

# RHEUMATOID ARTHRITIS

# WHAT IS RA ?

➤ The most common chronic inflammatory disorder of joints.

➤ Characterized by pattern of joint involvement

Autoantibodies

RF

ACPA

# EPIDEMIOLOGY

- All races
- Females > Males (2-3:1)
- Average age  $\longrightarrow$  40-60 years (men are older)
- 1% of adults in USA

# ETIOLOGY AND PATHOGENESIS

➤ Cause of RA remains unknown

➤ Multi factional

Genetic

Environmental

Autoantibodies

# GENETIC FACTORS

➤ MHC region → HLA genes

➤ Outside MHC → PTPN 22, STAT 4

# ENVIRONMENTAL FACTORS

- Smoking (Dose dependent)
- Silica dust
- Air pollution
- Bacteria (Mouth, lung , gut)
- Viruses (EBV , Parvovirus B19)

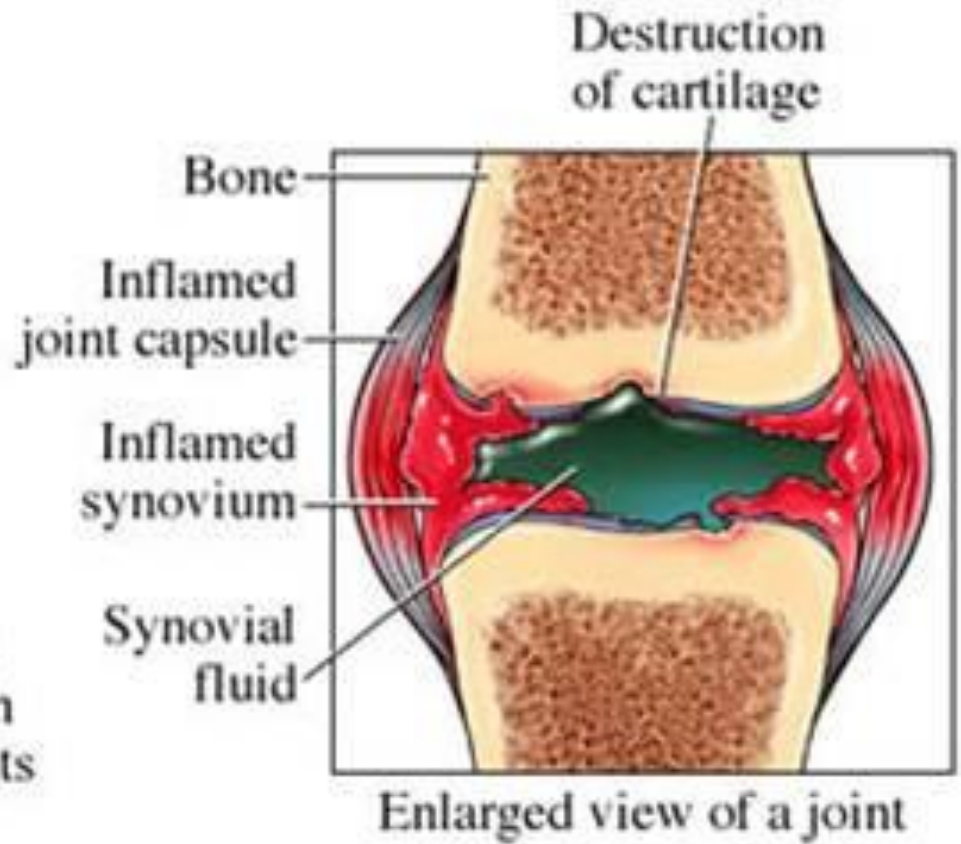
# AUTOANTIBODIES

➤ RF

➤ AMPAs {  
citrullinated  
carbamylated



Joint pain occurring in various joints





# PRECLINICAL RA

Genetic and environmental factors



Triggering Autoimmunity  
( Mucosal sites)

Absence of  
synovitis

# CLINICAL RA

Certain Immune complexes (include ACPA , RF)



Deposit in synovial postcapillary venules



Complement activation



Inflammation



Pannus

(Bone , cartilage, ligaments damage)

# 2010 ACR/EULAR CLASSIFICATION CRITERIA

|   |              |
|---|--------------|
| <b>Joint Involvement <sup>a</sup></b>                                       | <b>(0-5)</b> |
| 1 medium to large <sup>b</sup> joint  | 0            |
| 2-10 medium to large joints   | 1            |
| 1-3 small <sup>c</sup> joints (with or without involvement of large joints) | 2            |
| 4-10 small joints (with or without involvement of large joints)             | 3            |
| >10 joints <sup>d</sup> (at least one small joint)                          | 5            |
| <b>Serology <sup>e, f</sup></b>   | <b>(0-3)</b> |
| Negative RF <b>AND</b> negative ACPA  | 0            |
| Low-positive RF <b>OR</b> low-positive ACPA                                 | 2            |
| High-positive RF <b>OR</b> high-positive ACPA                               | 3            |
| <b>Acute Phase Reactants <sup>e, g</sup></b>                                | <b>(0-1)</b> |
| Normal CRP <b>AND</b> normal ESR  | 0            |
| Abnormal CRP <b>OR</b> abnormal ESR   | 1            |
| <b>Duration of Symptoms <sup>h</sup></b>                                    | <b>(0-1)</b> |
| <6 weeks  | 0            |
| ≥6 weeks  | 1            |
| <b>The sum of scores needs to be &gt;X to classify as RA</b>                |              |

# ARTICULARE MANIFESTATIONS

- **Most commonly involved joints → MCPs ,PIPs, Wrists, MTPs**
- **Larger joints become symptomatic after small joints**
- **Oligoarticular onset but progress to polyarticular**
- **Symmetric distribution**

# HAND

- Fusiform swelling → synovitis of PIP
- Boutonniere deformity → Flex of PIP and hyperext of DIP
- Swan-neck deformity → Hyperext of PIP and Flex of DIP
- Ulnar deviation of fingers → Subluxation of MCP , results from weakening of extensor carpi ulnaris
- Z-deformity → Hyperextension of IP with flex of MCP
- Piano key → Destruction of ulnar collateral ligament leading to floating ulnar styloid

# SYMMETRIC JOINTS SWELLING

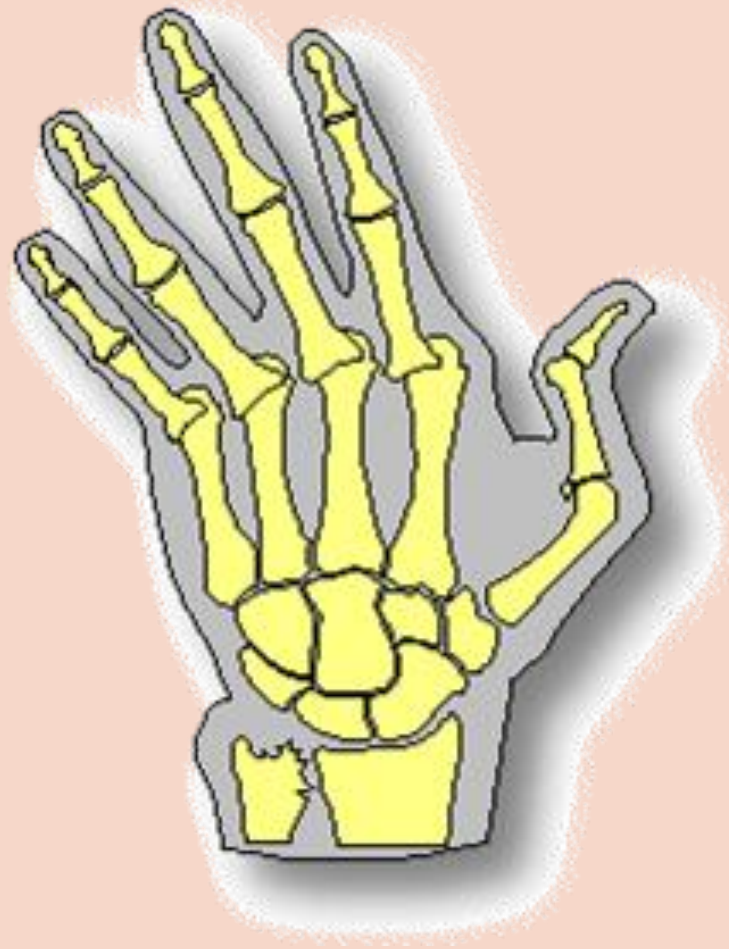
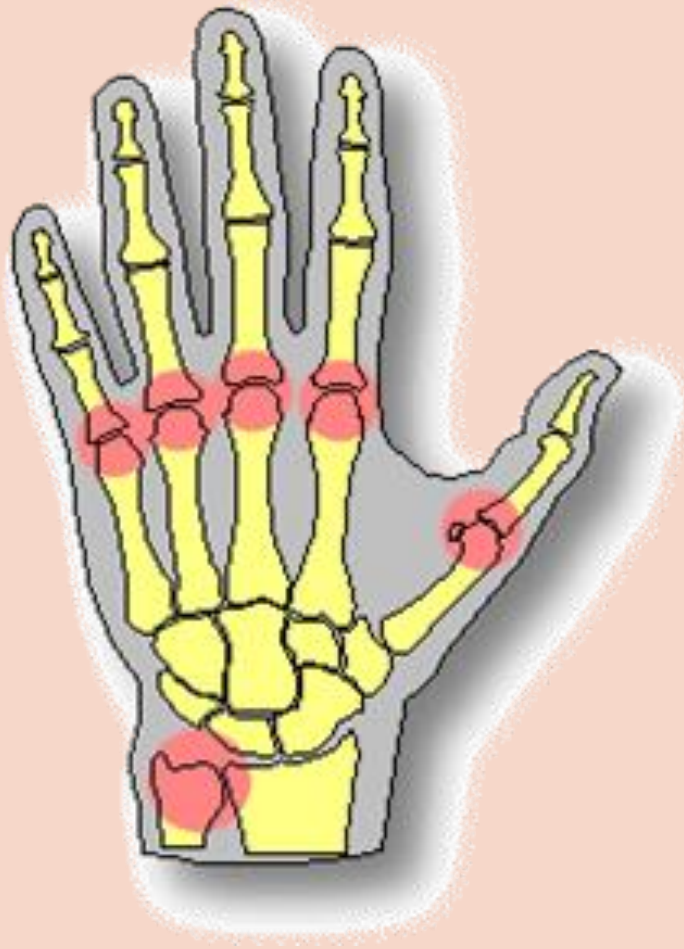




# FUSIFORM SWELLING, HAND



# HAND DEFORMITY IN RA





# SUBLUXATION AND MUSCLE ARTROPHY, HANDS



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# ULNAR DEVIATION AND MUSCLE ARTROPHY, HANDS



# SWAN-NECK AND BOUTONNIÈRE DEFORMITY, HAND





# BOUTONNIER DEFORMITY



# CARPAL TUNNEL SYNDROME



# TELESCOPING DIGIT, HANDS



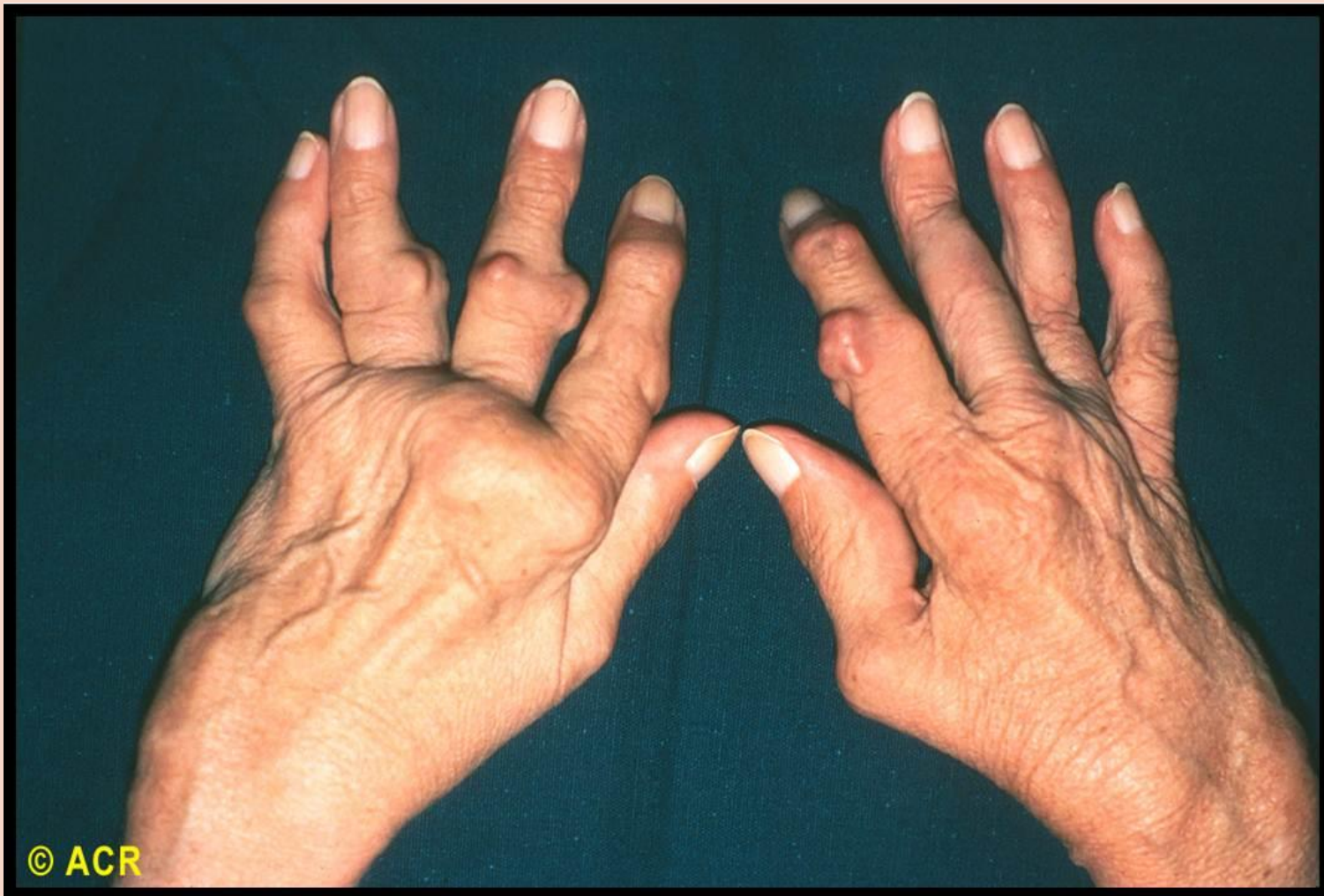


# SUBCUTANEOUS NODULE, OLECRANON



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# SUBCUTANEOUS NODULES, FINGERS





# FOOT

- **Hammer toe → Subluxation of metatarsal heads**  
(walking on stones)
- **Flattening of arch → Tarsal and subtalar involvement**
- **Valgus deformity in hind foot**

# FOOT DEFORMITIES



© ACR

# FOOT DEFORMITIES



# FOOT IN RA



# SPINE

- Cervical spine involved in 30-50%
- C1-C2 is the most commonly involved
- Decreasing rates with modern therapy
- Instability with potential impingement of cord
- Pain , neurologic involvement and death
- Stretching and rupture of transverse and alar ligaments

# EXTRA ARTICULAR MANIFESTATIONS

➤ Seropositive

➤ Males

➤ HLA-DR4

# GENERAL

➤ **Fever**

➤ **Lymphadenopathy (active dis , ,malignancy and inf )**

➤ **Weight loss**

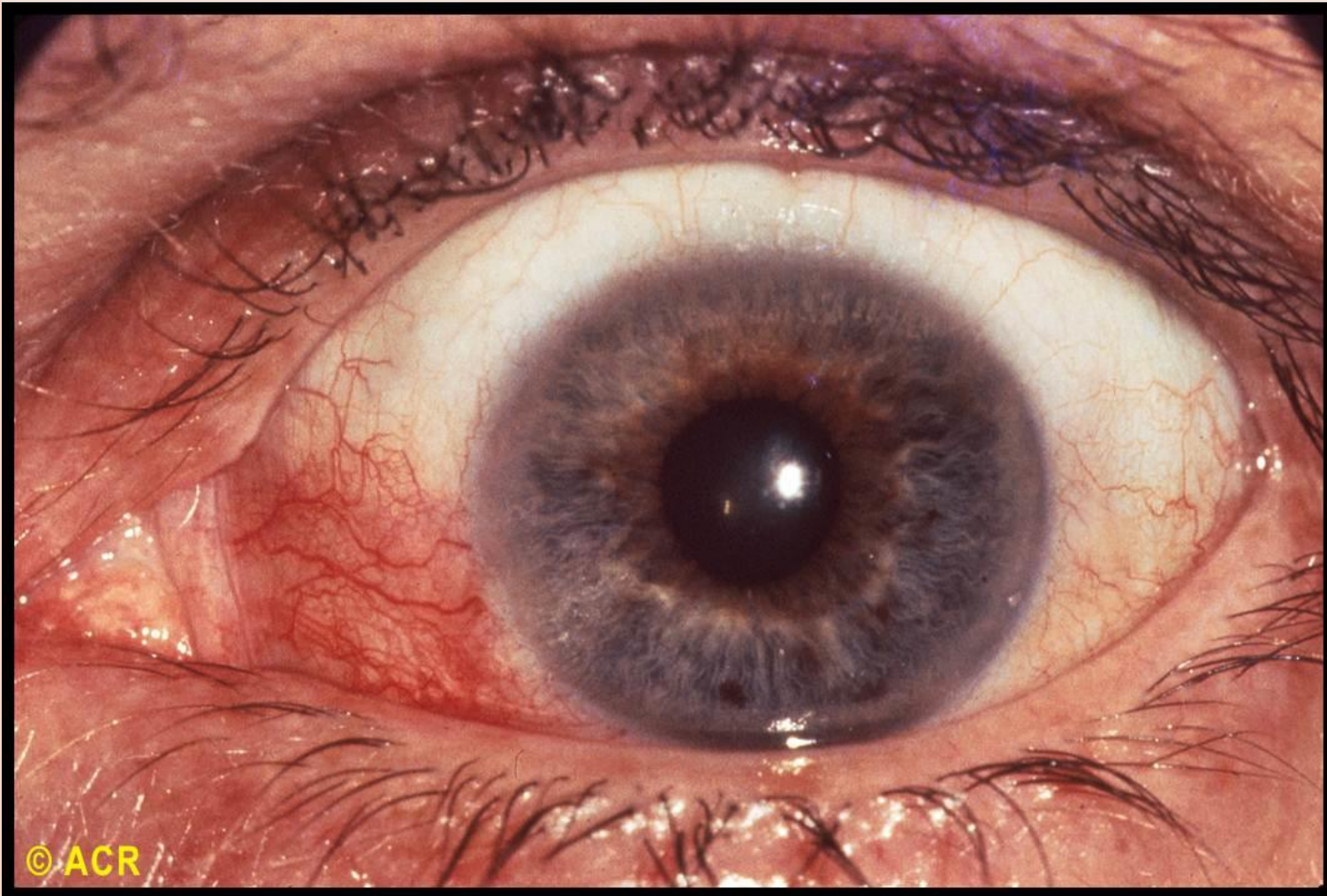
➤ **Fatigue**

# OCULAR

- **Sicca symptoms**
- **Episcleritis**
- **Scleritis**
- **Choroid and retinal nodules**
- **Scleromalacia**

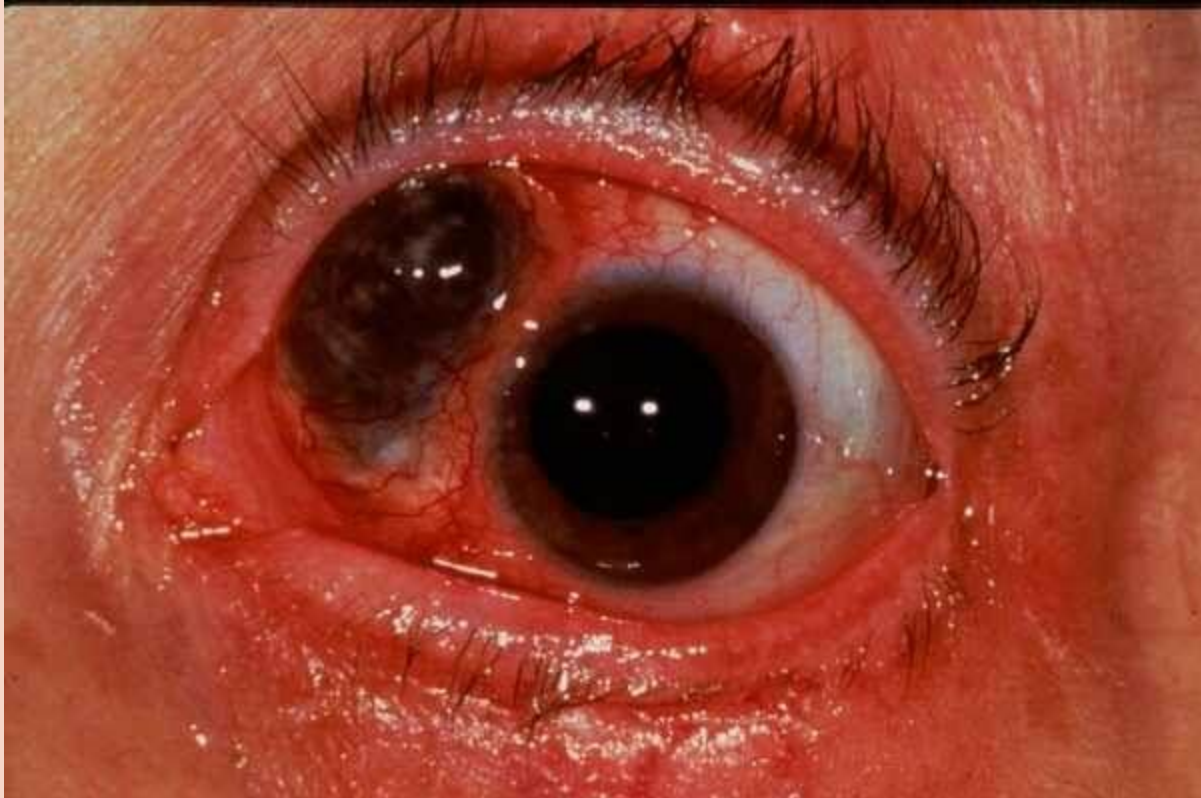


# EPISCLERITIS



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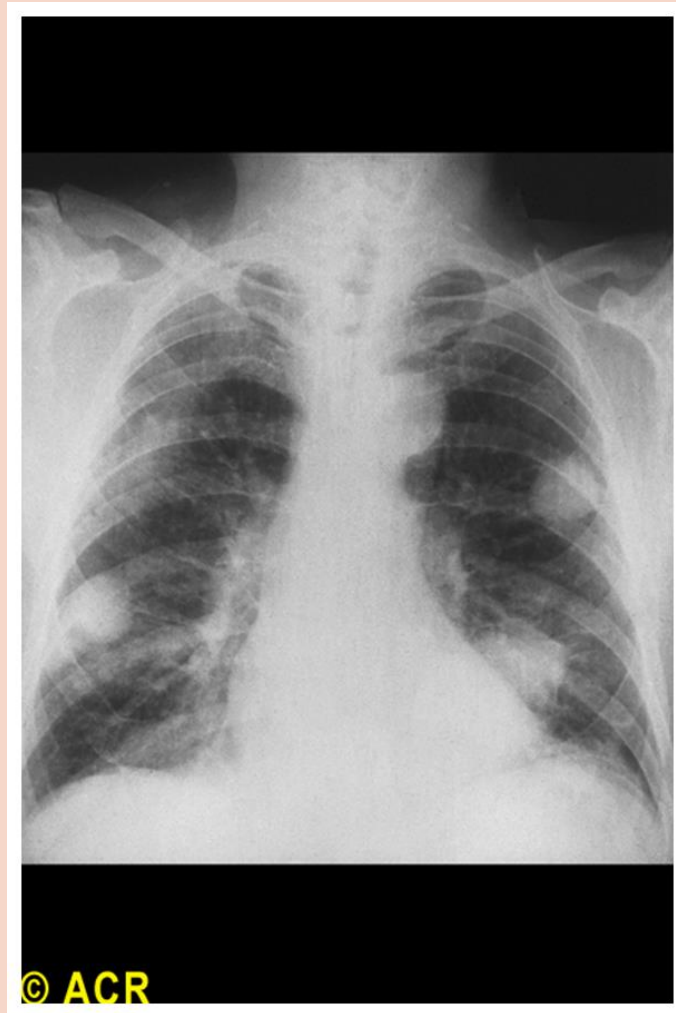
# SCLEROMALACIA PERFORANCE



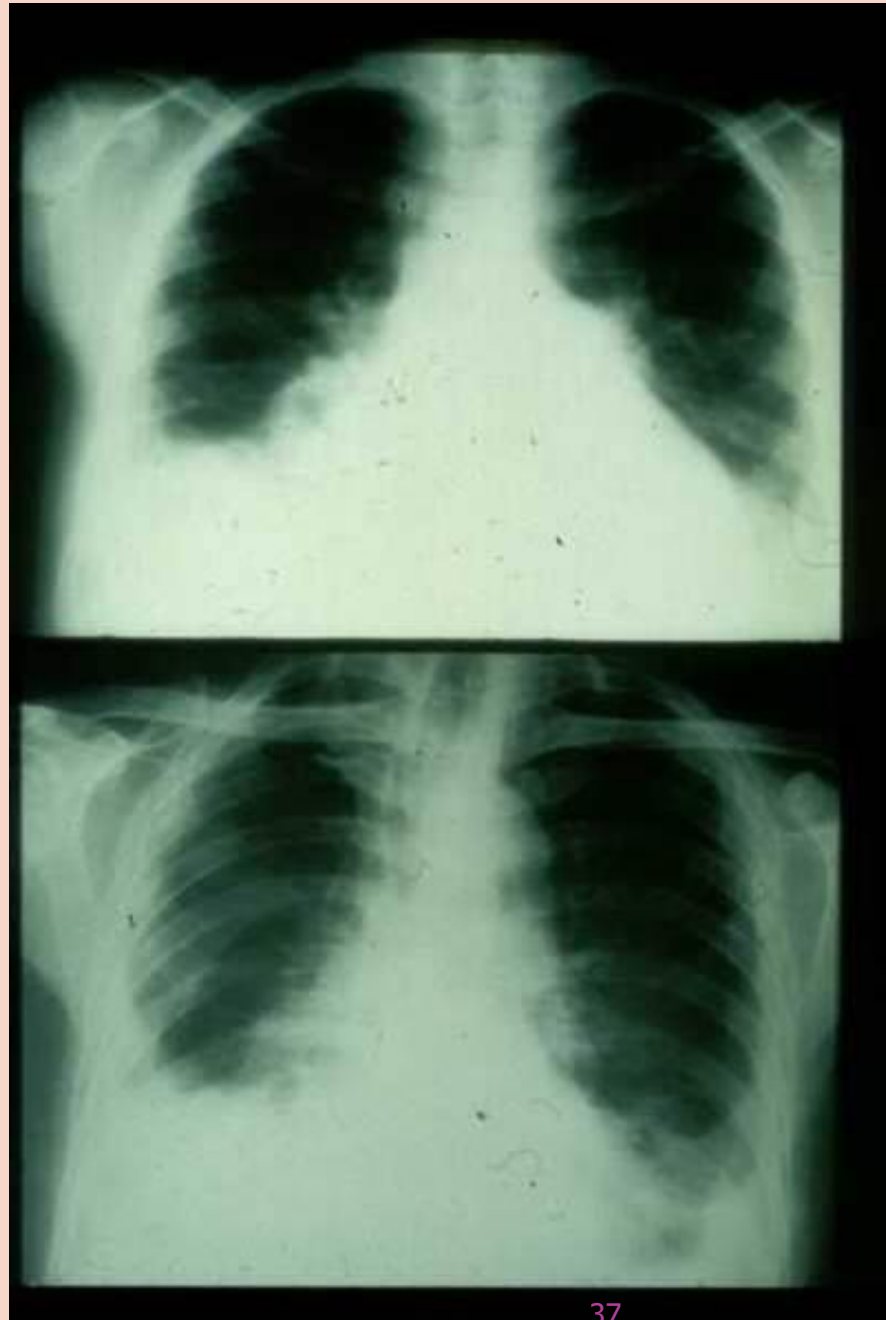
# PULMONARY

- Pleuritis and pleural effusions
- Nodules ( Caplan`s syn )
- ILD (UIP , males , smokers)
- Obstructive lung disease

# PULMONARY NODULES

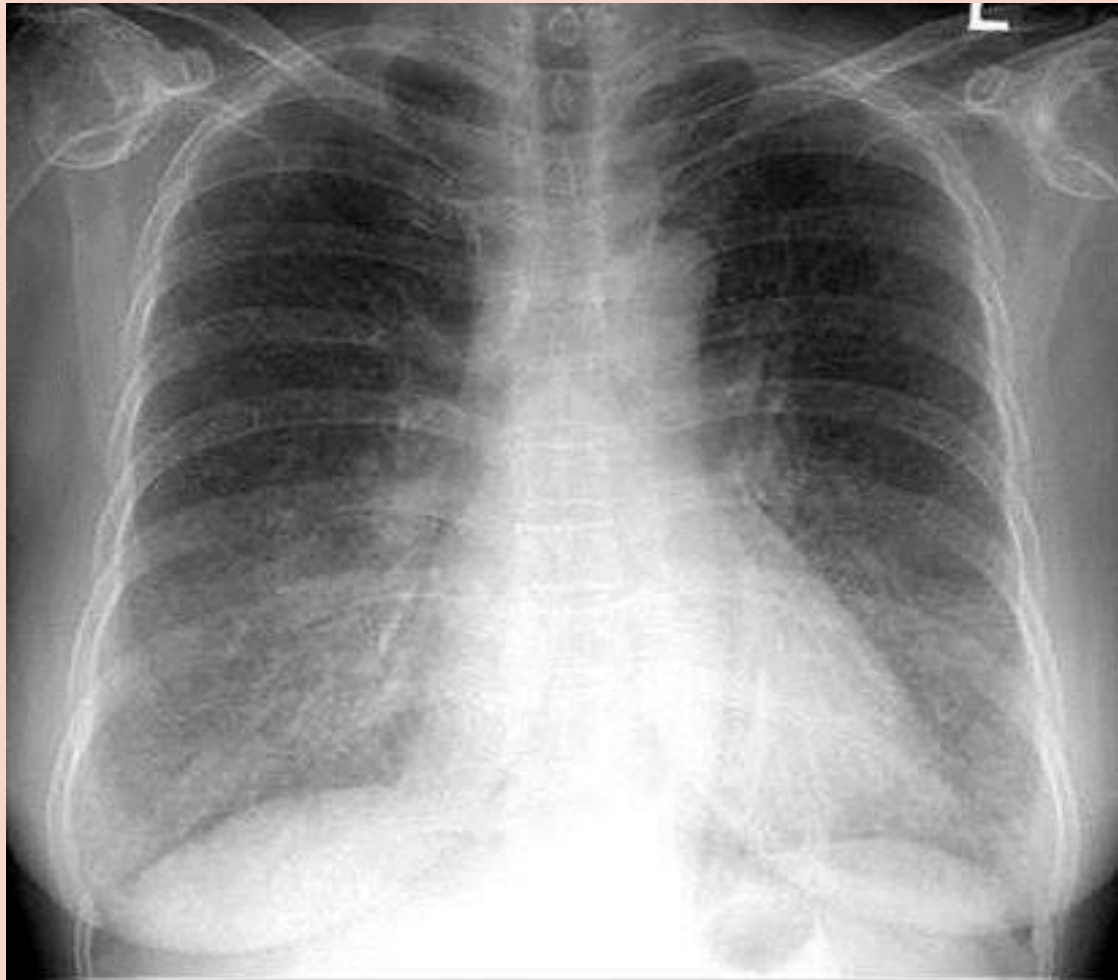


# LUNG AND PERICARDIAL EFFUSION





# LUNG FIBROSIS



# CARDIAC

➤ **Pericarditis**

➤ **Myocarditis**

➤ **Coronary disease**

# NEUROMUSCULAR

- **Entrapment neuropathy**
- **Peripheral neuropathy**
- **Mononeuritis multiplex**



# HEMATOLOGIC

- Anemia
- Felty`s syn (RA , splenomegaly , leukopenia)
- Large granular lymphocyte syn
- Lymphoma

# OTHERS

- Sjogren`s syndrome
- Amyloidosis
- Osteoporosis
- Atherosclerosis

# VASCULITIS

- Long standing poorly treated disease
- Significant joint involvement and nodules
- High titer RF
- Palpable purpura , Infarct of digital pulp /nail folds , neuropathy , livedo reticularis , pyoderma gangrenosum

# VASCULITIS IN RA



# VASCULITIS WITH SMALL INFARCTS, FINGERS



# LABORATORY FINDINGS

- **CBC : Anemia , Thrombocytosis**
- **ESR : Usually elevated/ Normal in early limited disease**
- **CRP : Usually elevated / More ideal than ESR in disease activity**
- **RF : Positive in 60-80 %**
- **ACPA : Specificity 93- 99 % , Not correlate with disease activity**

- **ANA : Positive in 30 -50 %**
- **C3 , C4 , CH50 : Normal or elevated / low in  
other than RA**

# RADIOGRAPHIC FEATURES

- Take months to develop
- Juxtaarticular osteopenia
- Joint erosions
- Joint space narrowing
- Deformities



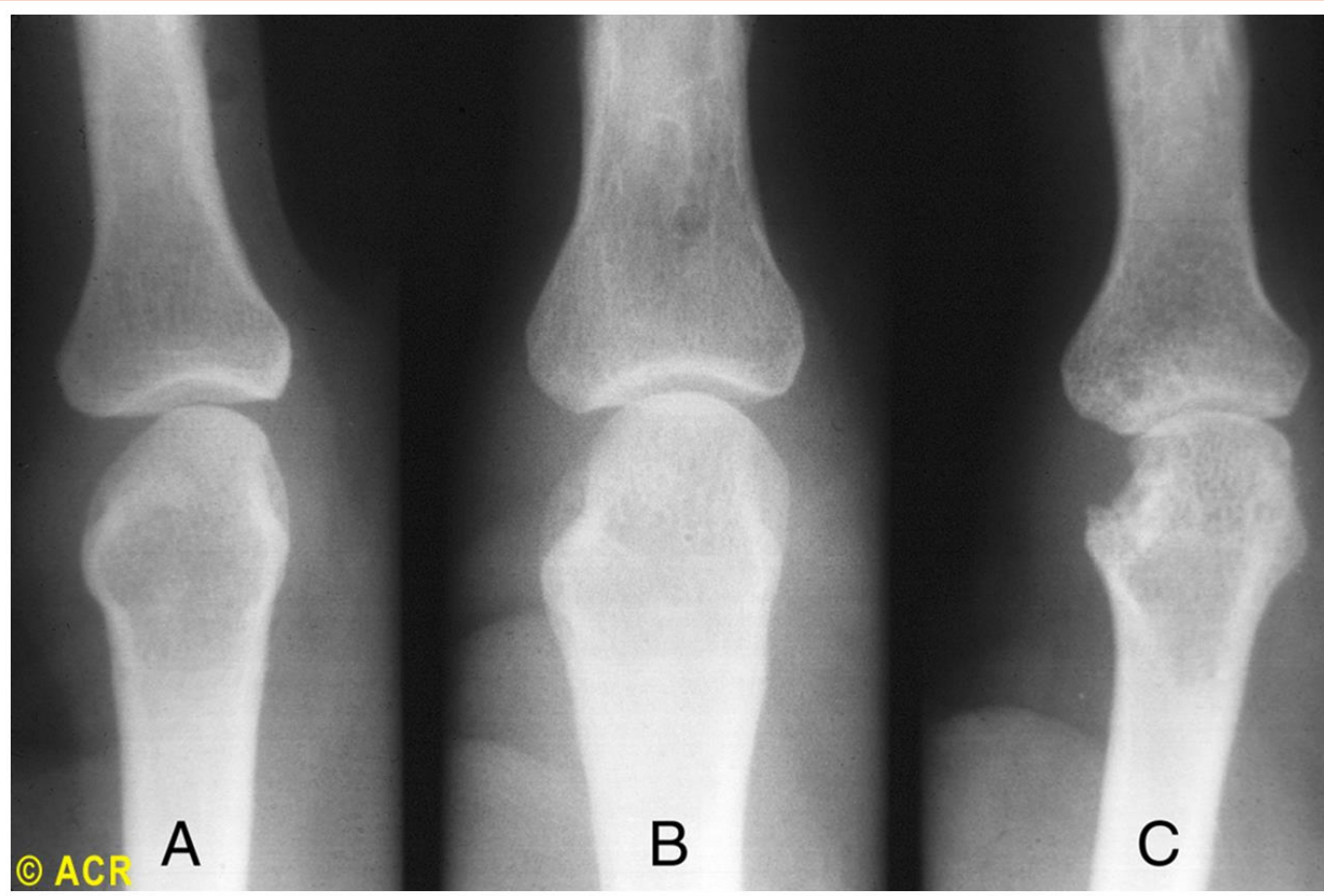
# HAND, SOFT-TISSUE SWELLING



# OSTEOPOROSIS



# HAND, PROGRESSIVE METACARPOPHALANGEAL EROSION



# MCP SUBLUXATION





# KNEES



# SYNOVIAL FLUID

- Inflammatory (WBC > 2000)
- WBC : 5000 - 50000 ( Infection most be ruled out )
- Diff : > 50 % of PMNs
- No crystal
- Cultures is negative

# MARKERS OF SEVERE DISEASE AND POOR PROGNOSIS

- Long disease duration
- RF and ACPA positivity
- Poor functional status
- Generalized polyarthritis
- Extra articular disease
- Persistently elevated ESR or CRP
- Radiographic erosions in 2 years of disease onset
- HLA-DR4



# TREATMENT

- **Treat early**
- **Treat to target : low disease activity or remission**

# DRUGS

- **Glucocorticoids**
- **Conventional DMARDs (HCQ , MTX , Leflunomide , sulfasalazine )**
- **Immunosuppressive (AZA , Cyclophosphamide , MMF)**
- **Biologic DMARDs (Anti-TNF agents , Tocilizumab , Rituximab)**
- **Targeted DMARDs (Tofacitinib , Baracitinib)**

# TREATMENT

- **Methotrexate** → **Most effective DMARDs**  
monotherapy in 30% patients
- **7.5-25 mg/week**
- **Fail to reach low disease activity after 3-6 months** → **Add of cDMARDs or bDMARDs or tDMARDs**
- **Intolerant to MTX** → **Leflunomide or AZA**

# TREATMENT

- **Fail to respond to initial biologic agent →  
switched to another biologic agent**
- **Rituximab is better in seropositive RA patients**

# TREATMENT

- Immunization (Flu , pneumonia , zoster)
- CV disease (smoking , BP control , lipid control , weight loss)
- Osteoporosis (Ca , vitD , targeted therapy)

**THANK YOU**