APPROACH TO THE RHEUMATOLOGICAL PATIENT

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Rheumatology Associates
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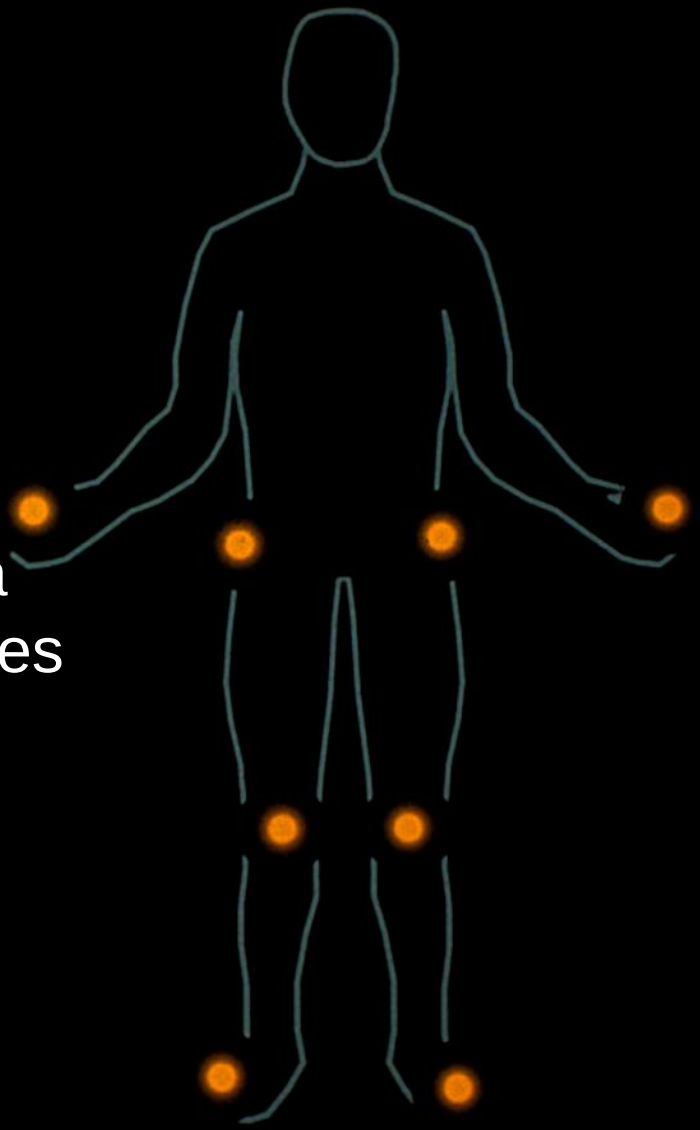
OUTLINE

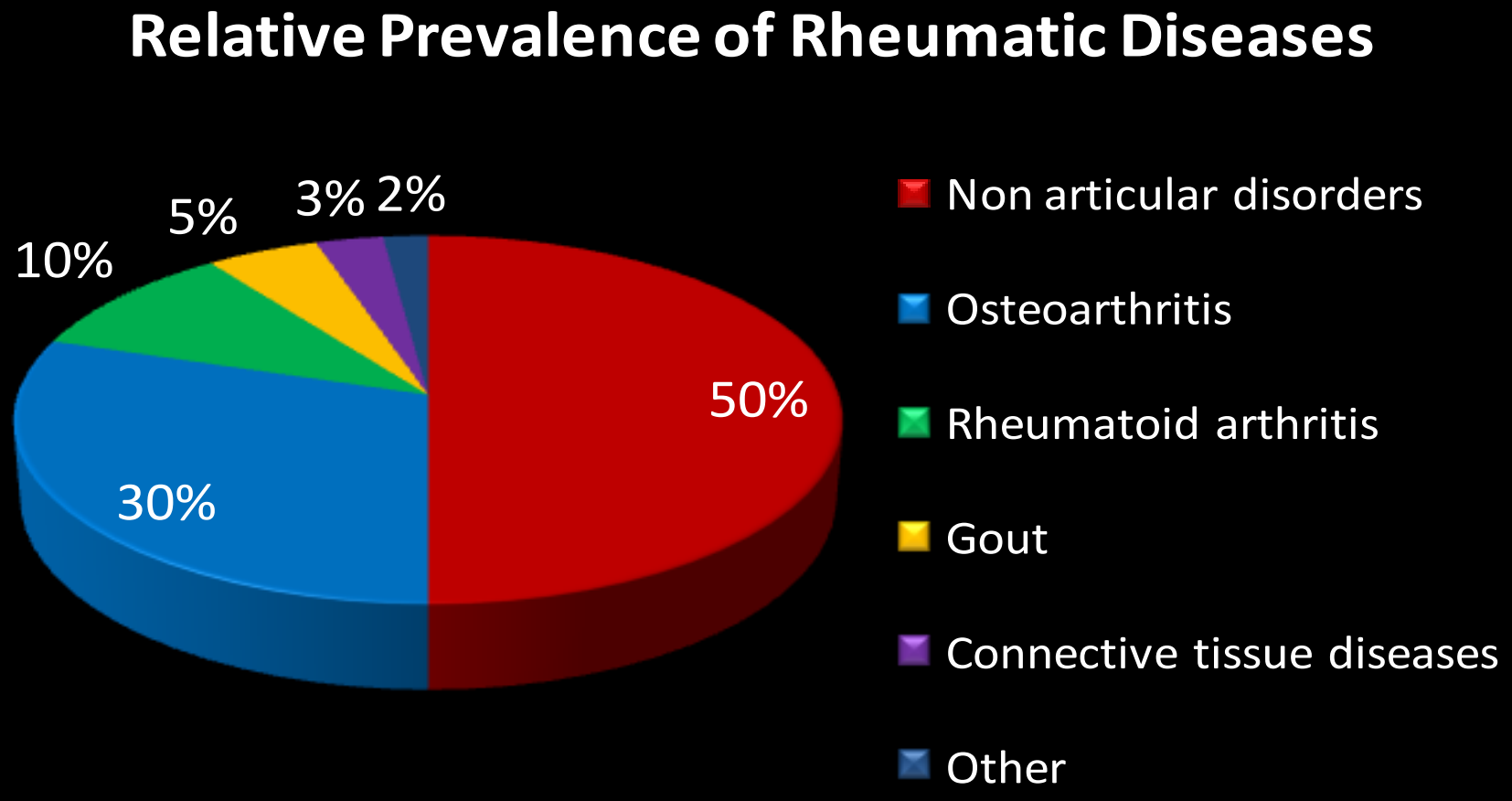
- Introduction
- Approach to the patient with a musculoskeletal complaint
- Approach to the patient with a connective tissue disease
- Approach to the patient with vasculitis
- Take home messages

INTRODUCTION

- More than 100 rheumatic conditions
- Overlap in clinical presentations
- Initial presentation may not lead to a precise diagnosis in up to 50% of cases
- Over time most patients will have characteristic features of a disease



INTRODUCTION



INTRODUCTION

COMPLETE HISTORY

COMPLETE PHYSICAL EXAM

LABORATORIES

IMAGING AND OTHER STUDIES

INTRODUCTION

A DIAGNOSIS CAN BE MADE BASED ON HISTORY AND PHYSICAL EXAM FINDINGS 80-90% OF THE TIME

INTRODUCTION

DIAGNOSTIC APPROACH

History:

- Establish the demographics of the patient:
  - Age
  - Gender
  - Ethnicity
  - Family History
- Characterize joint pain and ask about associated features
- Characterize back pain: Inflammatory vs. Non inflammatory
- Constitutional symptoms

INTRODUCTION

DIAGNOSTIC APPROACH

History:

- Organ specific symptoms
  - Eye: Pain, redness, dryness, vision changes
  - Heart: Chest pain, palpitations, orthopnea, PND
  - Lungs: Dyspnea, cough
  - Kidneys: Hematuria, edema
  - GI: GERD, dysphagia, GIB, bowel habit changes
  - Skin: Ulcer, photosensitivity, rashes, alopecia, nail abnlity
  - Neuro: CNS changes, neuropathy, CN abnormalities
  - ID: recent infections

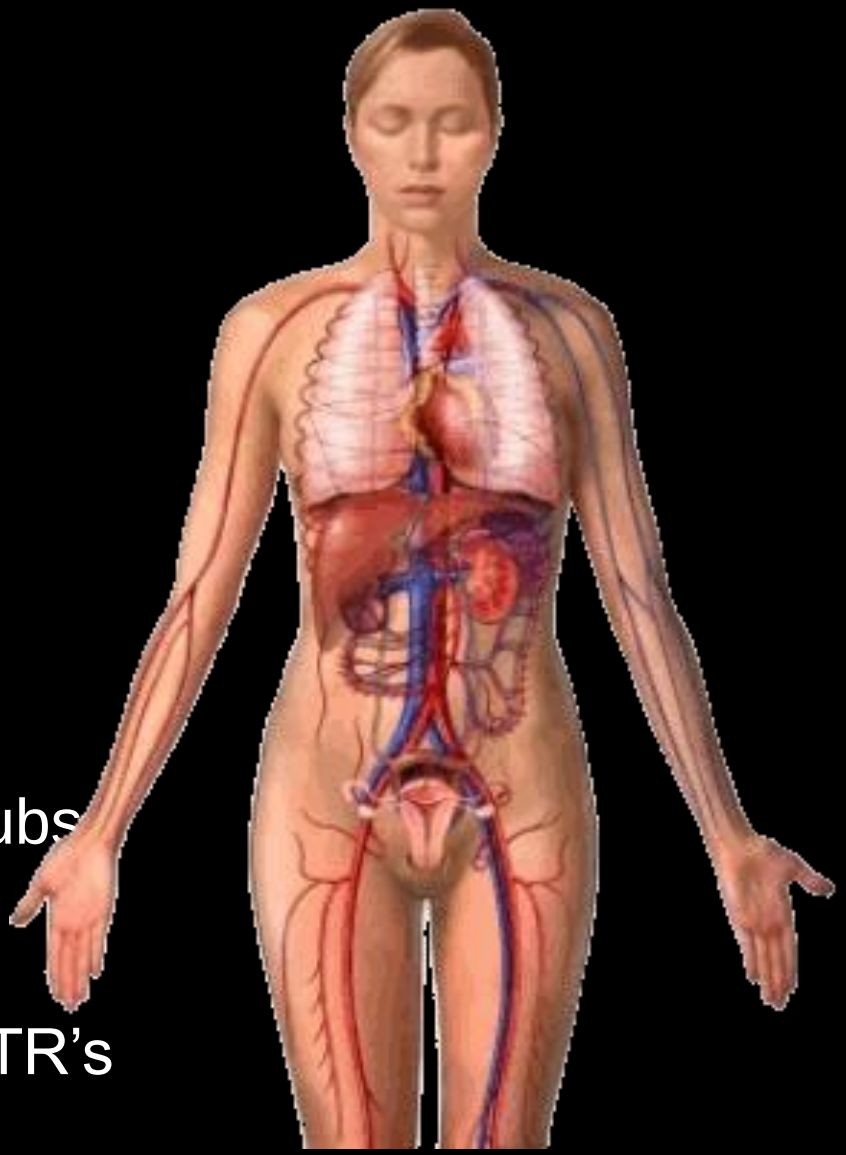
INTRODUCTION

DIAGNOSTIC APPROACH

Physical Exam:

- Head to toe evaluation

Eye redness
Mouth dryness/ulcers
Rales, effusions, murmurs, rubs
Hepatosplenomegaly
LAD
Motor strength, sensation, DTR's



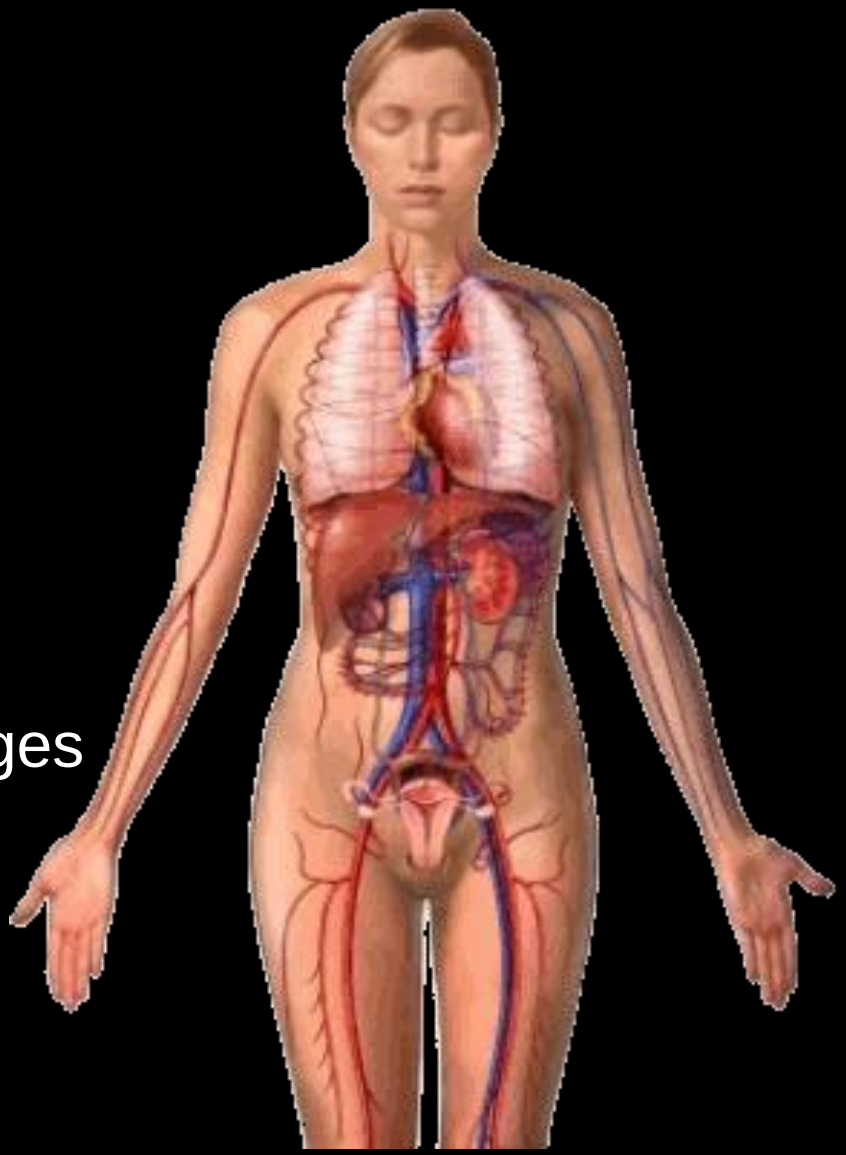
INTRODUCTION

DIAGNOSTIC APPROACH

Physical Exam:

- Head to toe evaluation

Rashes, telangiectasis, nail changes, pigmentation changes
Peripheral pulses, bruits
Back exam
Joint exam



INTRODUCTION

DIAGNOSTIC APPROACH

Laboratories:

- Results must be interpreted in light of the clinical findings
- Three areas of interest: Blood, Urine, Synovial fluid

INTRODUCTION

DIAGNOSTIC APPROACH

Blood:

- CBC: Anemia, leukopenia, thromobocytopenia
- Chemistries: renal insufficiency, elevated LFT's, uric acid
- ESR/CRP: non specific
- Autoantibodies: RF, ANA, ENA, dsDNA, ANCA
- HLA B-27, HLA B-51
- ASO
- Ferritin
- Lyme titer

INTRODUCTION

DIAGNOSTIC APPROACH

Urine:

- Proteinuria
- Hematuria
- Active sediment

INTRODUCTION

DIAGNOSTIC APPROACH

Synovial fluid:

- Cell count
- Gram stain and culture
- Crystal analysis


FORGET THE SLIPPERS, I WANT TIN MAN'S OIL!
garyvarvel.com

CASE 1

CC: Arthralgia in hands and feet

HPI: 50 yo WW presents with 6 weeks of arthralgia in hands and feet. Swelling over MCP's, PIP's. Has tried naproxen with partial relief

ROS, PMH, PSH, Social HX: Negative

FH: mother with rheumatoid arthritis

PE: Tenderness & synovitis of wrists, R MCP 2-4 and B PIP 3

Labs: CRP: 1.3 mg/dl, RF -, CCP 25 (nl < 20 u/ml), normal Xray

MUSCULOSKELETAL COMPLAINT

EVALUATION OF PATIENTS WITH MUSCULOSKELETAL COMPLAINTS

Goals

Accurate diagnosis

Timely provision of therapy

Avoidance of unnecessary diagnostic testing

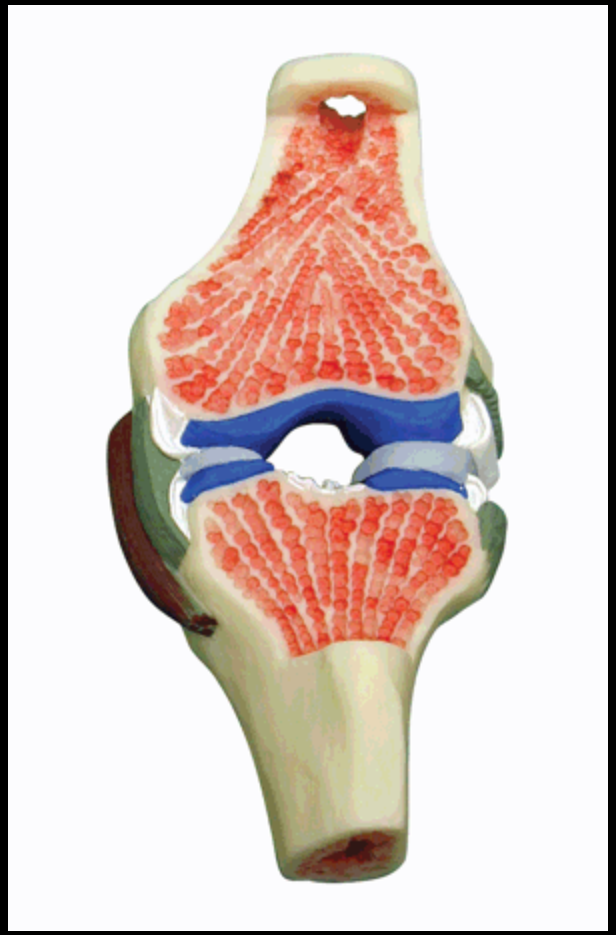
Harrison's Principles of Internal Medicine - 17th Ed. (2008)

MUSCULOSKELETAL COMPLAINT

DIAGNOSTIC APPROACH

Articular Vs. Non Articular:

- Articular structures

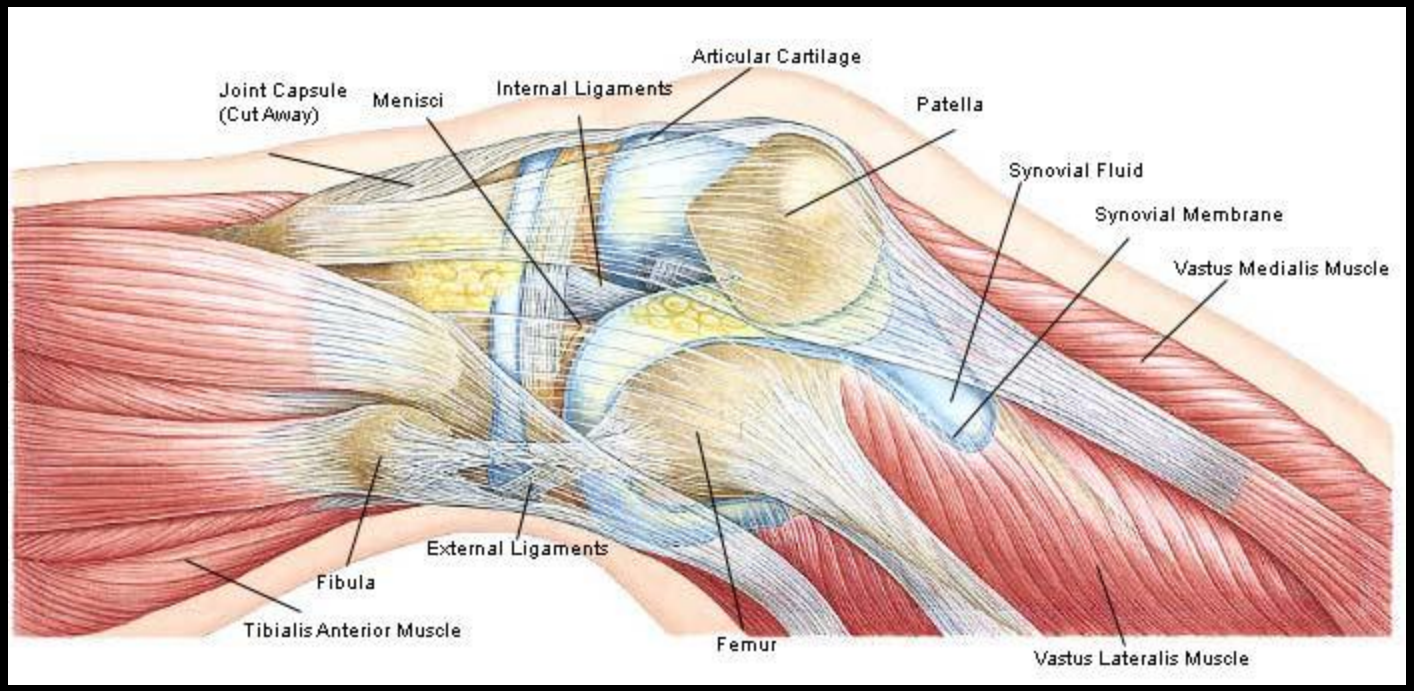


MUSCULOSKELETAL COMPLAINT

DIAGNOSTIC APPROACH

Articular Vs. Non articular:

- Non articular structures



MUSCULOSKELETAL COMPLAINT

DIAGNOSTIC APPROACH

History and physical exam pearls:

- Articular: Pain is diffuse and deep
  Pain with active and passive range of motion
  Swelling
  Crepitation, locking, instability or deformity

MUSCULOSKELETAL COMPLAINT

DIAGNOSTIC APPROACH

History and physical exam pearls:

- Non articular: Pain with active but not passive ROM
  Tenderness in adjacent structures
  Other physical findings in remote areas

MUSCULOSKELETAL COMPLAINT

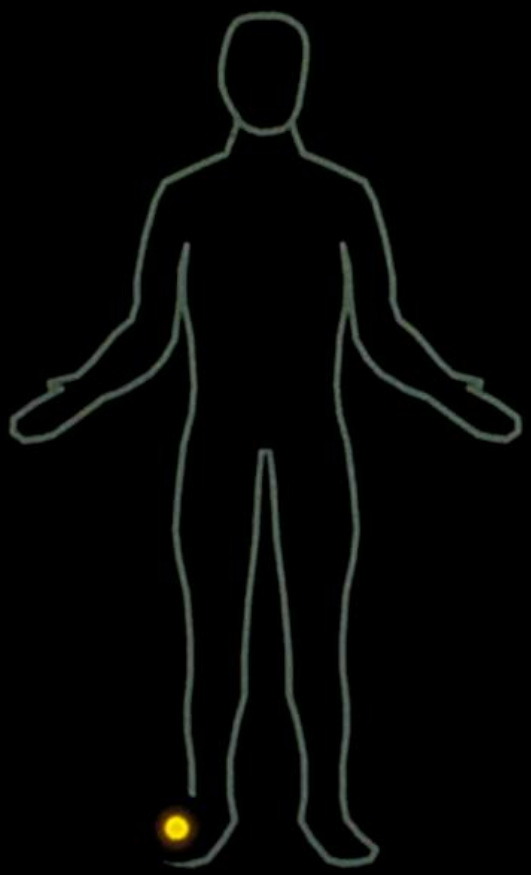
DIAGNOSTIC APPROACH

Monoarticular Vs. Polyarticular

- Monoarticular: 1 joint involved
- Oligoarticular: 2-4 joints involved
- Polyarticular: >4 joints involved

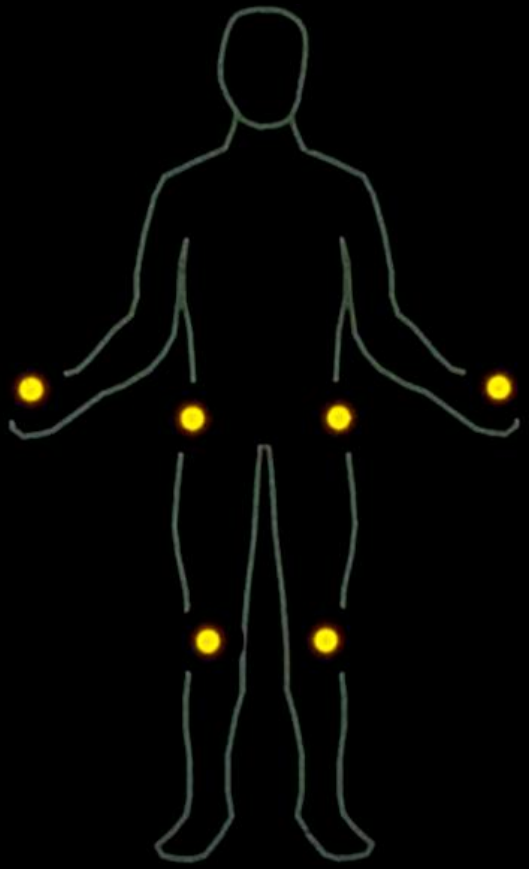
MUSCULOSKELETAL COMPLAINT

Monoarticular



Infection, crystal disease

Polyarticular

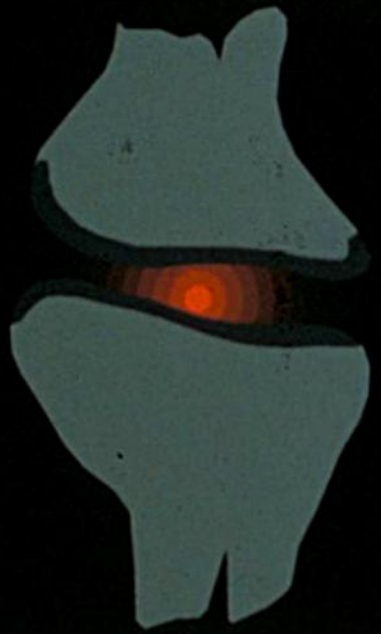


RA, psoriatic arthritis

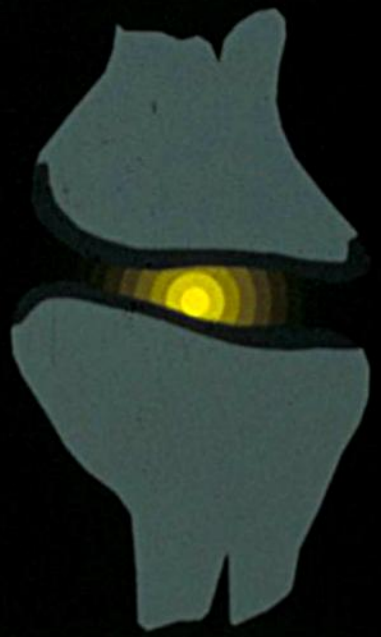
MUSCULOSKELETAL COMPLAINT

DIAGNOSTIC APPROACH

Inflammatory Vs. Non inflammatory



Rheumatoid arthritis



Osteoarthritis

MUSCULOSKELETAL COMPLAINT

DIAGNOSTIC APPROACH

History and Physical exam Pearls:

- Inflammatory:
  - Erythema
  - Warmth
  - Pain
  - Swelling
  - Tenosynovitis
  - Stiffness after prolonged rest
  - Fatigue

MUSCULOSKELETAL COMPLAINT

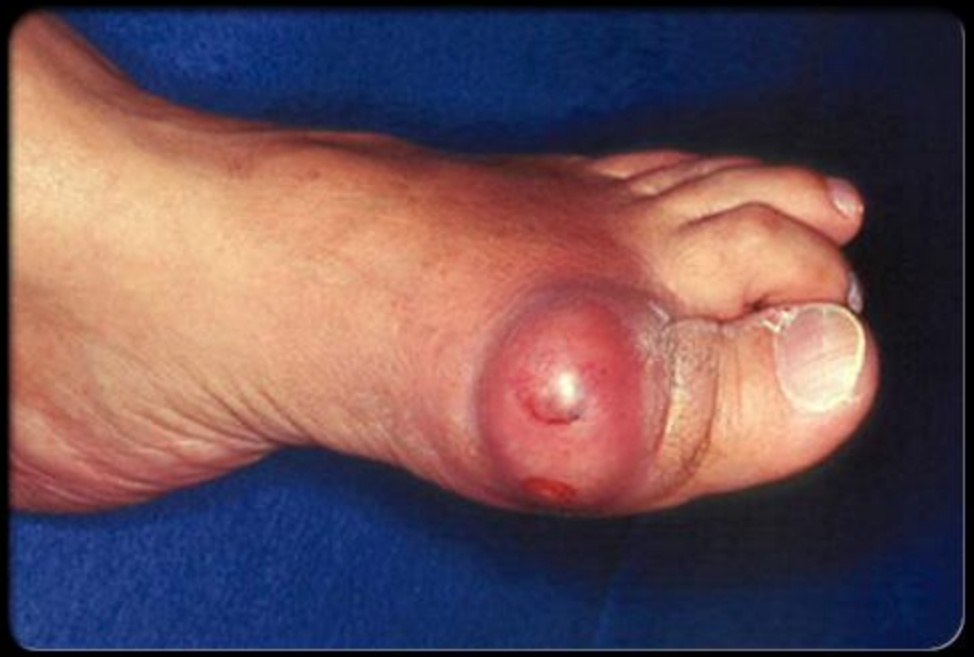
DIAGNOSTIC APPROACH

History and Physical exam Pearls:

- Non Inflammatory: Pain without swelling
  Gel phenomenon
  Pain is aggravated with activity

MUSCULOSKELETAL COMPLAINT

Inflammatory arthritis

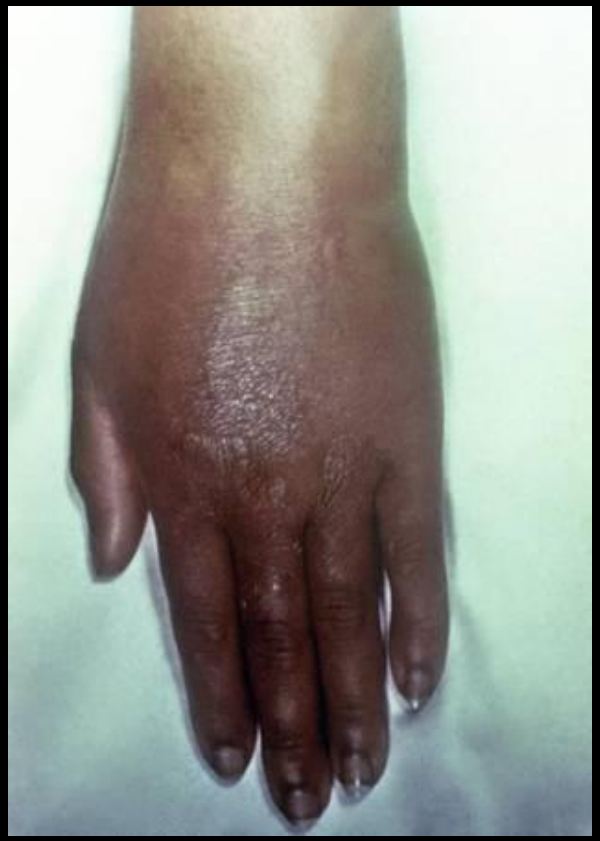


MUSCULOSKELETAL COMPLAINT

Inflammatory arthritis

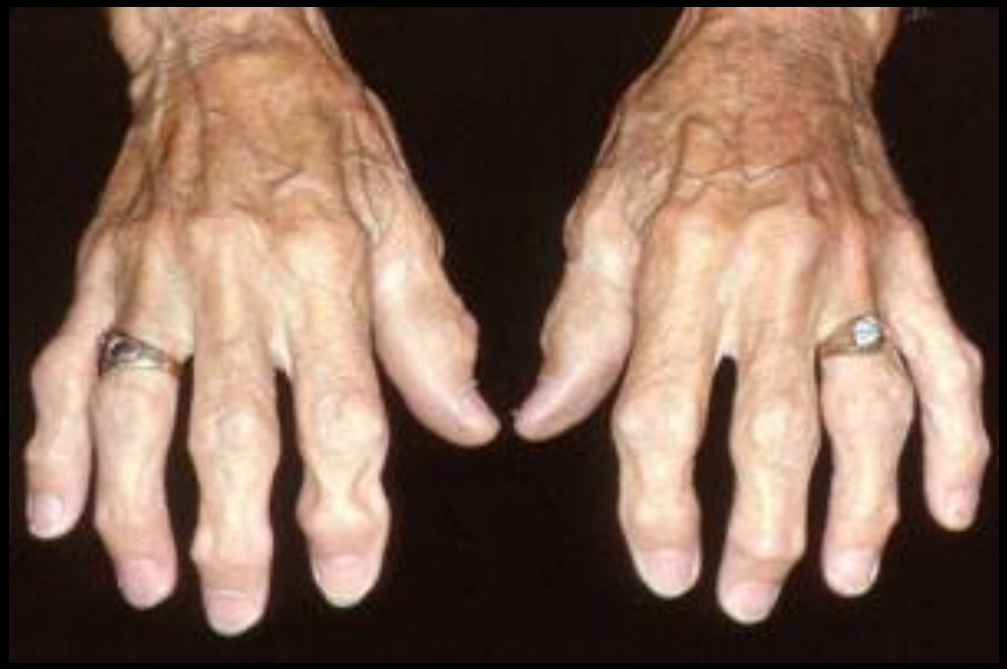
MUSCULOSKELETAL COMPLAINT

Inflammatory arthritis



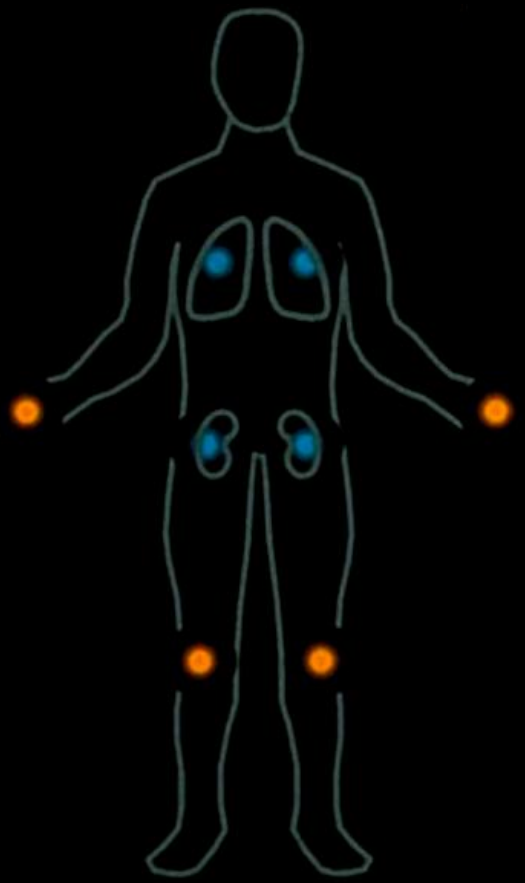
MUSCULOSKELETAL COMPLAINT

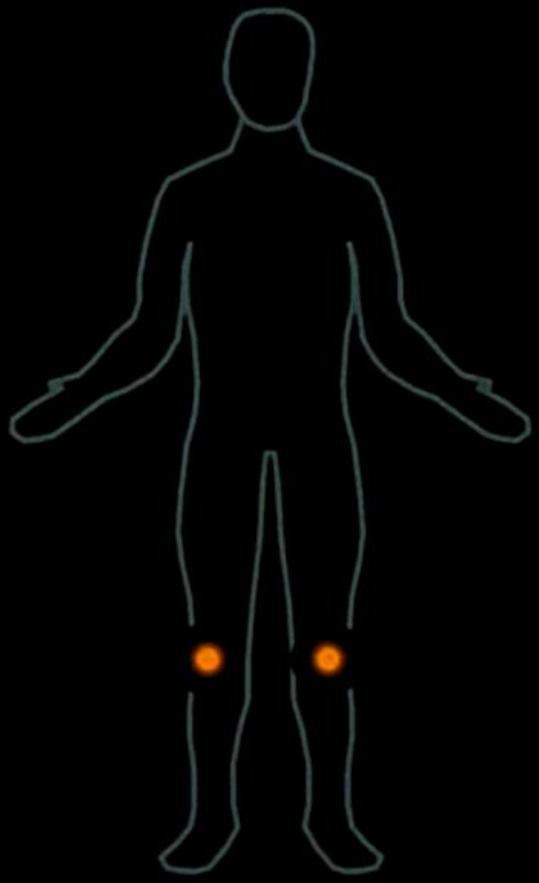
Non Inflammatory arthritis



MUSCULOSKELETAL COMPLAINT

Systemic Vs. Localized





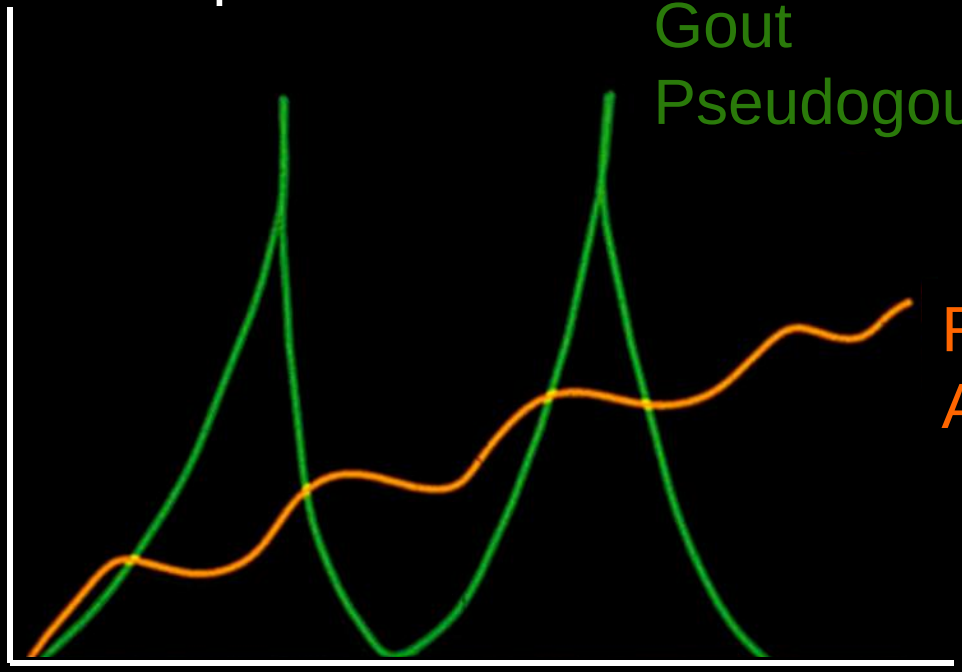
RA, SLE

Osteoarthritis

MUSCULOSKELETAL COMPLAINT

DIAGNOSTIC APPROACH

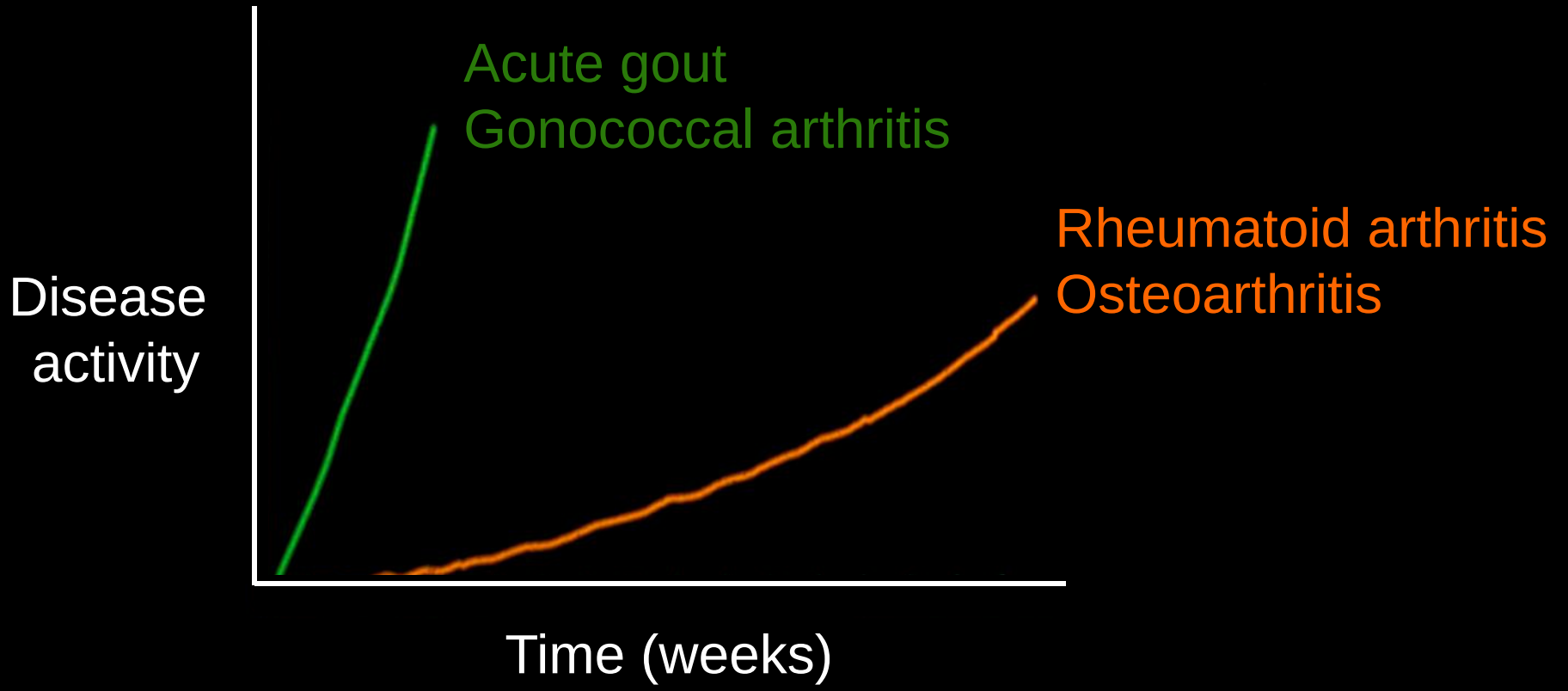
Persistent Vs. Episodic



MUSCULOSKELETAL COMPLAINT

DIAGNOSTIC APPROACH

Acute Vs. Insidious onset



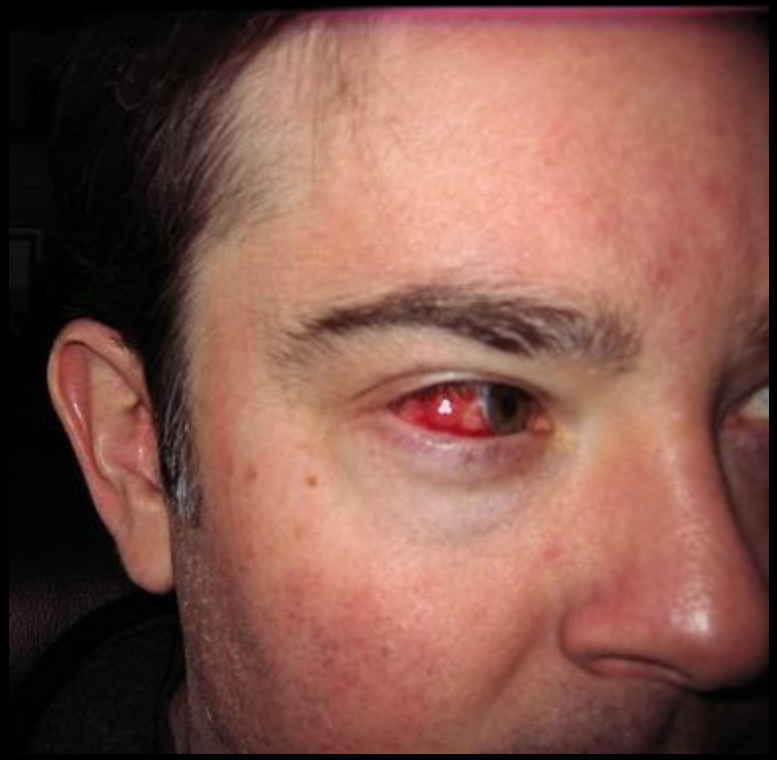
MUSCULOSKELETAL COMPLAINT

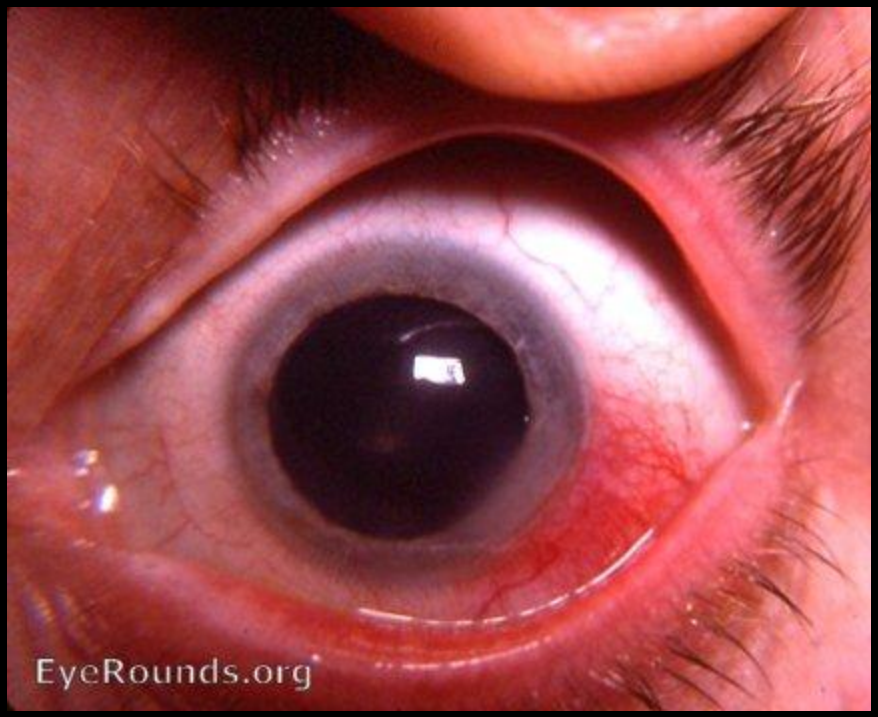
DIAGNOSTIC APPROACH

Physical exam:

- Look for clues in other organs that may lead to a diagnosis

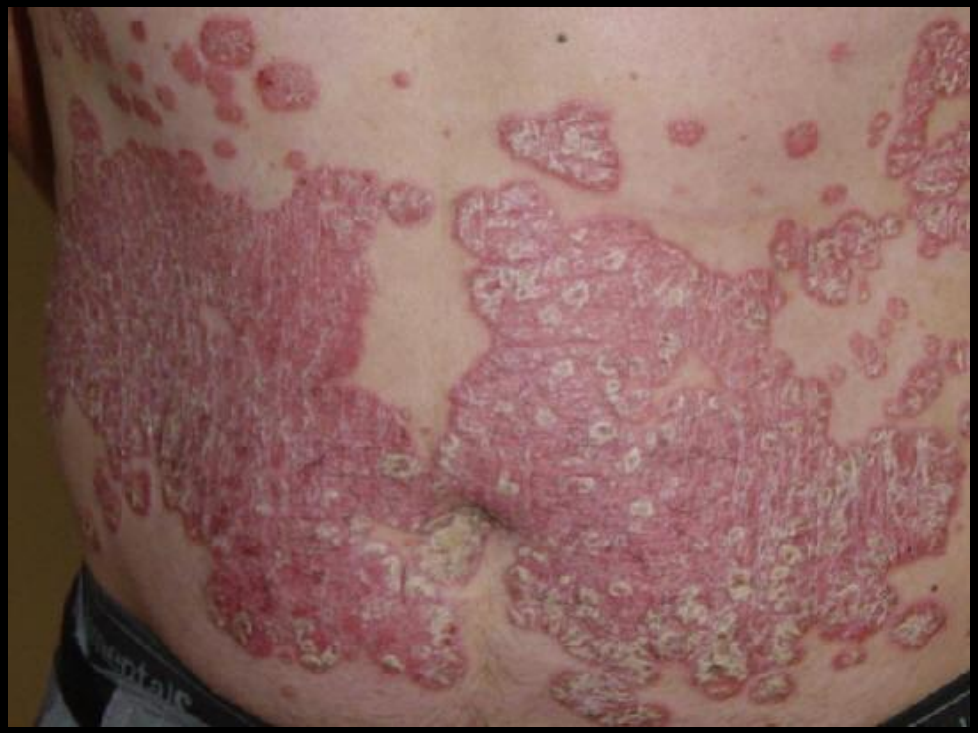
MUSCULOSKELETAL COMPLAINT

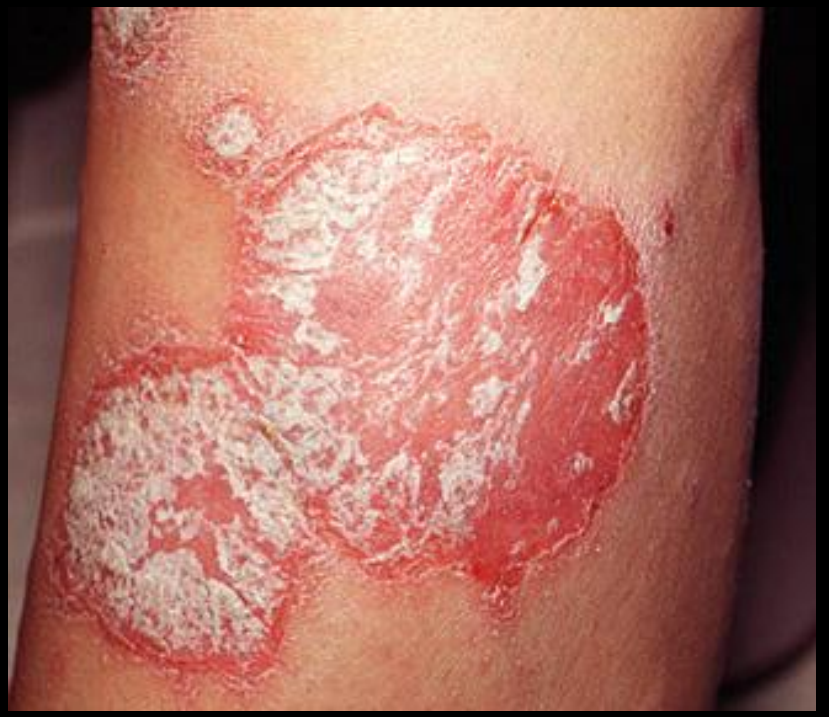




Rheumatoid arthritis

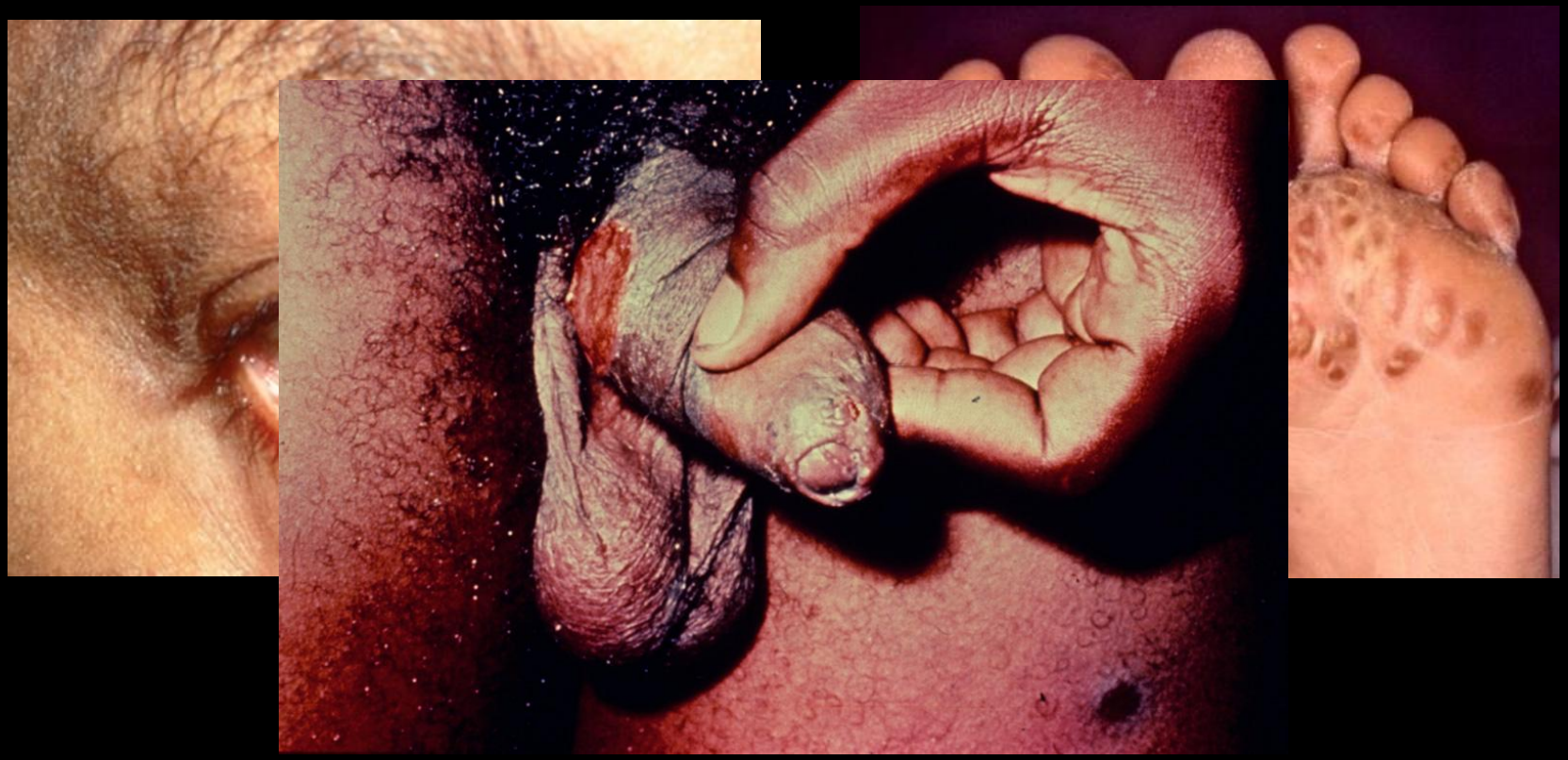
MUSCULOSKELETAL COMPLAINT





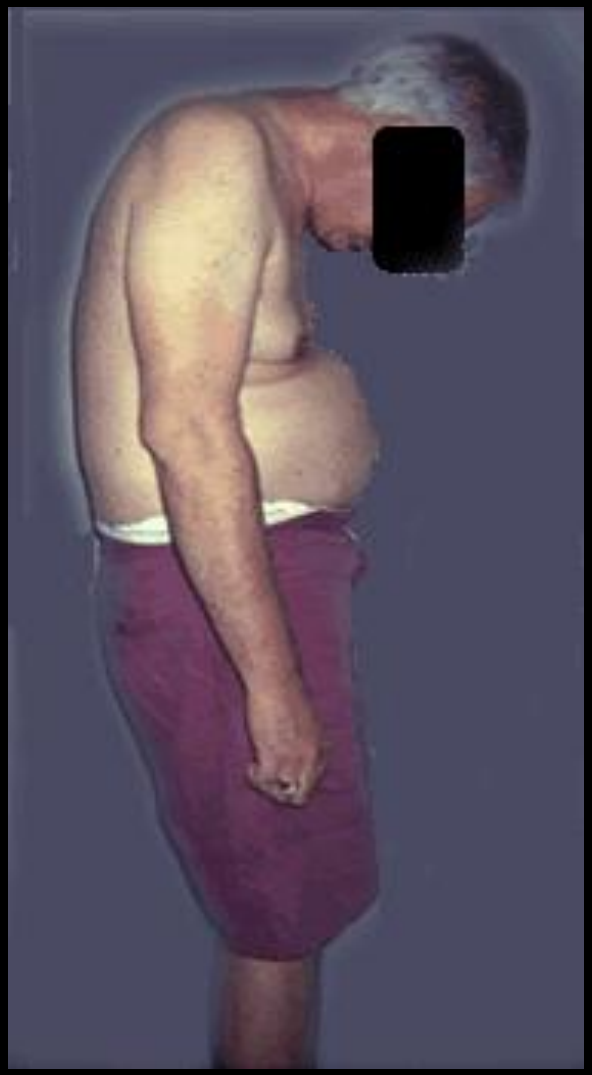
Psoriasis

MUSCULOSKELETAL COMPLAINT



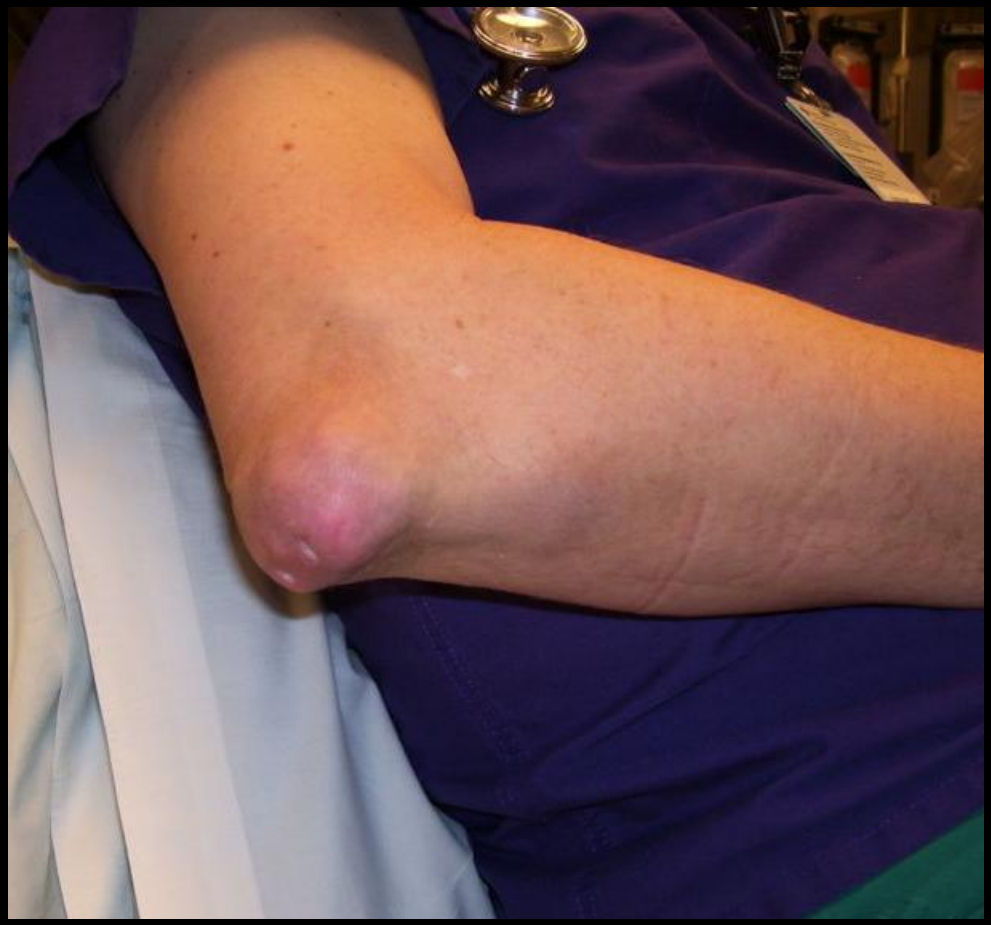
Gonoccocal arthritis

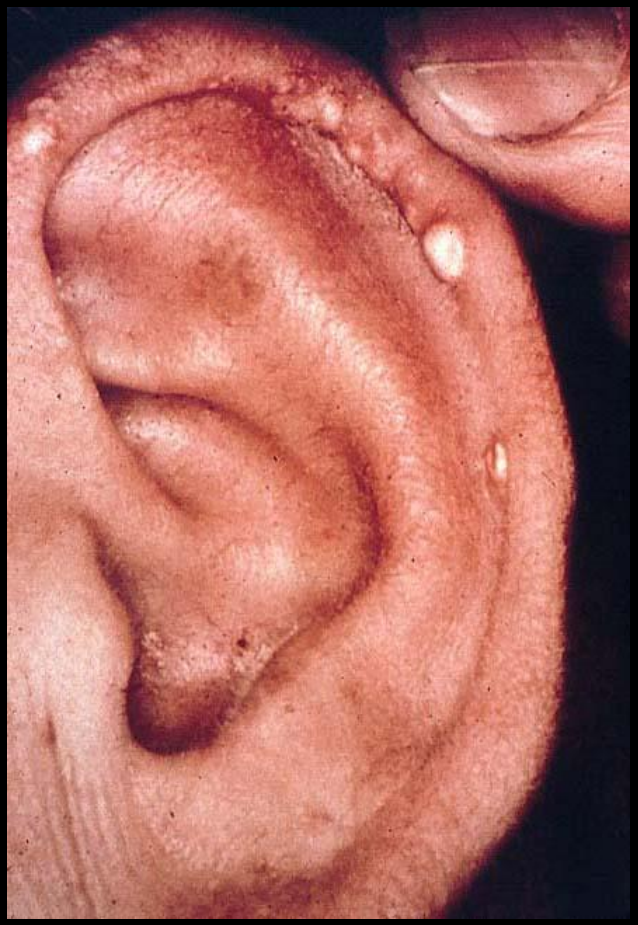
MUSCULOSKELETAL COMPLAINT



Ankylosing Spondylitis

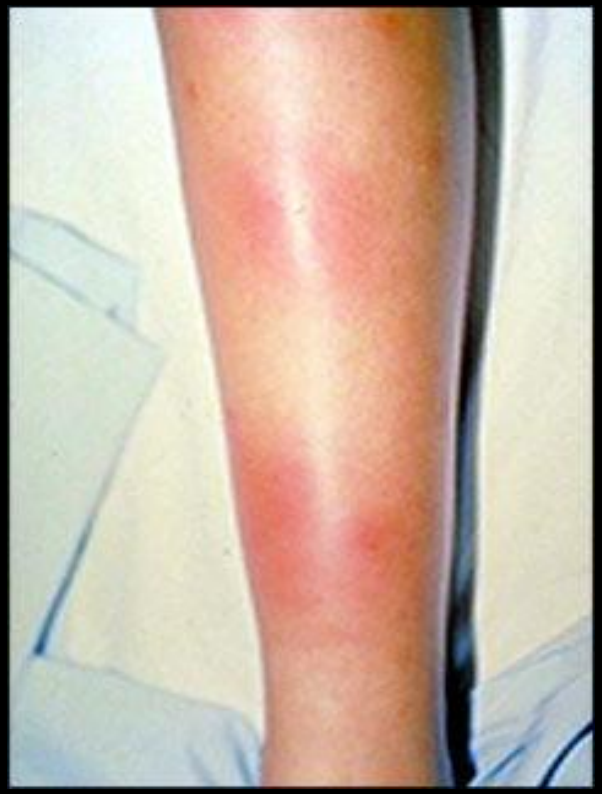
MUSCULOSKELETAL COMPLAINT



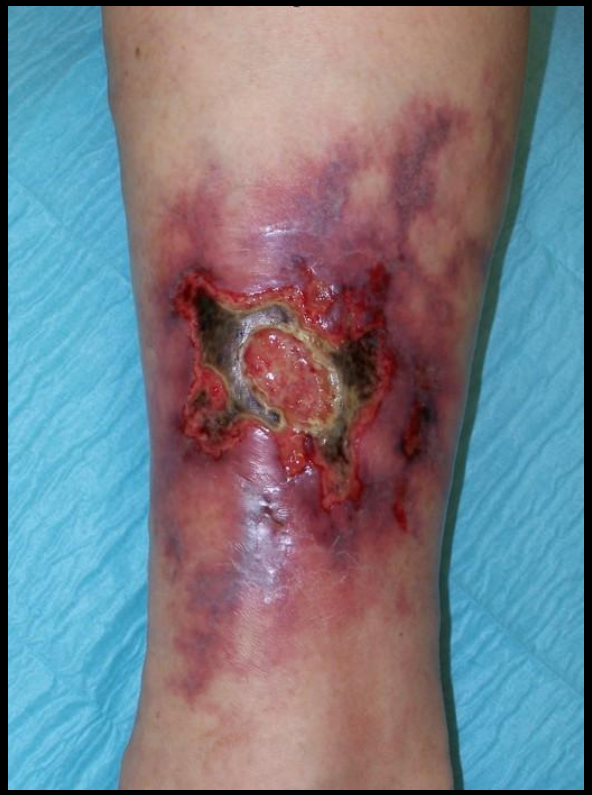


Gout

MUSCULOSKELETAL COMPLAINT



Sarcoidosis



IBD related arthritis

MUSCULOSKELETAL COMPLAINT

DIAGNOSTIC APPROACH

Laboratories:

- CBC: Anemia, thrombocytosis → Inflammation
  Neutropenia, thrombocytopenia → Felty's syndrome
  Hemolysis, thrombocytopenia → SLE

- Elevated ESR, CRP → inflammation

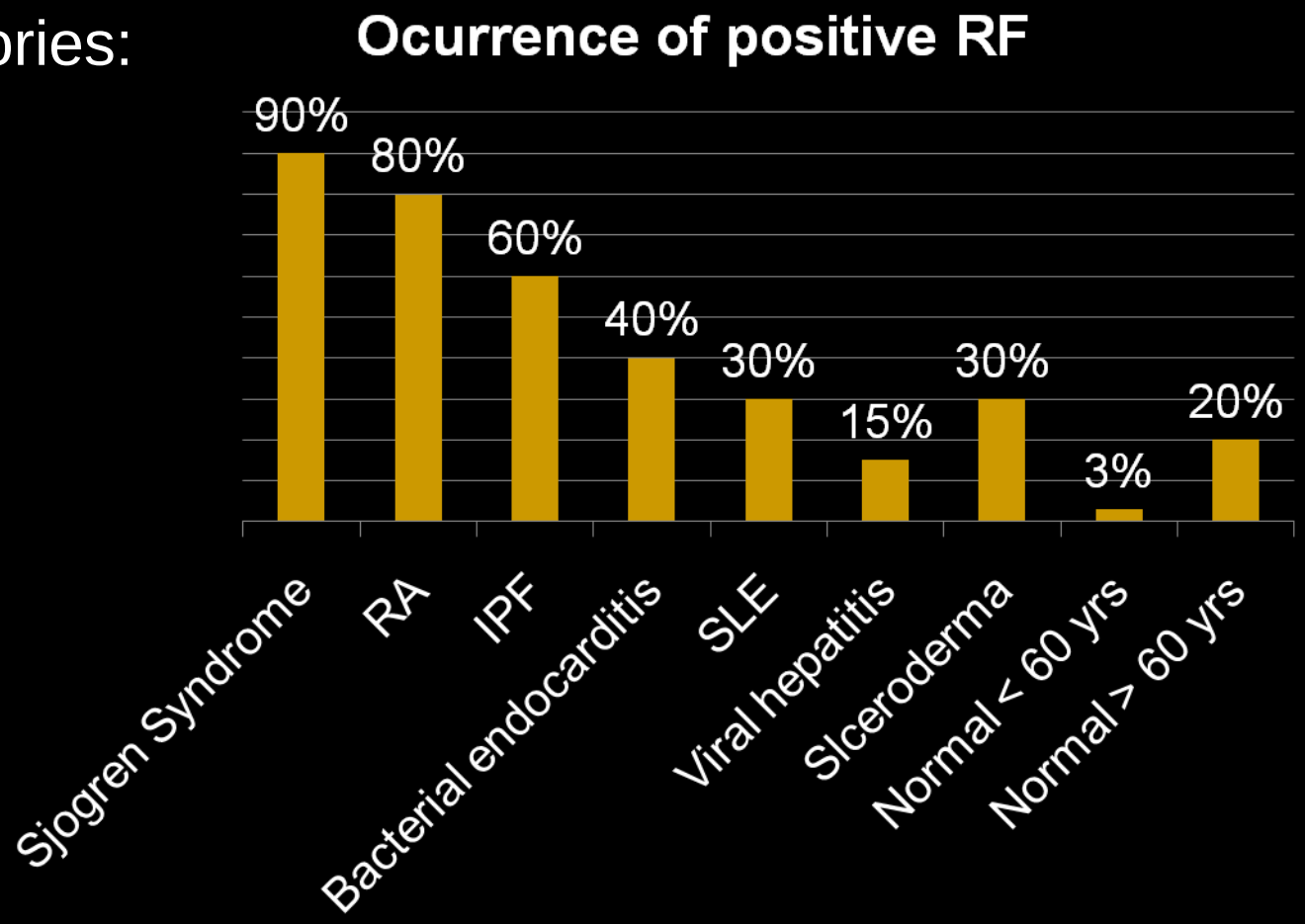
- CCP antibodies: Positive in 40% of RF negative RA, CCP is far more specific for RA than RF is, but a negative result does not exclude the diagnosis of RA

Van Venrooij WJ, Autoimmun Rev 2006; 6(1):37-41

MUSCULOSKELETAL COMPLAINT

DIAGNOSTIC APPROACH

Laboratories:



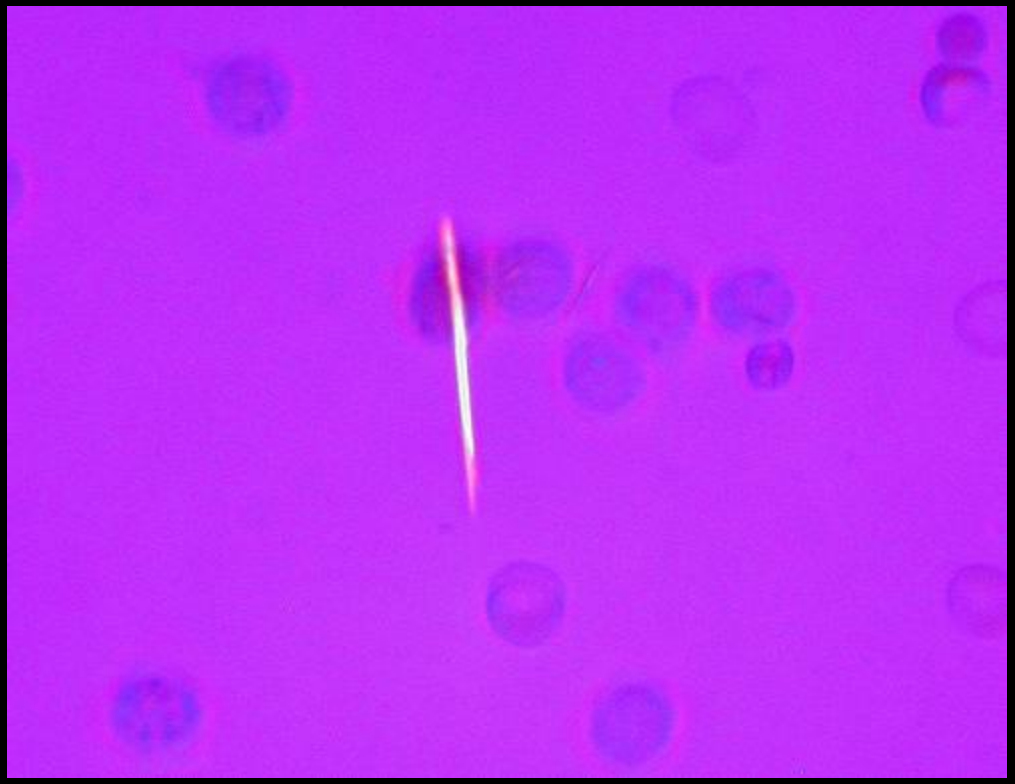
MUSCULOSKELETAL COMPLAINT

DIAGNOSTIC APPROACH

Synovial fluid analysis

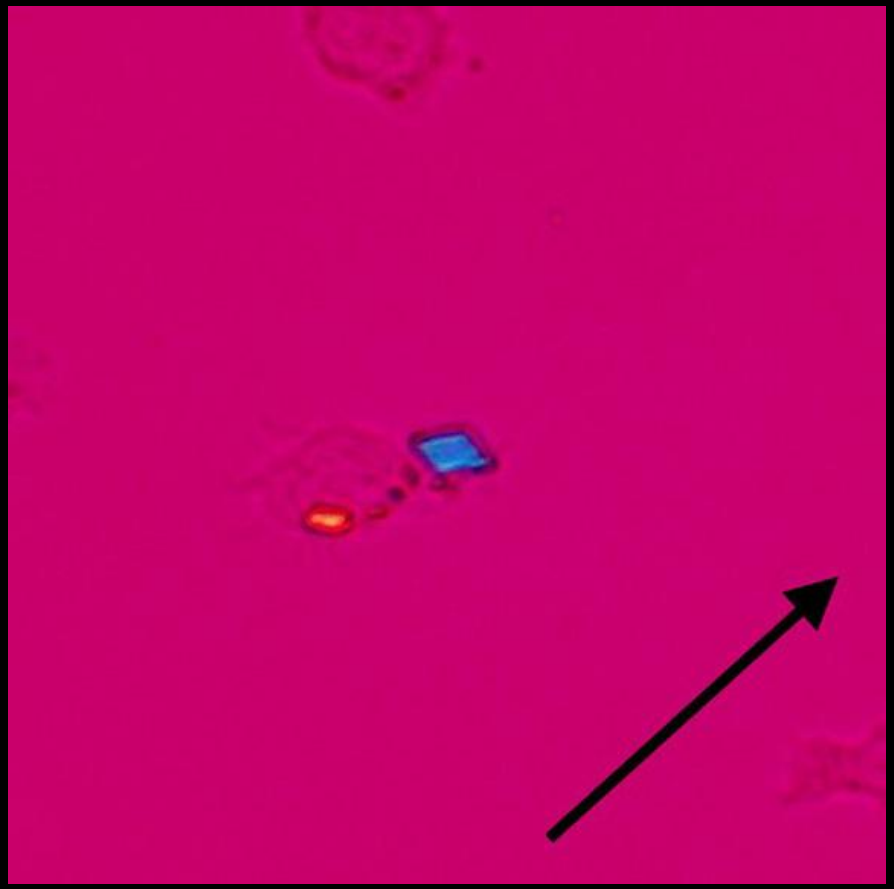
Condition	Appearance	WBC count	PMN%	Other
Normal	Clear/straw	< 200	< 25%	
Trauma	Clear/bloody	< 2000	< 25%	
OA	Clear/slightly cloudy	< 2000	< 25%	Occasional cartilage fragments
Infection	Cloudy/purulent	> 50000	> 80%	Organisms on gram stain
RA	Cloudy/light yellow	< 10000	75%	Occasional cholesterol crystals
Gout	Cloudy/white or yellow	> 10000	75%	MSU crystals
Pseudogout	Cloudy/white or yellow	> 10000	75%	CPPD crystals

MUSCULOSKELETAL COMPLAINT

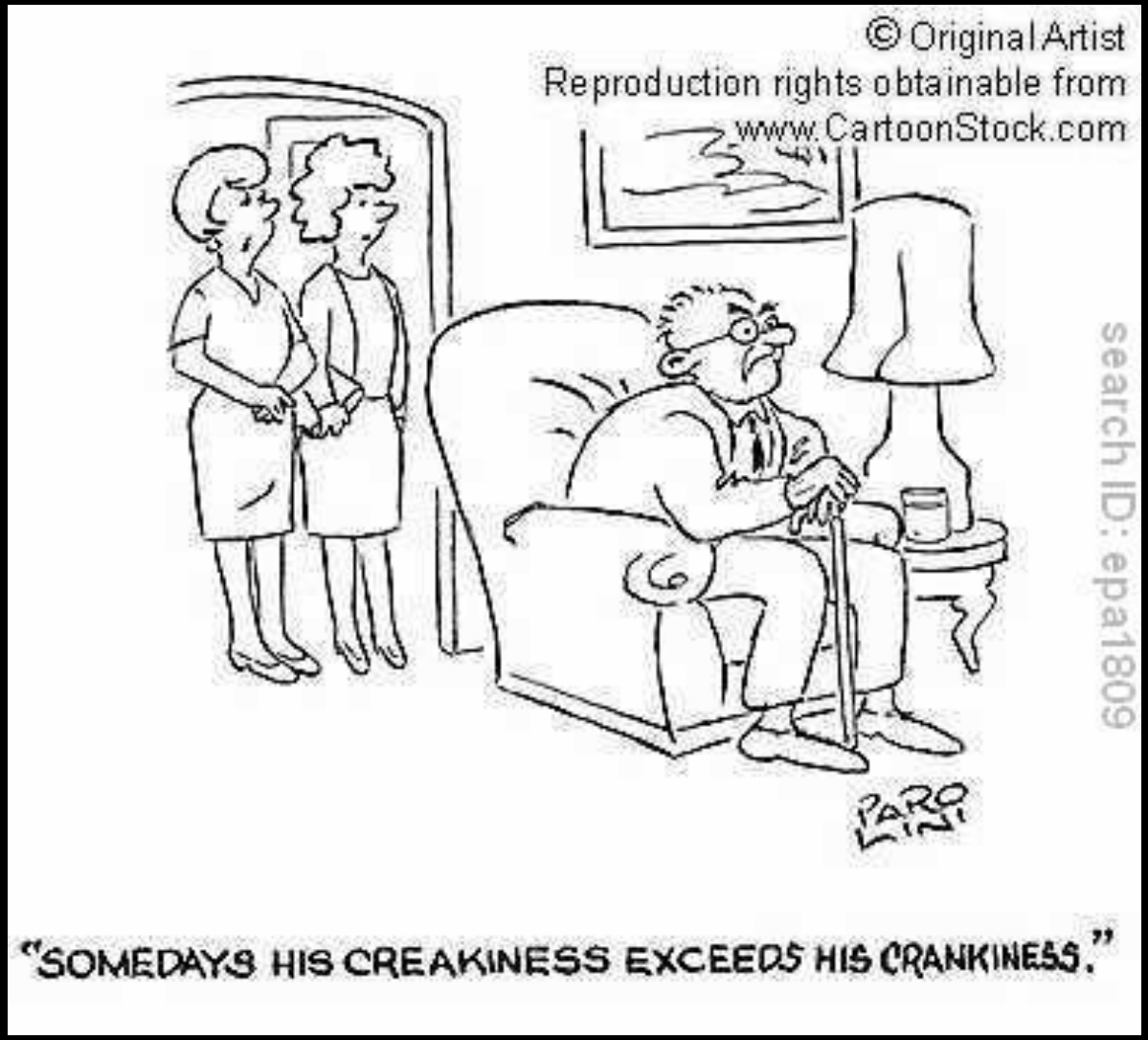


Monosodium urate crystal

MUSCULOSKELETAL COMPLAINT



Calcium pyrophosphate crystal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PARO LINI
"SOMEDAYS HIS CREAKINESS EXCEEDS HIS CRANKINESS."

CASE 2

CC: Arthralgia and muscle weakness
HPI: 46 yo AAW who presents with 6 months of arthralgia in shoulders, hands, knees and feet. Swelling wrists, and PIP's. She also has difficulty getting up from a chair, and combing her hair.
ROS: Easy bruisability, Raynaud's phenomenon, hair loss
PMH, PSH, social history and family history: NC
PE: Diffuse hair loss, TJC 26, SJC 9. Weakness in proximal arms, legs and neck flexors
Labs: Leukopenia, elevated AST, CPK 1000, aldolase 12, UA: nl, ANA 1:640, RNP pos, C3 120, C4 8

CONNECTIVE TISSUE DISEASE

Diagnostic approach:

History pearls:

- Multisystem organ involvement is common

Constitutional: Fatigue, fever, weight loss
Eyes: Sicca, redness, pain
ENT: Sicca, oral/nasal ulcers, dysphagia, sore throat
Heart: Chest pain, orthopnea, PND
Lungs: Pleuritic pain, dyspnea, cough
Abdomen: GERD, bowel changes, GIB
Joints: Pain, swelling, stiffness

CONNECTIVE TISSUE DISEASE

Diagnostic approach:

History pearls:

Skin: Photosensitivity, hair loss, rashes, Raynaud's, nail changes
Neurological: Neuropathy, muscle weakness, mental status changes, headache, seizures
Psychiatric: Depression, psychosis
GU: genital ulcers

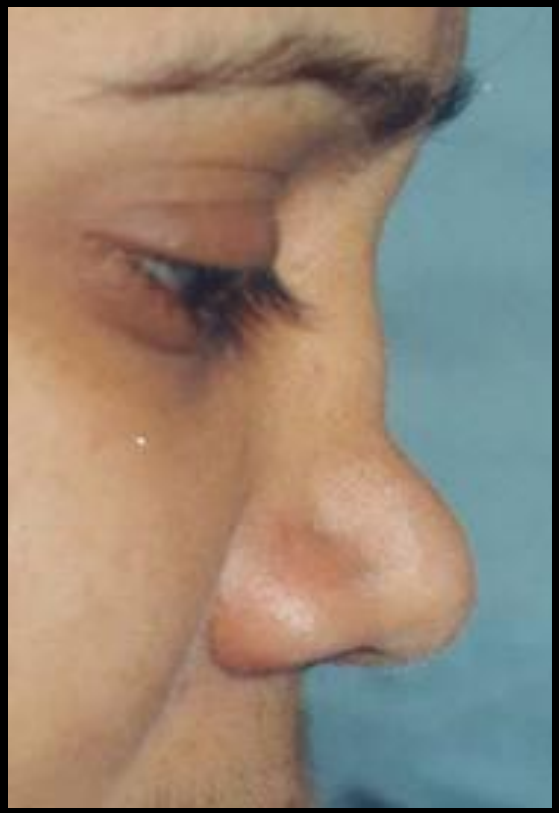
CONNECTIVE TISSUE DISEASE

Diagnostic approach:

Physical exam pearls:

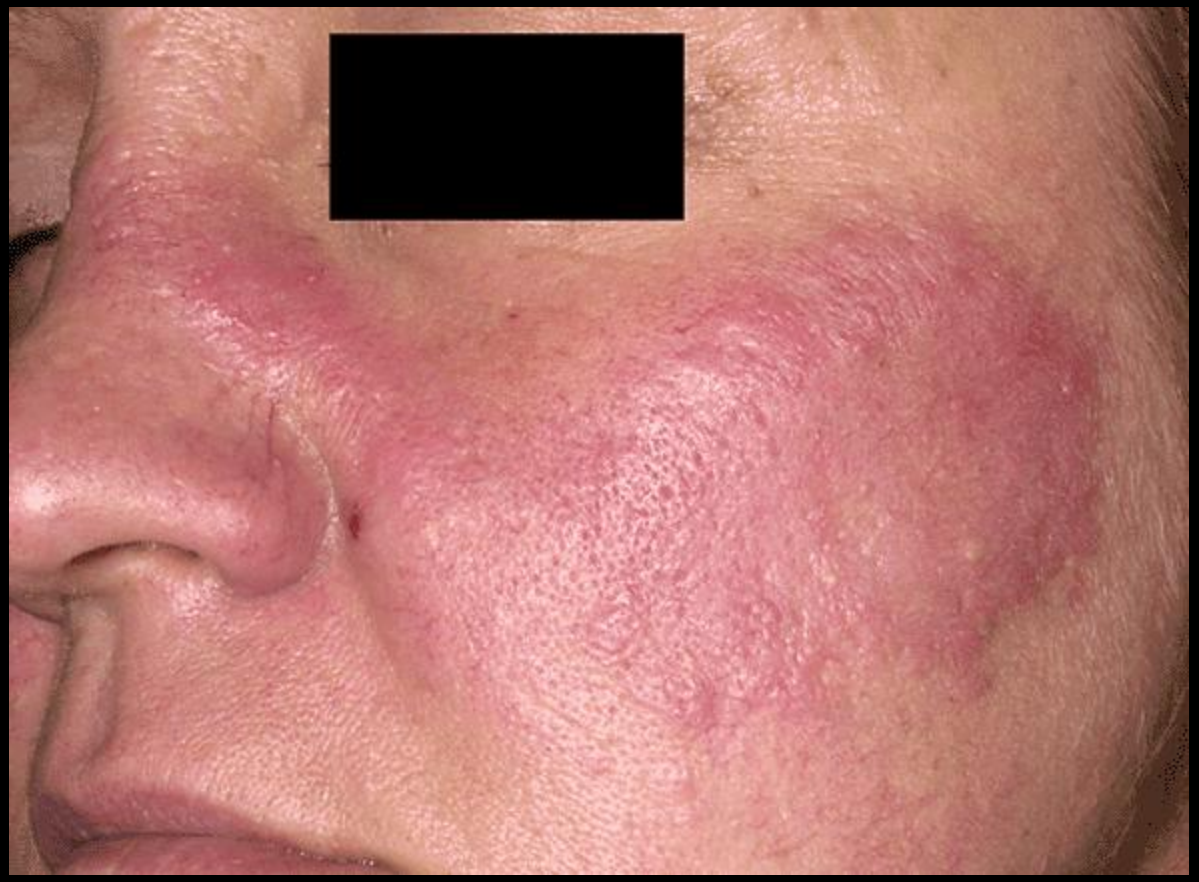
- Head to toe examination

CONNECTIVE TISSUE DISEASE



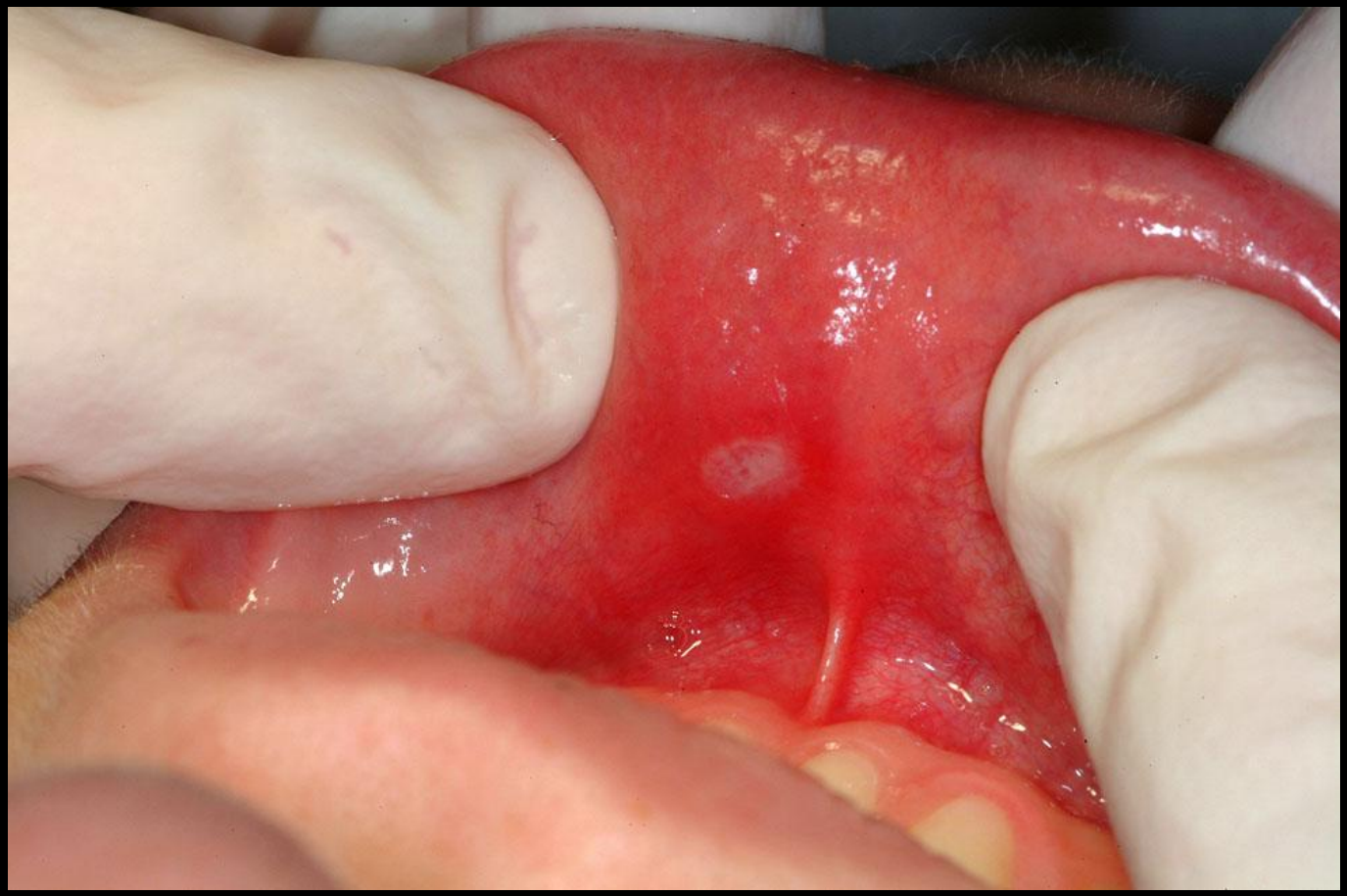
Relapsing polychondritis, granulomatosis with polyangiitis

CONNECTIVE TISSUE DISEASE



SLE

CONNECTIVE TISSUE DISEASE

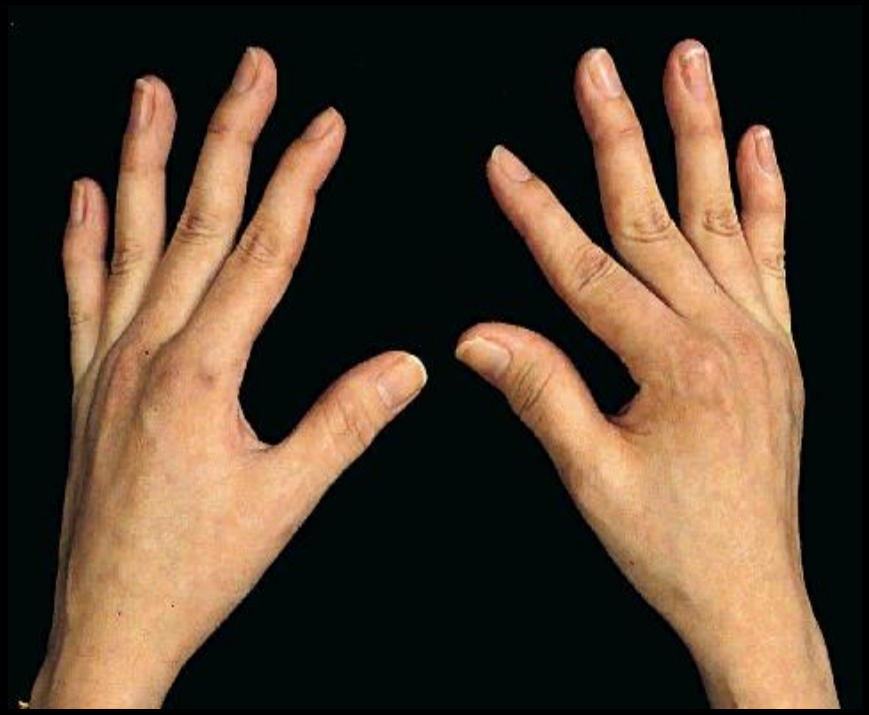


SLE, Behcet’s disease

CONNECTIVE TISSUE DISEASE

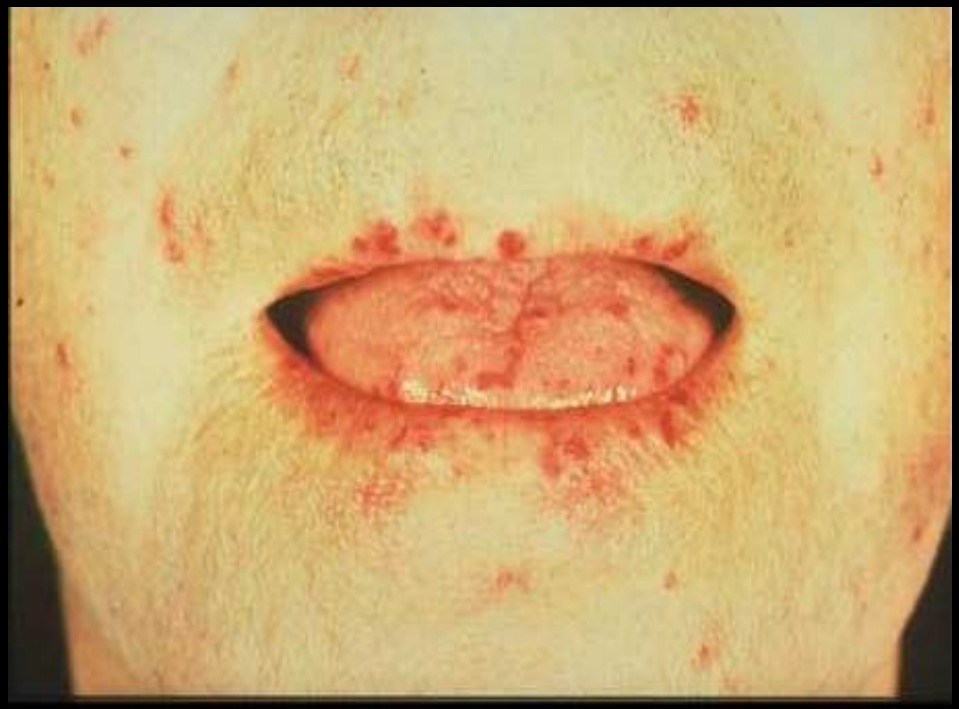
Systemic sclerosis

CONNECTIVE TISSUE DISEASE



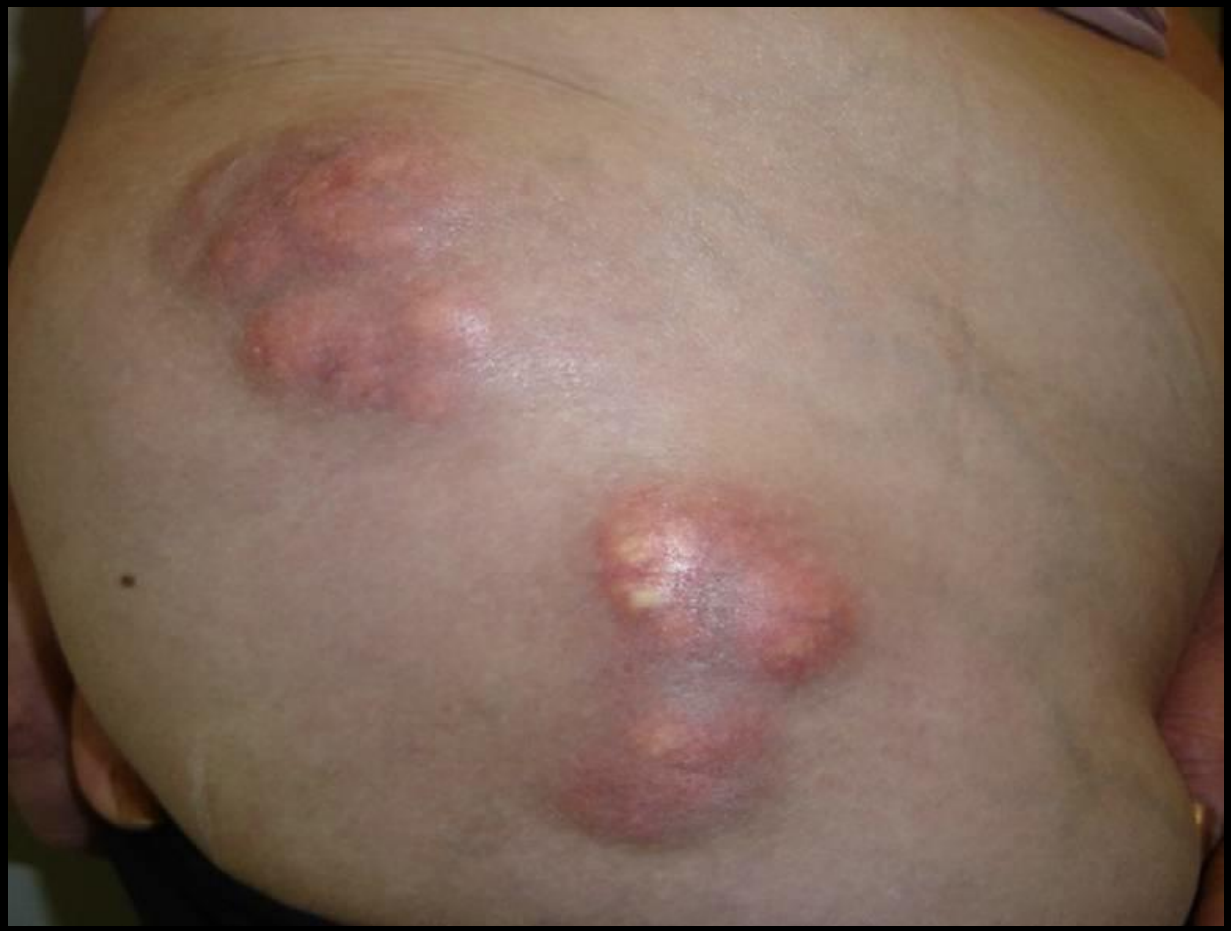
SLE

CONNECTIVE TISSUE DISEASE



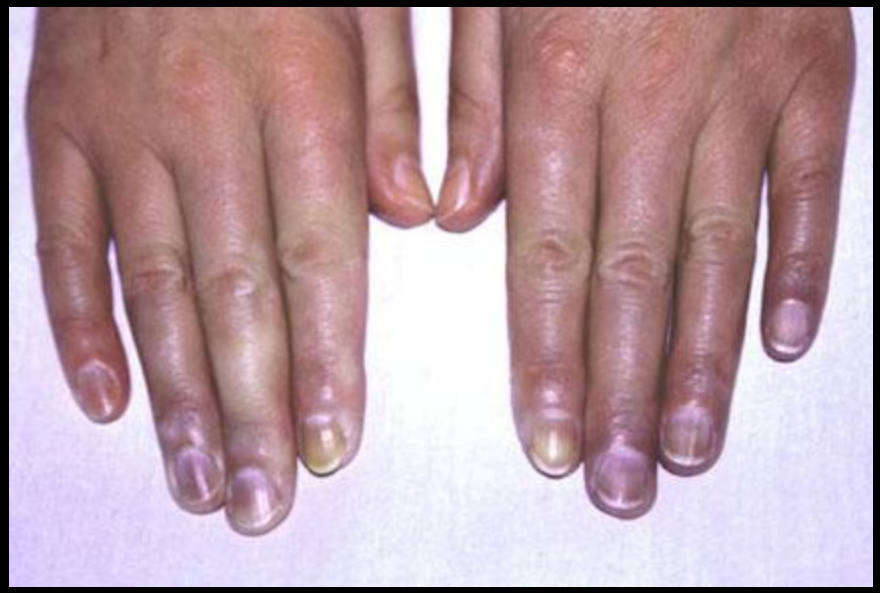
Systemic sclerosis

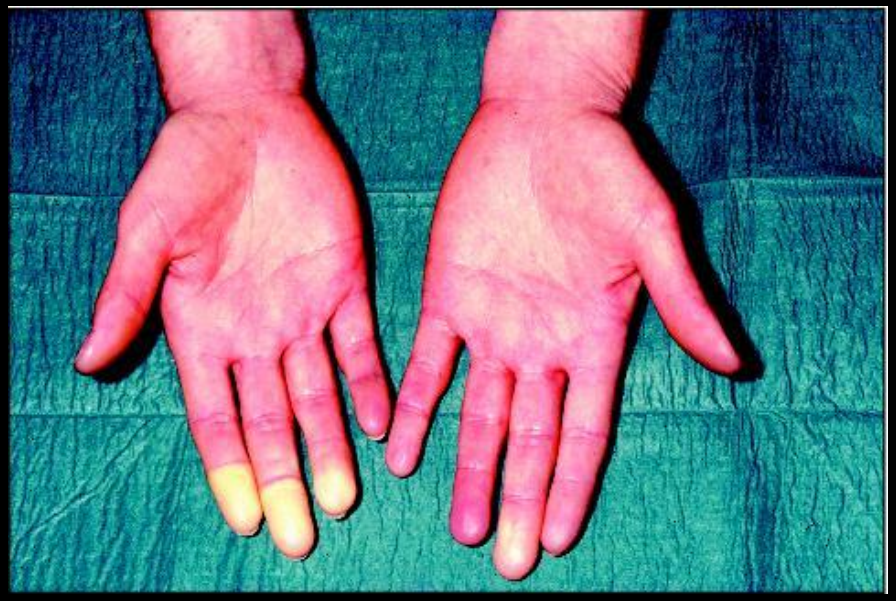
CONNECTIVE TISSUE DISEASE



Systemic sclerosis, dermatomyositis

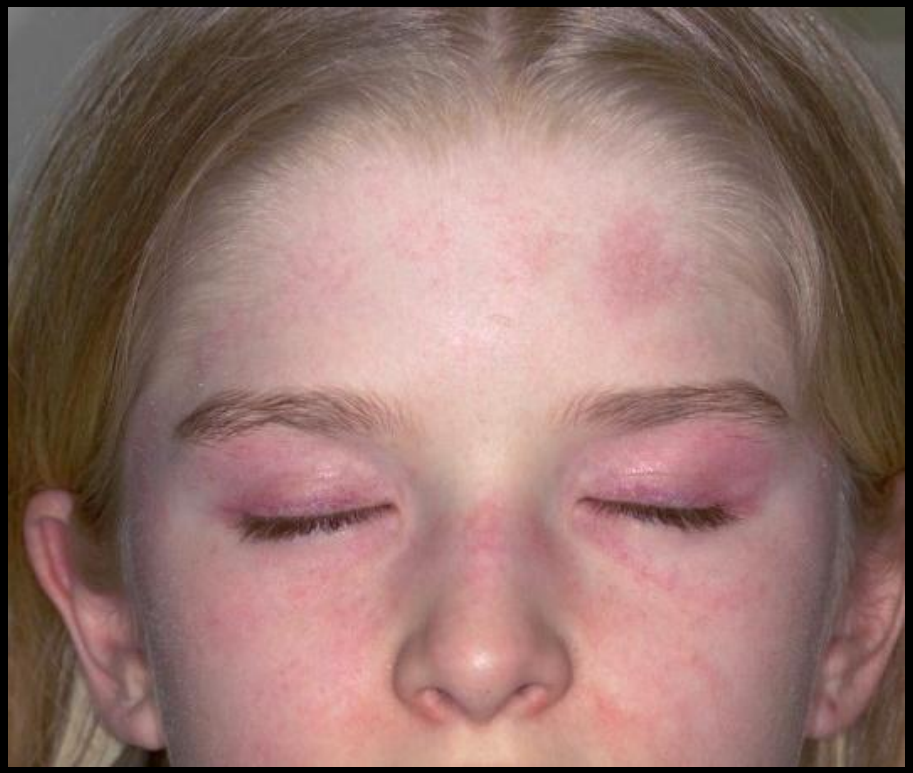
CONNECTIVE TISSUE DISEASE

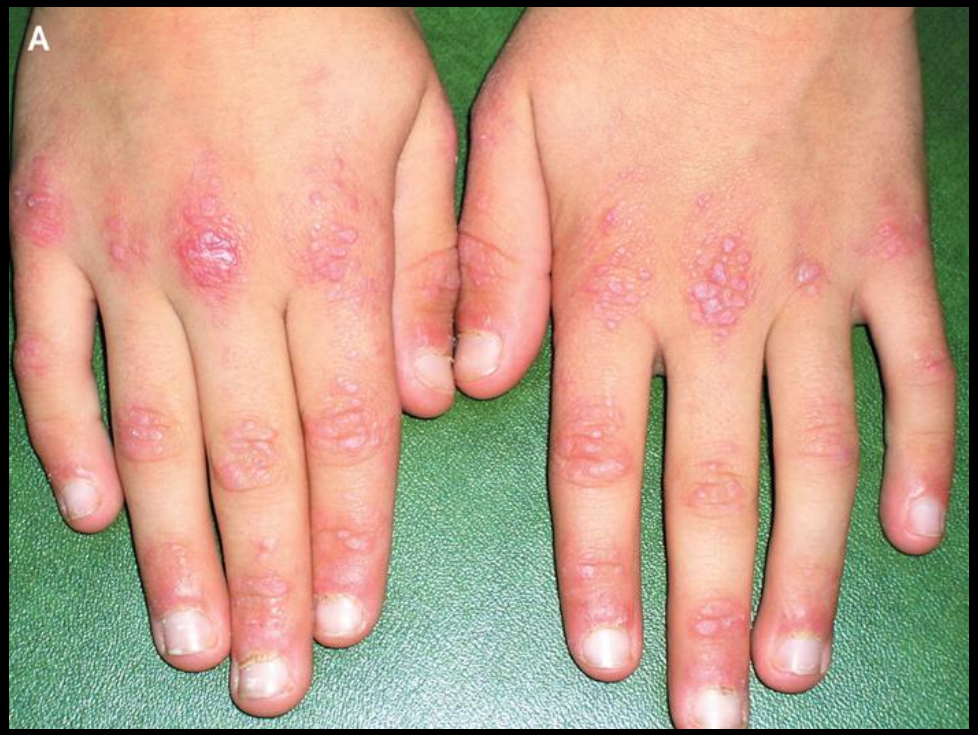




Systemic sclerosis, SLE

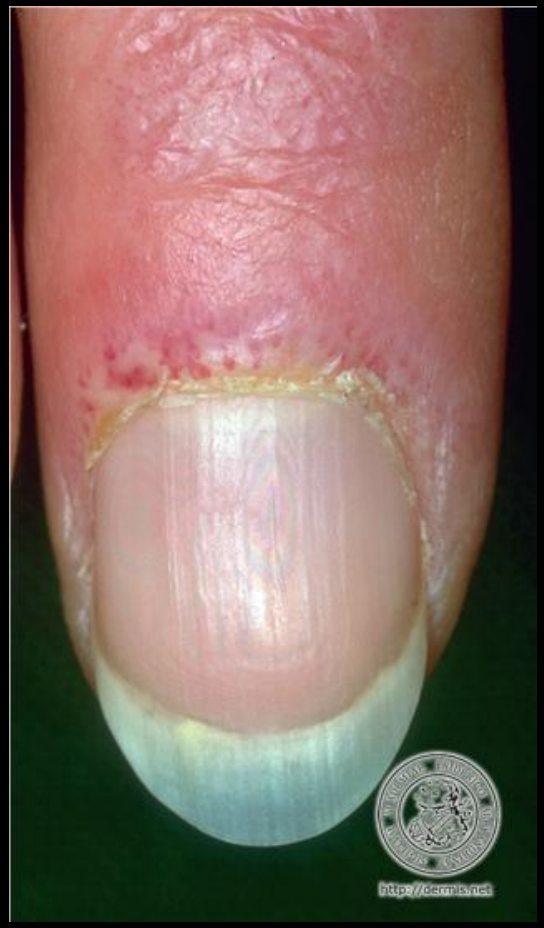
CONNECTIVE TISSUE DISEASE

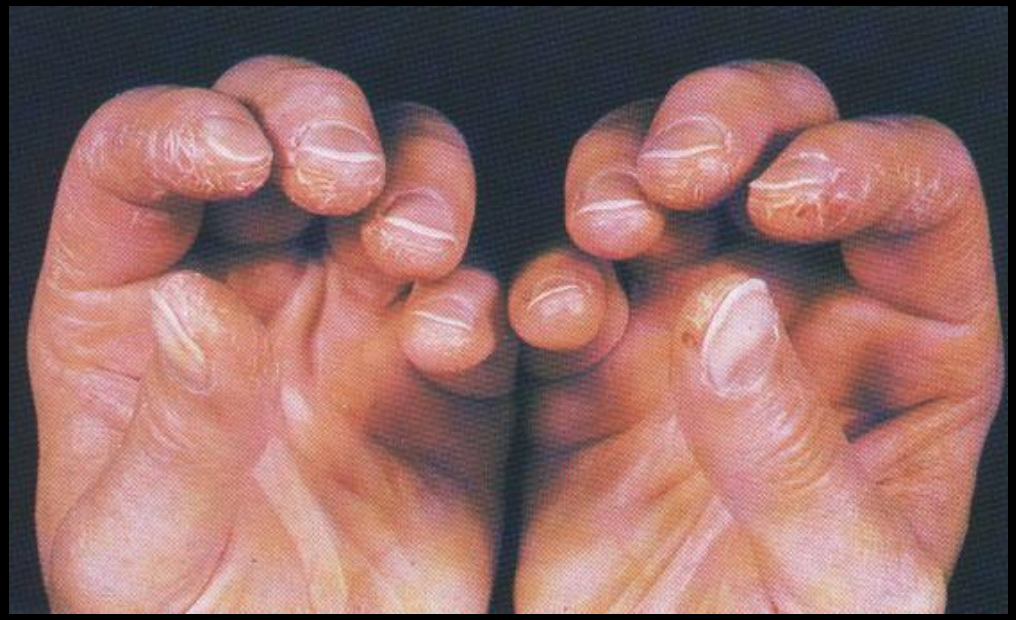




Dermatomyositis

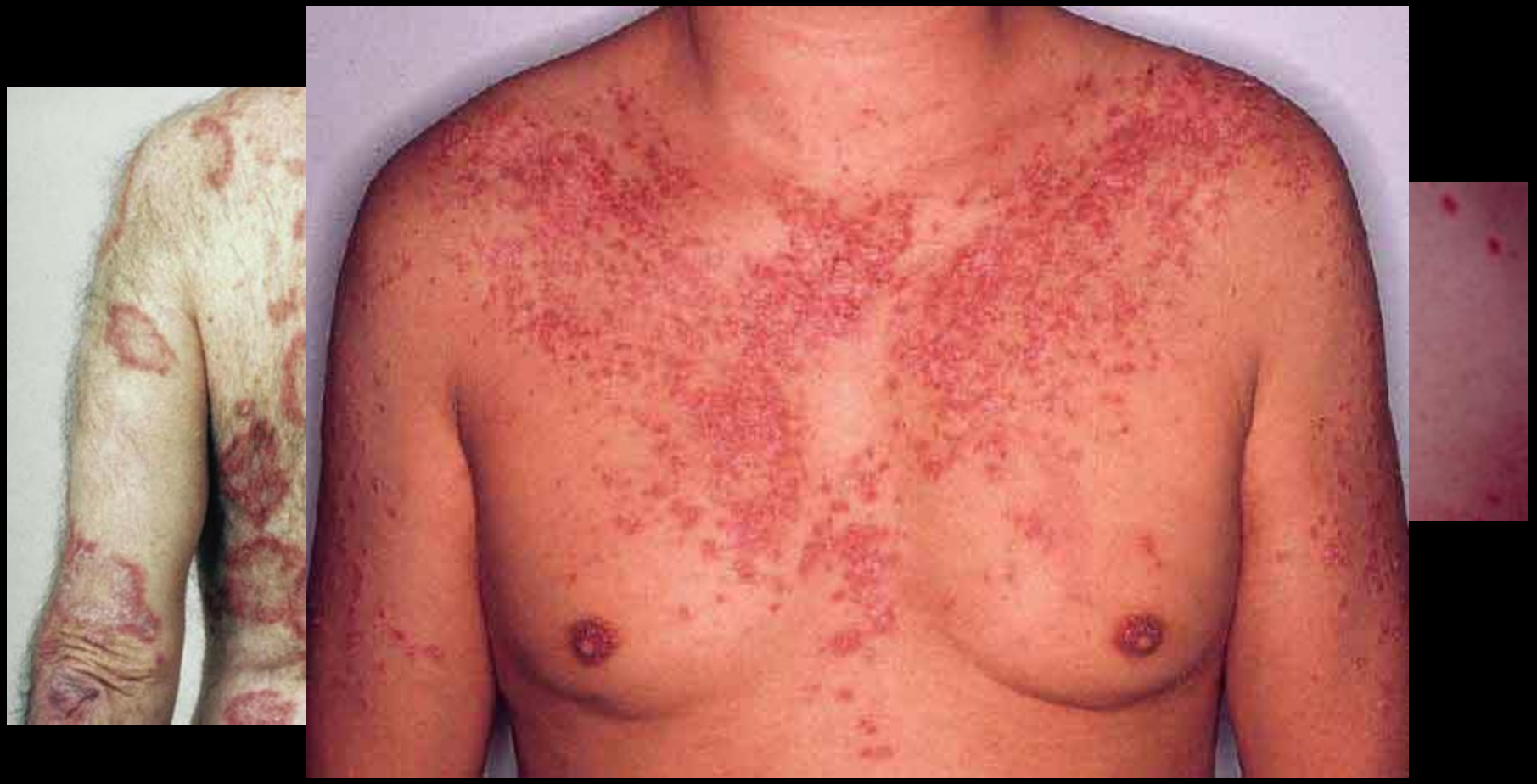
CONNECTIVE TISSUE DISEASE





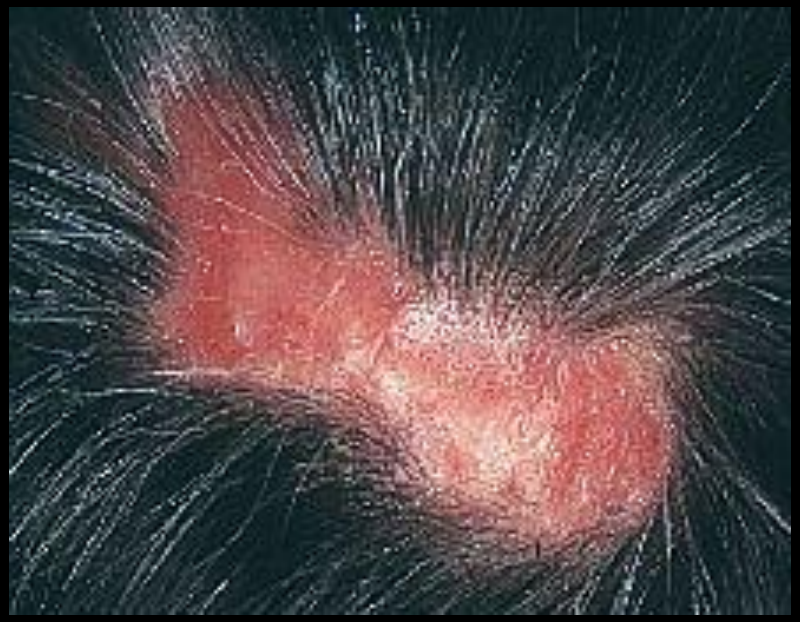
Dermatomyositis

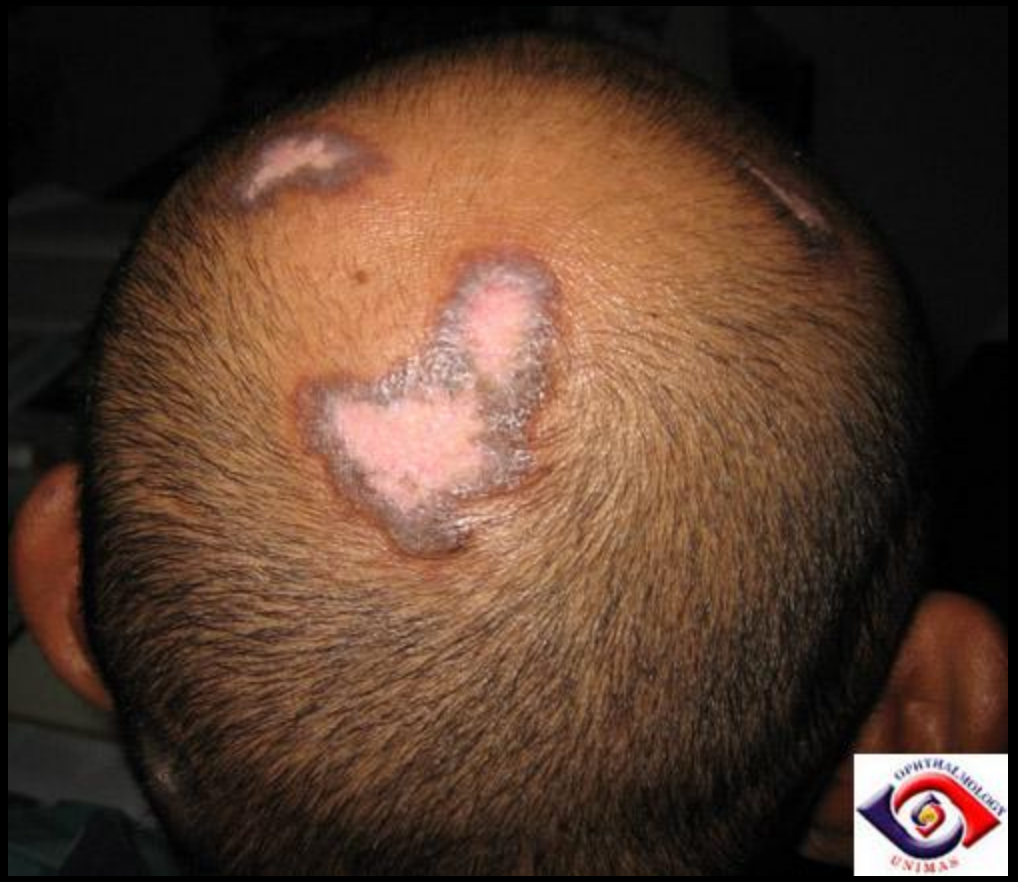
CONNECTIVE TISSUE DISEASE



SLE

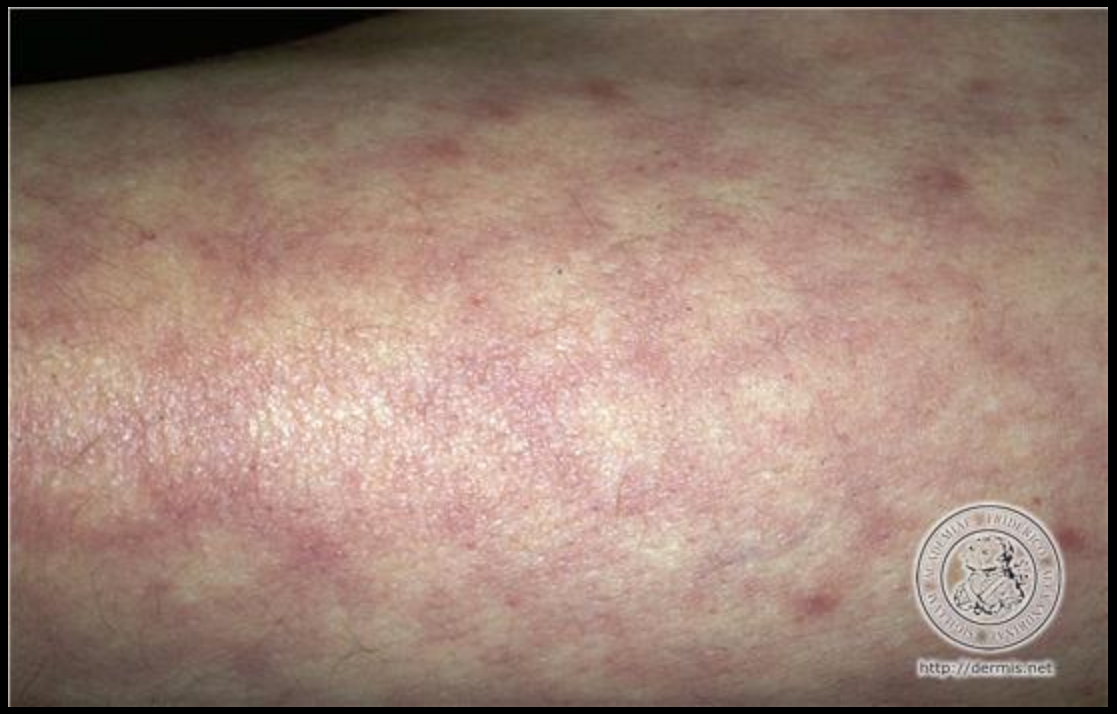
CONNECTIVE TISSUE DISEASE





Chronic cutaneous lupus

CONNECTIVE TISSUE DISEASE



SLE, antiphospholipid syndrome, Sjogren syndrome

CONNECTIVE TISSUE DISEASE

	Systemic lupus erythematosus	Sjögren's syndrome	Systemic sclerosis	Idiopathic inflammatory myositis
Constitutional signs and symptoms (eg, fever, fatigue, and weight loss)	Common	Fatigue (severe)	Less prominent primary symptoms	Common, mainly fatigue, usually without fever
Arthritis or arthralgia	Common, typically nonerosive	Common, nonerosive	Arthralgia common, synovitis rare	Polyarticular, and mild, erosive, and deforming with anti-Jo-1
Muscle symptoms	Myalgia, myositis (1–4%)	Myalgia	Myalgia, disuse atrophy, myositis (rare)	Substantial weakness, occasional pain
Mucocutaneous manifestations	Malar, discoid rashes, photosensitivity, mouth ulcers	Dryness, oral infections, hypergammaglobulinaemia purpura	Skin fibrosis, sclerodactyly, calcinosis, telangiectasia†	Rashes with dermatomyositis (eg, Gottron's papules, heliotropic rash eyes, V signs, and shawl signs)
Raynaud's syndrome	Yes (about 20% of patients)	Yes	Frequent, severe	Yes
Sicca syndrome	10–20% of patients	Prominent mouth and eyes	Occasional	<10% of patients
Cardiovascular disease	Pericarditis, early cardiovascular disease, and Libman-Sacks endocarditis	Uncommon	Right heart failure and secondary pulmonary hypertension	Arrhythmias, valvular heart disease, and ischaemia
Pulmonary symptoms	Serositis, pulmonary embolism, interstitial lung disease, pulmonary hypertension, shrinking lung	Chronic cough and lymphoproliferative disorders	Interstitial lung diseas and pulmonary hypertension (10–50% of patients)	Dry cough, shortness of breath, respiratory muscle weakness, interstitial lung disease, pulmonary hypertension, and bronchiolitis obliterans organising pneumonia
Gastrointestinal symptoms	Mesenteric vasculitis	Dysphagia and primary biliary cirrhosis	Oesophageal dysfunction, gastro-oesophageal reflux disease, diarrhoea, and faecal incontinence	Dysphagia most common, gastro-oesophageal reflux disease
Renal symptoms	Yes (30–50% of patients), glomerulonephritis	Interstitial lymphocytic nephritis, distal tubular acidosis, and interstitial cystitis	Renal crisis (diffuse systemic sclerosis), more common mild dysfunction	Very rare
Neurological symptoms	Headache, mood, cognitive disorders (20–30% of patients), other more severe and rare	CNS, peripheral nervous system, autonomic nervous system; Adie's pupil, orthostatic intolerance	Very infrequent, includes cranial neuropathies	CNS very uncommon
Haematological symptoms	Common, decreased white cell count, platelets, and haemoglobin	Decreased white cell count, anaemia (<10% of patients)	Anaemia secondary to gastrointestinal blood loss	Very rare

*Clinical features of systemic vasculitides in table 2. †Dependent on whether disease subtype is limited or diffuse.

Goldblatt F. Lancet 2013; 382: 797–808

CONNECTIVE TISSUE DISEASE

Diagnostic approach:

Laboratories:

- CBC: Hemolysis, thrombocytopenia, leukopenia, lymphopenia
- CMP: Renal insufficiency, elevated LFT's, hypokalemia
- Urinalysis: Hematuria, proteinuria, active sediment, inability to acidify the urine

CONNECTIVE TISSUE DISEASE

Diagnostic approach:

Laboratories:

- ANA: Antibodies against nuclear specificities (e.g. DNA, snRNP)

- ANA can be seen in the normal population:
  - ≥ 1:40: 20-30%
  - ≥ 1:80: 10-12%
  - ≥ 1:160: 5%
  - ≥ 1:320: 3%

Kelley's Rheumatology Textbook- 8th Ed. (2009)

CONNECTIVE TISSUE DISEASE

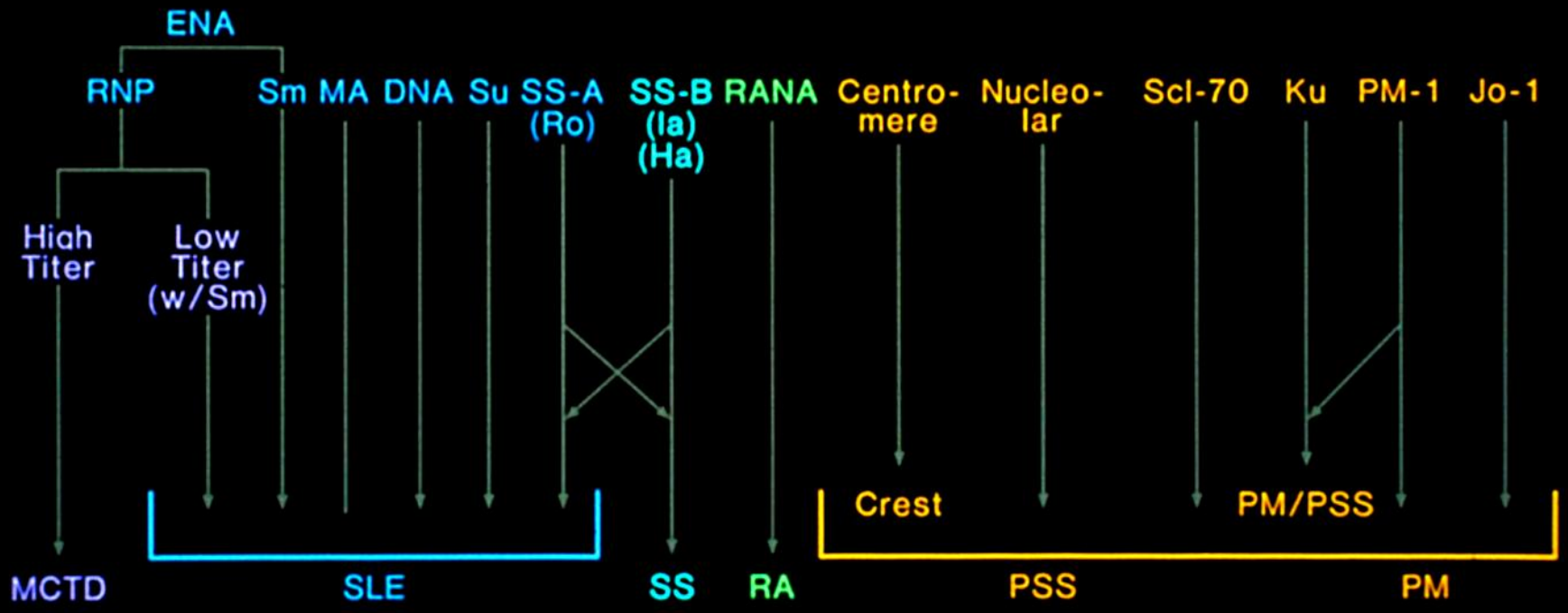
Causes of Positive ANA	%
SLE	~99
Systemic sclerosis	97
PM/DM	40-80
Sjogren syndrome	48-96
Drug induced lupus	100
MCTD	100
Autoimmune hepatitis	100
Juvenile arthritis	20-50
APS	40-50
Raynaud's phenomenon	20-60

Adapted from Kavanaugh, A. Arch Pathol Lab Med 2000, 124:71-81)

CONNECTIVE TISSUE DISEASE

Diagnostic approach:

Laboratories:



CONNECTIVE TISSUE DISEASE

Diagnostic approach:

Laboratories:

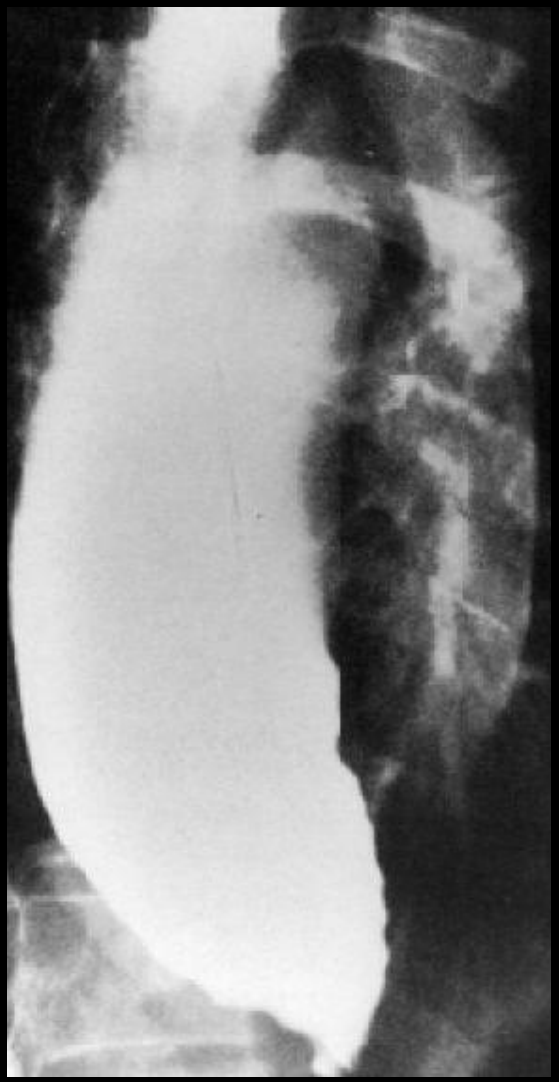
- In clinical use, ANA is insufficient to establish or refute a diagnoses

- ANA results add weight to diagnoses that throughout the evaluation should rely heavily on other clinical information

CONNECTIVE TISSUE DISEASE

Diagnostic approach:

Imaging studies:

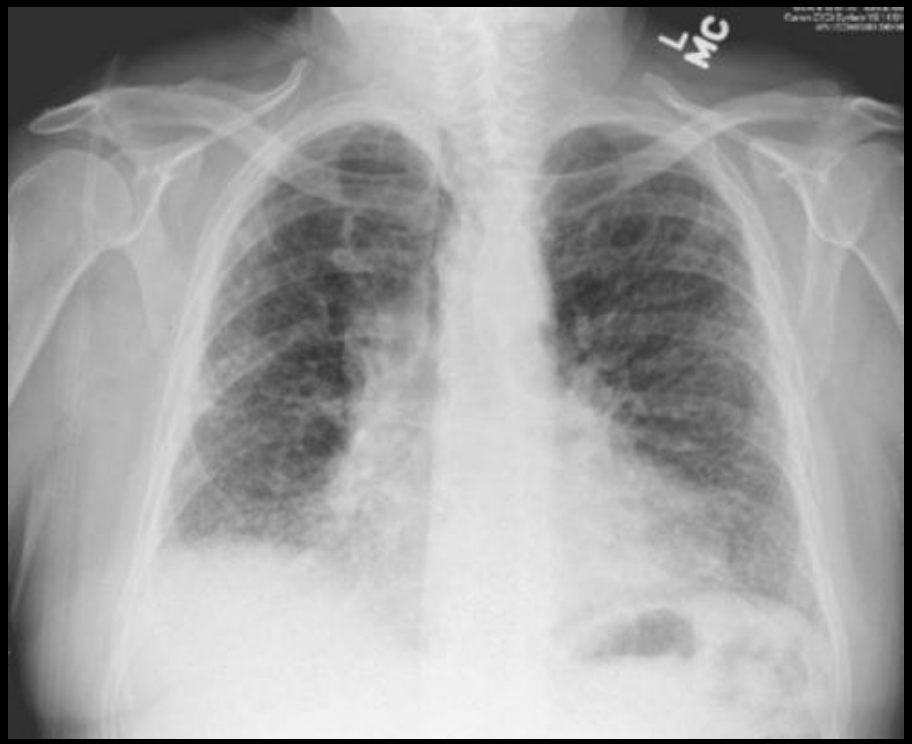


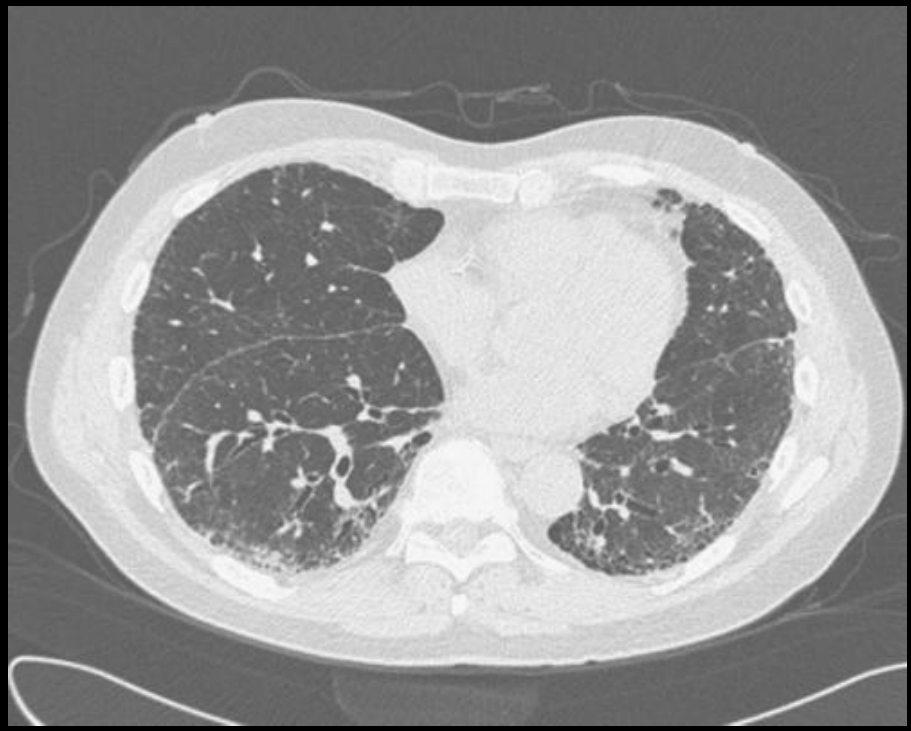
Systemic sclerosis

CONNECTIVE TISSUE DISEASE

Diagnostic approach:

Imaging studies:



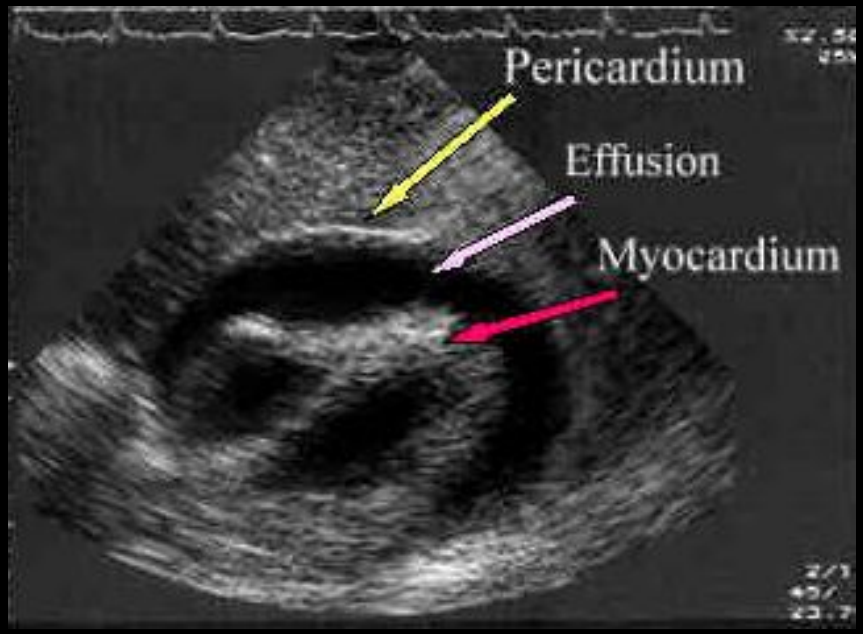


Systemic sclerosis

CONNECTIVE TISSUE DISEASE

Diagnostic approach:

Imaging studies:

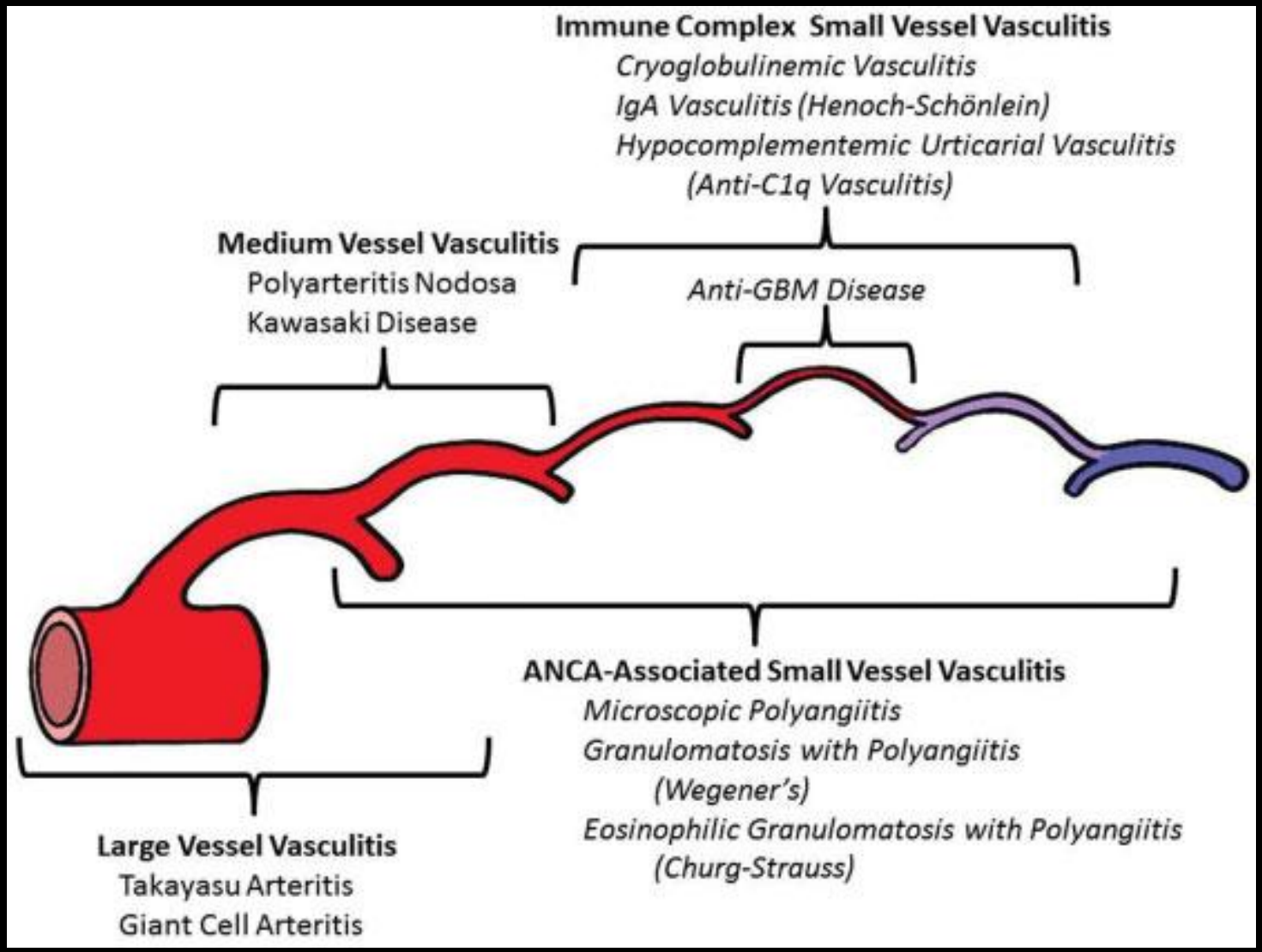


SLE

He's got a wierd disorder called acronymophobia.Cracked up on the BAFF batch.

CASE 3

CC: Cough and dyspnea
HPI: 50 yo WM who presents with 2 months of worsening cough, productive of yellow sputum, intermittent fever, DOE at 50 ft, sinus pressure and arthralgia.
ROS: Loss of hearing
PMH: Scleritis 1990, pneumonia 2012
PSH, social history and family history: NC
PE: Tenderness of paranasal sinuses, rhonchi in B lung fields
Labs: Normocytic anemia, creatinine 1.4 mg/dl, CRP 3 mg/dl, ESR 50 mm/hr, ANA -, ANCA +, PR 3 +, UA: blood +, 20 RBC
CXR: bilateral alveolar infiltrates and cavitary lesion on the left lower lobe



Jennette, JC. Arthritis & Rheumatism 2013 65;1: 1-11

APPROACH TO VASCULITIS

Diagnostic approach:

History pearls:

• Constitutional symptoms are common

• Hearing loss, eye pain, redness

• Upper respiratory symptoms: sinusitis, purulent drainage, epistaxis, nasal ulceration, stridor

• Lower respiratory symptoms: dyspnea, cough, hemoptysis, asthma

APPROACH TO VASCULITIS

Diagnostic approach:

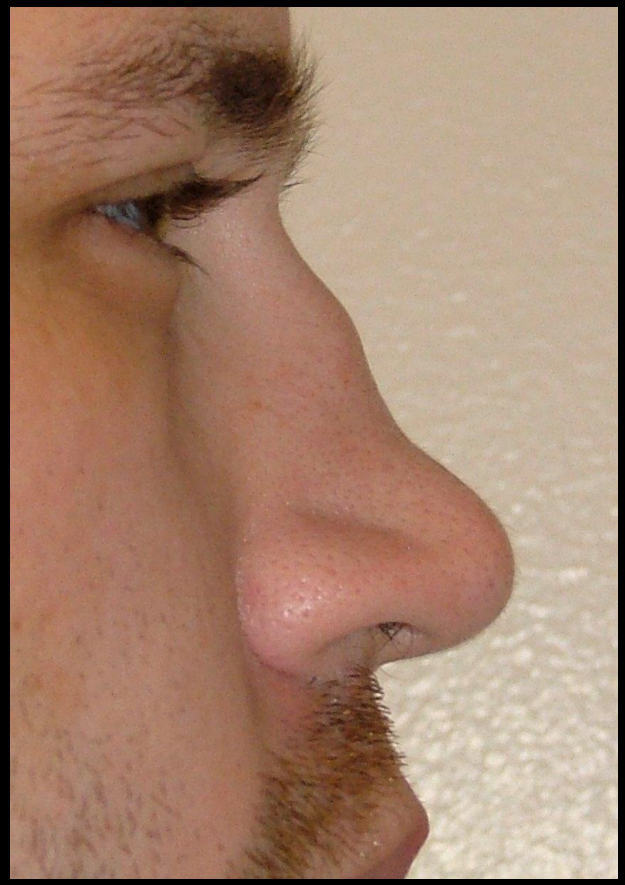
History and Physical exam pearls:

- Neuropathic symptoms, muscle weakness
- History of hepatitis B or C, HIV, other viruses
- Skin rashes, ulcers, nodules or vesicles
- Abdominal pain, GIB

APPROACH TO VASCULITIS

Diagnostic approach:

Physical exam pearls:

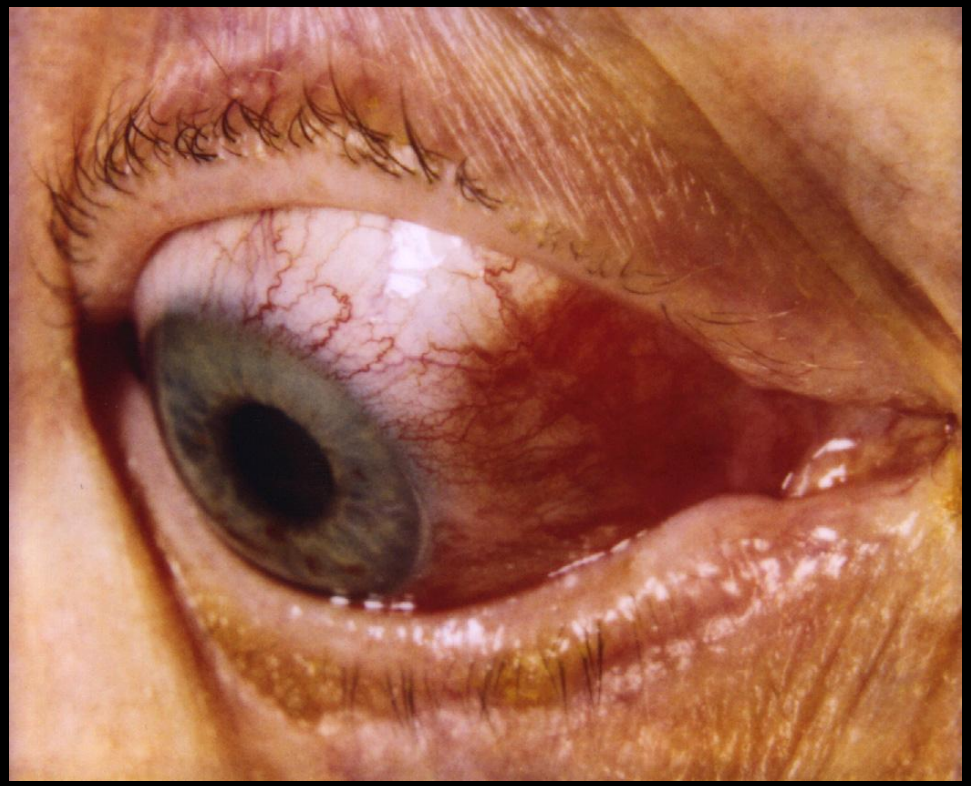


GPA
Relapsing polychondritis

APPROACH TO VASCULITIS

Diagnostic approach:

Physical exam pearls:



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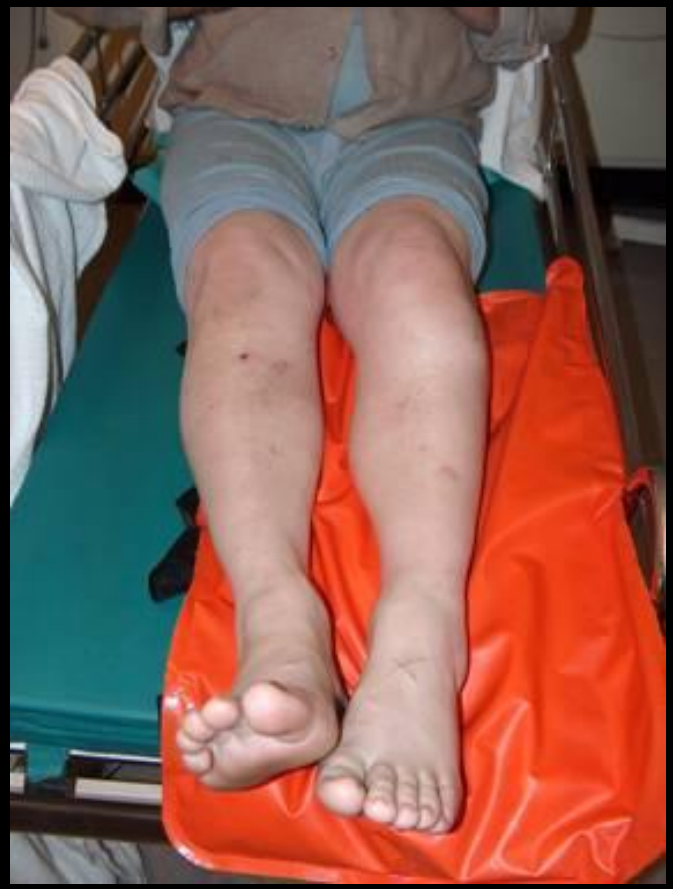
APPROACH TO VASCULITIS

Diagnostic approach:

Physical exam pearls:

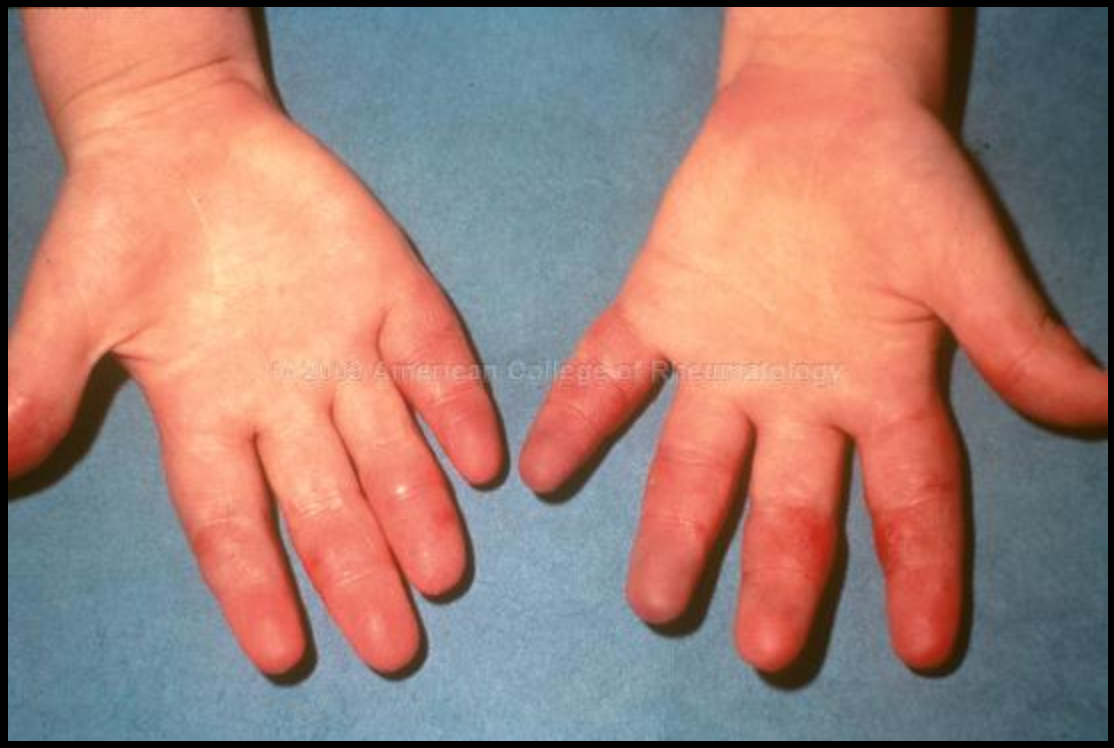


Eosinophilic granulomatosis with polyangiitis

APPROACH TO VASCULITIS

Diagnostic approach:

Physical exam pearls:

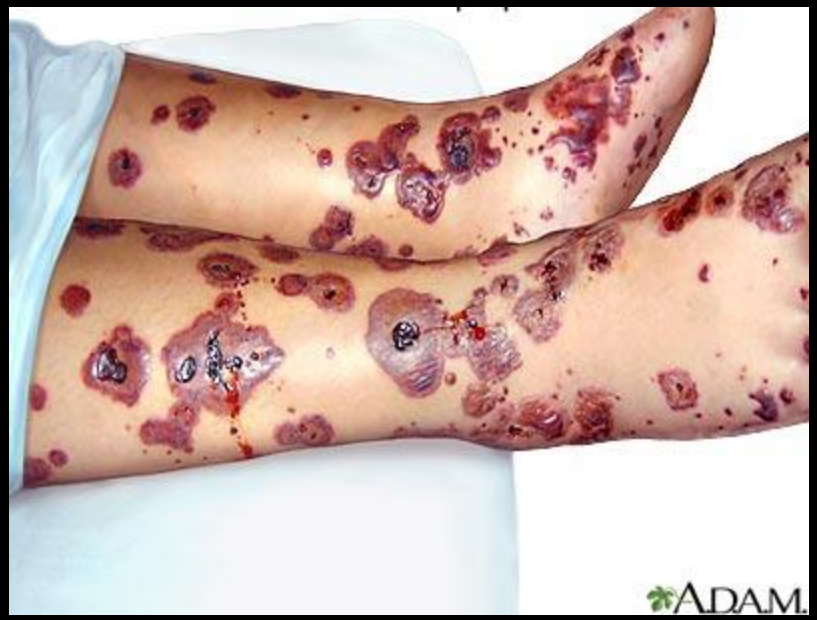


Polyarteritis nodosa

APPROACH TO VASCULITIS

Diagnostic approach:

Physical exam pearls:



Henoch-Schonlein purpura

APPROACH TO VASCULITIS

	Giant cell arteritis	Polyarteritis nodosa	Granulomatosis with polyangiitis	Eosinophilic granulomatosis with polyangiitis	Microscopic polyangiitis
Predominant blood vessel type	Large	Muscular arteries (medium or small arteries)	Arterioles-venules, sometimes arteries, veins	Arterioles-venules, sometimes arteries, veins	Arterioles-venules, sometimes arteries, veins
Granulomatous inflammation	Yes	No	Yes	Yes	No
ANCA positivity	No	No	80–90% (cytoplasmic ANCA/ antiproteinase 3)	50% (perinuclear ANCA/ myeloperoxidase)	75% (perinuclear ANCA/ myeloperoxidase)
Upper respiratory tract symptoms	No	No	Sinusitis, epistaxis, nasal septal perforation, saddle nose deformity, nasal crusting, and subglottic stenosis	Nasal polyps and allergic rhinitis	Usually absent or mild
Lung	No	Asthma	Nodules, infiltrates or cavitary lesions, and haemoptysis	Asthma, infiltrates, and haemoptysis	Alveolar haemorrhage
Glomerulonephritis	No	No	Yes	Yes	Yes
Renal hypertension	No	Yes	No	No	No
Gastrointestinal	No	Yes	No	Yes (eosinophilic gastroenteritis); pain, diarrhoea, and bleeding	Yes
Cardiac	Uncommon, coronary artery involvement, ischaemic heart disease, congestive cardiac failure	Yes (myocarditis)	Yes (valvular infarction)	Yes (eosinophilic myocardial infiltration, cardiomyopathy in 50% of patients)	Uncommon (congestive cardiac failure)
Skin	No	Nodules, livido reticularis painful serpiginous rash	Yes	Yes (tender nodules)	Yes
Mononeuritis multiplex	Yes	Common	Occasional	Common	Common
Ocular	Yes (vasculitic optic neuritis)	Yes (scleritis)	Yes (including retro-orbital granulomata)	Uncommon (scleritis and uveitis)	Yes (typically mild)
Distinguishing features	Blindness, headaches, scalp tenderness, jaw claudication Often associated with polymyalgia rheumatica	ANCA-negative, testicular involvement, painful rash	Destructive upper airways disease, granulomatous inflammation	Asthma, allergy, eosinophilia, granulomatous infiltrates with abundant eosinophils	No granulomatous inflammation

ANCA=antineutrophil cytoplasmic antibody.

Goldblatt F. Lancet 2013; 382: 797–808

APPROACH TO VASCULITIS

Diagnostic approach:

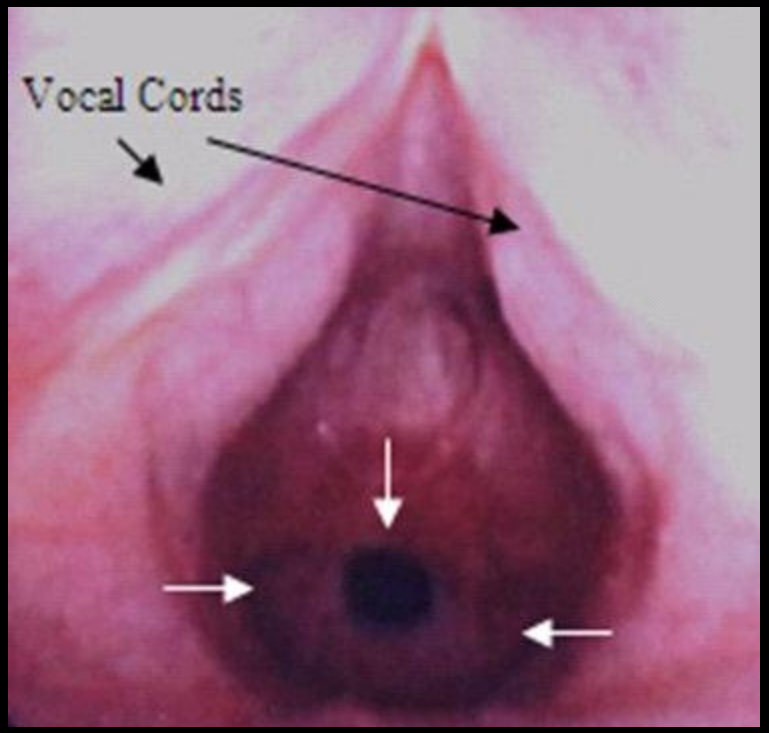
Labs:

- CBC: Anemia
- Elevated ESR/CRP
- CMP: Renal insufficiency, hypoalbuminemia
- Immunological: ANA, ANCA, cryoglobulins, RF, complements
- Other: Hepatitis serologies
- Urinalysis: Hematuria, proteinuria, cellular casts

APPROACH TO VASCULITIS

Diagnostic approach:

Imaging:



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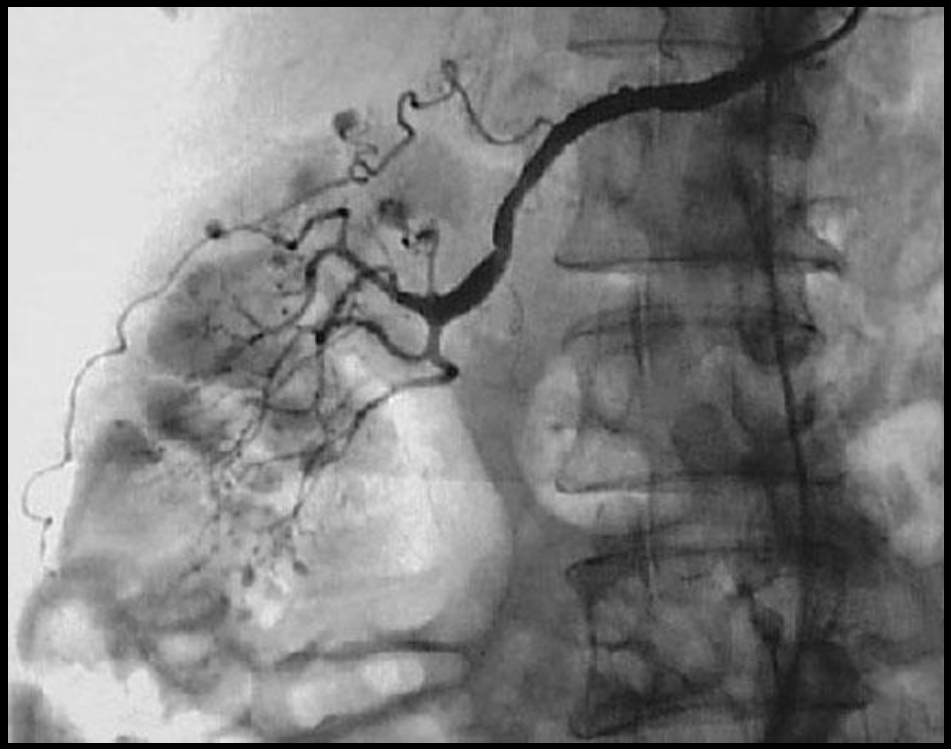
APPROACH TO VASCULITIS

Diagnostic approach:

Imaging:

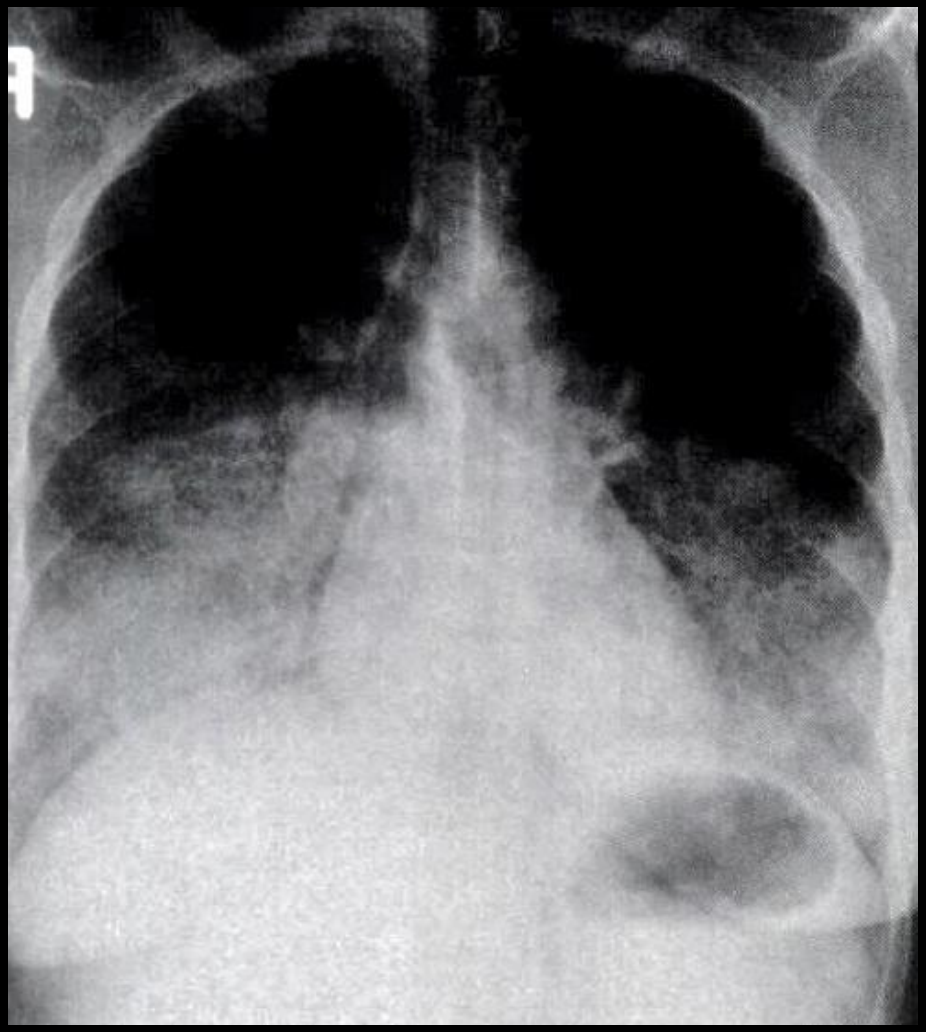


Polyarteritis nodosa

APPROACH TO VASCULITIS

Diagnostic approach:

Imaging:

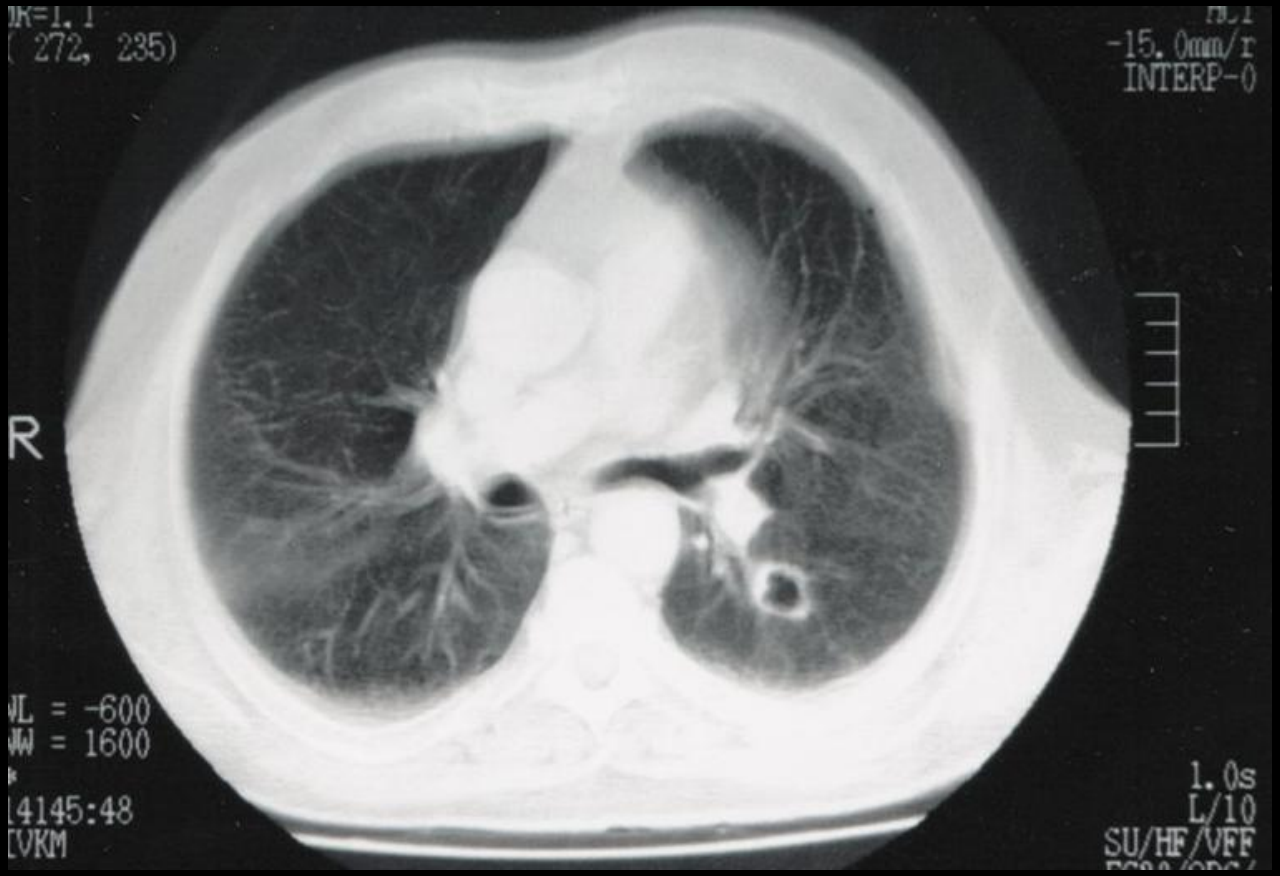


Goodpasture’s syndrome
GPA
Microscopic polyangiitis

APPROACH TO VASCULITIS

Diagnostic approach:

Imaging:



GPA

TAKE HOME MESSAGES

• A full history and physical exam can lead to a diagnosis 80-90% of the time

• In patients with a musculoskeletal symptom characterize the pain: Is it articular?, how many joints are involved?, is it inflammatory?, is it a systemic process?, What is the duration of symptoms?

• ANAs can be positive in multiple conditions and even in the normal population. Think of the pre-test probability for a connective tissue disease before ordering it