Arthritis: An Articulate Approach

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Objectives

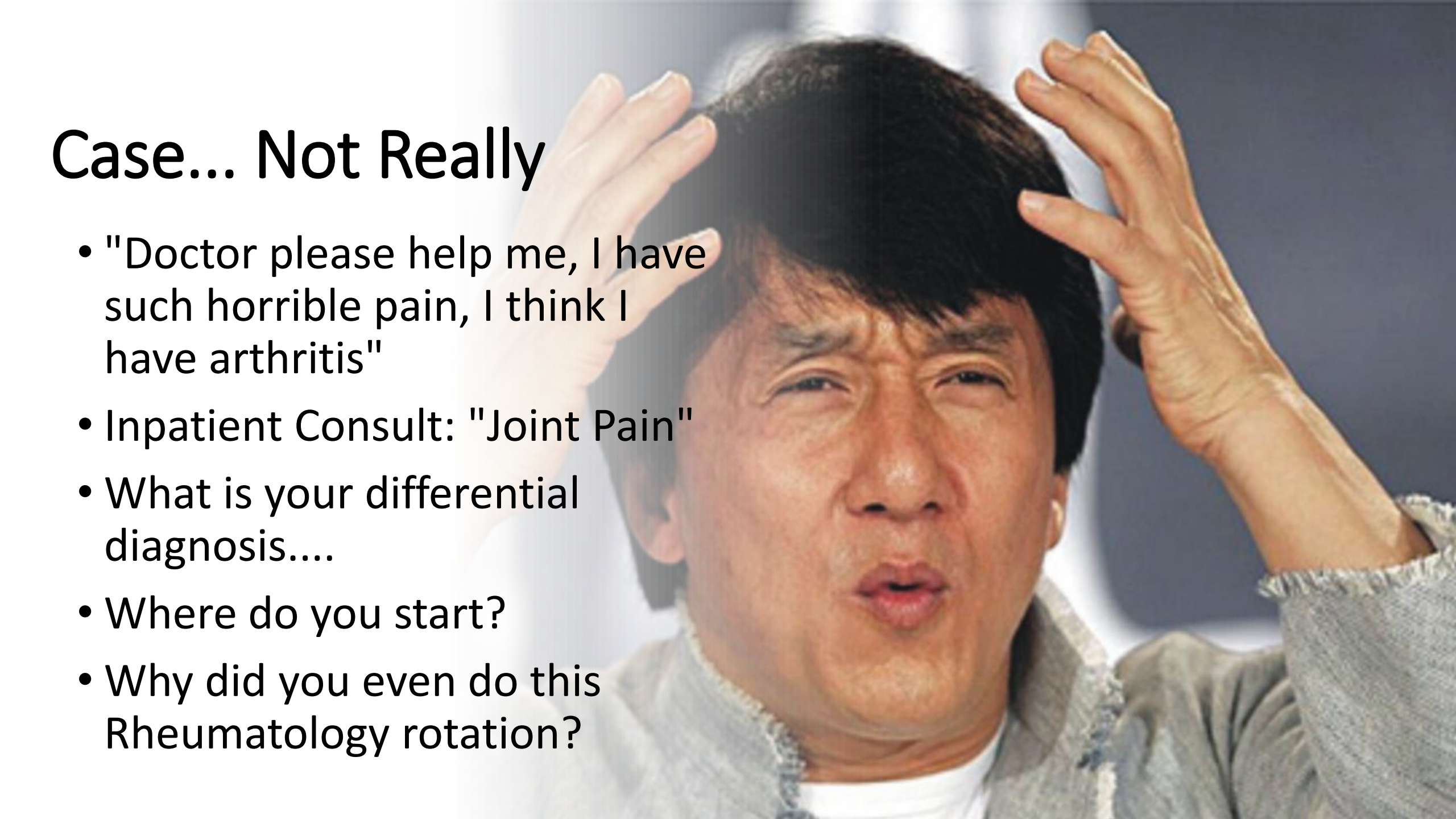
- Develop a Framework by which to Evaluate Arthritis
  - Key aspects of an H&P in the Arthritis Evaluation
  - Articular vs Non-Articular Etiologies of MSK pain
  - Inflammatory vs Noninflammatory Arthritis
  - The Systematic Approach to Guide the DDx
  - The Basics of Synovial Fluid Analysis
  - Identify commonly tested Infectious Mimics
  - Recognizing Patterns of Arthritis Syndromes

Disclosures

- Sadly, None....

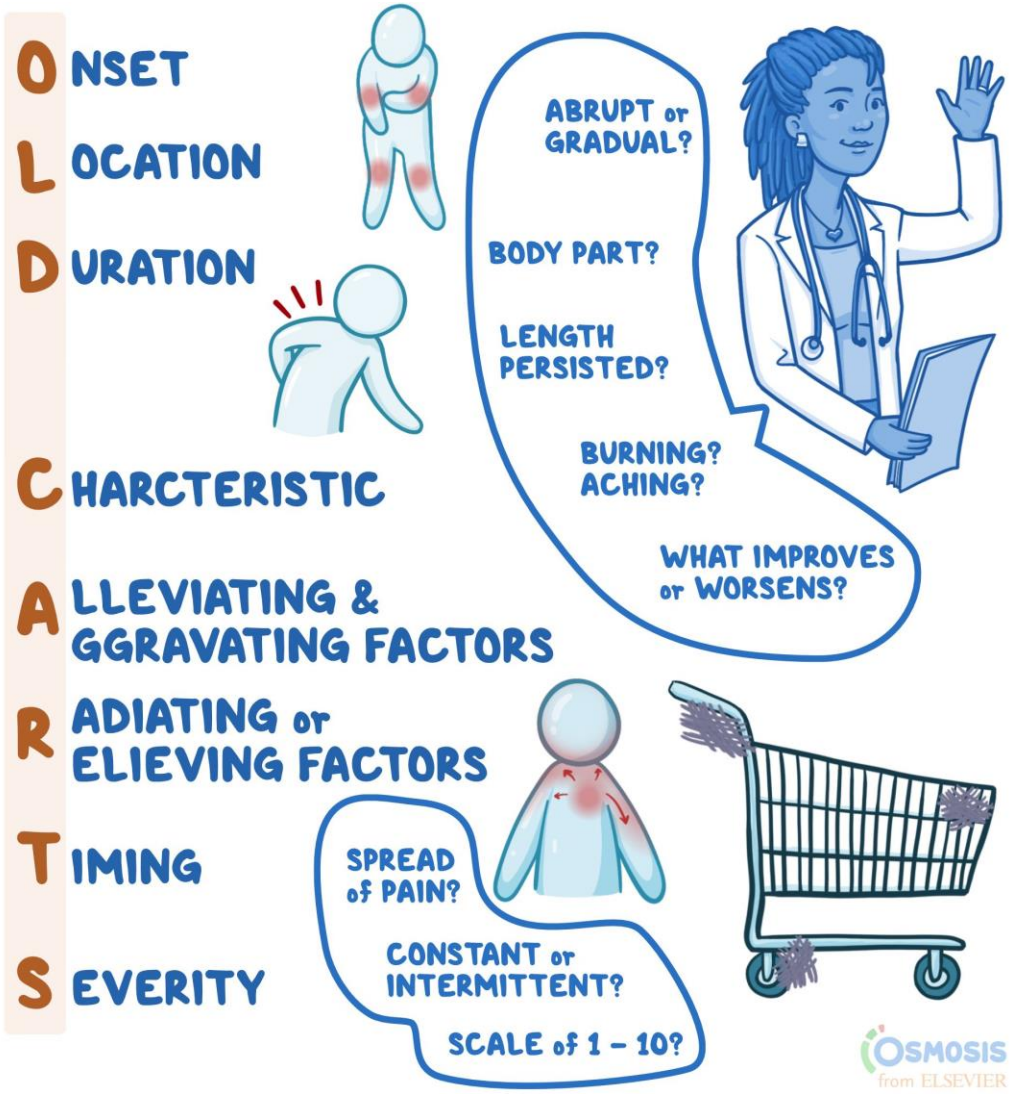
Case... Not Really

- "Doctor please help me, I have such horrible pain, I think I have arthritis"
- Inpatient Consult: "Joint Pain"
- What is your differential diagnosis....
- Where do you start?
- Why did you even do this Rheumatology rotation?



Back to the Basics

- History is CRITICAL for Rheumatologists
- 1st year of Med School Mnemonics
  - OLD CARTS, OPQRST
- Associated Symptoms
  - Fevers, Weight Loss, Rashes, etc.
  - The Rheumatology ROS (stay tuned)
- Next Level Arthritis Questions
  - Morning Stiffness?
  - Does activity improve or worsen the pain?
- Family and Social Hx

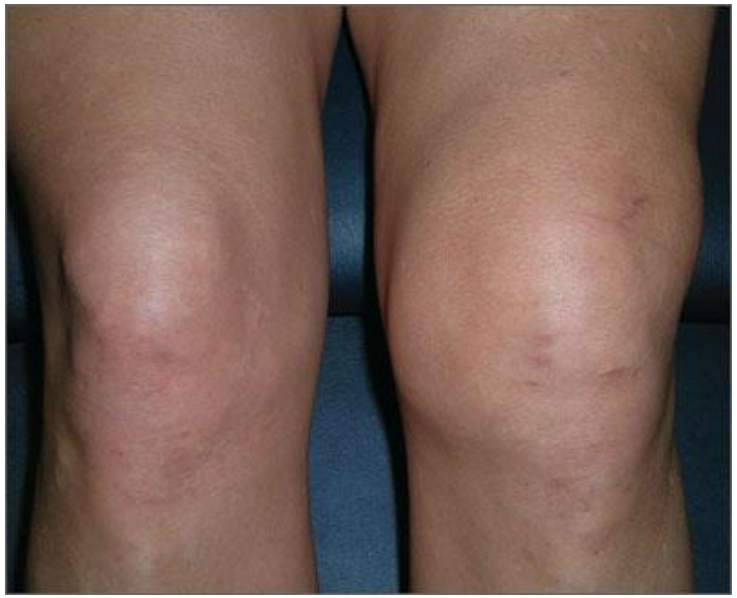


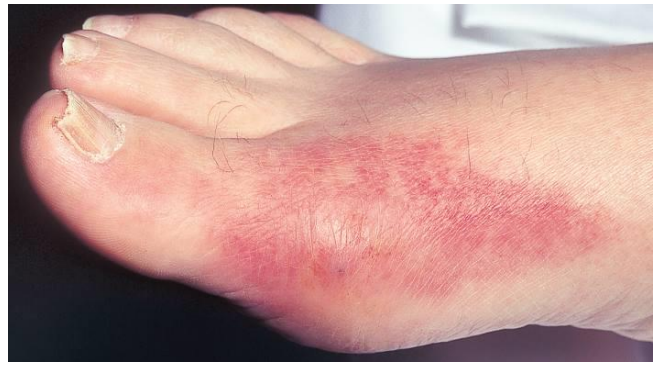
A Rheumatology ROS May Include

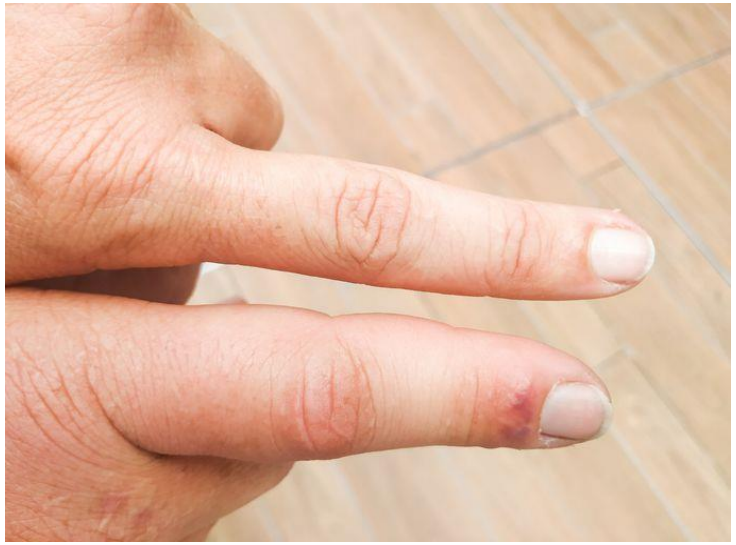
- Skin: Malar Rash, Photosensitivity, Alopecia, Sclerodactyly, Raynaud's, Digital Ulcers, Psoriasis, Purpura, Nodules, Genital Lesions
- HEENT: Mucosal Ulcers, Sicca Symptoms, Change in Visual Acuity, Eye Pain, Eye Redness
- Cardiopulmonary: Dyspnea, cough, hemoptysis, pleurisy, PE, Edema
- GI: Reflux, dysphagia, abdominal pain, diarrhea, hematochezia
- Renal: Proteinuria
- Heme: Cytopenias, DVT/PE
- Neuro: Neuropathy, weakness, TIA, CVA, Headaches

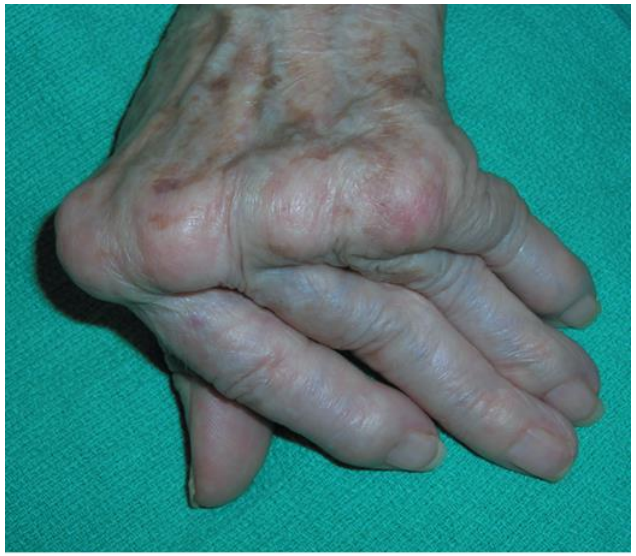
The Joint Exam

- Inspection
  - Color change?
  - Swelling?
  - Deformity?
- Palpation
  - Pain?
  - Temperature?
  - Synovitis?
- ROM
  - Passive vs Active
- Compare to the other side









A Case... For Real

- Let's try this again with some more information
- CC: "Doc, I have Shoulder Pain; I think its Arthritis"
- 66 yo F without PMH
- 4 months ago, onset of shoulder pain, worse with activity, particular trouble with overhead activity, better with rest, but pain at night when she lays on the shoulder
- Exam: Pain is localized to lateral deltoid by the patient; no swelling, erythema, or effusion of the shoulder joint; NO pain with Passive ROM; Significant Pain with active ROM abduction > 90 degrees and resisted internal rotation. + Jobe Strength (Empty Can) Test.
- **Question: Is this more likely Articular or Periarticular Pain?**

Articular vs Periarticular Pain

Articular Pain

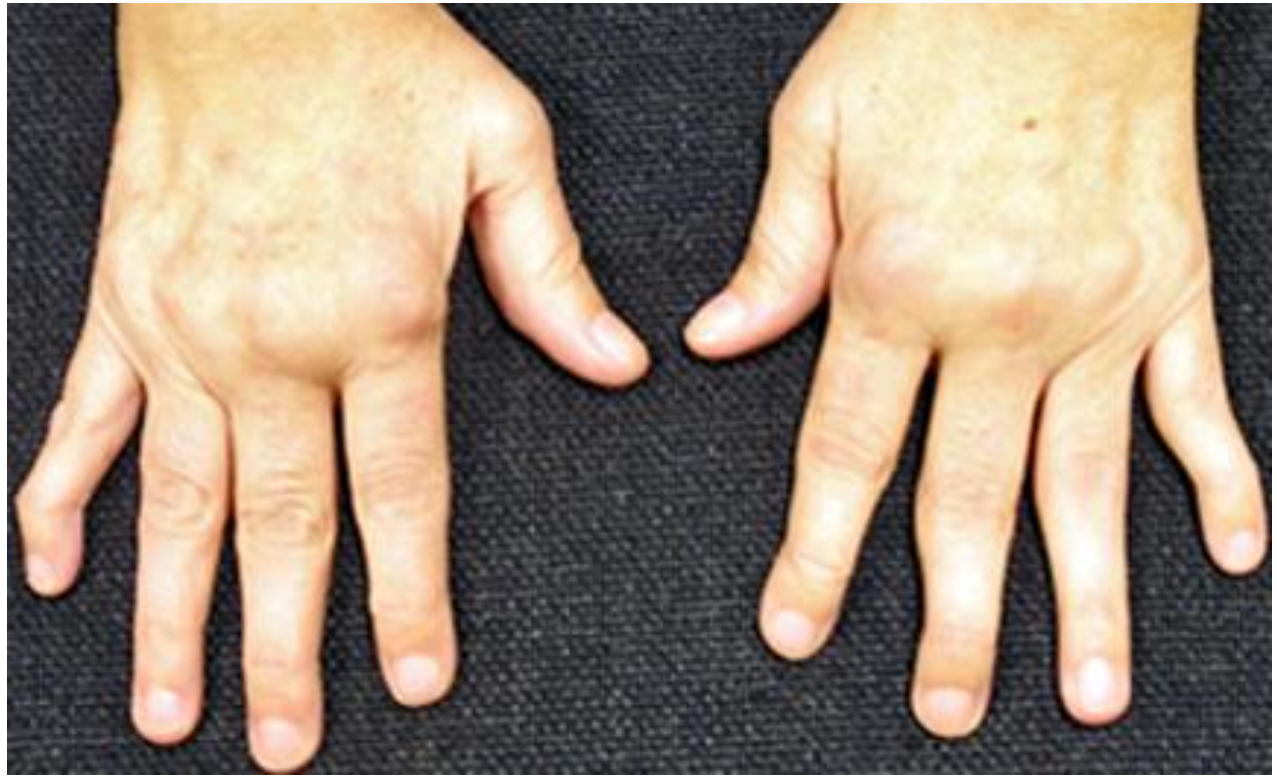
- History
  - Pain in area of a joint, patient can localize the joint(s) of issue
  - Pain in ALL directions of movement
- Exam
  - Swelling and Tenderness of Joint on Exam
  - **Pain with Active ROM = Pain with Passive ROM**
  - **Effusion = Arthritis**

Periarticular Pain ☑

- History
  - Pain near a joint
  - Pain with SOME movements
- Exam
  - Tenderness/swelling of part of a joint
  - Limited/Painful ROM in SOME directions
  - **Pain with Active ROM > Pain with Passive ROM**

Case

- 42 yo F without PMH
- CC: Bilateral Hand Pain
- History: Bilateral hand pain lasting 3 months, worst in the morning when she wakes up with 2 hours of morning stiffness, improves with movement, Localizes pain across MCPs and PIPs. Associated with fatigue
- Exam: Tender swelling of the MCPs of the bilateral hands, unable to make a fist. "Spongey" feeling of the MCPs.
- **Question: Is this more likely inflammatory or non-inflammatory arthritis?**



What are inflammatory joint pain features?

- Morning Stiffness > 1 hour
- Swelling, Warmth, Erythema, Tenderness, Loss of Function
- Associated Fatigue
- IMPROVES with Activity
- WORSENS with Rest
  - Gelling Phenomenon – increased stiffness with immobility
- Systemic Features, Elevated Inflammatory Markers
- Responsive to steroid*
  - *A lot of things are steroid responsive

Describing/Evaluating Inflammatory Arthritis

- Chronicity - Acute vs Chronic
- Symmetry?
- # of Joints Involved
  - Monoarticular
  - Oligoarticular
  - Polyarticular
- Size of the joints involved
- Location - Axial vs Peripheral

Case

- 59 yo M w PMH Metabolic Syndrome
- CC: "Right Knee Pain"
- History: 3 days of R knee pain, unable to walk, noticed swelling and redness, felt feverish as well
- Exam: Red, warm, tender right knee. Pain with all Passive and Active ROM. Appreciable right knee effusion

- Chronicity - Acute vs Chronic
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- # of Joints Involved
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- First: Describe the arthritis...
- Question: What is likely to provide the best diagnostic evaluation of this joint:
  - A) XRay
  - B) Arthrocentesis
  - C) Rheumatoid Factor
  - D) MRI
  - E) ANA... 

Acute Monoarthritis

- "If you do not aspirate, prepare to litigate" - Dr Kolfenbach
- Acute Monoarthritis - the answer is ALWAYS arthrocentesis because an acute monoarthritis is SEPTIC ARTHRITIS until proven otherwise
- Follow-up Question:
- What Synovial Fluid Studies are you going to order?
- Cell Count and Differential
- Gram Stain
- Culture
- Crystal Analysis

Septic vs Crystalline Arthritis

- AGAIN, THE JOINT IS SEPTIC UNTIL PROVEN OTHERWISE
- THE PRESENCE OF CRYSTALS DOES NOT RULE OUT SEPTIC ARTHRITIS, ONLY THE CULTURE DOES
- Septic is more common in IVDU, Immunocompromised pateints
- Most Common Bug for Septic Arthritis?
- S. aureus

Synovial Fluid Analysis in 2 Minutes

Fluid Type	Appearance	WBC Count	% Polys
Normal	Clear, Viscous, Pale Yellow	0 - 200	< 10%
Noninflammatory	Clear to Slightly Turbid	200 - 2000	< 20%
Inflammatory	Slighty Turbid	2000 – 50,000	20 - 75%
Pyarthritis	Turbid to Very Turbid	>50,000	> 75%

My Thoughts

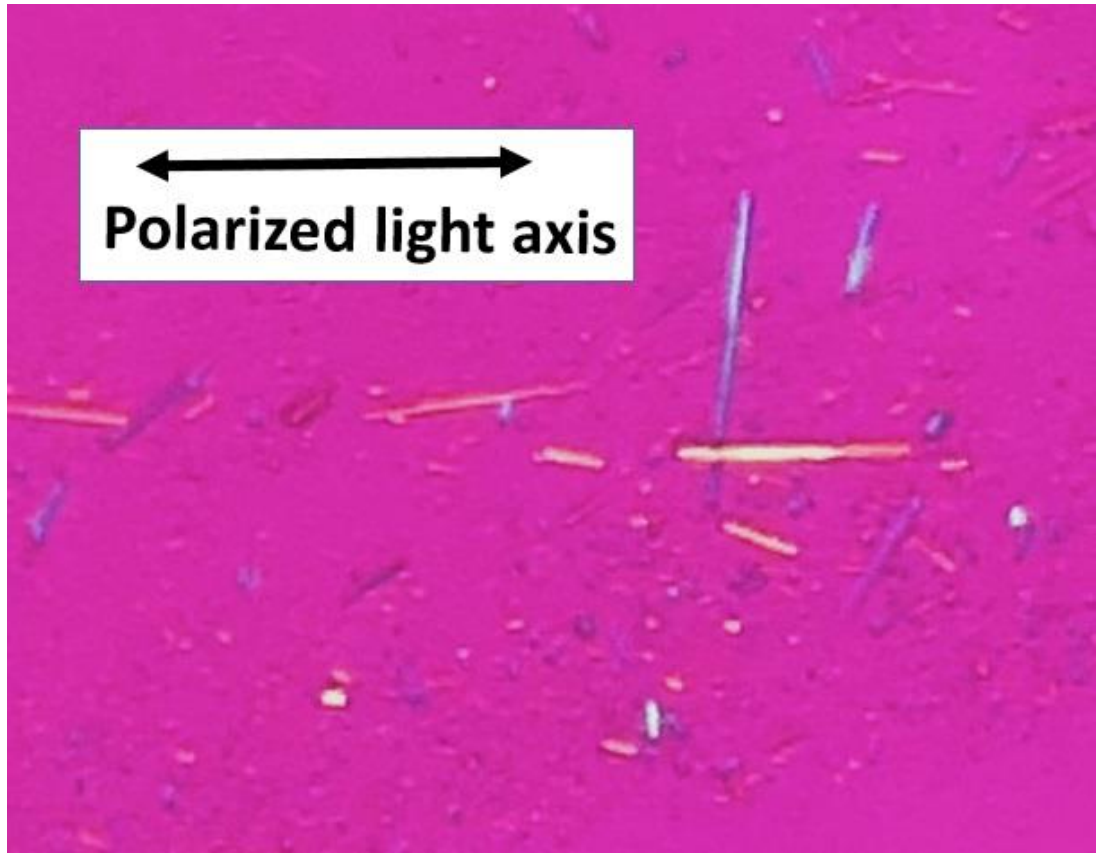
Crystalline arthritides can often present with "Pseudo-Septic" Synovial Fluid (pyarthritis), as can Reactive Arthritis

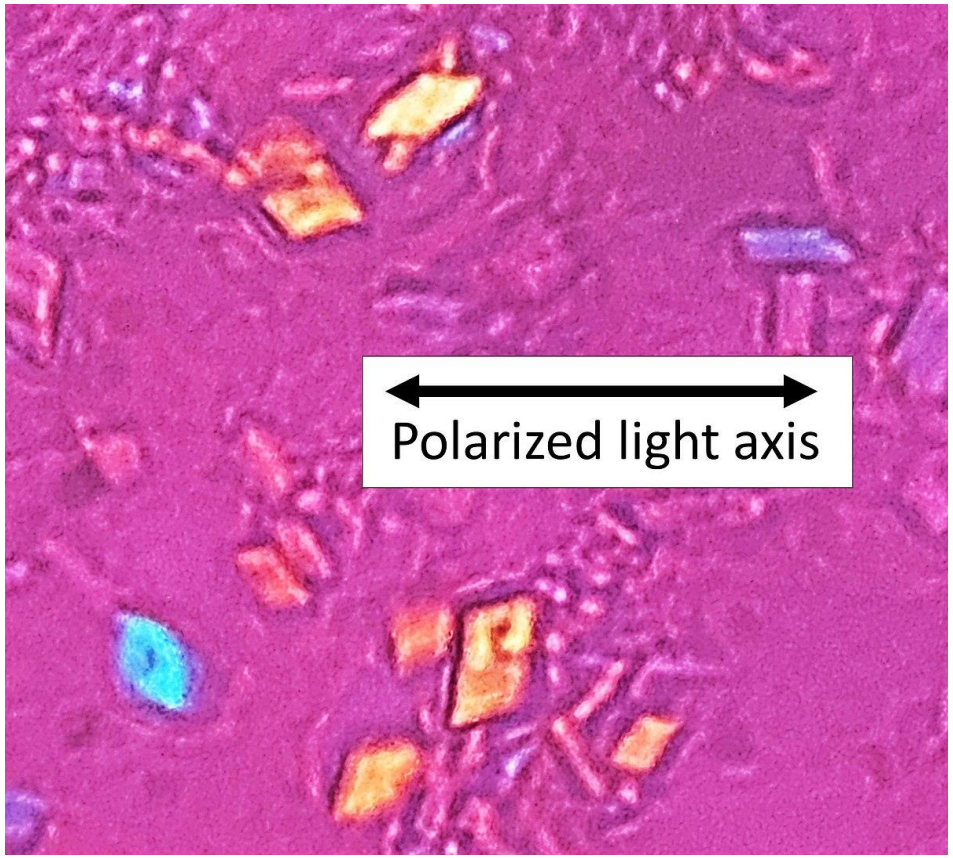
Many rheumatic diseases can present in the Inflammatory category

Septic Arthritis does not have to have > 50k WBCs either

Suspicion for Septic arthritis goes up the higher the WBC count is, and the Gram Stain and Culture are your ways to definitively diagnose Septic Arthritis

ID That Crystal



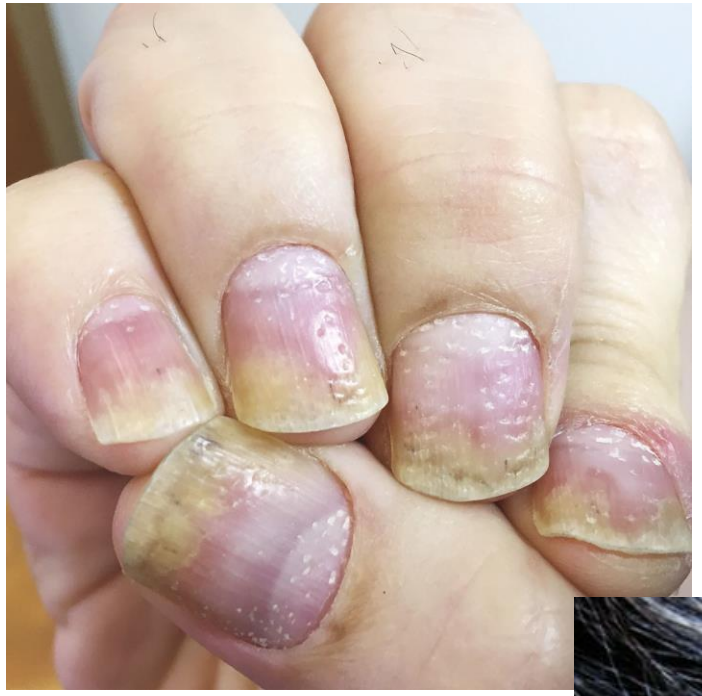


Chronic Monoarthritis

- Chronic Inflammatory Monoarthritis is rare
- MKSAP defines as > 26 weeks
- Think Chronic Infection (Lyme, TB, Fungal) vs Systemic Autoimmune Disease (atypical presentation of SpA)
- Look for systemic signs
- My patient: 23 yo F with 2 years R elbow pain, joint contracture, and synovitis with joint effusion by MRI
  - Missed scalp psoriasis, synovial fluid culture negative, improved on TNF-inhibitor, back to full ROM

Case

- 28 yo F no PMH
- Joint pain including 2 DIP joints, Right Wrist, Left Elbow
- Swollen, Painful joints that have persisted for 4 months. Morning stiffness for 2 hours.
- Her nails have "look weird" and she has a flaking rash in her scalp
- Describe the Arthritis...
- **Question: What is the most likely etiology for her symptoms?**



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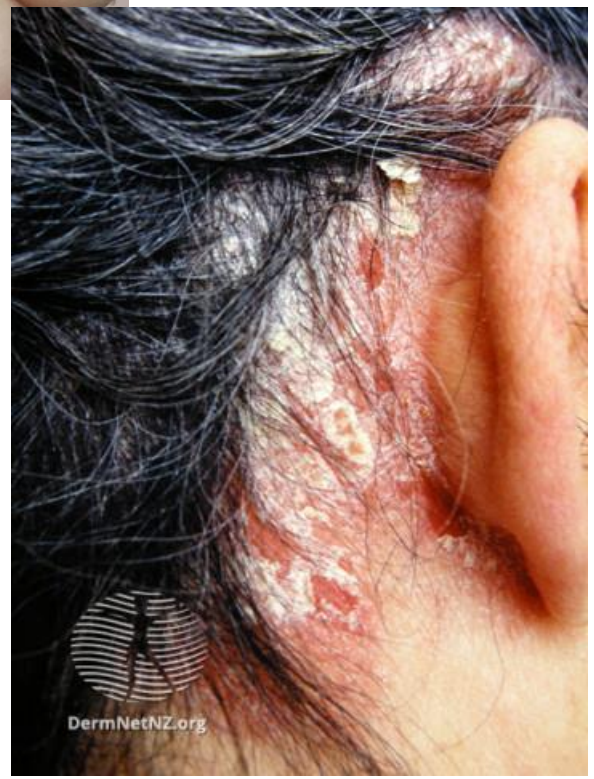
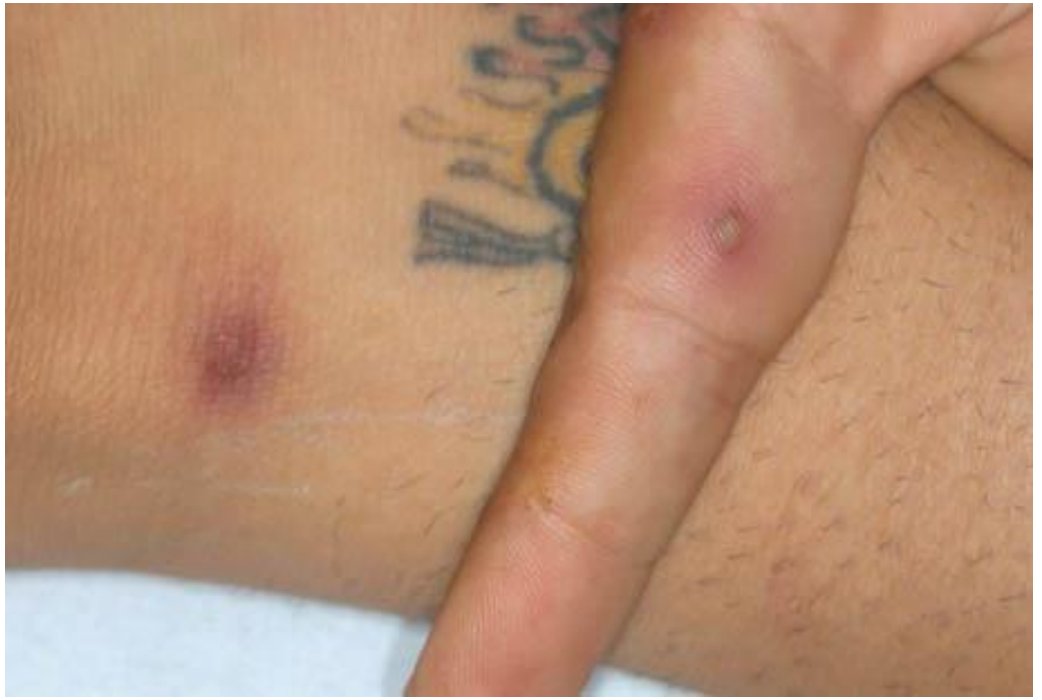


Oligoarticular Inflammatory Arthritis

- All causes of monoarticular arthritis can present with more than one joint, though MOST septic arthritis is monoarticular
- Spondyloarthritides are the more common systemic rheumatologic etiologies for Oligoarthritis
  - AS: inflammatory back pain, uveitis
  - ReA: Asymmetric, Large Joints, LE > UE, Recent GI/GU Infection, Rash
  - PsA: Asymmetric, UE > LE, DIPs involved, dactylitis, rash, nail disease
  - IBD: knees are common, UC or Crohn's can be diagnosed before or after joint disease

Case

- 24-year-old man is admitted to the hospital with a 4-day history of fever, malaise, and arthralgia of the elbows, wrists, and R knee
- Skin Lesions seen in the picture
- Evidence of tenosynovitis of the left wrist
- The right knee is swollen and warm, with significant effusion
- Describe the Arthritis...



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Case

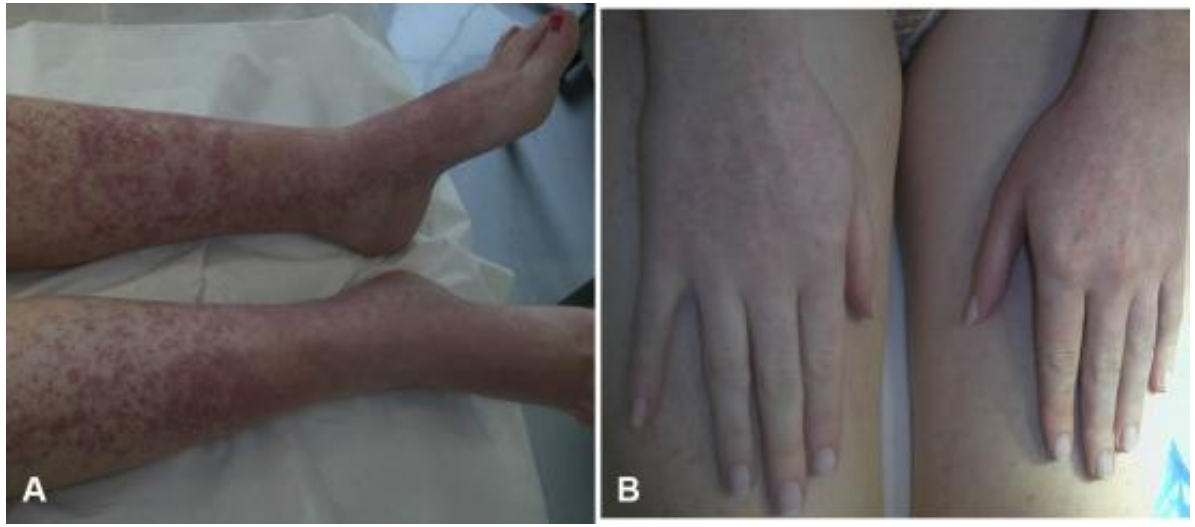
- **Which of the following is the most appropriate diagnostic test to perform next?**
- A. Antinuclear antibody and rheumatoid factor assays
  B. Biopsy and culture of a skin lesion
  C. HLA B27 testing
  D. Nucleic acid amplification urine test for *Neisseria gonorrhoeae*

An infectious mimic of Oligo/Poly Arthritis

- Disseminated Gonococcal Infection
- This variant is known as the Arthritis-Dermatitis Syndrome
- Occurs within two to three weeks of the primary infection
- Diagnosis: Identification of *N. gonorrhoeae* (either through nucleic acid testing or culture) on a specimen of blood, synovial fluid or tissue, skin lesion
- Treatment: Ceftriaxone

Polyarticular Arthritis

- 24 yo F daycare worker, felt like she had a flu recently
- Now with 1 week of pain and swelling of her hands and wrists with associated stiffness
- Rash
- Pain and swelling of the bilateral MCPs and PIPs and wrists (> 10 joints)
- Describe the Arthritis...
- Question: What is the diagnosis?



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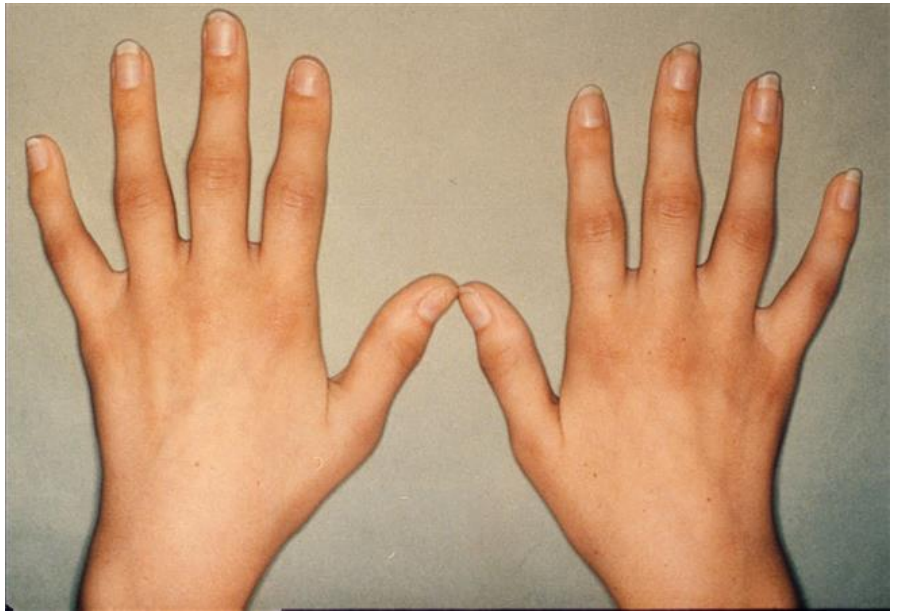
Another Infectious Mimic

- Parvovirus B19
- "Pseudorheumatoid Arthritis"
- Arthritis in 50-80% of adults (more common in adults than children)
- Rash does NOT need to be Erythema Infectiosum in adults
- Dx: Parvovirus B19 IgM
- Tx: Supportive Care

Chronic Polyarticular Arthritis

- 45 yo F smoker without PMH
- Joint pain for the last 5 months, worst in her hands and feet
- Stiff in the mornings for > 1 hour
- On exam there is synovitis of the bilateral MCPs, PIPs, and MTPs
- Describe the arthritis....
- What is the most specific test to diagnose this patient?
  - ANA, CRP, RF, Anti-CCP, or ESR?



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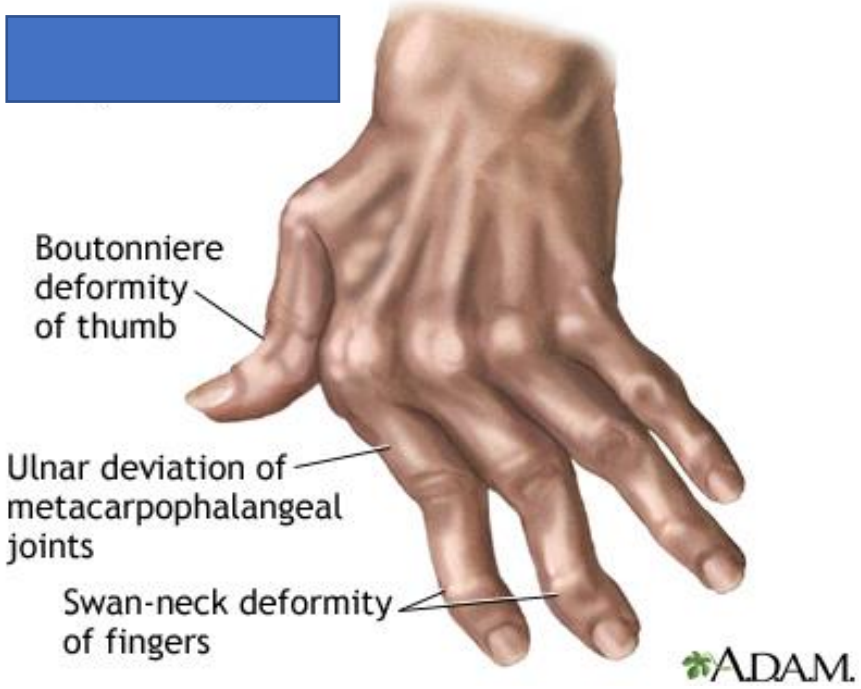
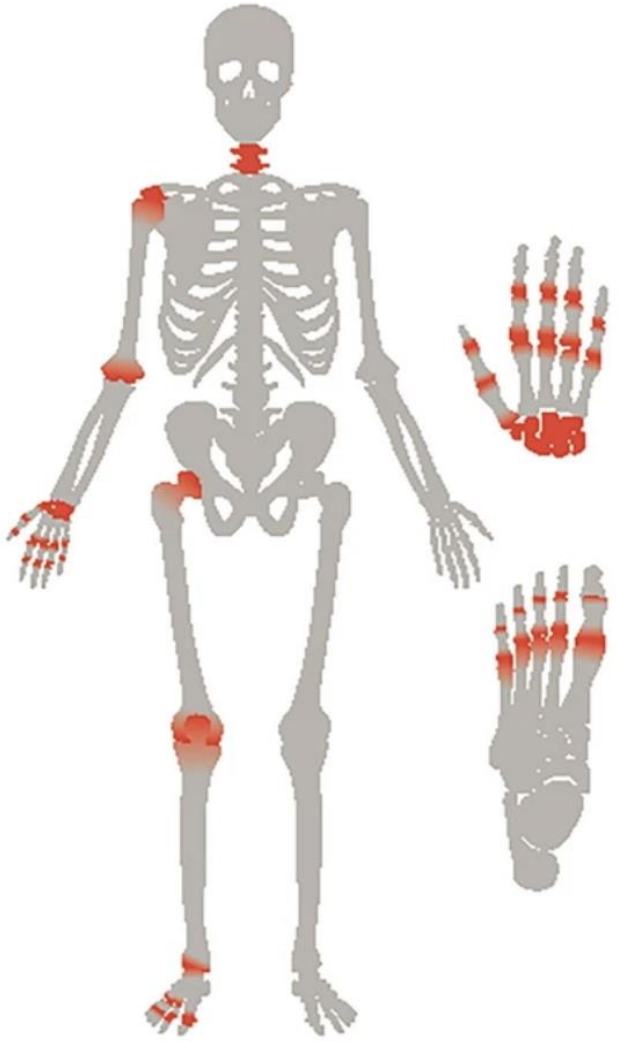
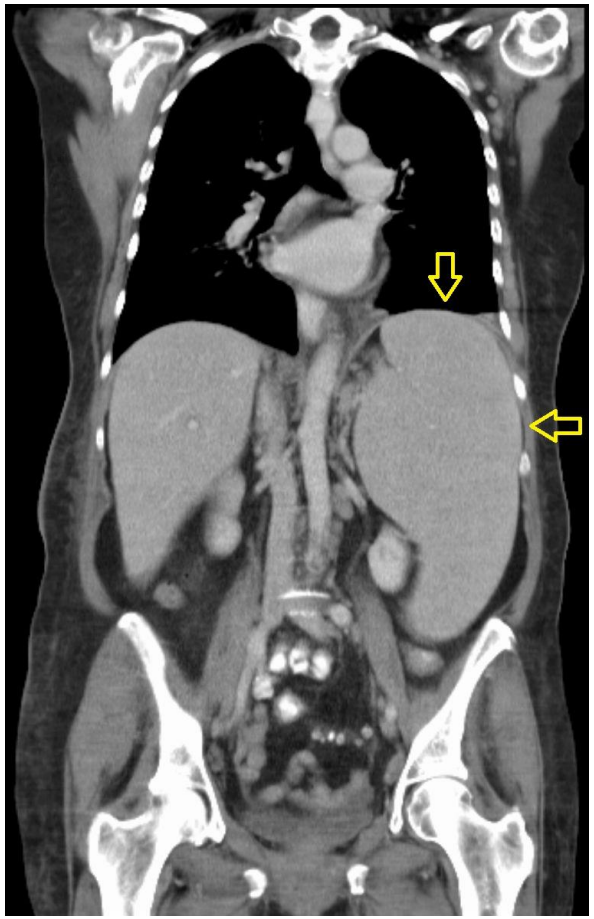
Recognizing Patterns

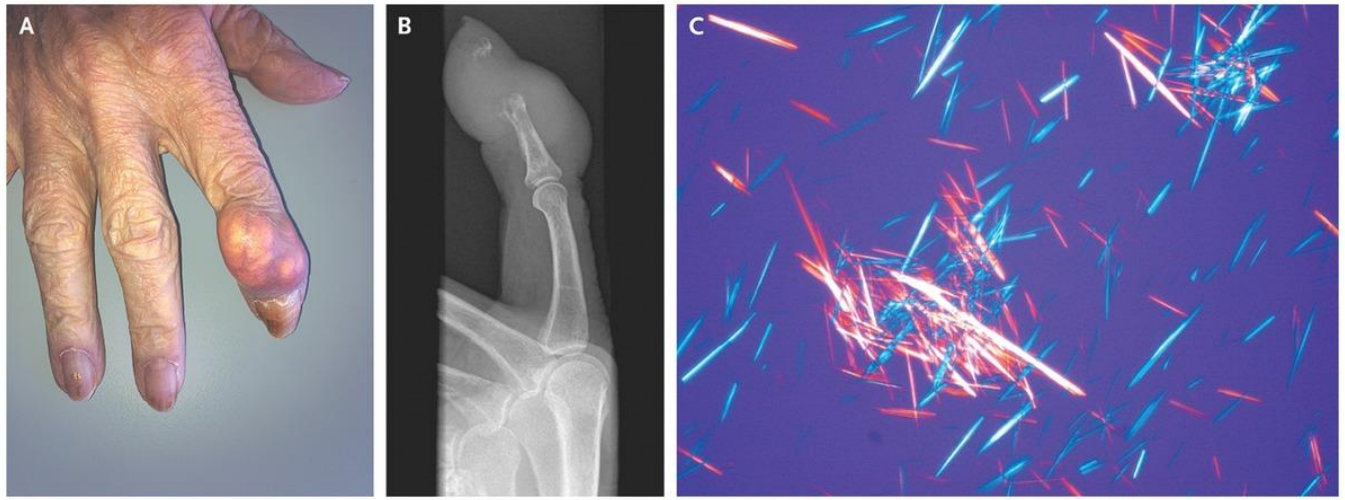


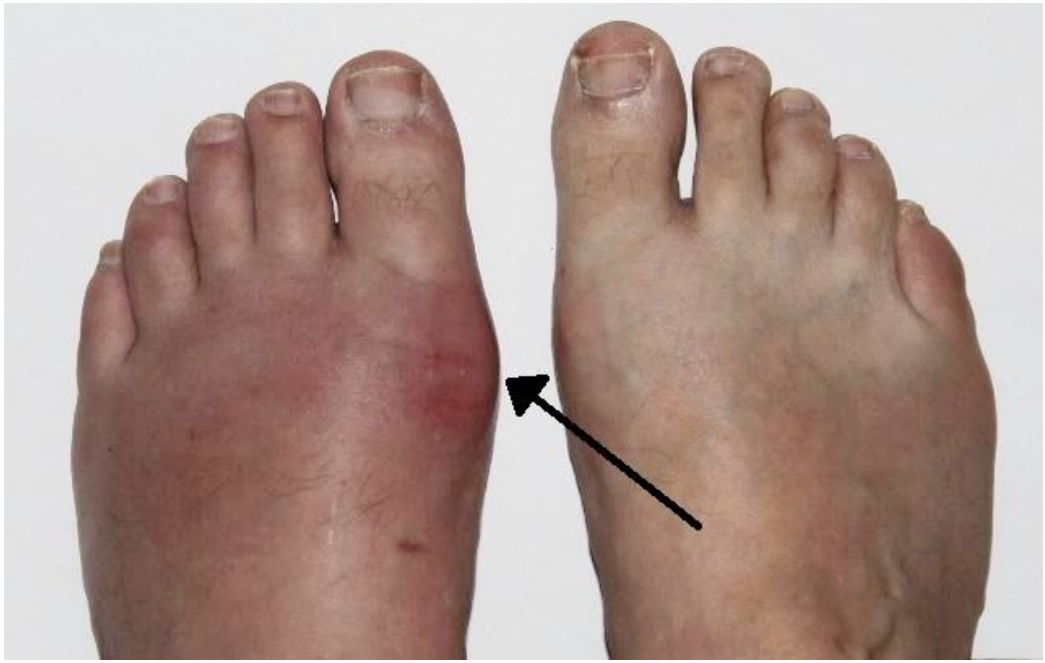


Neutropenia AND below



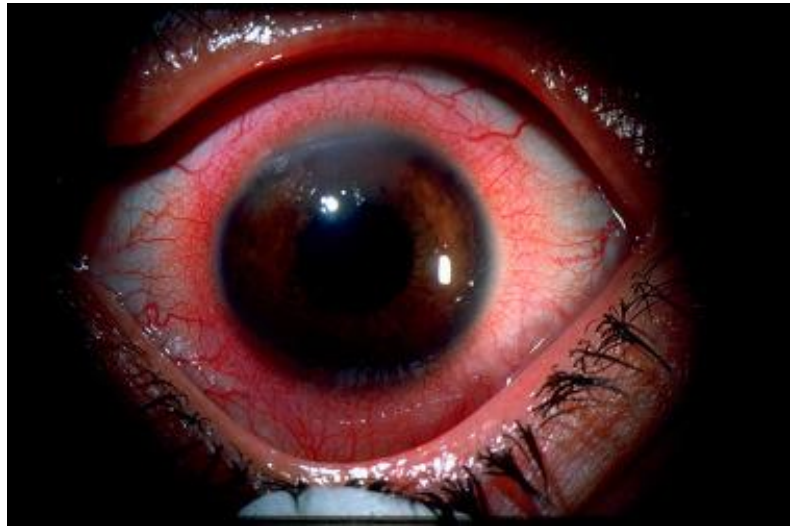
Recognizing Common Patterns

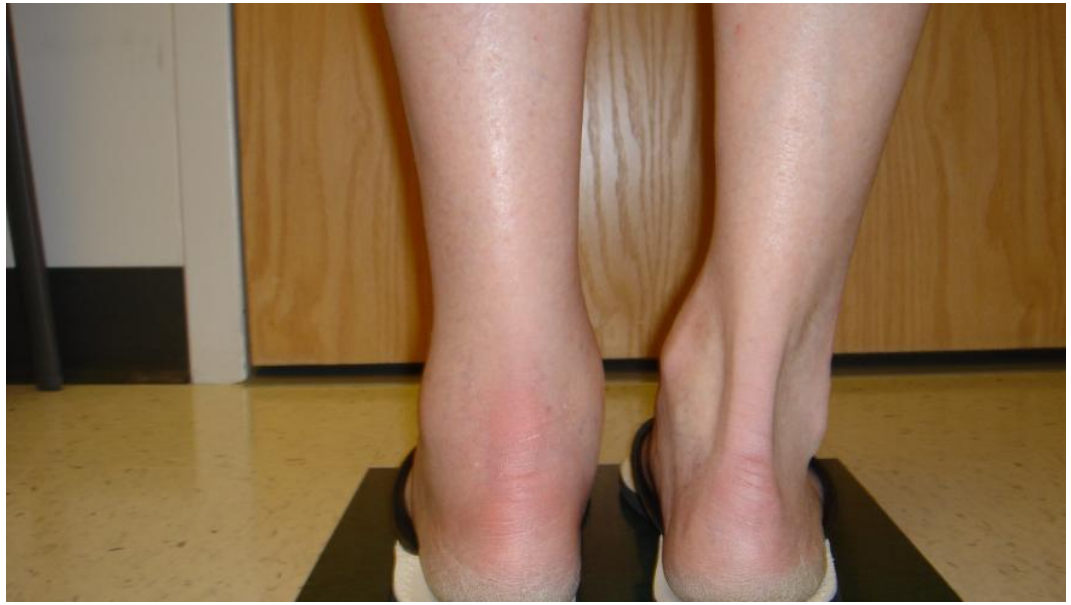


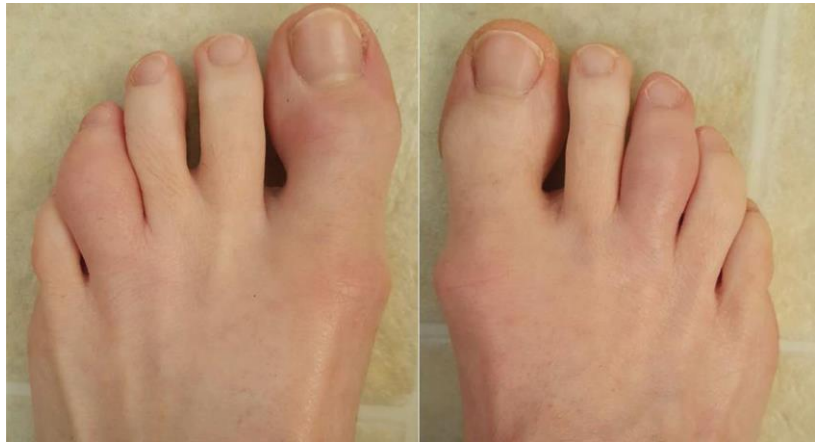


Recognizing Common Patterns

Anterior Uveitis



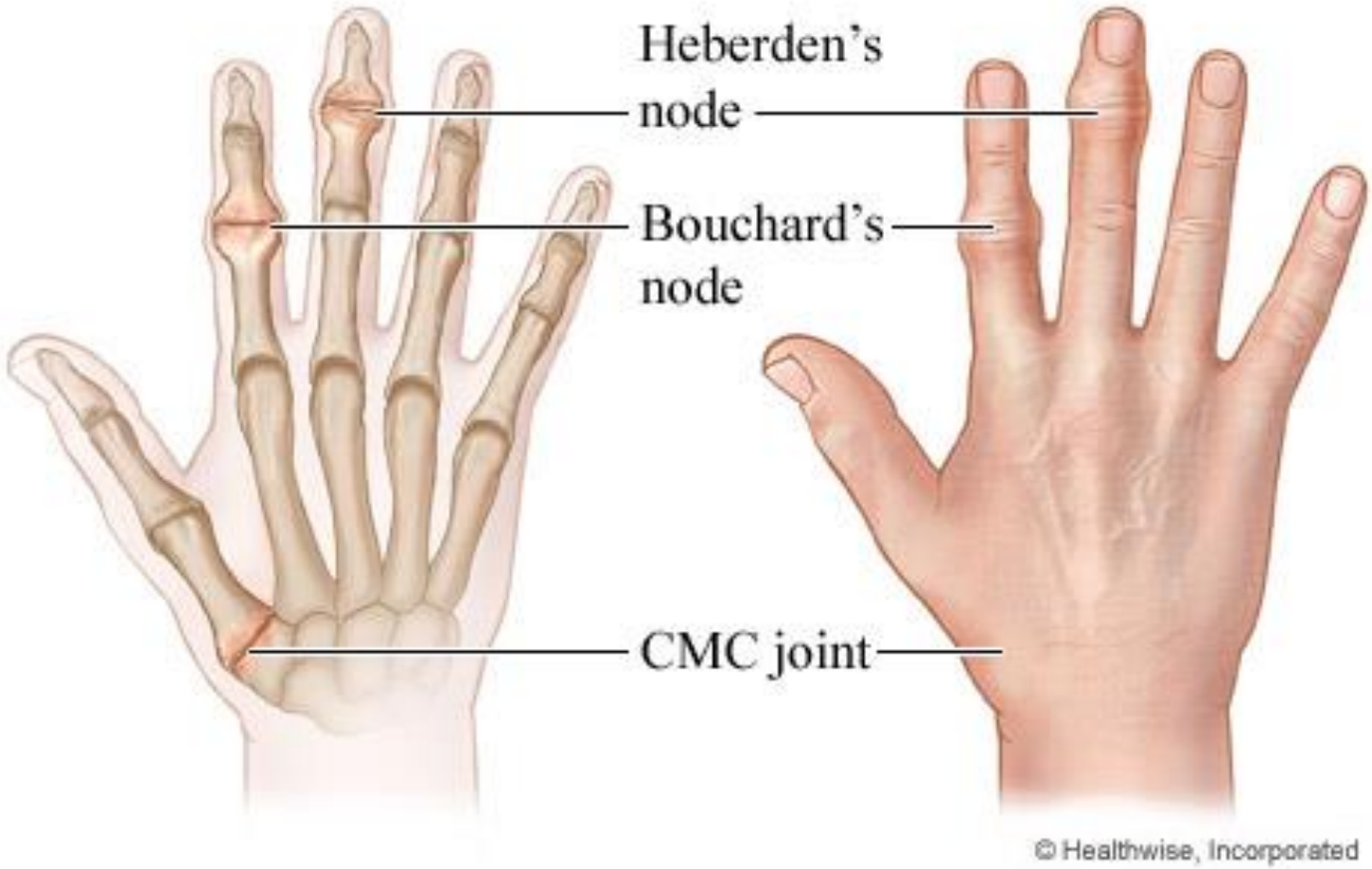


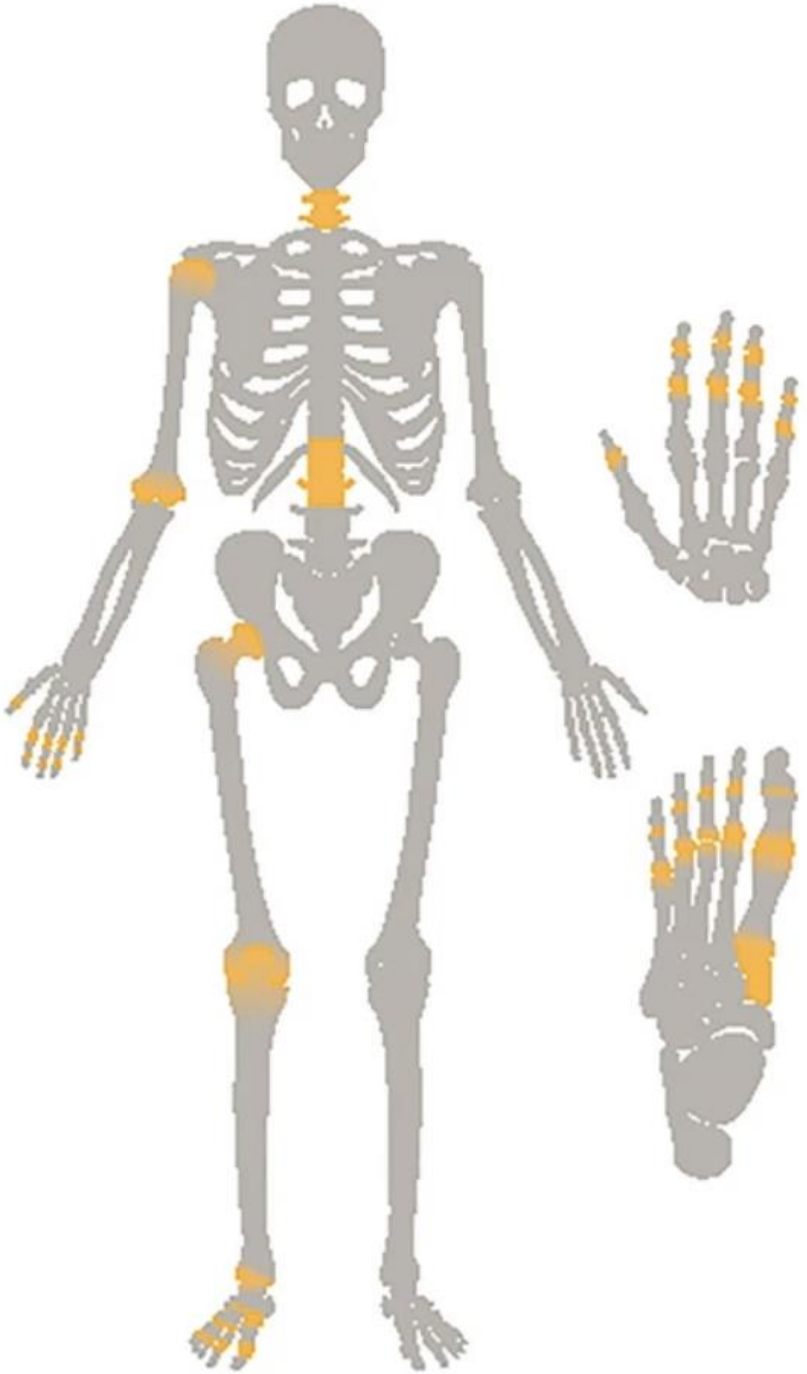


Inflammatory Back Pain

- Insidious
- > 3 months
- Early morning back pain & stiffness >1 hour.
- < 45 years of age.
- HLAB27 +ve

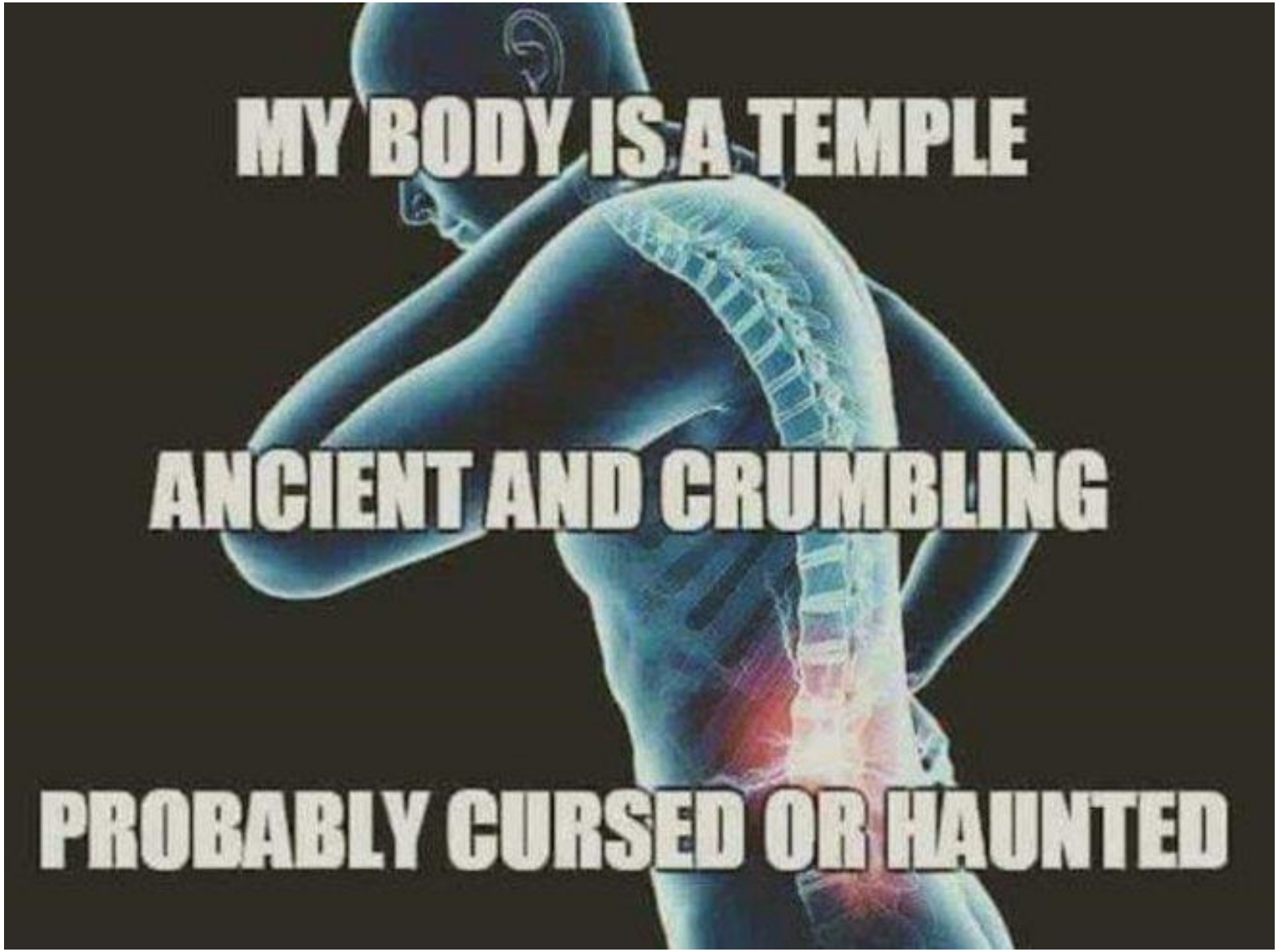
Recognizing Patterns





A GRAIN OF SALT

- Everything presented today are examples, but patients don't read the textbook before they present
- Gout can be polyarticular just like PsA can be mono-articular
- Even conditions that are not "Arthritis Conditions" can present with Inflammatory Arthritis
  - SSc, PMR, Anti-Synthetase Syndrome, Small Vessel Vasculitis can all present with Arthritis too
- MANY other infections can lead to arthritis as well!


MY BODY IS A TEMPLE
ANCIENT AND CRUMBLING
PROBABLY CURSED OR HAUNTED