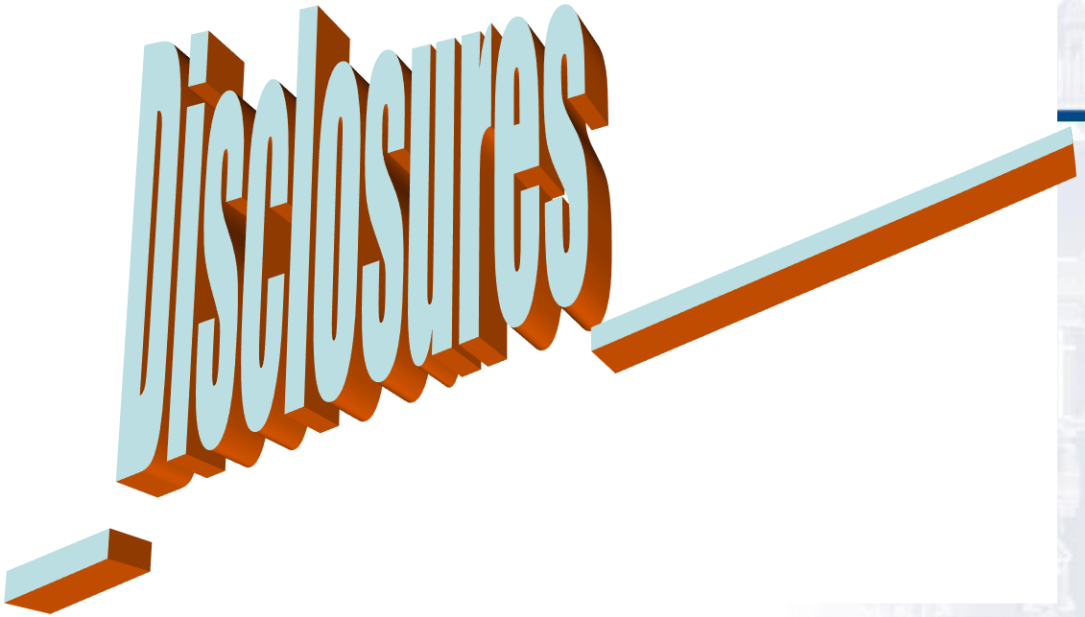
Approach to a Patient With a Joint Complaint

Uzma Jalal Haque, MD
Assistant Professor
Division of Rheumatology
Johns Hopkins School of Medicine

JOHNS HOPKINS
MEDICINE

Uzma Jalal Haque, MD
ACP CME 02/02/2019



No

No Financial Relationships with Commercial Interests

I will not reference an unlabeled or unapproved use of a drug or product in my presentation commercial Interests

I will not reference an unlabeled or unapproved use of a drug or product in my presentation

Objectives

- To discuss a simple structured approach to a patient with joint complaint
  - To differentiate articular from periarticular
  - To differentiate athralgia from arthritis
  - To differentiate inflammatory from non-inflammatory joint symptoms
- To use history and physical examination to assess the above
- To design initial workup and management of joint pain
- To be familiar with interpretation of key physical findings, serologies and radiographic findings

When you see a patient with joint pain

- Will this go away? (chronic vs self-limiting)
- Will this cause joint damage and disability?
- How can I minimize pain and suffering for this patient?
- What do I do today?
  - Diagnostics?
  - Treatment?
  - Referral?

Three Questions in a Patient with a Joint Complaint

- 1. Is the process articular or periarticular?
- 2. Does the patient have arthralgia or arthritis?
- 3. Are the joint symptoms inflammatory or non-inflammatory?

JOHNS HOPKINS MEDICINE

Q 1: Articular vs Periarticular vs Referred?

- Is the pain truly in the joint?
  - Articular
    - within the joint
  - Periarticular
    - around or outside the joint
  - Referred
    - from another structure

Q1: Articular vs Perarticular ?

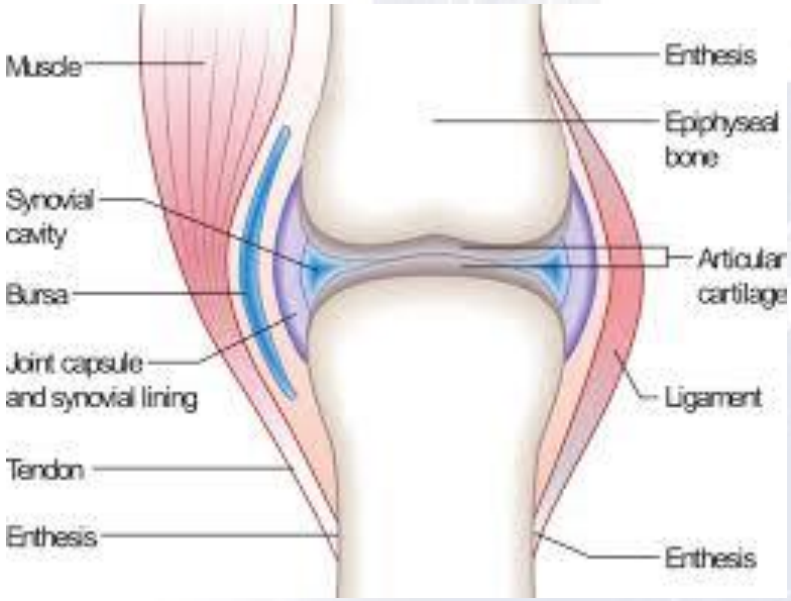
- Patients with pain in structures around a joint can also present to your clinic with “joint pain”

- Important to distinguish as these are
  - different processes
  - different workup
  - different management

Q1: Articular vs Peri-articular ?

Examples of common Periarticular diagnoses

- Bursitis
  - Trochanteric bursitis
  - Olecranon bursitis
- Tendonitis
  - Achilles tendonitis
  - Rotator cuff tendonitis
- Enthesitis
  - Plantar fasciitis
  - Medial/lateral epicondylitis



JOHNS HOPKINS MEDICINE

Q 2: Arthralgia or Arthritis?

- Once you have confirmed true joint (articular) involvement
  - Q2: Does the patient have arthralgia or arthritis?

Q 2: Arthralgia or Arthritis?

- Arthralgia:
  - *arthro - joint*
  - *-algos - pain*

  Joint pain *only*
- Arthritis:
  - *arthro - joint*
  - *-itis - inflammation*

  Joint inflammation/damage

Early PIP swelling

JOHNS HOPKINS MEDICINE

Q 2: Arthralgia or Arthritis?

- Why is this important?

- Arthritis → True joint disease

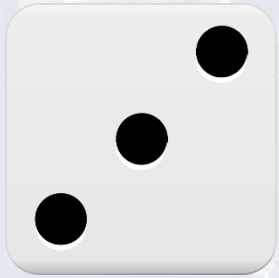
- Arthralgia → Symptom

(may be unrelated to true joint disease, e.g., depression, hypothyroidism, influenza)

Q 3: Inflammatory vs non-inflammatory

- Once you have defined true arthritis

Q 3: Does the patient have inflammatory or non-inflammatory arthritis?



JOHNS HOPKINS MEDICINE

Q 3: Inflammatory vs non-inflammatory Arthritis

- Inflammatory Arthritis - driven by the immune system

- Rheumatoid Arthritis
- Lupus
- Psoriatic Arthritis
- Gout

System	Examples
Rheumatic diseases	• Rheumatoid arthritis • Spondyloarthritis (e.g., psoriatic arthritis; reactive arthritis; ankylosing spondylitis; inflammatory bowel disease-associated arthritis) • Crystalline arthritis (e.g., gout; pseudogout) • Other rheumatic diseases (e.g., SLE; Sjogren syndrome; mixed connective tissue disease; myositis; scleroderma; vasculitis) • Auto-inflammatory syndromes (e.g., adult-onset Still disease)
Infectious diseases	• Acute infection (e.g., bacterial septic arthritis; viral arthritis; Gonococcal arthritis) • Subacute infection/chronic infection (e.g., subacute bacterial endocarditis; hepatitis B; hepatitis C; HIV; Lyme; fungal; tuberculosis)
Endocrine diseases	• Thyroid disorders • Hemochromatosis
GI causes	• Celiac disease • Inflammatory bowel disease-associated arthritis
Miscellaneous	• Paraneoplastic syndromes • Sarcoidosis • Whipple disease • Serum sickness

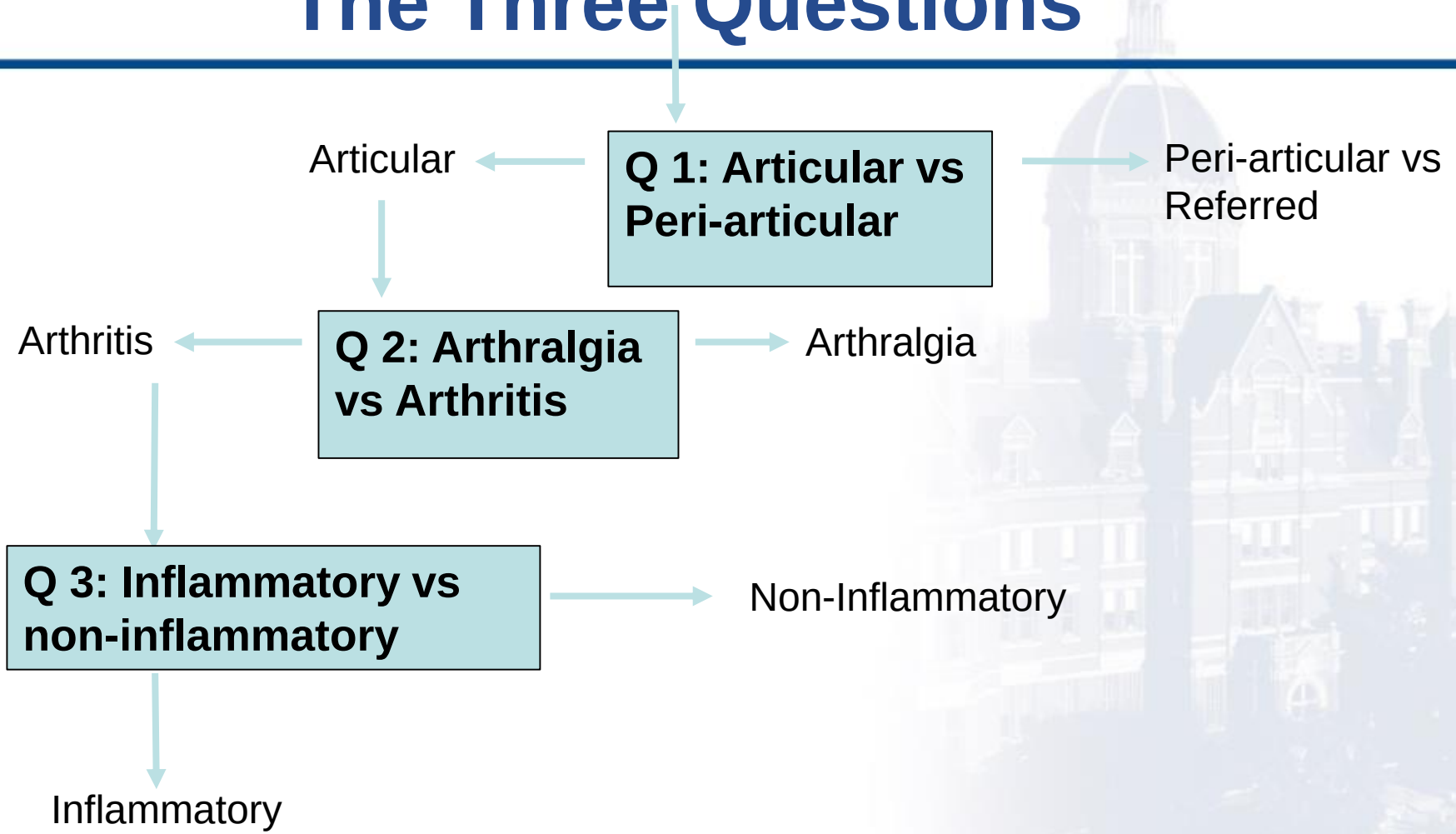
Q 3: Inflammatory vs non-inflammatory

- Non-inflammatory Arthritis – caused by cartilage damage due to injury, trauma or aging

- Osteoarthritis

	Examples
Common causes	• Primary osteoarthritis • Trauma (e.g., meniscal tear)
Others	• Secondary osteoarthritis (e.g., due to acromegaly, hemochromatosis, calcium pyrophosphate deposition disease, ochronosis) • Pigmented villonodular synovitis • Avascular necrosis • Hemophilia • Sickle Cell disease • Neuropathic arthropathy (e.g., Charcot arthropathy)

Patient with a Joint Complaint
The Three Questions



Three Questions in a Patient with a Joint Complaint

- Critical distinction between different processes
- Key branching point in
  - directing diagnostic workup
  - management and triage decisions

JOHNS HOPKINS MEDICINE

Question 1

Articular or Peri-articular or Referred

JOHNS HOPKINS MEDICINE

Q1- History

Q1: Articular vs Periarticular vs Referred

- Determine exact location of the pain

Question to ask	Most likely to be caused by joint
Where is the pain?	
Groin	True Hip Joint
Lateral thigh	Trochanteric bursitis
Buttock / Gluteal	SI joint, Ischial bursa, referred from spine

Q1 - History

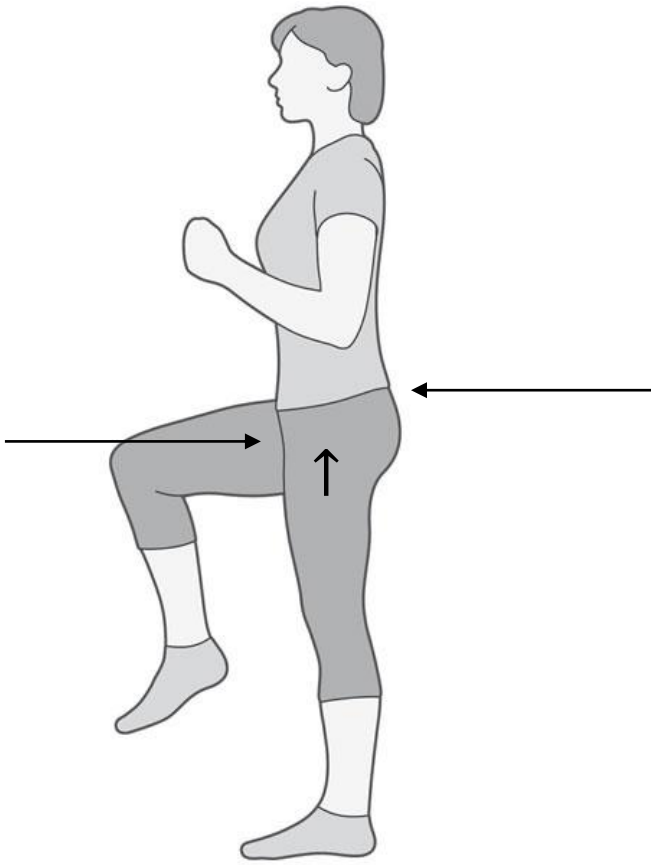
Q1: Articular vs Peri-articular vs Referred

- Define activities that make symptoms worse and suggest involvement of specific structures

Question to ask	Most likely to be caused by joint
Pain in “groin/outer thigh” • Getting into or out of car • Getting into or out of bathtub • Difficulty in bending over (while sitting) to put on socks/tie shoe laces	True Hip Joint
Pain in outer thigh worse with sleeping on that side	Trochanteric bursitis

Q1 – Physical Examination Location, location, location…

- Ask patient to point with one finger the exact location of pain



Joint	Location of pain /corresponding anatomic structure
Lateral thigh pain	Trochanteric bursa
Groin pain	True hip joint
Buttock pain	Ischial bursa, SI joint, Piriformis, Referred from LS spine

Q1 - Physical Examination

Q1- Articular vs Periarticular?

- Be familiar with maneuvers that engage a specific joint/structure

Maneuver	Specific Joint /Structure
FABER	True hip/ SI pathology
Tenderness over the T. bursa	Trochanteric bursitis/IT band

Question 2

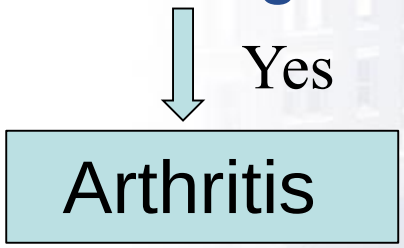
Arthralgia or Arthritis?

Q2 - History

Once you have defined true articular involvement

Q2- Arthralgia vs Arthritis?

- Ask about joint pain and swelling?



Q2 - Physical Examination

Q2- Arthralgia vs Arthritis?

Joint Examination:

- LOOK for swelling/redness
- FEEL for warmth/heat
- PALPATE for effusion
- MOVE for tenderness and range of motion

Remember that both with arthralgia and arthritis you will illicit joint tenderness

Q2 - Physical Examination

Q2- Arthralgia vs Arthritis?

Swelling in a joint = Arthritis

JOHNS HOPKINS MEDICINE

Question 3

Inflammatory vs non-inflammatory?

Q3 - History

Once you have defined true arthritis

Q3- Inflammatory vs non-inflammatory?

- Morning stiffness?
- When are joint symptoms worse?
- Does movement help or hurt your joints?

Q3 - History

Q3- Inflammatory vs non-inflammatory?

Non-inflammatory Arthritis

Evening ← What time of day are joint symptoms worst? → **Morning**

Worse ← Does physical activity make joint symptoms better or worse? → **Better**

No ← Does morning stiffness last for more than 60 minutes? → **Yes**

Inflammatory Arthritis

Q3 – History

Morning Stiffness

- Cardinal feature of inflammatory arthritis
  - May be variable described by patients
  - “Tin man” vs “need oiling”
- Duration > 60 minutes
- May vary in severity
- May be worse in the evenings
- In some patients, may last for the entire day
- May be present in fibromyalgia

JOHNS HOPKINS MEDICINE

Orbai AM, Arth Care Res,2014

Q3- Physical Examination

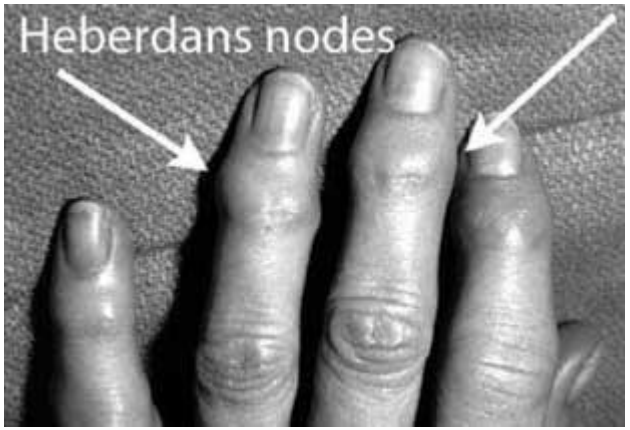
Q3- Inflammatory vs non-inflammatory ?

- Articular
  - Acute inflammation
  - joint deformities

Joint-related physical findings	Likely diagnosis
• Bony enlargement • Heberden nodes • Bouchard Nodes • Crepitus on motion	**Osteoarthritis**
• Joint erythema of acute onset • Joint warmth of acute onset	**Gout** **Septic arthritis** **Injury/Trauma**
• Ulnar deviation • Boutonniere deformities • Swan neck deformities	**Rheumatoid arthritis**
• Dactylitis	**Psoriatic arthritis** **Spondyloarthritis** **Gout**

Physical exam clues – not to miss

- Heberden node



Bony deformities =
Hand osteoarthritis

- Bouchards

Physical exam clues – not to miss

- Dactylitis

Psoriatic arthritis

Sarcoidosis

Infection

Sickle cell arthritis

Q3 - Physical Examination

Q3: Inflammatory vs non-inflammatory arthritis

- Extra-articular
  - Look for systemic clues

Systemic clinical findings	Likely diagnosis
• Subcutaneous nodules	**Rheumatoid arthritis** **Systemic Lupus Erythematosus** **Acute Rheumatic Fever**
• Subcutaneous tophi	**Gout**
• Skin psoriasis • Nail bed pits	**Psoriatic arthritis**
• Viral Exanthem	**Viral arthritis**
• Malar Rash • Alopecia • Oro-nasal ulcers	**Systemic Lupus Erythematosus**
• Sclerodactyly • Telangiectasias	**Scleroderma**
• Splinter hemorrhages • Janeway lesions	**Subacute bacterial endocarditis**
• Scleritis	**Rheumatoid arthritis** **Systemic Lupus Erythematosus** **Vasculitis**

Physical Examination
Clues to underlying diagnosis

Extra-articular

- Rashes
  - Psoriasis, malar rash
- gouty tophi
- subcutaneous nodules
- oral ulcers

JOHNS HOPKINS MEDICINE

Diagnostics

In a patient with arthritis

Design a Diagnostic Workup in a Patient with Arthritis

Ideal Diagnostic Workup

- should help further narrow the differ diagnosis
- should be aligned with your pre-test clinical diagnosis
  - to either confirm or rule out suspected diagnostic possibilities
  - guide your decision regarding next steps in management

Serologies in any patient with inflammatory arthritis

- General Screening: Serology

General Serologies	
ANA	Non-specific High titers present in lupus, SS, scleroderma, CTD
Rheumatoid Factor	Non-specific High titers present in RA
Anti-CCP antibodies	Highly specific for RA

Diagnostic Workup in inflammatory arthritis

- Specific Serology
  - driven by clinical suspicion

Specific Serologies	Clinical symptoms	Present in..
dsDNA antibodies	Oral ulcers, malar rash, photosensitivity, hair loss, serositis, hematuria, proteinura	Lupus
Anti- Smith antibodies	As above	Lupus
Anti-Ro / anti-La antibodies	As above Dry eyes, dry mouth, RP	Lupus, Sjogren's syndrome
Anti-RNP antibodies	Arthritis, rash, muscle weakness, RP	Overlap syndrome
Complements C3/C4	Above lupus symptoms	Lupus
ANCA serologies	Petechial rashes, chronic sinusitis, pulmonary nodules	ANCA vasculitis

Diagnostic Workup in any patient with inflammatory arthritis

- Rule out common causes of inflammatory arthritis
  - TSH
  - Hepatitis B, hepatitis C, HIV
  - Others such as parvo, chickungunya, Lyme per clinical suspicion
- General Labs
  - CBC
    - anemia, leukopenia, thrombocytopenia
  - LFTs
  - Serum creatinine
  - Markers of inflammation (ESR and CRP)
  - *Serum uric acid (if suspecting gout)*

Antibodies you should be familiar with ….

JOHNS HOPKINS MEDICINE

Anti-nuclear Antibodies

- Directed against the nuclear antigens
- Significant titer $\geq$ 1:160
- High sensitivity for lupus
  - present in 98-100% of patients with lupus

- Non-specific - present is several diseases and up to 10% of healthy individuals
  - Chronic infections, HIV, hepatitis
  - Thyroid diseases
  - Multiple sclerosis
  - Autoimmune hepatitis, PBC
  - Lymphoma

Clinical Pearl:
Negative ANA rules out lupus

JOHNS HOPKINS MEDICINE

Rheumatoid Factor

- Antibodies directed against Fc portion of IgG
- Present in 70-85% RA patients
- High titers associated with nodular, erosive RA
- Titers do not follow RA activity
- Low specificity for RA
  - Other autoimmune diseases (e.g. Sjogren's, SLE)
  - Chronic infections: Hepatitis B/C, HIV, syphilis, tuberculosis
  - Chronic lung/liver disease
  - Malignancies: Lymphoma, leukemia
  - Sarcoidosis

Clinical Pearl: Negative RF does not rule out RA

JOHNS HOPKINS MEDICINE

Anti-Citrullinated Peptide Antibodies (Anti-CCP)

- High specificity for RA (>99%)
- High positive predictive value for RA
- Higher sensitivity in early RA (>60%)
- Found in up to 40% of RF negative patients especially early in disease
- Predictive of erosive disease and joint damage

Clinical Pearl:

Positive anti-CCP antibodies = RA

JOHNS HOPKINS MEDICINE

Demouruelle MK, Curr Rheumatol Rep 2011; 13: 421-30. van Venrooij WJ, Nat Rev Rheumatol 2011; 7: 391-98.

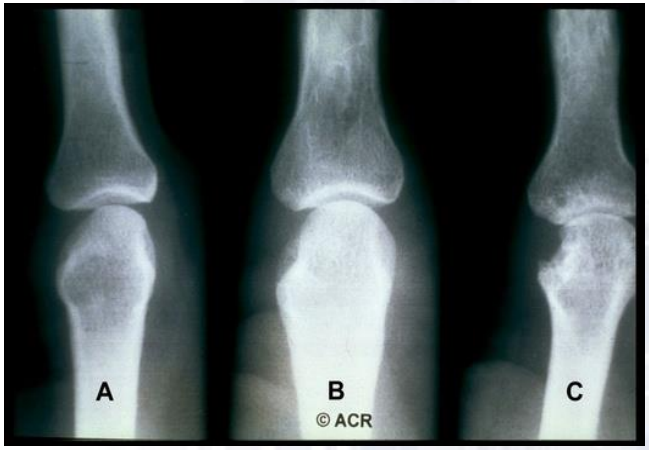
Radiology in workup of arthritis

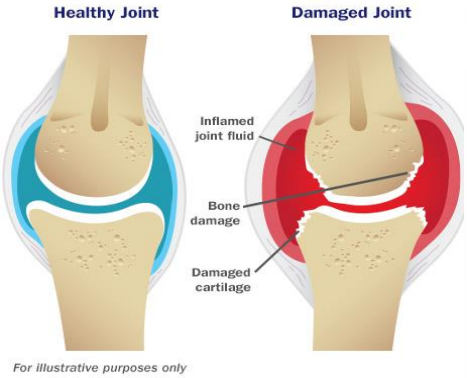
Radiographic Workup of Inflammatory Arthritis

- X-rays

May be unrevealing

To look for erosions in RA and Gout





X-ray characteristics of inflammatory arthritis:

- *Erosion*
- Joint space narrowing

JOHNS HOPKINS MEDICINE

Radiology in non-inflammatory arthritis

Knee osteoarthritis

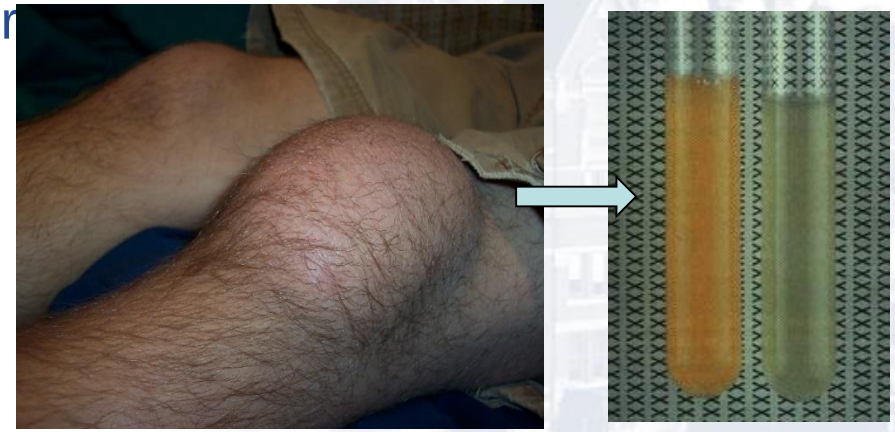
X-ray characteristics of osteoarthritis:

- *Osteophytes*
- Bony sclerosis (extra bone formation)
- Joint space narrowing

Diagnostic Workup

When is joint aspiration indicated?

- Acute monoarthritis
  - to rule out infection, evaluate for crystals
    - Send for crystals, WBCs, Gram stain and Culture
    - WBC > 20,000 with predominant neutrophils
    - highly suspicious for crystals/infection
- Chronic monoarthritis
  - rule out Lyme arthritis



JOHNS HOPKINS MEDICINE

Indication for Referral

When to Refer to Rheumatology

- RAPID REFERRAL
  - Inflammatory arthritis > 6 weeks
  - Positive CCP
  - Involvement of MCPs/MTPs
  - High markers of inflammation
  - Any patient with inflammatory back pain
  - Any patient with non-infectious dactylitis

  - DO NOT BE DETERRED BY
    - Negative blood work or x-rays
      - 40% RA patients negative RF/CCP in early disease
      - 20% of RA patients are seronegative
      - X-rays in RA and spondyloarthritis can be negative in early disease

JOHNS HOPKINS MEDICINE

JOHNS HOPKINS
MEDICINE