# ACOI 2019: SPONDYLOARTHRITIS

ROBERT L. DIGIOVANNI, DO, FACOI
PROGRAM DIRECTOR, LARGO MEDICAL CENTER RHEUMATOLOGY FELLOWSHIP
ROBDSIMC@TAMPABAY.RR.COM
Slides prepared by Natalie Yanes, DO, Rheumatology Fellow, and Gene Jalbert, DO

# DISCLOSURES

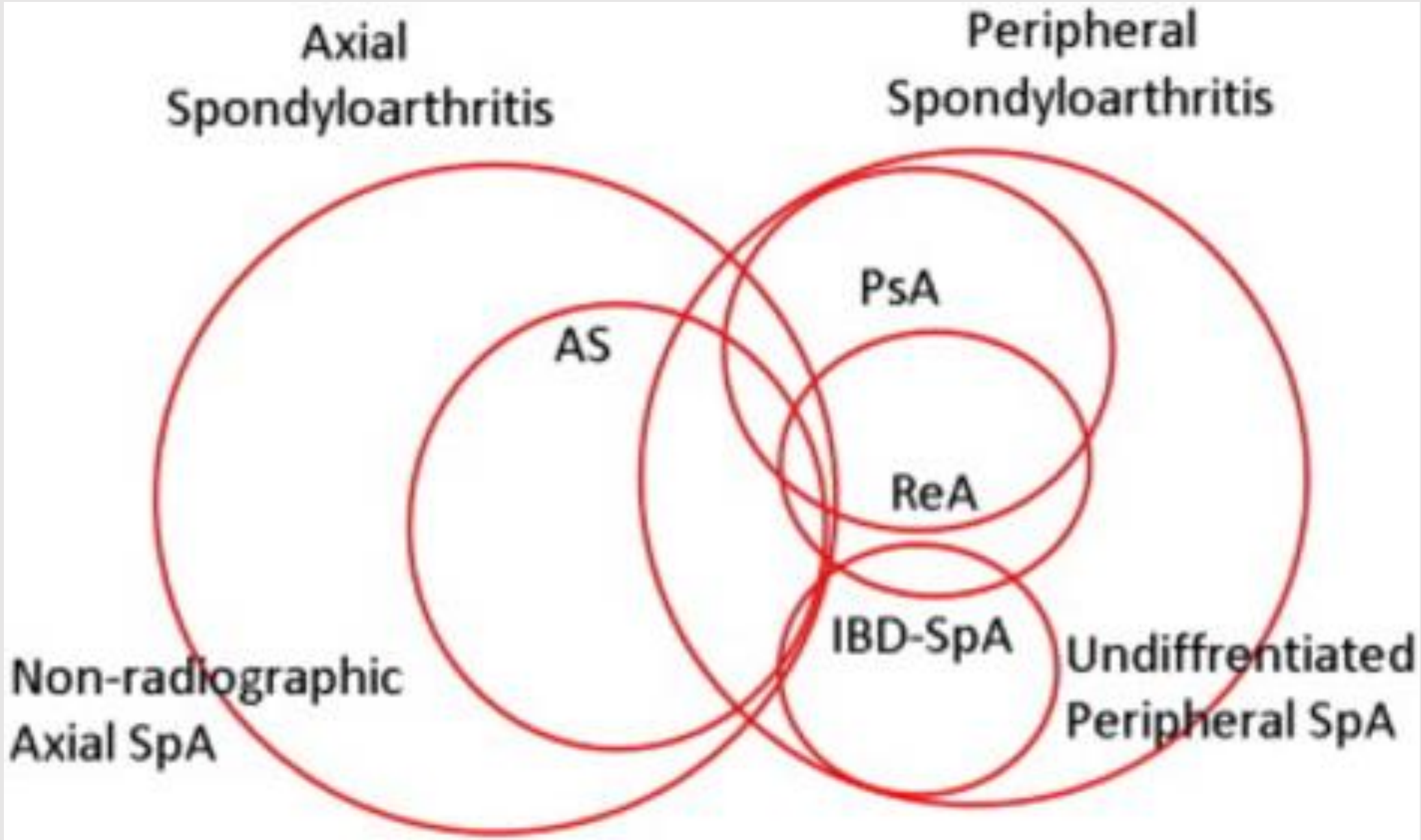
- NONE

# Learning Objectives

- Understand how to diagnose Spondyloarthritis
- Understand clinical features and presentation of the Spondyloarthropathies
- Understand the radiographic findings associated with SpA
- Understand the different treatment options

# The Spondyloarthropathies

- Ankylosing Spondylitis (A.S.)
- Non-radiographic Axial spondyloarthropathies (nr-axSpA)
- Psoriatic Arthritis (PsA)
- Inflammatory Bowel Disease Associated (Enteropathic)
  - *Crohn and Ulcerative Colitis*
- Reactive Arthritis (ReA)
- Juvenile-Onset SpA



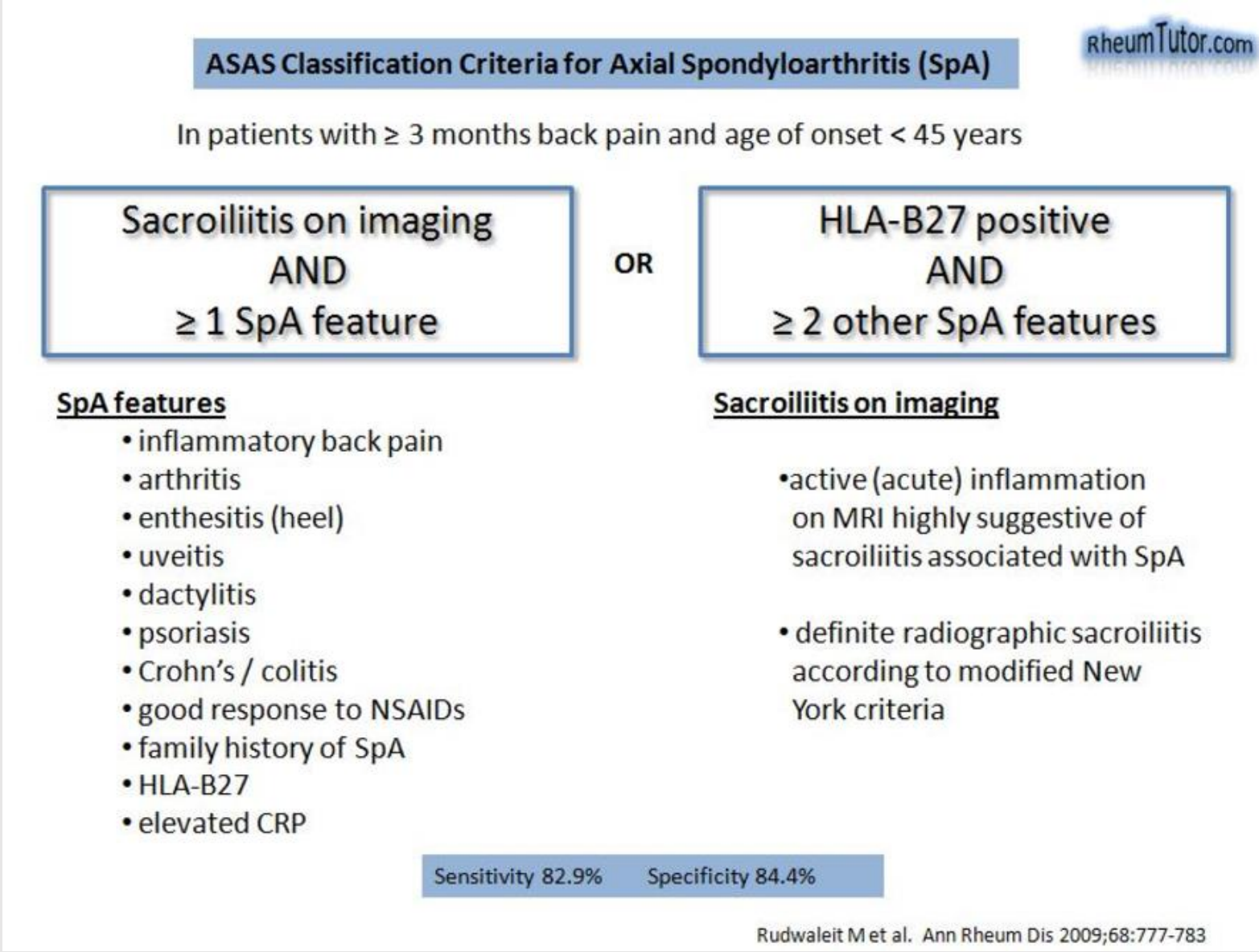

S.P. Raychaudhuri, A. Deodhar / Journal of Autoimmunity 48-49 (2014) 128-133

# Clinical Manifestations:

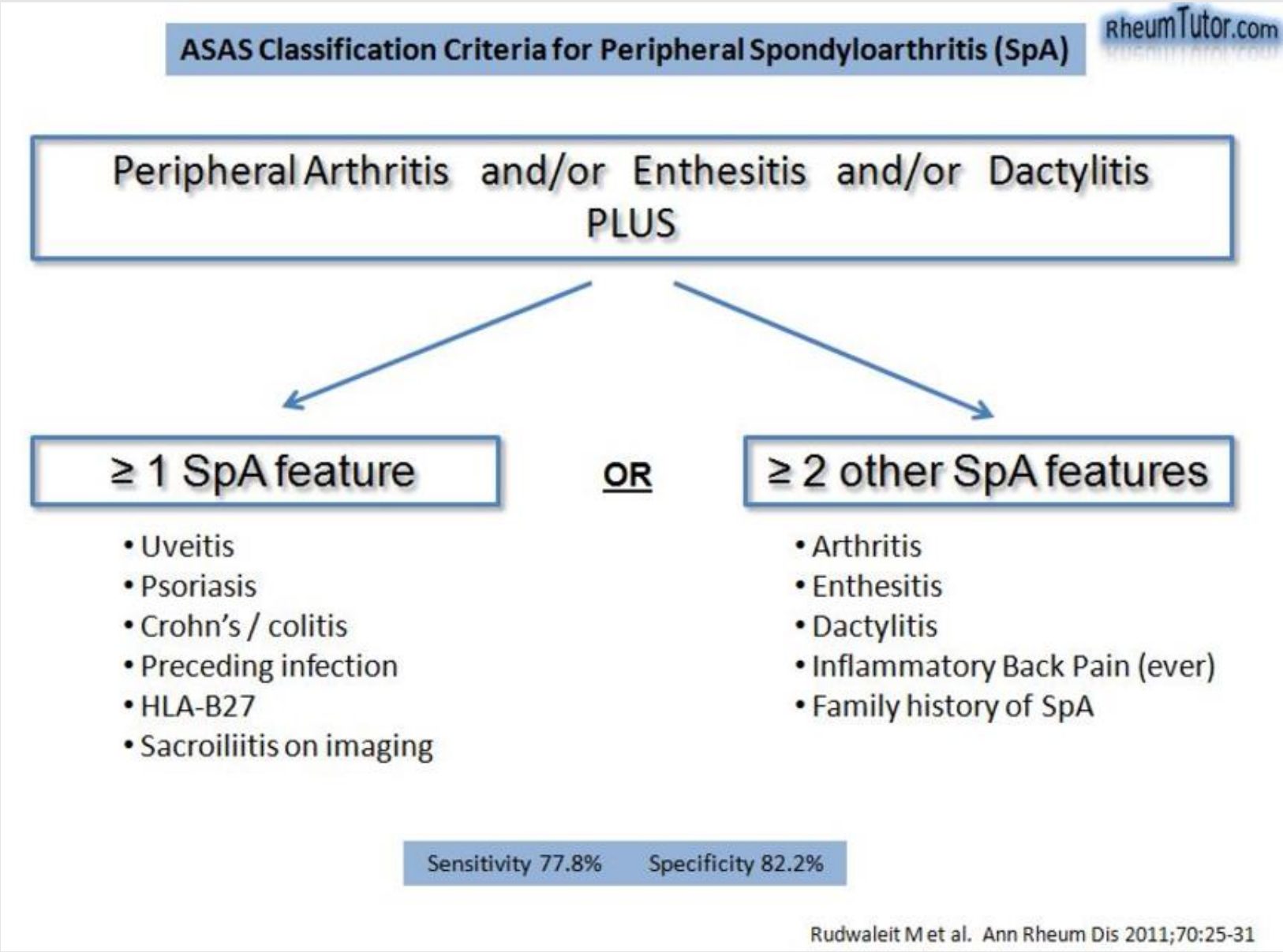
- Spondyloarthritis is differentiated from other forms of arthritis by the distribution and type of musculoskeletal manifestations and certain extraarticular features.
- These include:
  - *Axial joint disease (especially SI joints)*
  - *Asymmetrical Oligoarthritis (2-4 joints).*
  - *Dactylitis (Sausage Digits)*
  - *Enthesitis*
  - *Eye inflammation*
  - *Bowel inflammation*
  - *HLA-B27+ and family history associations*
  - *Skin and genital lesions*

UpToDate

- Axial SpA:
  - *Radiographic (Sacroiliitis seen on X-ray)*
  - *No Radiographic features → non-radiographic SpA (nr-SpA)*
    - Nr-SpA was formally known as undifferentiated SpA



- Peripheral SpA:
  - *Enthesitis, dactylitis and arthritis*
  - *Eventually evolves into a specific diagnosis → A.S., PsA, etc.*



# Case #1

- Patient is a 37 year old male who presents for evaluation of low back pain of insidious onset. It began around 5 years ago. He has morning stiffness lasting around 2 hours. He denies any history or trauma.
- On physical exam the lungs are CTAB and he has a RRR. He has tenderness over the SI joints and a modified Schober of 9cm. There are no rashes. There is no joint tenderness or synovitis.
- Labs showed: RF-, CCP-, ANA-, ESR 52 mm/hr, CRP 22 mg/L
- What is the most likely diagnosis?

# Ankylosing Spondylitis

- It is a chronic systemic inflammatory disease affecting the SI joints, spine, and peripheral joints.
- Male to Female Ratio is 2-3:1
- There are two subtypes of axial spondyloarthritis (axSpA): ankylosing spondylitis (AS) and nonradiographic axSpA (nr-axSpA).
- Manifestations usually begin in late adolescence or early adulthood.
- Most commonly they present with inflammatory back pain. Buttock pain may alternate from side to side.
- Approximately 30% of patients develop peripheral arthritis
  - *Shoulders and hip are most commonly involved*


UpToDate, RheumSecrets

# What is Inflammatory Back Pain?

- Inflammatory Back Pain:
  - *Chronic back pain, better with exercise but not with rest and pain at night*
  - *Insidious onset with more than 3 months in duration*
  - *Usual onset <45 years of age*
  - *Marked improvement w/ NSAIDs within 24-48 hours*
  - *Above features are not diagnostic*

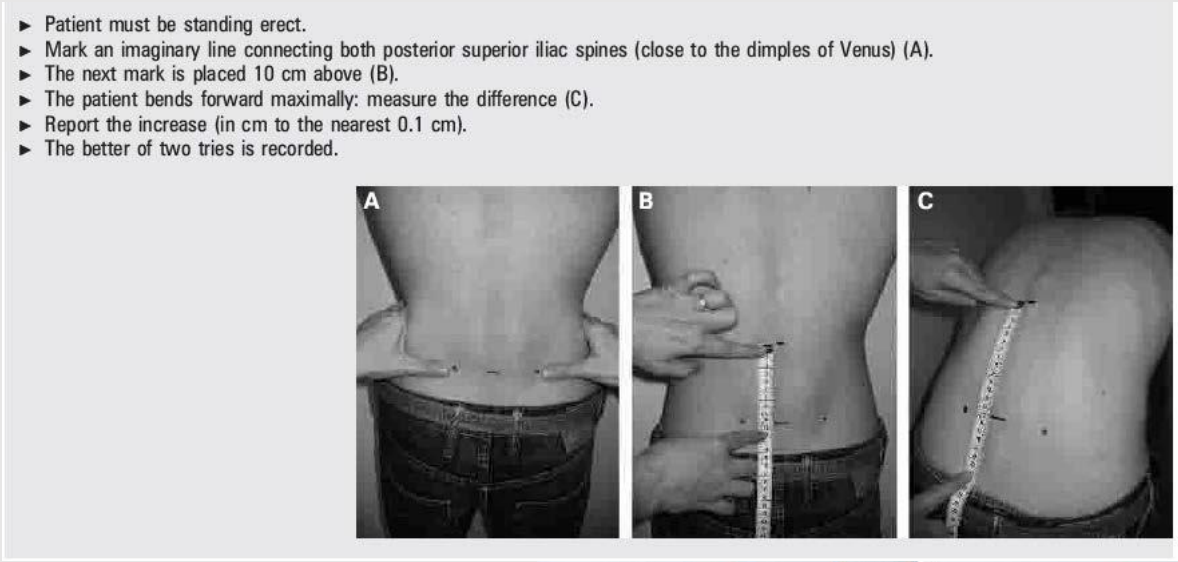

UpToDate, ACR

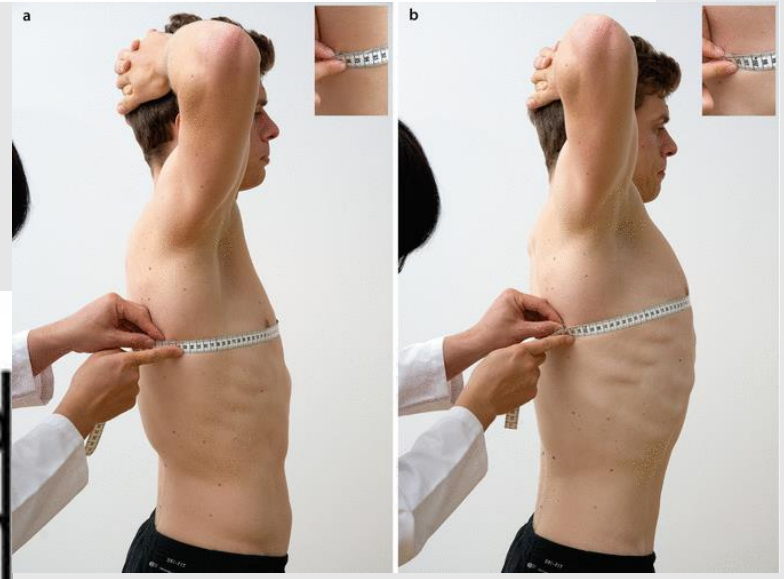
# Extraskeletal Manifestations:

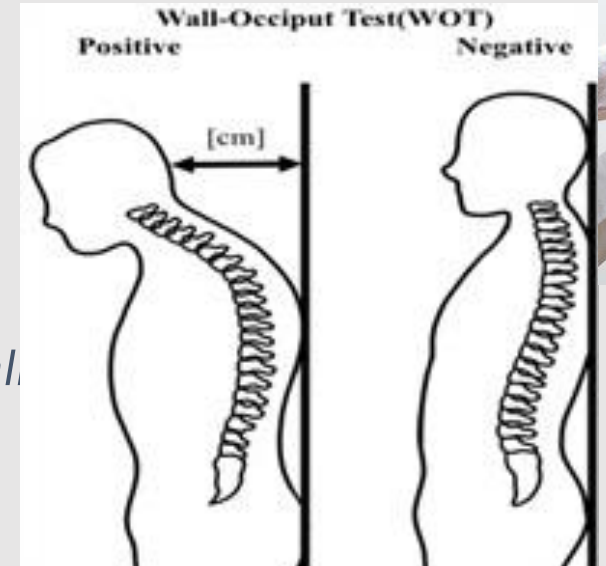
- "ANKSPOND"
  - ***A****- Aortic insufficiency, Aortitis, Conduction abnormalities, diastolic dysfunction, pericarditis, and ischemic heart disease.*
  - ***N****- Neurologic (C1/2 subluxation), Cauda Equina, Arachnoiditis, Spinal stenosis.*
  - ***K****- Kidney: Secondary amyloidosis, IgA nephropathic and chronic prostatitis.*
  - ***S****- Spine: Cervical fracture, spinal stenosis, and osteoporosis*
  - ***P****- Pulmonary: UPPER lobe fibrosis, restrictive lung changes.*
  - ***O****- Ocular: Anterior uveitis (25-30%)*
  - ***N****- Nephropathy: IgA nephropathy and nephrolithiasis*
  - ***D****- Discitis or spondylodiscitis (Andersson lesions)*
  - *ALSO: 30-60% of pt's with A.S. have asymptomatic microscopic colitis or Crohn's-like lesions in the terminal ileum and colon. More common in those with peripheral arthritis.*

# Physical exam:

- **Modified Schober Test**
  - *Landmark: PSIS (Dimples of Venus)*
  - *> than 5 cm change when patient bends forward*
- **Reduced Chest Expansion**
  - *Measured as the differencd between maximal inspiration and maximal forced expiration in the 4th intercostal space*
  - *Normal: ~5 cm*
  - *Less than 2.5 cm is abnormal.*
- **Wall-To-Occiput test**
  - *From inability to extend the neck*
  - *With heels/scapulae touching the wall, the occiput should be able to touch the wall.*



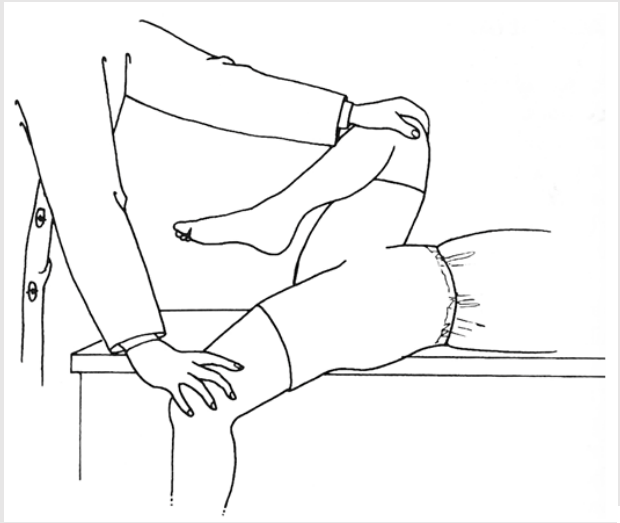



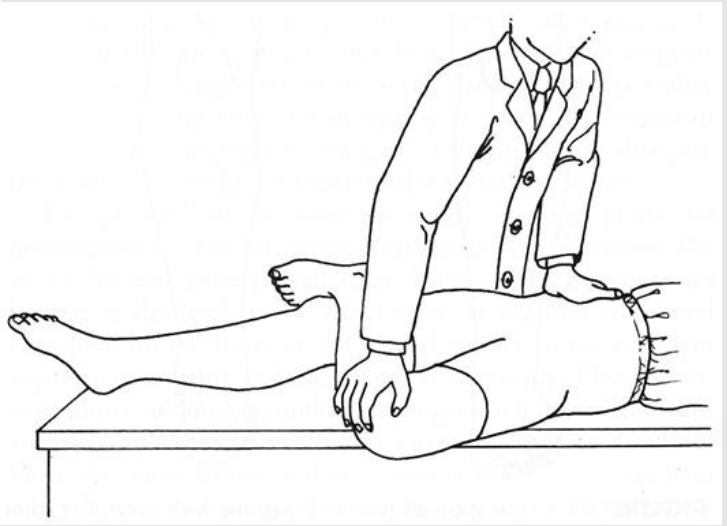

RheumSecrets, Images: ASAS Handbook, Roth A. (2017) Spine. In: Orthopedic and Trauma Findings. Springer, Berling, Heidelberg, LWW Journal. August 1, 2016 - Volume 41 - Issue 15 - p 1232-1238

# Physical exam:

- **Gaenslen's Test**
  - *Supine, leg dropped over side of exam table while other leg drawn toward chest.*
  - *Pain elicited in the SI joint on the side of the dropped leg.*



- **Patrick Test**
  - *FABER test should elicit contralateral SI joint tenderness*



RheumSecrets, Images: ASRA

# What might be a good blood test to corroborate your diagnosis?

- ANA
- ANCA
- HLA B27
- Anti-dsDNA

# HLA-B27

- The SpAs are associated with HLA-B27, an HLA class I gene (CD8+ T Cell Response)
- Found in more than 90% of patients with ankylosing spondylitis (AS)
- Found in 50-70% of patients with other forms of SpA
- HLA-B27 is found in 6% of the general population of the US
  - *A positive HLA-B27 by itself is not diagnostic of SpA*

UptoDate

# What imaging might you order on this patient?

- Lumbar X-ray
- Sacroiliac X-ray
- Sacroiliac MRI

# Imaging:

- General findings:
  - *Sacroiliitis seen on plain radiographs is relatively specific for SpA.*
  - *Syndesmophytes and changes of spondylitis in the spine are also relatively specific for SpA but are seen more in longstanding disease.*
  - *Other findings: Enthesitis and erosive joint disease*
- Plain Radiographs:
  - *In early disease, the x-rays are normal*
  - *Axial X-rays:*
    - Sacroiliitis is the most specific finding (Takes years before it is apparent)
    - Syndesmophytes (Bridging) w/o sacroiliitis seen in 5% of cases
  - *Radiographic Sacroiliitis: Grade 2 bilaterally or Grade 3 unilaterally.*
  - *Non-Radiographic SpA: No definite radiographic sacroiliitis **(On X-ray)***

UpToDate

# Imaging:

- Magnetic Resonance Imaging (MRI):
  - *Usually not necessary in patients with abnormalities seen on plain films and clinical signs and symptoms of SpA.*
  - *MRI can help establish the diagnosis of nr-axSpA.*
  - *MRI of the sacroiliac joints:*
    - Active inflammatory lesions of the SI joints which appear as high-intensity bone marrow edema on STIR or T2 images.
    - Typical locations including the subchondral or periarticular bone marrow
    - Bone Marrow Edema can be seen in infections, malignancy, and osteitis condensans ilii.

UpToDate

# Sacroiliitis:

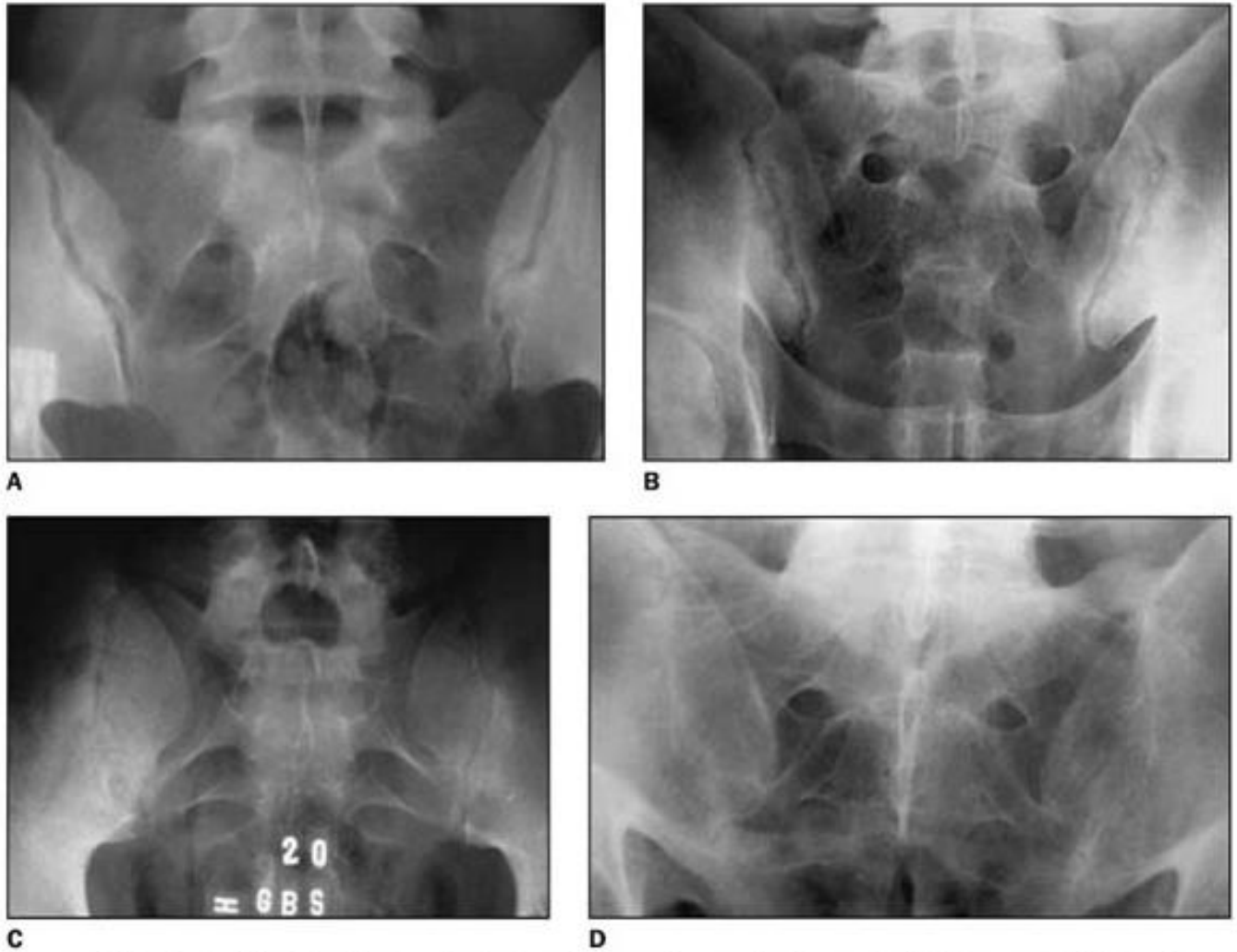



**Figure 4.** Radiographic classification in the evaluation of sacroiliac joints. Grade 0 – normal (**A**); grade I – suspicious; grade II – mild irregularity and sclerosis of articular surfaces, with preserved joint space (**B**); grade III – joint space narrowing, besides intense irregularity and subchondral sclerosis (**C**); grade IV – bilateral ankylosis (**D**).

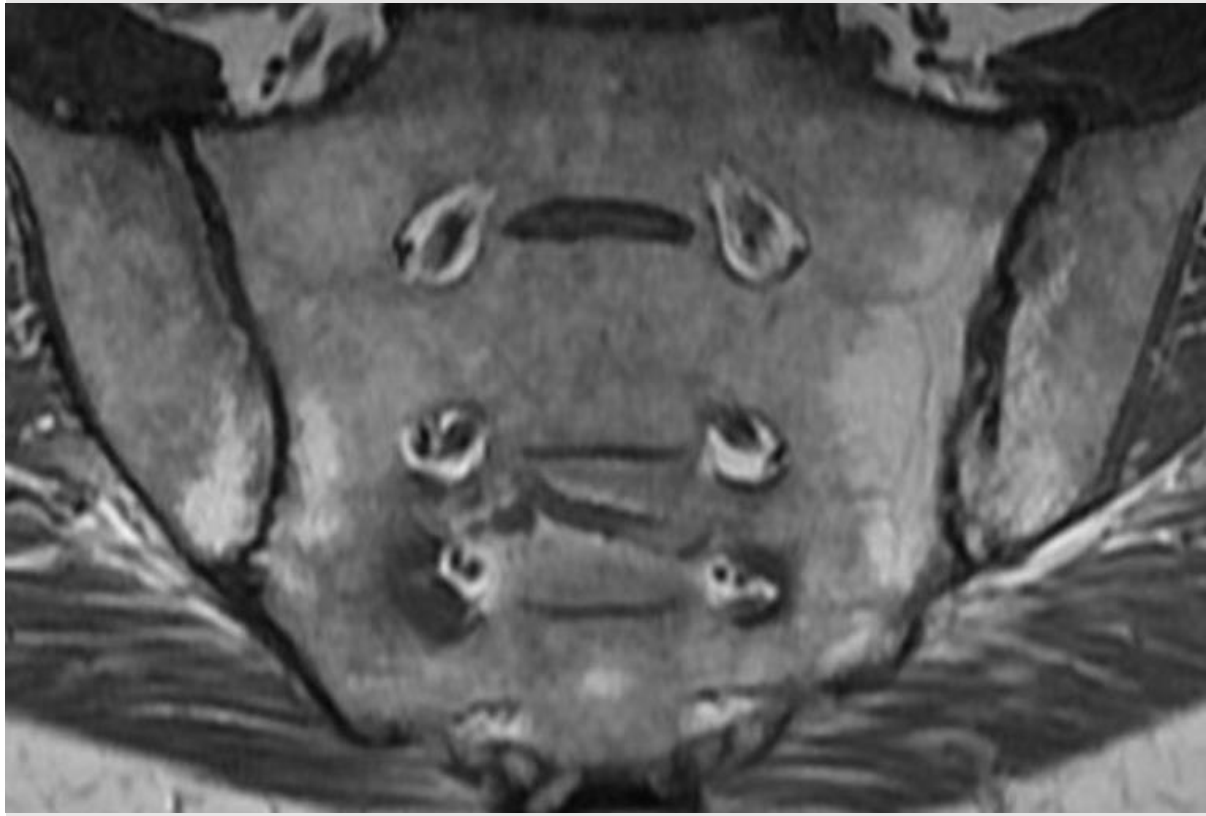


Image: Montandon et al Sacroiliitis: imaging evaluation, Radiopedia

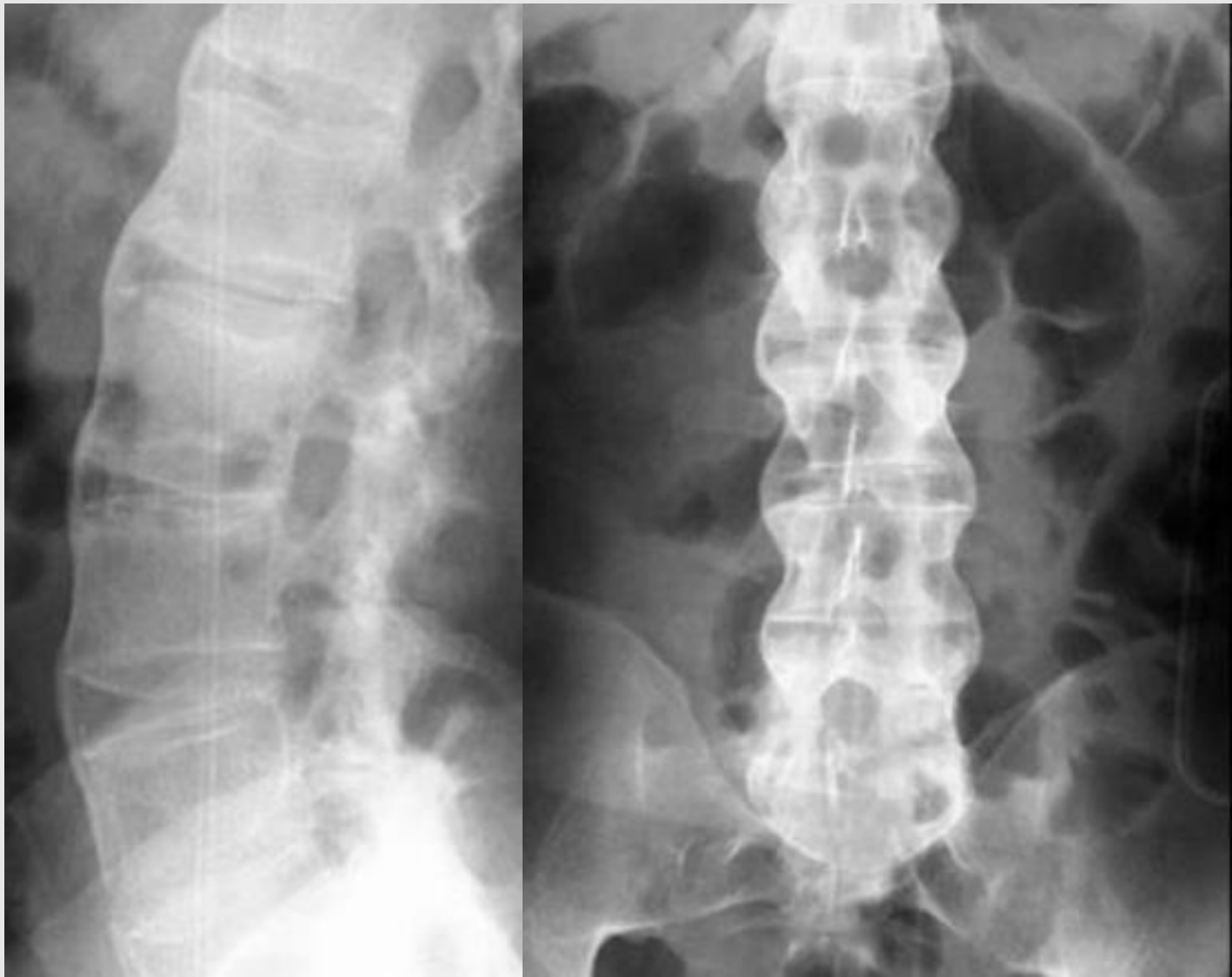
# Ankylosing spondylitis:

- X-ray finding explained:
  - ***Romanus Lesions: "Shiny corners"*** *– inflammation of the insertion of the annulus fibrosis to the corners of the vertebral bodies.*
  - *Leads to* ***"squaring"*** *of the vertebrae.*


RheumSecrets, Images: Sieper et al. Annals of Rheumatic Disease 2009, Radiopedia

# Ankylosing spondylitis:

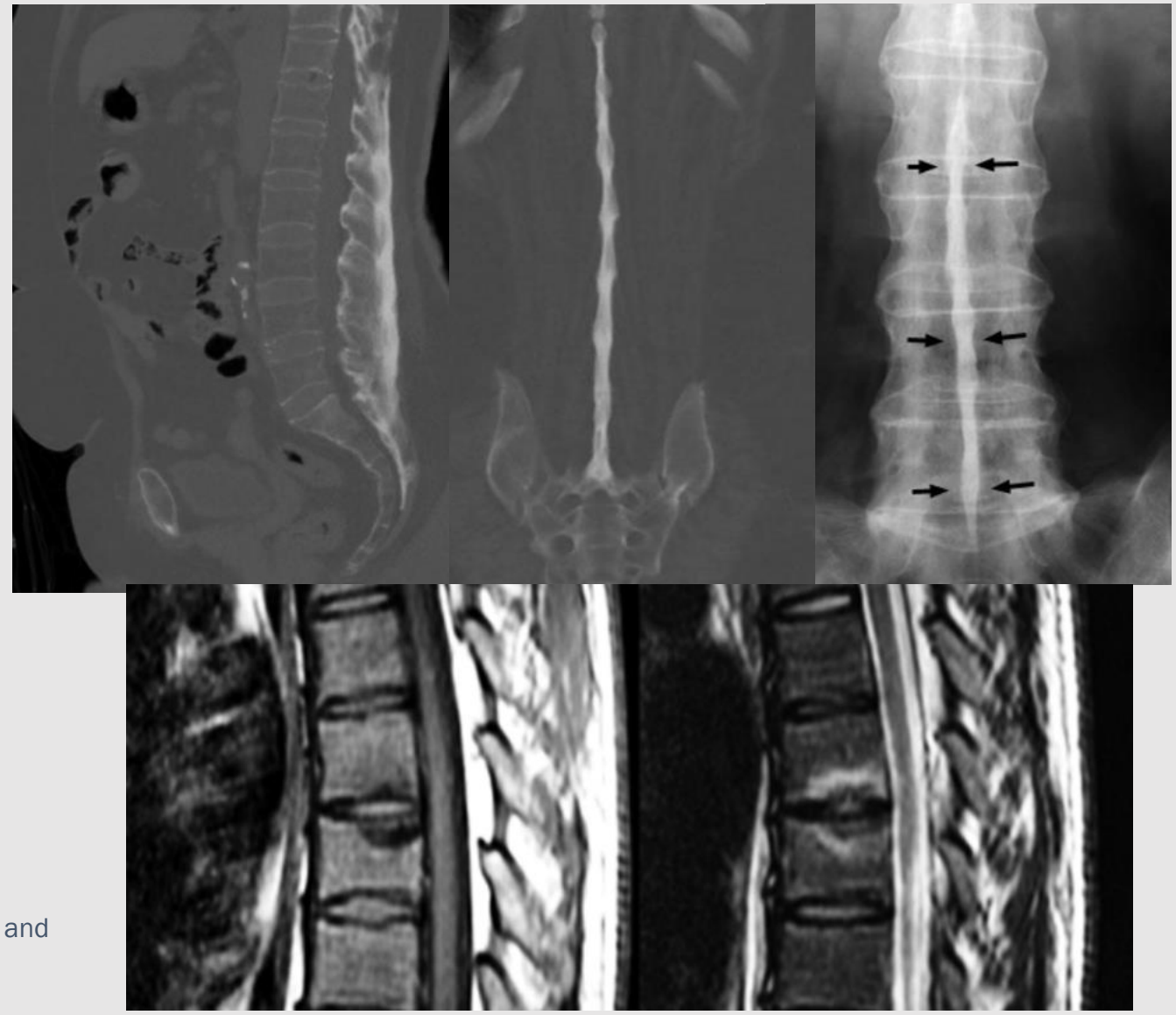
- X-ray findings explained:
  - ***“Sharpy Fibers”:*** *Ossification of the outer layer of the annulus fibrosis.*
  - *Fusion of the apophyseal joints and calcification of spinal ligaments results in* ***Bamboo spine.***



RheumSecrets, Image: Radiopedia, *University of Washington, Musculoskeletal Radiology*

# Ankylosing spondylitis:

- X-ray findings explained:
  - *Calcification of the supraspinous ligament can end in a tapering point: **Dagger spine**.*
  - *Some develop destructive spondylodiscitis which is called **Andersson lesions** that mimic infection.*



RheumSecrets, Images: Orthopedicsone, Radiopedia, Park et al. Bone and Joint Journal. 2011.Vol. 93-B, No. 7

# Treatment

- Nonpharmacologic: Physical Therapy
- Initial Drug Therapy: NSAIDs
- Inadequate Response to NSAIDs: Biologics
  - *TNF Inhibitors: Etanercept, Infliximab, Adalimumab, Golimumab, Certolizumab*
  - *Anti-Il-17: Secukinumab*
- Isolated Active Sacroiliitis — Glucocorticoid injection into the sacroiliac joints
- Non-Biologic DMARDS are not effective for axial SpA (e.g., MTX)
- Systemic glucocorticoids are not indicated for patients with axial SpA

UpToDate

# Case #2

- Patient is a 52 year old male who presents for evaluation of joint pain which has been present for about 6 months. He has pain primarily in the DIPs.
- On physical exam he was found to have a scaly rash on the scalp and nail pitting. He has tenderness to palpation of the DIPs and there is 2+synovitis.
- Labs: Hemoglobin 11.2 g/dL, RF negative, HLAB27+, CRP 16mg/L
- What is the most likely diagnosis?

# Psoriatic Arthritis

- Affects women and men equally
- Whites are affected two times more often than other ethnic groups
- Most patients present between age 35 and 50 years.
- Incidence of approximately 6 per 100,000 per year
- Prevalence of about 1 to 2 per 1000 in the general population

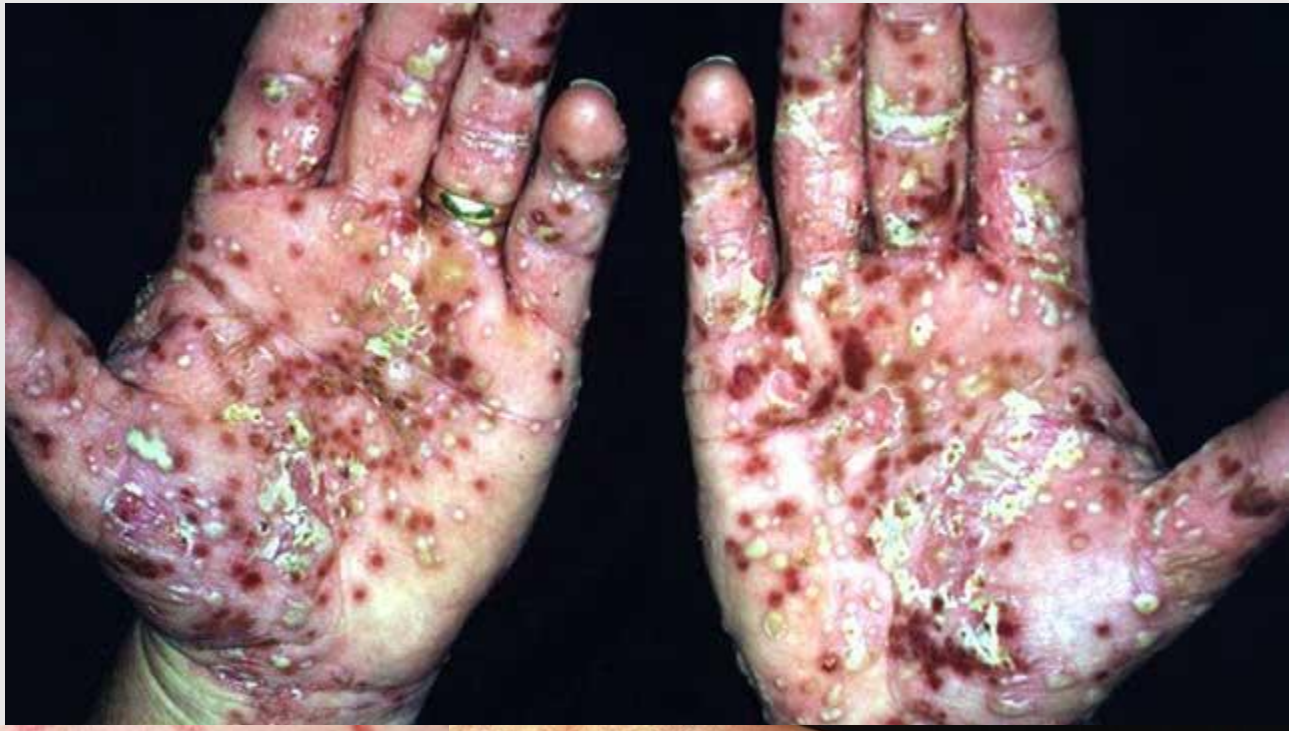
UpToDate

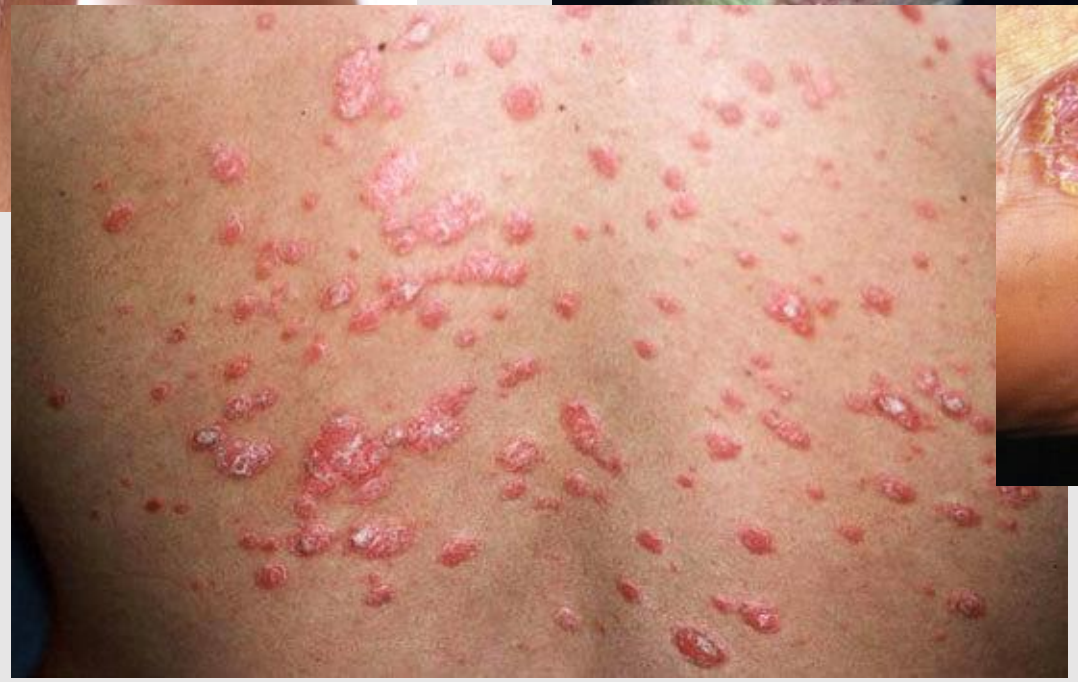
# CASPAR Criteria

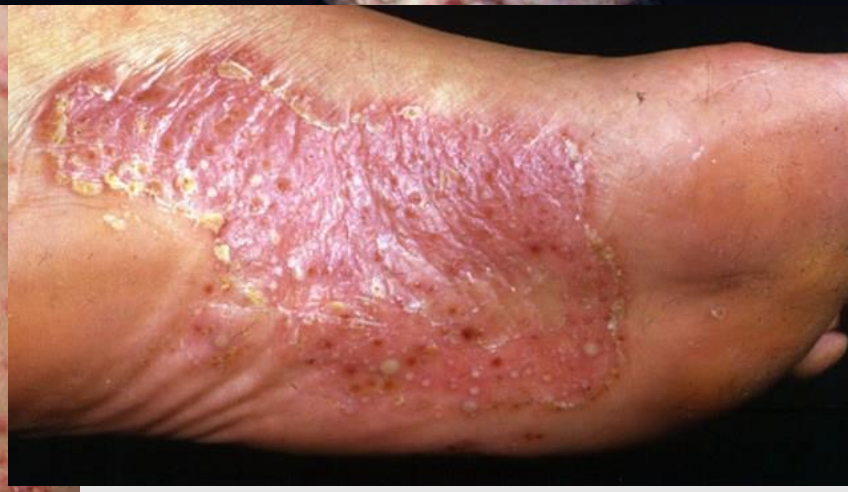
- A patient with an inflammatory musculoskeletal disease can be classified as having PsA if a total of at least 3 points is accumulated from the presence of the following list of features:
  - *Skin psoriasis that is:*
    - Present – 2 points, OR
    - Previously present by history – 1 point, OR
    - A family history of psoriasis, if the patient is not affected – 1 point
  - *Nail lesions (onycholysis, pitting) – 1 point*
  - *Dactylitis – 1 point*
  - *Negative rheumatoid factor (RF) – 1 point*
  - *Juxtaarticular bone formation on radiographs (distinct from osteophytes) – 1 point*

Taylor et al. Classification Criteria for PsA

# Psoriasis



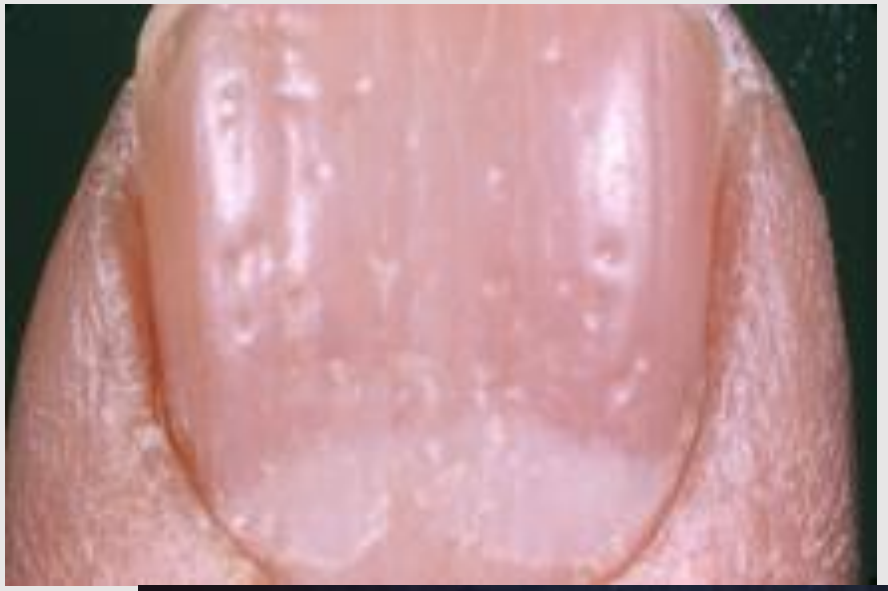


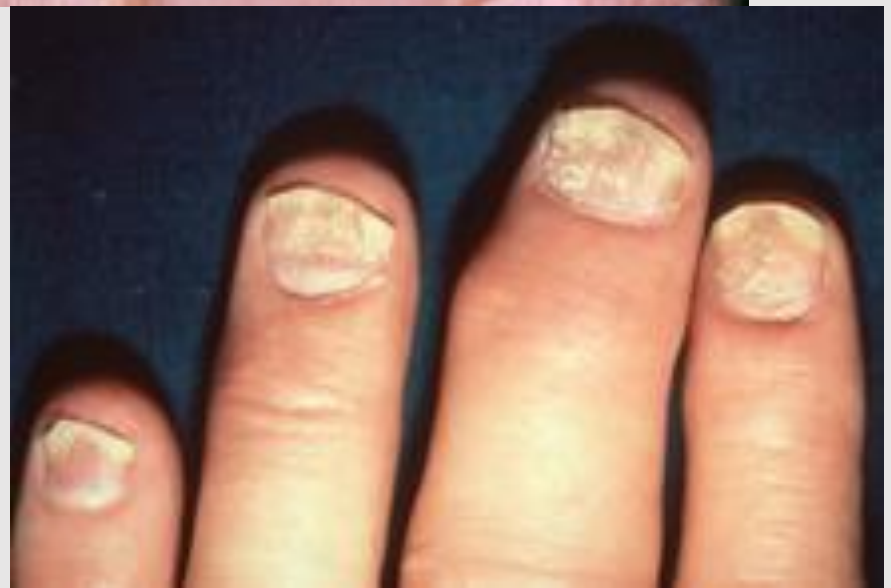


Healthline, Dermrounds

# Nails

- Nail lesions occur in 80-90% of patients with PsA
- Nail changes include:
  - *Pits, which are sharply defined depressions in the plate*
  - *Onycholysis, separation of the nail from its bed, which may involve the whole or only part of the nail.*
  - *Other lesions, which include leukonychia, red spots in the lunula, and nail plate crumbling.*





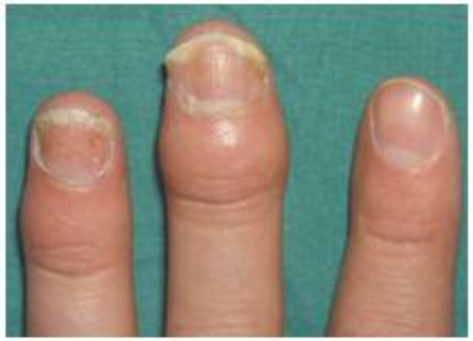
UpToDate, ACR

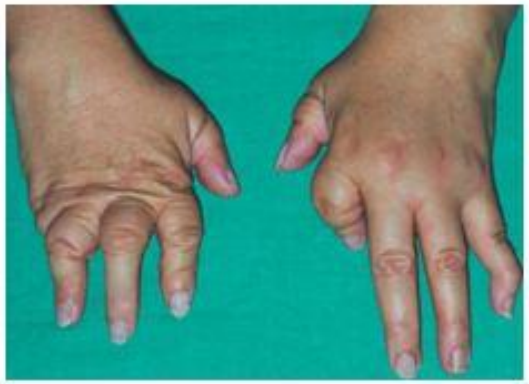
# Psoriatic Arthritis Subtypes

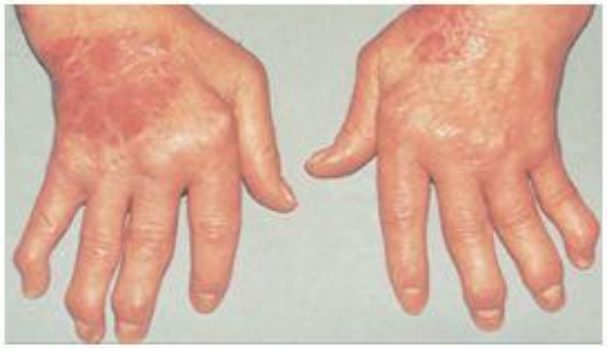
- The clinical patterns, which were originally described by Moll and Wright, include:
  - ***Distal arthritis**, (DIP predominant)*
  - ***Asymmetric oligoarthritis***
  - ***Symmetric polyarthritis, (RA like)***
  - ***Arthritis mutilans***
  - ***Spondyloarthritis (SpA),** including both sacroiliitis and spondylitis*
- Some patients present with more than one pattern, and many change the pattern of their arthritis during follow-up

# Clinical Subsets of Psoriatic Arthritis (PsA)

RheumTutor.com





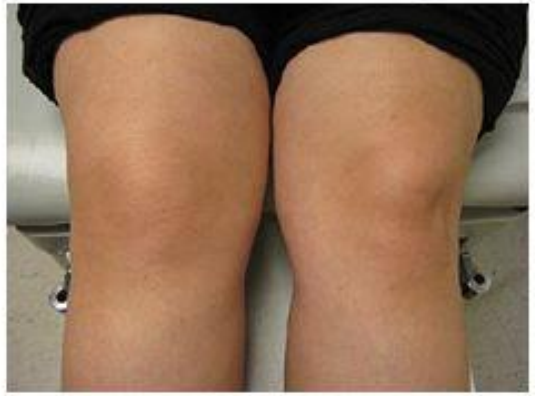


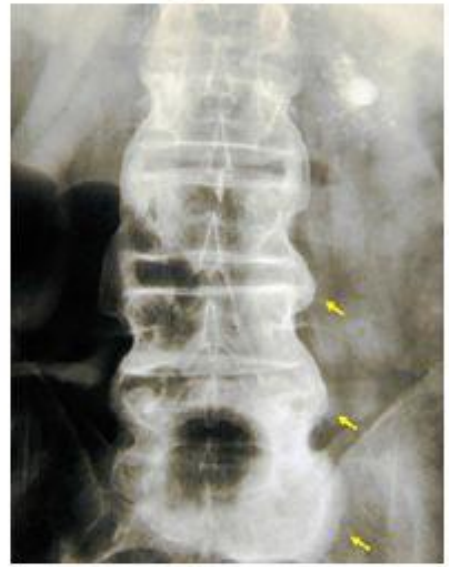
**1959**
**Verna Wright[1]**

- DIP and nail disease
- Arthritis mutilans
- Polyarthritis (RF-)

**1973**
**John Moll and Verna Wright[2]**

- DIP predominant arthritis
- Arthritis mutilans
- Symmetrical polyarthritis
- Asymmetrical oligoarticular arthritis
- Predominant spondylitis

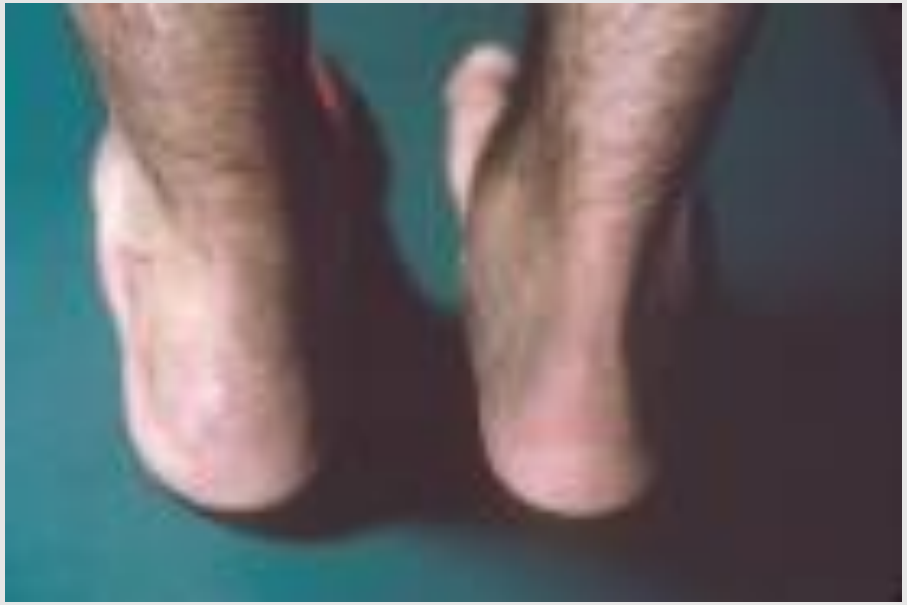





1. Wright V. Psoriasis and arthritis. Ann Physical Med 1959
2. Moll, Wright. Psoriatic Arthritis. Semin Arthritis Rheum 1973

# What other manifestations might you expect to find on physical exam?

# Enthesitis

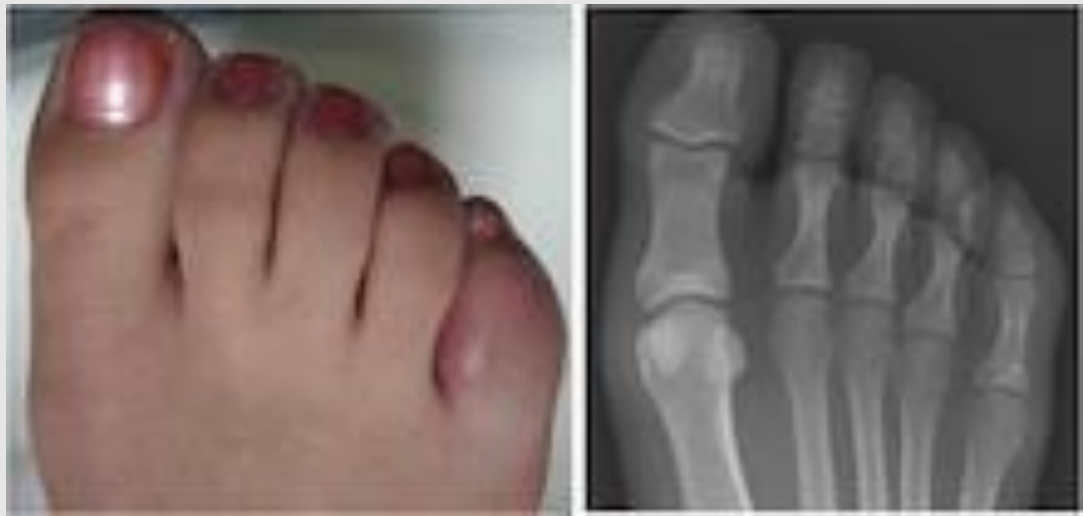


UpToDate, Image: ACR

- Enthesitis (Enthesopathy):
  - *Inflammation around the insertion of ligaments, tendons, joint capsules or fascia to bone.*
  - *Specific to SpA's.*
  - *Most common: Achilles tendon inflammation and plantar fascia at the calcaneal bursa.*
  - *Other less common sites: Greater trochanters, iliac crests, epicondyles, tibial plateaus, costochondral junctions at the sternum, humeral tuberosities, manubrial-sternal joints, occiput, and spinous processes.*

# Dactylitis

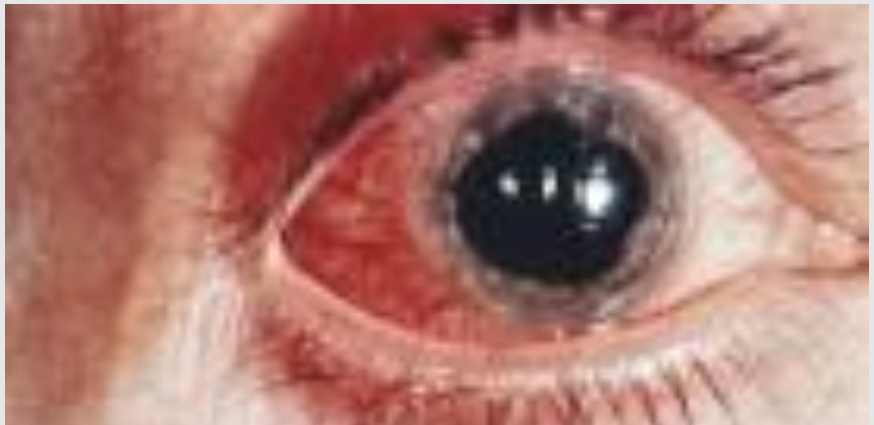
- AKA Sausage digits
- Can be seen in ALL forms of SpA, however most comonly seen in PsA and ReA
- Entire digit is swollen w/ surprisingly less pain and tenderness w/ palpation.
- Is due to involvement of the flexor tendon, sheath, and soft tissue tenosynovitis. Joints can be involved as well.



UpToDate, Image: ACR

# Inflammatory Eye Disease

- Conjunctivitis (More common in reactive arthritis): Non-purulent. Transient (weeks).
- Anterior Uveitis (iritis):
  - *Usually unilateral and may be initial presenting features of SpA*
  - *Redness, pain, photophobia*
  - *50% of patients with recurrent anterior uveitis have a form of SpA*
  - *10% can become chronic and threaten vision impairment*

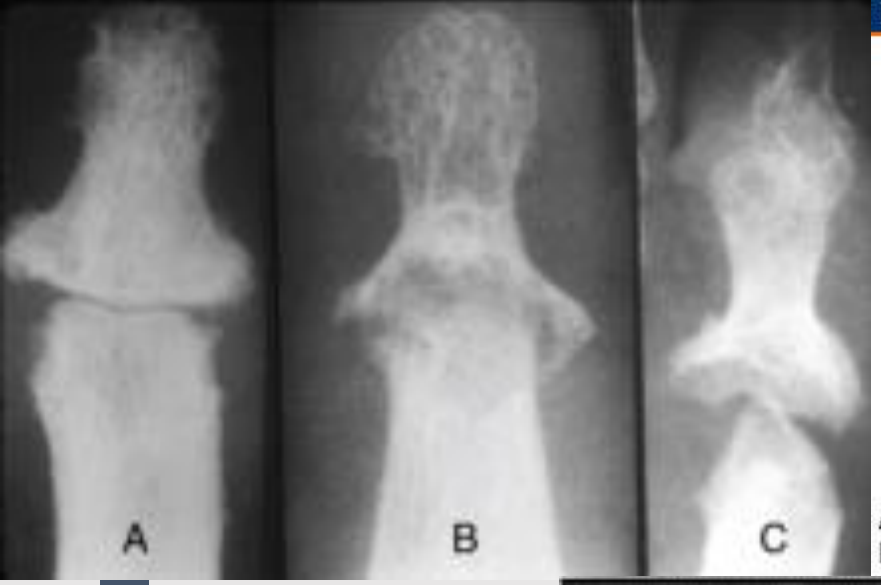


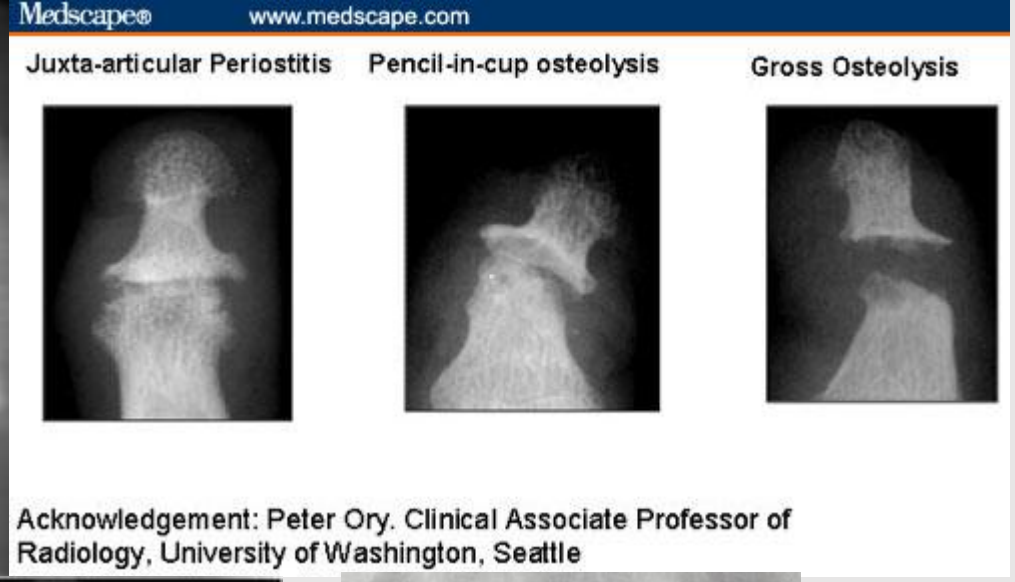
UpToDate, Image: ACR

# Imaging:

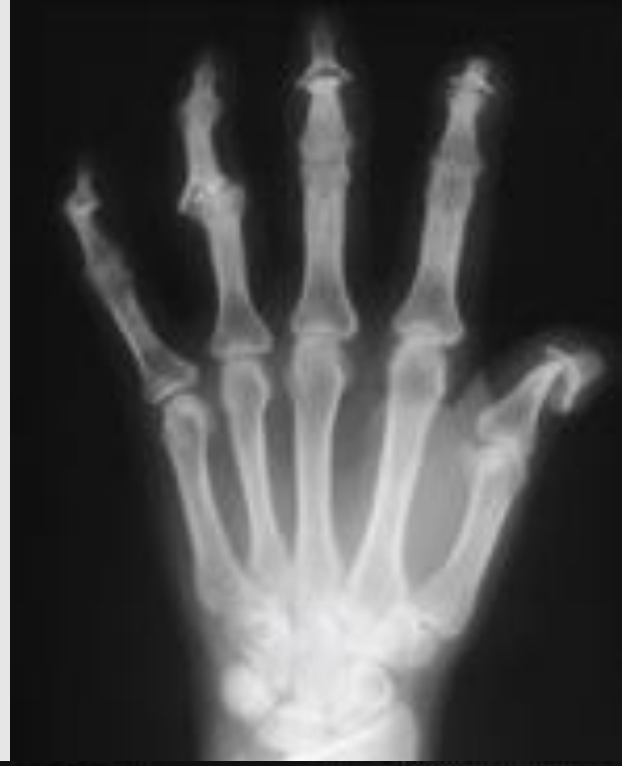
- Radiographic changes can develop with the coexistence of erosive changes and new bone formation
- Other typical radiological changes include:
  - *Lysis of the terminal phalanges*
  - *Fluffy periostitis*
  - *New bone formation, at the site of enthesitis*
  - *“Pencil-in-cup" appearance*
  - *Occurrence of both joint lysis and ankylosis in the same patient*
- Axial radiographs in patients with PsA may reveal changes identical to those seen in AS.
  - *However, many patients with PsA present with asymetric SI involvement.*
  - *Syndesmophytes are also seen in patients with PsA.*
    - Often bulkier than those seen in AS
    - May be paramarginal
    - May skip vertebral levels

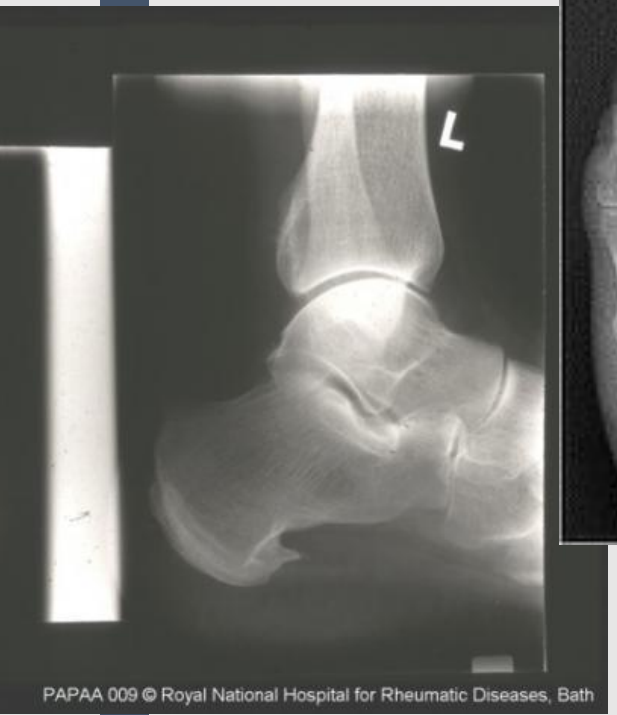
UpToDate

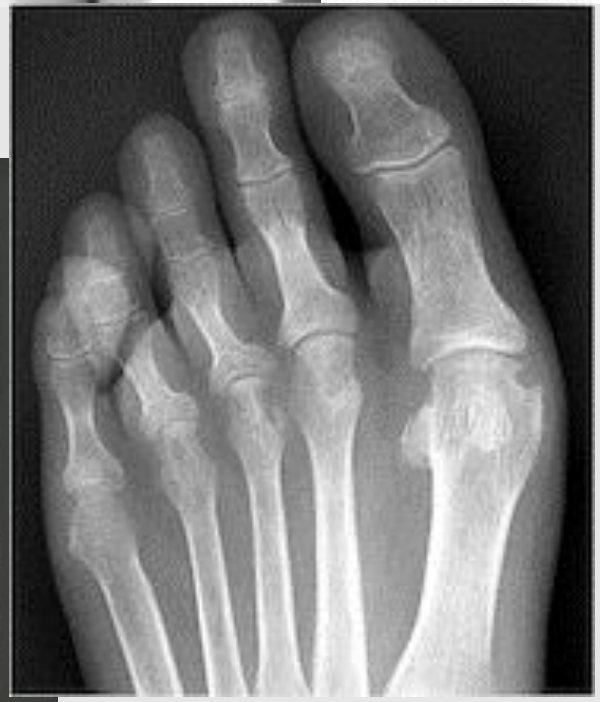


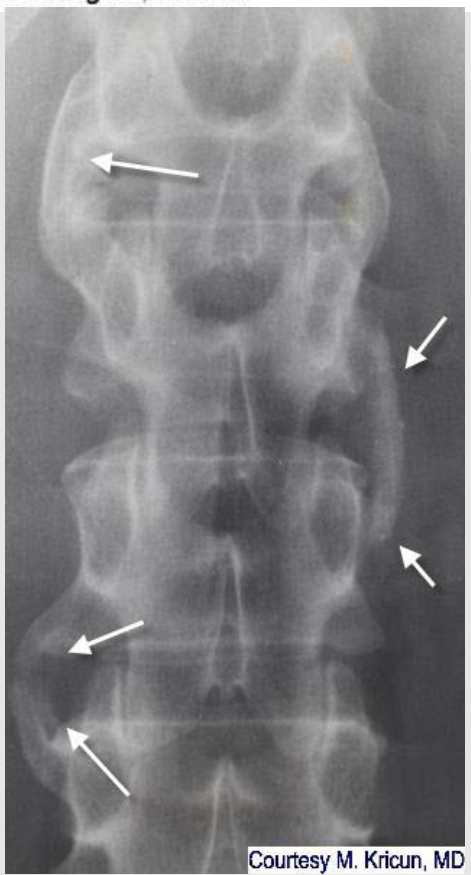



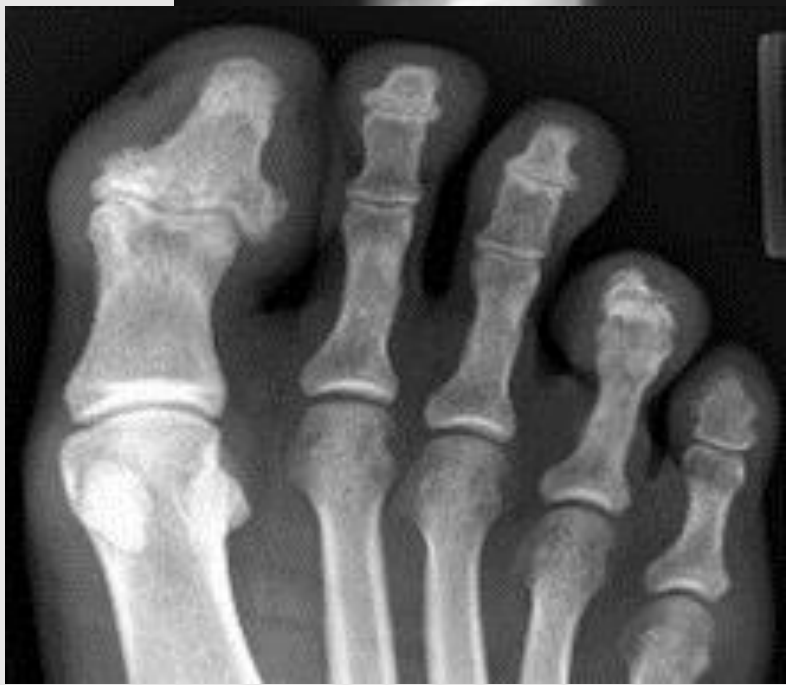

Acknowledgement: Peter Ory. Clinical Associate Professor of Radiology, University of Washington, Seattle







ACR, Medscape, PAPPA

# Treatment Options:

- Nonpharmacologic: PT, OT, exercise
- Peripheral Arthritis: NSAIDs, Methotrexate, Leflunomide
- Peripheral arthritis resistant to non biologic DMARDs or axial disease:
  - *Anti-TNF agents: Etanercept, Adalimumab, Golimumab, Cirtulizumab, and Infliximab.*
  - *Anti-IL17 agents: Secukinumab, Ixekizumab*
  - *Anti-IL12/23 agents: Ustekinumab*
  - *PDE-4 inhibitors: Apremilast. Can be used in combination*
  - *Jak inhibitors: Toficitinib*
  - *CTLA-4: Abatacept*
- Local Steroid injections are useful in the treatment of enthesopathies, synovitis and sacroiliitis.
- Use of oral glucocorticoids should be avoided, since their use is associated with an increased chance of developing erythroderma or pustular psoriasis

# Case #3

- A 24 year old male presents with a two week history of knee and ankle swelling associated with pain. He also has new onset low back pain. On review of systems he recalls that several weeks prior he had an episode of gastroenteritis with diarrhea, abdominal pain, and fever which have since resolved.
- On physical exam his abdomen is soft and nontender, lungs are CTAB. There is swelling of the left knee and right ankle as well as painful ROM.  Schober is negative.
- Xrays of the lumbar and SI joints were unremarkable.
- What is the most likely diagnosis?

# Reactive Arthritis

- Previously known as “Reiter’s syndrome”
- Patients typically present with an asymmetric oligoarthritis, usually 1-4 weeks following the inciting infection
- Enterogenic Form – Equal sex distribution
- Urogenital Form – Predominantly male
- Genetics: 30-50% of ReA pts have HLA-B27
- 40% of patients may have axial symptoms  and 25% develop radiographic changes
- Diagnosis of reactive arthritis is a clinical diagnosis based upon the pattern of findings and exclusion of other diseases

RheumSecrets, UpToDate

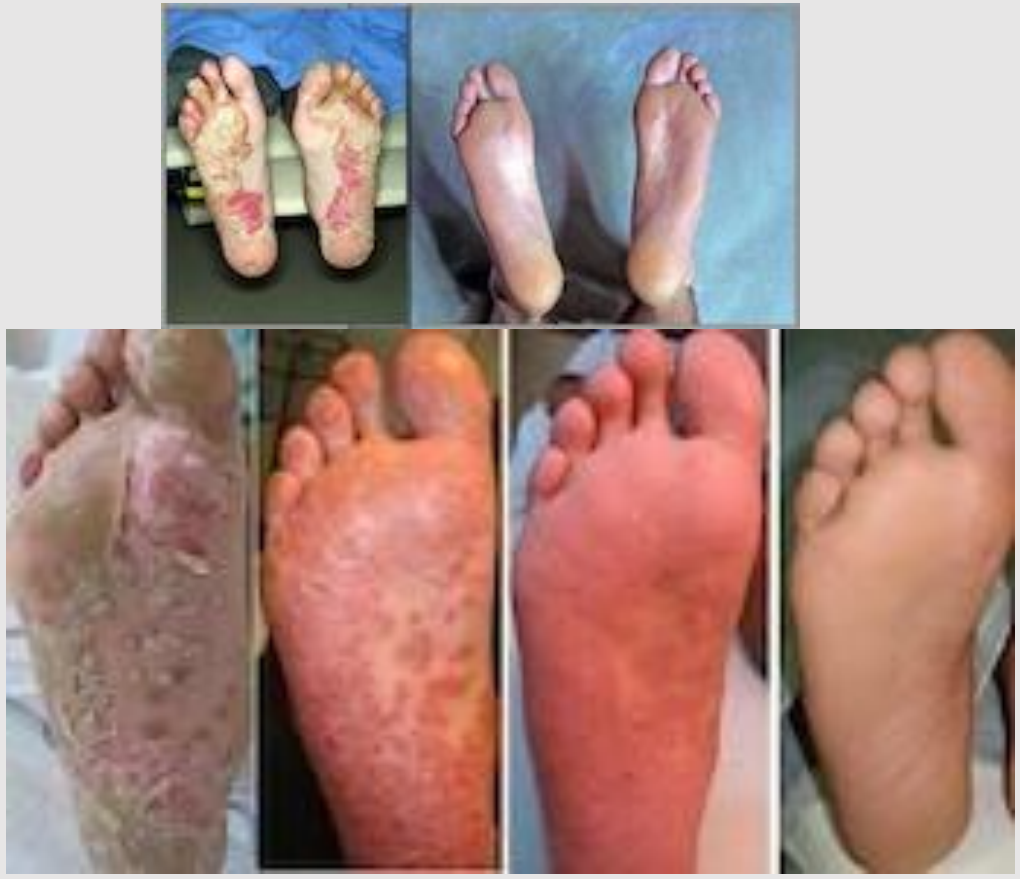
# What infection may have triggered his arthritis?

# Reactive Arthritis Causes

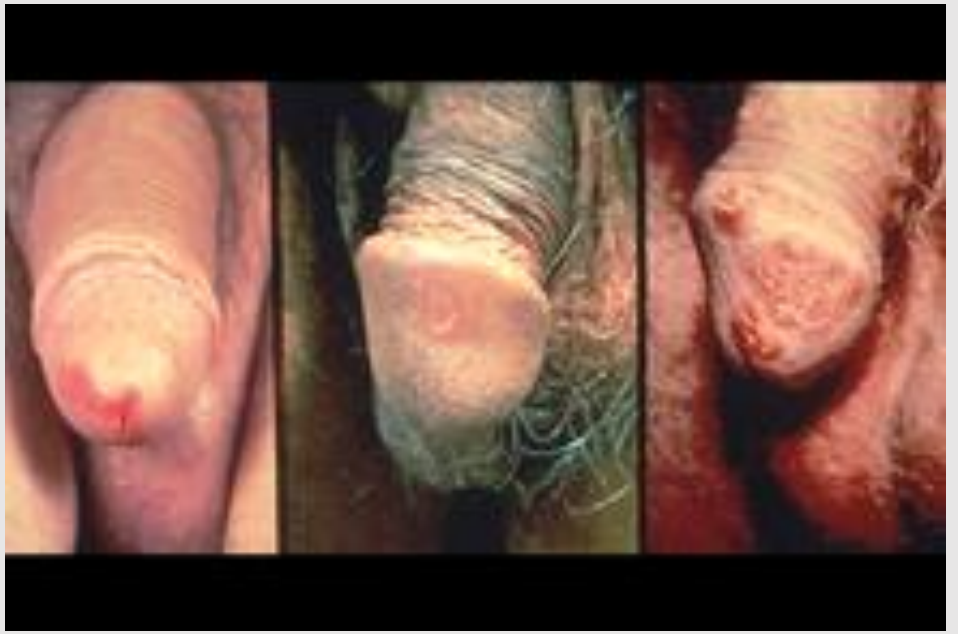
- GU: Chlamydia Trachomatis, Neisseria Gonorrhea and Ureaplasma Urealyticum
- GI: Shigella, Campylobacter, Yersinia, Salmonella, C. Diff, Vibrio
- Others:
  - *Chlamydia Pneumonia*
  - *Borellia Burgdorferi*
  - *Streptococcus*
  - *Hepatitis C*
  - *Giardia Lamblia*
  - *Mycoplasma*
  - *Intravesical Bacillus Calmette-Guerin (BCG)*

# Cutaneous lesions characteristic of ReA

## Keratoderma Blennorrhagicum



## Circinate Balanitis



ACR

# Treatment

- In at least 1/2 of patients, all symptoms resolve in less than six months
- In most patients, symptoms resolve within one year.
- Antibiotics are not used to treat the arthritis but may be indicated for treatment of the underlying infection if evidence of ongoing infection.
- Acute Reactive Arthritis – NSAIDs, Intrarticular or Oral Steroids (Brief course) if inadequate response
- Chronic Reactive Arthritis (more than 6 months) - nonbiologic DMARD, usually sulfasalazine or methotrexate
- Refractory Arthritis - Tumor necrosis factor (TNF) inhibitor

UpToDate

- Questions?