



## Billeddiagnostisk udredning af patienter med langvarige rygsmerter - Specifikke og uspecifikke

Michel Bach Hellfritsch  
Overlæge  
Radiologisk afdeling  
Aarhus Sygehus

## Program

- Kort præsentation af modaliteter
- Gennemgang af årsager til kroniske rygsmerter – set fra en radiologs synsvinkel - samt forslag til anvendelse af billeddiagnostik ved kroniske rygsmerter.

3

## Billeddiagnostik

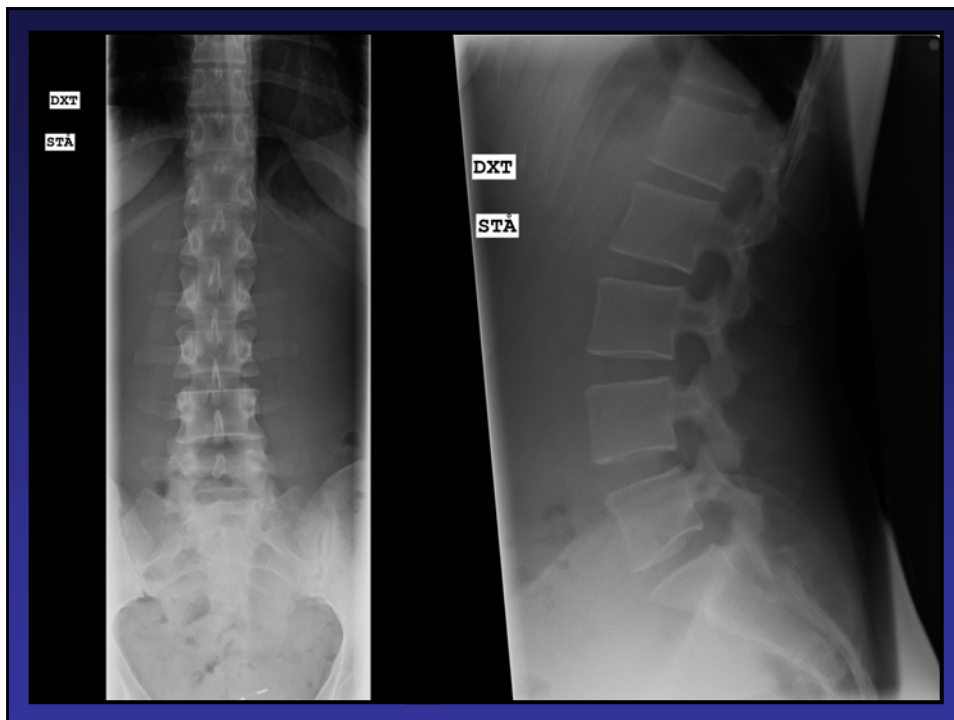
- Konventionel røntgen
- CT-skanning
- MR-Skanning
- Ultralydskanning

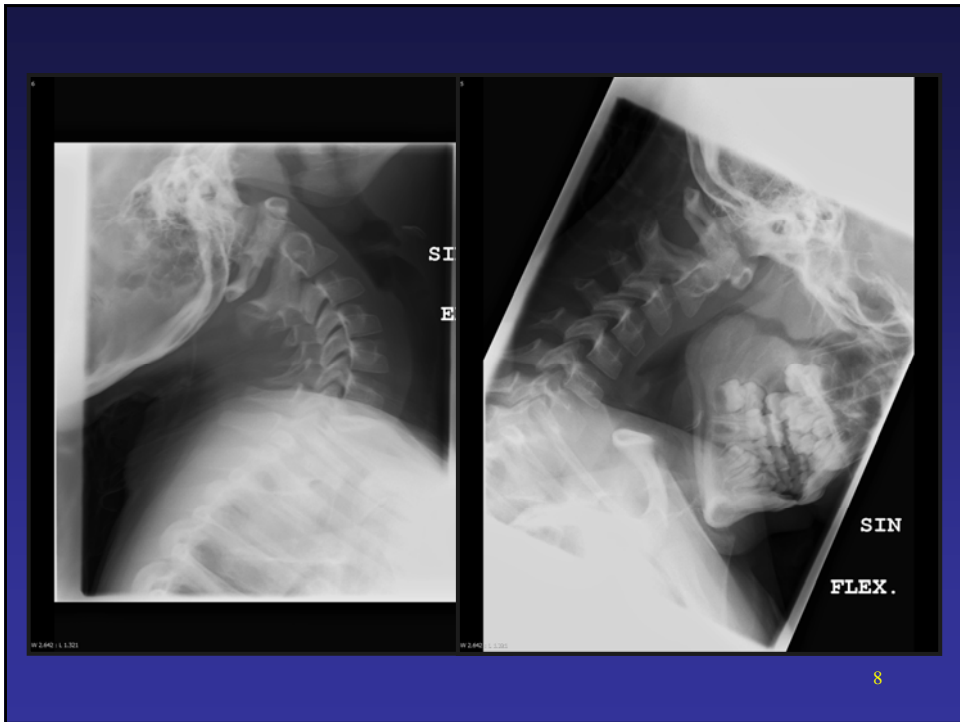
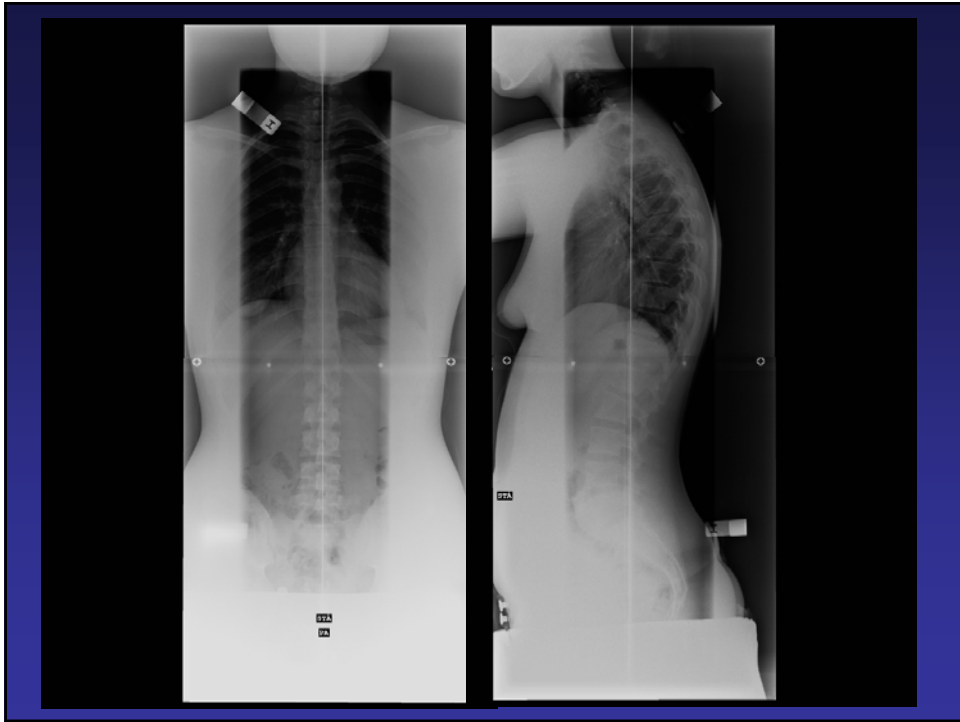
4

## Billeddiagnostik

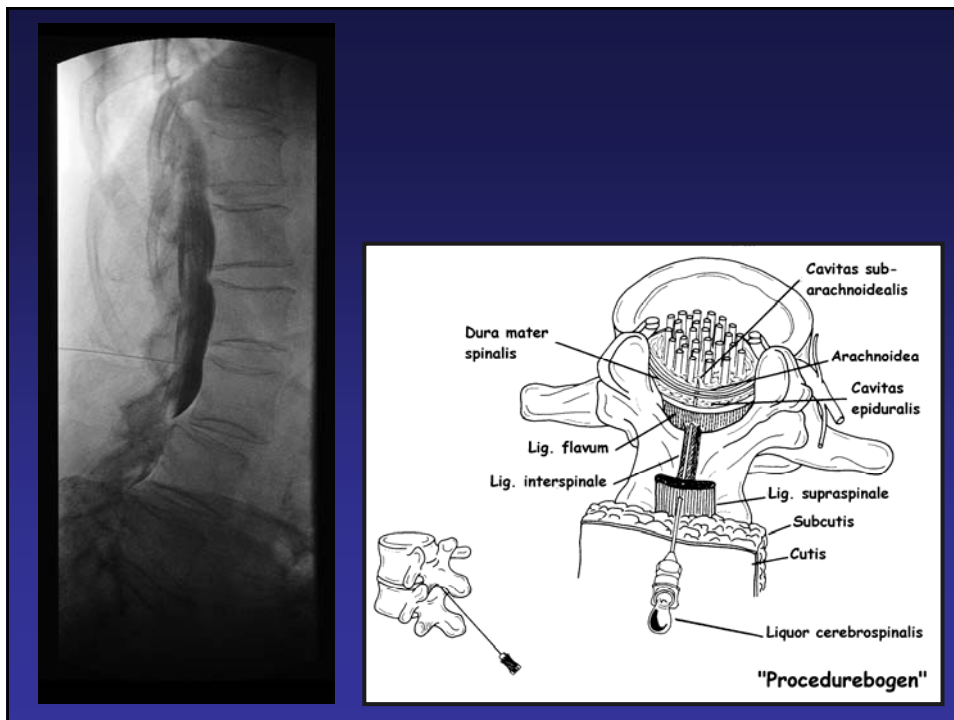
- Konventionel røntgen
- CT-skanning
- MR-Skanning
- Ultralydskanning

5









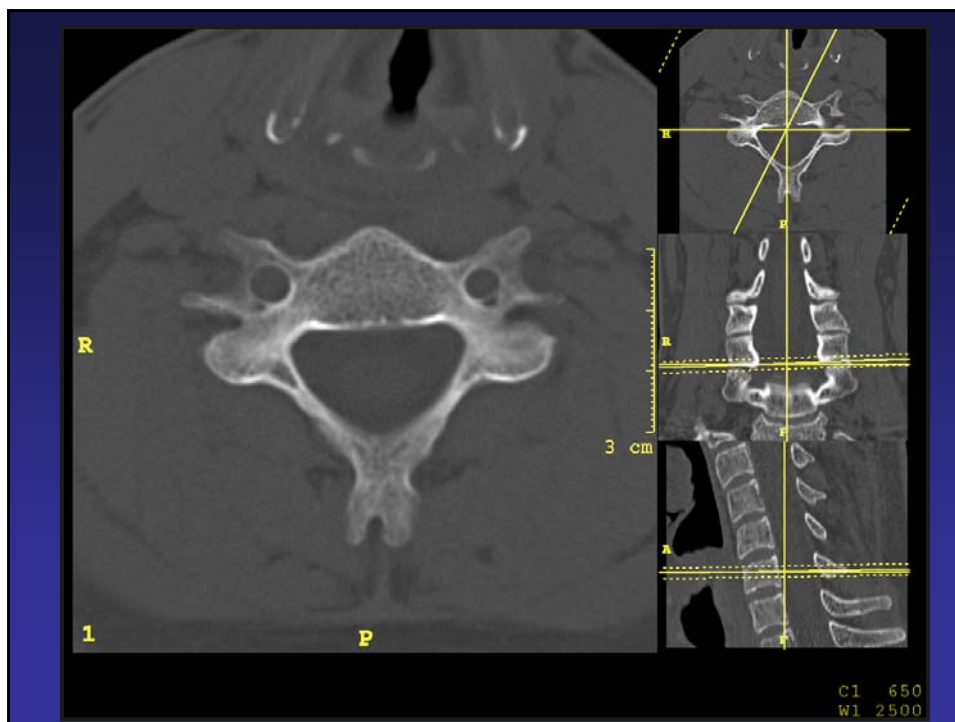
## Billeddiagnostik

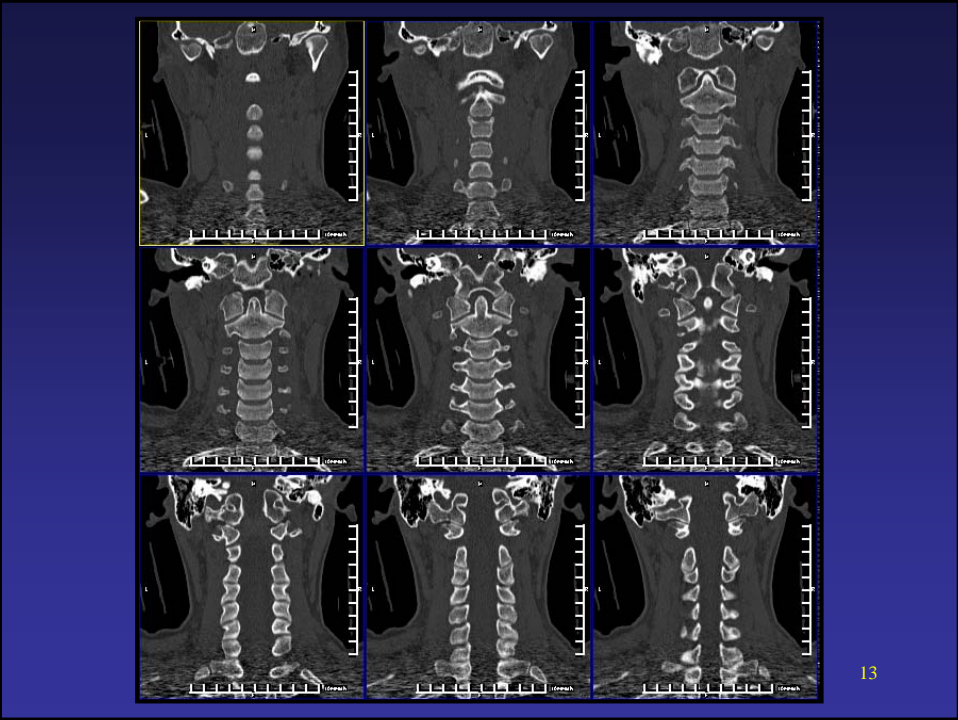
- Konventionel røntgen
- God fremstilling af knoglestrukturen.
- God til at vurdere akser.
- Mulighed for at lave funktionsundersøgelser
- Bløddelene, knoglemarven.
- Røntgenstråler.

# Billeddiagnostik

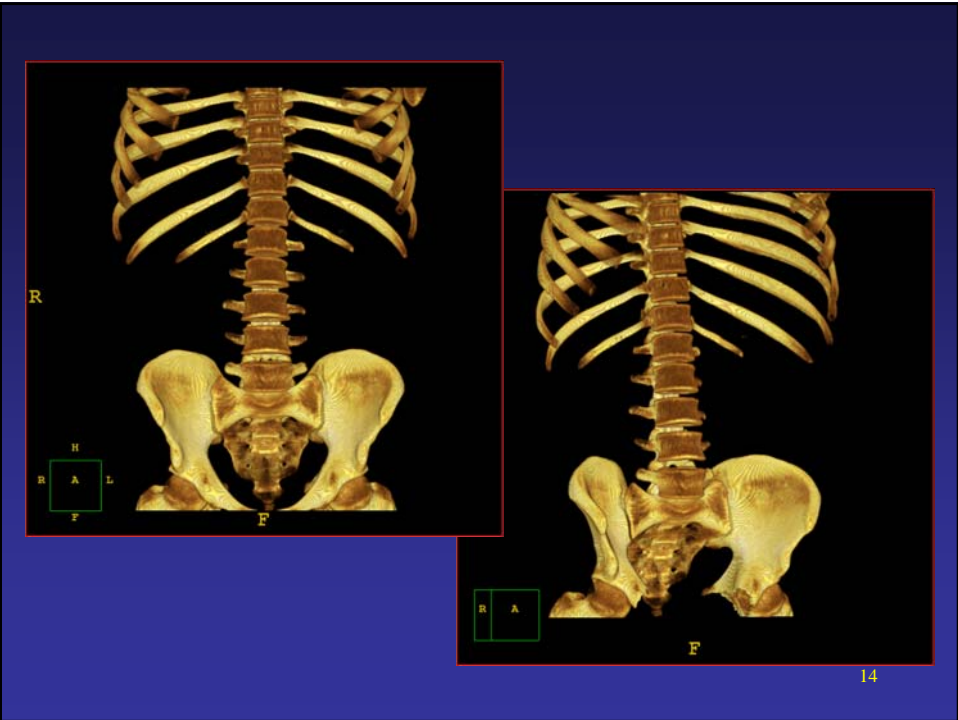
- Konventionel røntgen
- **CT-skanning**
- MR-Skanning
- Ultralydskanning

11

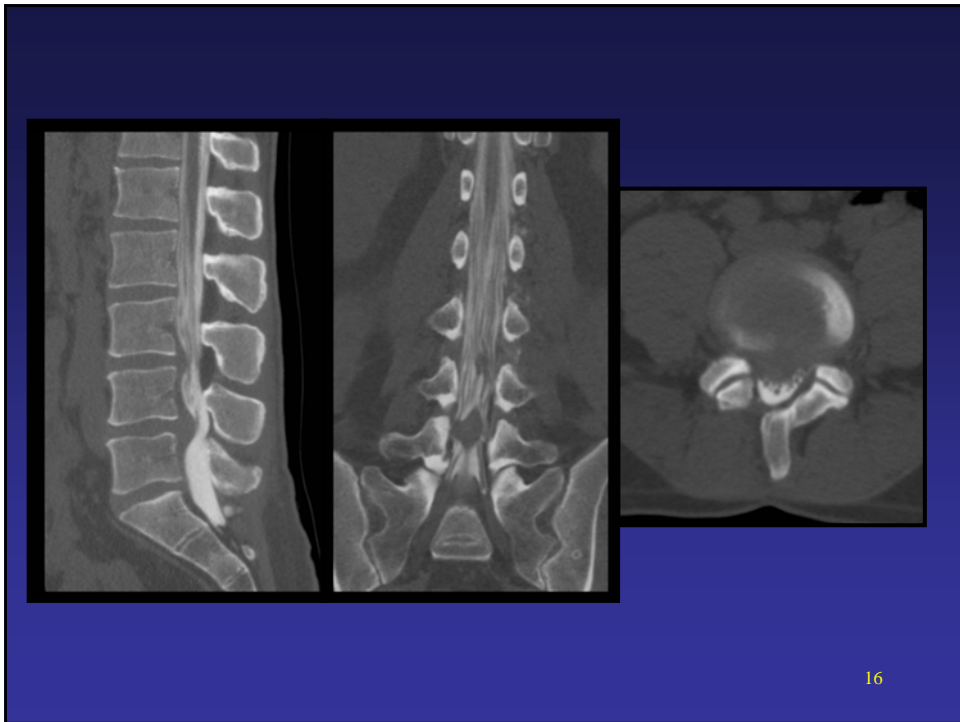
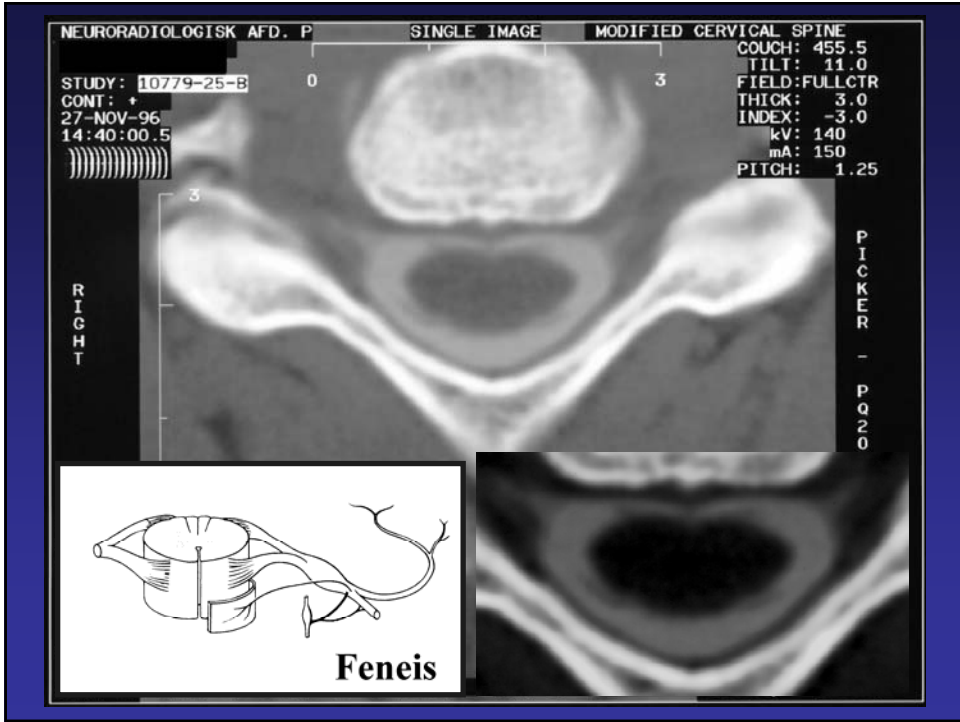




13



14





## Billeddiagnostik

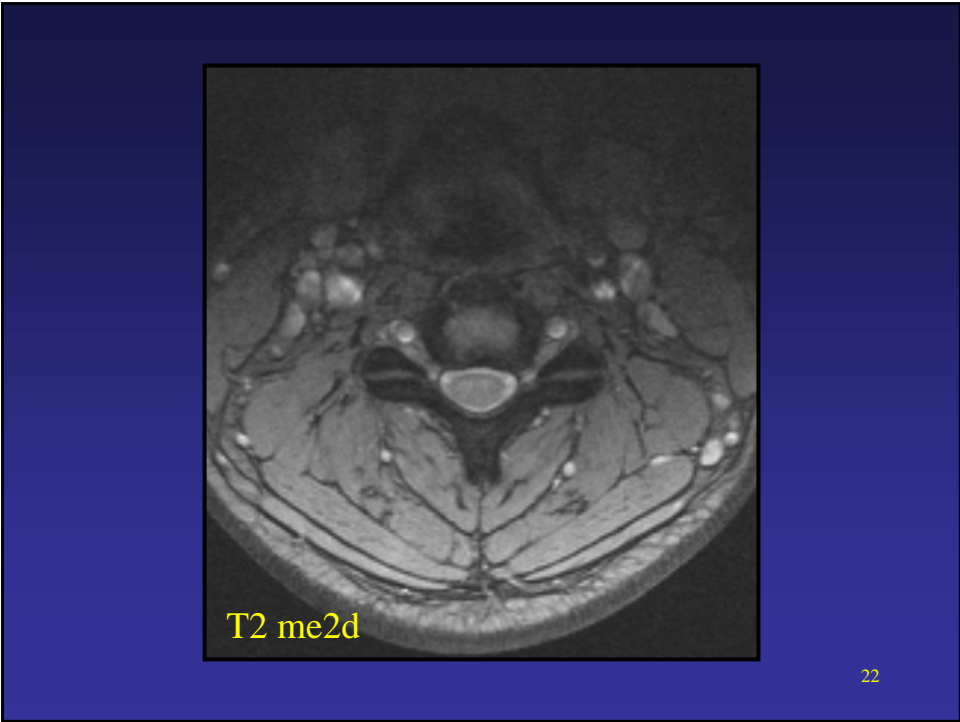
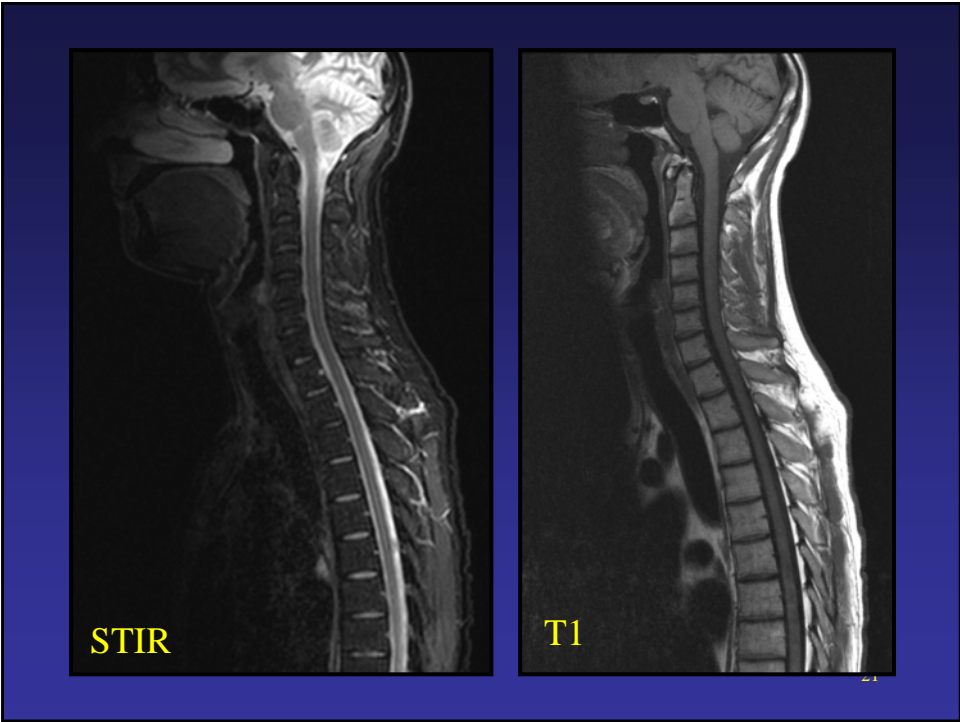
- CT-skanning
- Særlig god fremstilling af knoglestrukturen.
- Mulighed for MPR og 3D.
- Røntgenstråler.
- Bløddelene (i columna!) – meget bedre end konv. røntgen, ikke så godt som MR.

19

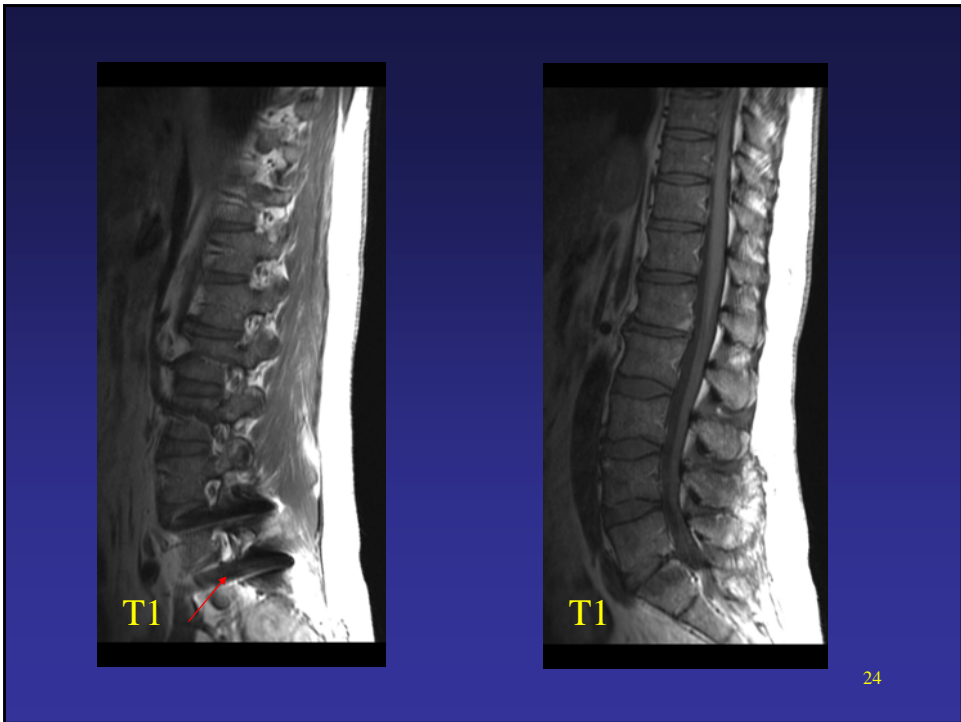
## Billeddiagnostik

- Konventionel røntgen
- CT-skanning
- MR-Skanning
- Ultralydskanning

20









## Billeddiagnostik

- MR-Skanning
- Særdeles god fremstilling af columnas bløddele.
- Kontraindikationer (Absolutte/relative).
- Lang undersøgelsestid (Flere sekvenser á 4-6 min, totalt 20 – 30 min).

25

## Billeddiagnostik

- Konventionel røntgen
- CT-skanning
- MR-Skanning
- Ultralydskanning

26

## Ultralydskanning

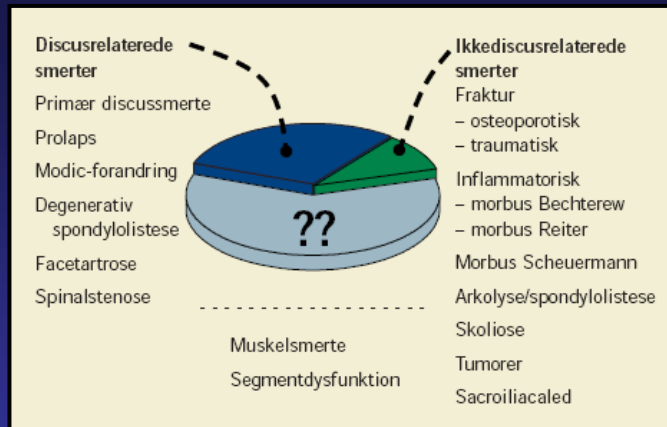
- Ingen/minimal plads i udredning af langvarige rygmerter (Abdominalt aortaaneurisme, hydronefrose...)

27

## Langvarige rygmerter

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Malformationer</li><li>• Skoliose</li><li>• Mb. Scheuermann</li><li>• Arkolyse med/uden spondylolistese.</li><li>• Discusdegeneration<ul style="list-style-type: none"><li>– Discus protusion</li><li>– Discus prolaps</li></ul></li><li>• Spondylartrose</li><li>• Kissing spine (Mb. Bastrup).</li></ul> | <ul style="list-style-type: none"><li>• Spinalstenose</li><li>• Rescesstenose</li><li>• Tumorer</li><li>• Inflammatoriske rygsygdomme</li><li>• Post-operative ryg</li><li>• Spondylit/spondylo-discit</li><li>• M.fl.</li></ul> |
|--|--|

28

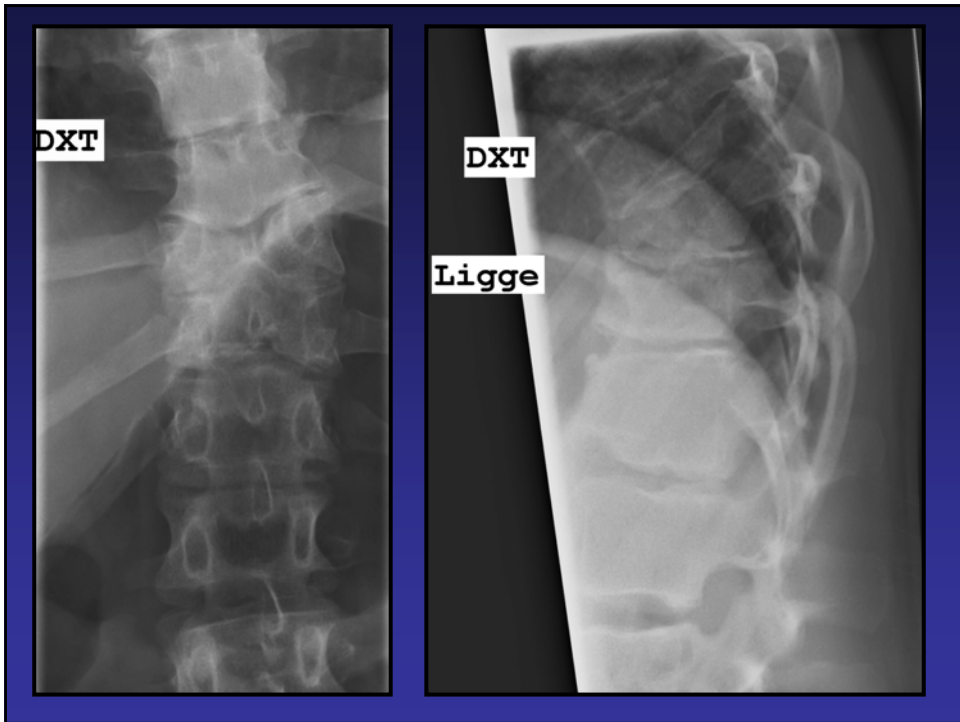
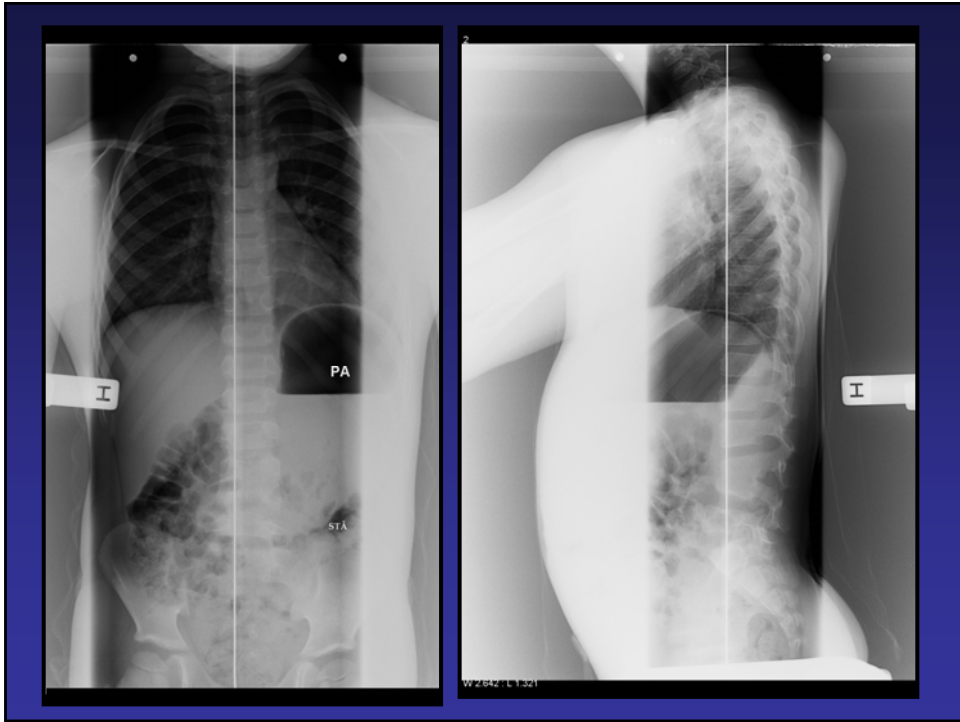


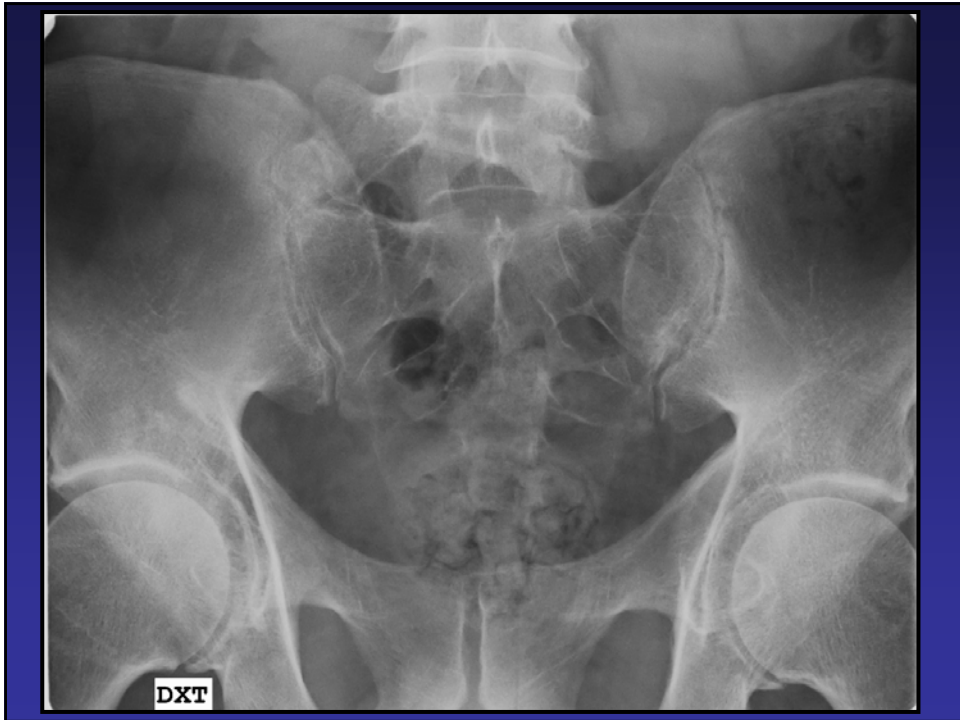
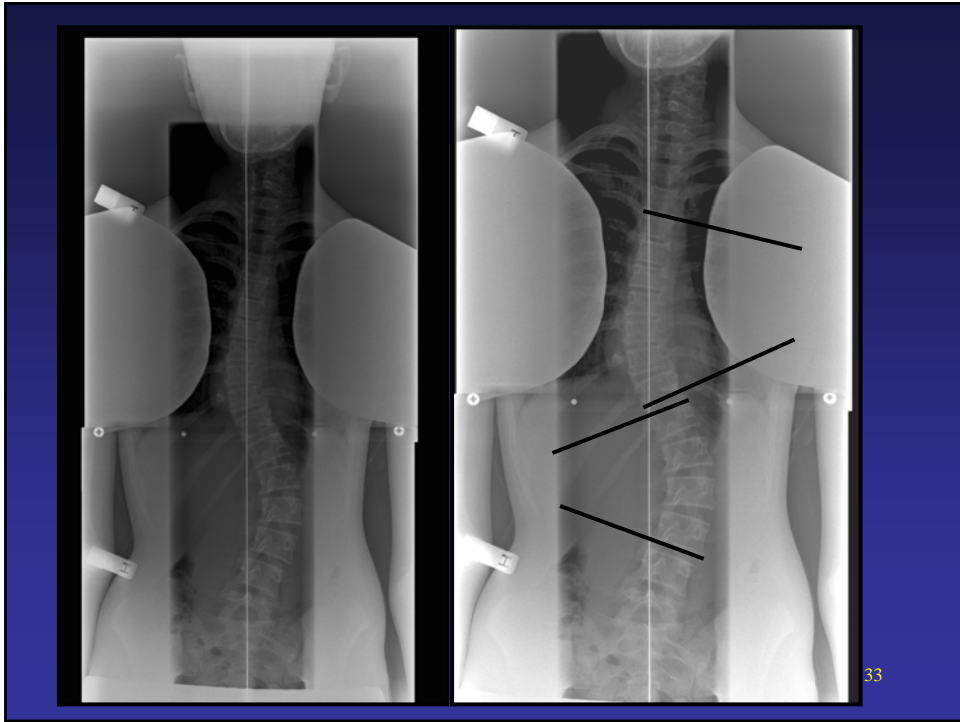
Bendix og Manniche  
UfL 2006

29

Børn og unge

30





14 årig dreng med ondt i ryggen  
på torakolumbale overgang  
gennem et stykke tid

35





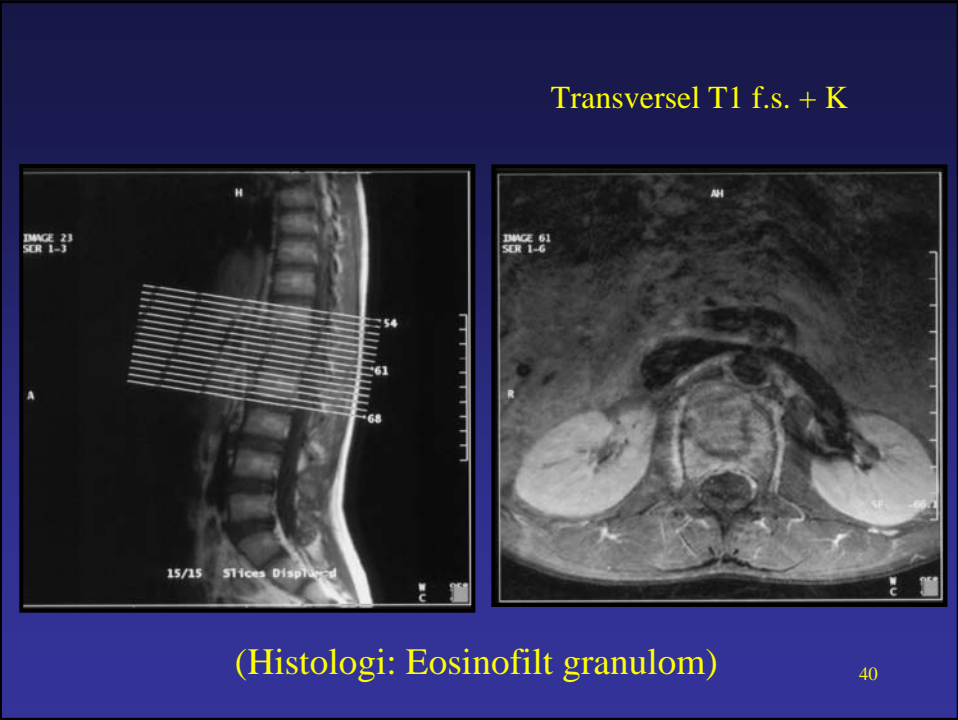
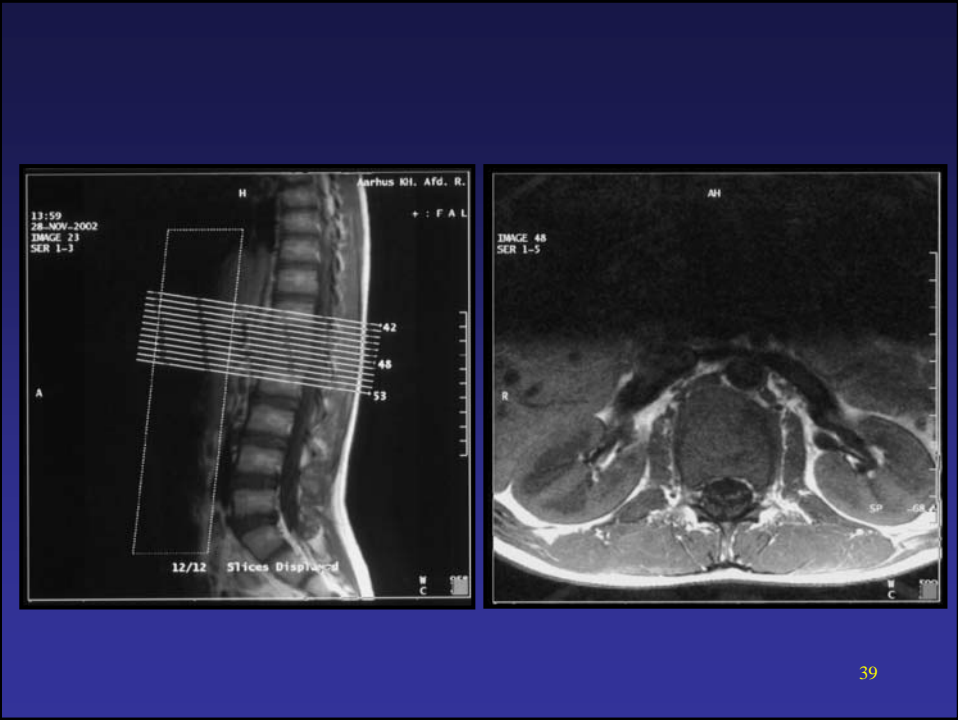
37

Sagittal STIR

Sagittal T1



38

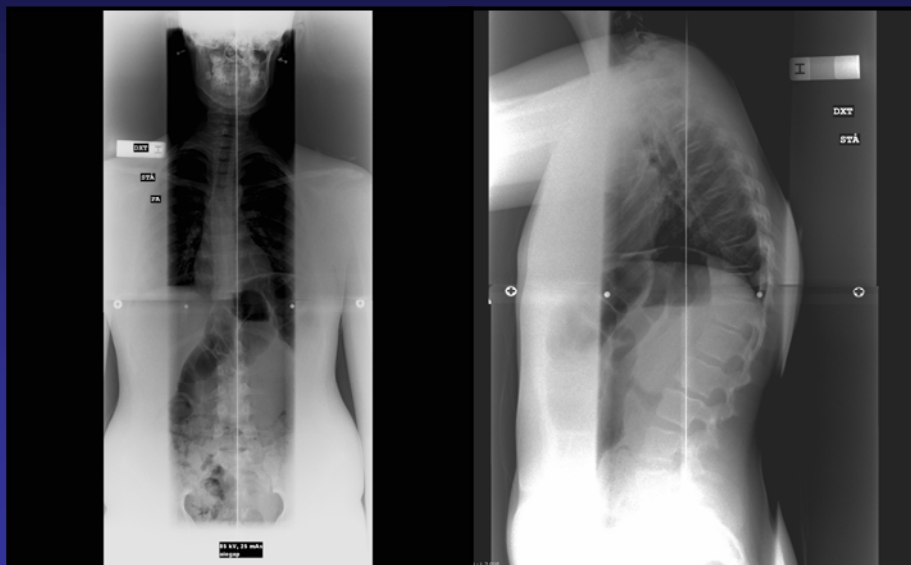




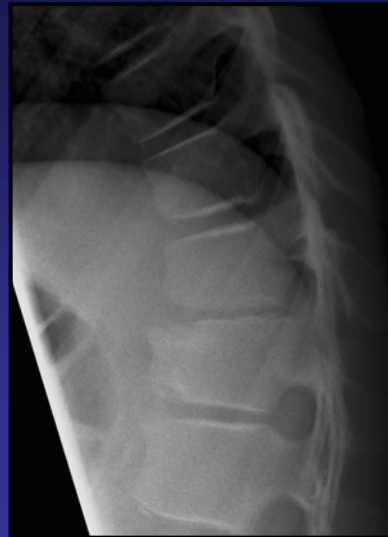
**Mb. Scheuermann**

41

**Mb. Scheuermann**

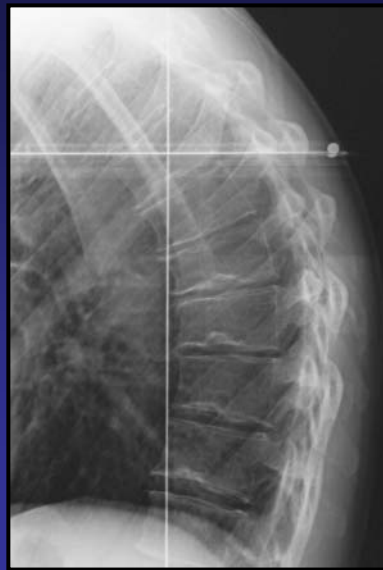


## Mb. Scheuermann

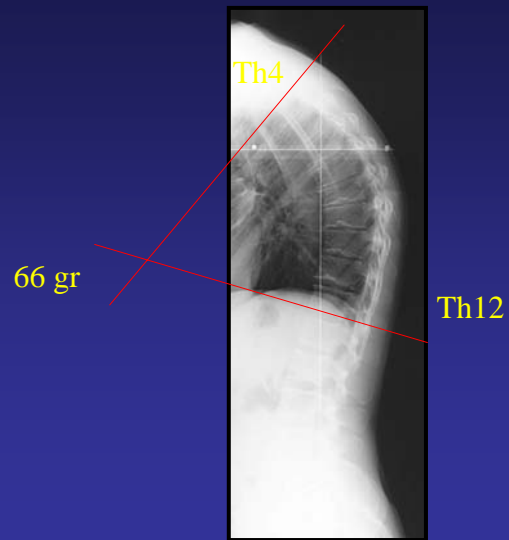


43

## 25 årig mand med betydelig kyfoskoliose (Mb. Scheuermann)



25 årig mand med betydelig kyfoskoliose (Mb. Scheuermann)



## Børn og unge

- Lokaliserede rygsmerter: Konventionel røntgen. Hvis negativ: MR (Scintigrafi?).
- Tegn på skoliose/kyfoskoliose: Skolioseoptagelse.

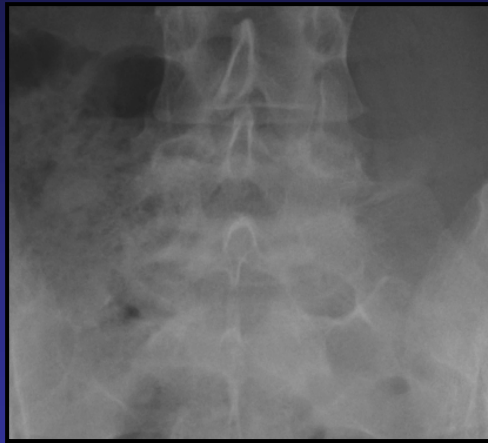
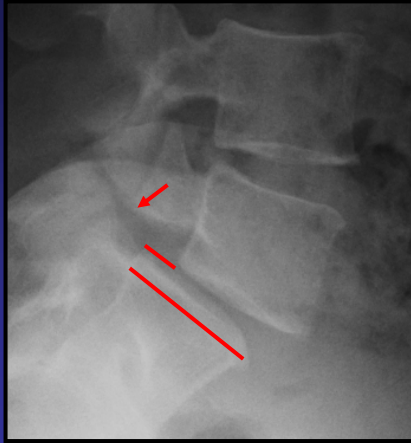
46

# Arkolyse og spondylolistese

47



48



49

## Arkolyse og spondylolistese

- Røntgen i to plan.
- Kontrol (Ved progression af smerter/symptomer): Stående sideoptagelse initialt.

50

# Degenerative ryg sygdomme

51

# Spondylose

52



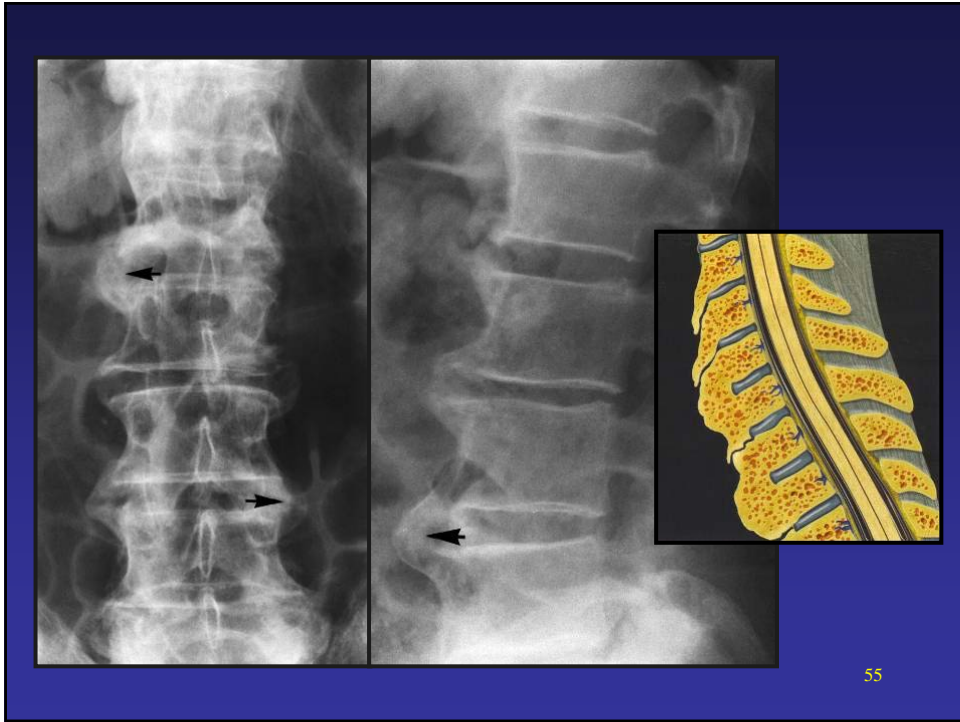
Spondylofytter

53

## Ankyloserende hyperosteoser

Mb. Forrestier  
DISH (Diffuse Idiopatiska Skeletale  
Hyperosteoser)

54



55

## Spondylartrose

56

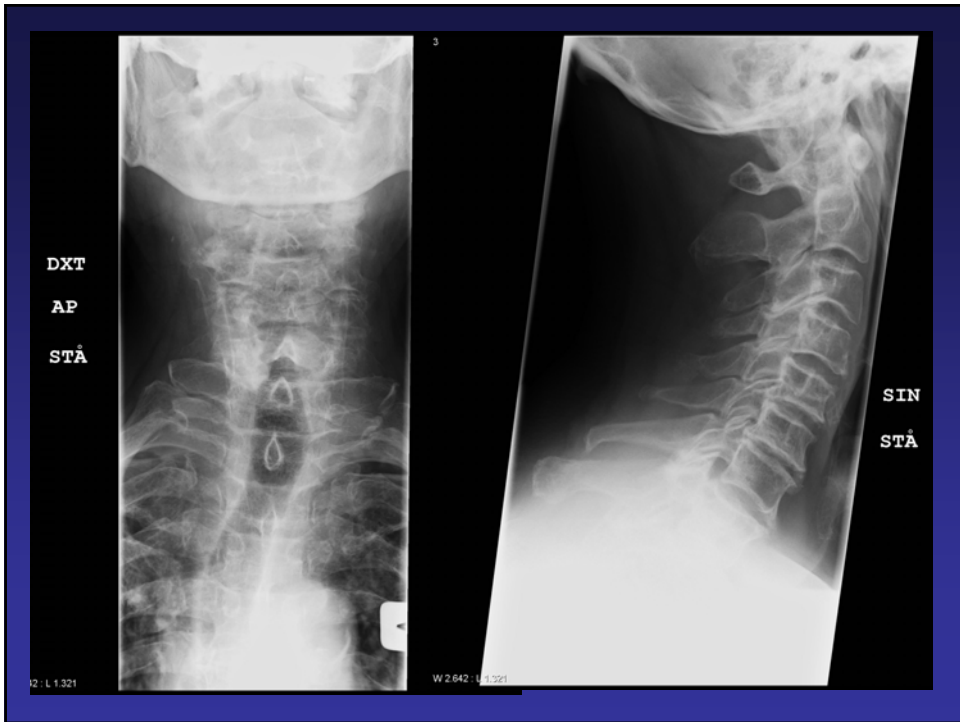


## Spondylartrose



73-årig mand med nakke- og  
skuldersmerter.

Spondylose, diskusdegeneration, spondylartrose og  
uncovertebralledsartrose



## Kissing spine (Mb. Baastrup)

61

## Kissing spine (Mb. Baastrup)



## Kissing spine (Mb. Baastrup)



## Degenerative rygsygdomme

### Billeddiagnostik

- Uspecifikke rygsmerter i mindre end 6 uger: Intet
- Uspecifikke rygsmerter i mere end 6 uger: Konventionel røntgen kan overvejes.
- Recidiverende rygsmerter i mere end 6 uger og tidligere røntgen indenfor 5 år: Intet

# Discus degeneration

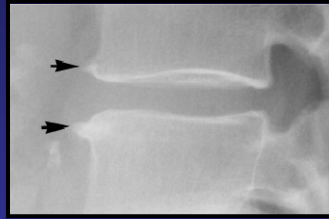
65

Kvinde 45 år



66

## Discusdegeneration: Traktionssporer

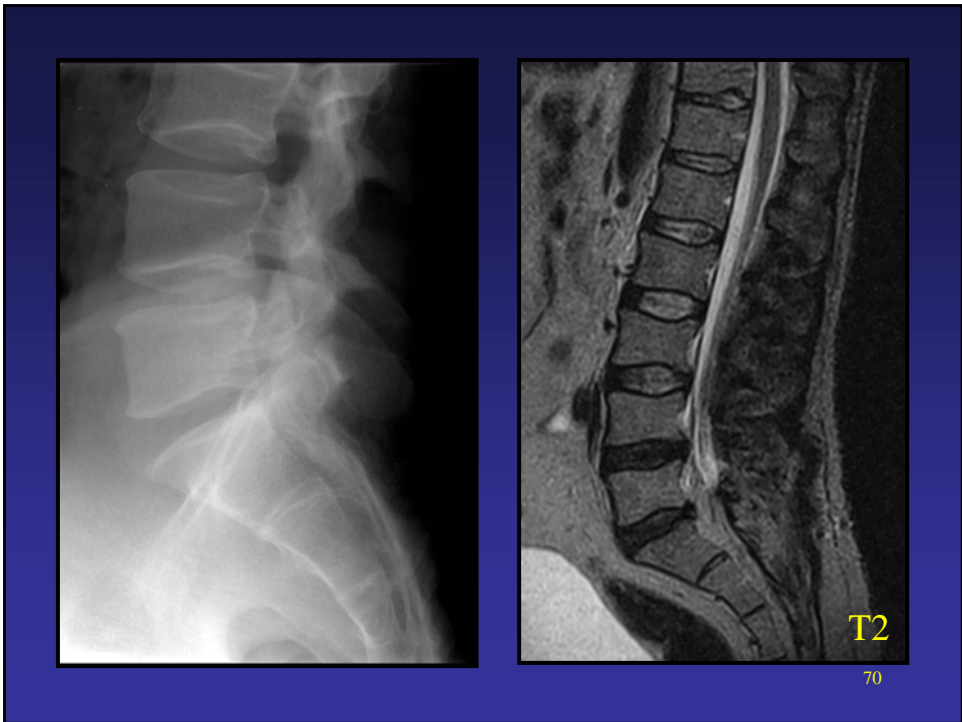
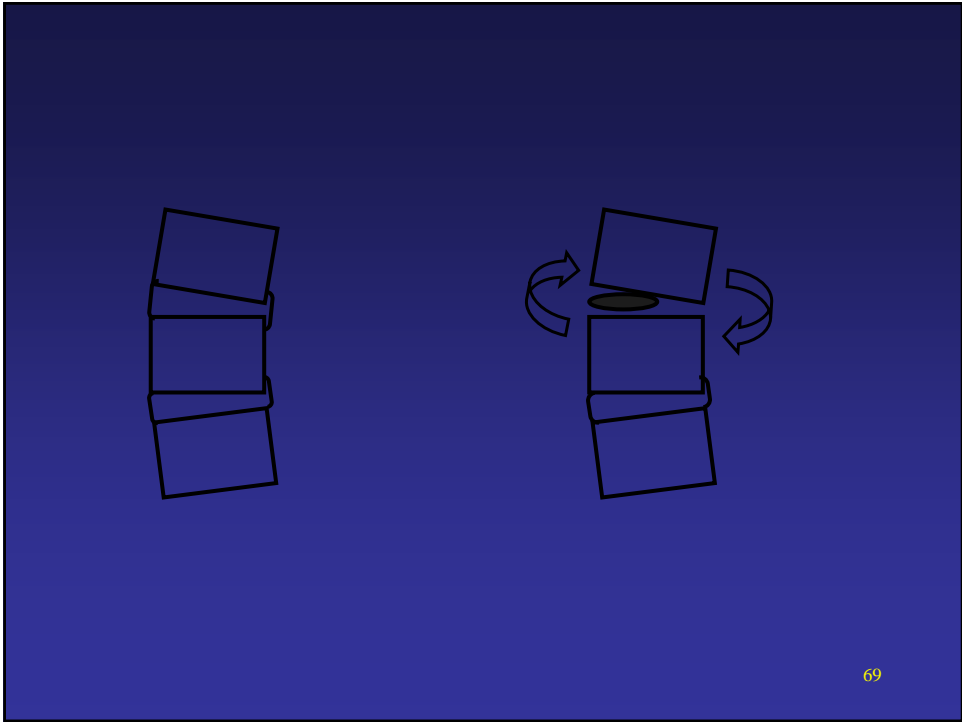


67

## Discusdegeneration: Luft i discus



68



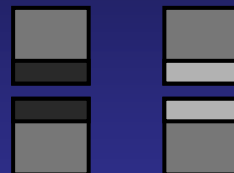
## Degenerative endepladeforandringer

71

### Degenerative endepladeforandring (Modic forandringer)

#### Type 1:

- Hypointens på T1, hyperintens på T2
- Fibrovaskulære marvforandringer
- Ses ikke på rtg./CT

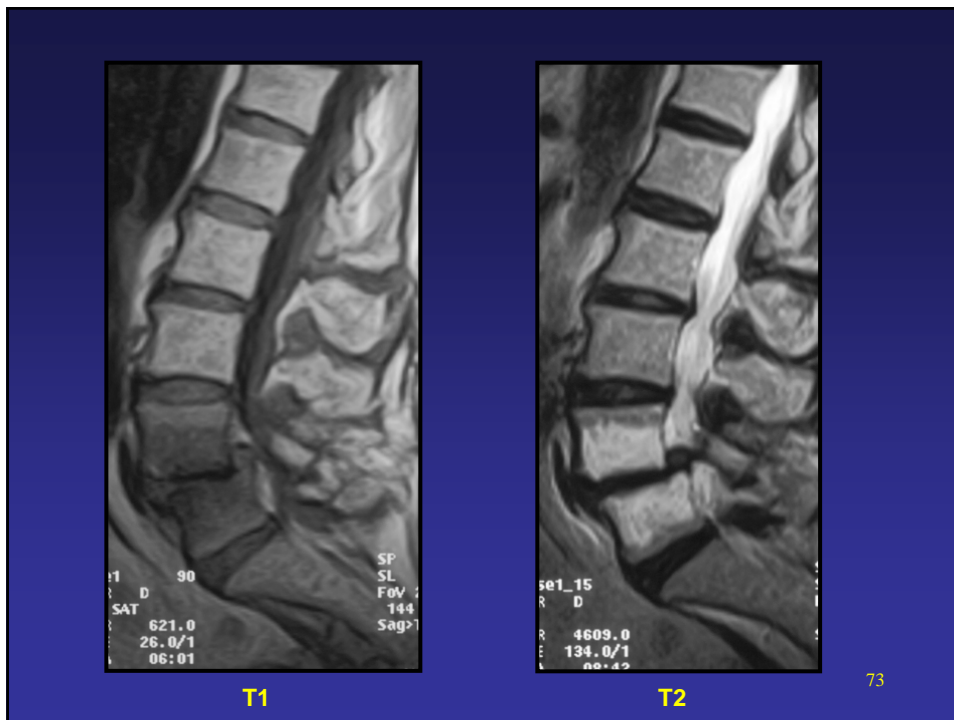


T1

T2

72

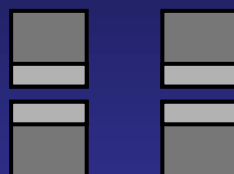




## Degenerative endepladeforandring (Modic forandringer)

### Type 2:

- Hyperintens på T1, hyper-/isointens på T2
- Fedtinvolution
- Ses ikke på rtg./CT



T1

T2

74



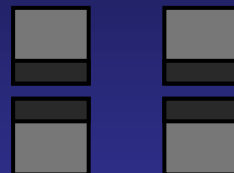
T1

75

## Degenerative endepladeforandring (Modic forandringer)

### Type 3:

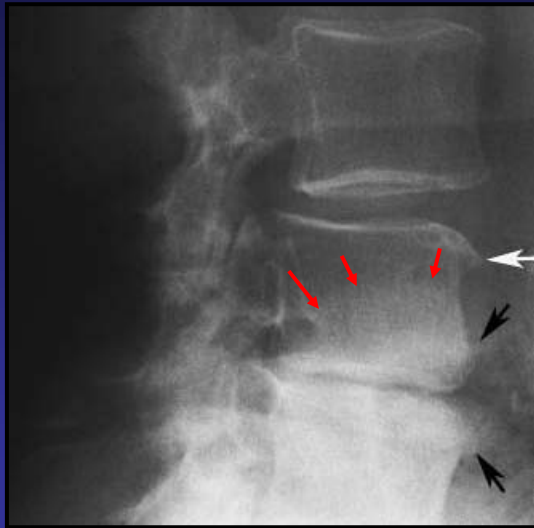
- Hypointens på T1, hyperintens på T2
- Sklerose med beskeden restknoglemarv
- Ses som sklerose ved rgt./CT



T1

T2

76



77

## Betydningen af endepladeforandringerne?

SPINE Volume 30, Number 10, pp 1173-1180  
©2005, Lippincott Williams & Wilkins, Inc.

Magnetic Resonance Imaging and Low Back Pain in  
Adults: A Diagnostic Imaging Study of 40-Year-Old  
Men and Women

Per Kjaer, PT, MSc, PhD,\* Charlotte Leboeuf-Yde, DC, MPH, PhD,\* Lars Korsholm, PhD,†  
Joan Solgaard Sorensen, MD\* and Tom Bendix, MD, Dr Med Sci\*

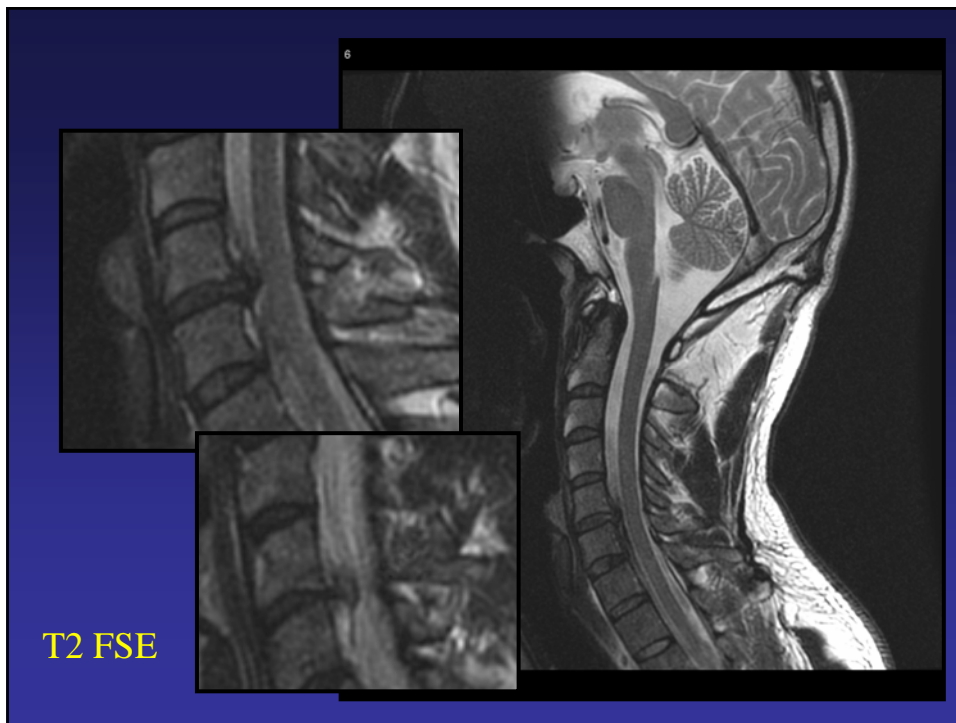
78

## Discus prolaps

79

## Cervikal prolaps

80



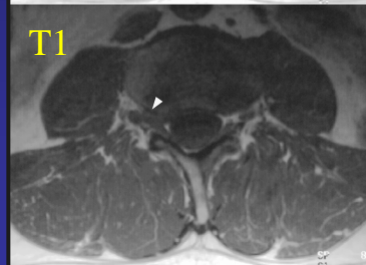
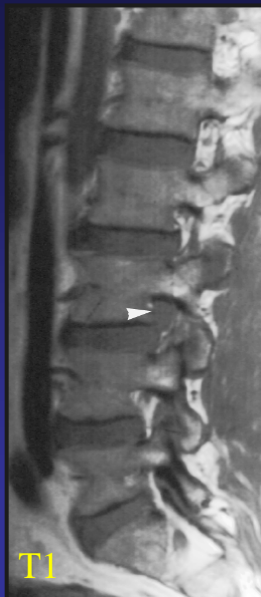
## Lumbal prolaps

## Discusprolaps Paramedian



83

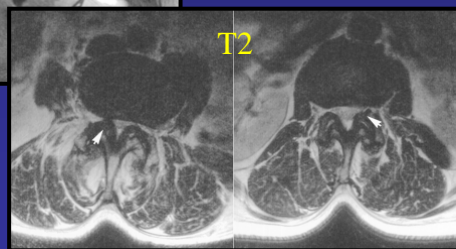
## Discusprolaps Lateral

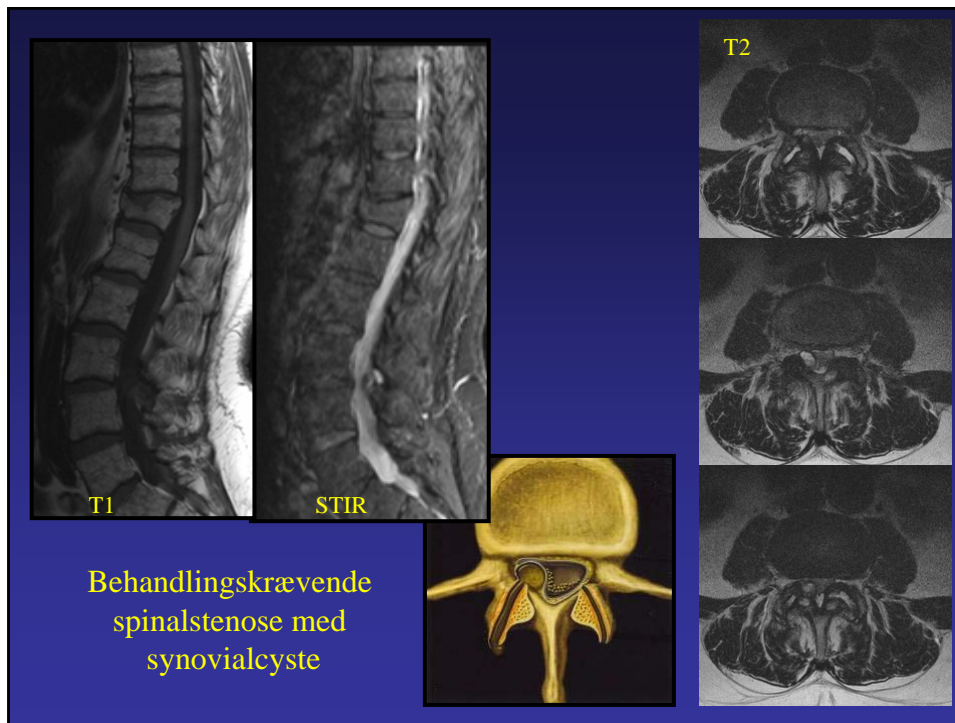


84

# Spinalstenose

85





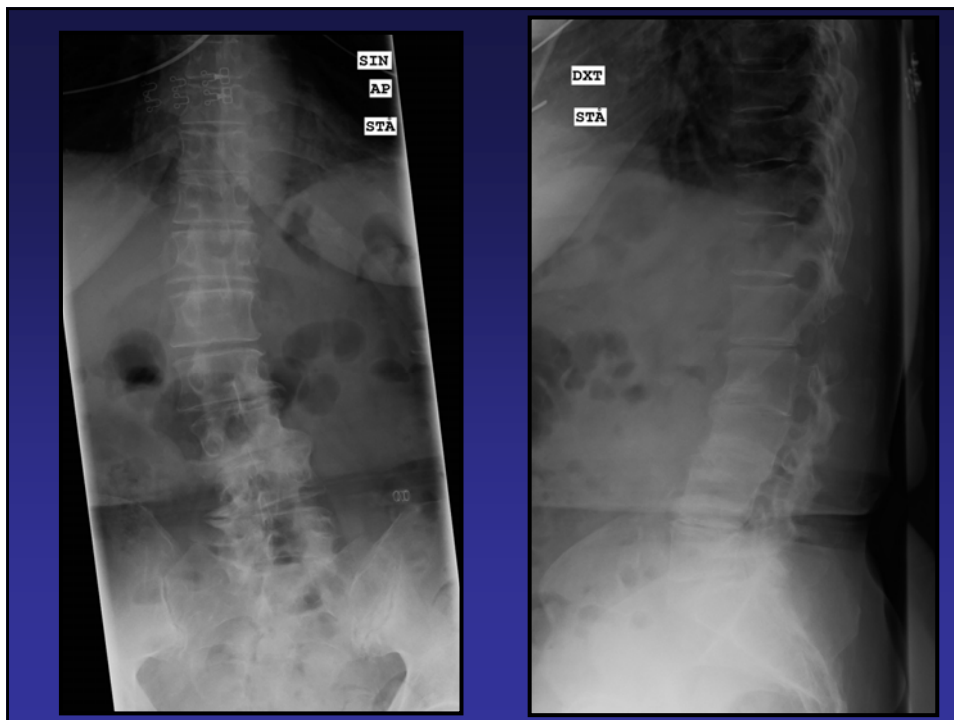
## Spinalstenose

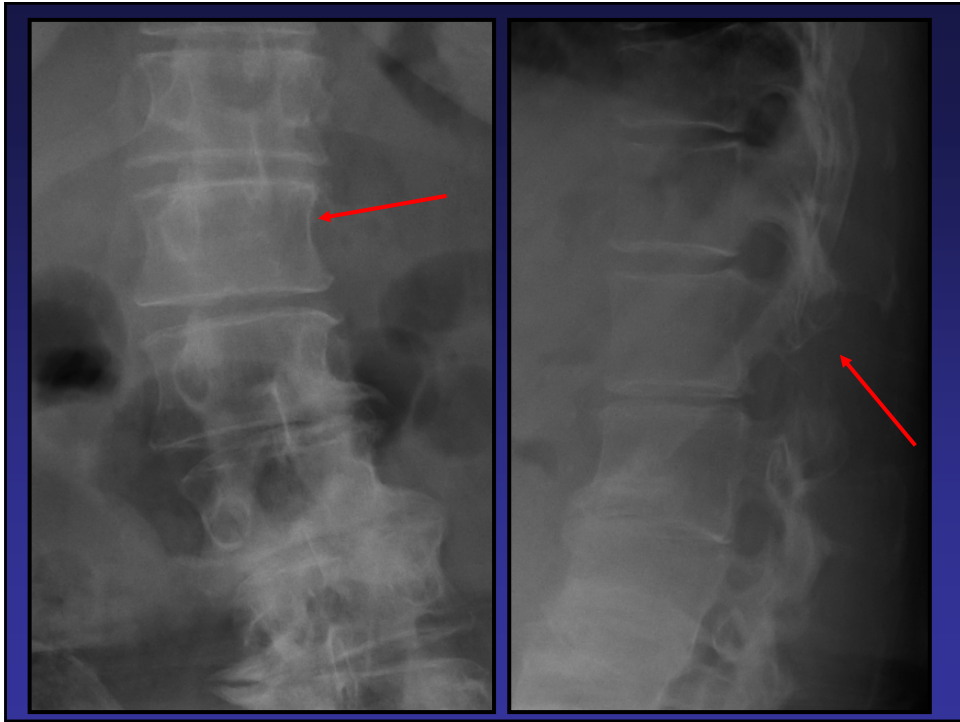
- Spinalstenose: MR skanning.



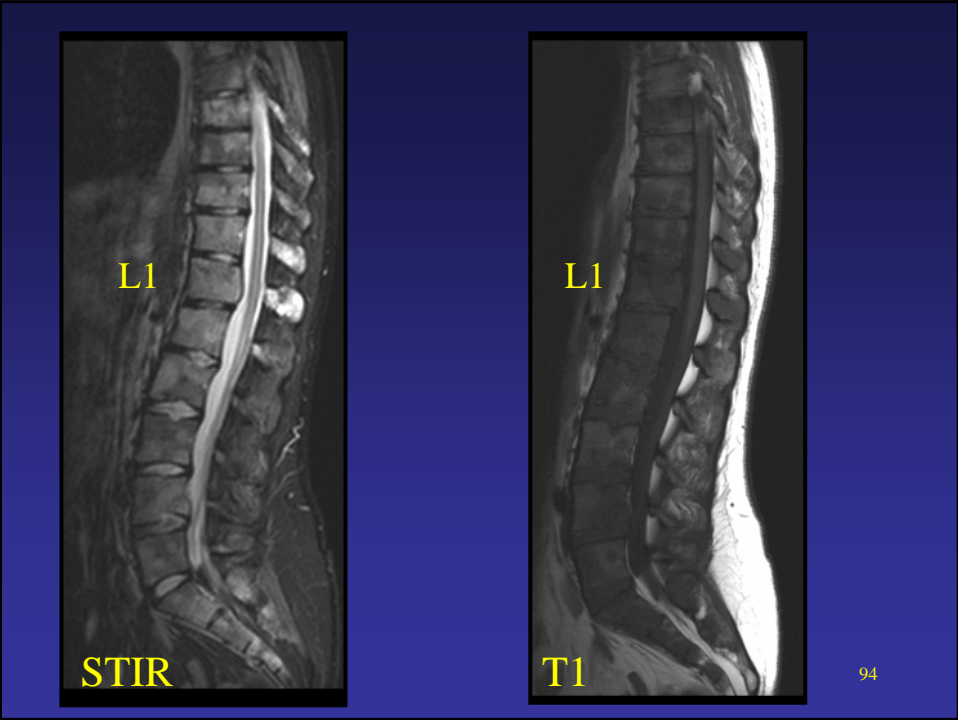
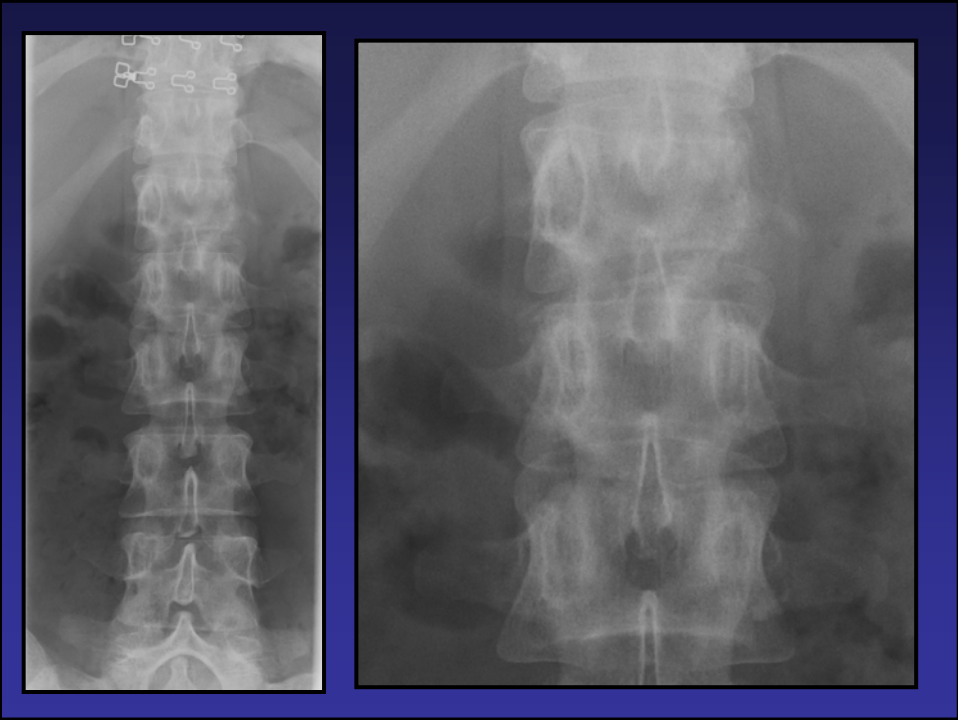
# Tumorer

89





28-årig kvinde med rygsmerter



## Tumorer

- Ved såvel knogletumorer som metastaser er MR første valg
- ...men der vil næsten altid foreligge røntgenoptagelse først.

95

## Inflammatoriske ryg sygdomme

96

## Inflammatoriske ryggsygdomme

- Rheumatoid artrit
- Juvenil kronisk artrit
- Seronegative spondylartropatier
  - Ankyloserende spondylit (Spondylitis ankylopoitica)
  - Psoriatisk artrit
  - Reaktiv artrit
  - Artrit associeret med inflammatoriske tarmsygdomme
  - Artrit associeret med pustulosis palmoplantaris (Pustulotisk artroosteit)
  - Uklassificerbare spondylartropati former

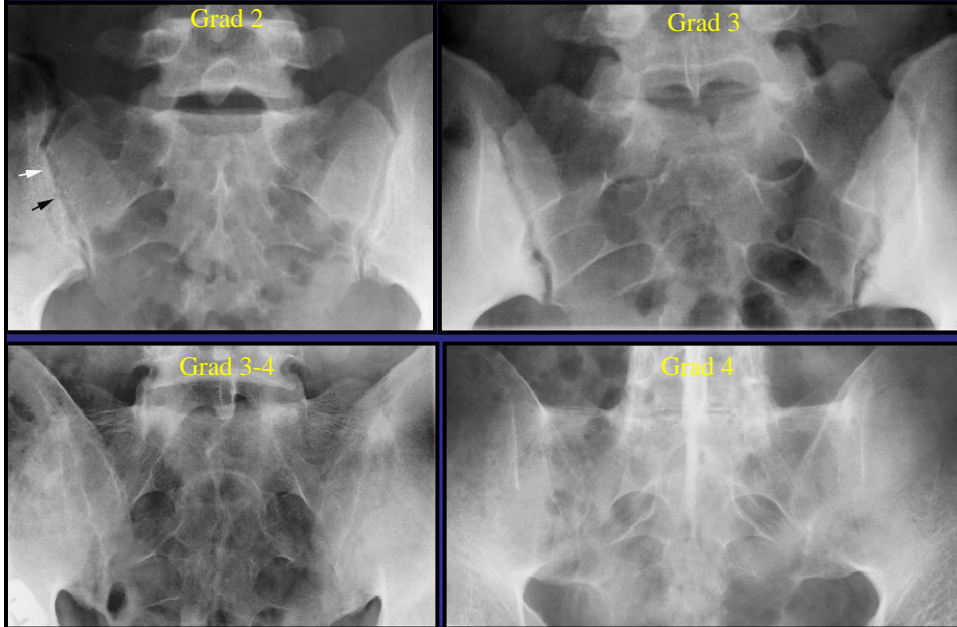
97

## Mb. Bechterew

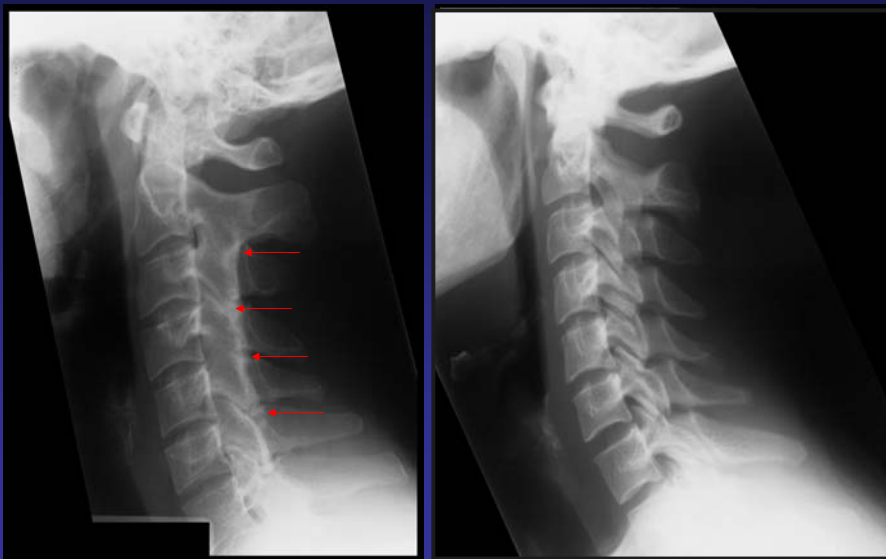
Ankyloserende spondylit  
Spondylitis ankylopoitica

98

## Konventionel røntgen



29 årig mand med axial artrit (Mb Bechterew).





67 årig mand  
med Mb.  
Bekhterew

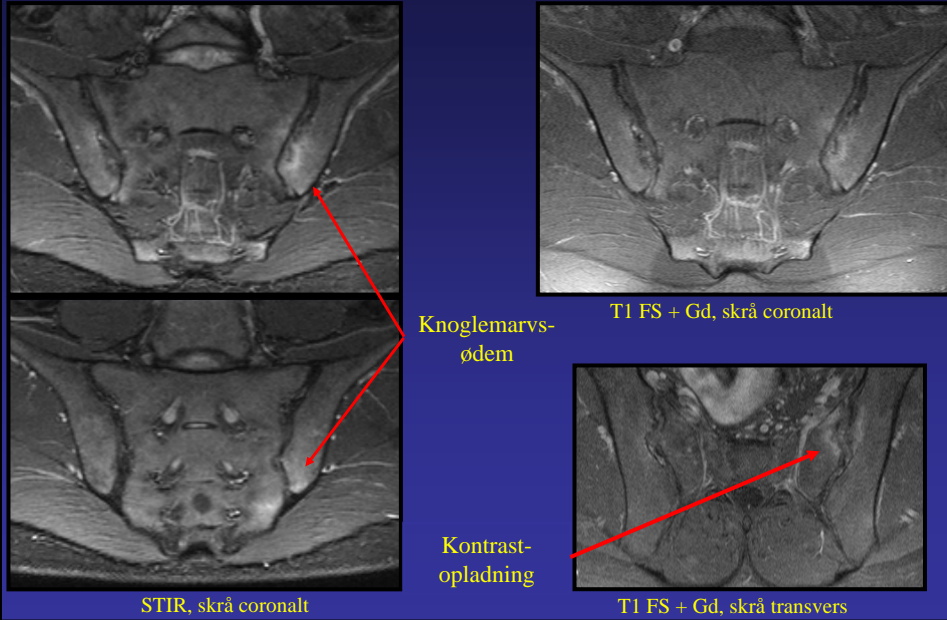
101

## MR-skanning

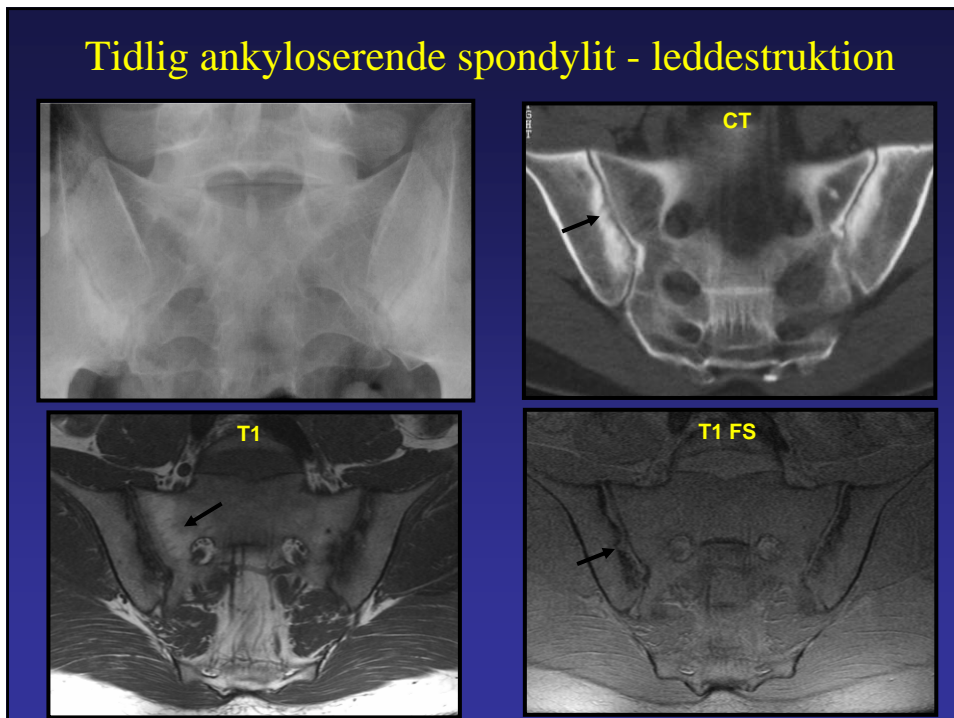
- Sammenlignelig med CT hvad angår erosioner og sklerose.
- MR viser tegn på aktivitet i form af knoglemarvs ødem og kontrastoplading i knoglemarv og/eller ledspalte.
- Påviser sacroileit før der kommer erosioner synlige ved CT.
- Viser fedt-akkumulation i knoglemarven som tegn på kronisk sygdom.
- Er uden kendt risiko.

102

## Tidlig ankyloserende spondylit



## Tidlig ankyloserende spondylit - leddestruktion

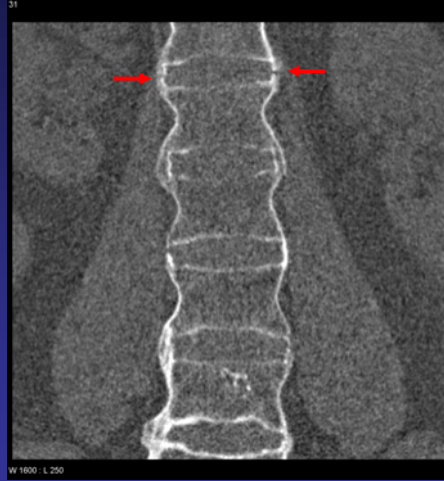




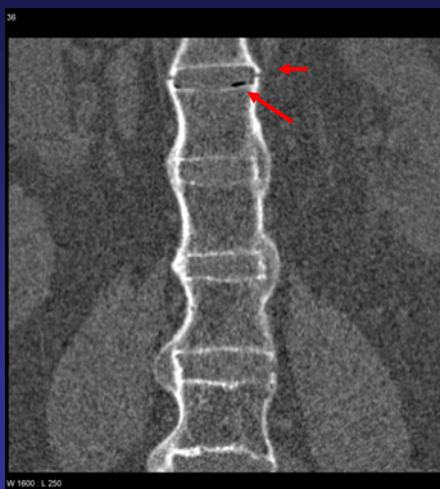
## Smerte accentuering ved mb. Bechterew

105

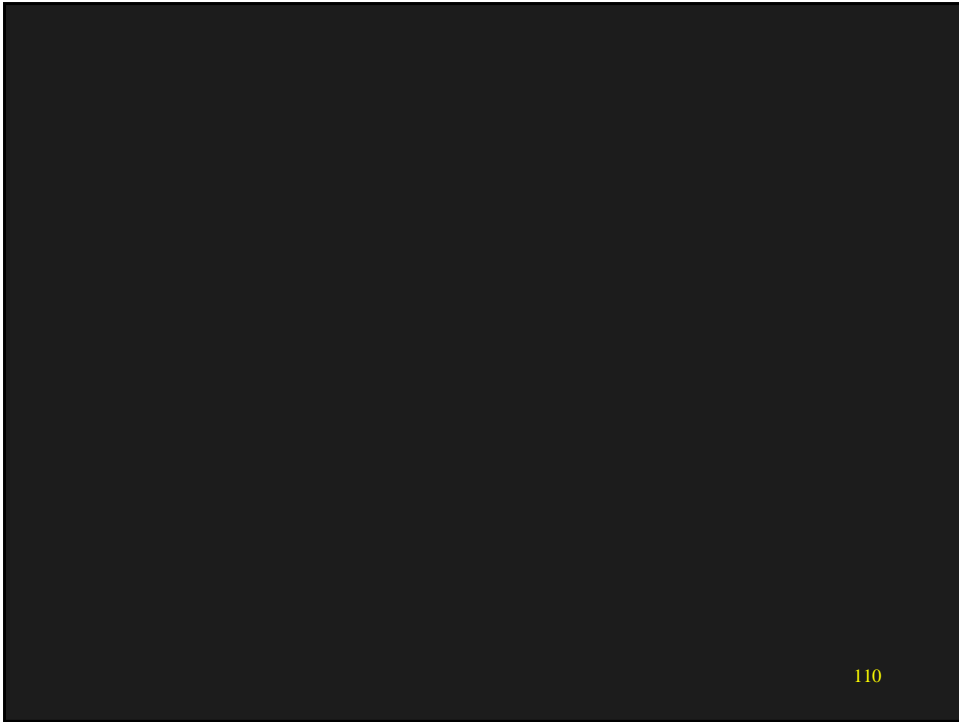




107

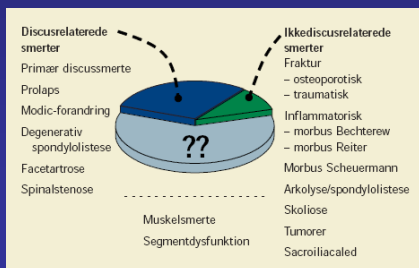


108



# NOTER OG EKSTRA BILLEDER

111



**Lænderyggen, degeneration og radiologi**

Denne artikel beskriver de radiologiske tegn på degeneration i lænderyggen, herunder diskusprolaps, Modic-forandringer og spondylolistese. Det diskuteres også, hvordan disse tegn kan korrelere med kliniske symptomer som rygsmerte og funktionel begrænsning.

