Osteoarthritis

Rheumatoid Arthritis

&

Systemic Lupus Erythematosus

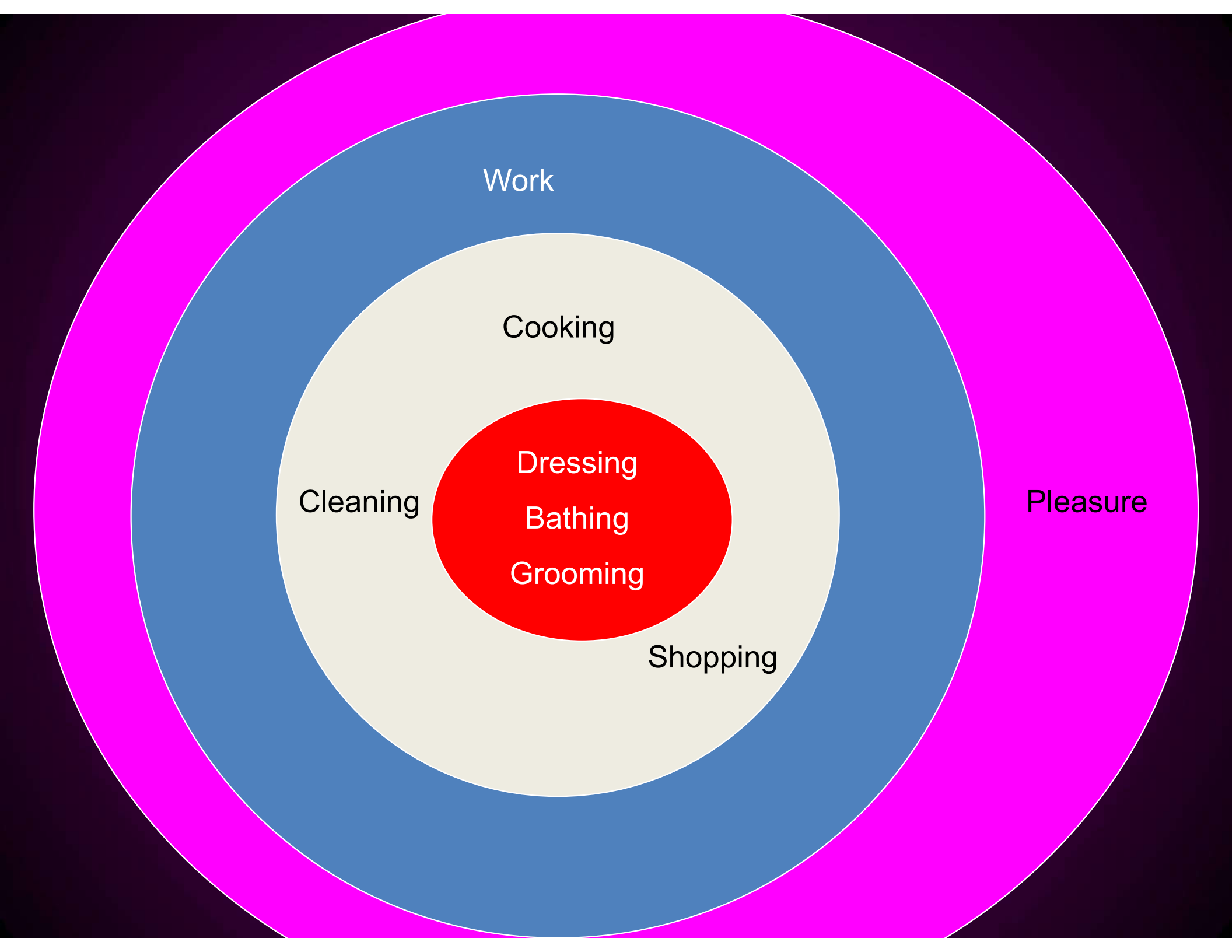
Arthritis

"arthr" = joint
"itis" = inflammation

"Arthritis can affect babies and children, as well as people in the prime of their lives"

Osteoarthritis
Rheumatoid Arthritis
Systemic Lupus Erythematosus
Gout
Childhood Arthritis (Juvenile Idiopathic Arthritis)

(The Arthritis Society, 2012)

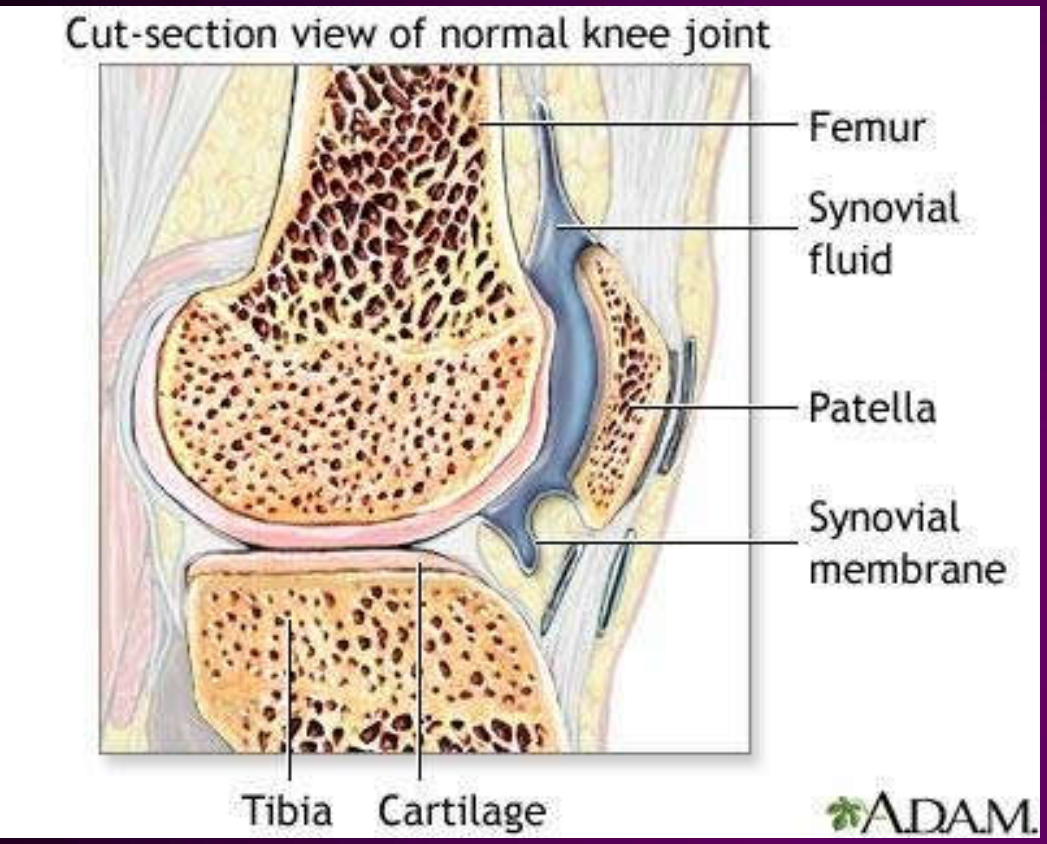

Work
Cooking
Dressing
Bathing
Grooming
Cleaning
Shopping
Pleasure

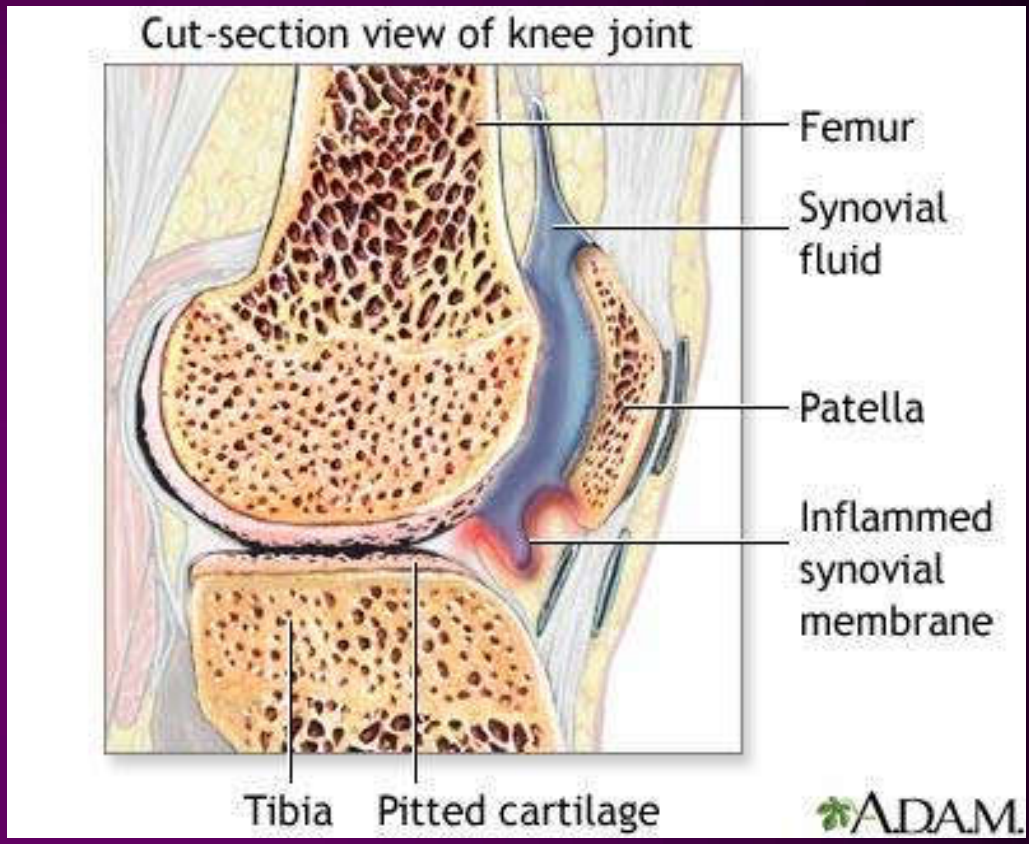
Facts

- Leading cause of disability .
- Affects 1 in 6 individuals
- 2/3 individuals with arthritis are women
- One of the most prevalent chronic joint diseases
- Skeletal remains from humans living 4500BC show signs of arthritis
- Has caused more deaths than melanoma, asthma, or HIV/AIDS
- Only 1.3% of research is dedicated to arthritis.

(The Arthritis Society , 2012; Statistics Canada, 2012; Canadian Arthritis Network, 2007)

Anatomy of the Joint





Articular/hyaline cartilage
- -acts as a shock absorber
- - allows for friction-free movement
- - not innervated!

Synovial membrane/synovium
- -secretes synovial fluid
- -nourishes cartilage
- -cushions the bones

(Day et al., 2010; Cartilage Health, 2008)

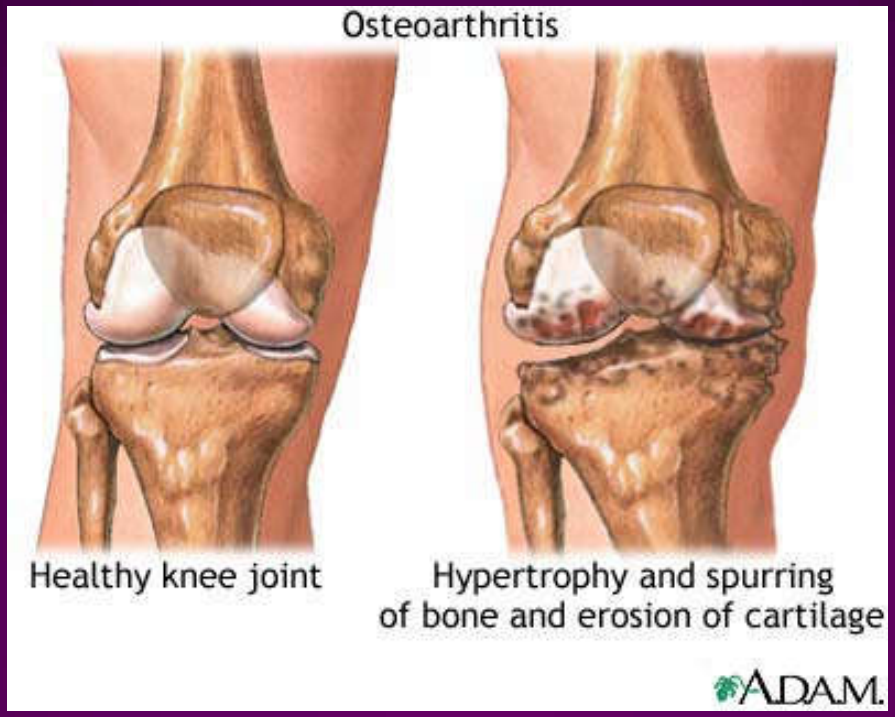
Osteoarthritis

Most common form of arthritis

Osteoarthritis is defined as "a degenerative joint disease characterized by destruction of the articular cartilage and overgrowth of bone"

(Arthritis Society, 2011; Day et al., 2010)

Pathophysiology

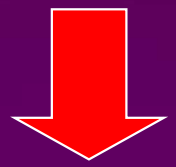


Normal Joint: Cartilage covers the end of bones to act as a shock absorber and to promote smooth movement of the joint.

Osteoarthritis: Cartilage wears down over time. Patients may experience a painful bone-on-bone articulation.

(Arthritis Society, 2011)

Mechanical injury
Previous Joint Damage
Genetic & hormonal factors



Chondrocyte response

Release of cytokines

Release of proteolytic enzymes, metalloproteases, collagenase

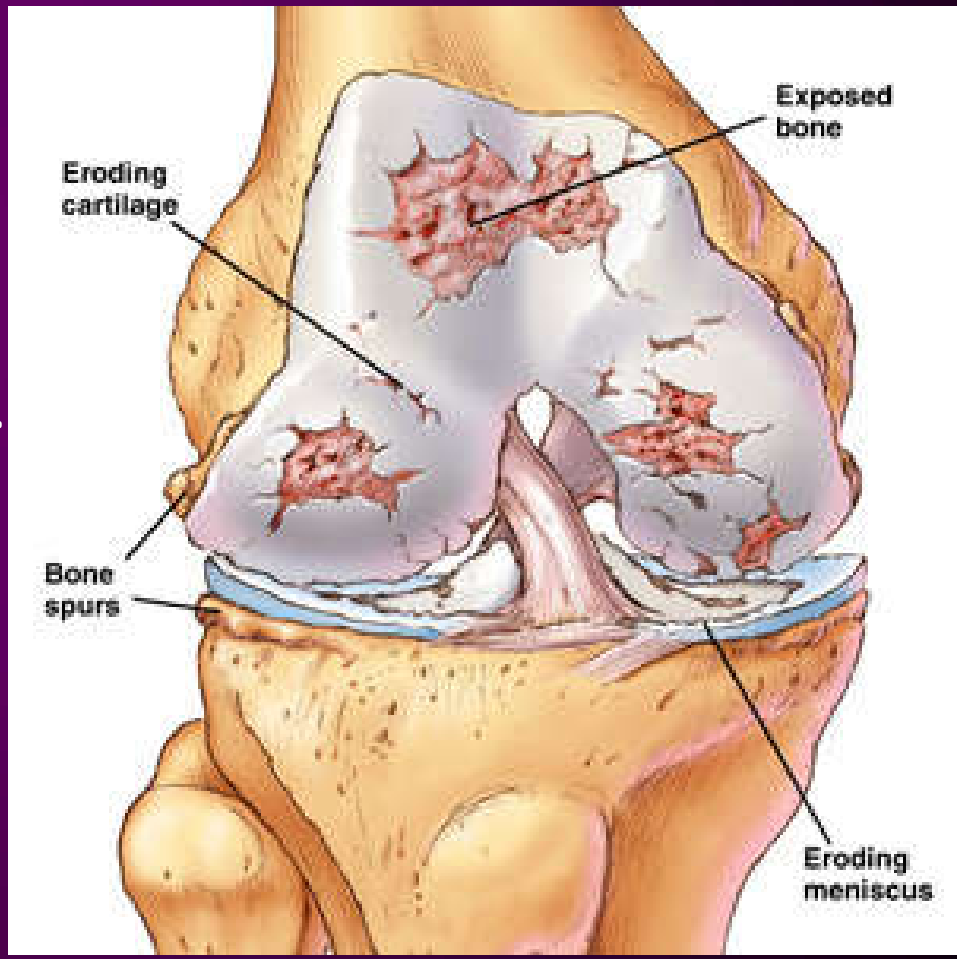
Resulting damage predisposes to a further chondrocyte response

(Day et al., 2010; Mosby, 2009

Primary & Secondary Osteoarthritis

Primary Osteoarthritis – no identifiable reason for arthritis development.

Secondary Osteoarthritis – a likely cause for osteoarthritis exists (e.g. joint injury among professional athletes).



(Arthritis Society, 2011)

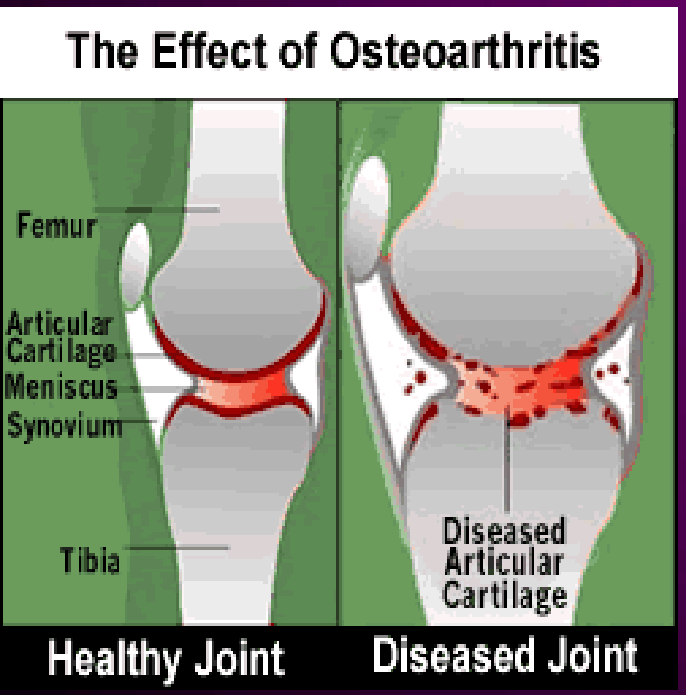
Risk Factors

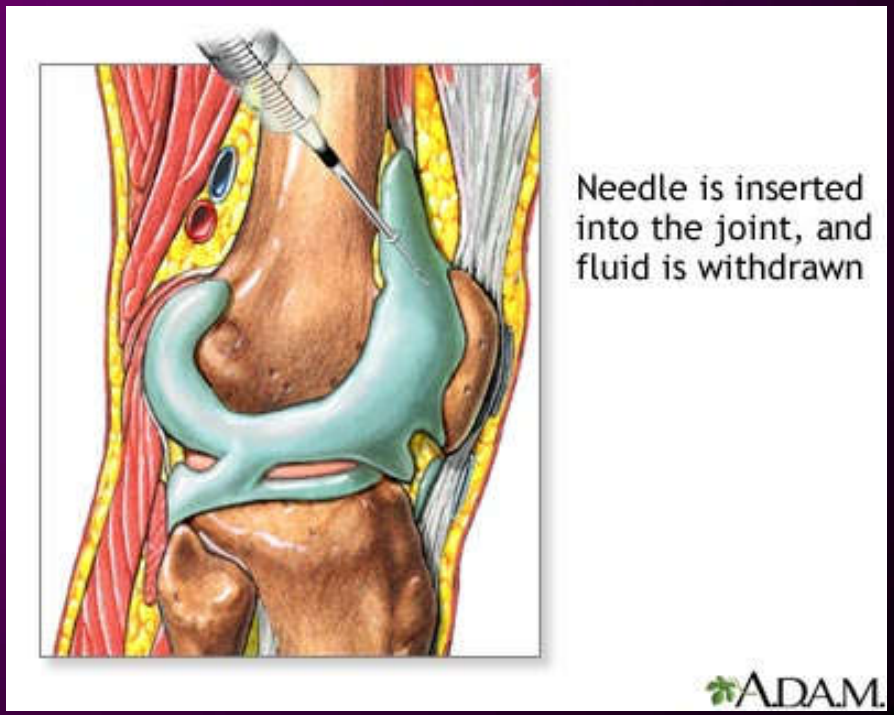
- Age
- Female versus male sex
- Obesity
- Osteoporosis
- Occupation
- Sports activities
- Previous injury
- Muscle weakness
- Proprioceptive deficits
- Genetic elements
- Acromegaly
- Calcium crystal deposition disease

Diagnosis

(Day et al., 2010; National Institute of Arthritis & Musculoskeletal & Skin Diseases, 2010).

Clinical history
X-rays
Physical Assessment
MRI
Joint Aspirate





Clinical Diagnosis

- Symptoms
  - Pain
  - Stiffness
  - swelling
- Physical examination
  - Crepitus
  - Bony enlargement
  - Decreased range of motion
  - Malalignment
  - Tenderness to palpation
- The more features, the more likely the diagnosis

Differential Diagnosis

- Rheumatoid Arthritis
- Gout
- CPPD (Calcium pyrophosphate crystal deposition disease)
- Septic Joint
- Polymyalgia Rheumatica

Synovial fluid analysis

- Severe, acute joint pain is an uncommon manifestation of OA
- Clear fluidWBC <2000/mm3
- Normal viscosity

Radiographic Features

- Joint space narrowing
- Subchondral sclerosis
- Marginal osteophytes
- Subchondral cyst

Joint Space Narrowing

- OA typically asymmetrical

Paget's disease

Subchondral Sclerosis

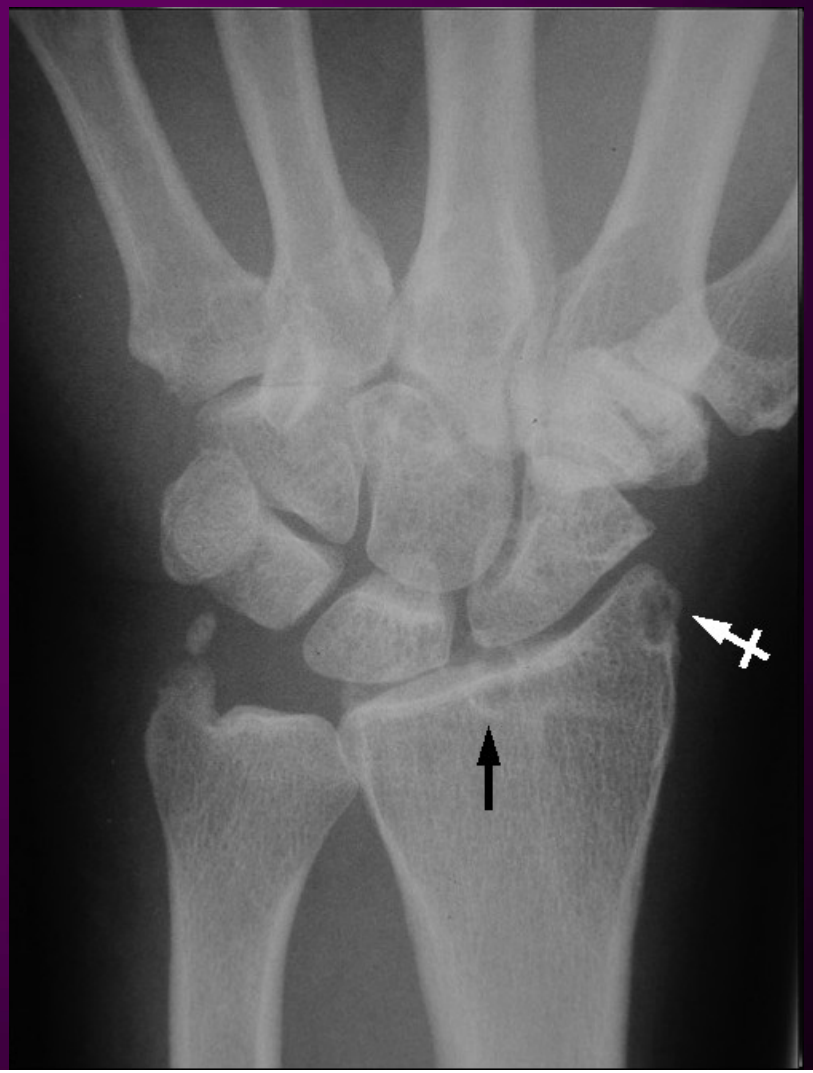
- Increased bone density or thickening in the subchondral layer

Osteophytes

- Bone spurs

Subchondral Cysts

- Fluid-filled sacs in subchondral bone



OA of the Knee: Classic Criteria

1. Greater than 50 years of age
2. Morning stiffness for less than 30 minutes
3. Crepitus on active motion of the knee
4. Bony tenderness
5. Bony enlargement
6. No palpable warmth

- 3 of 6 criteria give sensitivity of 95% and specificity of 69%

Overview

- Definition and Risk Factors
- Idiopathic vs. Secondary OA
- Clinical Features
- Diagnosis
- Radiologic Features
- ACR OA dx for knees, hands, hips
- Goals of Treatment
- Non-pharmacologic treatment
- Pharmacologic treatment
- Surgical Considerations

Goals of Treatment

- Control pain and swelling
- Minimize disability
- Improve the quality of life
- Prevent progression
- Education
- Chronic Condition and Management

Non-pharmacologic Treatment

- Weight Loss
- Rest
- Physical Therapy
- Knee Braces/Shoe Inserts - SOR C
- Acupuncture
- Exercise – focus on low load exercise

- Heat and Cold

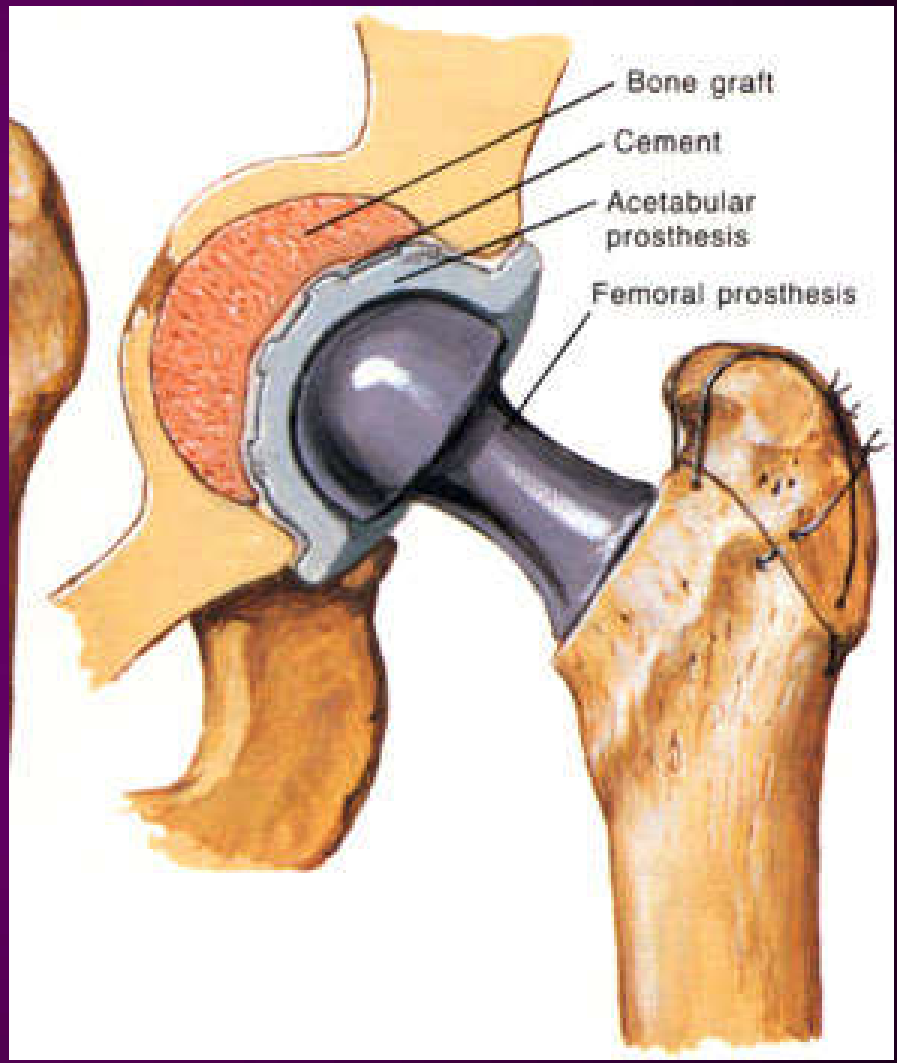
Pharmacological Management

- Acetaminophen
- NSAIDs
- Opioids
- Hayalurinic acid injections
- Topical analgesics
- Glucosamine and chondroitin

(Day et al., 2010; Arthritis Society, 2011)

Surgical Management

- Osteotomy
- Arthrodesis
- Arthroplasty
  - Total knee replacement
  - Total hip replacement



(Day et al, 2010)

Osteotomy

"The surgical cutting of a bone"

One of the most common surgeries for osteoarthritis

Displacement osteotomy: a bone is "redesigned surgically to alter the alignment or weight-bearing stress areas"

(Day et al., 2010; Mosby, 2009)

Arthrodesis

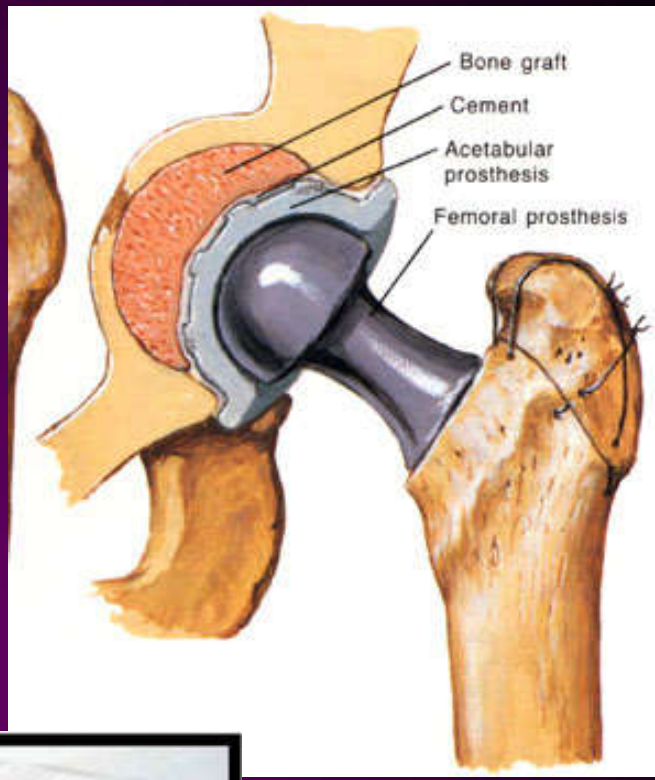
- Fusion of bones in a joint
- Bones are held together by plates, screws, pins, wires, or rods
- New bone begins to grow
- Limited joint motion
- Pain reduction

(Day et al., 2010; Eustice, 2008)

Arthroplasty

Athro=joint
Plasty=remodelling

For partial or total replacement of a joint.



(Day et al., 2010)

Overview

- Epidemiology
- History
- Physical Examination
- Laboratory Tests
- Radiographical signs
- Pharmological Treatment
- Surgical Treatment.

What is Rheumatoid Arthritis?

- Autoimmmune disease.
- 1-2% prevalence
- 3rd to 6th decade of life
- Women > Men 3:1
- 1st degree relative double the risk.

Risk Factors

- Age and gender
- Genetic
- Hormonal and reproductive
- Infections
- Socioeconomic
- Lifestyle

Genetic

- Genetic factors may predispose some individuals to RA (concordance in twin studies; familial clustering)
- The presence of HLA-DR4 antigen may confer up to a 7x increased risk
- The DRB1 gene is believed to be a predictor of severe and persistent disease
- PTPN22 and PAD14

History

- Insidious onset
- Slow development of sign & symptoms
- Stiffness
- Polyarticular
- Most common: PIP & MCP of hands
- Morning stiffness > 1hr
- Fatigue, malaise, depression

Physical Examination

- Symmetric joint swelling
- Fusiform swelling PIP
- Pain on passive motion

Physical Examination

- Tenosynovitis & synovitis
- Synovial cysts
- Displaced/ ruptured tendons

Physical Examination

- Ulnar deviation
- Swan Neck
  - Hyperexten PIPJ
  - Flex DIPJ
- Boutiniere
  - Flex PIPJ
  - Ext DIPJ

1987 ACR Classification Criteria

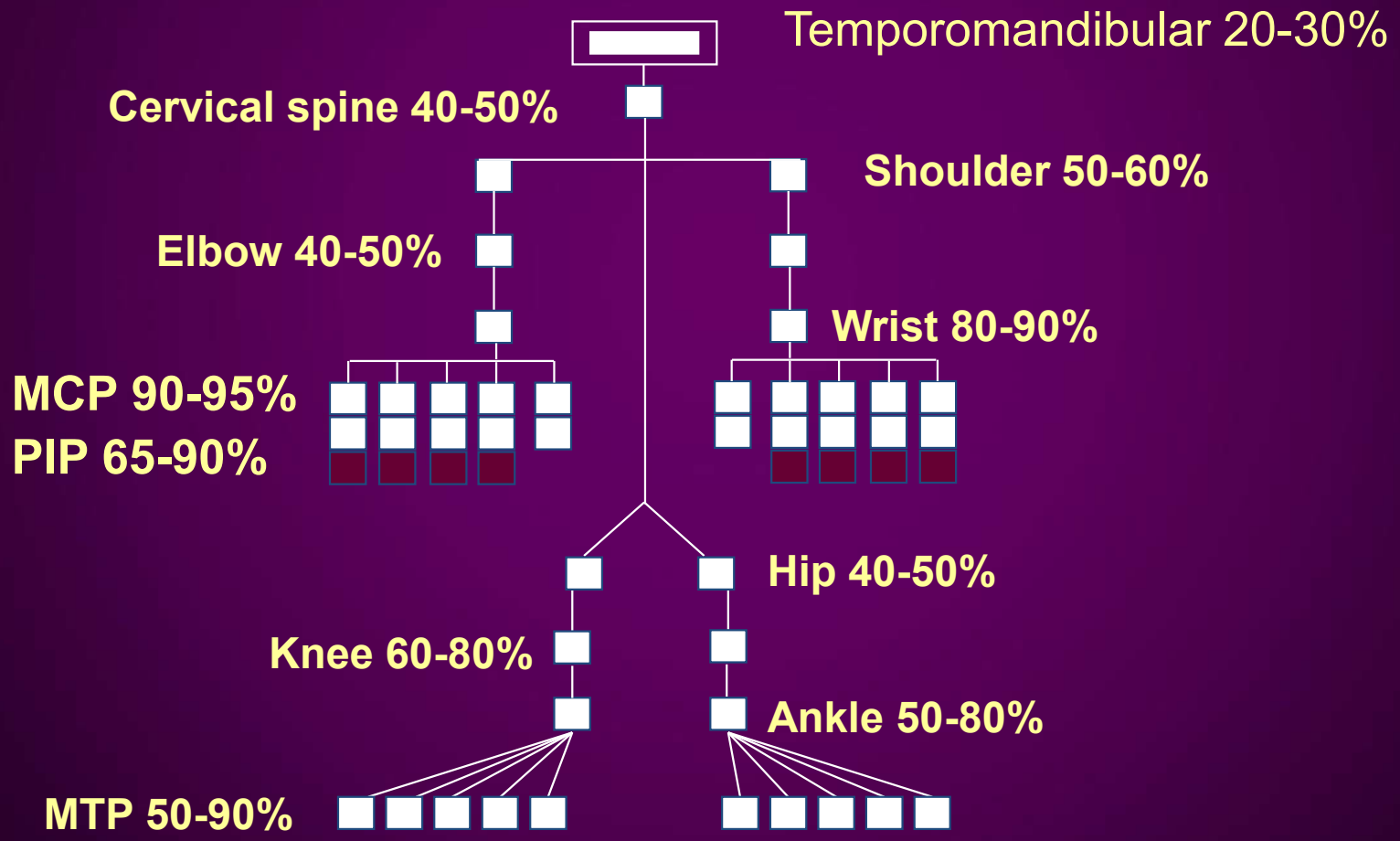
1. Morning stiffness lasting at least one hour
2. Arthritis (swelling) of 3 or more joint areas
3. Arthritis (swelling) of hand joints
4. Symmetric arthritis
5. Positive rheumatoid factor
6. Subcutaneous nodules
7. Erosions on x-rays of hands and wrists

To qualify as RA, need 4 of 7 for at least 6 weeks

New ACR and EULAR criteria

>=6 points: joint involvement, serology, duration of synovitis, acute phase reactants

What joints are commonly affected?



Radiology

- Symmetrical
- Early: no sig changes
- Late:
  - Juxta-articular osteoporosis w/ decr bone density
  - Uniform jt narrowing
  - Marginal erosions


© ACR


CR


© ACR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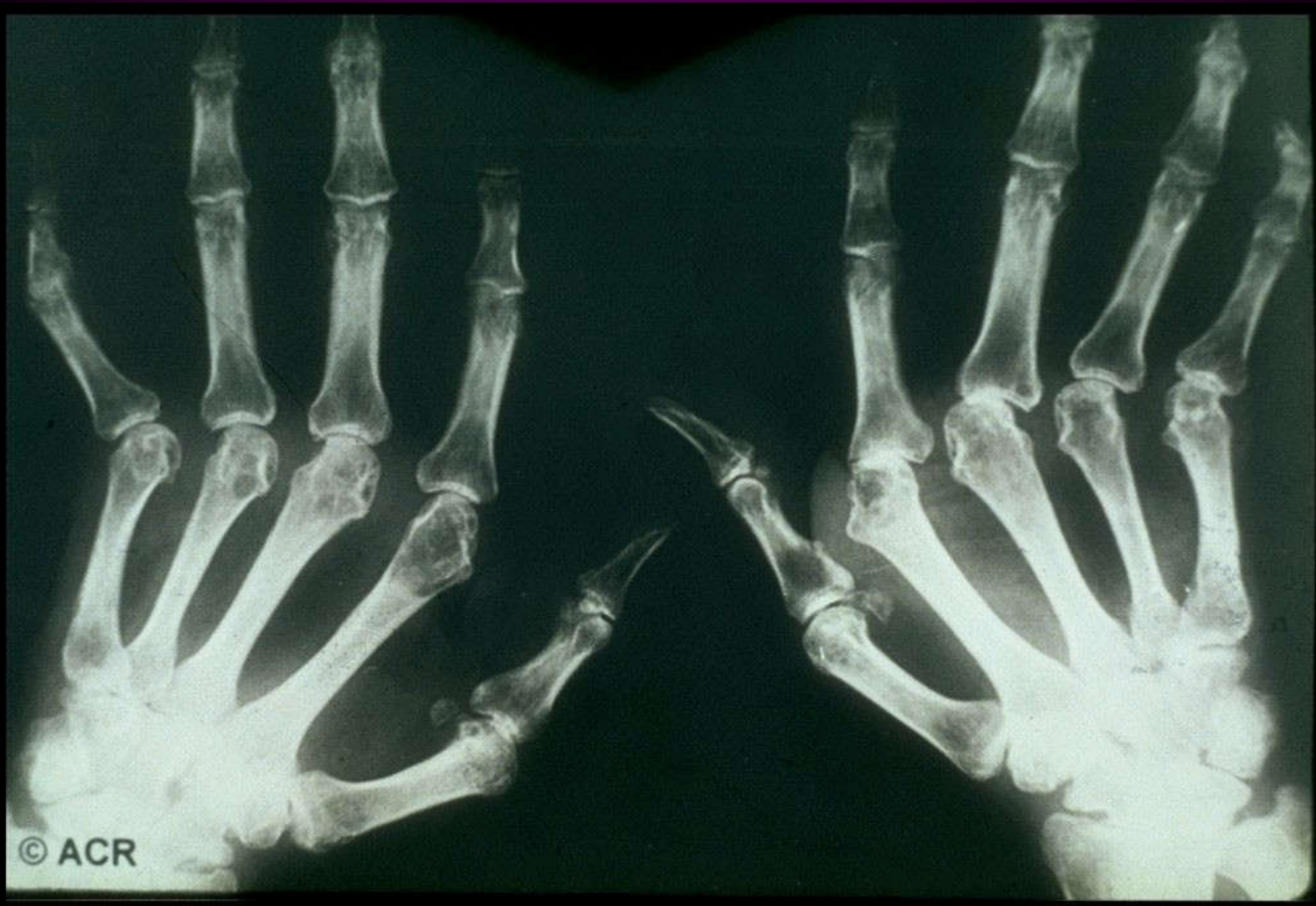
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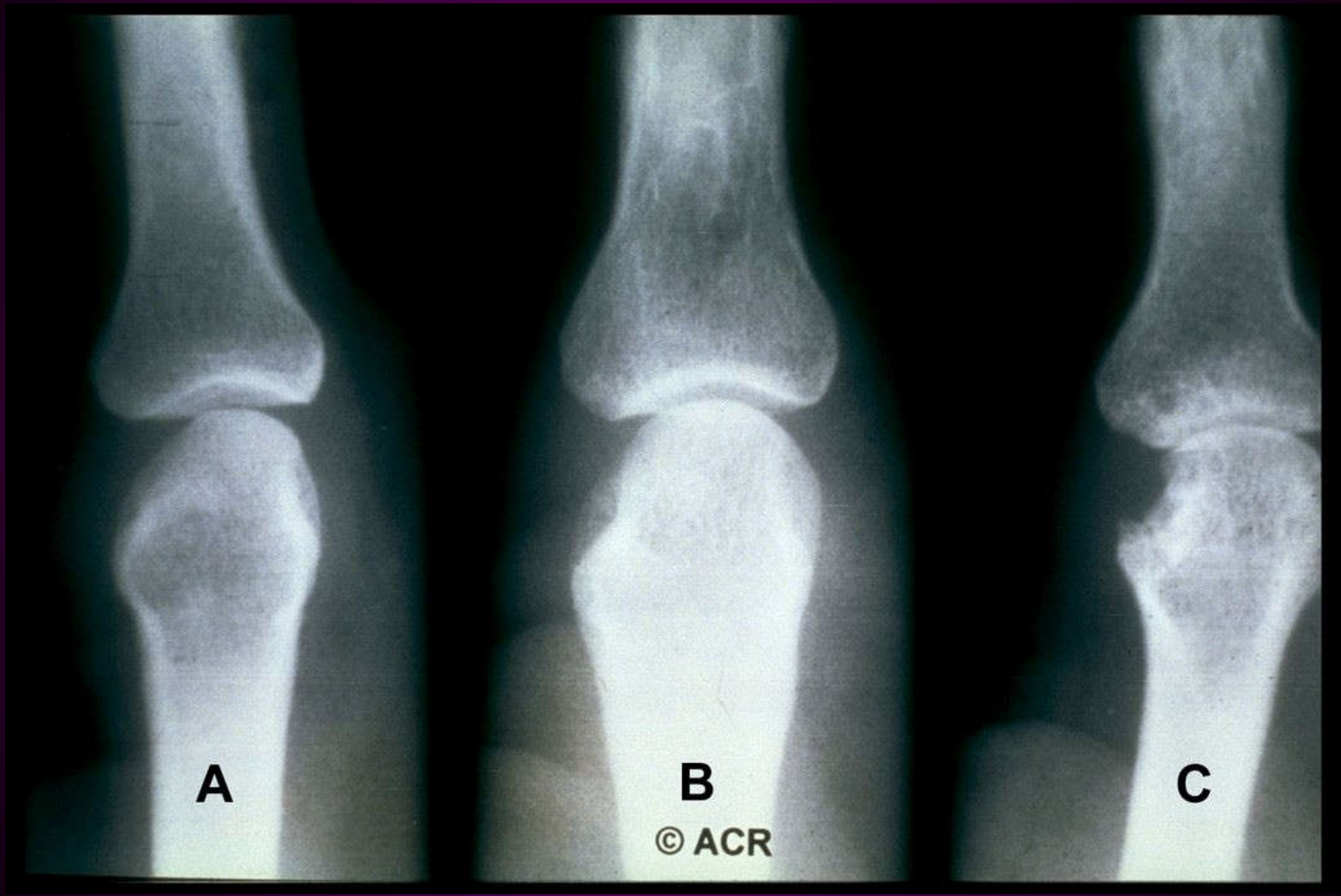
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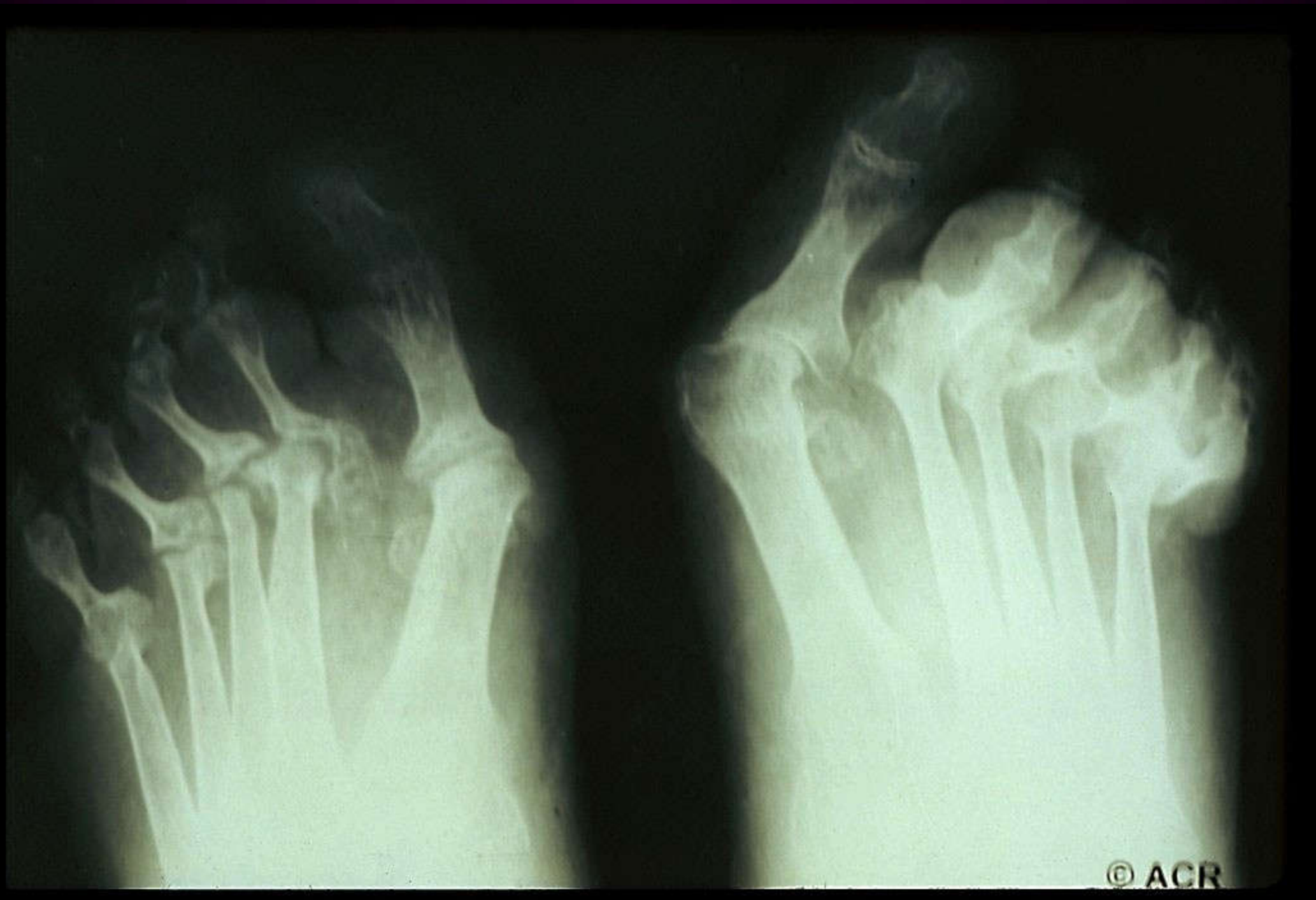
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Normal knee

Damaged Knee

Laboratory Tests

- CBC
  - Anaemia
  - Thrombocytosis
- Acute phase response
  - ESR / CRP / Alk P
- Raised immunoglobulins
- Rheumatoid factor
- Anti-CCP antibody

Rheumatoid Factor

Not unique to rheumatoid arthritis

Present in about 80% of patients with RA

Does not cause rheumatoid arthritis

Associated with more severe disease

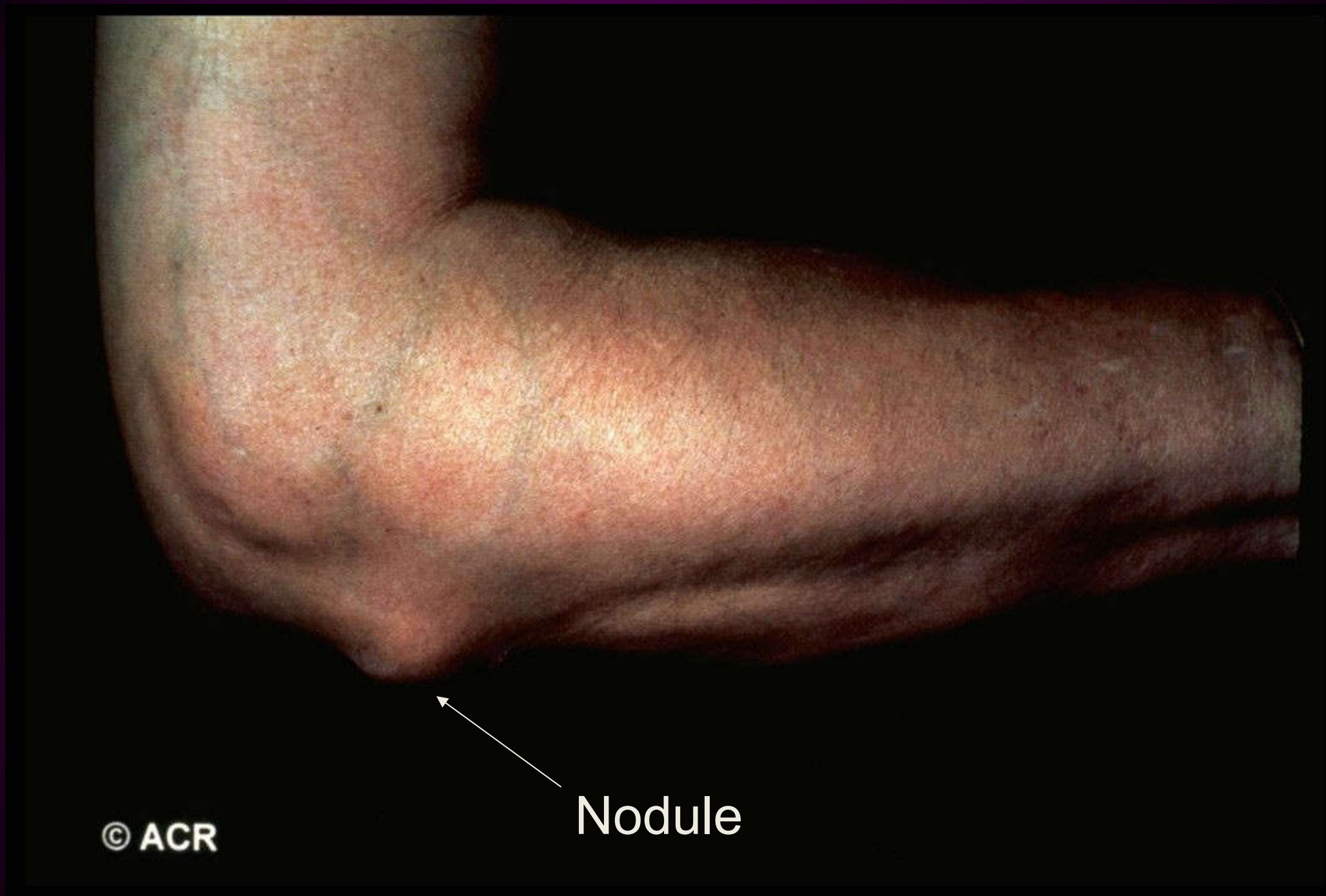
NOT A BLOOD TEST FOR ARTHRITIS!!!!

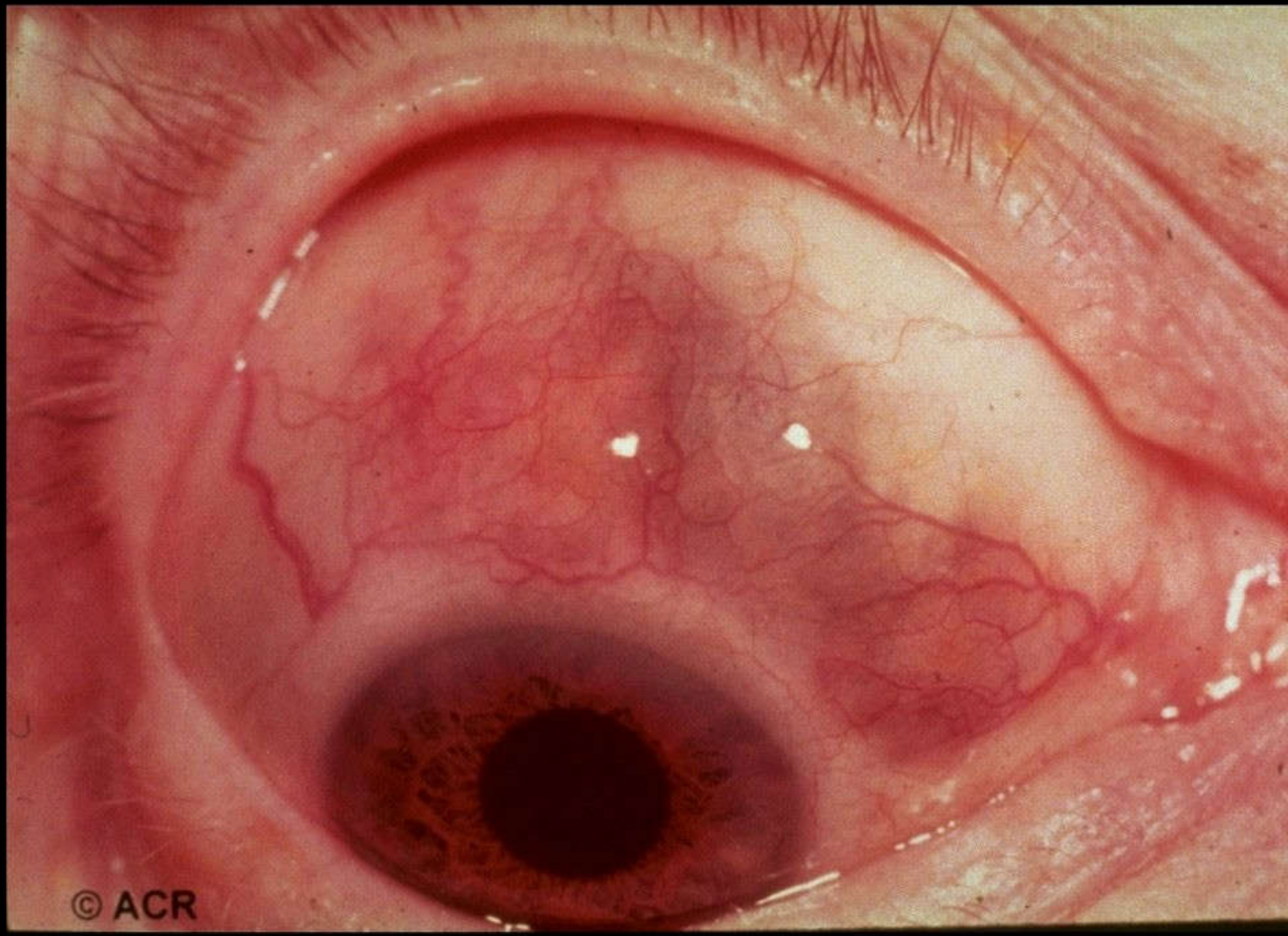
Is rheumatoid arthritis limited to the joints?

NO!!!

Extra-articular Manifestations

- Anaemia
- Sicca syndrome
- Pericarditis
- Pleuritis/ Pulmonary Fibrosis
- Subcutaneous Nodules
- Ocular Inflammation
- Neuropathies
- Vaculitis
- Splenomegaly (5% - only 1% is Felty's synd.)
- Amyloidosis


Nodule
© ACR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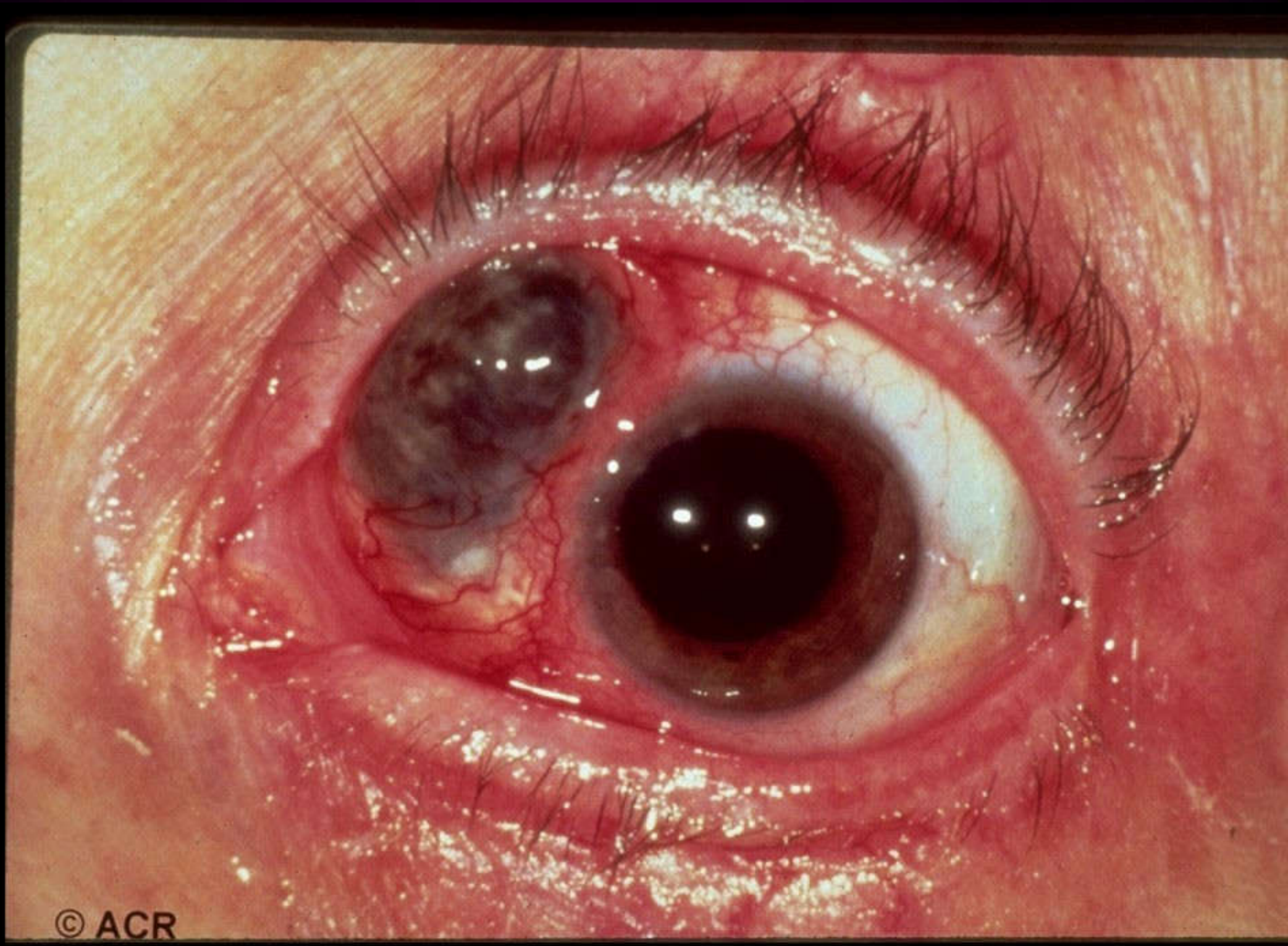
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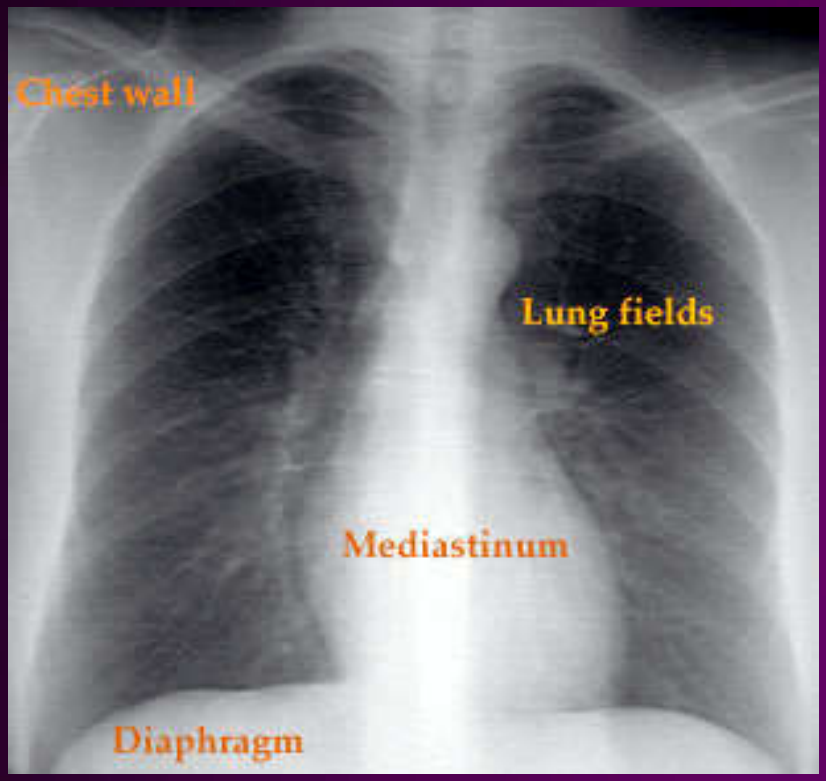
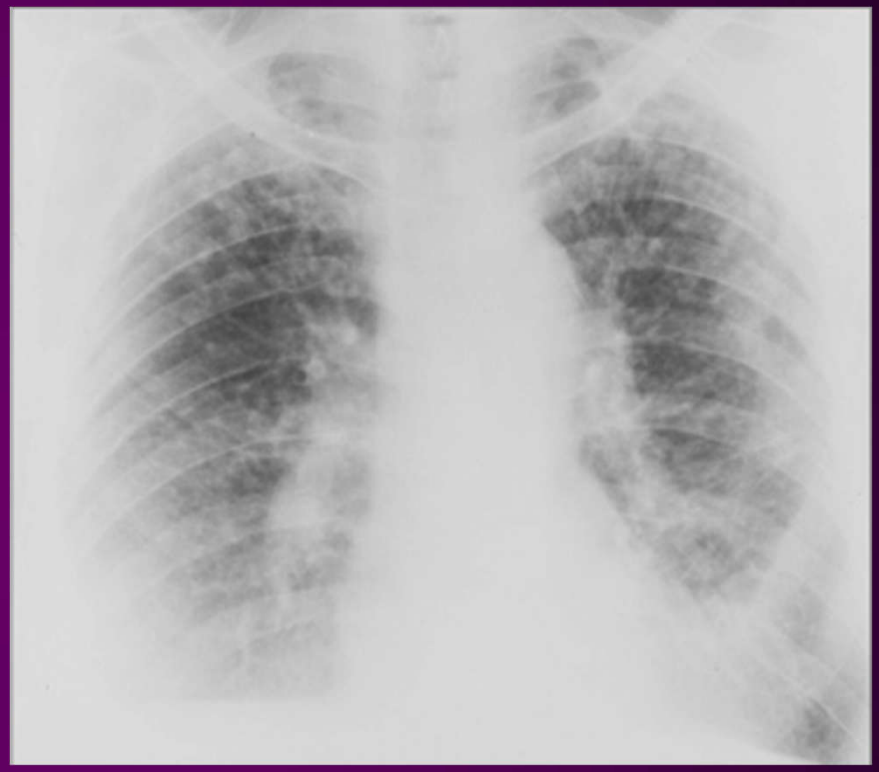


Normal Lungs



Severe Pulmonary Fibrosis

Results:

Pain

Disability

Loss of work

Mortality

Mortality

- RA can reduce life expectancy by 10 to 15 years
- Mortality may approach 50% over 5 years in cases of severe disability
- Patients with extra-articular involvement are twice as likely to die as those with joint involvement only
- Co-morbidity and drug toxicity account for the majority of deaths

Optimal RA Treatment?

- Accurate & early= early referral
- Early referral = early ttt
- Early ttt= improved outcomes
- Most rapid deterioration of jt func 2 yrs after diag

- NSAIDS
- Cortisone
  - Best anti-inflam
  - Worst SE
- DMARDS
  - Gold
  - Methotrexate
  - Leflunomide (Arava)

Newer Therapies

- **Antiproliferative agents**
  - Leflunomide (Arava)
  - Methotrexate
- **Anti-TNF therapies**
  - Etanercept (Enbrel)
  - Infliximab (Remicade)
- **Anti-IL-1 agents**
  - IL-1ra (Kineret)
- **Combination**

Surgical Treatment?

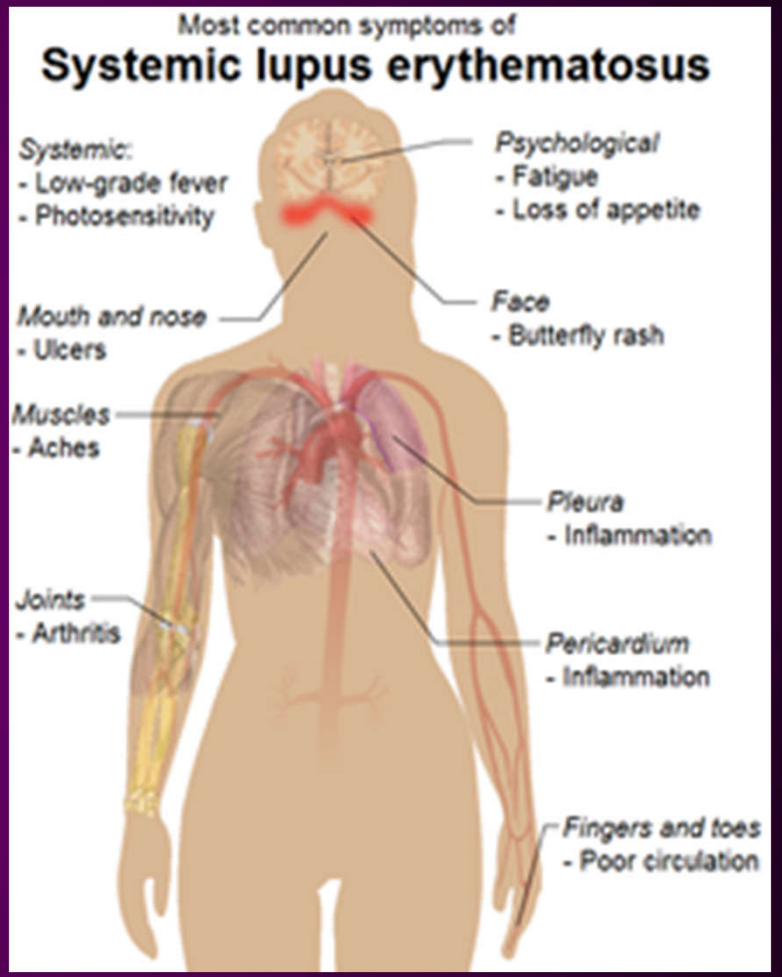
- Goal: Relieve pain
- Consider:
  - Medical condition
  - Age
  - Activity level
  - Condition of Bone & ST

Summary

- A chronic disease of unknown cause affecting the joints and other tissues
- Results in pain, disability, early mortality
- A clinical diagnosis i.e. a constellation of findings by physician and lab, not just a blood test
- New drugs emerging with increased efficacy but long term risks unknown

LUPUS

- A chronic disease, affecting over 1/1000 Canadians
- Affects 8x as many women
- Auto-immune
- Cause is unclear – potential hormonal or genetic link
- When properly treated, most individuals can survive for a normal lifespan



(Lupus Society of Canada, 2012)

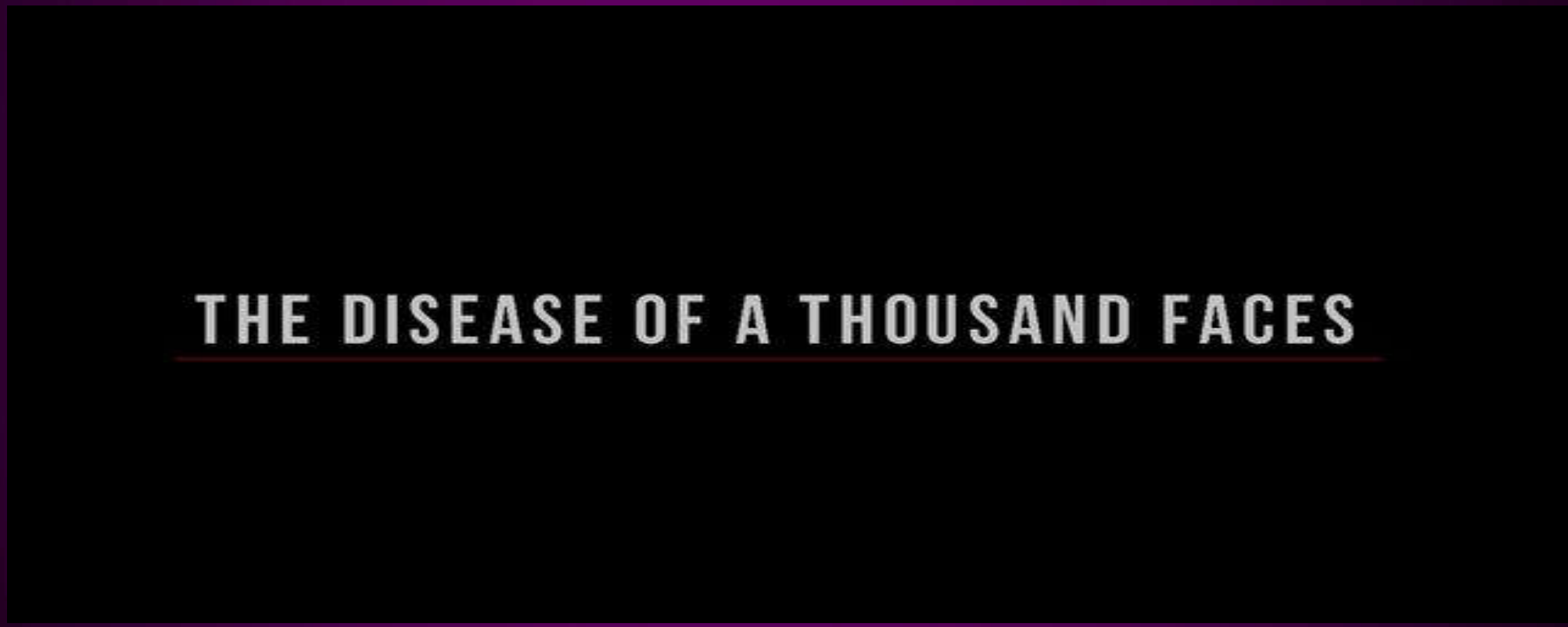
Types of Lupus

Systemic Lupus Erythematosus (SLE) : The most common type of lupus. Any tissue in the body may be affected including the kidneys, heart, lungs, and brain.

Discoid Lupus Erythematosus (DLE): Affects the skin; skin develops lesions and scales.

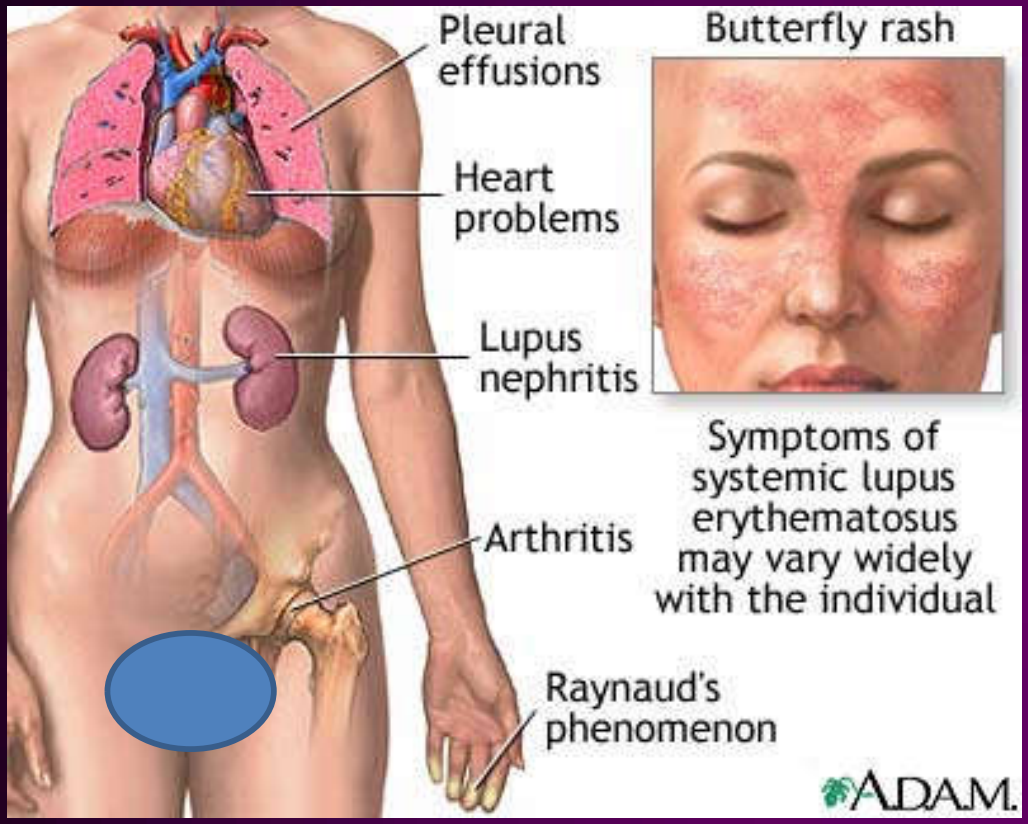
Cutaneous Lupus Erythematosus : May be chronic or acute. This type may only involve the skin or progress to involve other body systems.

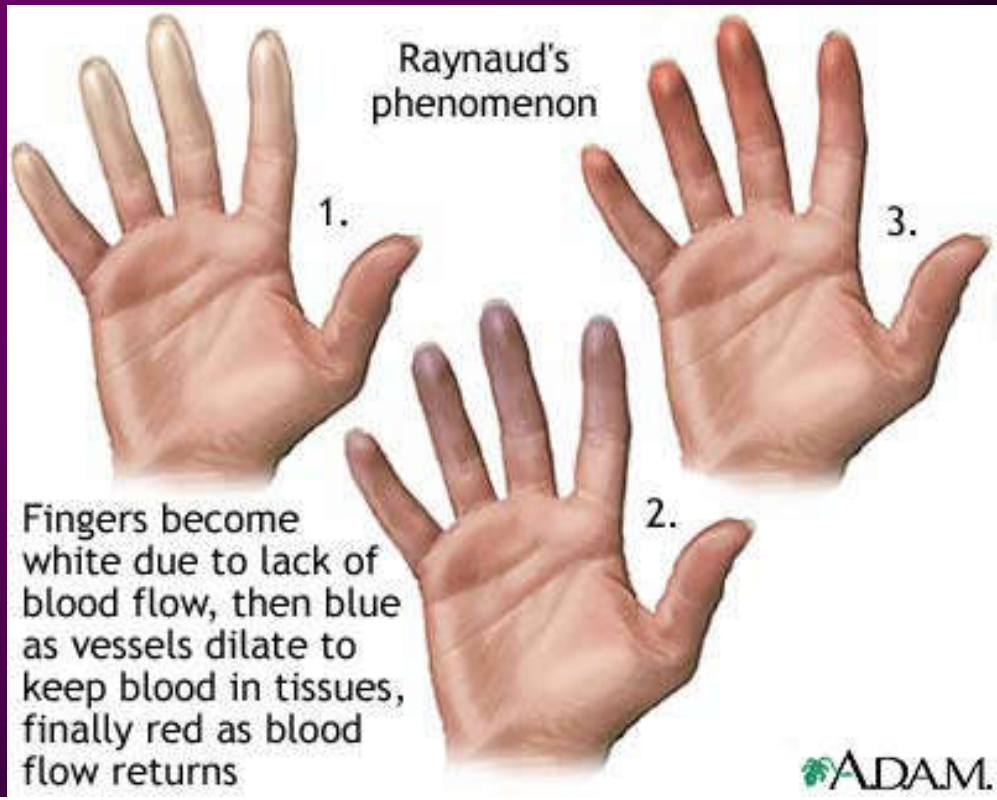
(Lupus Society of Canada, 2012; Mosby, 2009)



(Lupus Society of Canada, 2012)

Manifestations of SLE





(Mosby, 2009; Lupus Society of Canada, 2012)

Pharmacological Therapy

Acetaminophen

NSAIDs

Corticosteroids

Cytotoxic or Immunosuppressive drugs

Antimalarial drugs

(Lupus Society of Canada, 2012; Arthritis Society, 2010; Day et al, 2010)

Healthy Lifestyle

(Arthritis Society, 2010)

Nursing Considerations

- Educate patient on lupus.
- Help patient identify factors that precipitate flare-ups.
- Assess patient's medication knowledge.
- Provide adequate symptom management.
- MedicAlert bracelet
- Provide emotional and psychological support.. A big one!

(Mosby, 2009; Lupus Society of Canada, 2007)

- THANK YOU