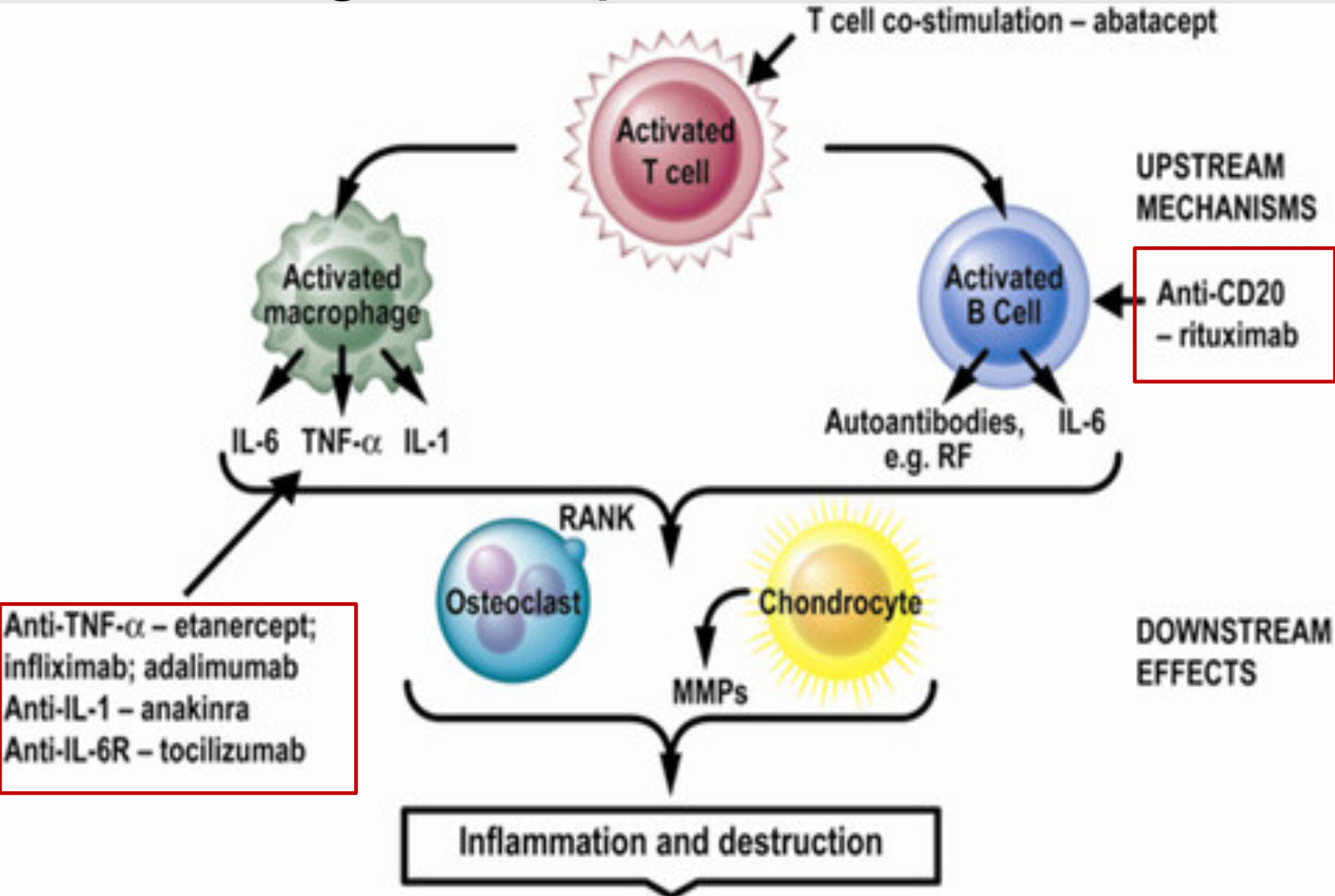
- Hydroxychloroquine (eye exam)
- Sulfasalazine (CBC, LFTs)
- Methotrexate (CBC, LFTs)
- Leflunomide (CBC, LFTs)
- Azathioprine (CBC, LFTs)

# Disease-Modifying Antirheumatic Drugs (DMARDs)

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- Control symptoms
- No immediate analgesic effects
- Can delay progression of the disease (prevent/slow joint and cartilage damage and destruction)
- Effects generally not seen until a few weeks to months

# Biologic Response Modifiers



# Biologic Response Modifiers

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- **TNF Inhib:**  
etanercept,infliximab,Adalimumab
- **IL6 receptor inhib:**  
tocilizumab
- **T Cell costimulation modulator:**  
abatacept



# Physiotherapy

- Effective in maintaining the range of motion
- Strengthening of muscles
- Prevent contractures
- Prevent deformities
- Maintain activities of daily living

# Occupational Therapy

- Education of patients in the use of daily living activities
- Prevention of joint contractures and deformities



THANK YOU