

Workshop



3^ο ΘΕΡΙΝΟ ΣΧΟΛΕΙΟ
ΑΚΤΙΝΟΛΟΓΙΑΣ
ΜΥΟΣΚΕΛΕΤΙΚΟΥ
“Η ΡΕΥΜΑΤΟΛΟΓΙΑ
ΣΥΝΑΝΤΑ
ΤΗΝ ΟΡΘΟΠΑΙΔΙΚΗ”
www.ssmr-2020.gr

ΔΕΡΜΑΤΟΛΟΓΙΑ
ΠΑΓΚΡΗΤΙΑ
ΕΝΩΣΗ
ΥΓΕΙΑΣ

23-25
ΟΚΤΩΒΡΙΟΥ
2020
ΗΡΑΚΛΕΙΟ
ΚΡΗΤΗΣ
Ibis Styles
Heraklion
Central

Συνδιοργανωτές:
Ρευματολογική Κλινική ΠΓΝΗ
Εργαστήριο Ιατρικής
Απεικόνισης ΠΓΝΗ



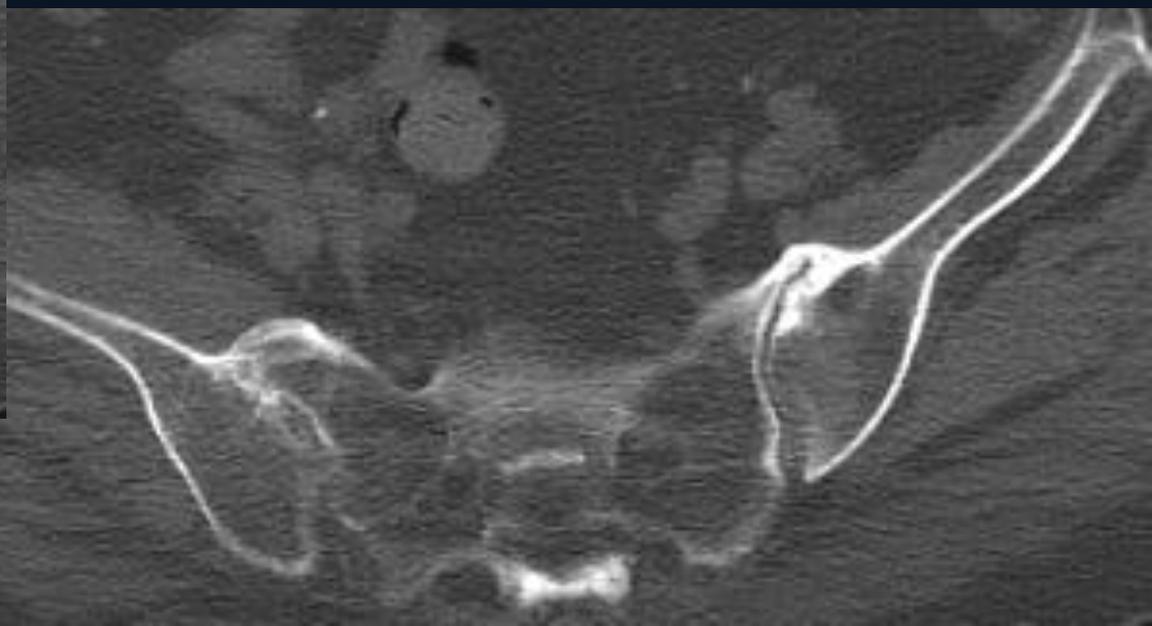
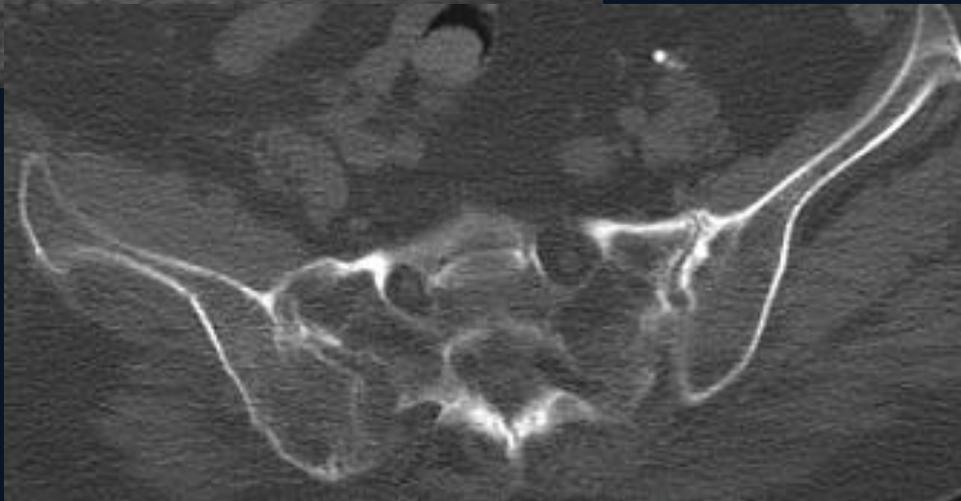
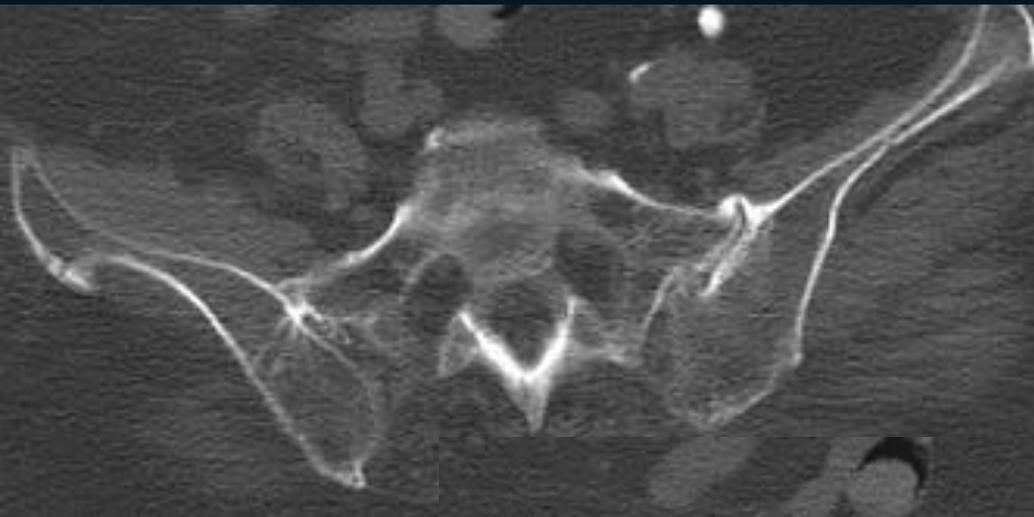
Apostolos Karantanas

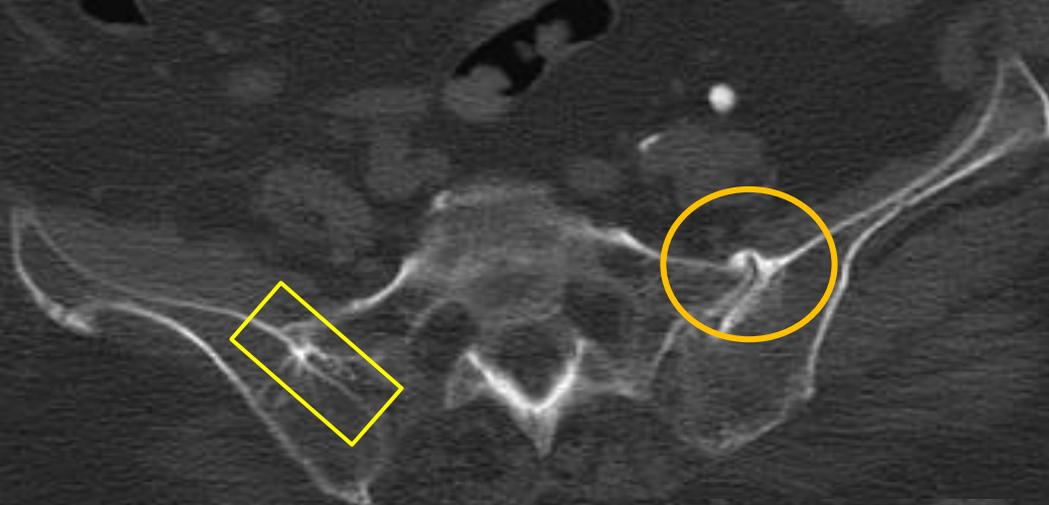
Professor of Radiology, University of Crete

Case 1 • 83-year-old female with long standing low back pain

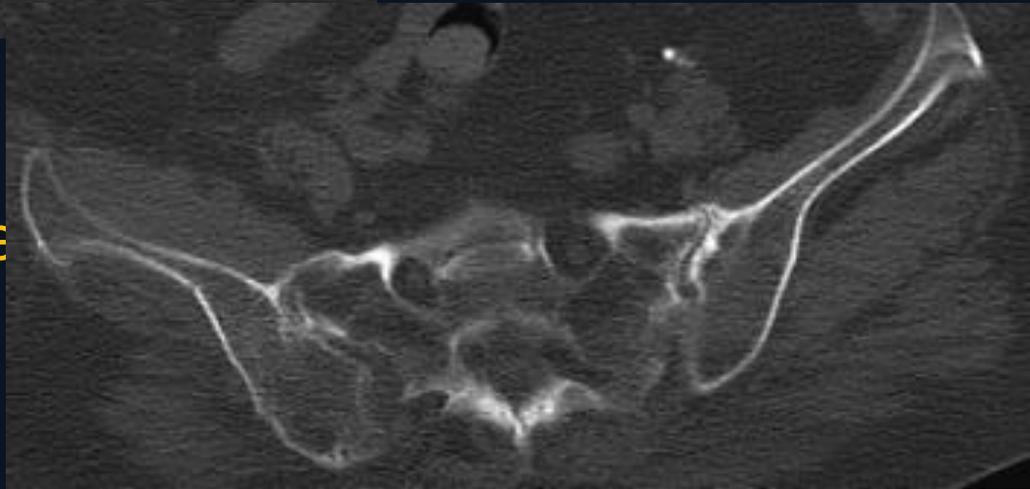
What is your diagnosis?

- A. Ankylosing spondylitis
- B. DISH
- C. Degenerative osteoarthritis
- D. Post-infectious “back-fill” effect





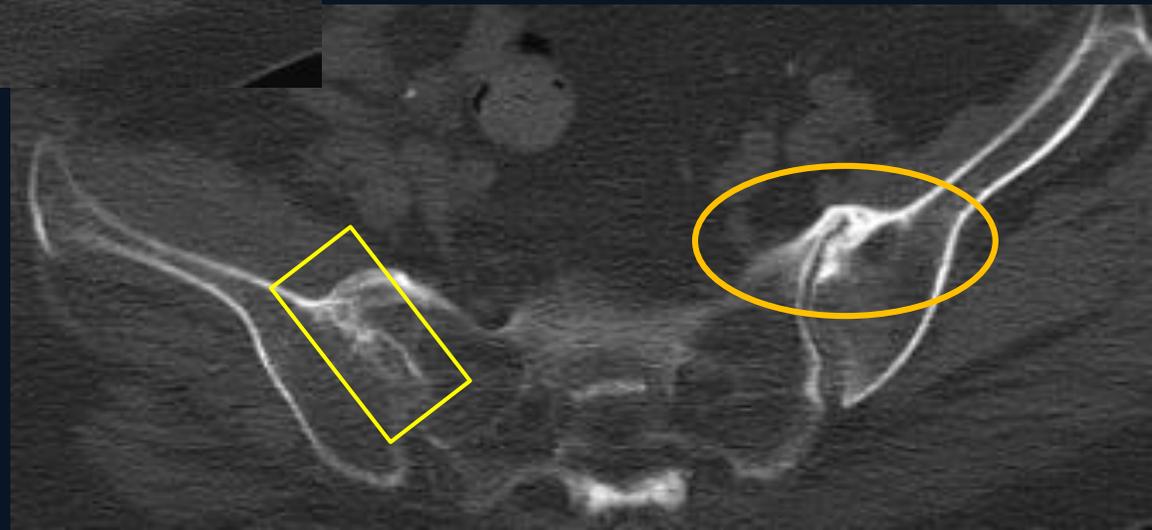
- A. Ankylosing spondylitis
- B. DISH
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- D. Post-infectious “back-fill” effect



Anterior bridging oste

steoarthritis

Ankylosis:
normal in the elderly



Male 28, Obese, Groin and left hip pain 2 m
Ten years ago, low back pain which lasted for 3 y
The patient did not seek any medical consultation in the past

Lab: >>CRP

PE: Restricted motion of the lower spine and left hip.
Tenderness in the pubis.

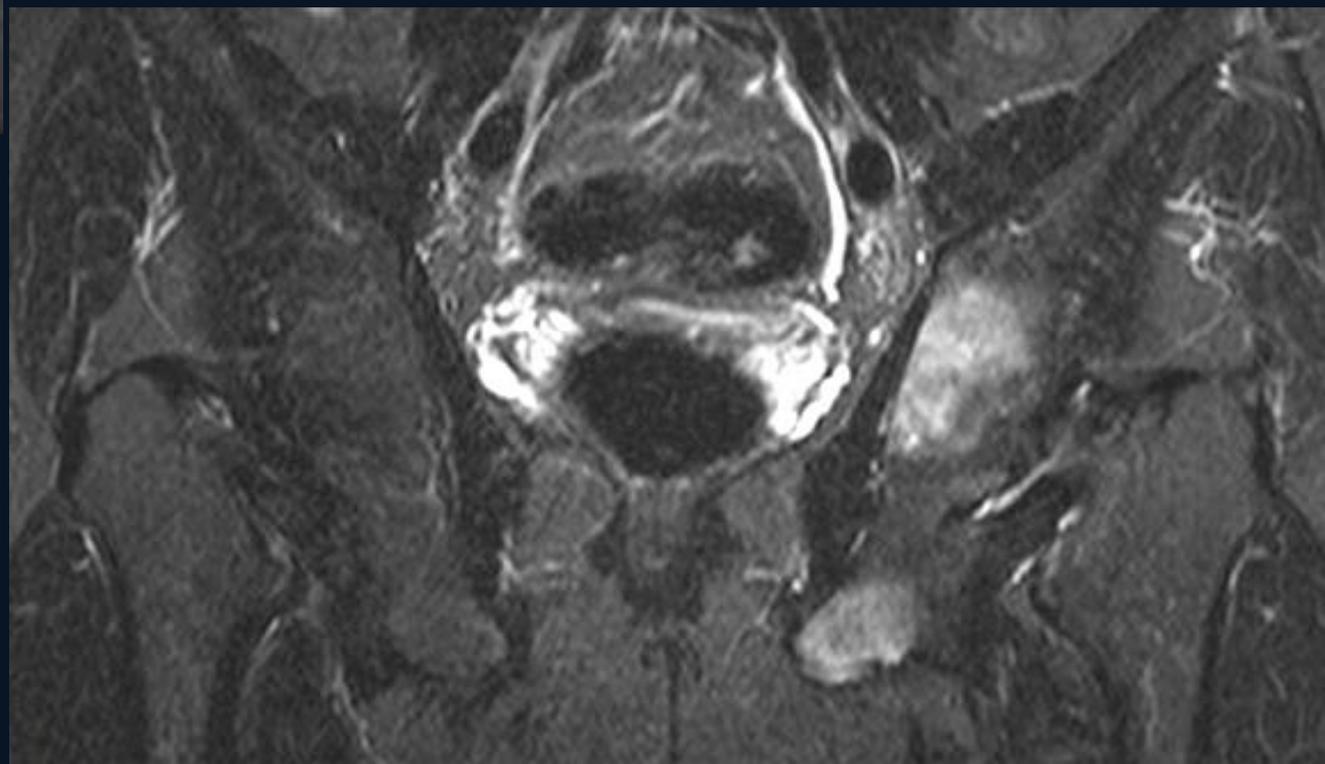
Case 2



FS T2-w TSE



STIR



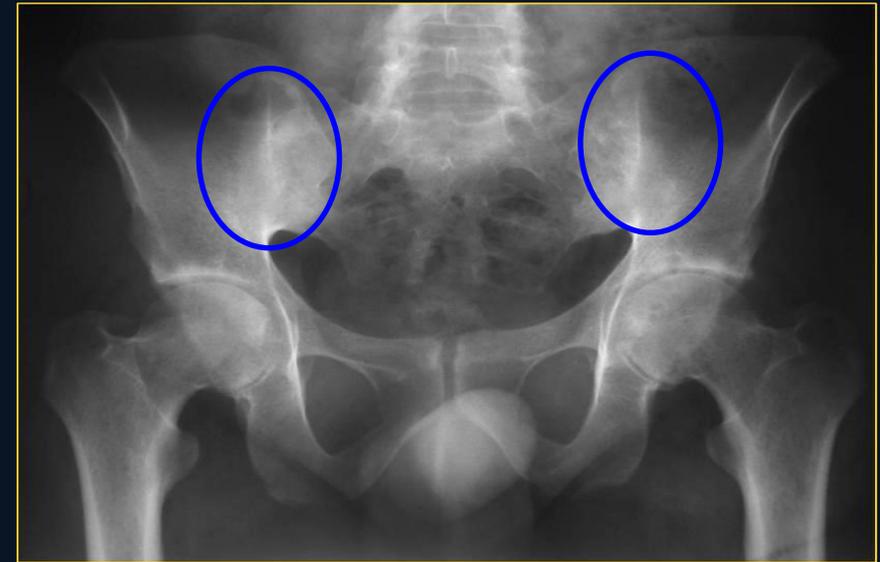
Choose the correct

A. Transient BME syndrome

B. Rheumatoid arthritis

C. Degenerative OA

D. Ankylosing spondylitis



Key points: AS

- 30-50% hip involvement, 90% bilateral
- Hip joint involvement in AS: poor prognosis
- The earlier the AS onset, the greater the risk of THA
- **Ro**: concentric JSN, marginal osseous erosions
- No new bone formation in the joint, absence of osteoporosis

Key points: AS

- Pubic symphysis involvement occurs late in the disease. BME is located anteriorly
 - ? Enthesopathy
 - ? Pelvic instability
- BME in the absence of enthesitis
 - Stress reaction due to stiff axial skeleton

Suggestions:

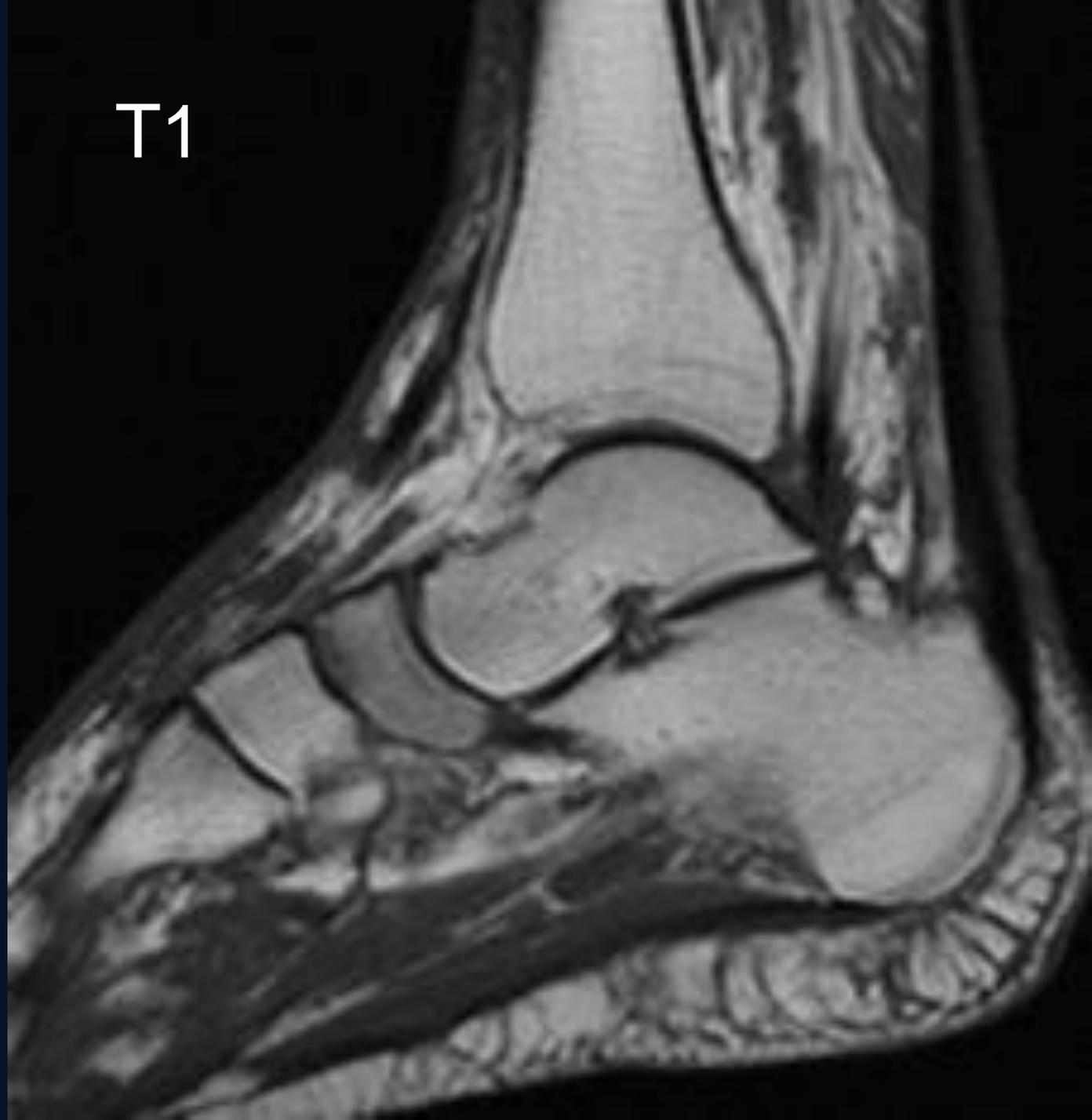
Boutry N, et al. Eur J Radiol 2007

Braun & Sieper, Lancet 2007

Case 3

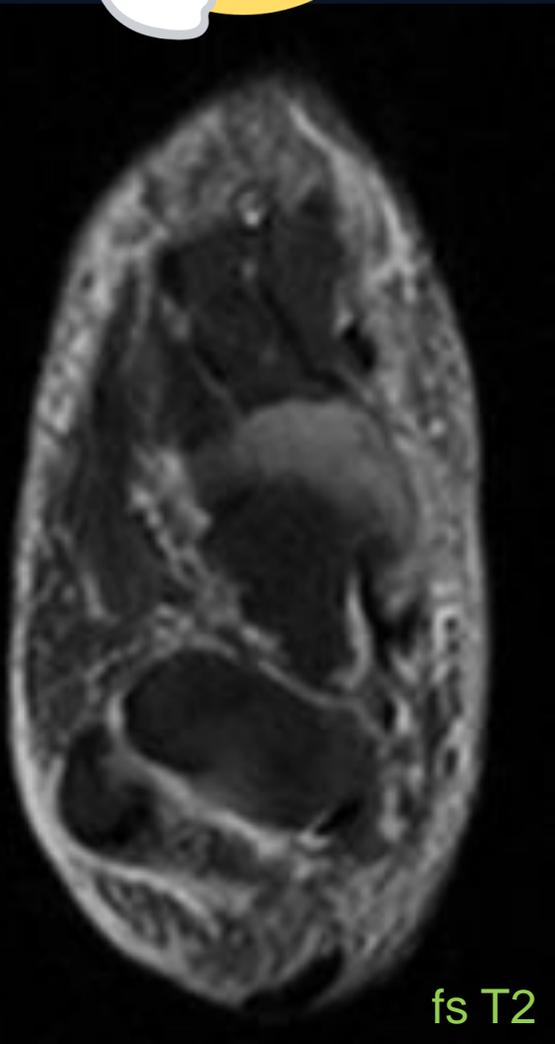
- 64f housewife
- 20y RA hands
- Hx of steroid administration
- No trauma or overuse
- Pain in the midfoot

T1

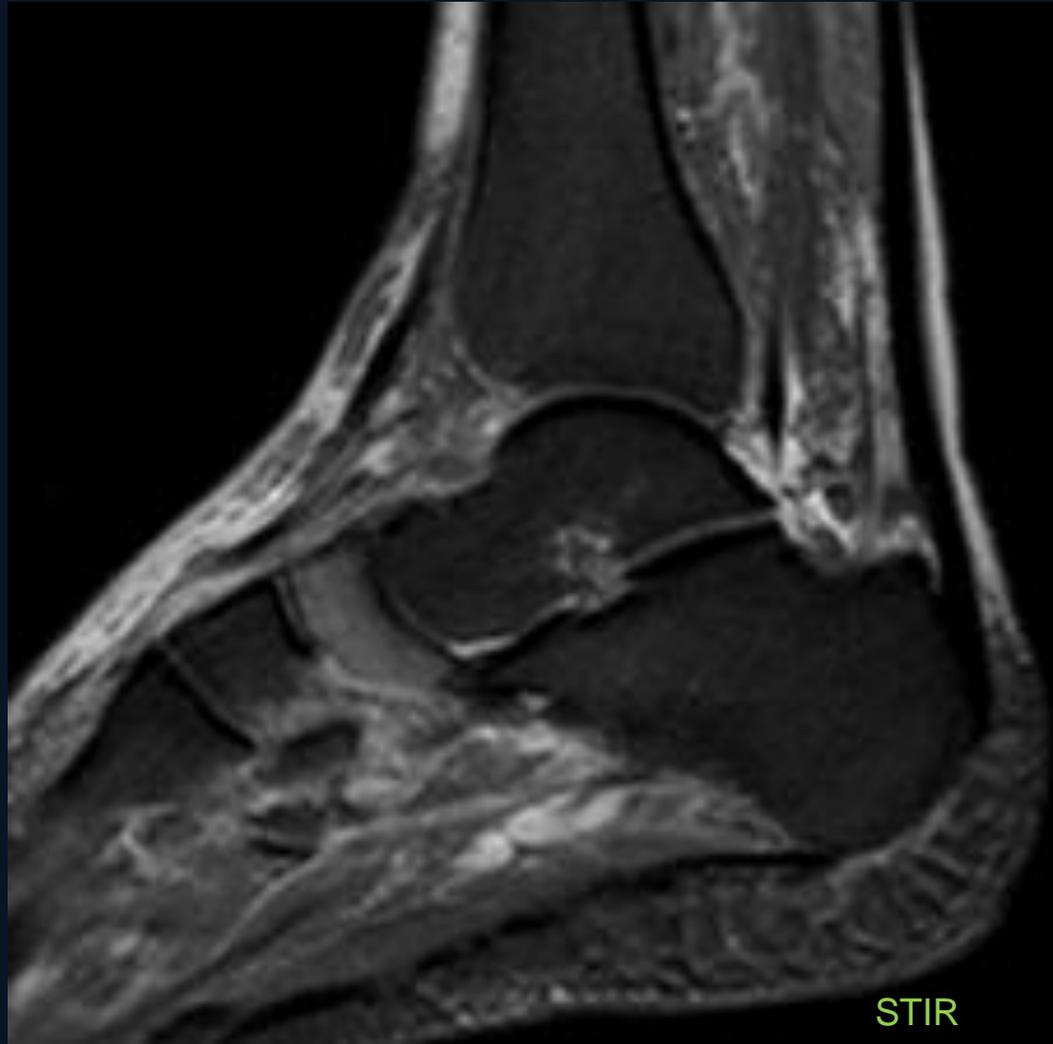




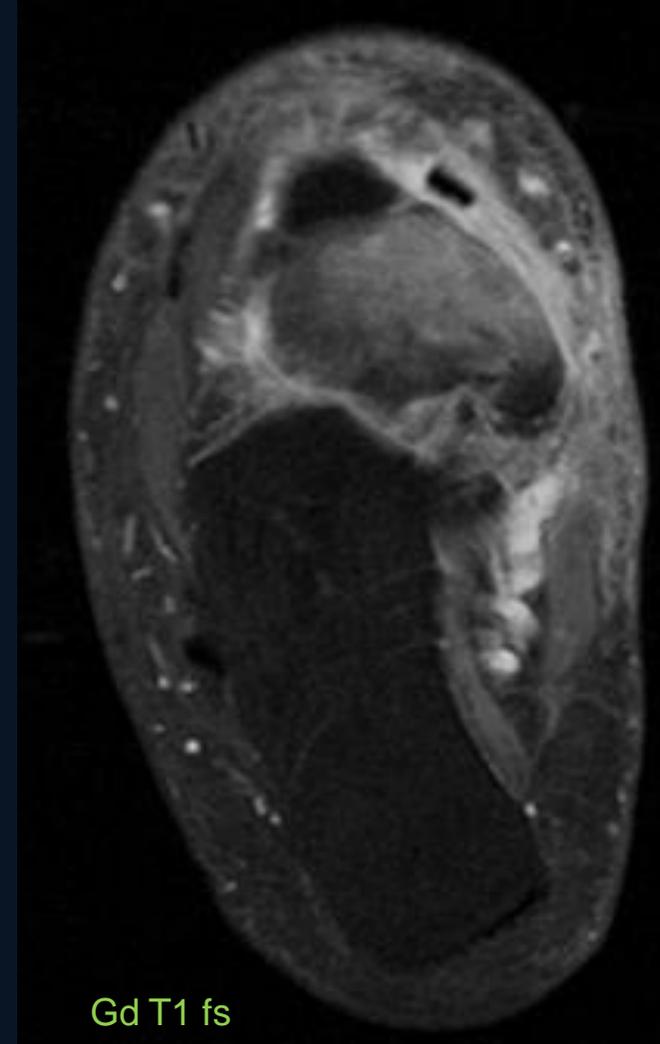
Microtrabecular insufficiency fracture, dd Mueller Weiss



fs T2



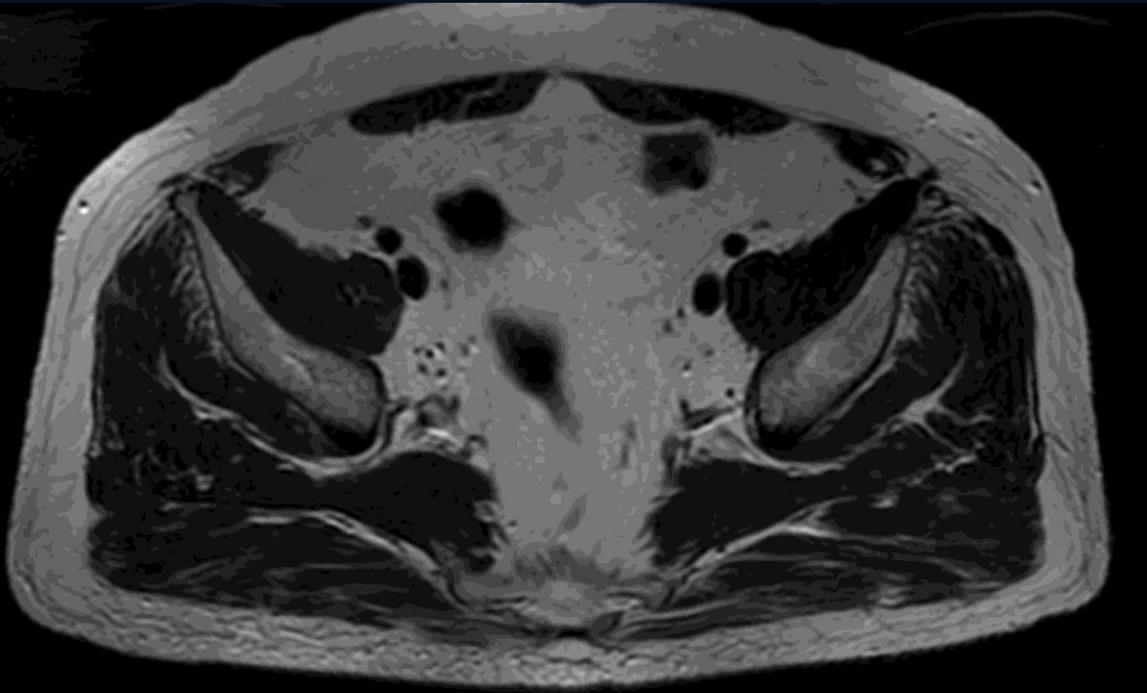
STIR



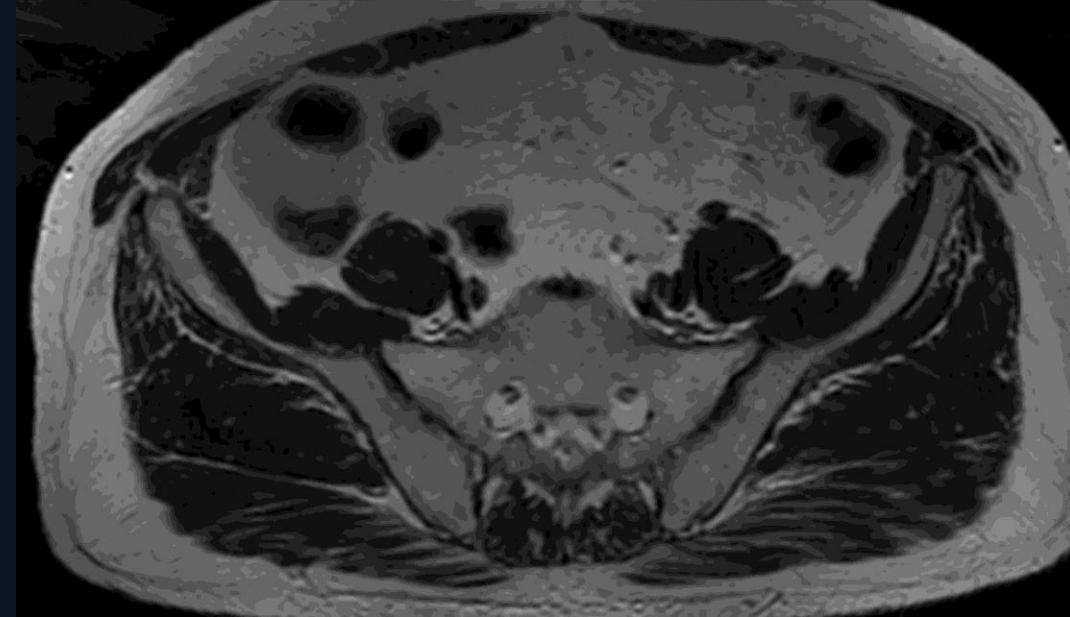
Gd T1 fs

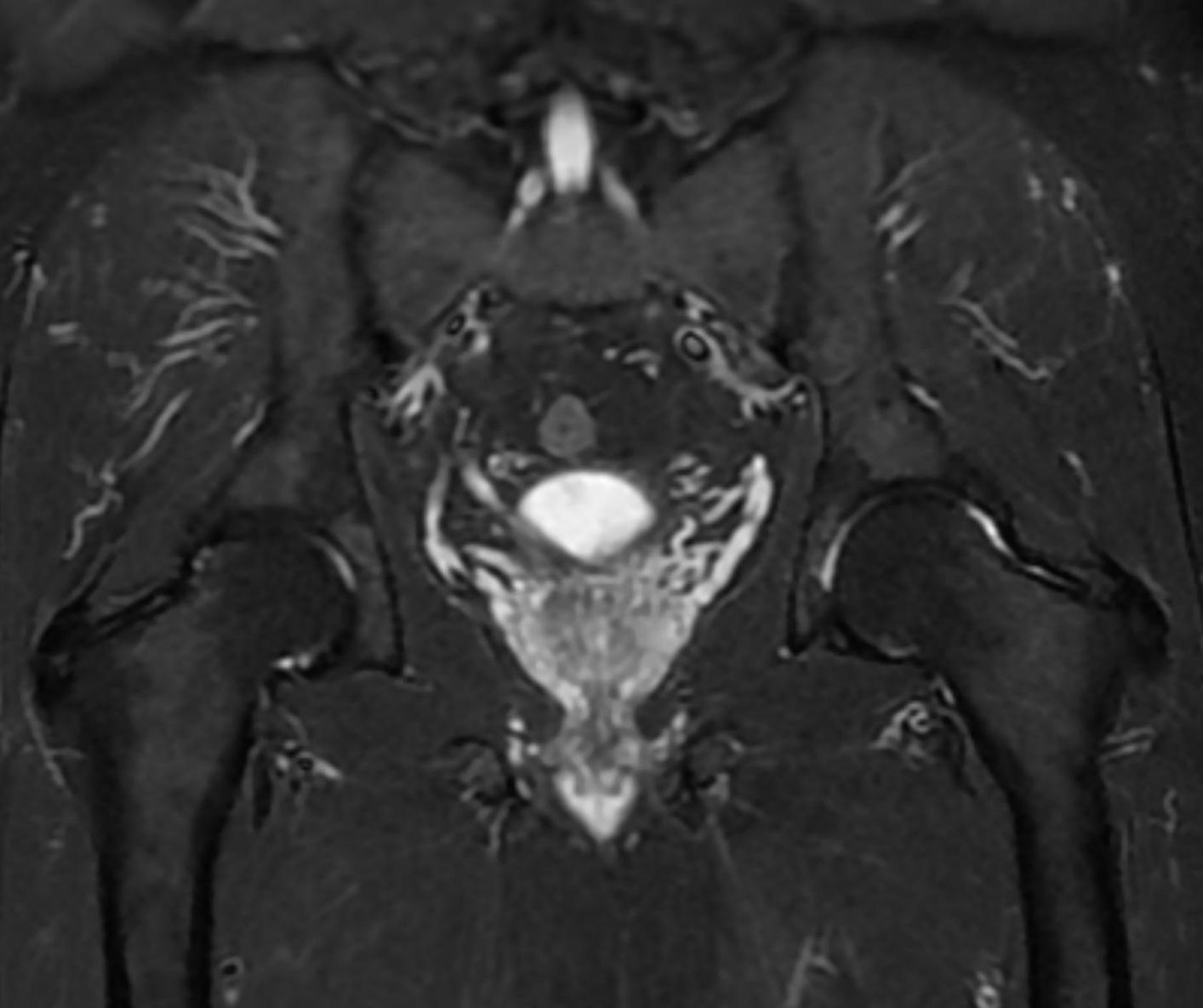
Case 4

- 59m, Priest
- MRI to explore “piriformis s.”
- Hx: 21y LBP, no diagnosis
- PE: hips limited ROM

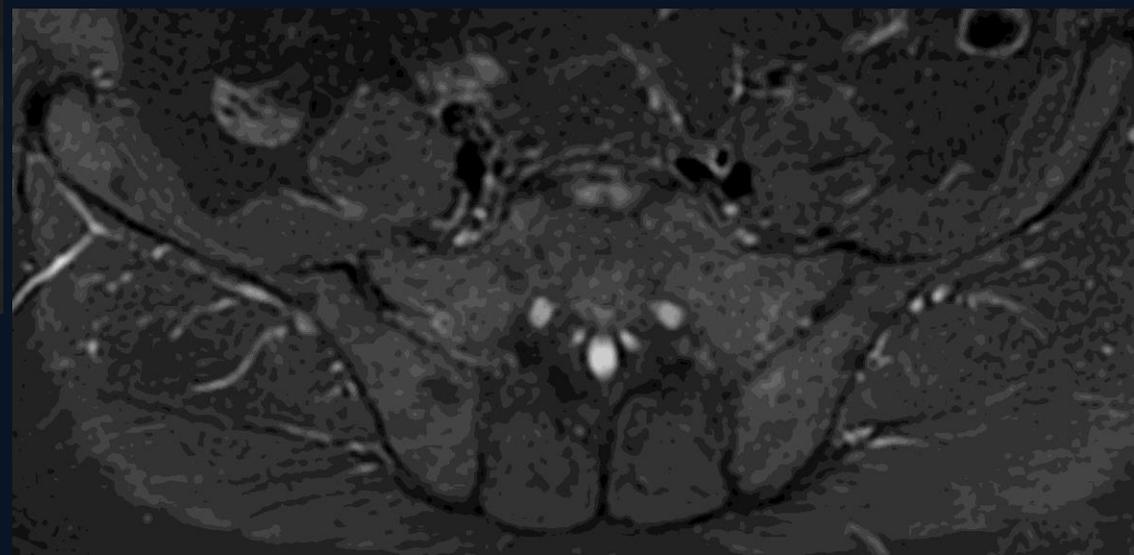


T2





STIR

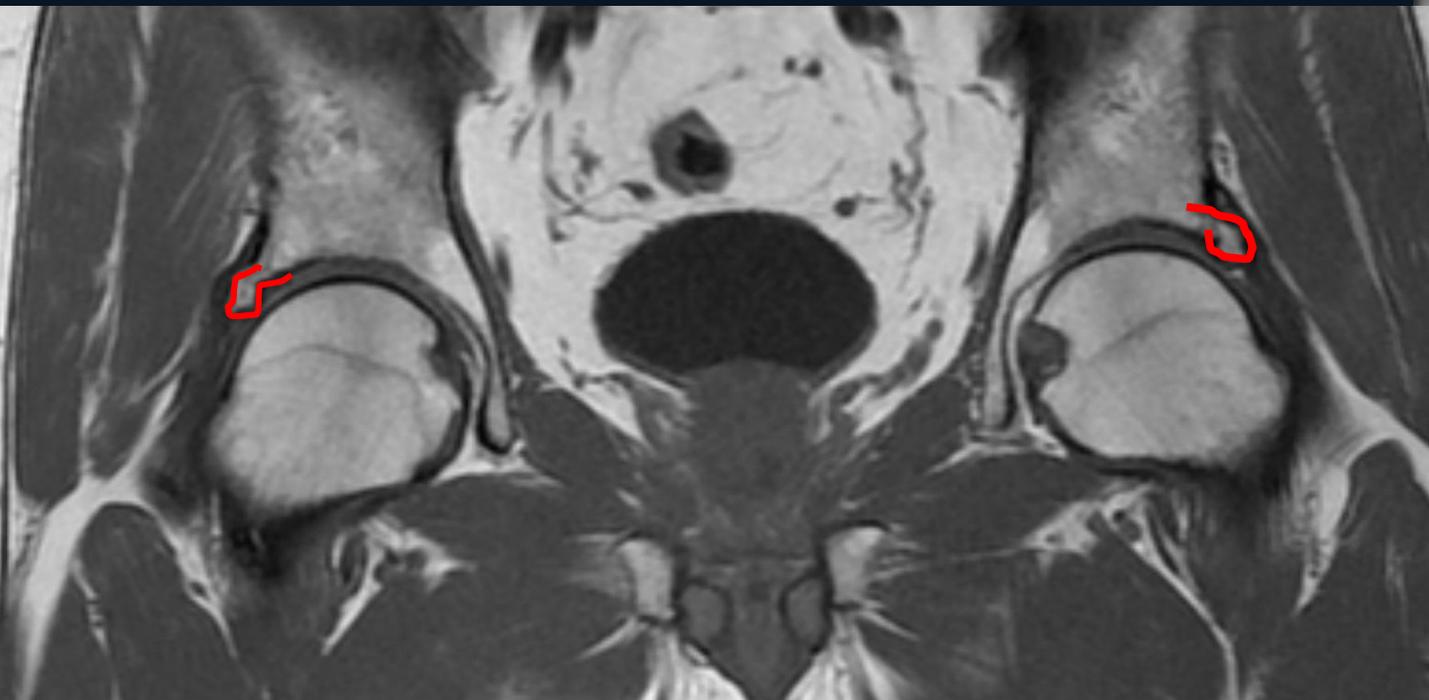
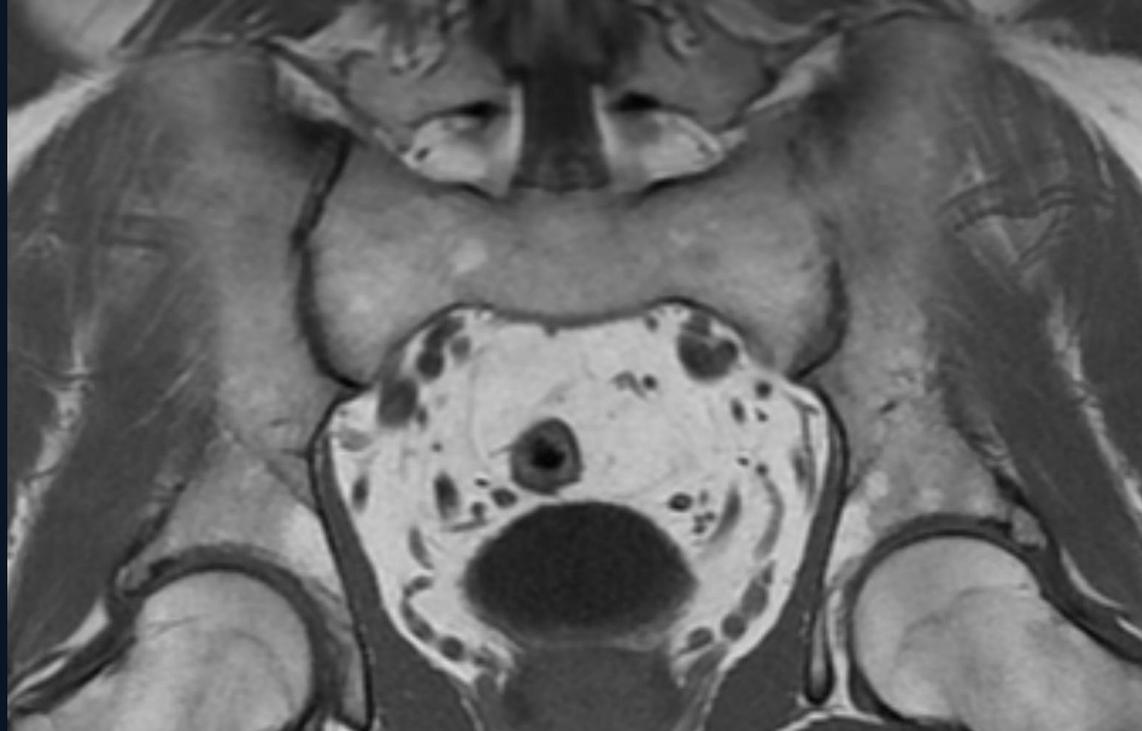


Ankylosing spondylitis

No active disease

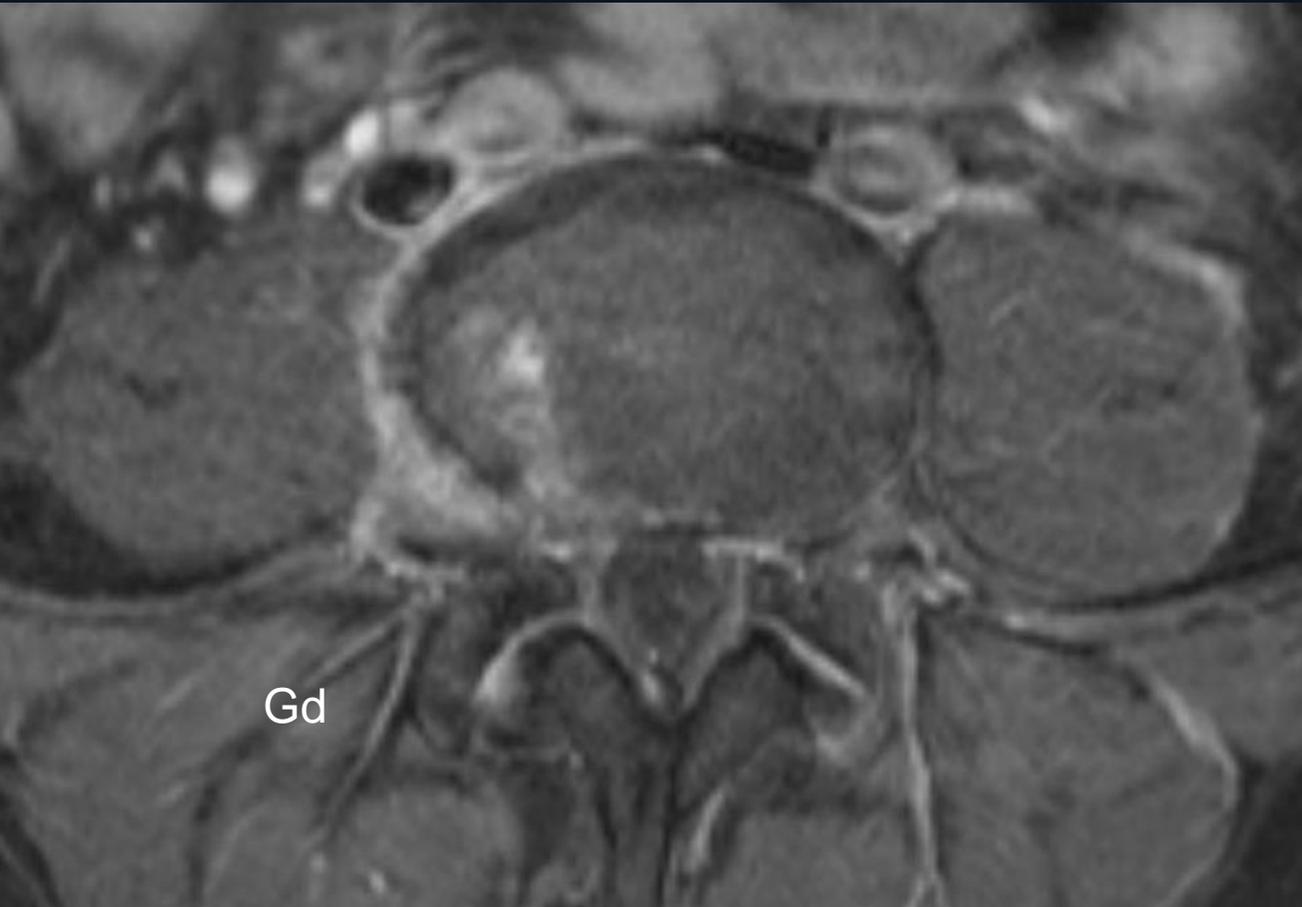
Enthesophytes 

“Pincer” type FAI



Case 5 • 44f, breast ca 3y, LBP 4y, R. sciatica 3m

scintigraphy \Rightarrow mets

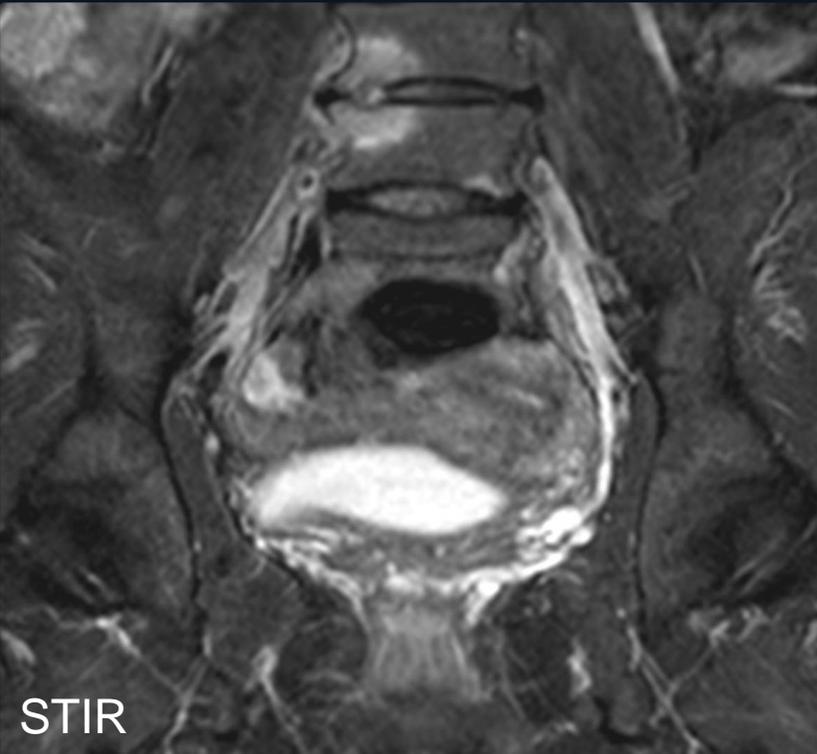


44f, breast carcinoma 3y, LBP 4y, R. sciatica 3m
scintigraphy  mets

What is your diagnosis?



- A. Metastatic disease
- B. MODIC I changes
- C. Septic spondylodiscitis
- D. Axial spondyloarthritis

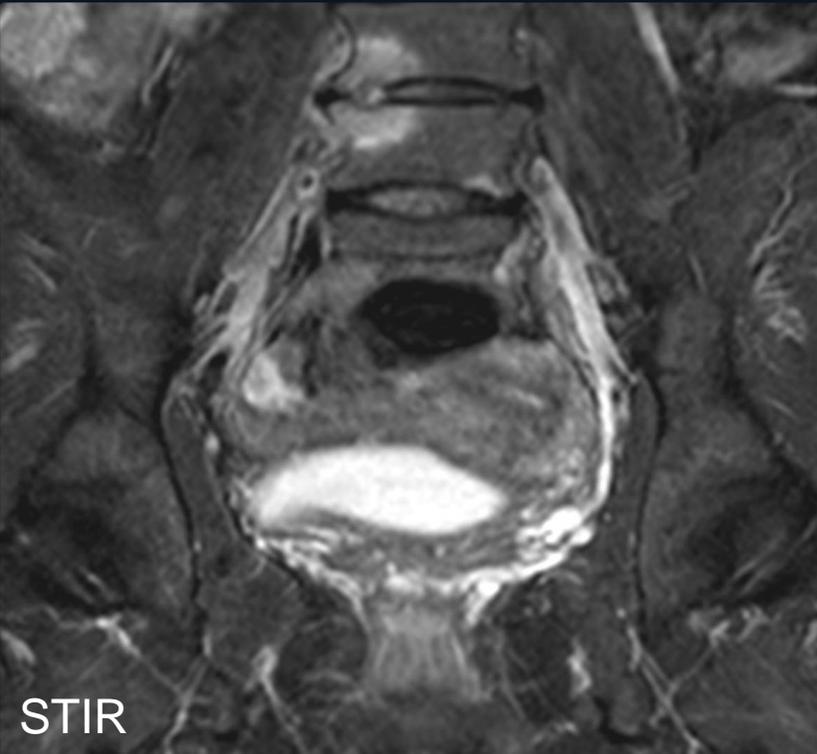


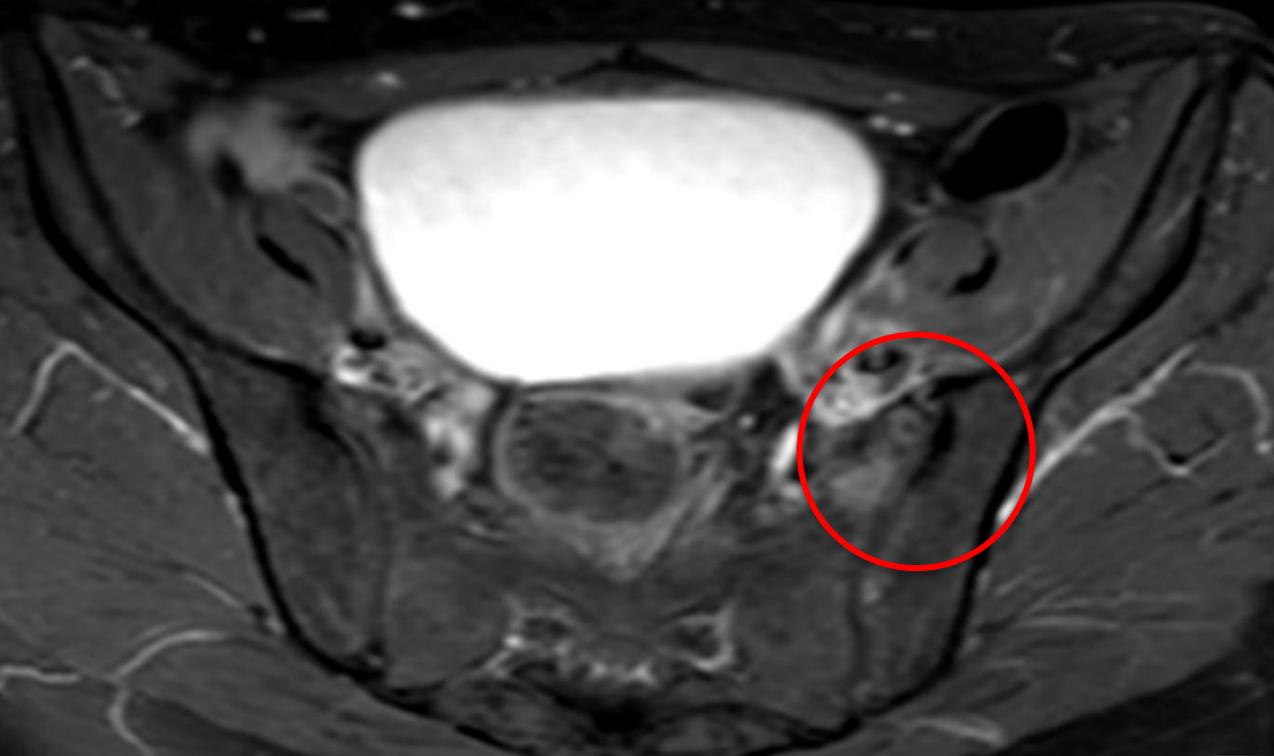
Gd

44f, breast carcinoma 3y, LBP 4y, R. sciatica 3m
scintigraphy  mets

What is your diagnosis?

- A. Metastatic disease
- B. MODIC I changes
- C. Septic spondylodiscitis
- D. Axial spondyloarthritis

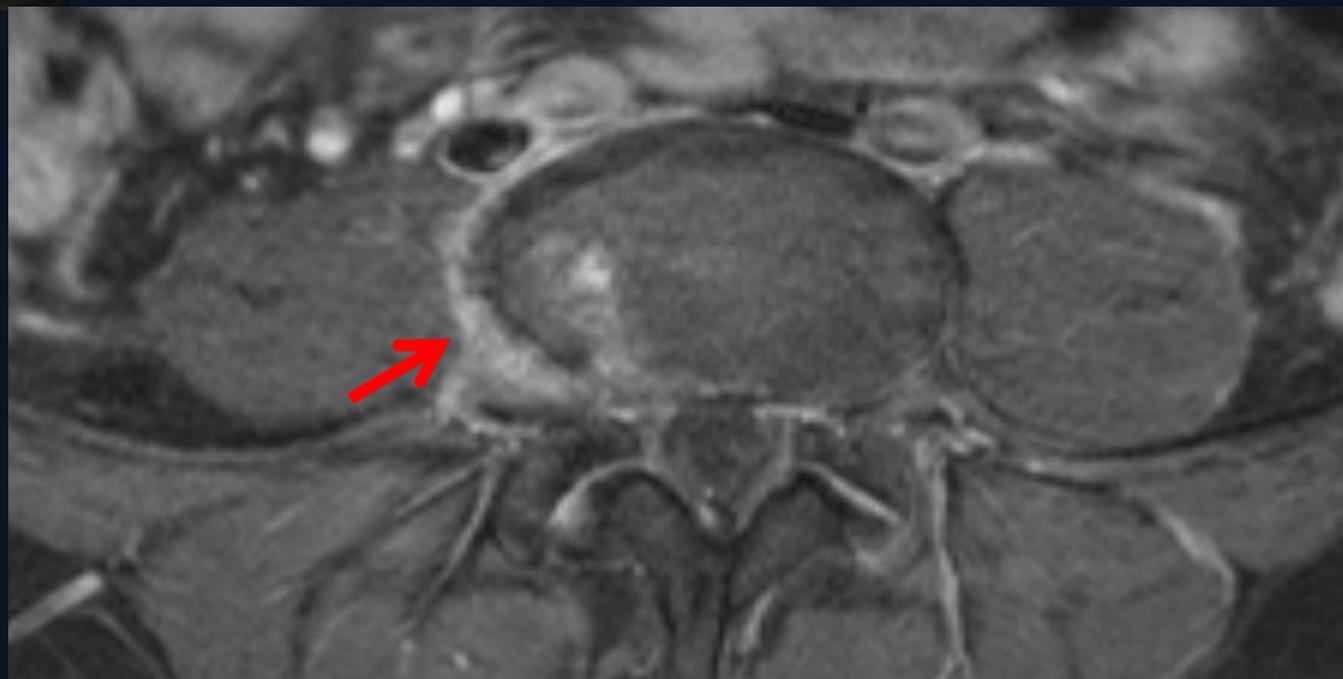
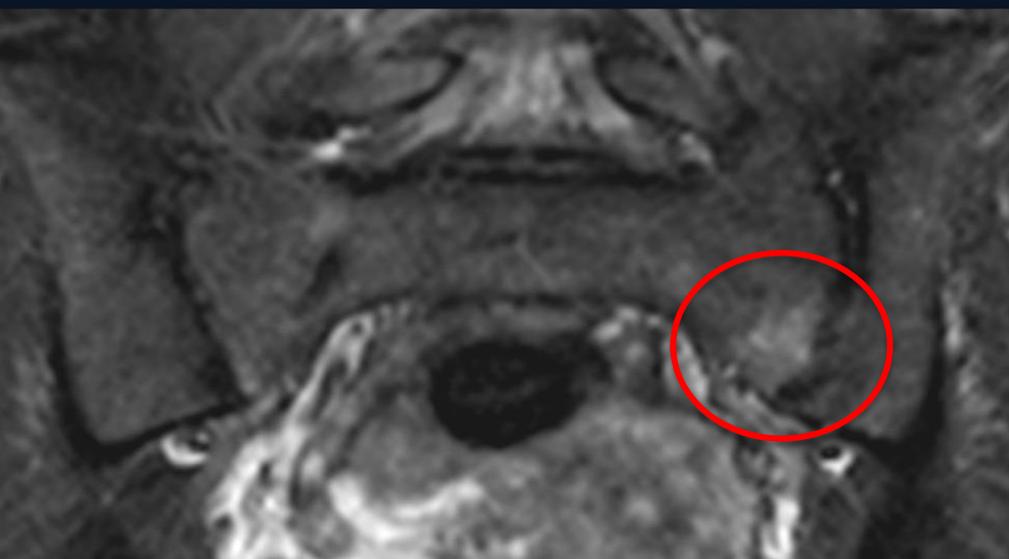




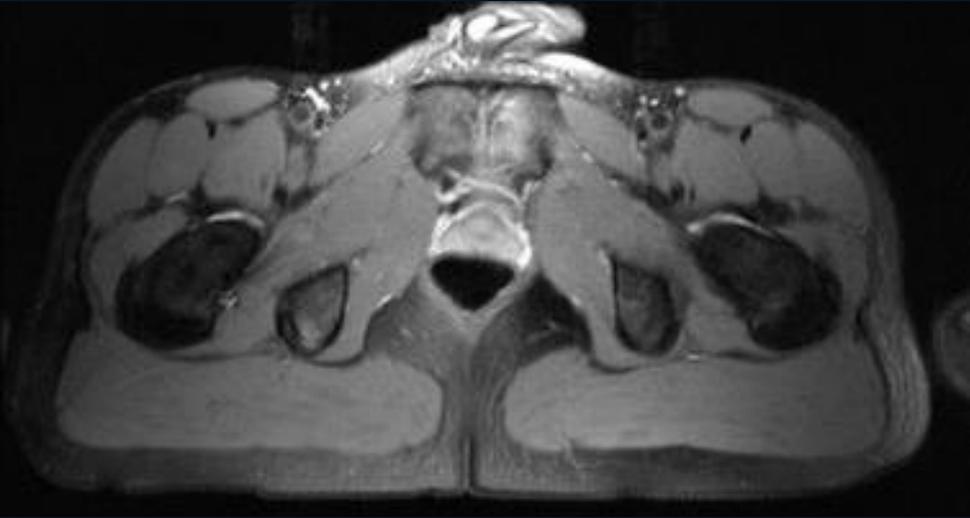
Why sciatica?



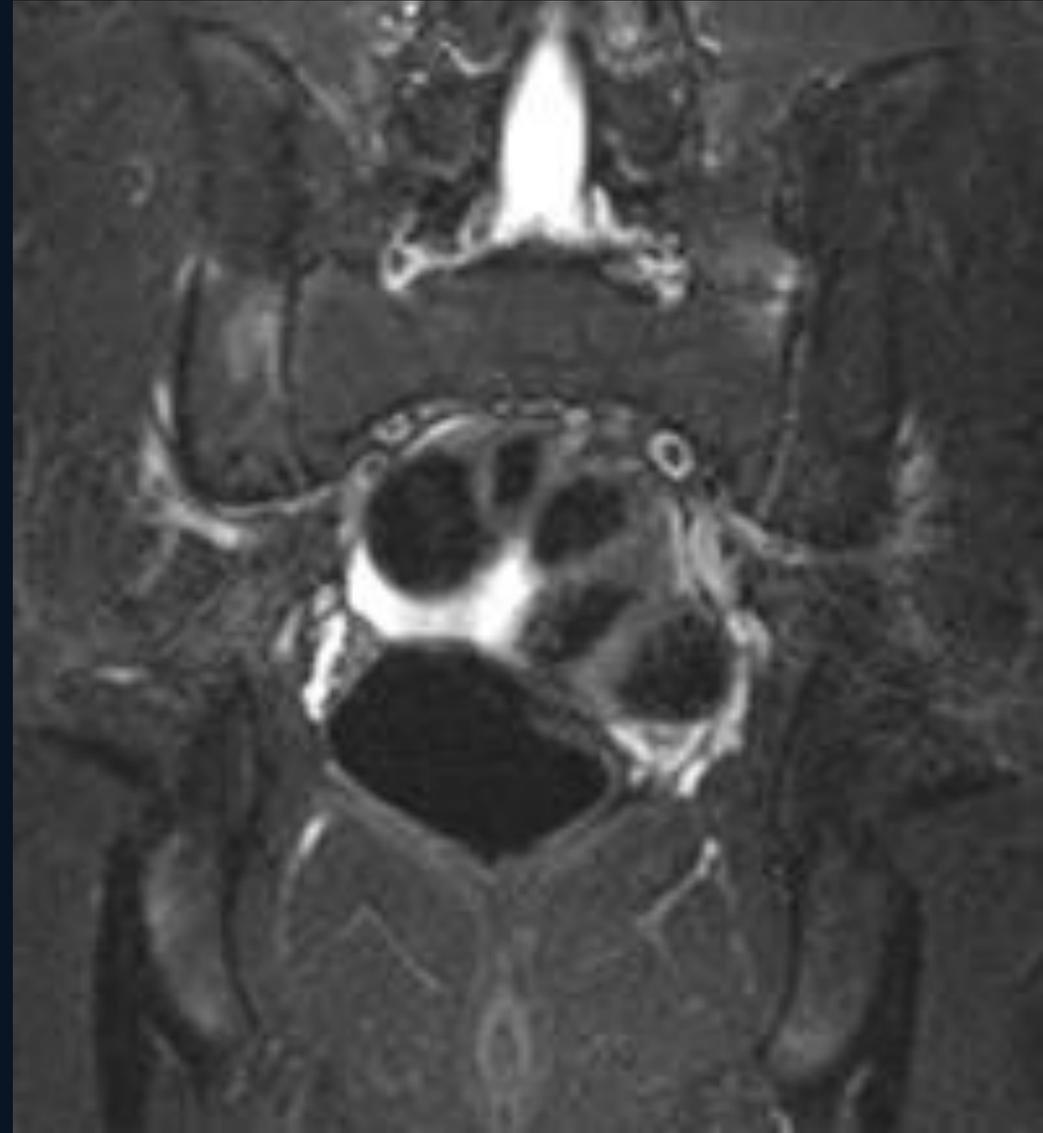
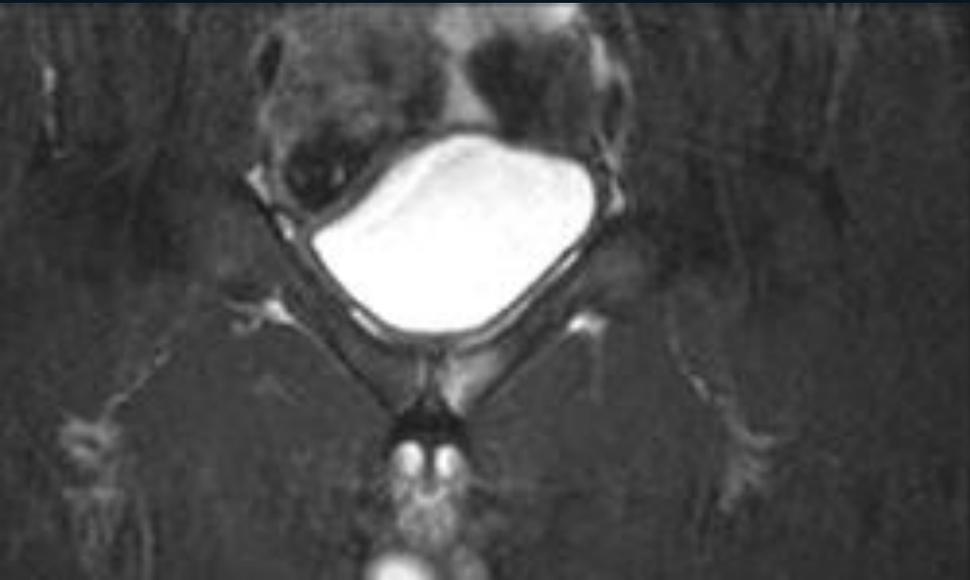
Enthesopathy may cause root irritation



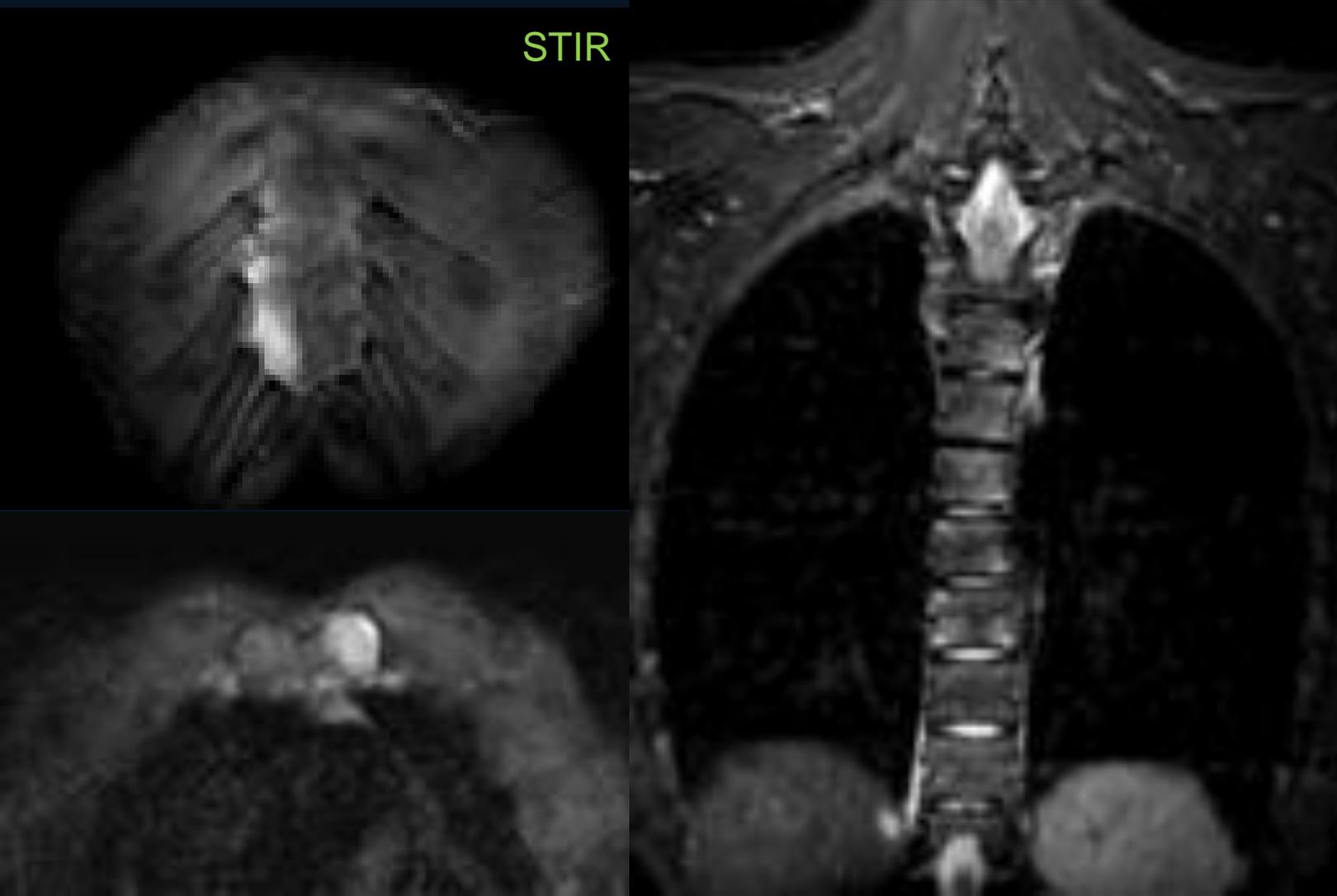
16y/o male adolescent, elite football player, painful, nodulocystic acne on the face since 9 m, severe pain in axial skeleton since 2m, + bouts of chills and rigors



Case 6



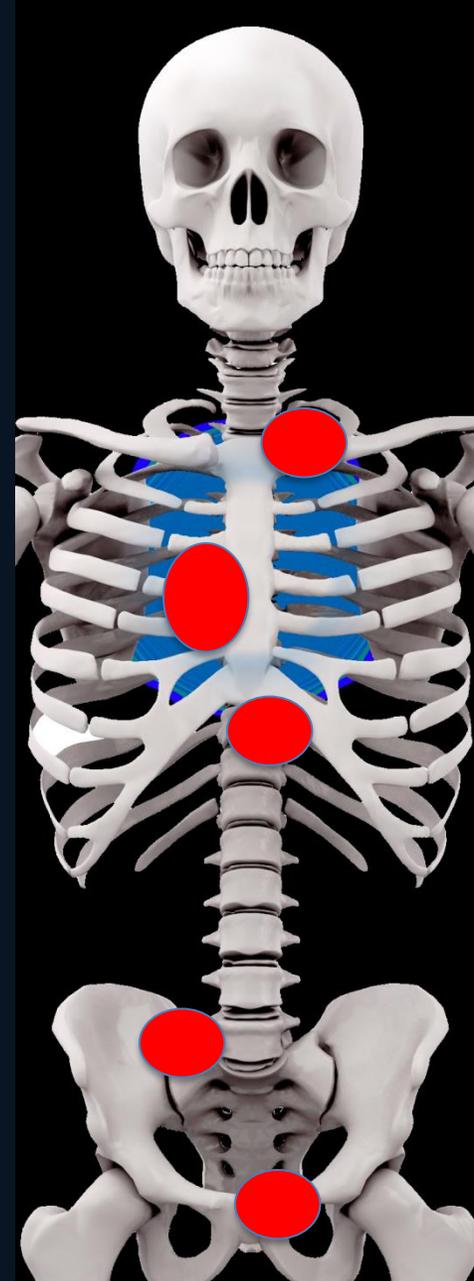
WBC=16,000 cells/mm³, ESR=130 mm/1st h, CRP=24 mg/dL, (normal <0.80)



16-y/o male with acne and bone pain

What is your diagnosis?

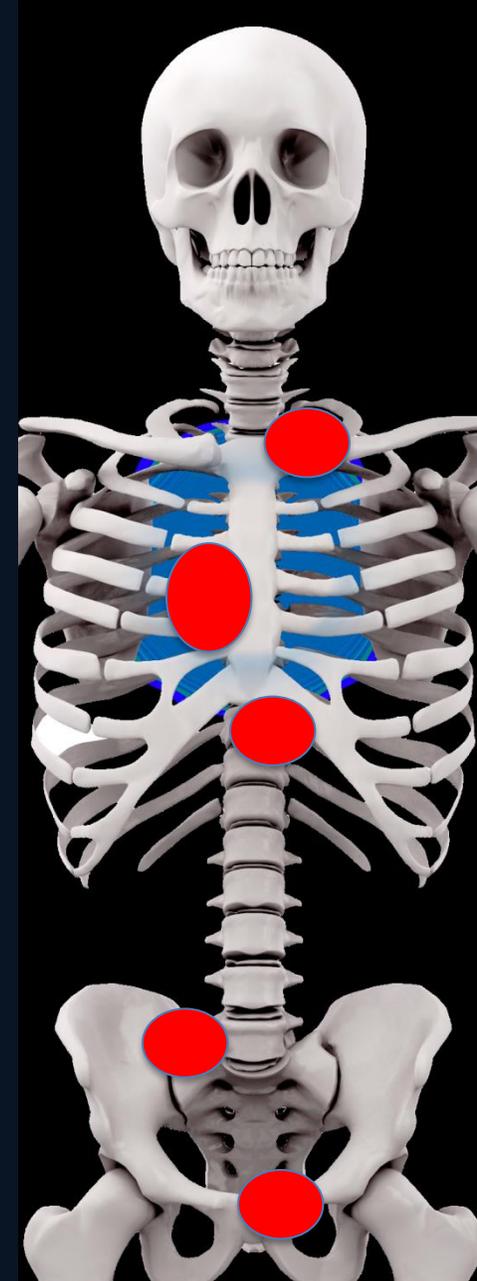
- A. Ankylosing spondylitis
- B. JIA
- C. Multifocal septic osteomyelitis
- D. SAPHO
- E. Multiple stress reactions

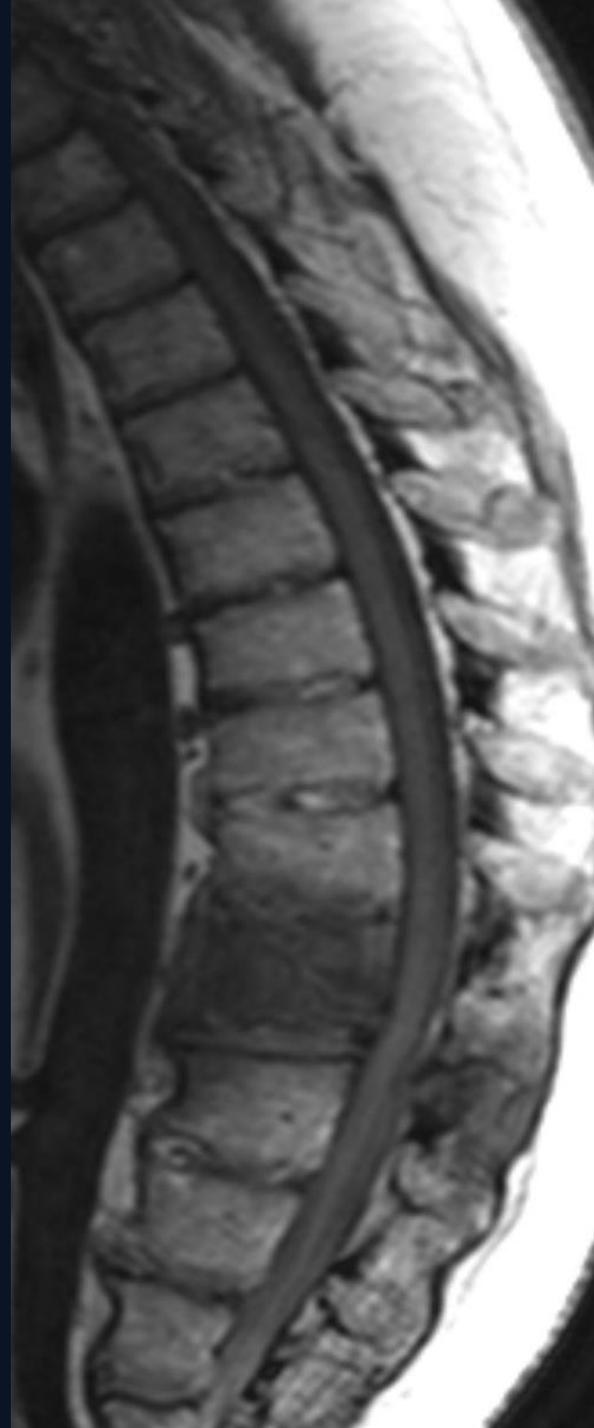
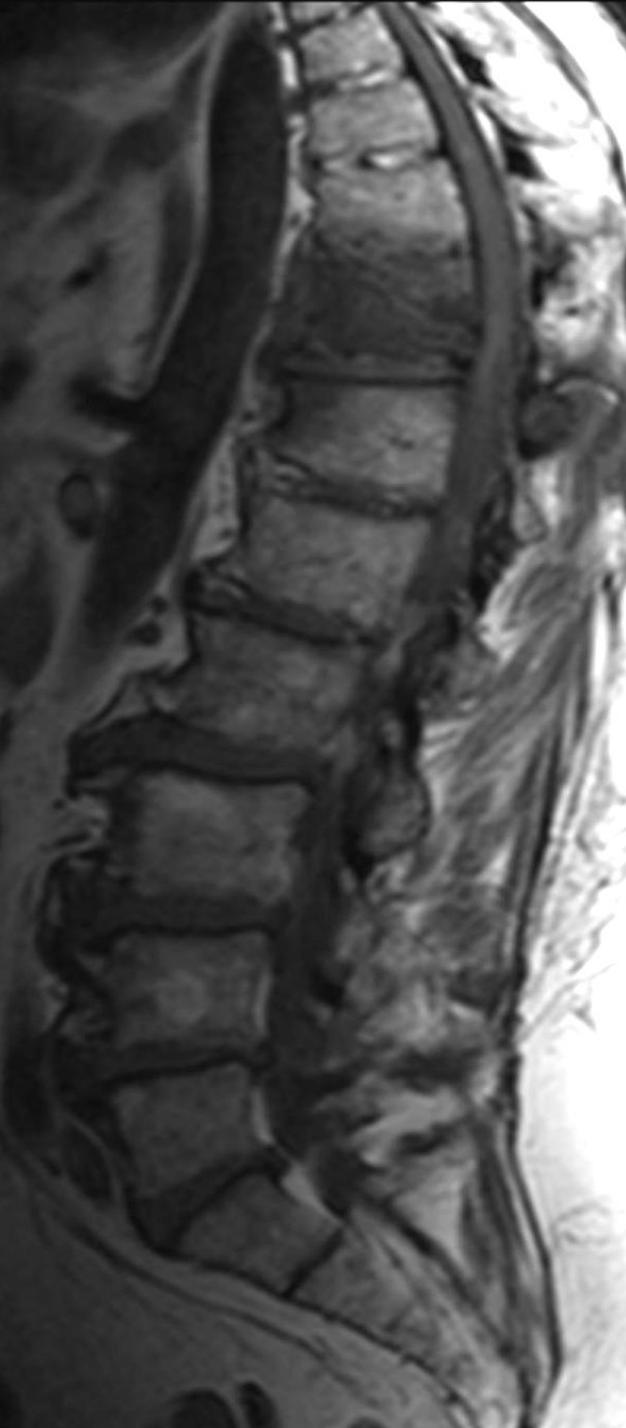


16-year-old male with acne and bone pain

- A. Ankylosing spondylitis
- B. JIA
- C. Multifocal septic osteomyelitis
- D. SAPHO
- E. Multiple stress reactions

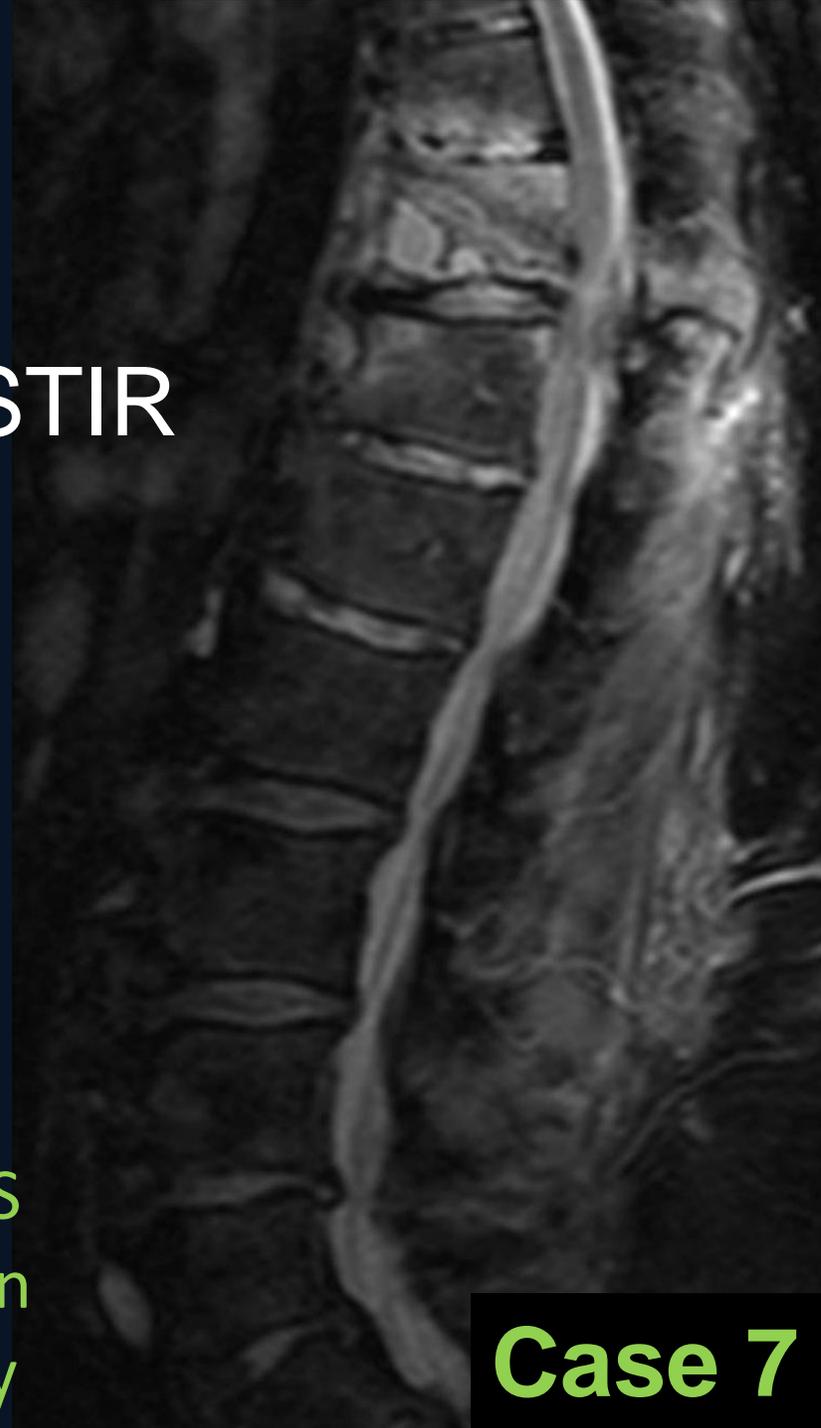
SAPHO syndrome with acne fulminans and severe polyosteitis involving axial skeleton.





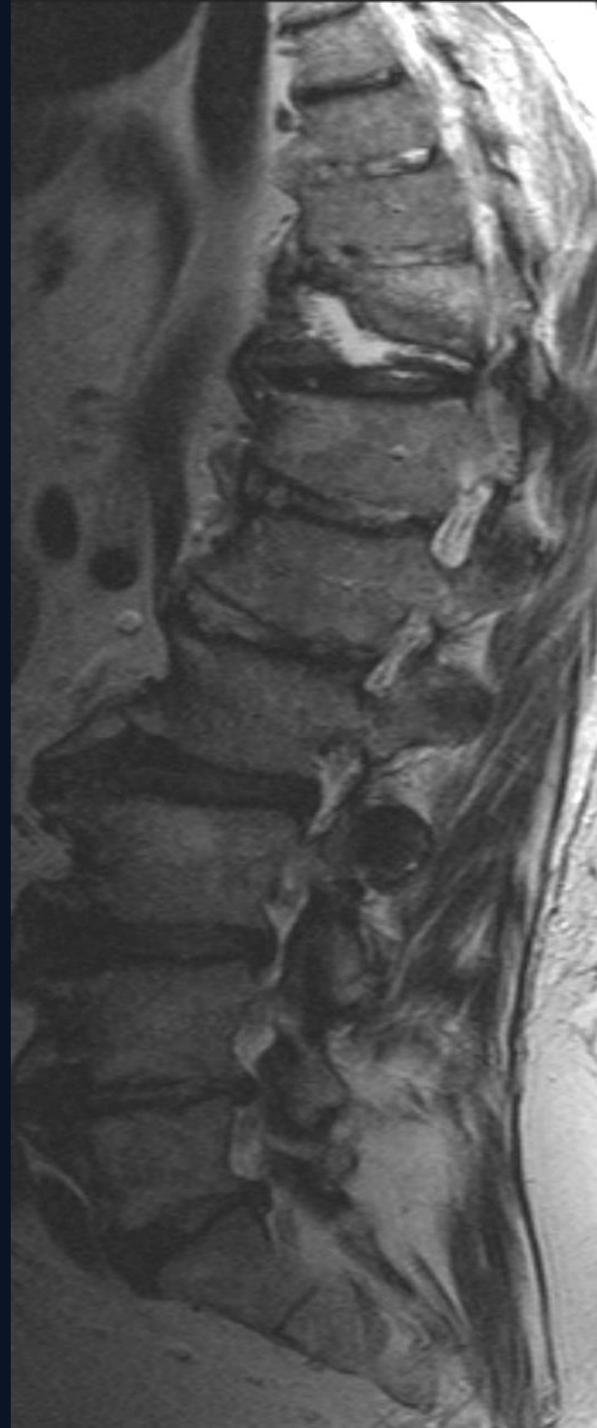
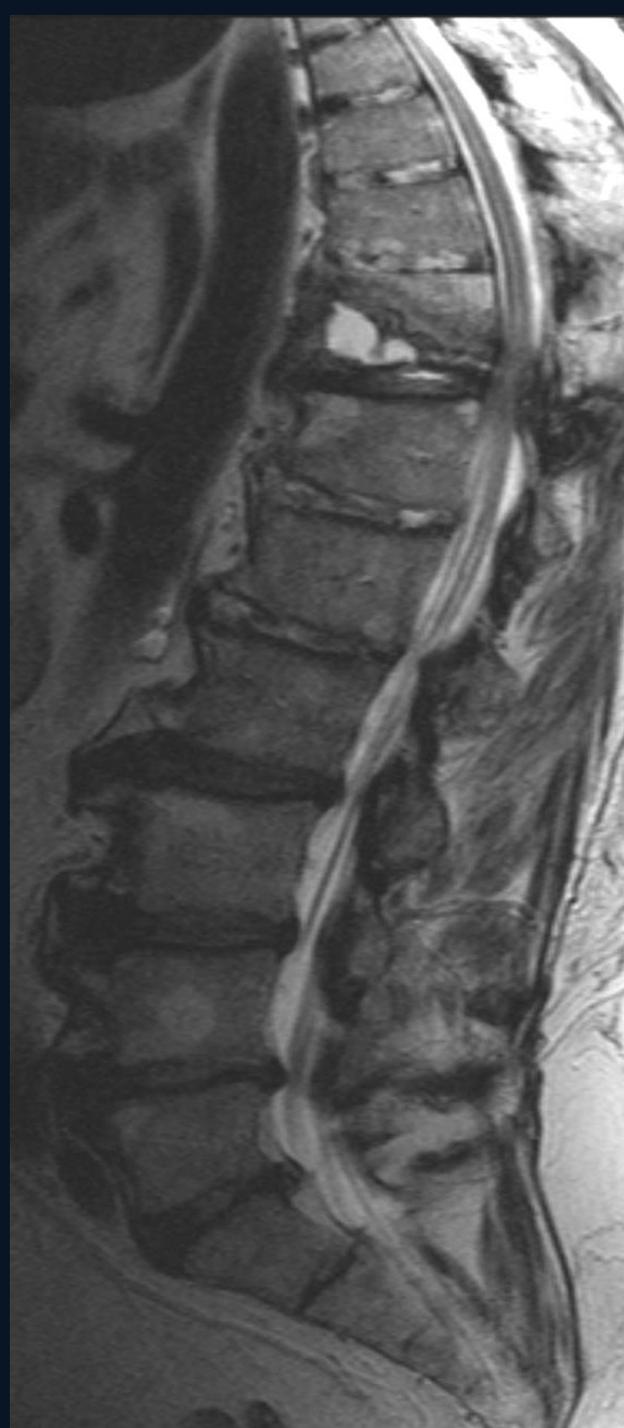
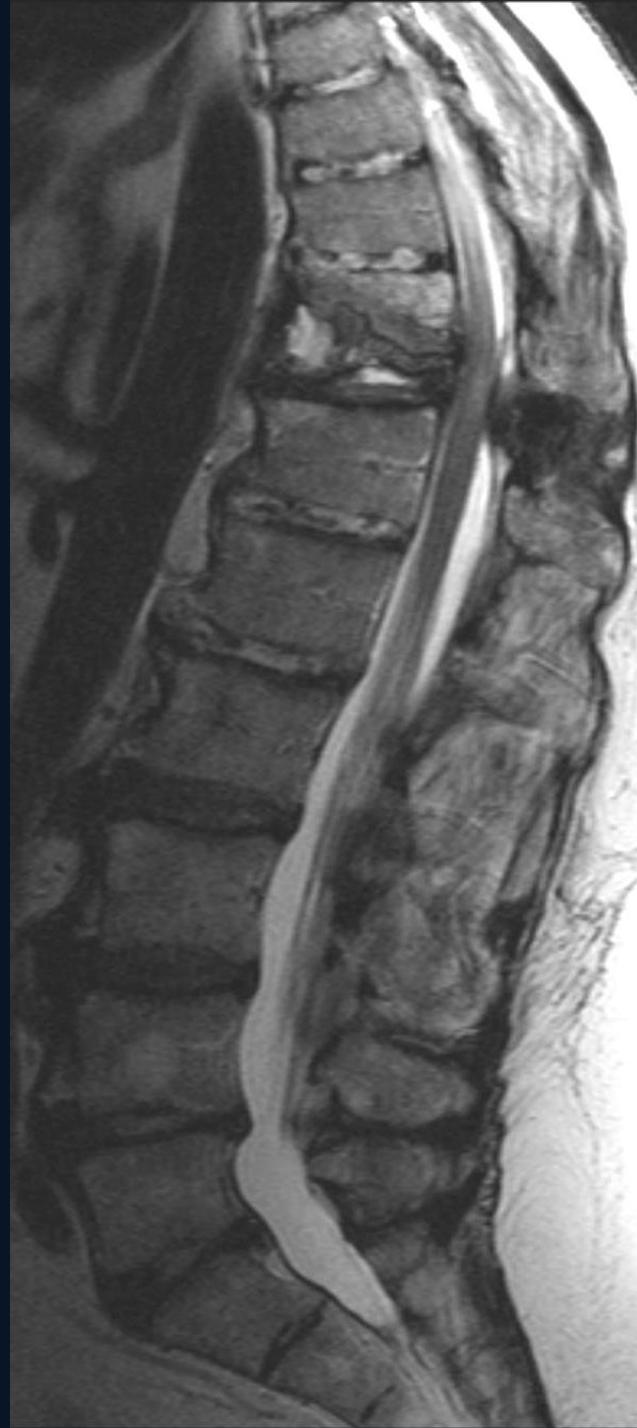
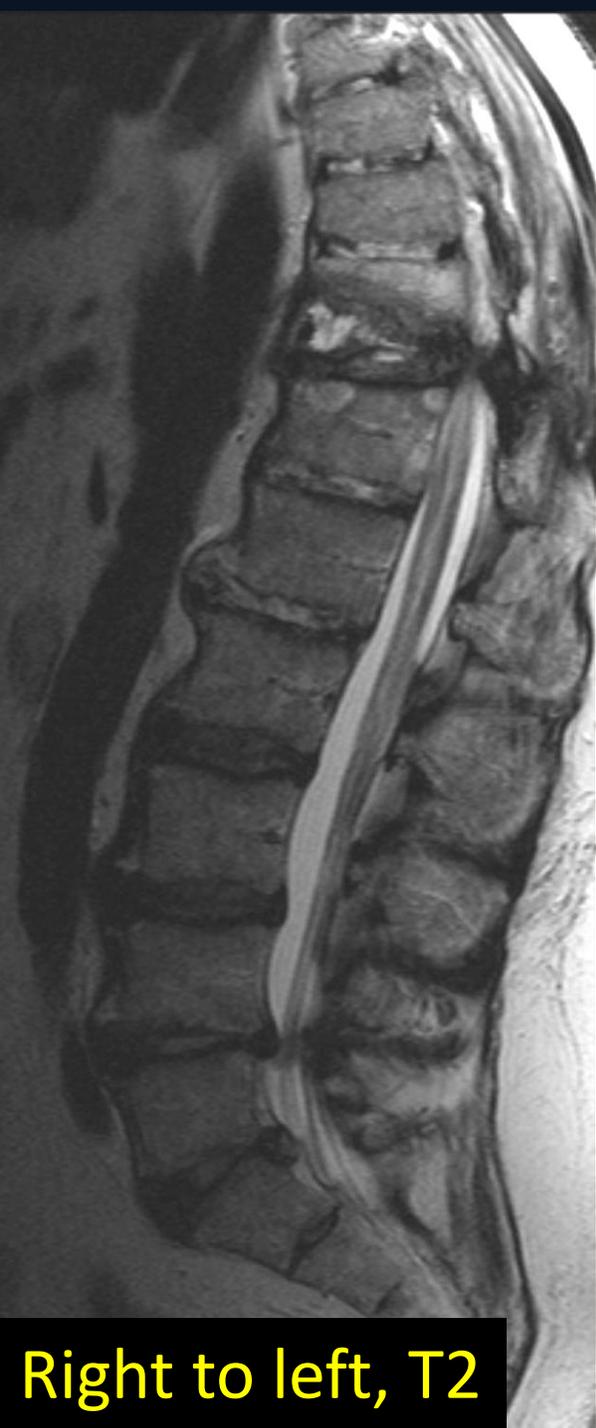
T1

STIR



58m, known AS
Acute back pain
PE: myelopathy

Case 7



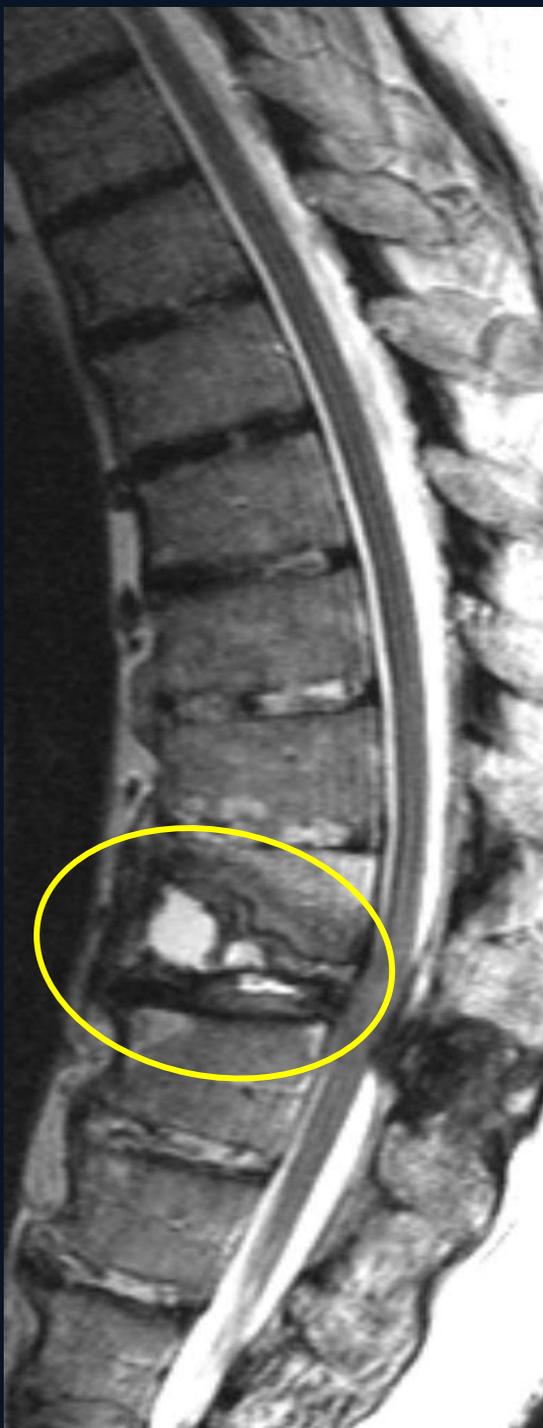
Right to left, T2

Diagnosis?

Osteoporotic fracture

with pseudarthrosis – osteonecrotic cavity

“Fluid “ sign



13y/o boy with right pelvic and hip pain, X Rays (-)

What is your diagnosis?



- A. Enthesitis-related arthritis
- B. Juvenile idiopathic arthritis
- C. CRMO
- D. Septic sacroiliitis

Case 8



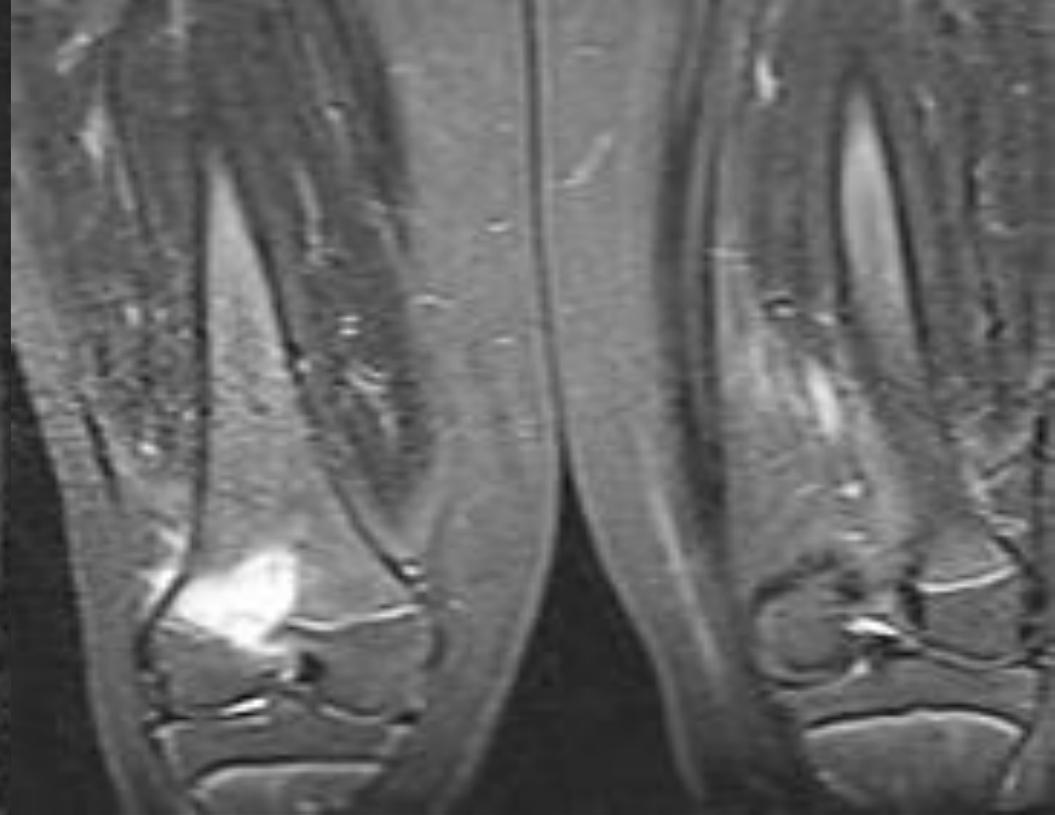
13y/o boy with right pelvic and hip pain, X Rays (-)

What is your diagnosis?



- A. Enthesitis-related arthritis
- B. Juvenile idiopathic arthritis
- C. CRMO
- D. Septic sacroiliitis





CRMO

Diagnosis of exclusion

Subtype of adult SAPHO

Bone marrow lesions may exist without symptoms

Sato TS, et al
Imaging mimics of CRMO: Avoiding pitfalls in a diagnosis of exclusion
Pediatr Radiol 2020

Ευχαριστώ



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Χρηματούχοι: 20
Μόρια Συνεχιζόμενης
Ιατρικής Εκπαίδευσης
(CME-CPD credits)



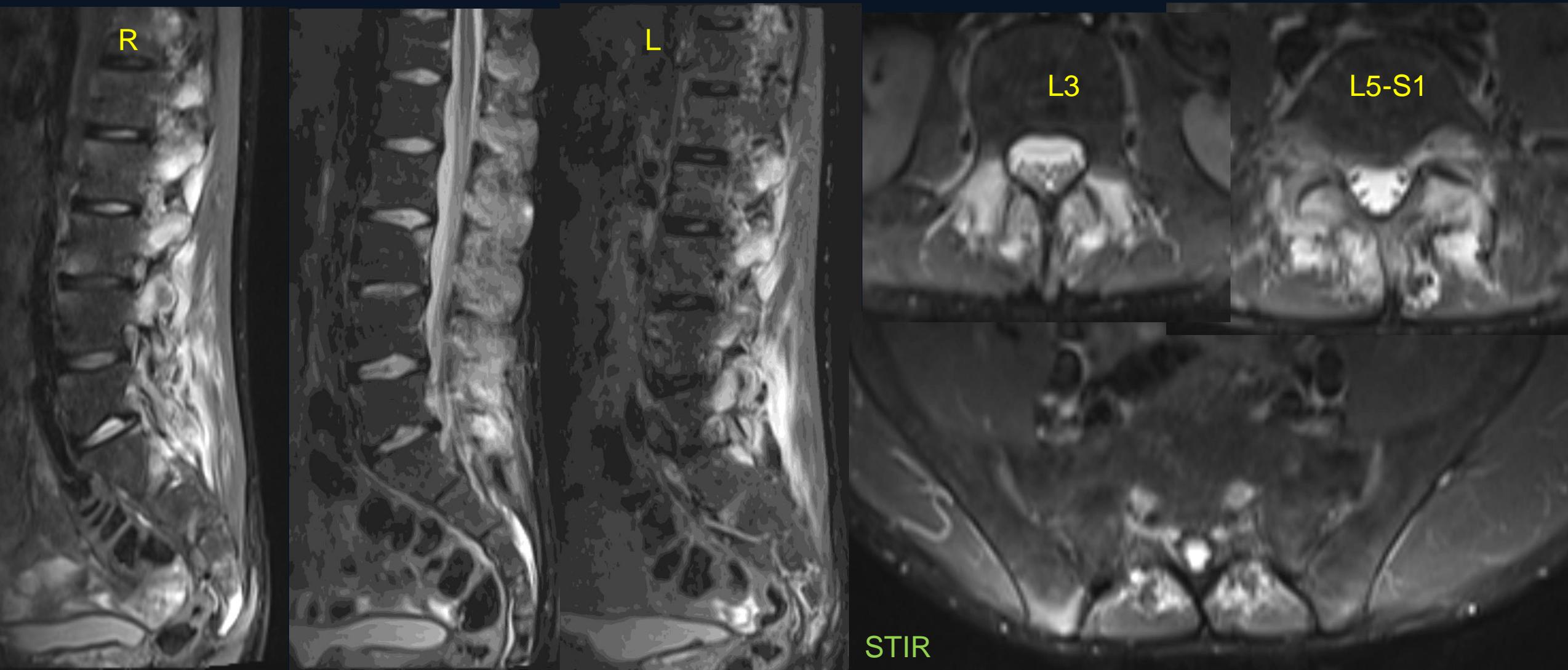
• 25m, LBP 6m. Now unable to stand, febrile, mantoux +, ESR 50

Clinical Diagnosis: Tb/brucella/mets. Hx: back pain 5y ago, diarrhea 1y ago



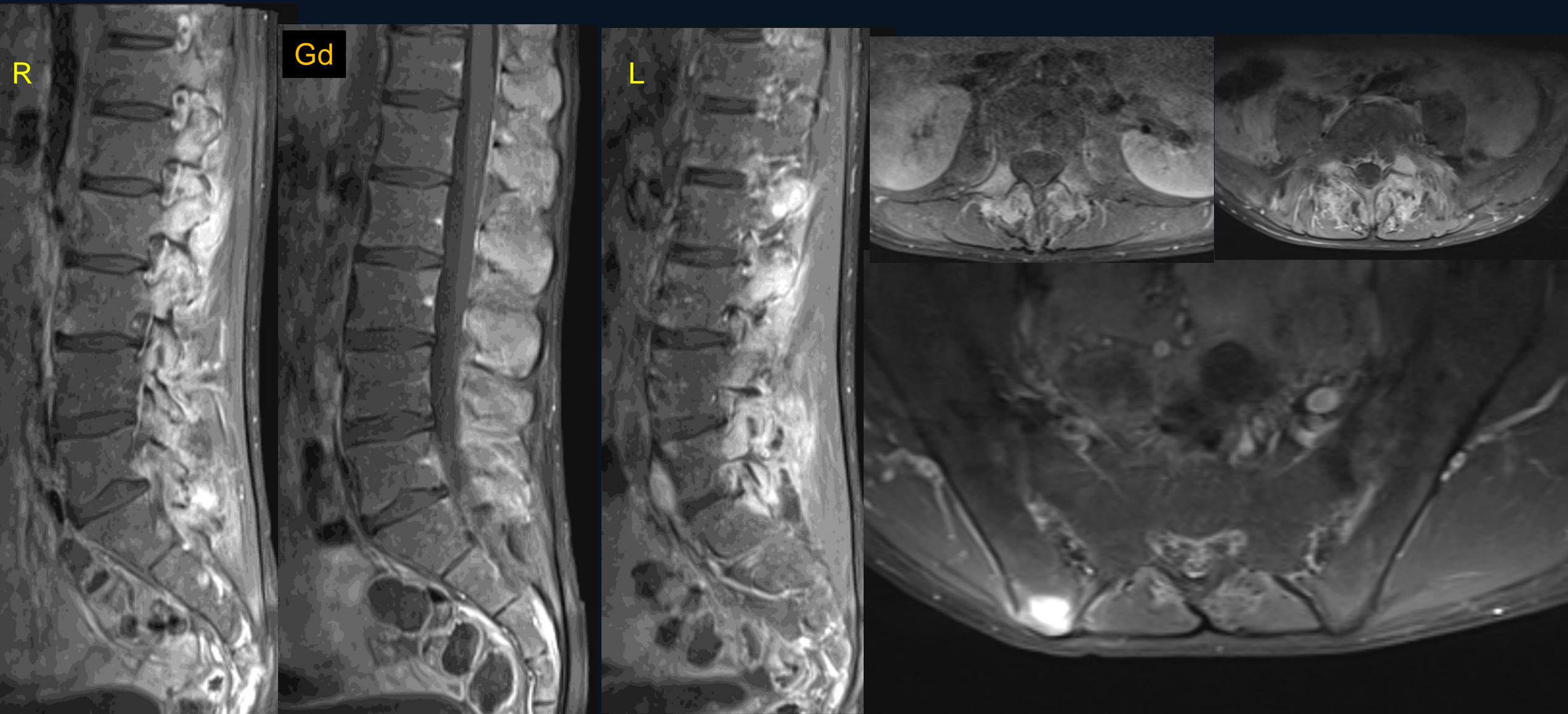
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Clinical Diagnosis: Tb/brucella/mets. Hx: back pain 5y ago, diarrhea 1y ago



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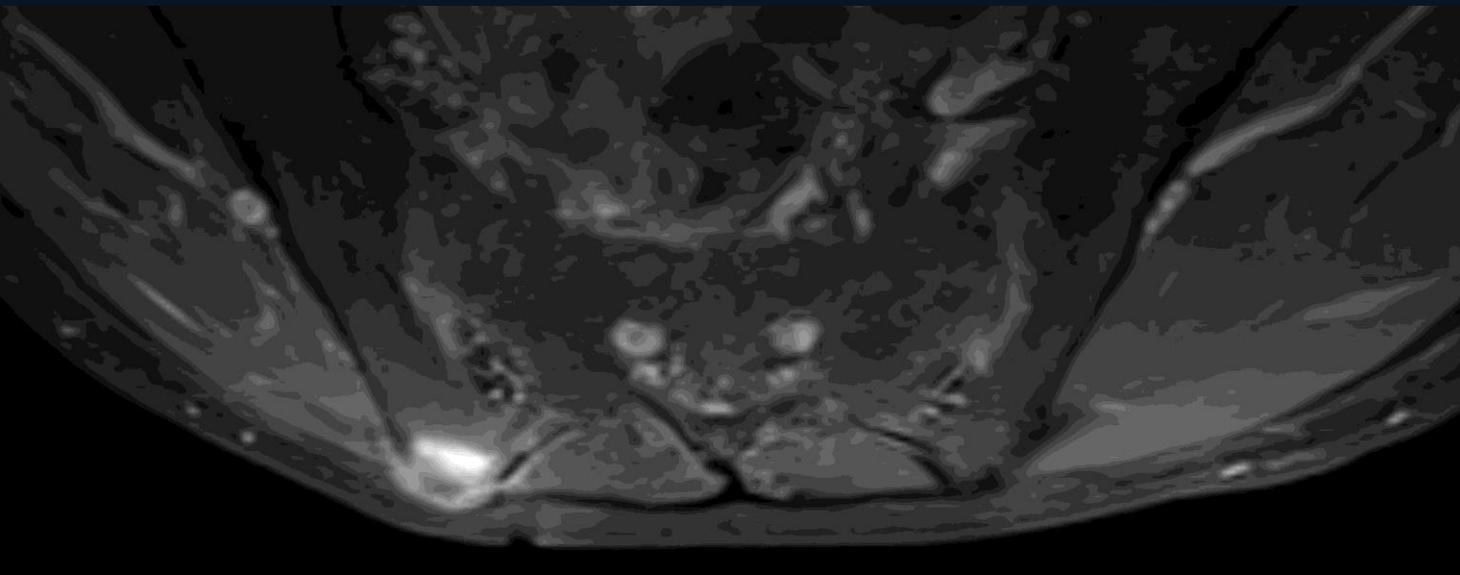


25m, LBP 6m, Clin. D. Tb/brucella/mets

What is your diagnosis?



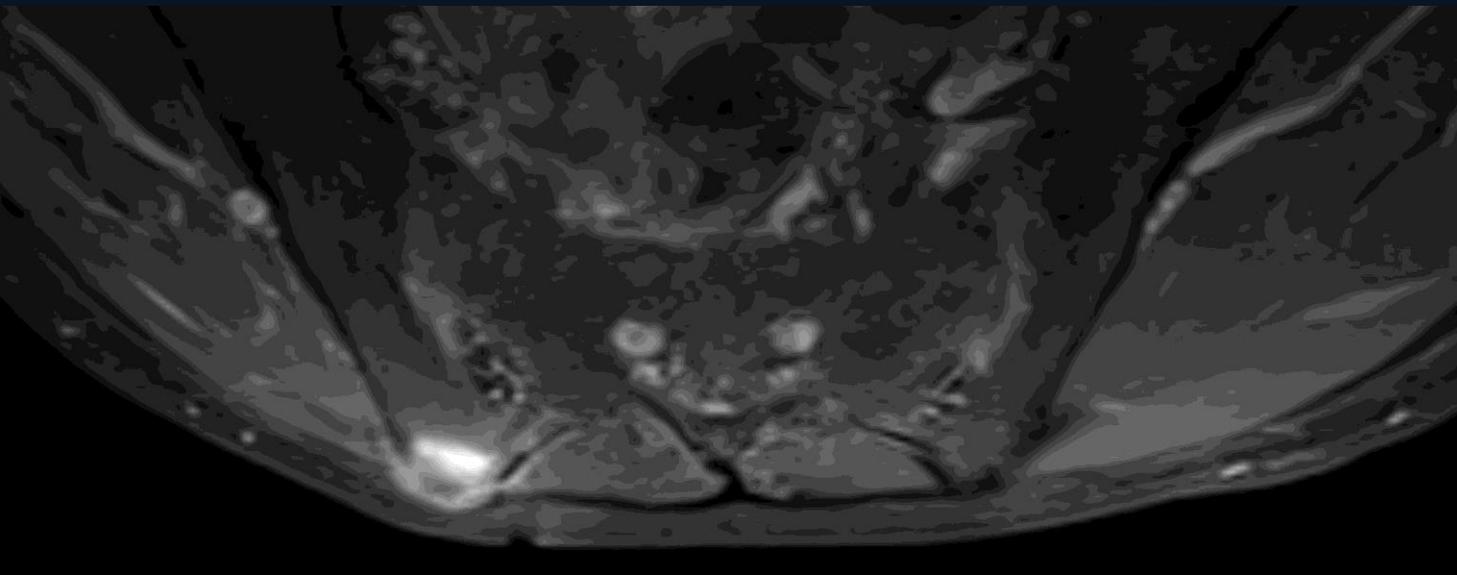
- A. Axial spondyloarthritis
- B. Tuberculous osteitis
- C. Metastatic disease
- D. Familial Mediterranean fever

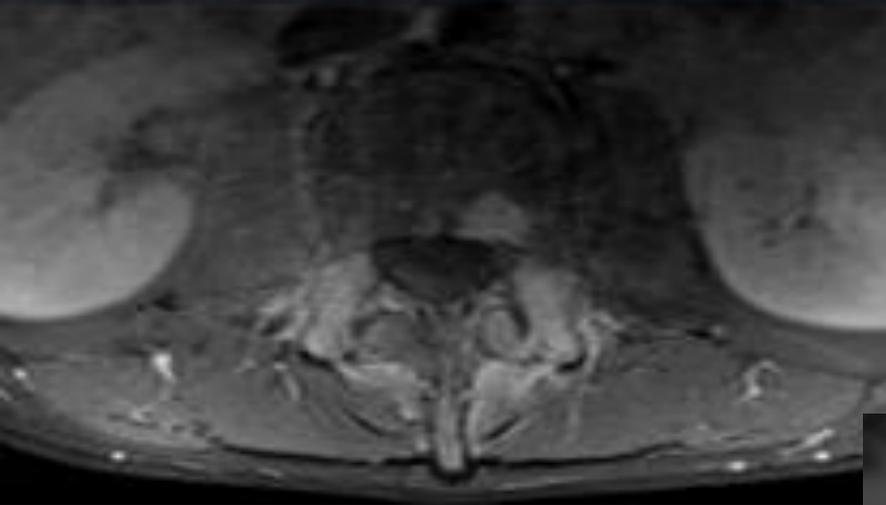


25m, LBP 6m, Clin. D. Tb/brucella/mets

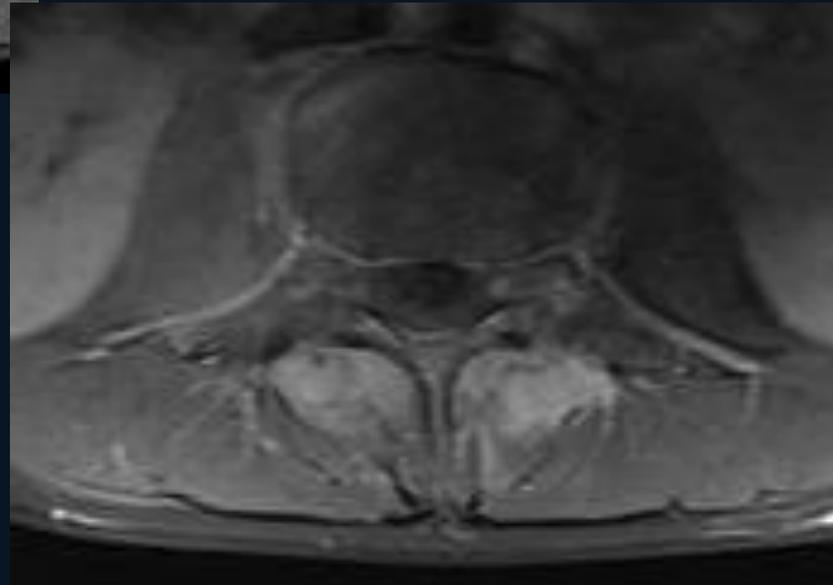
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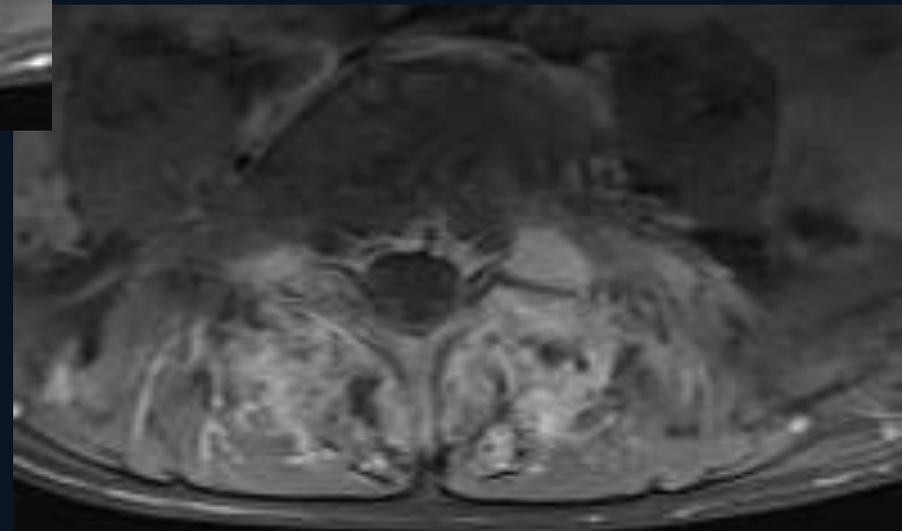


Enthesitis alone is not sufficient for the definition of axial SpA



Gd FS T1

Enteropathic SpA



Maksymowych WP , et al.

- 32 patient study
- 87.5% of patients had posterior element disease
- Inflammatory change present in 45% thoracic and 35% of lumbar vertebrae







Case 9

- 38m shepherd
- 2-3m: back pain, low grade fever, night sweats, malaise, weight loss 6 kg
- Initial Ro (-) NSAIF drugs
- Lab: ESR=89mm/1st h, CRP=20.4mg/l, total serum protein 9.6gr/dl
- PE: no fever, painful movements, stiff spine,
Laseque (+) 60° more on the right
Local tenderness lower lumbar and R. gluteal area

T1



T2



T1

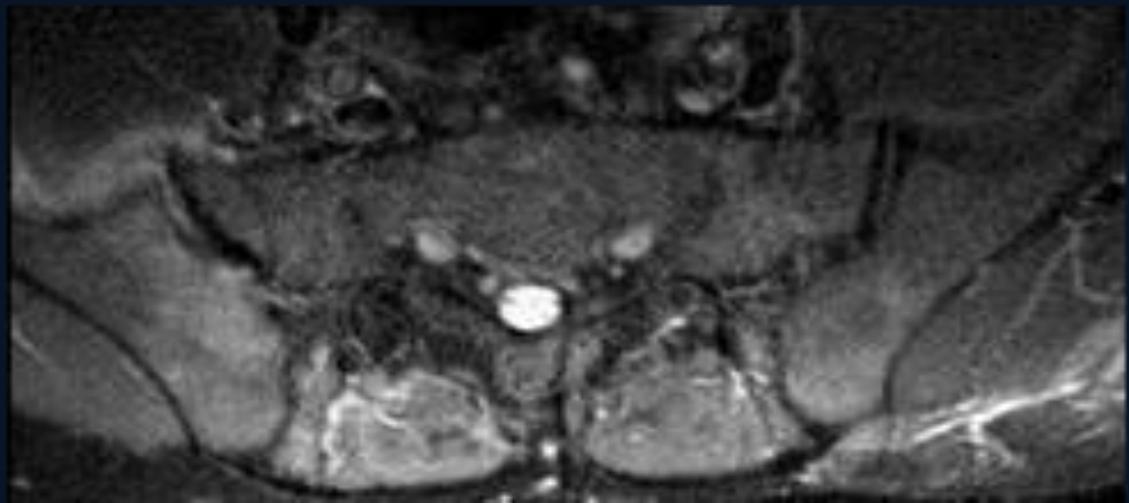
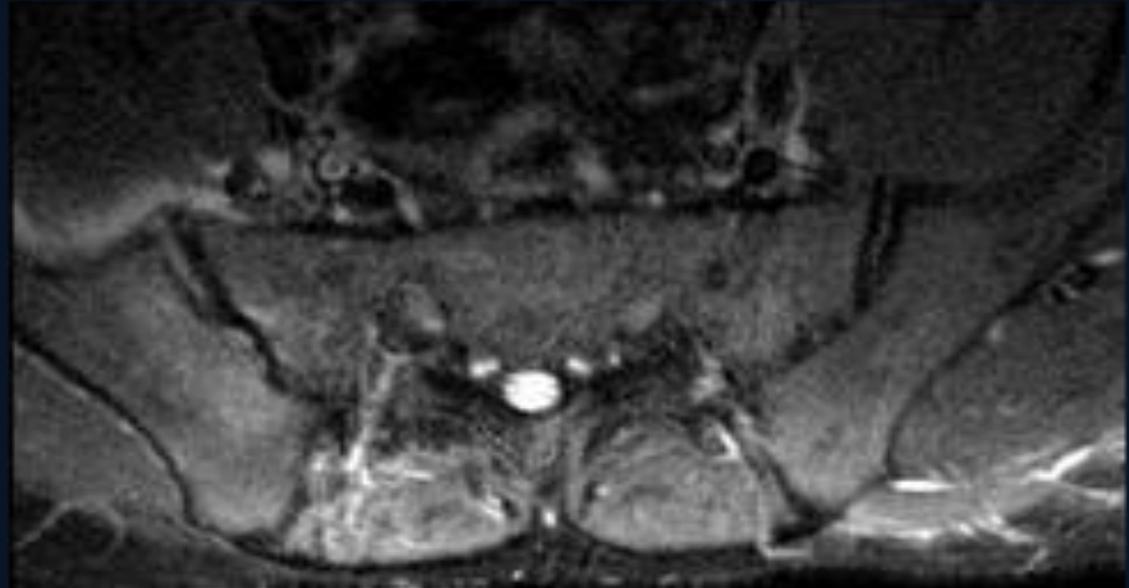


T2

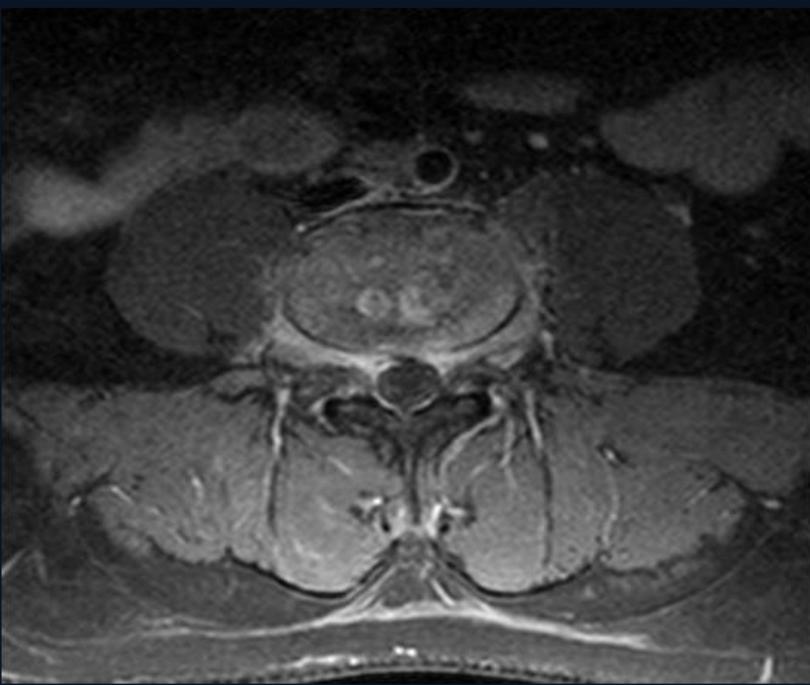
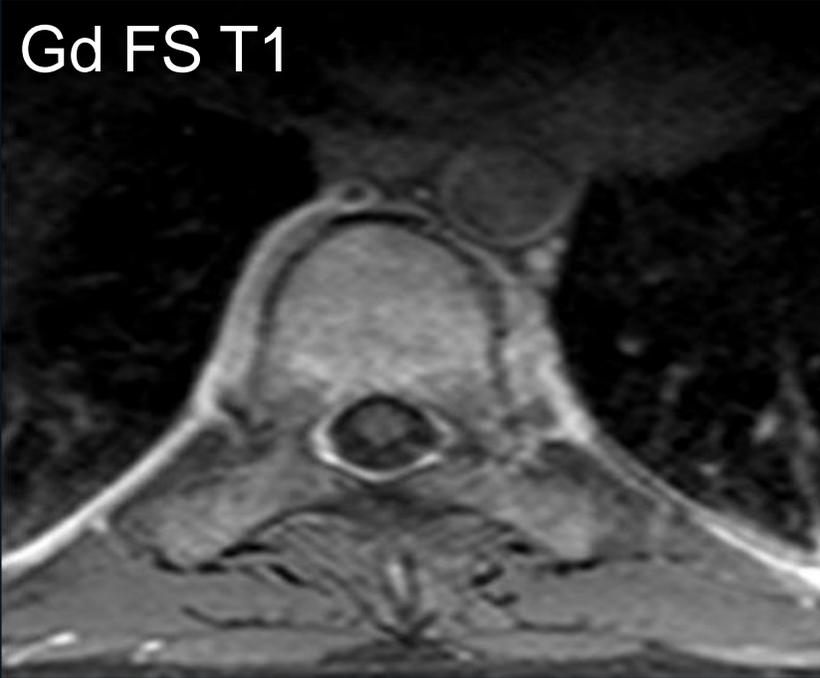




STIR



Gd FS T1



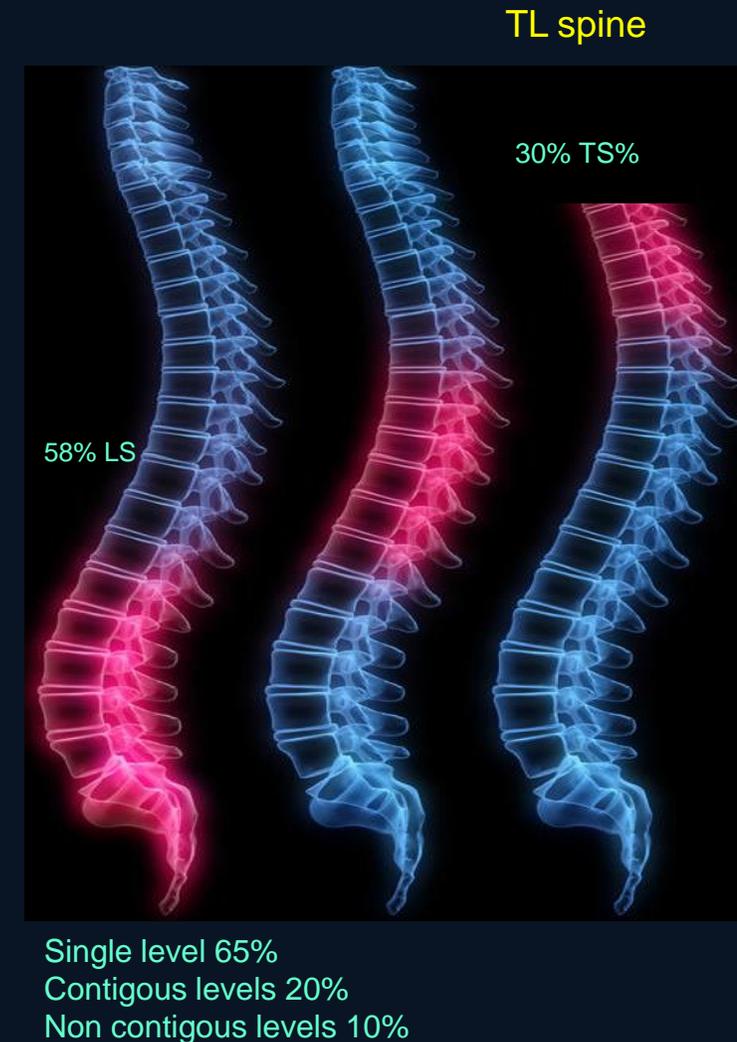
Choose the correct

- A. Aseptic – Andersson's discitis
- B. TB spondylodiscitis
- C. Brucella spondylitis
- D. Lyme disease
- E. Staph aureus

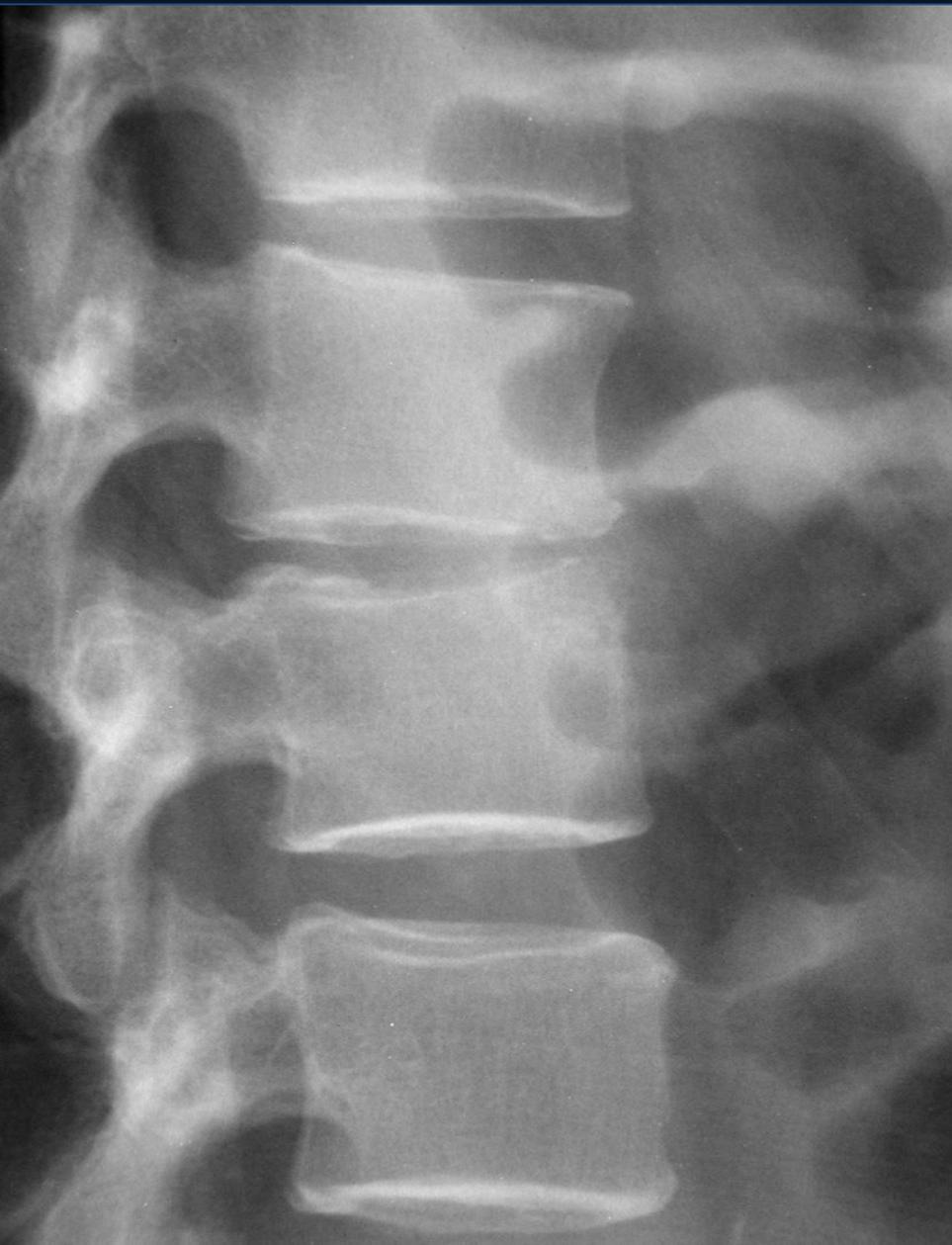


Spine infection

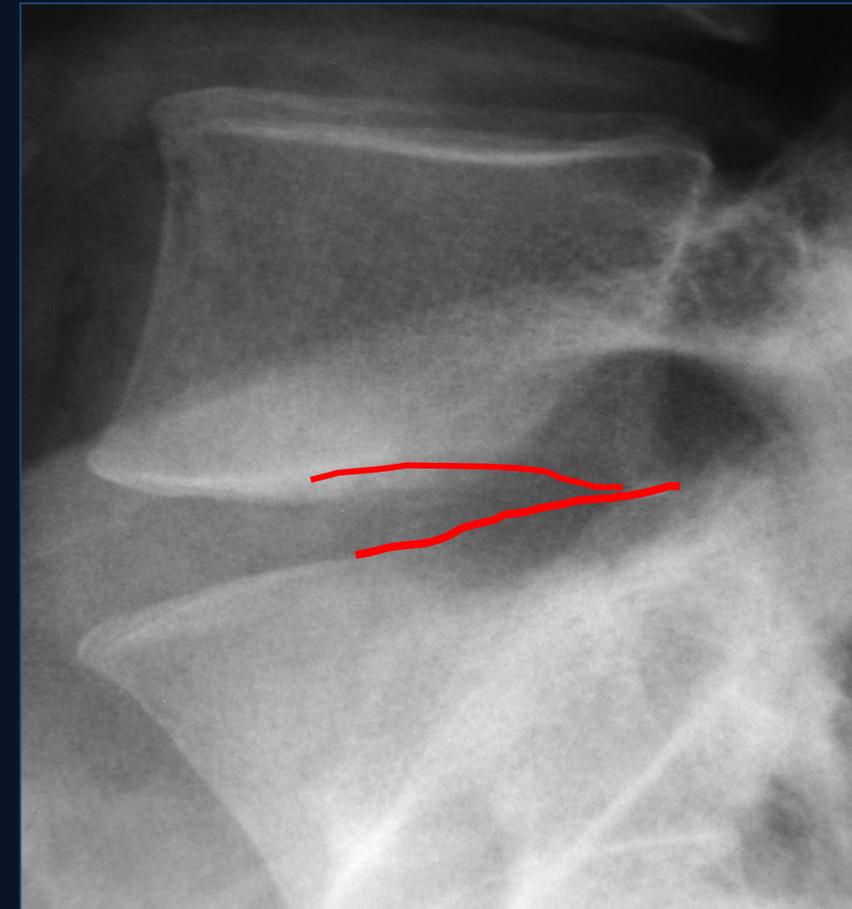
- T & L spine most common
- 2-7% of skeletal infections
- Recent history of
 - Catheterisation
 - Cystoscopy
 - Surgery: 30% of all pyogenic SD cases
- **Staphylococcus aureus** in 60%
- **Fever** 35-60%, **delay** 2-12w in diagnosis
- **MRI** method of choice, Sens 96%, Acc 94%



END-PLATE



- Site of commencement
- Loss of “white” outline
- Loss of “black” outline MRI
- Before disc changes



Key points BRUCELOSIS

- Gram (–) bacterium, low mortality, high morbidity
- Rural Mediterranean regions, immigrants
- Systemic d, any organ in the human body
- Osteoarticular 35-70%
- Arthritis (SIJ), spondylitis, osteomyelitis, bursitis, tenosynovitis, psoas abscesses
- Clinical suspicion important for diagnosis
- **MRI** ↓ T1, ↑ FSs, enhancement: disk and opposing v. bodies with erosion and destruction of endplates
- CRP normalization useful for treatment response
- *Ozaksoy D, et al. Eur Spine 2001*

Key imaging features BRUCELOSIS



Conservative treatment efficient 13/21
Failure in MRSA and pts with neurologic impairment

Spernovasilis N,...Karantanas A
Clin Neurol Neurosurg 2017

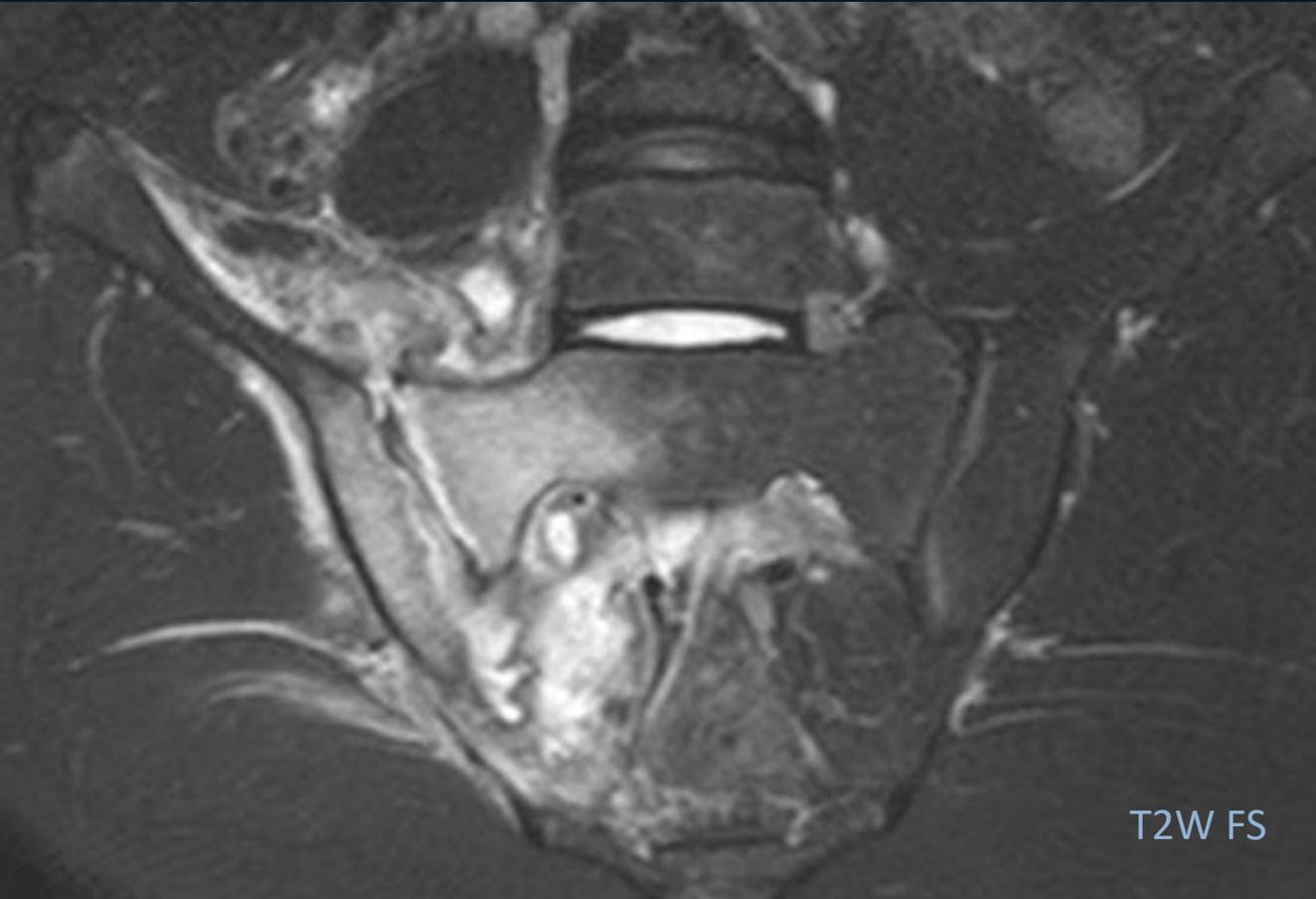
Question 7 • 11-year-old girl with low back pain

What is your diagnosis?

- A. Enthesitis-related arthritis
- B. Juvenile idiopathic arthritis
- C. Septic sacroiliitis
- D. Familial Mediterranean fever

Question 6 • 13-year-old boy with right pelvic and hip pain

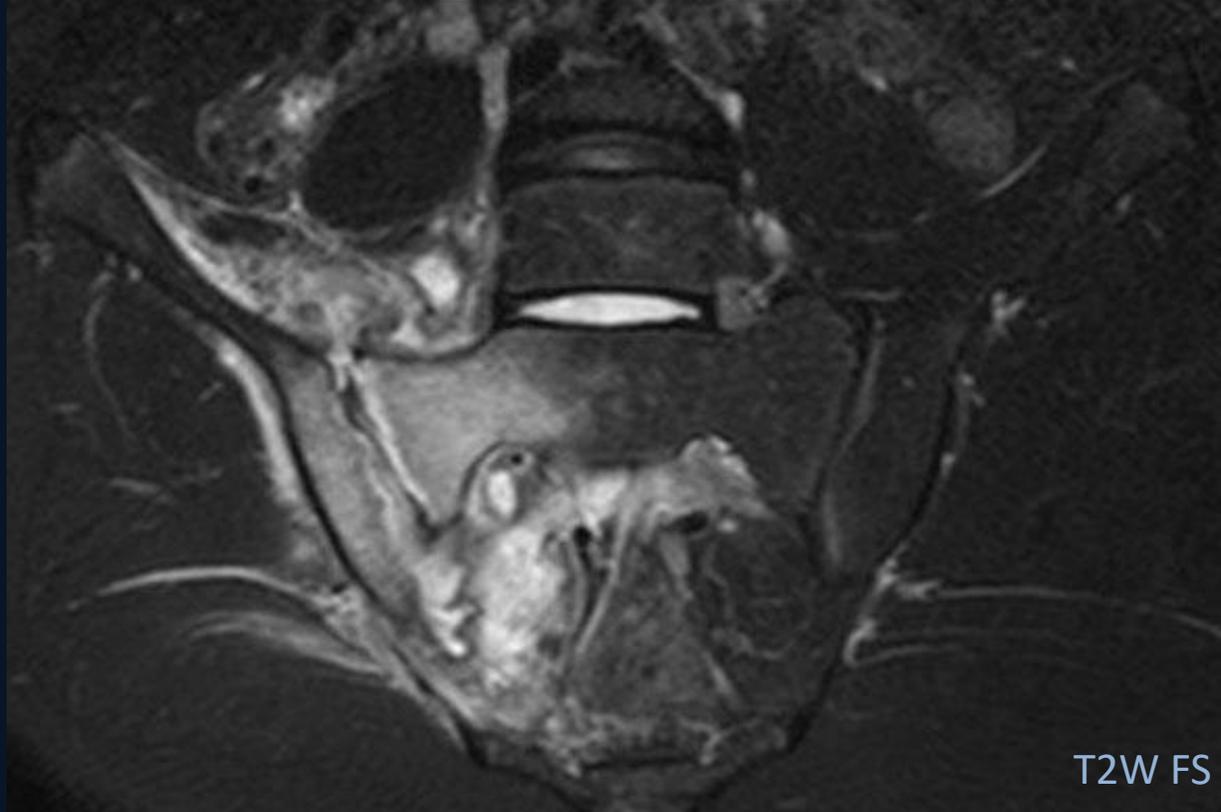
What is your diagnosis?



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- C. Septic sacroiliitis
- D. Familial Mediterranean fever

Question 6 • 13-year-old boy with right pelvic and hip pain

What is your diagnosis?

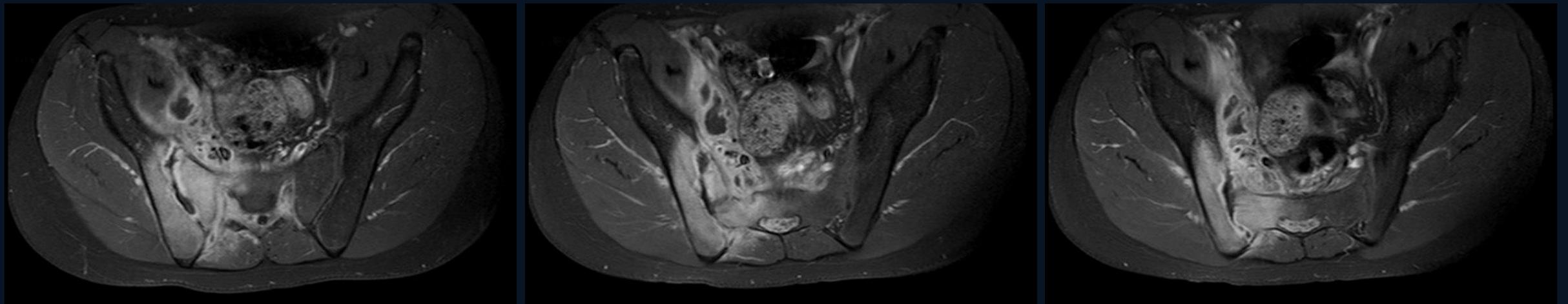
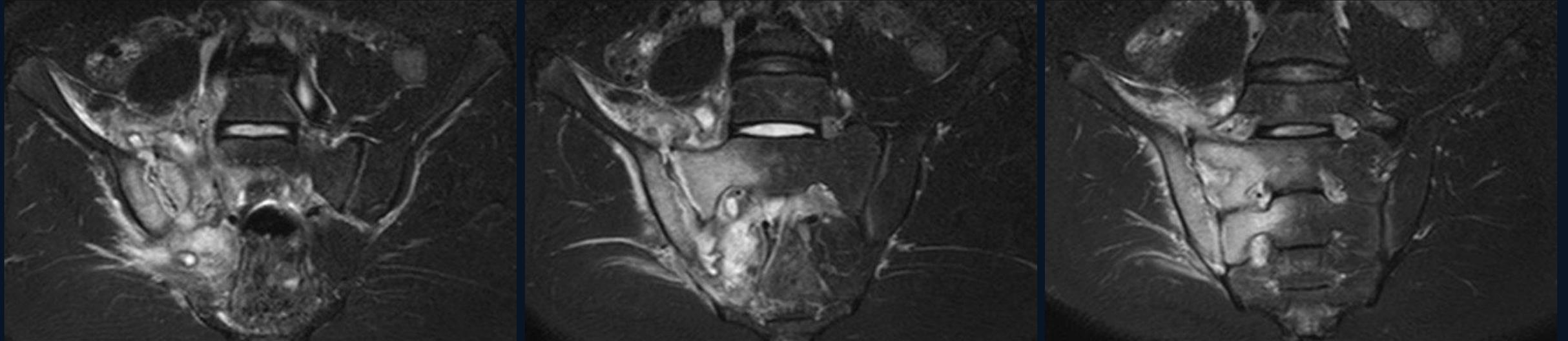


- A. Enthesitis-related arthritis
- B. Juvenile idiopathic arthritis
- C. Septic sacroiliitis
- D. Familial Mediterranean fever

Question 6 • 13-year-old boy with right pelvic and hip pain

Septic sacroiliitis (*S. aureus*)

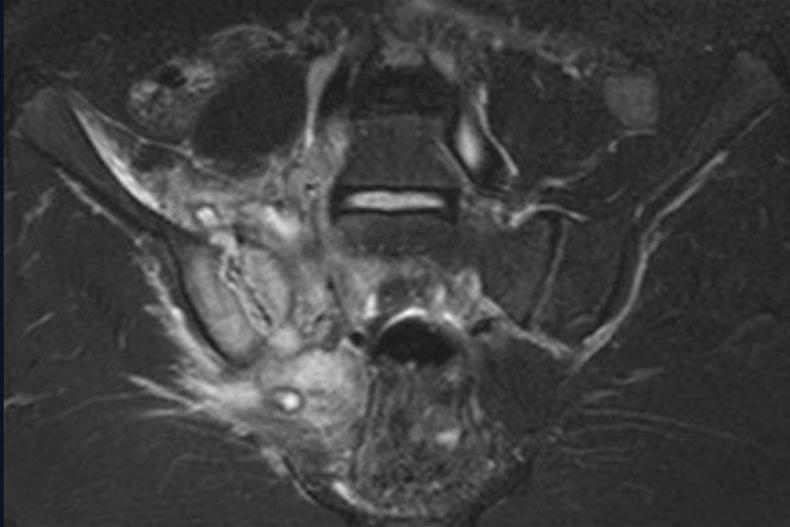
T2W FS



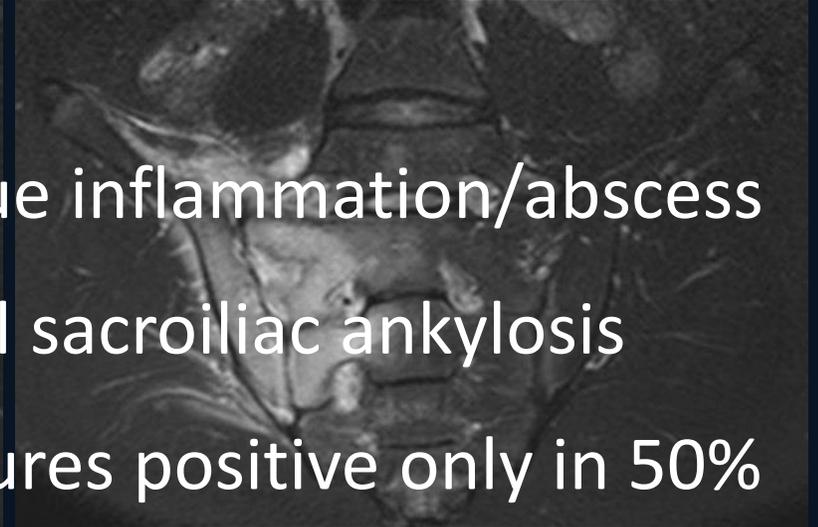
T1W FS + C

Septic sacroiliitis

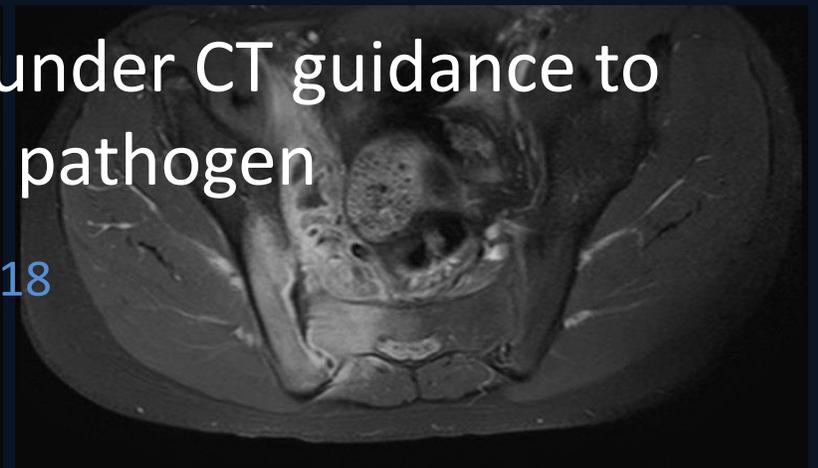
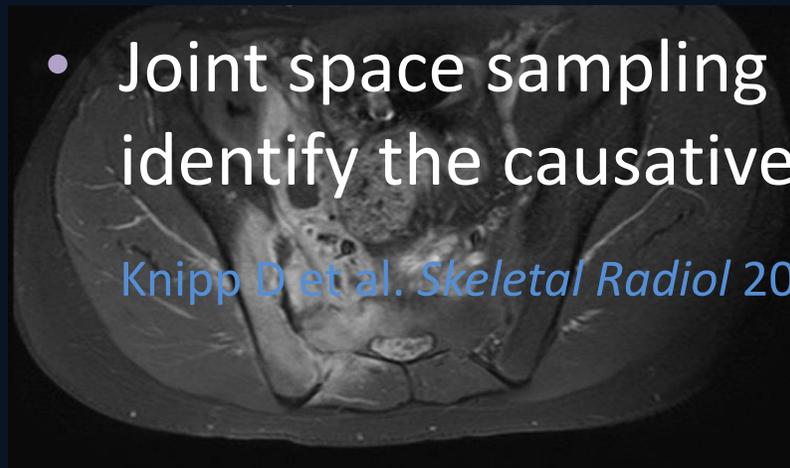
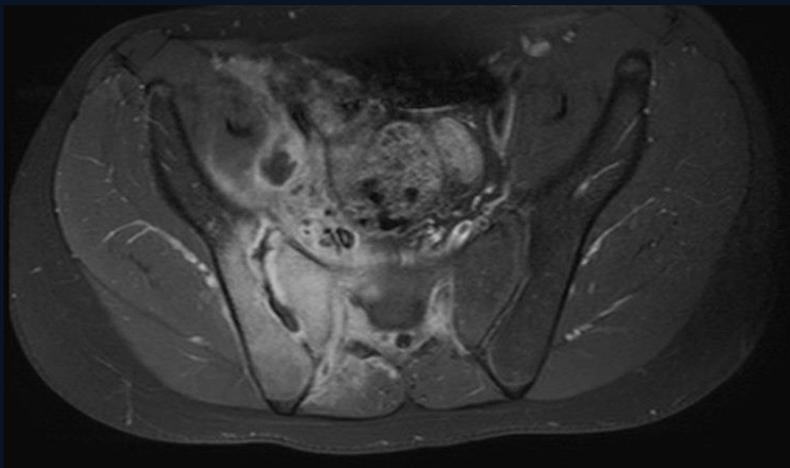
T2W FS



T2W FS



- Unilateral
- Surrounding soft tissue inflammation/abscess
- May lead to unilateral sacroiliac ankylosis
- Peripheral blood cultures positive only in 50%



- Joint space sampling under CT guidance to identify the causative pathogen

Knipp D et al. *Skeletal Radiol* 2018

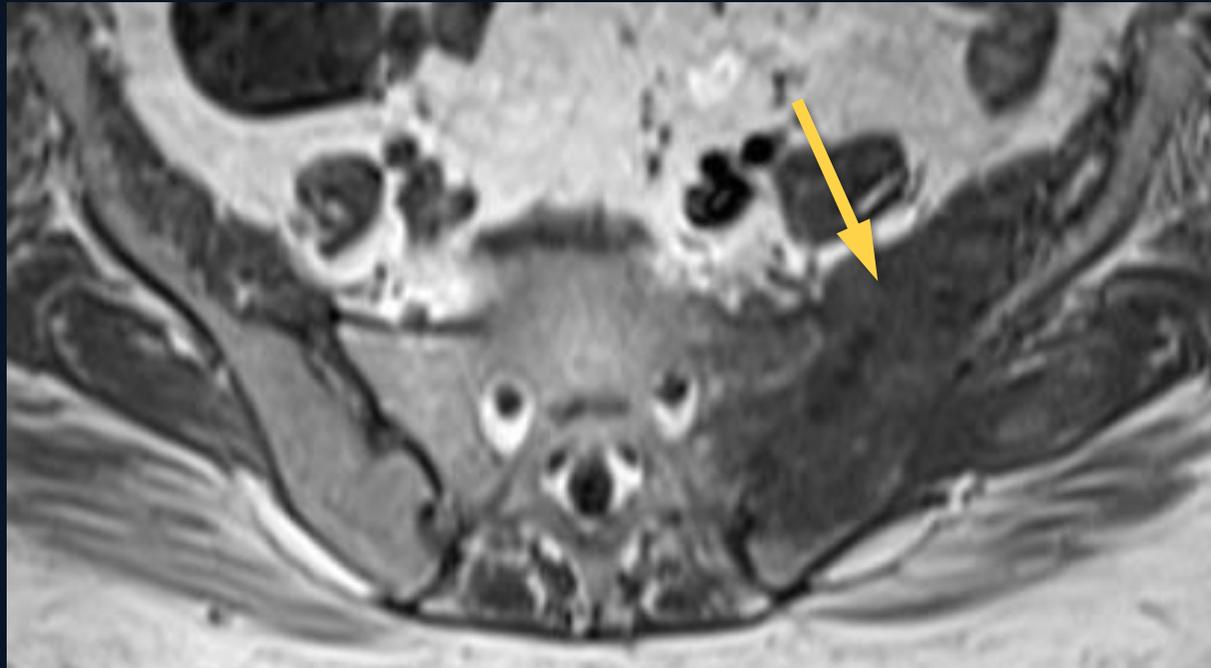
T1W FS +C

T1W FS + C

Septic sacroiliitis

S. aureus

54 yo F



T1W

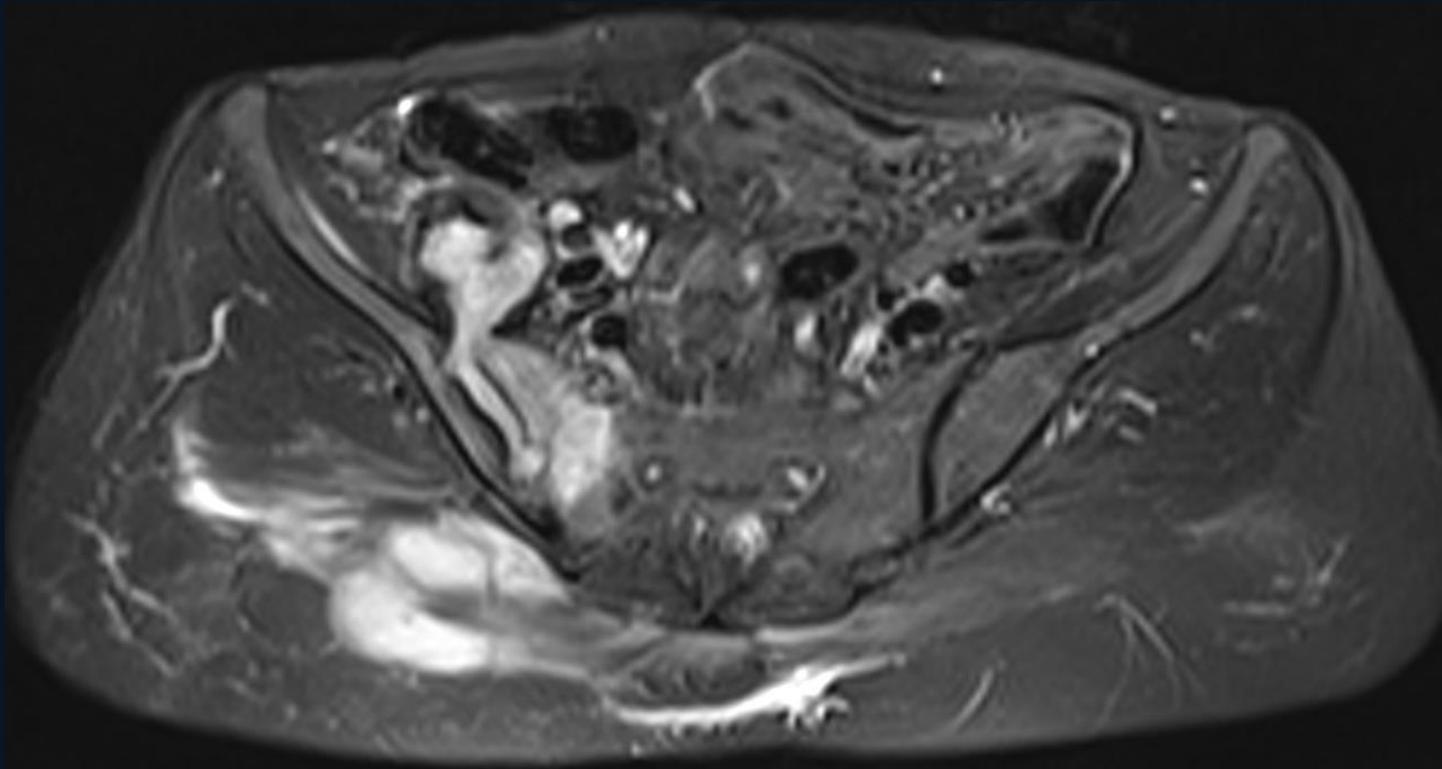


T2W

Septic sacroiliitis

M. tuberculosis

40 yo F

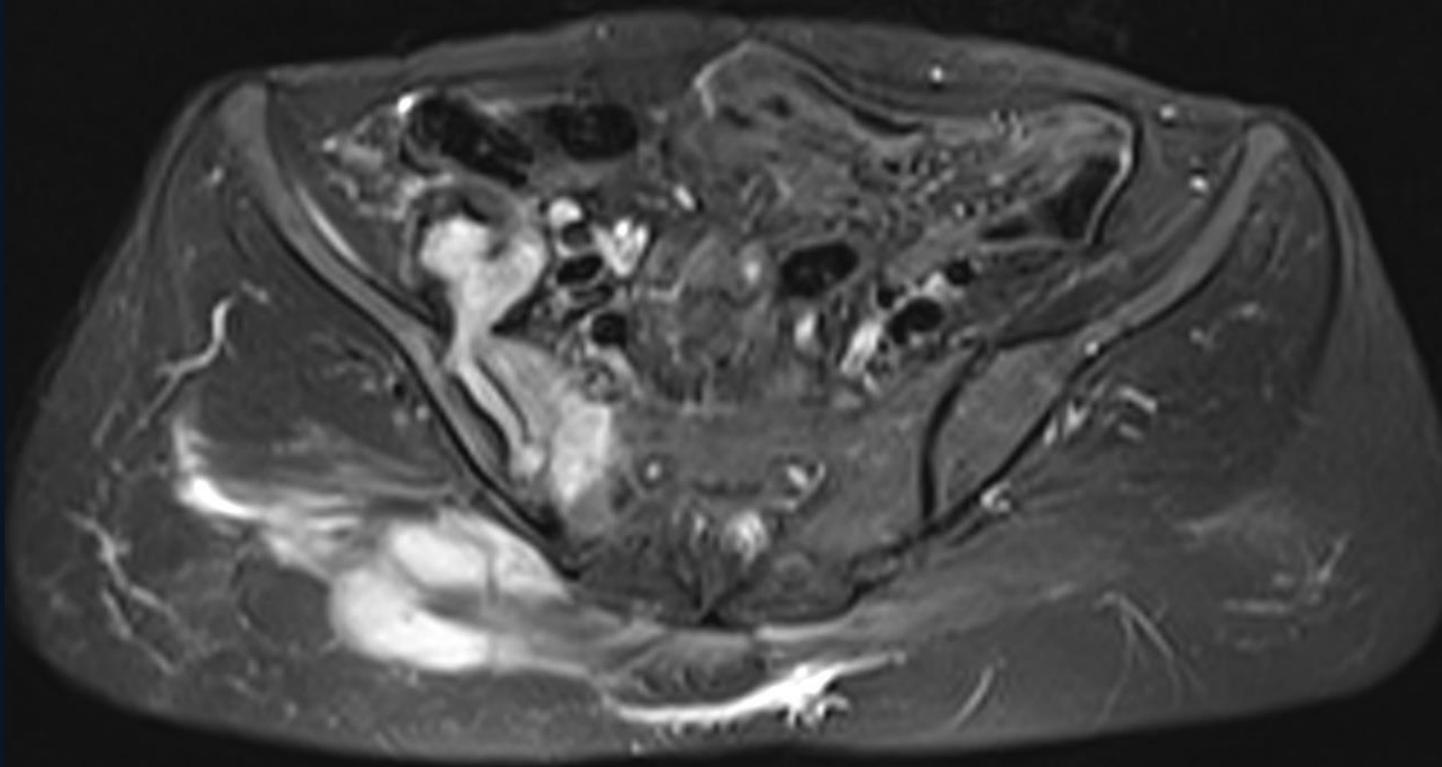


STIR

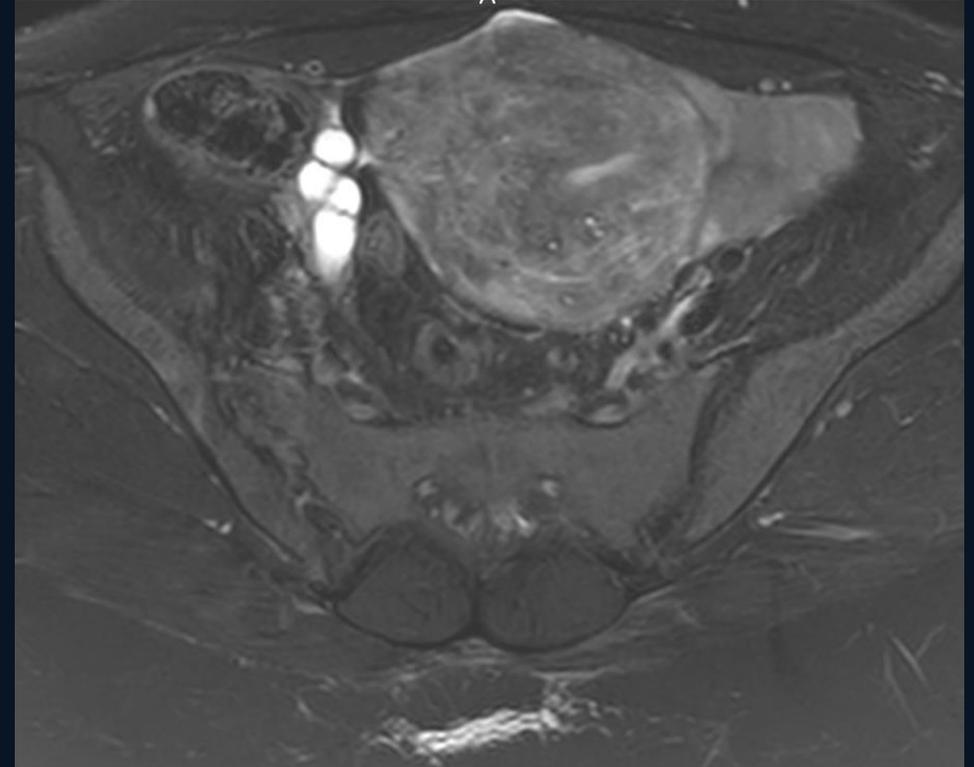
Septic sacroiliitis

40 yo F

M. tuberculosis • Following anti-Tb treatment



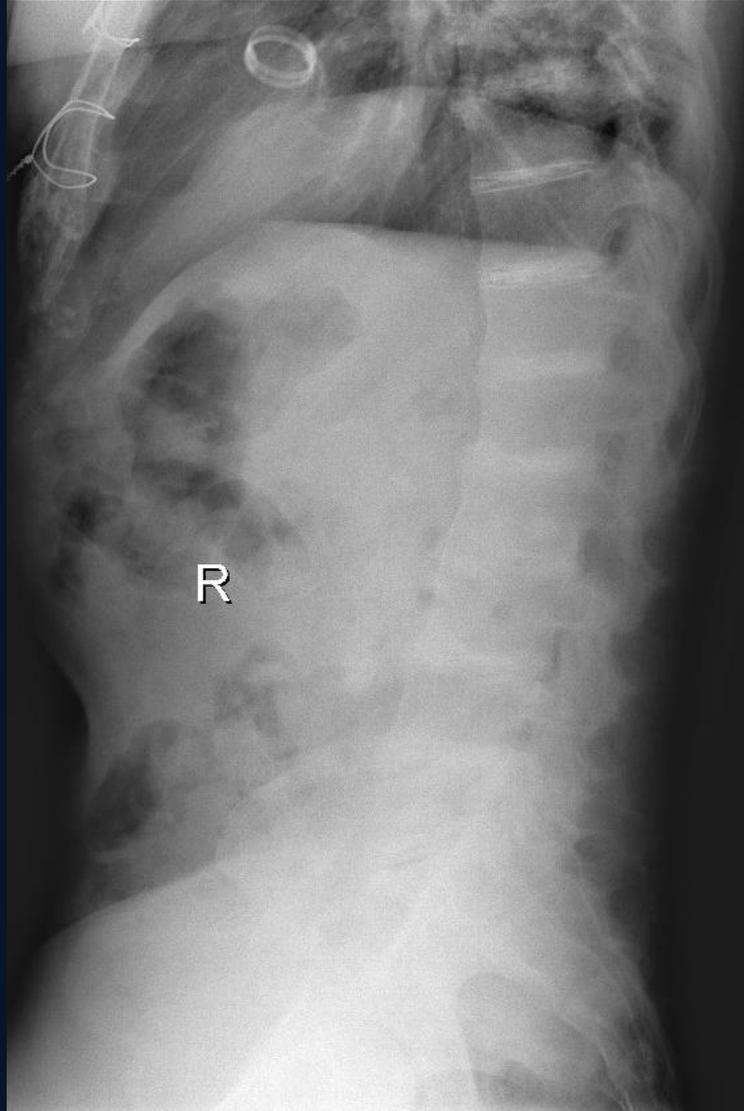
STIR, true axial



T2W FS, axial oblique

Question 8 • 65-year-old man with longstanding back pain

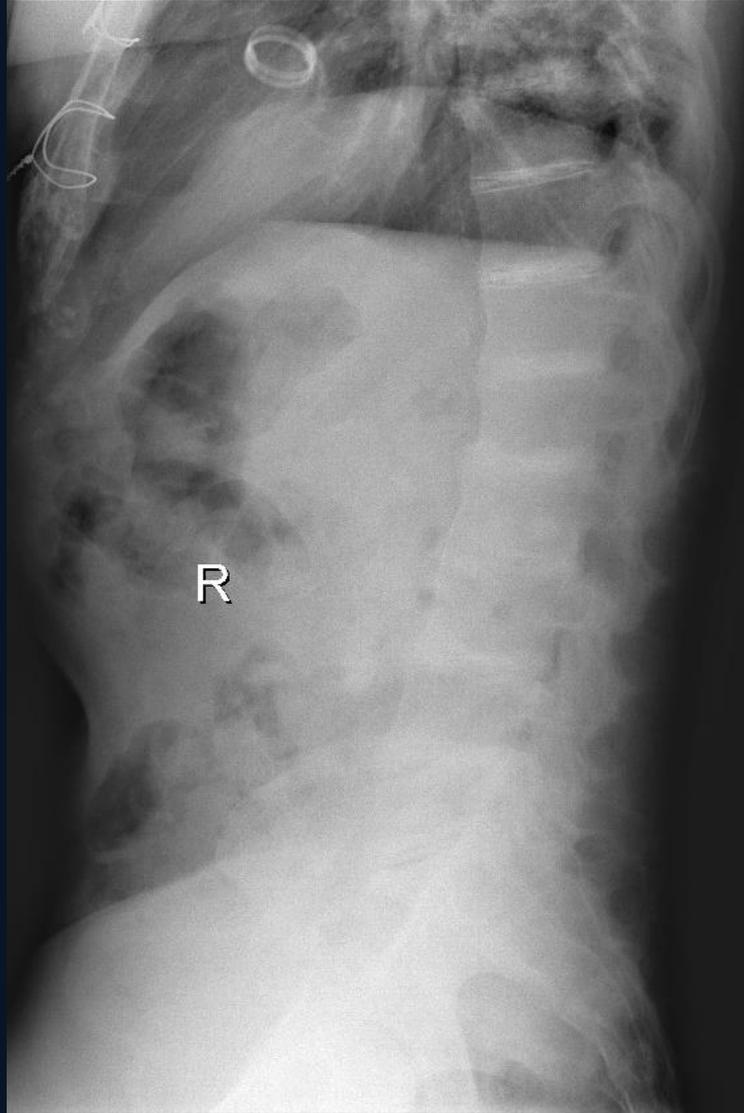
What is your diagnosis?



- A. Diffuse idiopathic skeletal hyperostosis
- B. Ochronosis
- C. Ankylosing spondylitis
- D. Gout

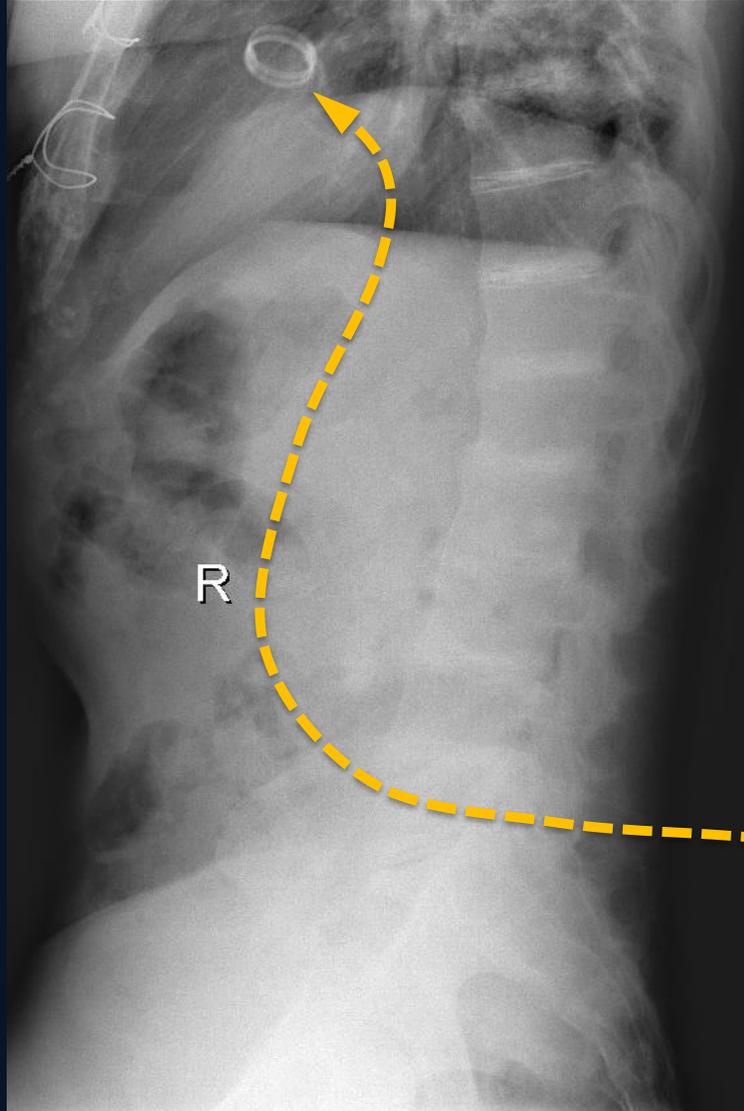
Question 10 • 65-year-old man with longstanding back pain

What is your diagnosis?



- A. Diffuse idiopathic skeletal hyperostosis
- B. Ochronosis
- C. Ankylosing spondylitis
- D. Gout

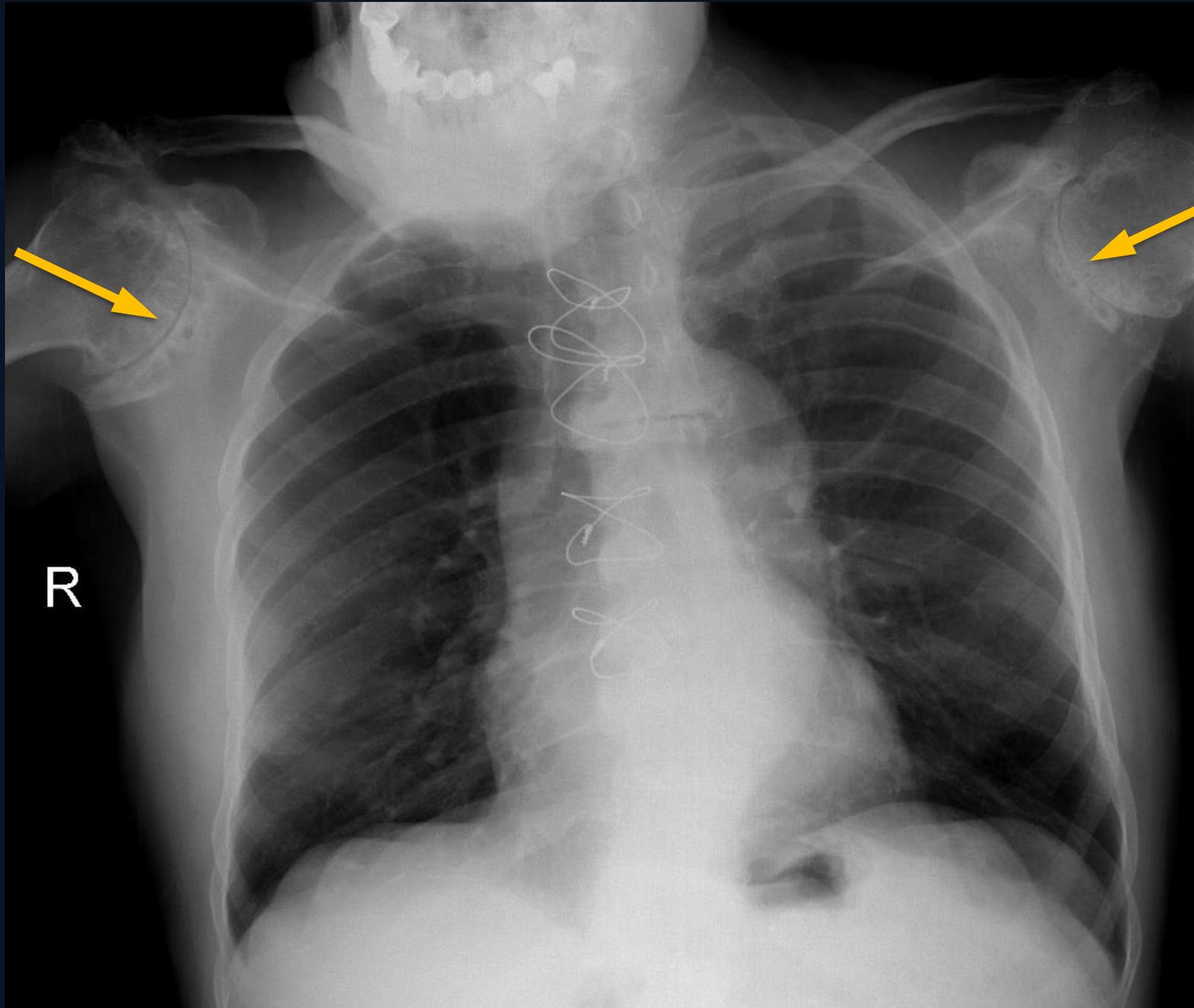
Question 10 • 65-year-old man with longstanding back pain
Ochronosis (alkaptonuria)



- A rare autosomal recessive multisystem metabolic disorder
- Lack of homogentisic acid oxidase
- Dense disc calcifications and osteoporosis
- Early osteoarthritis
- Chondrocalcinosis
- Aortic stenosis

Ochronosis
Alkaptonuria

65 yo M



R

Ochronosis

Alkaptonuria

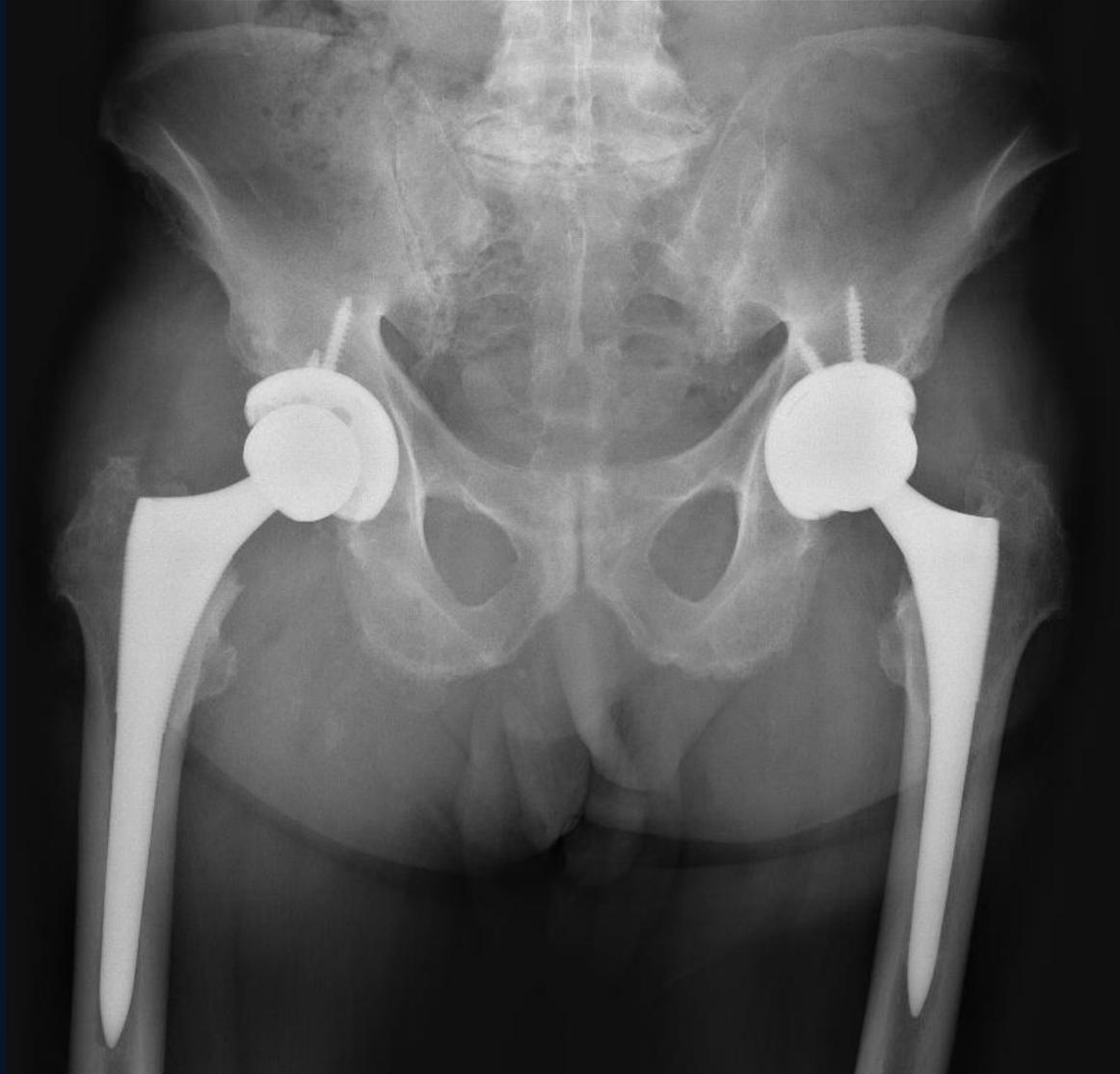
3313
10



65 yo M

R

Ochronosis
Alkaptonuria



R

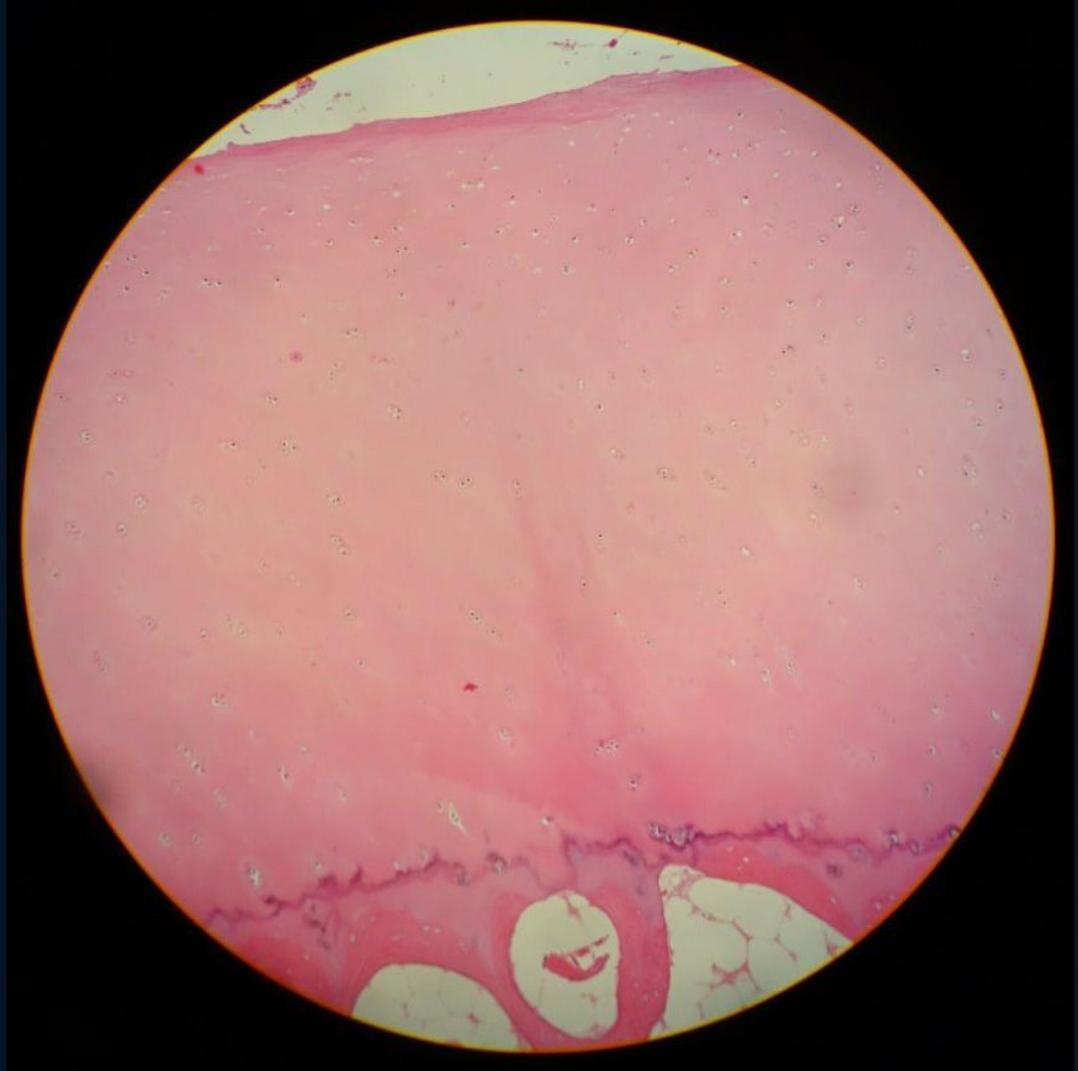


Ochronosis
Alkaptonuria

Homogentisic acid deposition

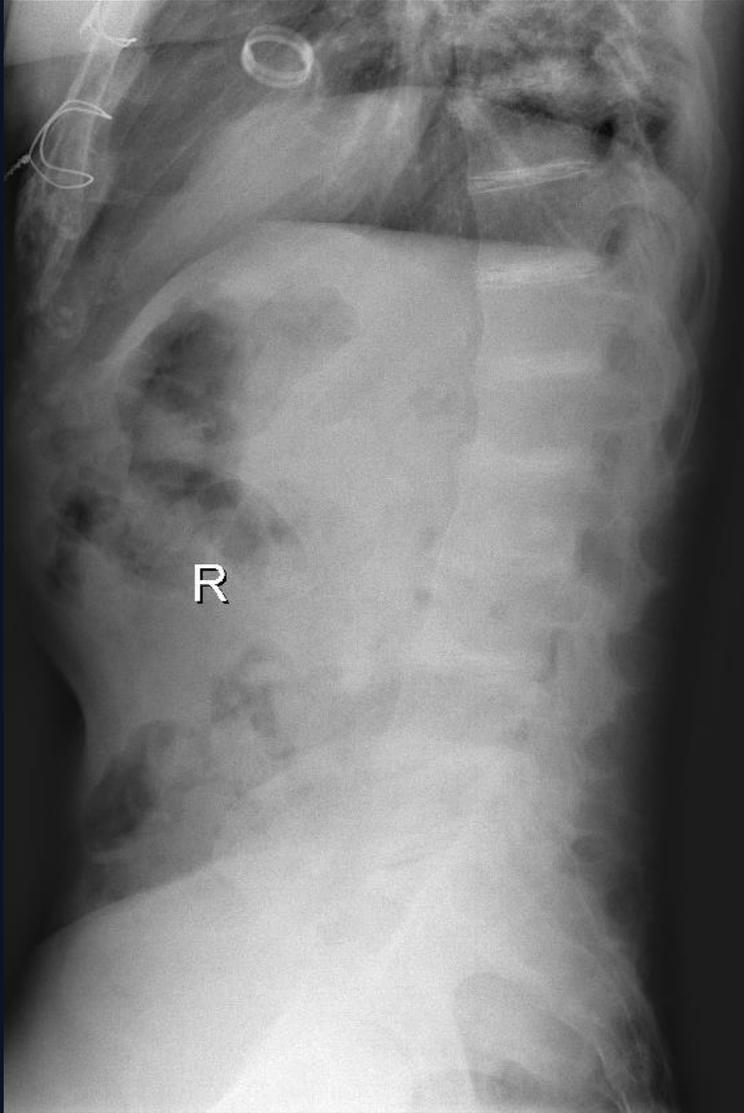


Ochronosis Homogentisic acid deposition
Alkaptonuria



Question 10 • 65-year-old man with longstanding back pain

What is your diagnosis?



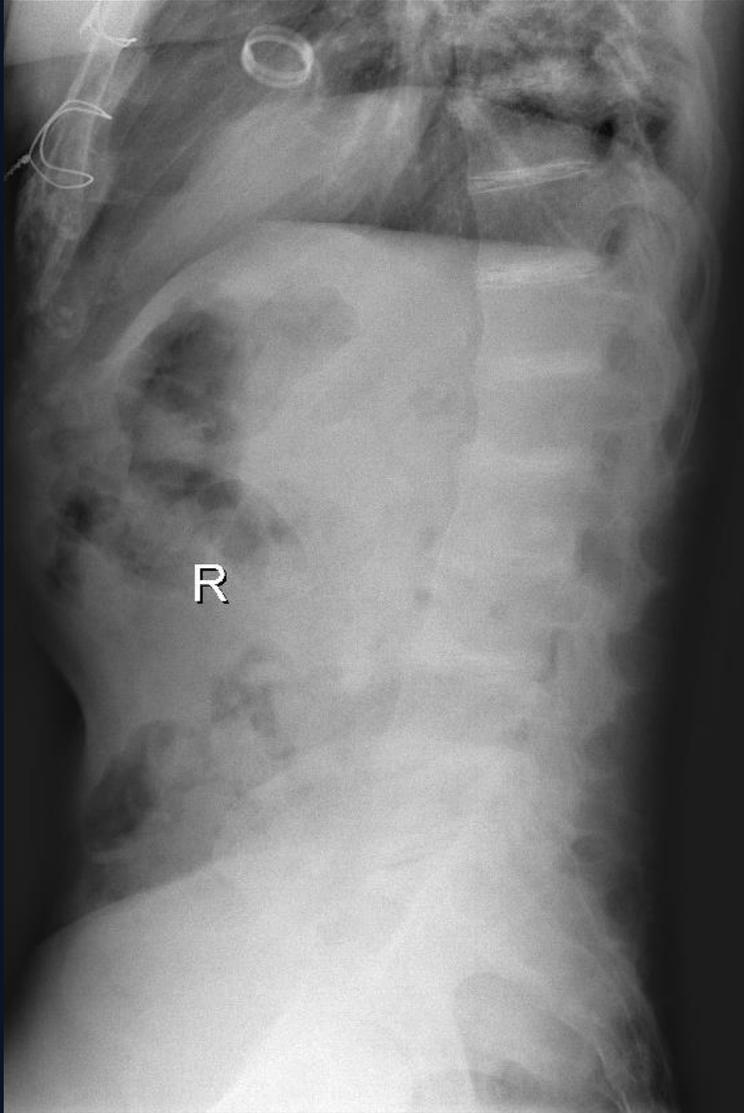
- A. Diffuse idiopathic skeletal hyperostosis
- B. Ochronosis
- C. Ankylosing spondylitis
- D. Gout

Diffuse idiopathic skeletal hyperostosis (DISH)



Question 10 • 65-year-old man with longstanding back pain

What is your diagnosis?



- A. Diffuse idiopathic skeletal hyperostosis
- B. Ochronosis
- C. Ankylosing spondylitis
- D. Gout

Ankylosing spondylitis

51 yo M

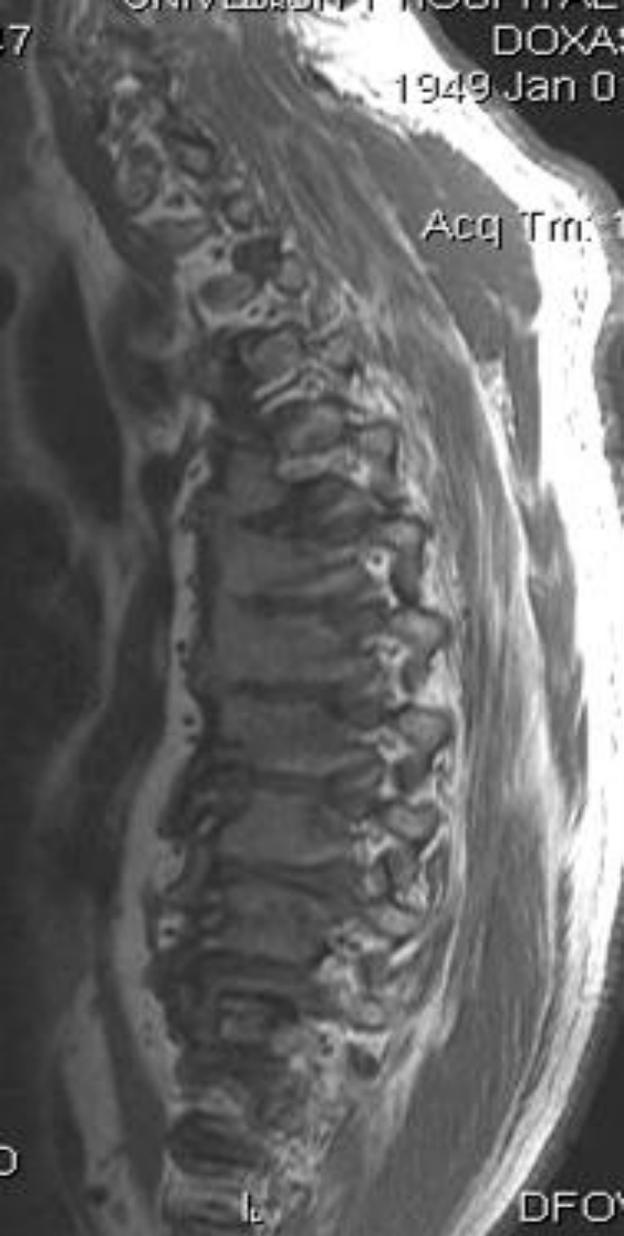


Bamboo spine

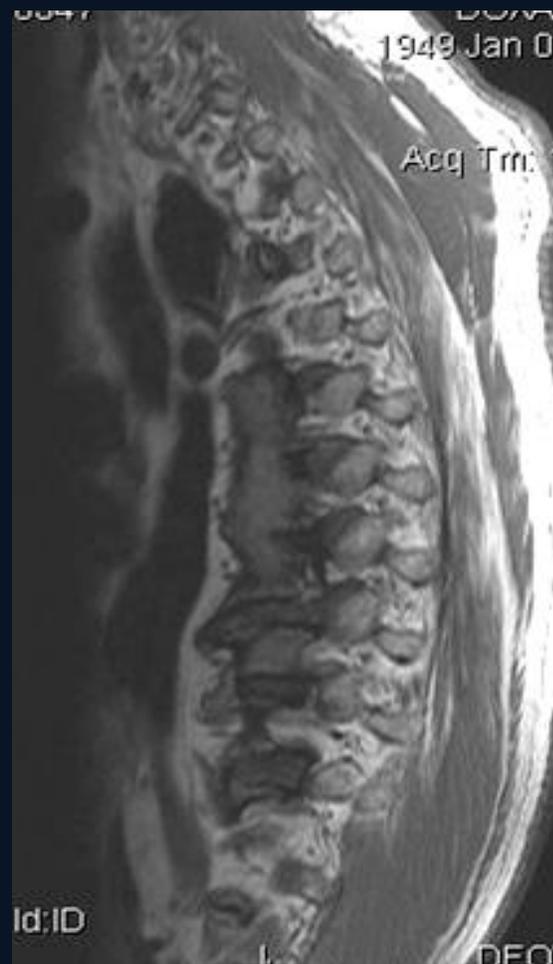
Ossification
of the outer fibers
of the annulus fibrosus

Marginal syndesmophytes

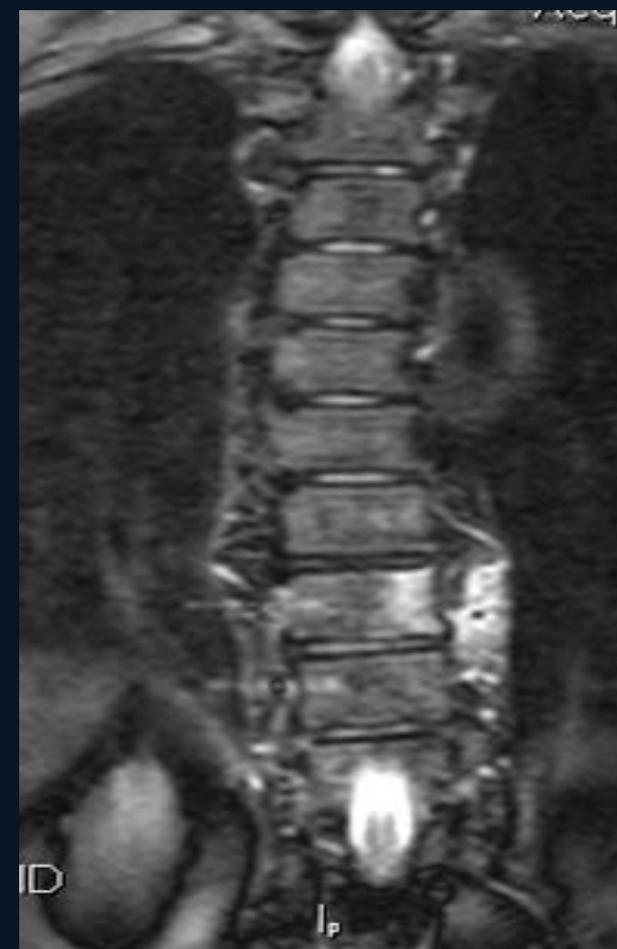
67 m, chronic back pain



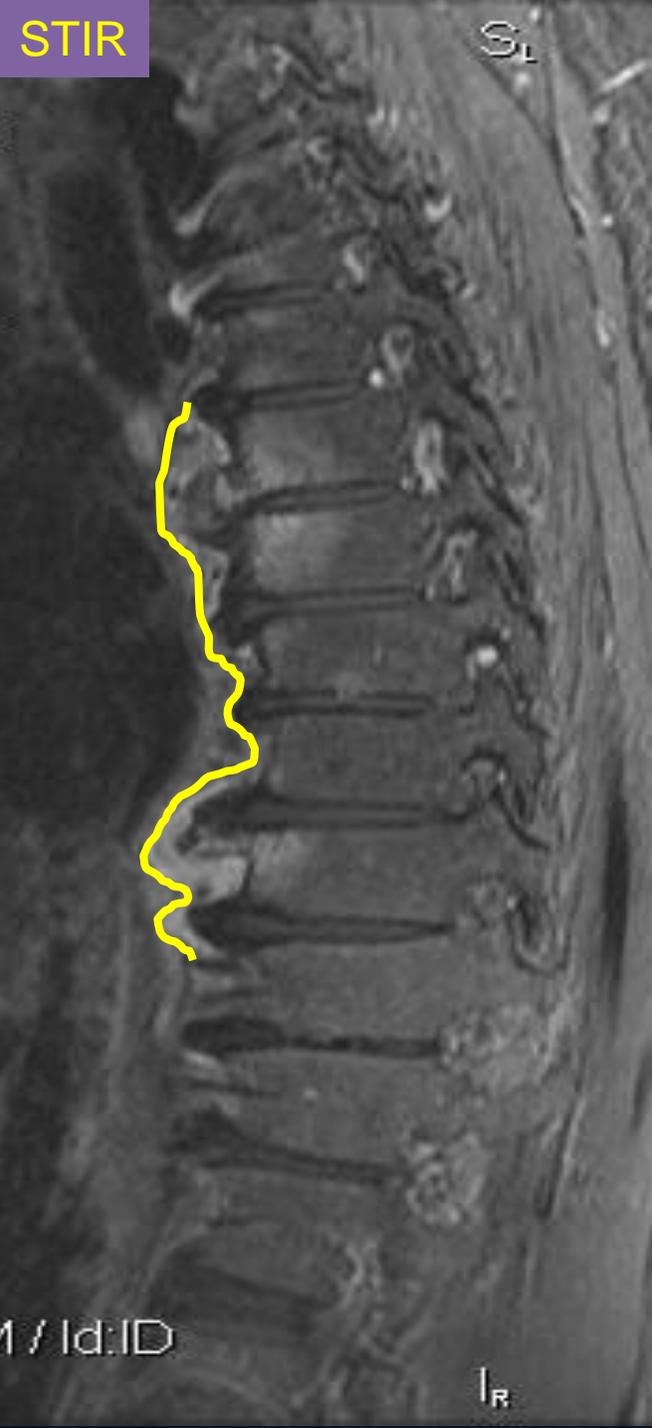
DISH



T1

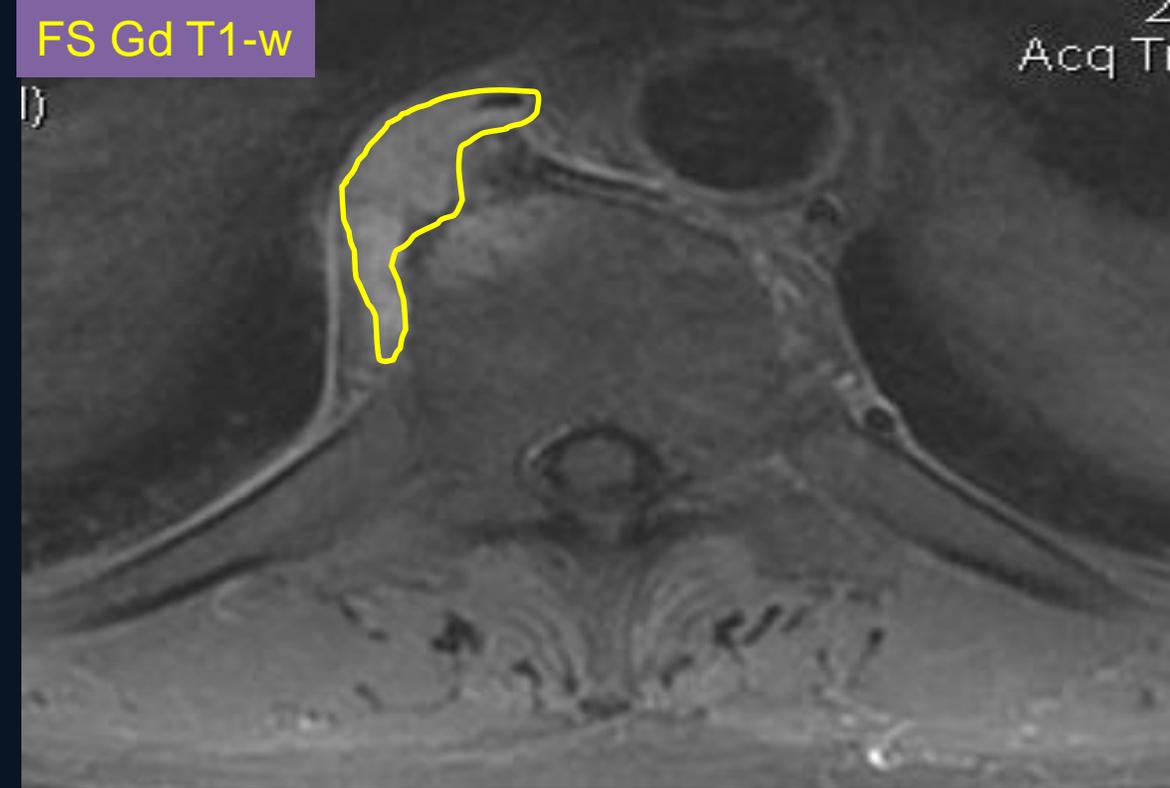


STIR



68 y/o, m

DISH



16
39.7 (COI)

