MRT av spondylartrit

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Spondylartropatier

- Grupp av överlappande sjukdomstillstånd
  - Ankyloserande spondylit / Mb. Bechterew
  - Reaktiv artrit (Campylobacter, Yersinia, Shigella, Chlamydia spp.)
  - Enteropatisk spondylit (Mb. Crohn, ulcerös colit)
  - Psoriasisartrit
  - Odifferentierad spondylartropati

Spondylartropatier karaktäriseras av

- Sacroiliit och (ascenderande) spondylit
  - ”Sacroiliitis is the hallmark of ankylosing spondylitis”
- Perifer artrit (juxtaartikulär > intraartikulär)
- Entesopati (senfästen, kapselfästen)
- Familjär disposition
- Association med HLA-B27
- Smygande debut med svår klinisk diagnos
- Tidigare svår radiologisk tidigdiagnos
- Tidigare endast symptomatisk behandling

Nu bra radiologi
Nu bra behandling

Modern behandling

- Sjukgymnastik
- NSAID
- DMARD
  - Corticosteroider
  - Sulfasalazin
  - Metotrexat
- Biologiska läkemedel
  - TNFα-blockerare
    - (tumor necrosis factor alpha)
    - Infliximab - Remicade
    - Adalimumab – Humira
  - Receptorprotein
    - Etanercept- Enbrel

Diagnostik

- Anamnes och status
  - BASMI (Bath Ankylosing Spondylitis Metrology Index)
  - BASFI (Bath Ankylosing Spondylitis Functional Index)
- Laboratorieprover?
- Radiologisk utredning – kotpelare och sacroiliacaleder
  - Röntgen
  - Magnetisk resonanstomografi
  - Datortomografi

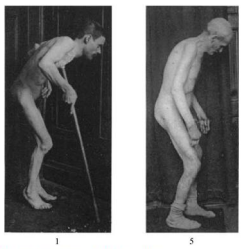

Fig. 9. Original photographs of ankylosing spondylitis (Marie, 1898).

The clinical description of ankylosing spondylitis was complete, and modern definitions continue to highlight Marie's constellation of observations, including young adult onset, progressive course, spinal stiffness, rigidity, ankylosis of the hips, dorsal kyphosis, limitation of chest expansion, and integrity of the knee joints (Fig. 9). In 1899

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Kliniska symptom AS

Age at onset < 40 years	Chronic back pain with onset < 50 years of age
Duration > 3 months	Morning stiffness > 30 minutes
Insidious onset	Improvement with exercise, but not with rest
Improvement with exercise	Awakening during the second half of the night
Morning stiffness	Alternating buttock pain
Calin et al, 1977 [43]	Rudwaleit et al, 2006 [167]

Table 7: Comparison of criteria for inflammatory back pain

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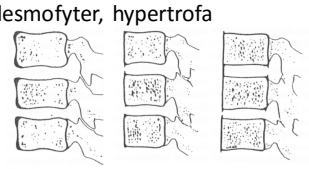
Patologi

- Inflammation i enteser
  - Ligamentfästen, senfästen
  - Diskkapsel circumferent kring disken
  - Ledkapslar (facettleder, costovertebralleder, costotransversalleder)
- Benresorption (apofysit, leddestruktion)
- Bennybildning (syndesmofyter, hypertrofa pålagringar)
- Ankylos



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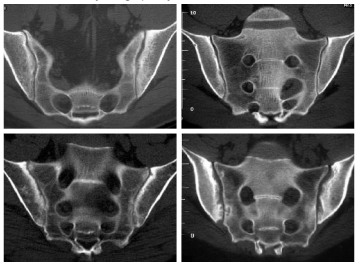
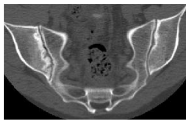
Pfizer Experience

CT of sacroiliitis

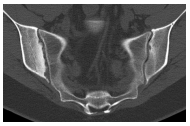
Four cases of ankylosing spondylitis; from mild to severe disease



Psoriatic arthritis



Reactive arthritis



Pathologic findings: Erosions, sclerosis, ankylosis

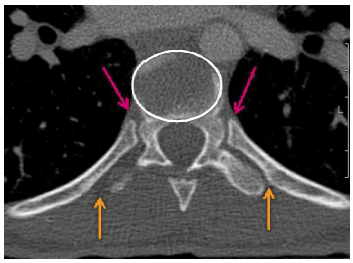
Pfizer Experience

Magnetic resonance imaging (MRI)

- Since1990
- High sensitivity and specificity
- Active inflammation
  - Juxta-articular bone marrow edema
  - Effusion
  - Contrast enhancing inflammatory tissue
- Chronic post-inflammatory changes
  - Fatty metaplasia of bone marrow
  - Erosions
  - Sclerosis
  - Ankylosis

Pfizer Experience

Anatomic sites for inflammatory changes



Disk, surrounded by capsule and ligaments

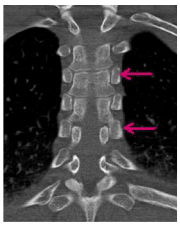
Costo-vertebral joints

Costo-transverse joints

Facet joints
(not shown on image)

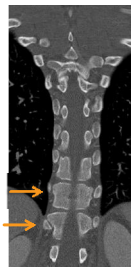
Pfizer Experience

Anatomic sites for inflammatory changes



Costo-vertebral joints 2-10

Costo-transverse joints



Costo-vertebral joints 11-12

Ribs 2 – 10 articulate at disk level

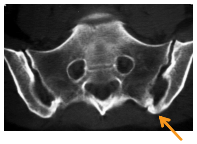
Ribs 11 – 12 articulate on vertebral body

Pfizer Experience

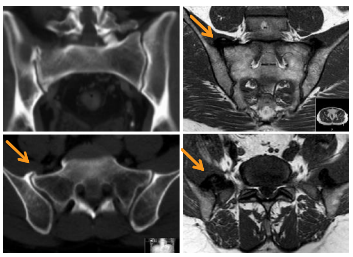
Normal variants and non-inflammatory disease

With increasing age

Accessory sacroiliac joints



DISH (Diffuse idiopathic skeletal hyperostosis, Mb Forestier – Rotes-Querol)

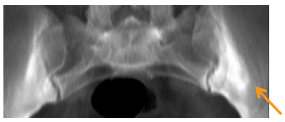


Pfizer Experience

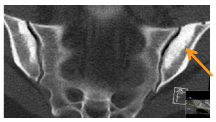
Normal variants and non-inflammatory disease

Stress-related

OCI (Osteitis condensans ilii)



Radiography

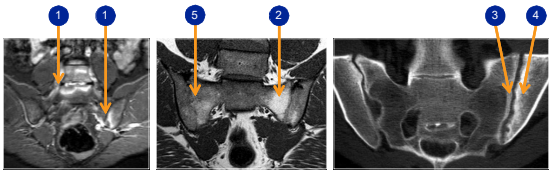


CT

Same patient on both images

Pfizer Experience

Inflammatory and post-inflammatory sacroiliitis



Inflammation

1. Enthesitis (inflammation of the entheses – insertion points for ligaments and joint capsules)

Post-inflammatory reparative and/or destructive changes

2. Fatty conversion of bone marrow
3. Erosions
4. Sclerosis and new bone formation
5. Ankylosis

Pfizer Experience

Inflammatory and post-inflammatory AS

- Enthesitis (radiographic Romanus lesions, corner lesions on MRI)
- New bone formation (syndesmophytes)
- Further ossification of ligaments, vertebral ankylosis
- Ankylosis of facet joints
- Osteoporosis

Pfizer Experience

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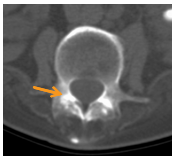

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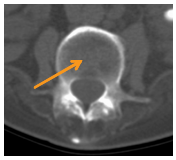
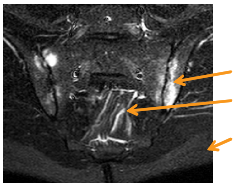


Pfizer Experience

MRI: Examination protocol for 1.5 or 3T

STIR (Short tau inversion recovery) sequence.

Used to detect active inflammation with bone marrow edema. All signal from fat is extinguished, and signal is derived exclusively from water.



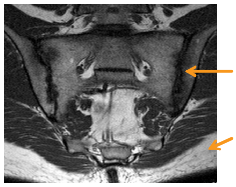
Pfizer Experience

MRI: Examination protocol for 1.5 or 3T

Spin-echo (SE) T1-weighted sequence.

Used for anatomy, and for chronic changes such as fatty metaplasia of bone marrow, sclerosis, and erosions.

Signal information from fat.



Pfizer Experience

Additional sequences are optional

- SE T1-weighted with fat saturation or proton density (PD) with fat saturation may show erosions better
- Intravenous gadolinum contrast has not been shown to have added value in diagnosis

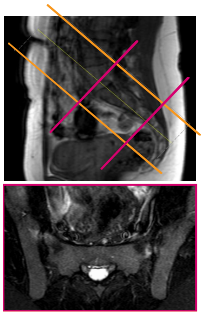
Pfizer Experience

MRI: Examination protocol for 1.5 or 3T

Scan planes, anatomy

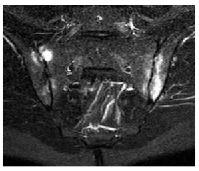
Oblique coronal sections
Parallel to the anterior border of the sacrum (about S2 level), 3 mm thick

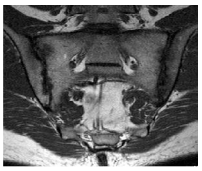
Oblique axial sequences
Perpendicular to the sacrum, 3-4 mm thick



Pfizer Experience

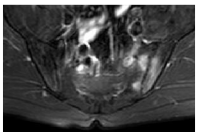
Oblique coronal STIR





Oblique coronal SE T1

Oblique axial STIR



Recommended standard examination protocol

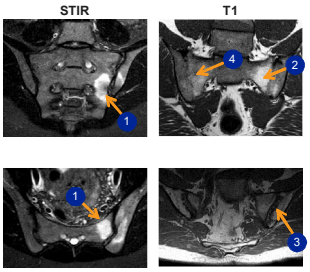
- Oblique coronal STIR and SE T1
- Oblique axial STIR (or TSE T2 fs)

Pfizer Experience

Inflammatory pathologic changes

1. Enthesitis with bone marrow edema
2. Fatty metaplasia of bone marrow
3. Erosions
4. Ankylosis

Small areas of fatty infiltration or edematous high signal may be seen in healthy individuals. According to the ASAS classification criteria there should be minimum 2 areas of "clearly present" bone marrow edema "highly suggestive of SpA" or edema in 2 contiguous sections



Pfizer Experience

MRI protocol for axial SpA

Sequences

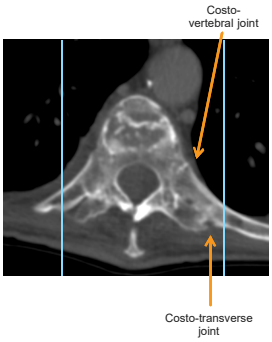
- STIR – active inflammation, bone marrow edema
- SE T1 – anatomy, post-inflammatory fatty replacement of bone marrow

Pfizer Experience

MRI protocol for axial SpA

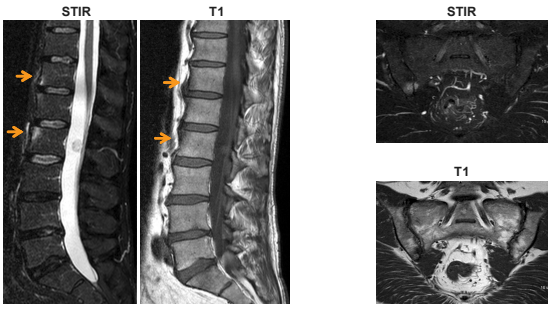
Scan orientation, anatomy

- Sagittal scanning
- Two scans to cover entire spine (cervico-thoracic + thoraco-lumbar)
- Wider scanning than for regular lumbar spine MRI in order to cover area for costo-vertebral and costo-transverse joints

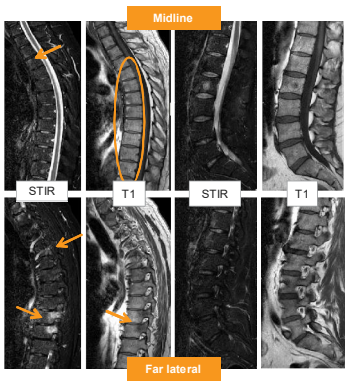


Pfizer Experience

Active corner lesions and sacroiliitis



Pfizer Experience



Healthy

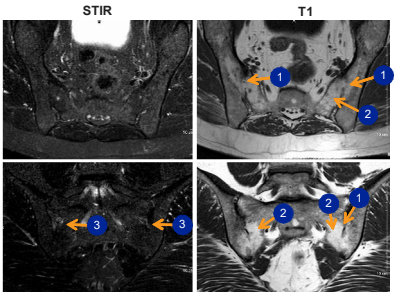
Small areas with bone marrow edema or fatty infiltration is a common finding in healthy individuals.

With diagnosis

At least 2 edematous or 5 fatty infiltration areas are needed for diagnosis of AS on MRI.

Pfizer Experience

Sacroiliac joints in the same patient. Ankylosis, fatty infiltration, small areas of bone marrow edema

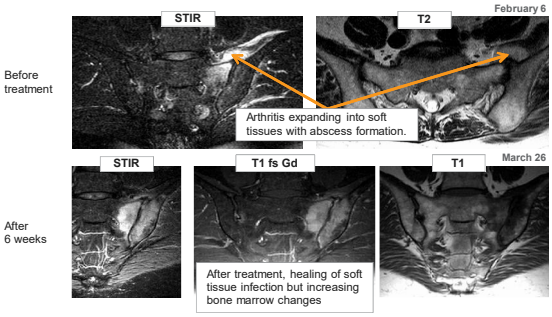


1. Ankylosis
2. Fatty infiltration
3. Bone marrow edema

Pfizer Experience

Differential diagnosis

Infectious (septic) sacroiliitis

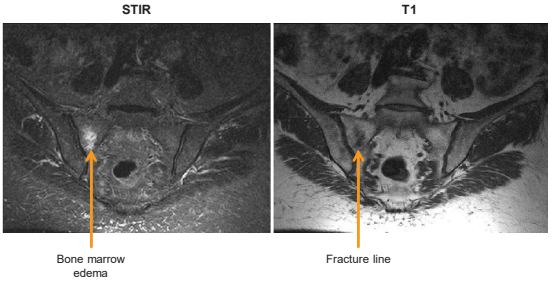


Stürzenbecher et al. MR imaging of septic sacroiliitis. Skeletal Radiol. 2000;29:439-446.

Pfizer Experience

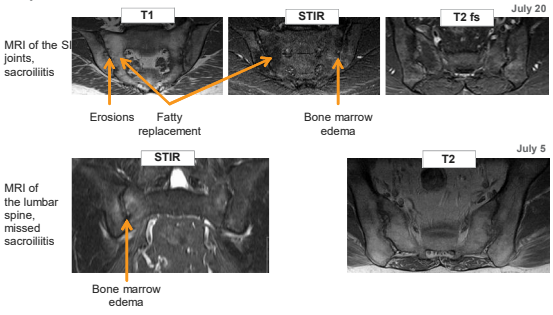
Differential diagnosis

Sacral insufficiency fracture, 74-year-old female



Pfizer Experience

The diagnosis of AS can often be found in prior studies



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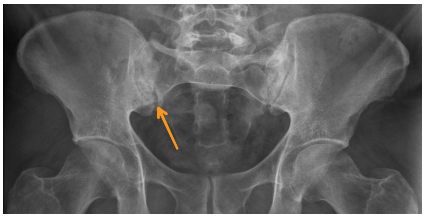
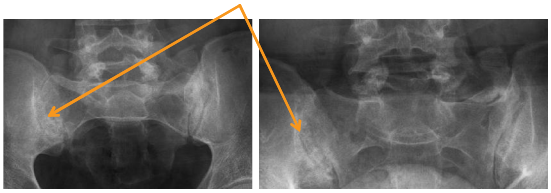


Three years before: Pelvis and hip radiography.
Missed diagnosis (right-sided sacroiliitis, suspicious on the left)

Pfizer Experience

The diagnosis of AS can often be found in prior studies

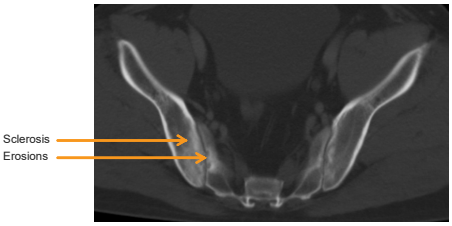
Sacroiliitis with sclerosis and erosions



Sacroiliac joint radiography four years before:
Missed diagnosis (right-sided sacroiliitis, suspicious on the left)

Pfizer Experience

The diagnosis of AS can often be found in prior studies

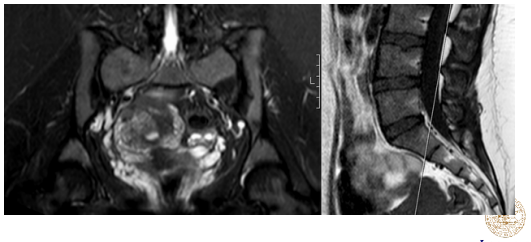


Polytrauma five years before:
Missed diagnosis (unilateral sacroiliitis right-sided sacroiliitis, suspicious on the left)

Våga ställa diagnos!

22-årig kvinna. Ryggproblem ett par år. SI-leder?

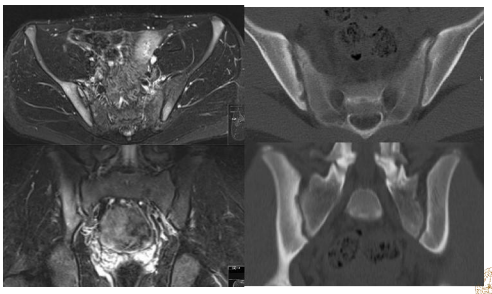
Samtidigt:



Exakt ett år tidigare

Ytterligare 7 månader tidigare. Bilateralt benmärgsödem - sacroiliit.

Jämför CT och MRT



2009 2008

Pfizer Experience

Rekommenderad läsning

MRT:
Sieper J., et al. The Assessment of SpondyloArthritis international Society (ASAS) handbook: a guide to assess spondyloarthritis.
Ann Rheum Dis 2009; 68 (2):1-44.

Datortomografi:
Geijer M. Clinical utility and evaluation of radiology in diagnosing sacroiliitis (Thesis). Gothenburg University 2008. https://gupea.ub.gu.se/dspace/handle/2077/18380

Röntgenundersökning:
Braum L, Hermann K-GA. Utility of imaging in the diagnosis and assessment of axial spondyloarthritis. Int J Adv Rheumatol 2010; 8:127-135.

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EMEA/14/0/PSE/10