

Rheumatoid Arthritis

- Objectives:

By the end of this lecture student should be able to:

- Recognize which patient is likely to have RA
- Know the different modes of presentation of RA
- Develop a plan of investigation and management of RA

Introduction

Rheumatoid arthritis is a chronic systemic inflammatory disease that predominantly affects the joints. It can affect other systems in the body. Early recognition and treatment can prevent joint destruction and disability.

Rheumatoid Arthritis

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

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

THE PATHOLOGY OF RA

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

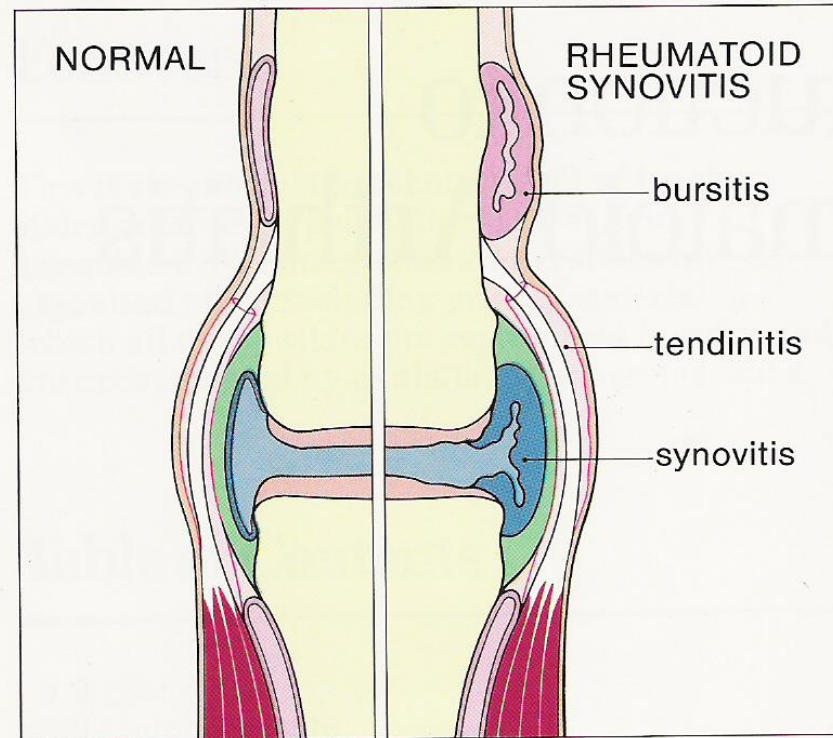
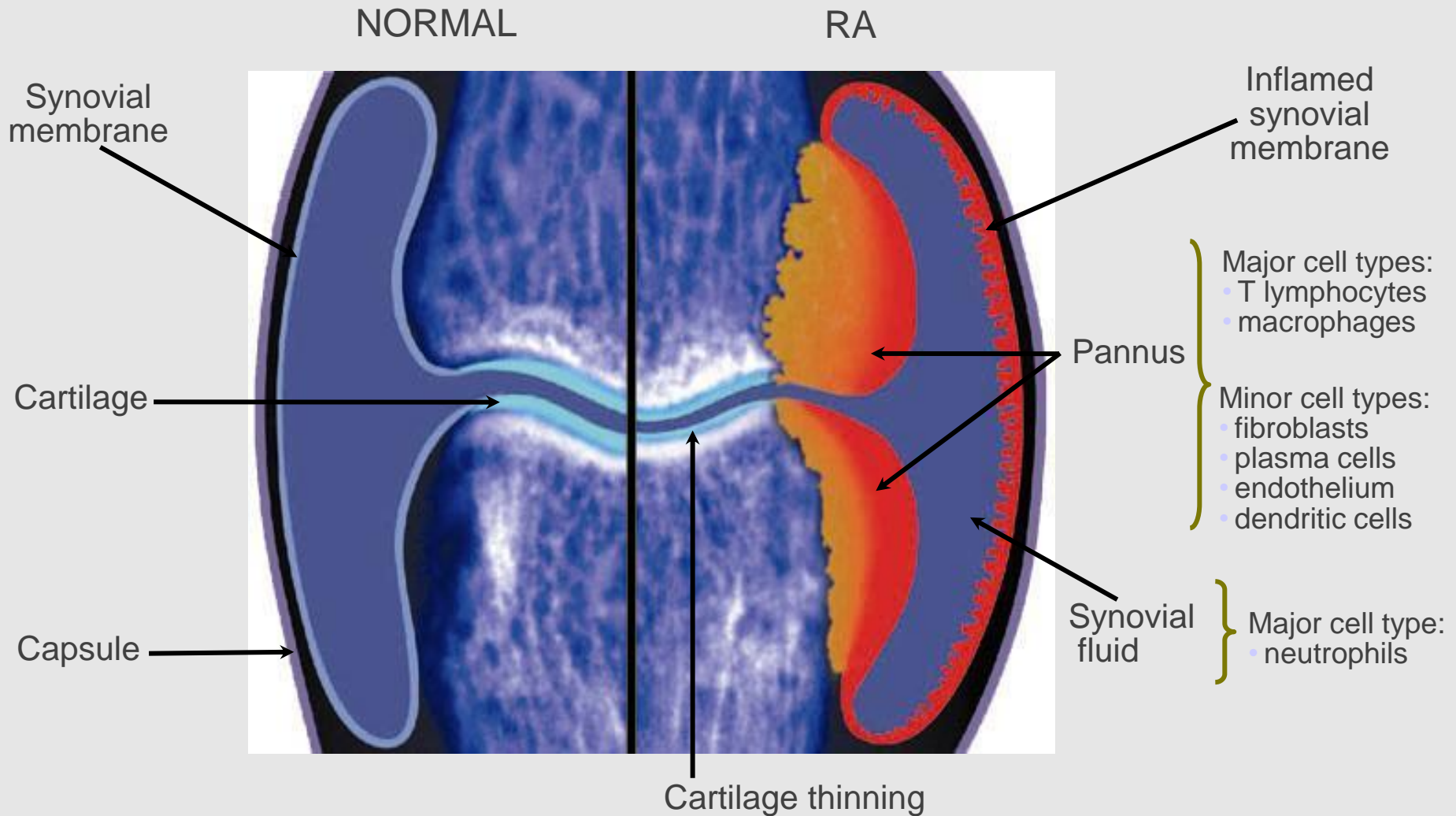


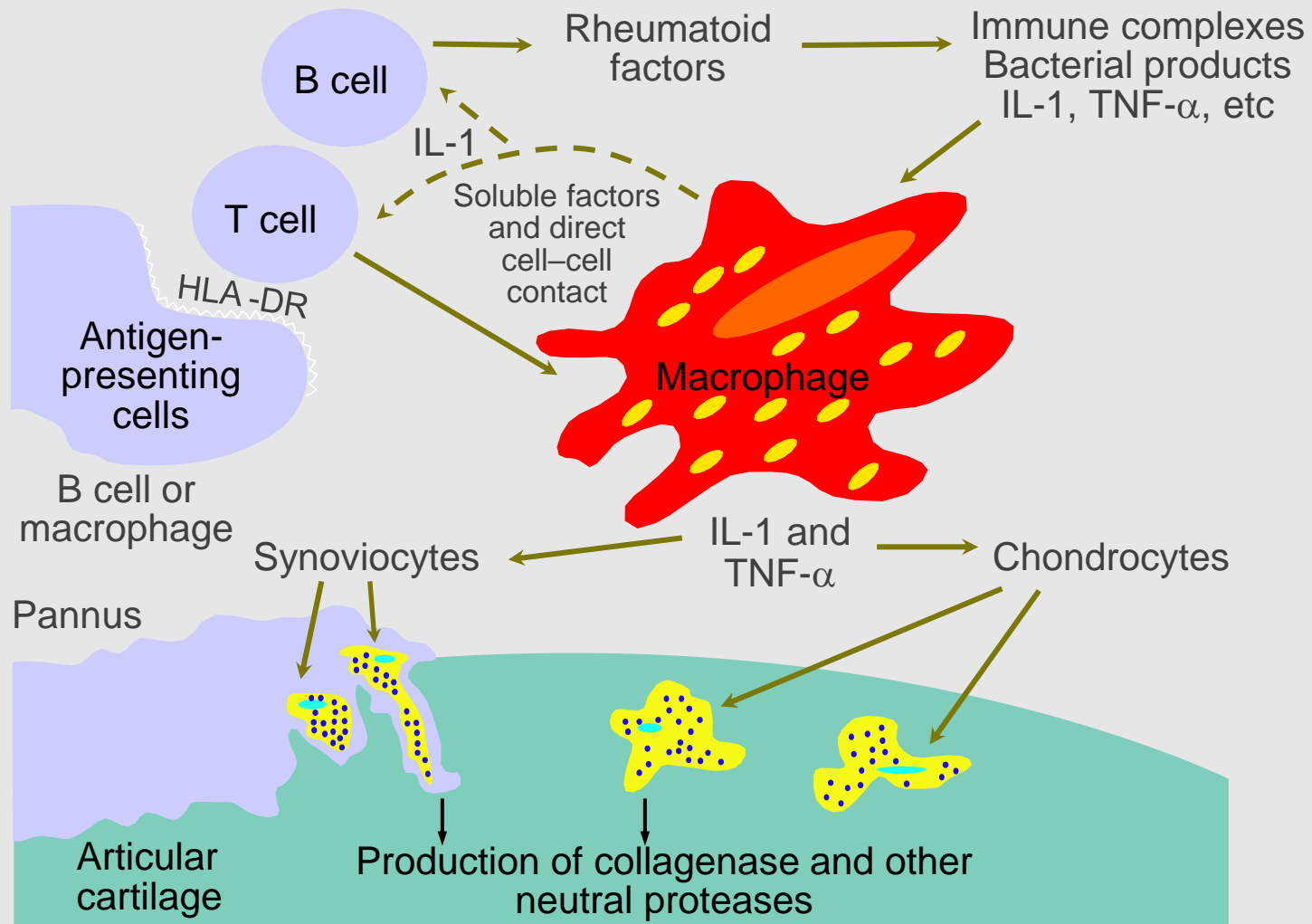
Fig. 3.3 The three major sites of rheumatoid synovitis.

RA Is Characterised by Synovitis and Joint Destruction



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

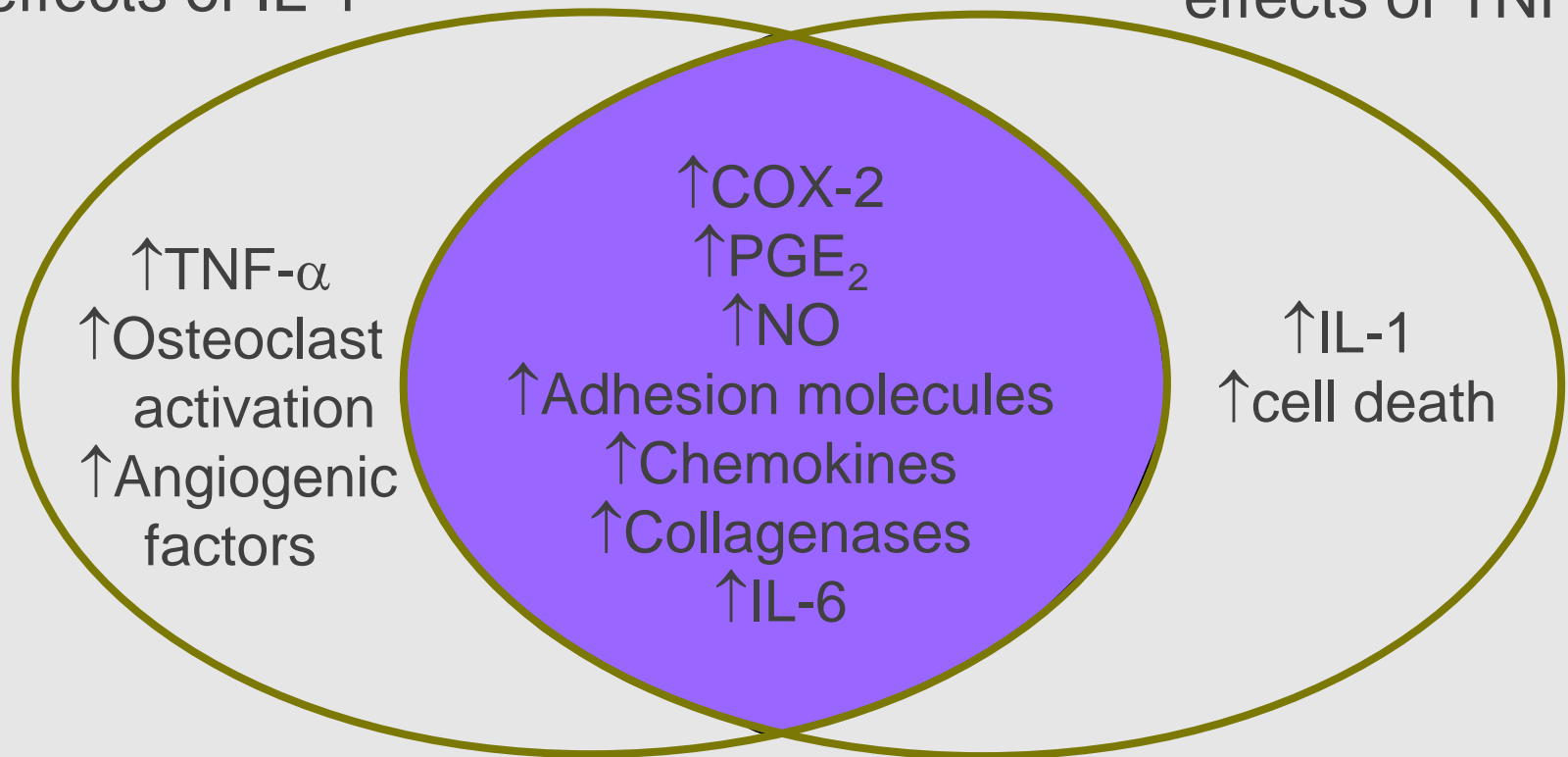
Numerous Cellular Interactions Drive the RA Process



IL-1 and TNF- α Have a Number of Overlapping Proinflammatory Effects

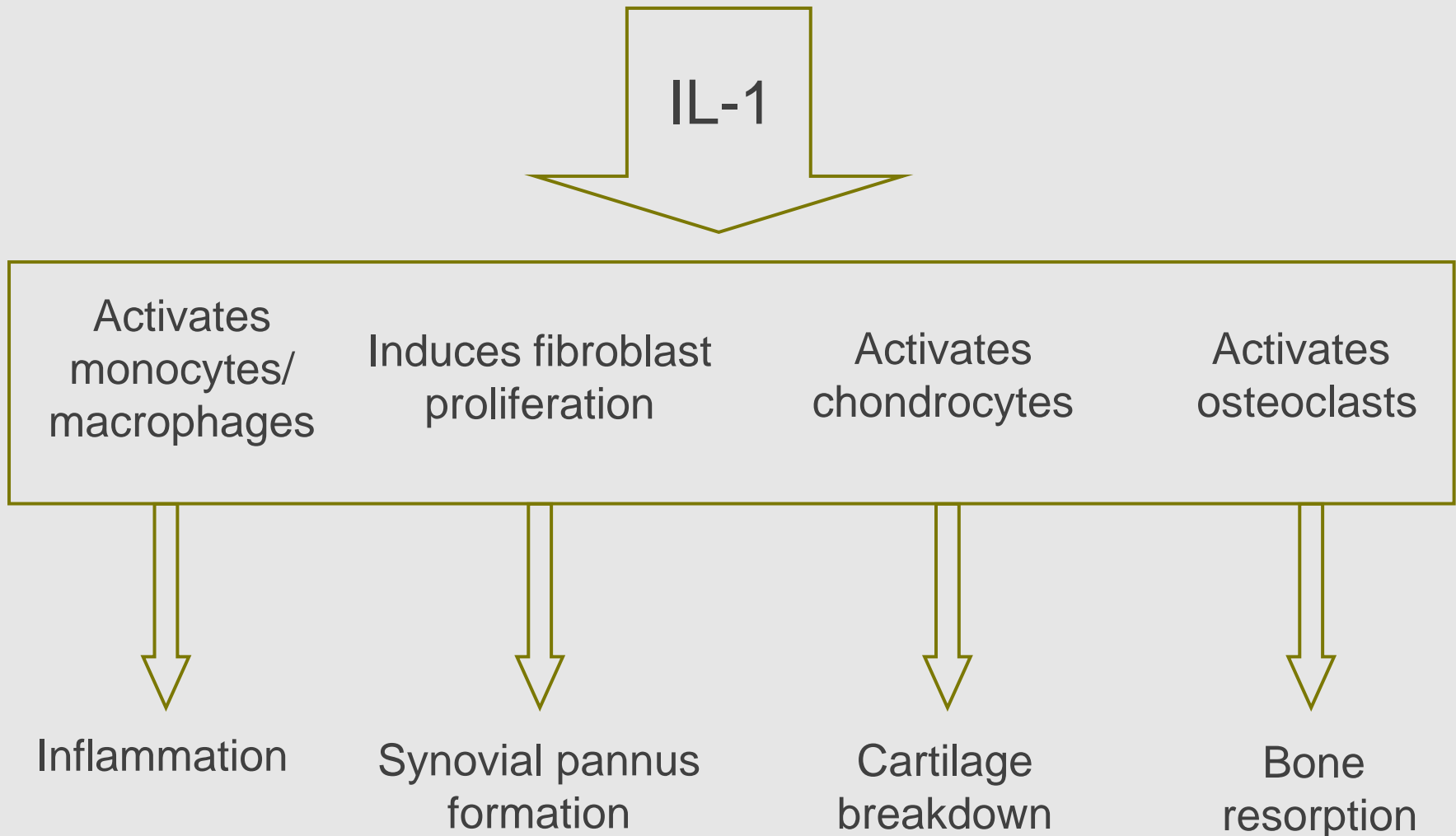
Proinflammatory effects of IL-1

Proinflammatory effects of TNF- α



COX-2 = cyclo-oxygenase type 2; PGE₂ = prostaglandin-E₂; NO = nitric oxide

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



Signs and Symptoms

- 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:

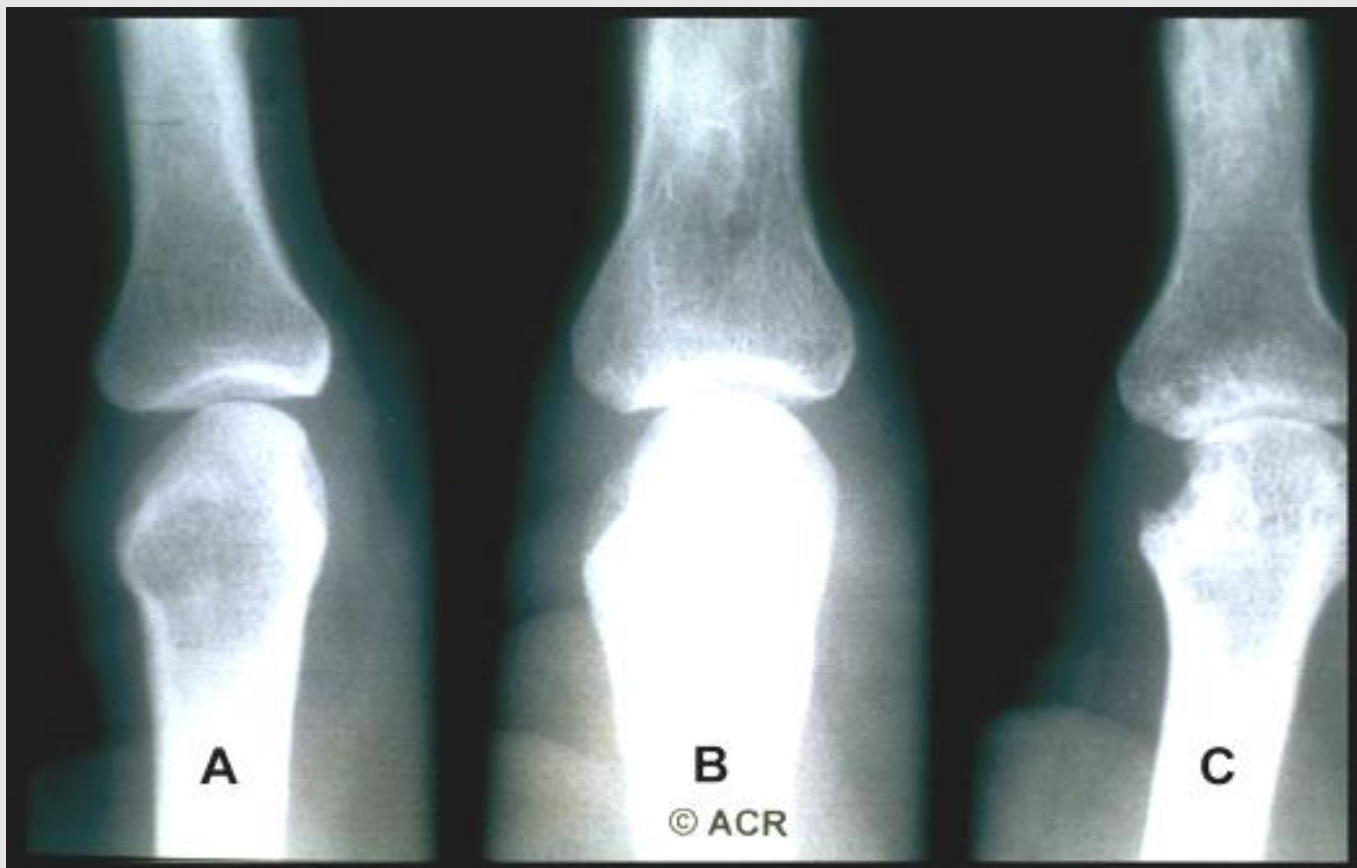
- Synovitis
- Fixed flexion or extension deformities
(Swan neck or boutonniere deformity)

THUMBS:

- Synovitis
- 'Z' deformity







Joint Destruction



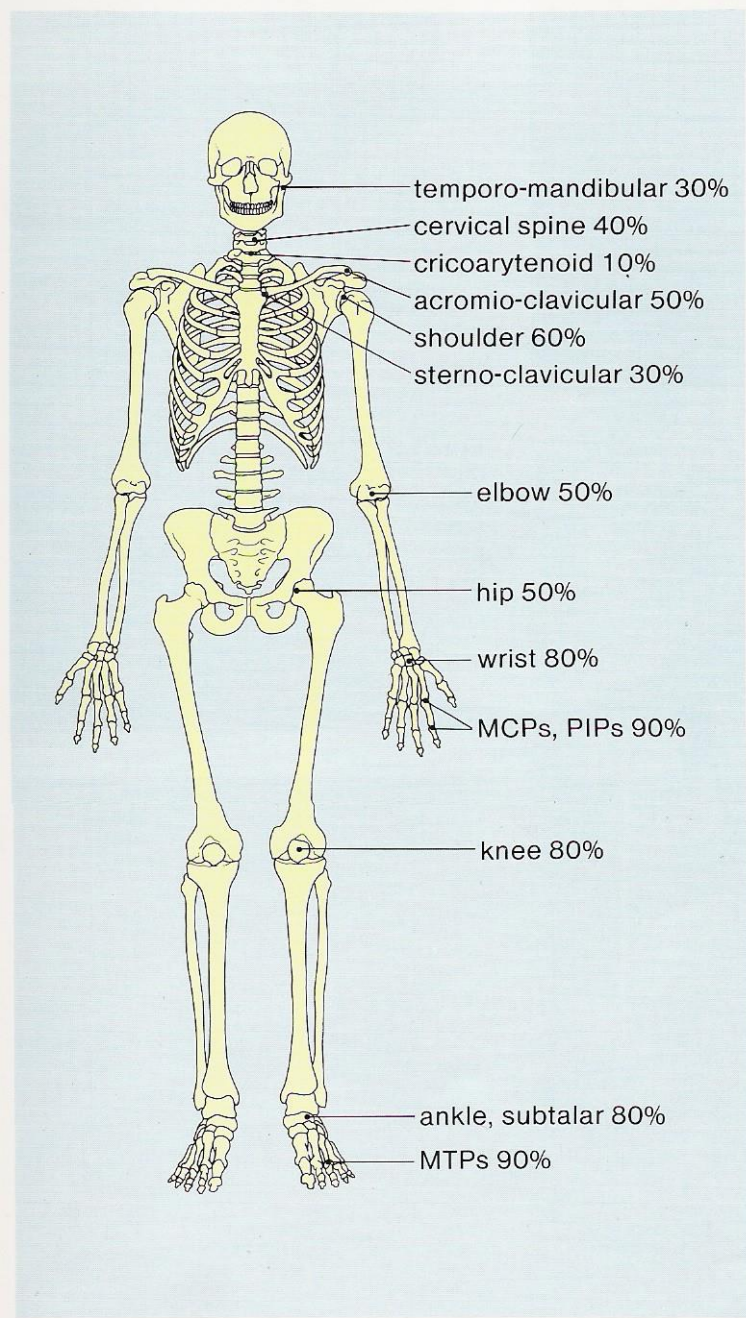


Fig. 3.6 Frequency of involvement of different joint sites in established RA.

Extra-articular manifestations

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

Extra-articular manifestations

- 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

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



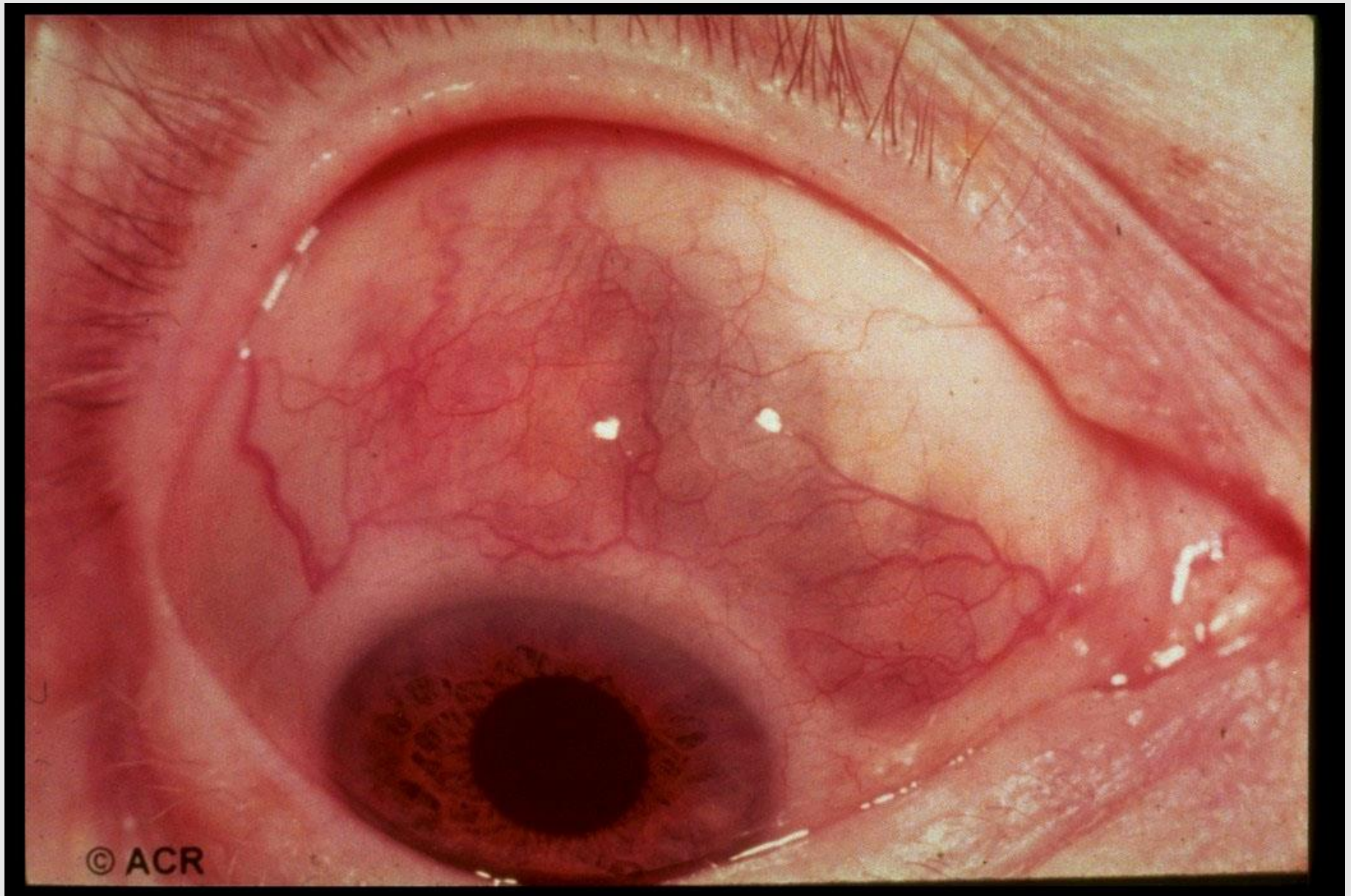
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A close-up photograph of a human elbow joint, showing the skin texture and anatomical features. The skin is light-colored with some minor discoloration and small dark spots. The joint is flexed, and the olecranon process is visible. The background is dark.

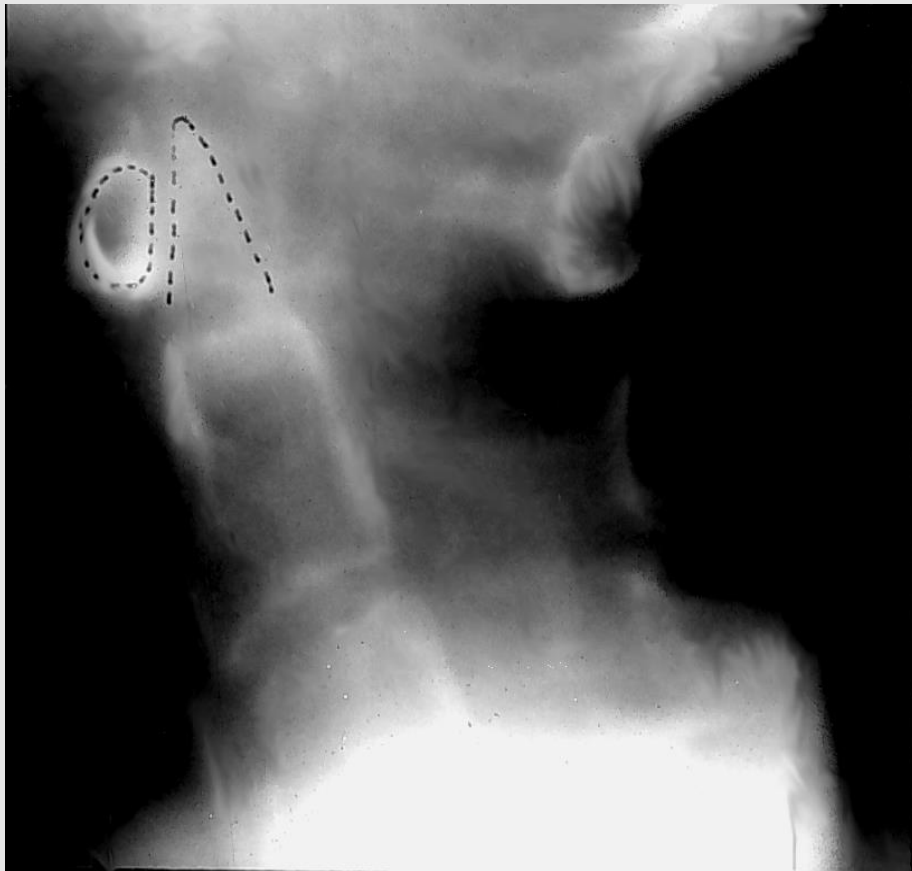
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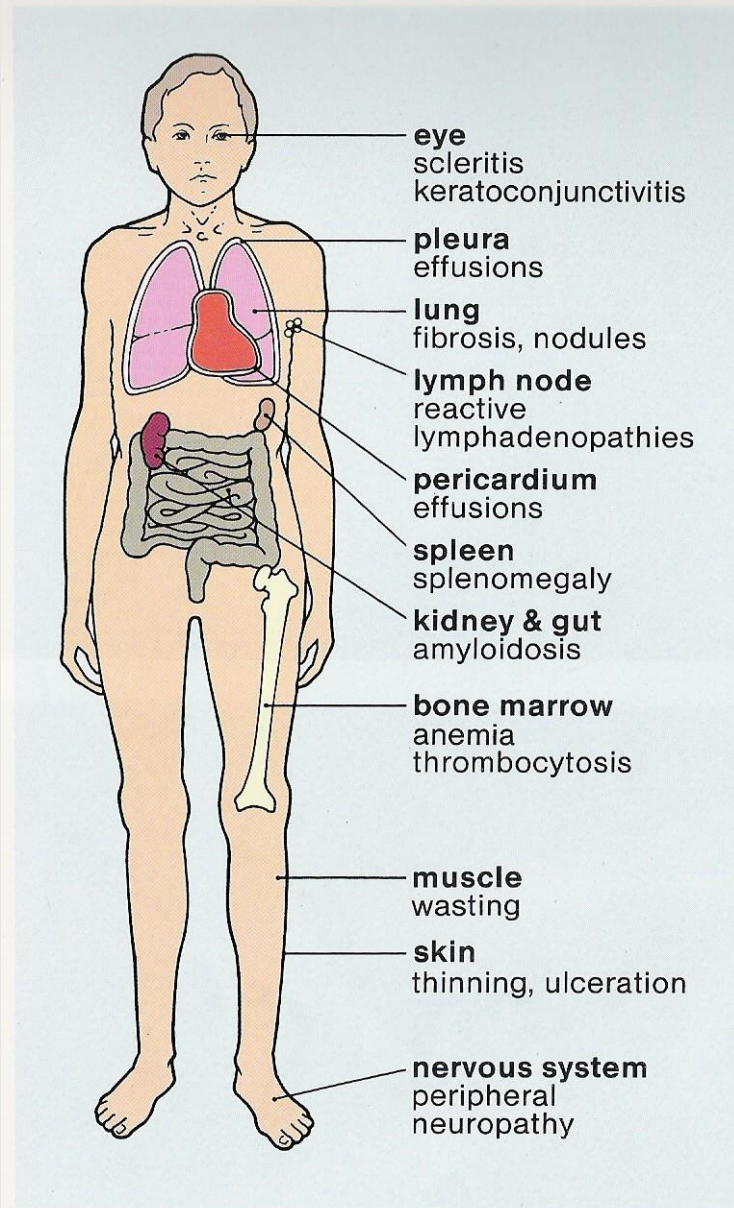


Fig. 3.27 Other organs commonly involved in rheumatoid disease.

Investigations:

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

ACR 1987 Classification Criteria for Rheumatoid Arthritis

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

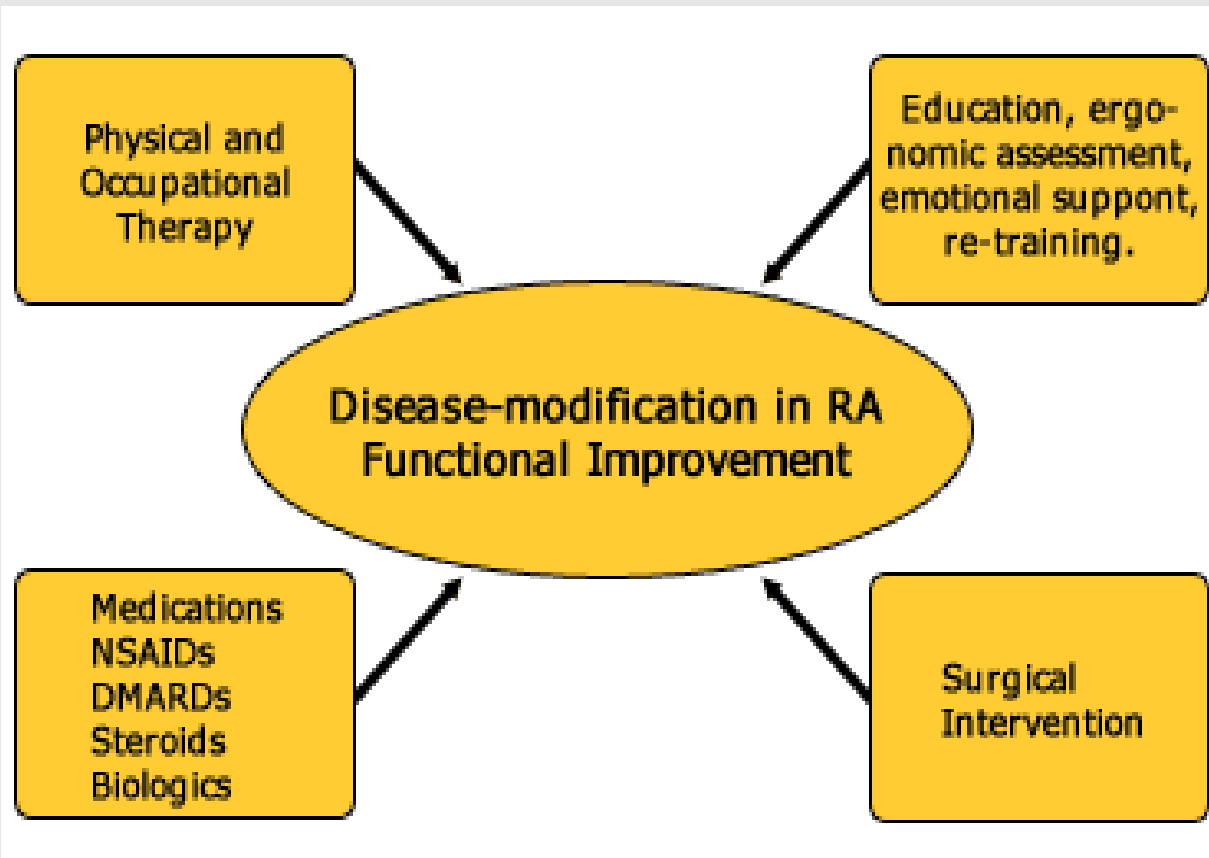
- | | |
|----------|----------|
| 6 weeks | 0 |
| >6 weeks | 1 |

Treatment Goals

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

Treatment Approaches

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



Rationale for the Early Treatment of R.A.

- 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

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

Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)

Traditional NSAIDs

- Aspirin
- Ibuprofen
- Ketoprofen
- Naproxen

COX-2 Inhibitors

- Celecoxib
- Etericoxib

Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)

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

Disease-Modifying Antirheumatic Drugs (DMARDs)

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

Disease-Modifying Antirheumatic Drugs (DMARDs)

- 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

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

Take home message:

Early diagnosis and treatment of RA can prevent joint destruction and preserve function.

THANK YOU