

# AMSER Case of the Month

## November 2020

58-year-old male presents for back pain

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# Patient Presentation

- 58-year-old obese, white male presented to his rheumatologist for worsening pain in his back and right foot pain
- 2 weeks prior to presentation, the patient was working on a vehicle and began having severe right-sided leg cramps
  - This progressed to leg weakness
- Patient reports mid-back pain rated a 6/10 on the pain scale, increased neck pain, and deep groin pain
- He had stopped his Humira (adalimumab) for 4 weeks due to concerns about COVID-19
- **PMHx:** Type II diabetes mellitus, gout, ankylosing spondylitis, osteoarthritis, coronary artery disease
- **PSHx:** Appendectomy, cervical laminectomy w/ arthrodesis, femur/knee surgery, triple coronary artery bypass grafting
- **Family Hx:** Type II diabetes mellitus, hypertension, heart disease

# Physical Exam

- **Blood pressure:** 130/82
- **Pulse:** 62
- **Respirations:** 17
- **Weight:** 283 lbs (128.4 kg)
- **General:** Obese man in no acute distress, no diaphoresis
- **Neck:** Limited range of motion (unchanged), no thyromegaly
- **Musculoskeletal:** Kyphosis of thoracic spine, mid-thoracic tenderness, right-sided tenderness from thoracic to lumbar spine, negative modified straight leg raise on right, negative leg roll on right, mild joint line tenderness on bilateral knees
- **Neurologic:** 4/5 strength in right leg, no focal deficits, no abnormal muscle tone, normal coordination

What Imaging Should We Order?  
Why?

# ACR Appropriateness Criteria

**Clinical Condition:** Chronic Back Pain: Suspected Sacroiliitis/Spondyloarthropathy

**Variant 5:** Spine ankyloses. Suspected fracture.

Radiologic Procedure	Rating	Comments	RRL*
CT spine area of interest without IV contrast	9	Required as standard of care for exclusion of fracture in patients with ankylosis.	Varies
X-ray spine area of interest	8	If negative, additional imaging required.	Varies
MRI spine area of interest without IV contrast	8	This procedure should be performed in patients with neurologic symptoms.	0
Tc-99m bone scan with SPECT spine	2	This procedure may be helpful to localize source of pain, but generally not helpful for establishing an inflammatory diagnosis.	☼☼☼
CT spine area of interest with IV contrast	1		Varies
CT spine area of interest without and with IV contrast	1		Varies
MRI spine area of interest without and with IV contrast	1		0
FDG-PET/CT whole body	1		☼☼☼☼
<b>Rating Scale:</b> 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			<b>*Relative Radiation Level</b>

← What was ordered by rheumatologist

Why?

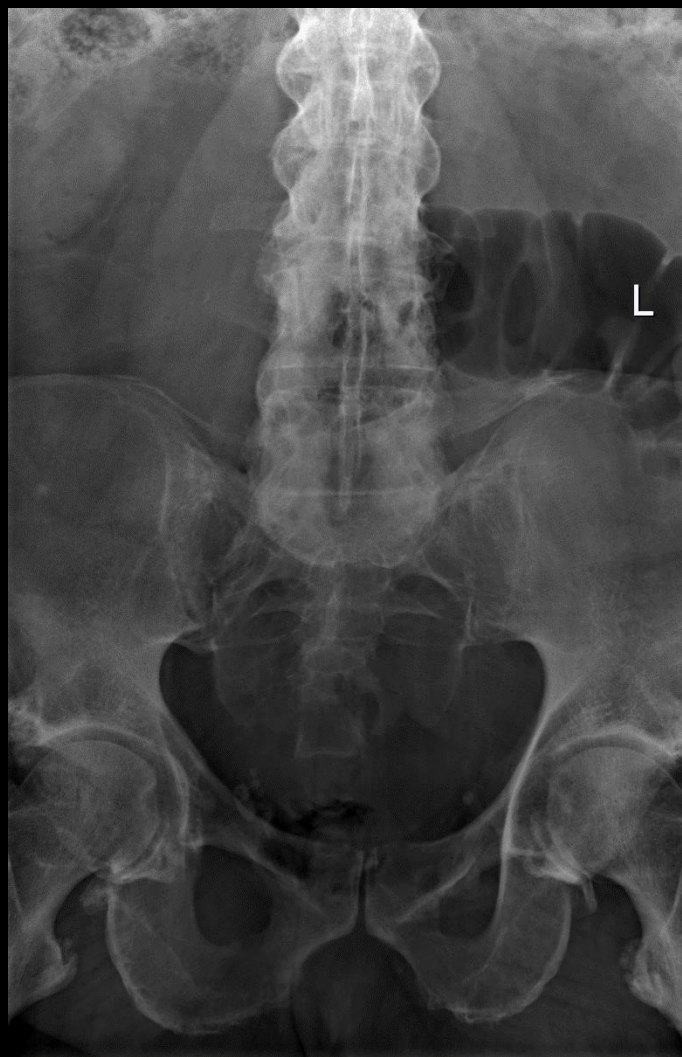
- Because of known Ankylosing spondylitis, DDx included fracture



# X-Rays of Thoracic and Lumbar Spine (unlabeled)



Sagittal Thoracic

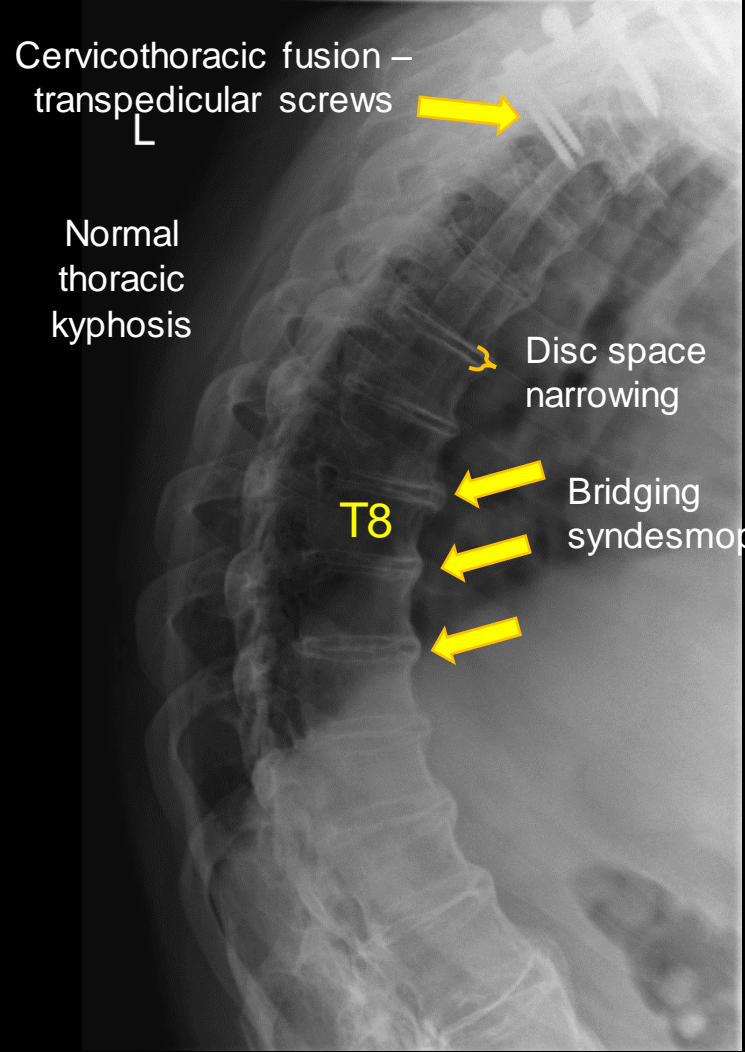


AP Lumbar

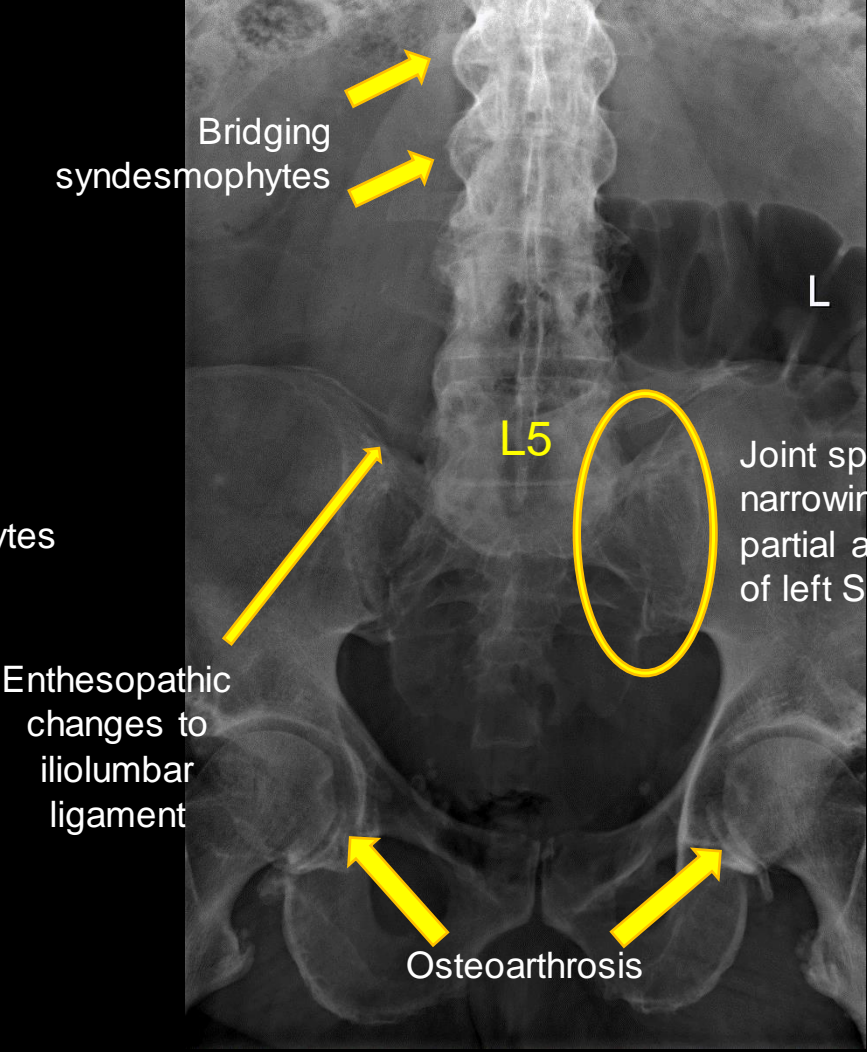


Sagittal Lumbar

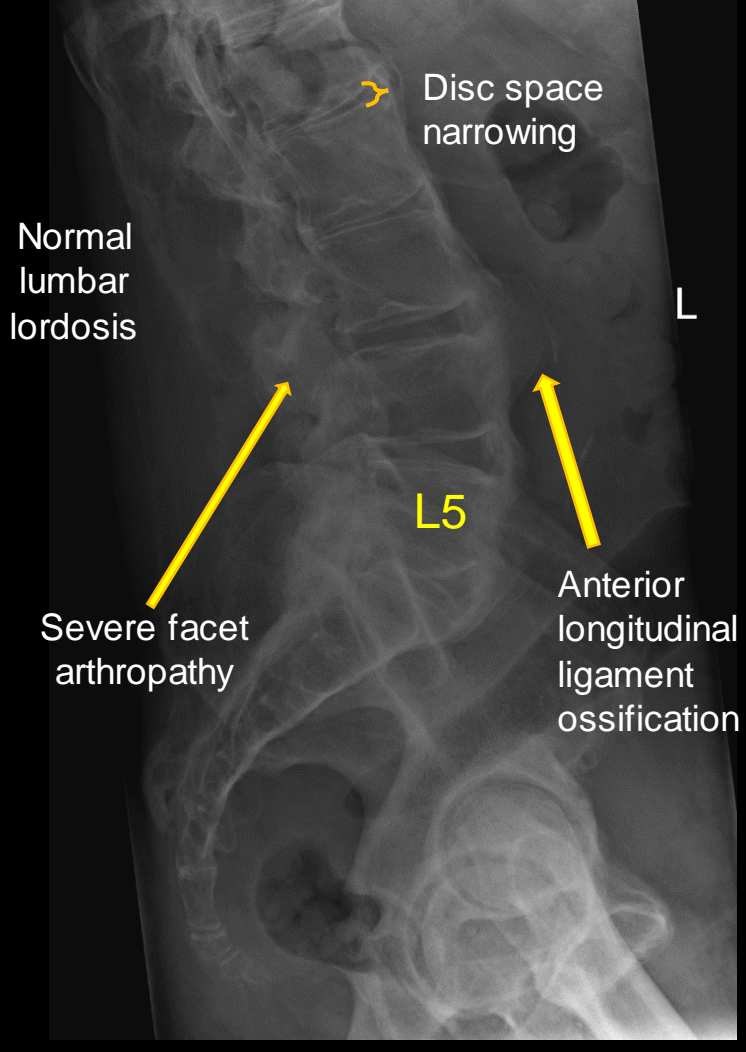
# X-Rays of Thoracic and Lumbar Spine (labeled)



Sagittal Thoracic



AP Lumbar



Sagittal Lumbar

Final Dx:

Ankylosing Spondylitis with Partial Ankylosis of Left  
Sacroiliac Joint

No Fractures



# Treatment

- Given a 7-day prescription of methylprednisolone for his leg pain and weakness
- Instructed to continue his Humira
- Counseled on weight loss and core strengthening to maintain joint and muscle health

# Case Discussion: Ankylosing Spondylitis

- **Ankylosing spondylitis**

- Chronic inflammatory disease spondyloarthropathy - affects the sacroiliac joints and spine
- Seronegative → rheumatoid factor negative
- Also known as Bechterew disease and Marie Strümpell disease

- **Differential Diagnoses: Other spondyloarthropathies**

- Psoriatic arthritis
- Inflammatory bowel disease-related arthritis
- Reactive arthritis

# Case Discussion: Ankylosing Spondylitis

- **Epidemiology**

- Peak onset: 20 to 30 years old
- 80% develop first symptoms before age 30
- Male to female ratio 2-3:1
- Human leukocyte antigen (HLA)-B27 positive
  - 90% of ankylosing spondylitis patients are HLA-B27 positive
  - 5-6% of HLA-B27 positive patients will develop ankylosing spondylitis

- **Risk Factors**

- Increased risk among relatives
  - Monozygotic twins – highest risk
  - First-degree relatives > second-degree relatives > third-degree relatives

# Case Discussion: Ankylosing Spondylitis

## • Signs/Symptoms

- Back pain
  - Spine and sacroiliac joints
  - Improves with exercise and NSAIDs
  - Pain at night/with decreased activity
- Peripheral arthritis
- Costovertebral, manubriosternal, sternoclavicular, and costochondral inflammation
- Enthesitis - inflammation of extraspinal connective tissue between tendon/ligament and bone
- Dactylitis
- Impaired spinal mobility
- Postural abnormalities – hyperkyphosis

## • Complications and Comorbidities

- Low bone mineral density
- Spinal fragility fractures
  - Three-column “chalk stick” fractures can be a serious complication
- Atlantoaxial subluxation
- Nerve root compression
- Renal disease
  - Glomerulopathy
  - IgA nephropathy
  - Renal amyloidosis
- Cardiovascular disease
- Anterior uveitis
- Apical pulmonary fibrosis
- Psychosocial health problem

# Case Discussion: Ankylosing Spondylitis

- **Diagnosis**

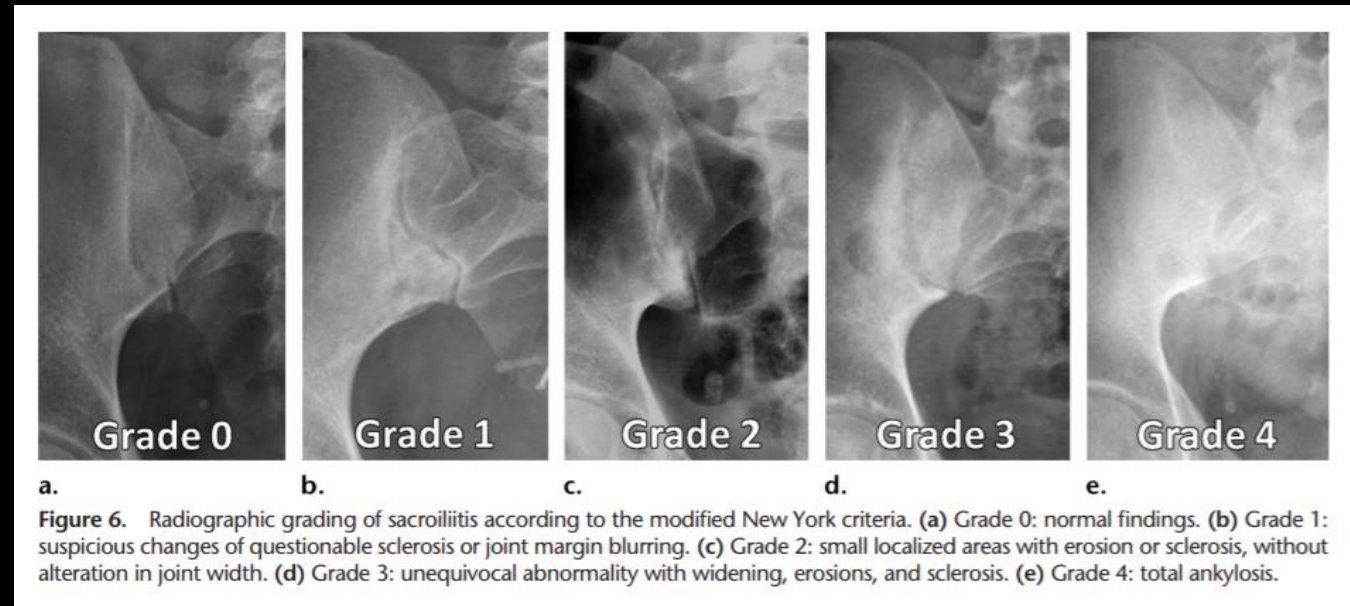
- X-ray of the pelvis and lumbar spine – look for sacroiliitis
- If radiographs are negative:
  - Test for HLA-B27 and C-reactive protein
  - MRI:
    - With inflammatory sacroiliac symptoms → with and without contrast
    - With inflammatory back symptoms → without contrast

# Case Discussion: Ankylosing Spondylitis

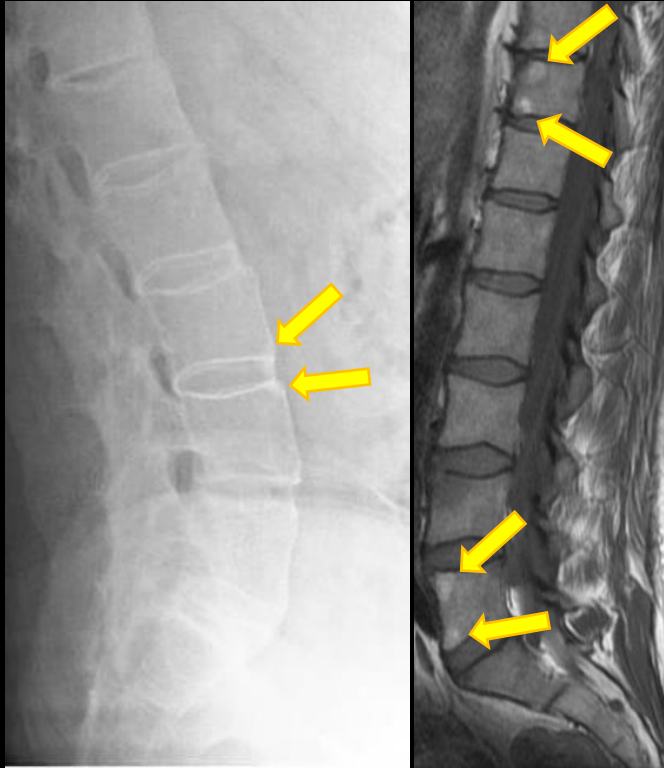
- Radiographic findings

- Grading sacroiliitis

- Grade 0 - normal
- Grade 1 – some blurring of the joint margins
- Grade 2 – minimal sclerosis with some erosions
- Grade 3 – definite sclerosis on both sides of joint OR severe erosions with widening of the joint space, with or without ankylosis
  - Seen in this patient
- Grade 4 – complete ankylosis

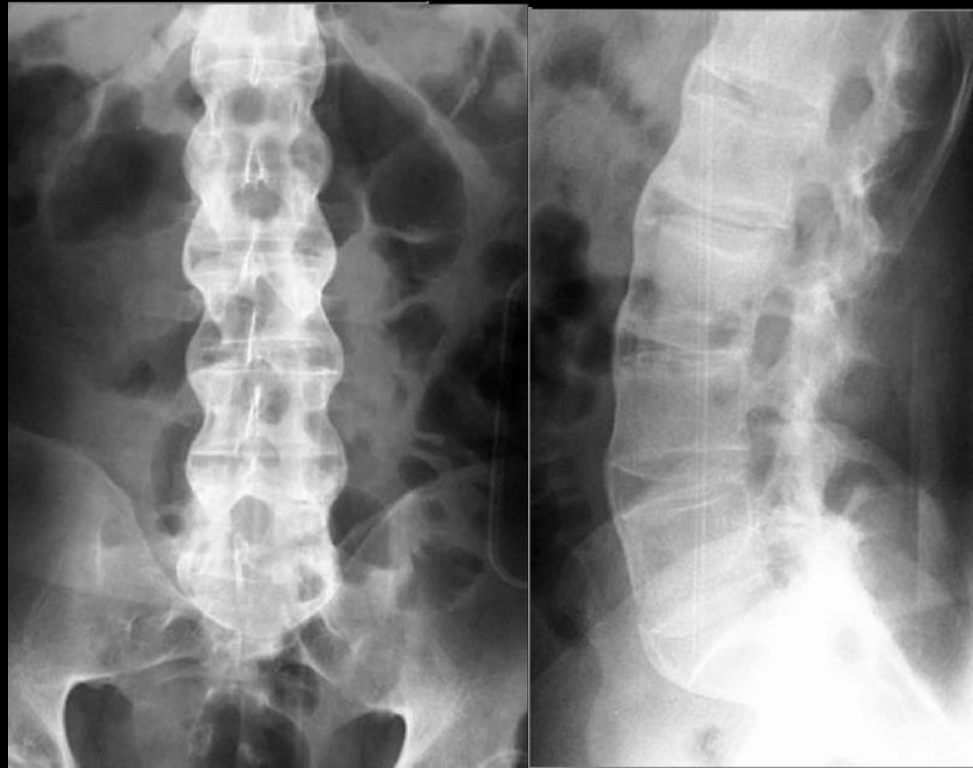


# Case Discussion: Ankylosing Spondylitis



Shiny Corner sign

- Reactive sclerosis – inflammatory erosions at the superior and inferior endplates of the vertebral bodies



Bamboo spine

- Vertebral body fusion by syndesmophytes
- Posterior vertebrae elements may also fuse



Dagger sign

- Ossification of the supraspinous and interspinous ligaments

# Case Discussion: Ankylosing Spondylitis

- **Treatment**

- Initial therapy

- Non-pharmacologic

- Education about their disease and life-long exercise and postural training
      - Smoking cessation
      - Depression screenings and psychosocial support
      - Physical therapy – postural training, range of motion exercises, stretching
      - Manipulation techniques – manual massage, mechanical vibrations, indirect osteopathic manipulative treatments

- Pharmacologic

- NSAIDs – naproxen, celecoxib, or ibuprofen

- NSAID therapy failure

- Inadequate response of 2 different NSAIDs for 2-4 weeks each
    - Tumor necrosis factor-alpha inhibitors - adalimumab, certolizumab, etanercept, golimumab, infliximab
    - Interleukin-17 inhibitors - Secukinumab, Ixekizumab



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