

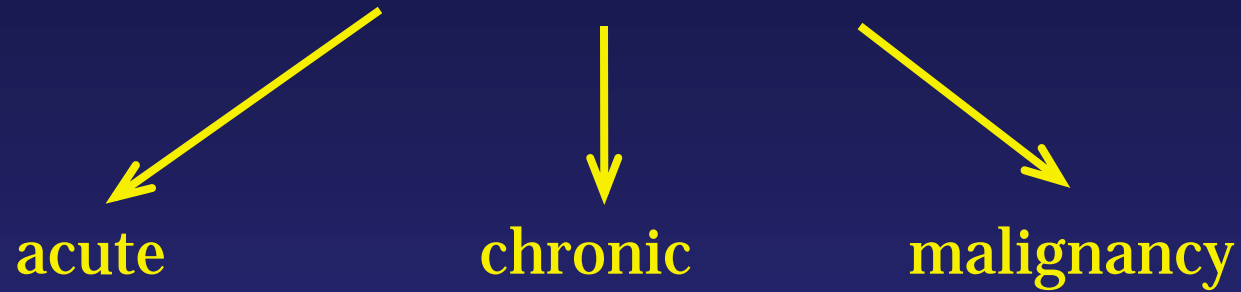
*My patient has
back pain*

Hiren R. Patel, MD
Atlantic Medical Imaging

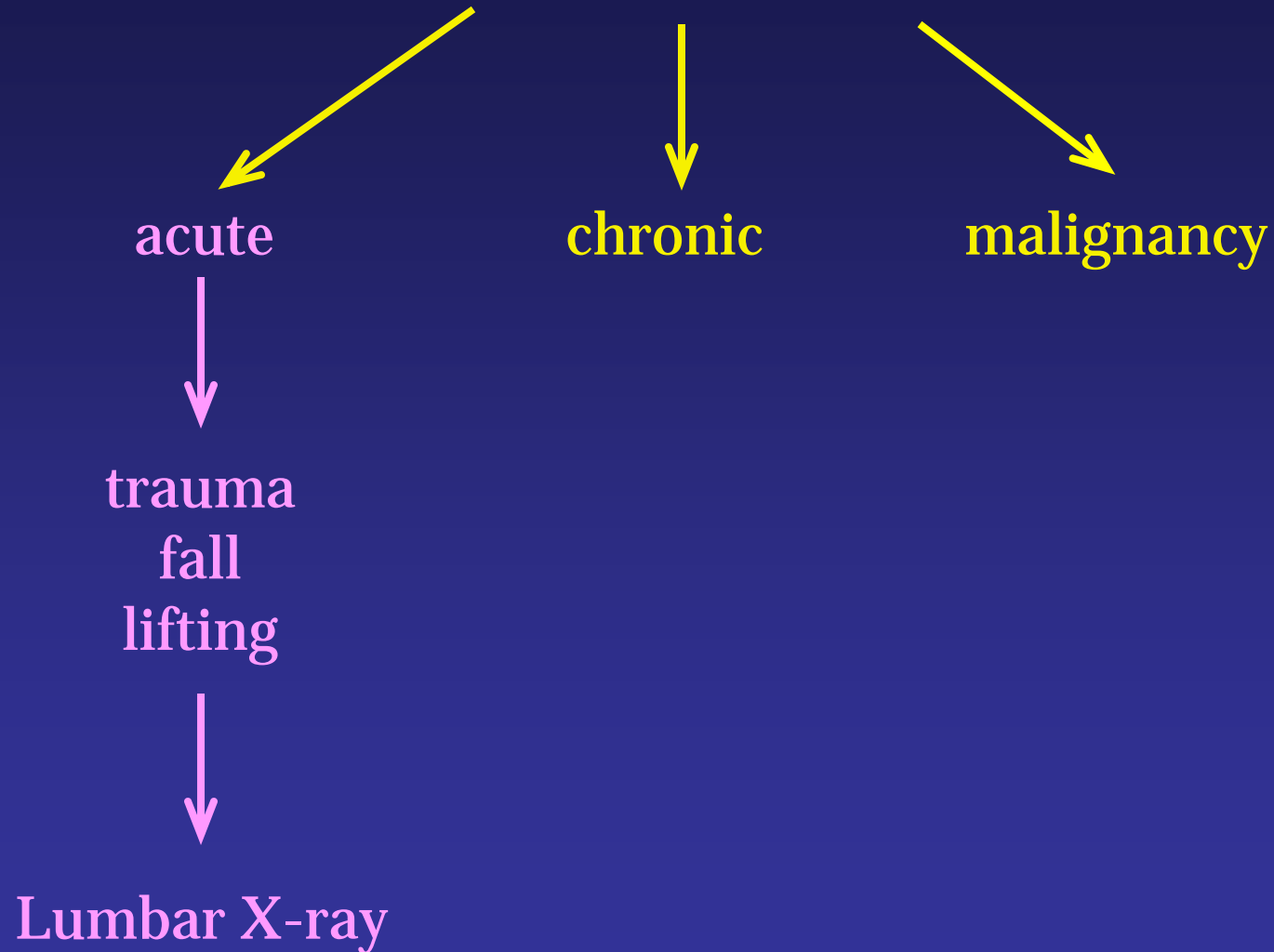
Back Pain

- Some facts
 - Mostly of the lumbar spine
 - Common
 - 50% of all American workers, each year
 - 80% of population, over lifetime
 - Expensive
 - Billions of dollars spent

Low Back Pain



Low Back Pain

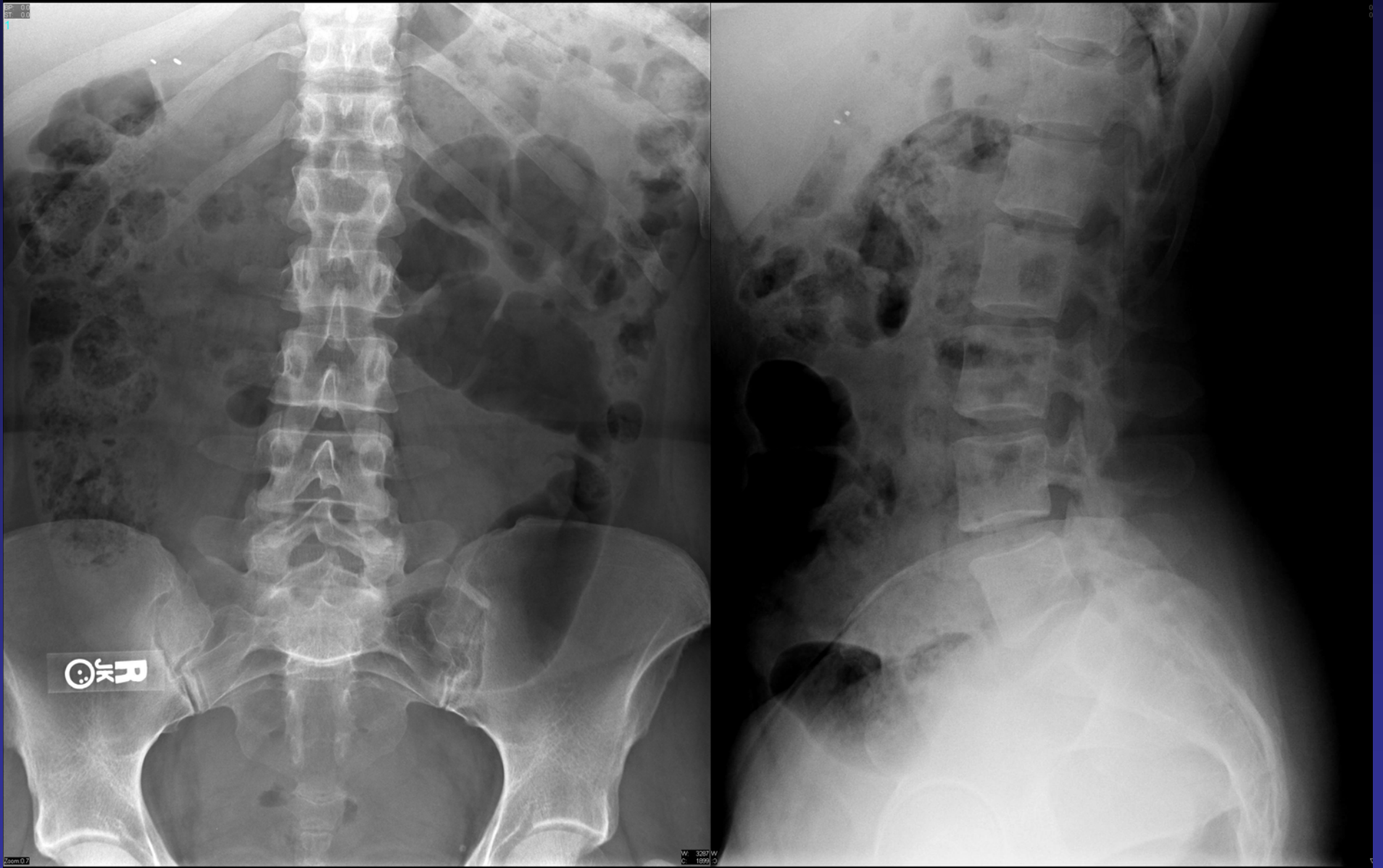


Lumbar X-ray

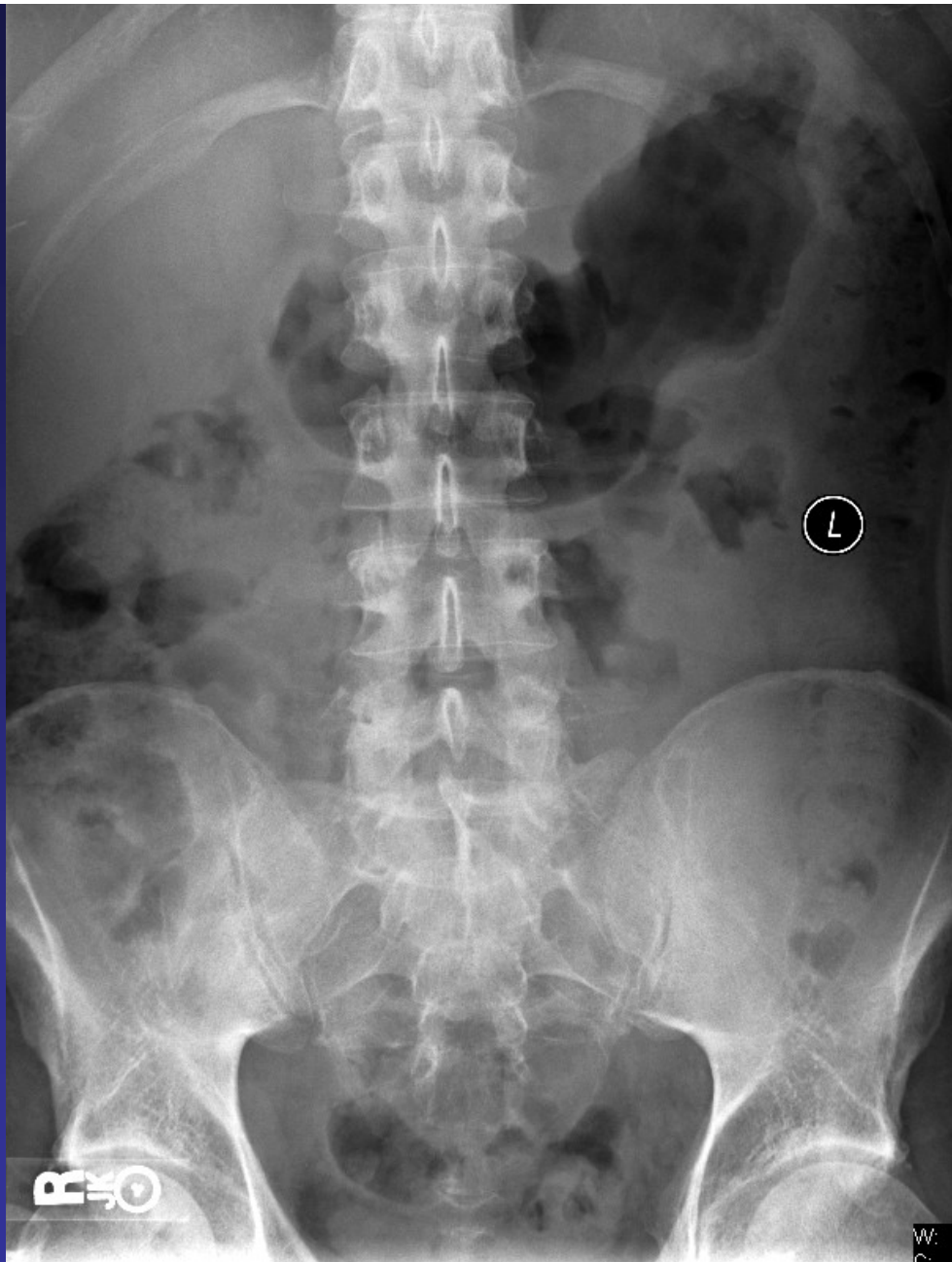
- Advantages:
 - Quick
 - Relatively inexpensive
 - Widely available
 - No contrast (or special tech skills) needed
 - Excellent bone characterization
 - Excellent assessment of alignment

Lumbar X-ray

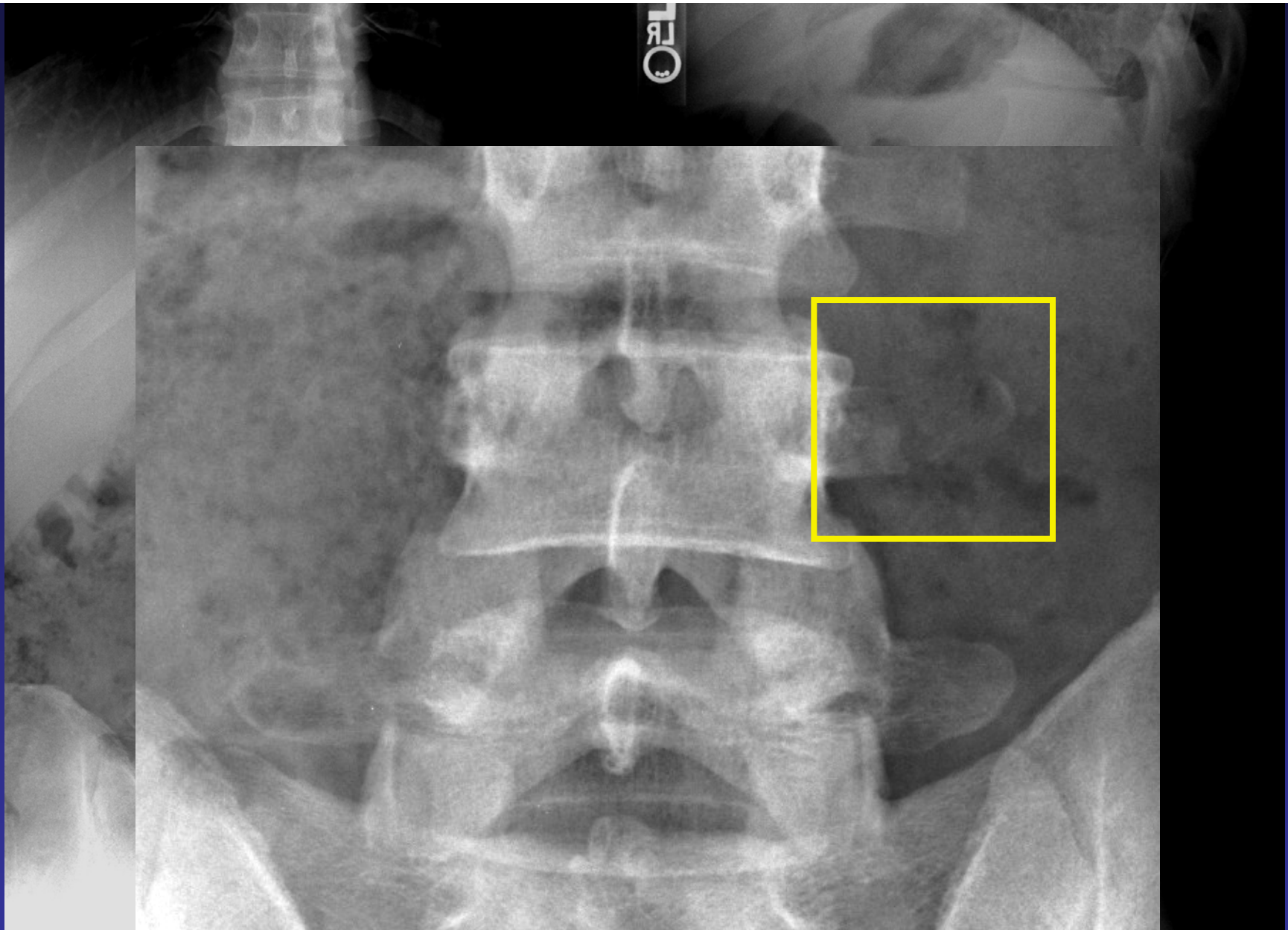
- Disadvantages
 - Planar imaging (2D, overlapping structures)
 - Non-displaced fractures can be missed
 - Technical limitations due to large body habitus, obliquity
 - Poor characterization of discs and ligaments
 - Appearance of acute and chronic disease can overlap
 - Sometimes need comparison study and/or follow-up imaging



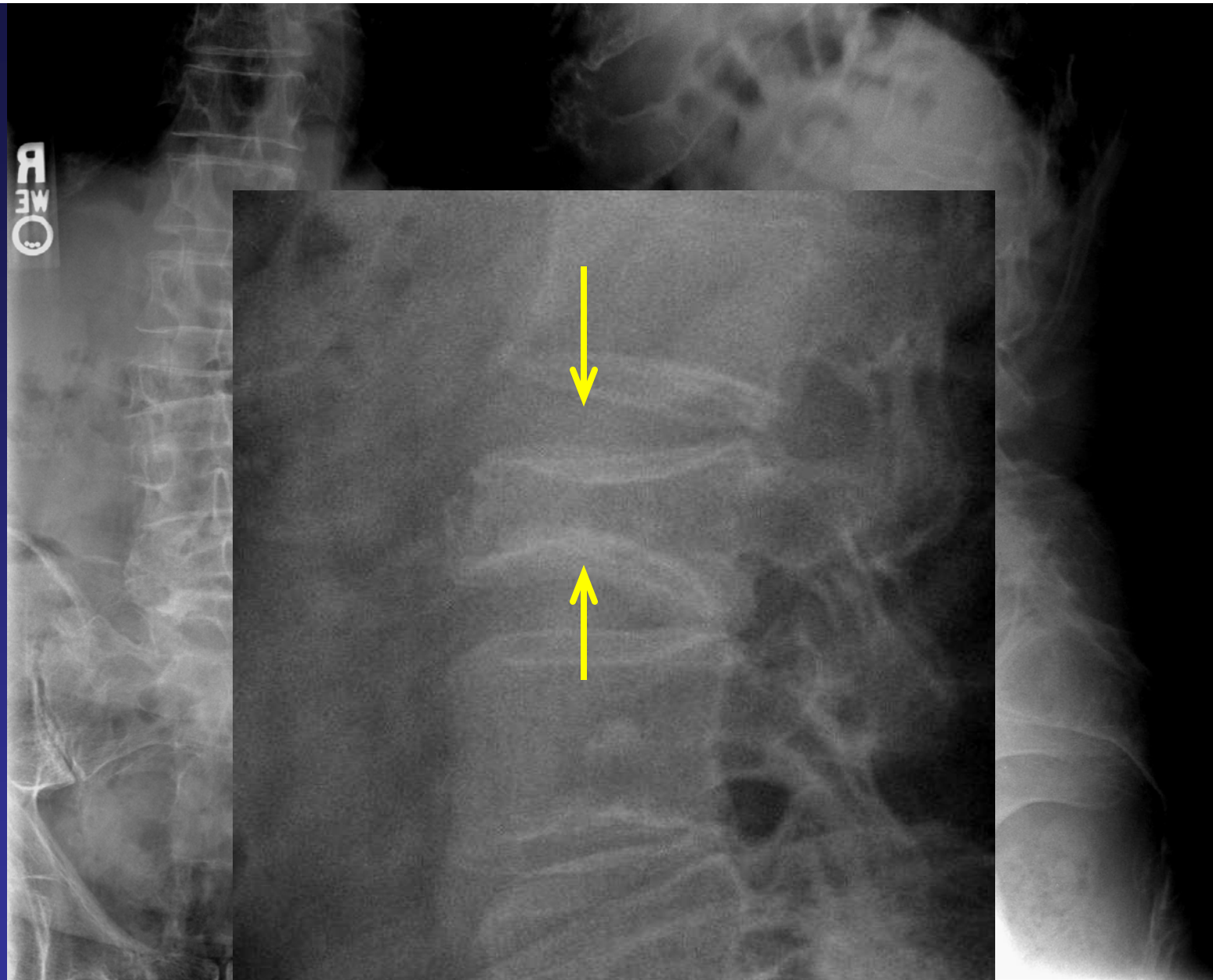
Case #1 Normal lumbar X-ray



Case #2 mild spondylosis

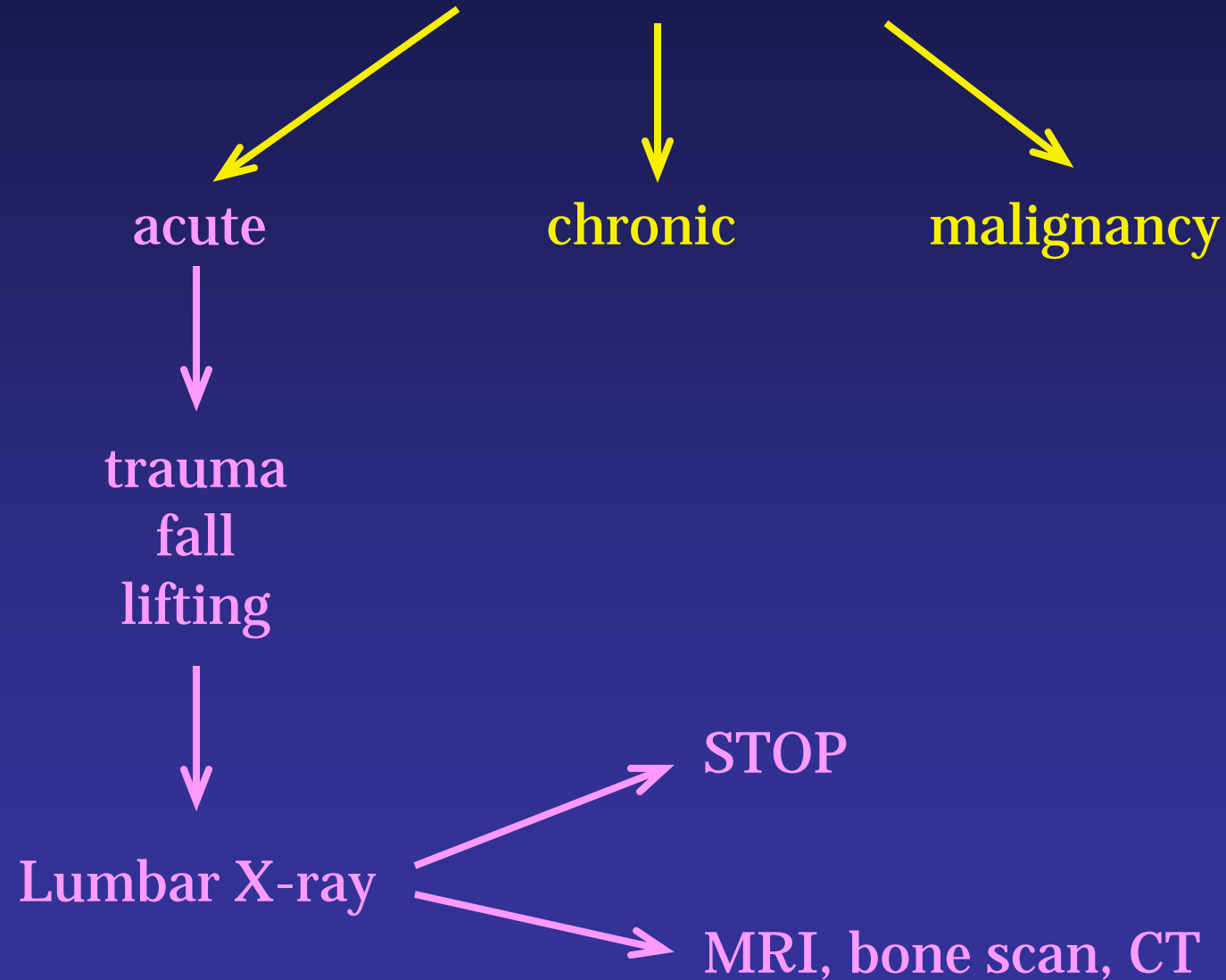


transverse process fracture
L6



Acute vs. chronic vertebral compression fracture

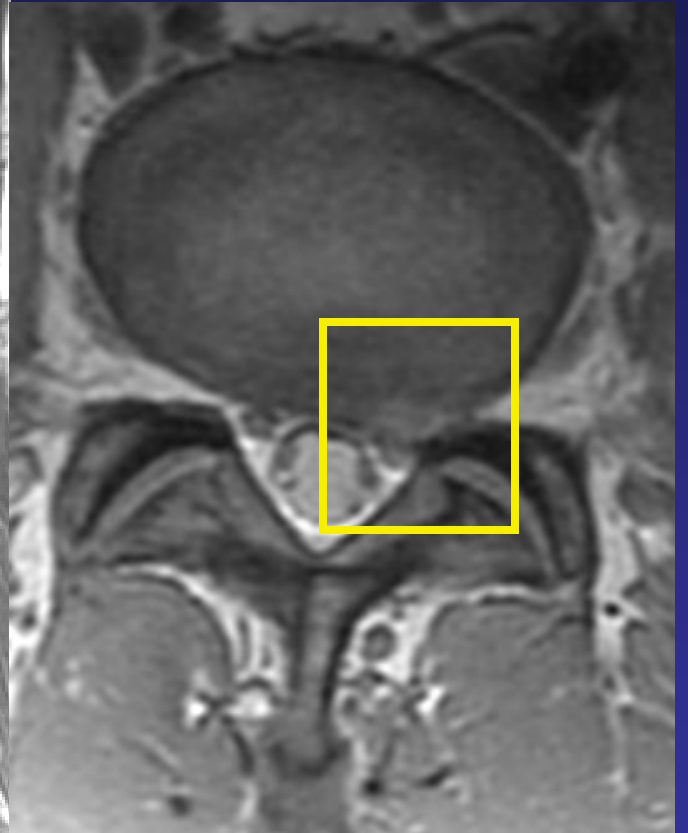
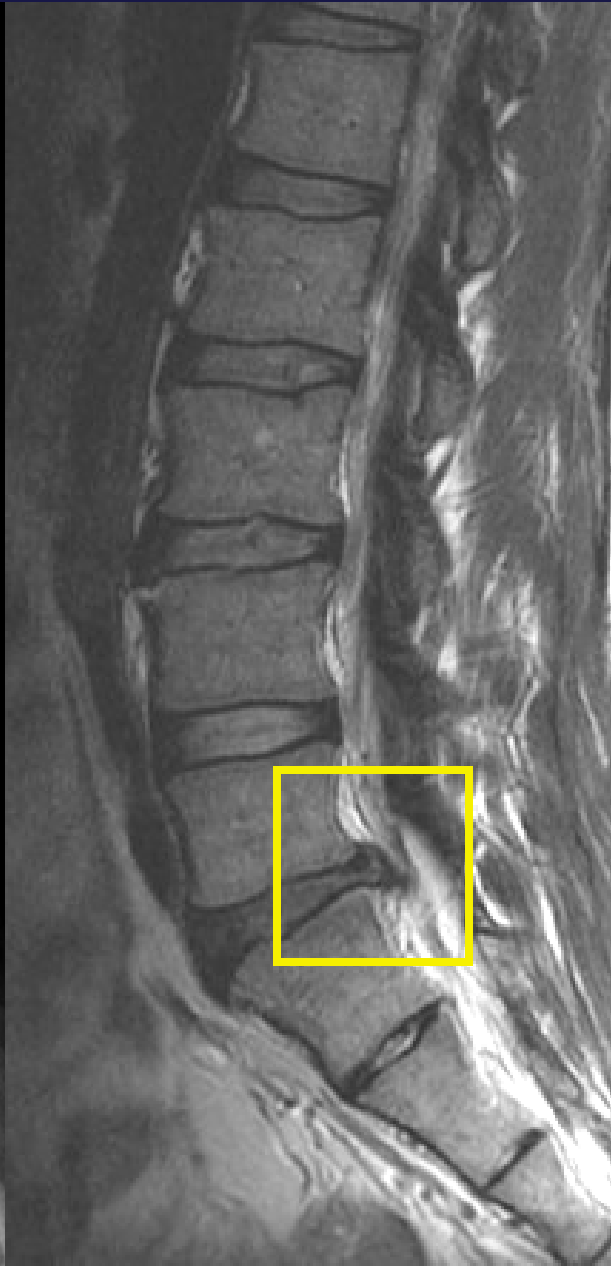
Low Back Pain





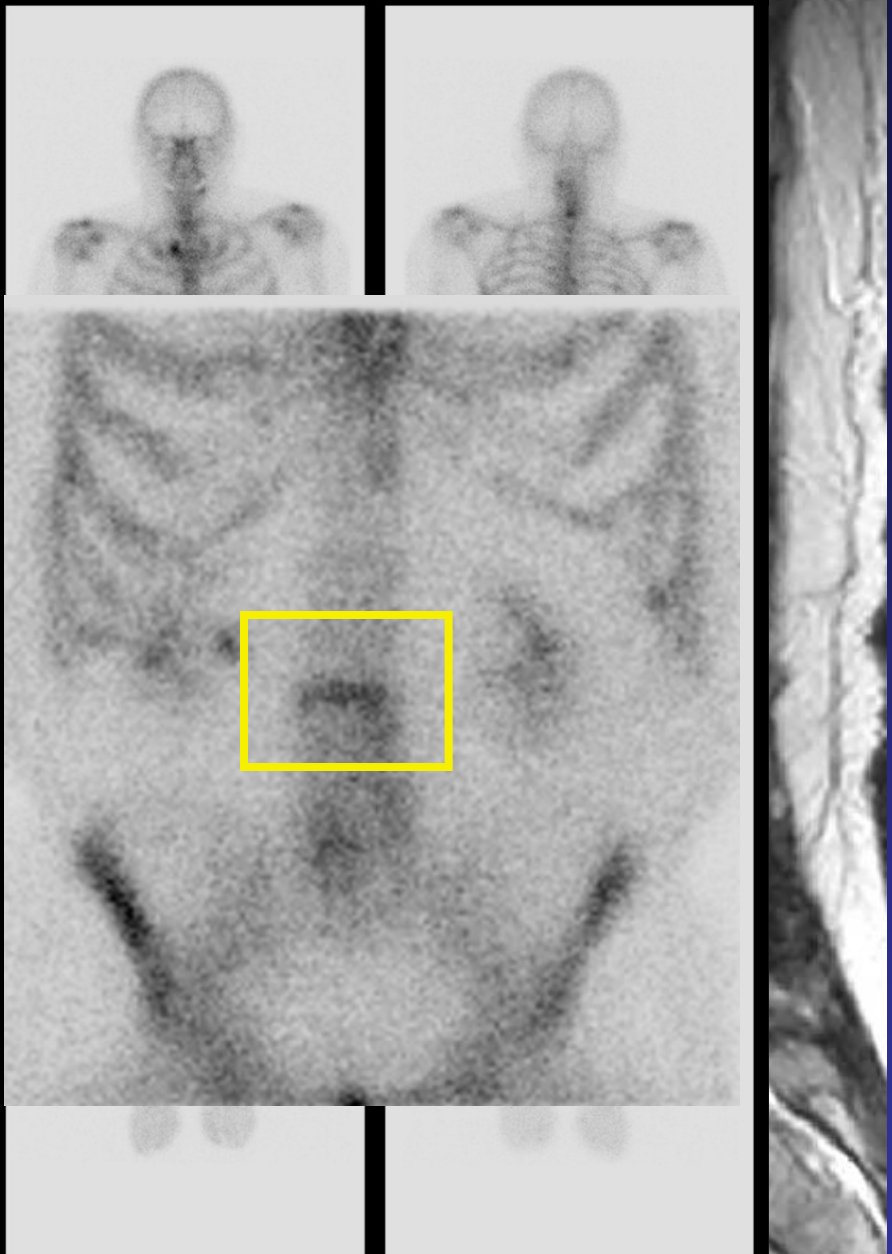
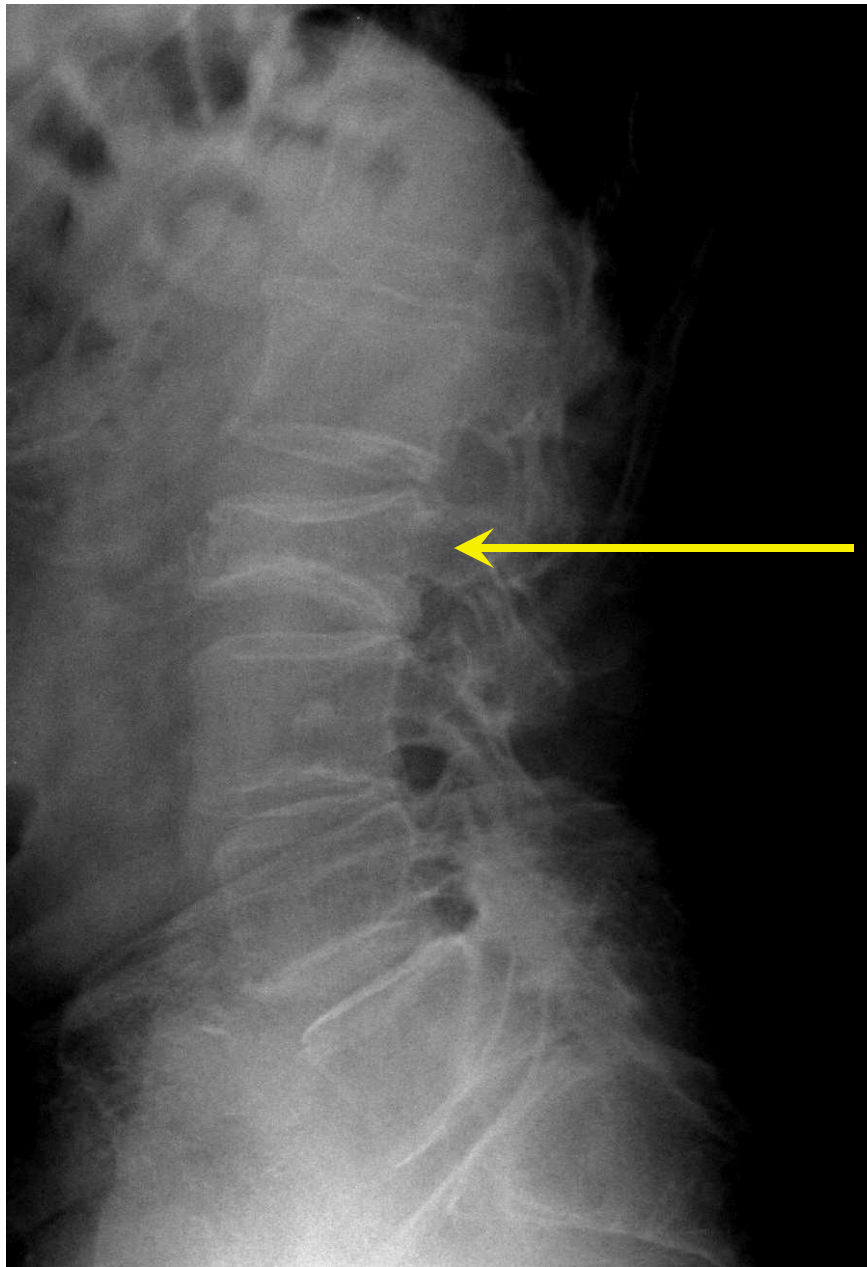
Case #1

normal MRI



Case #2

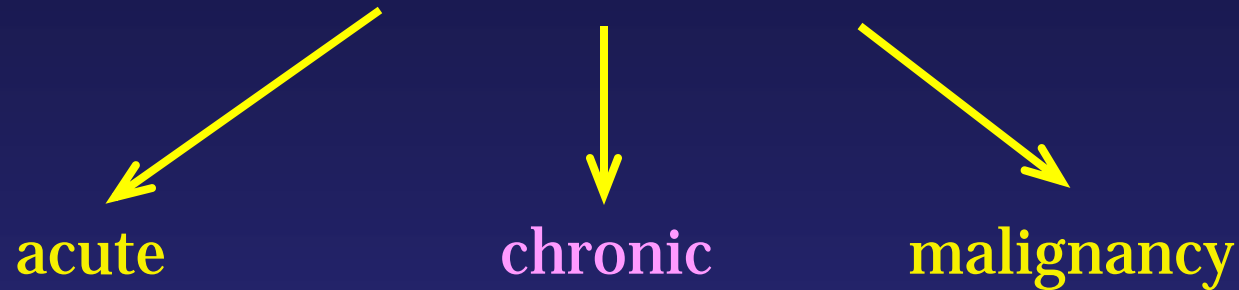
HNP & nerve compression



Case #4

Subacute osteoporotic
old MRI
compression fracture

Low Back Pain



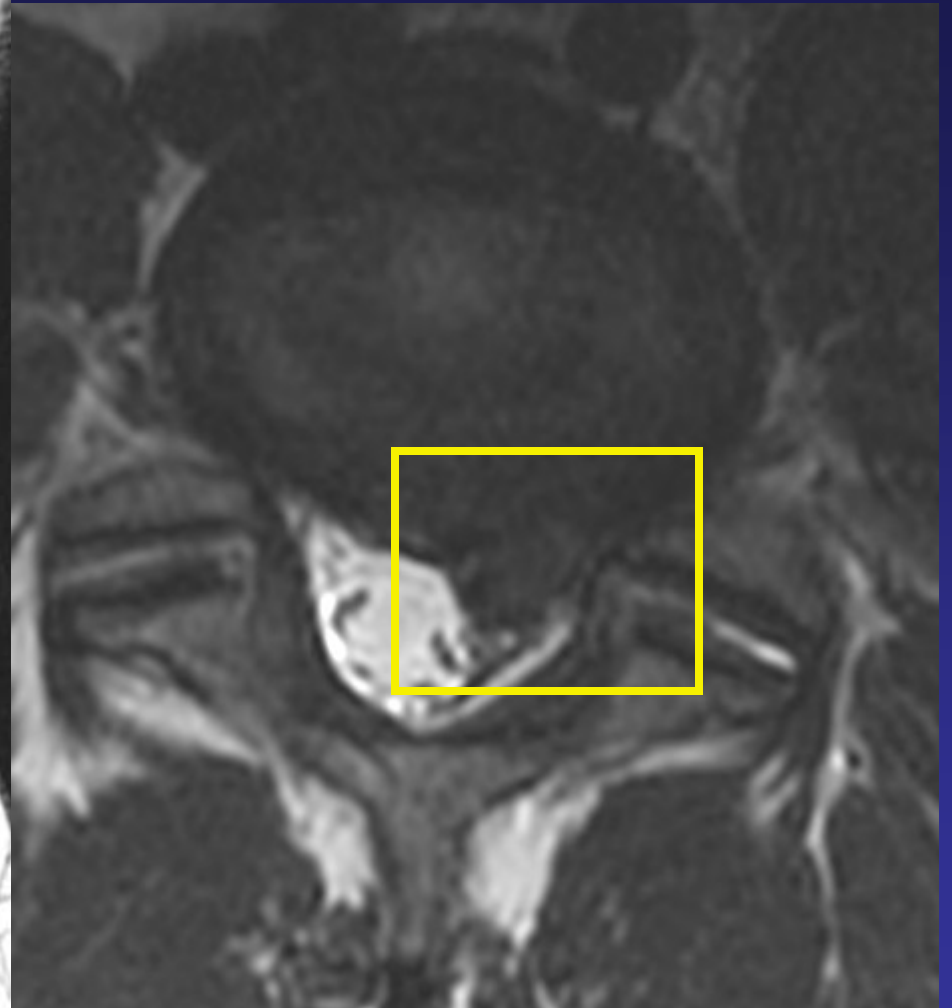
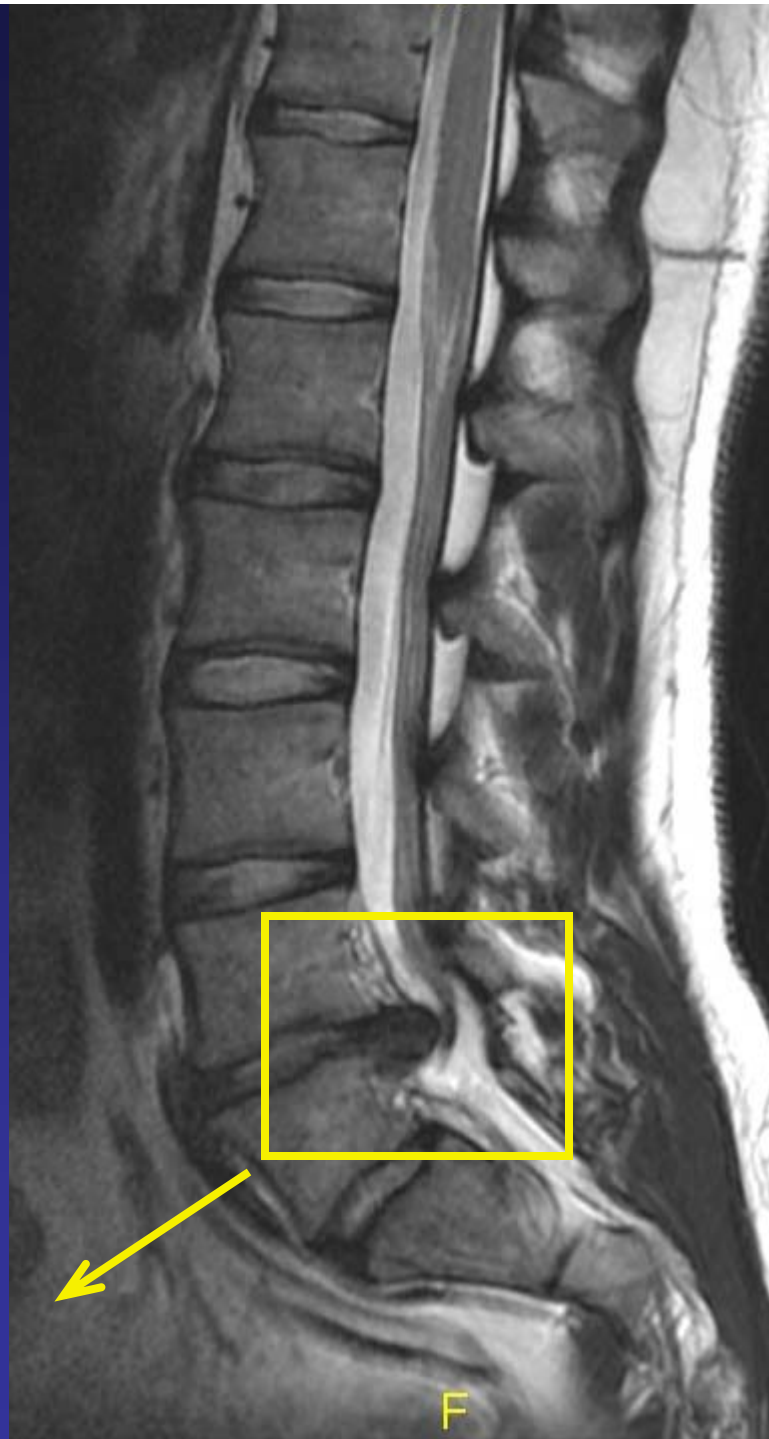
Lumbar X-ray
MRI
Bone Scan w/SPECT
CT (+/- myelography)

Lumbar MRI

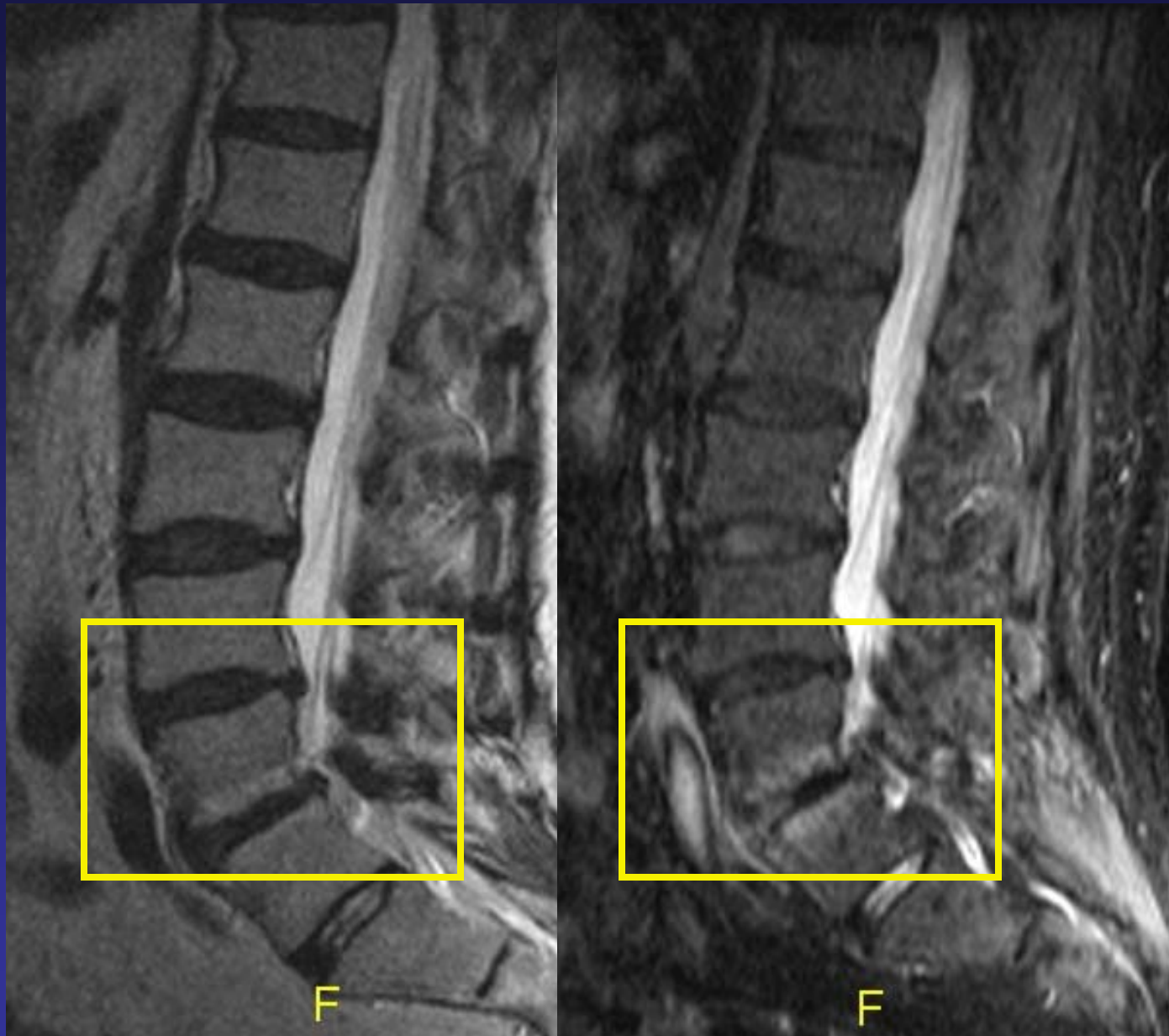
- **Advantages**
 - **Relatively quick**
 - 20-30 min. exam
 - **Accurate and reliable**
 - 1.5T and 3T options
 - Excellent bone and soft tissue characterization
 - **Readily available**
 - Standard and wide bore units
 - **No ionizing radiation**

Lumbar MRI

- Disadvantages
 - Relatively expensive
 - Beware of low field strength (resolution)
 - Poor functional information
 - Limited field of view



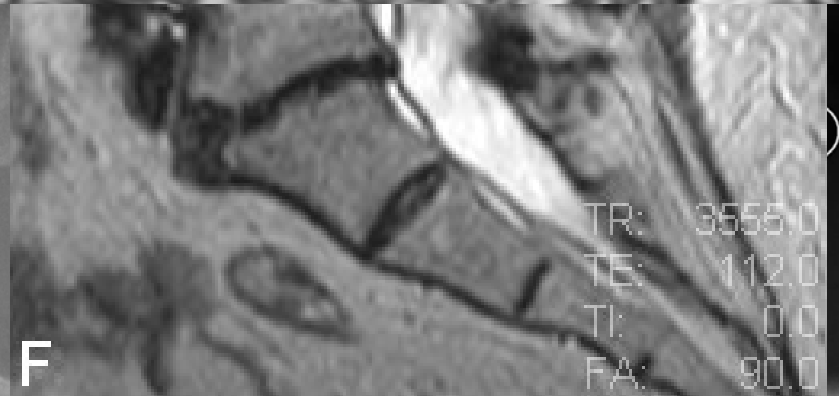
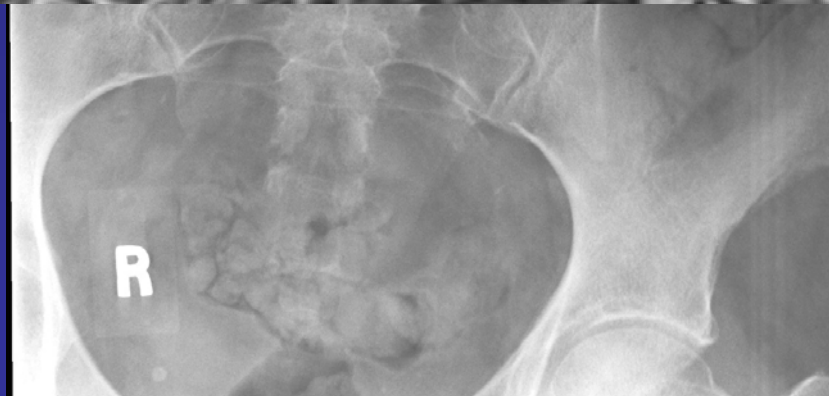
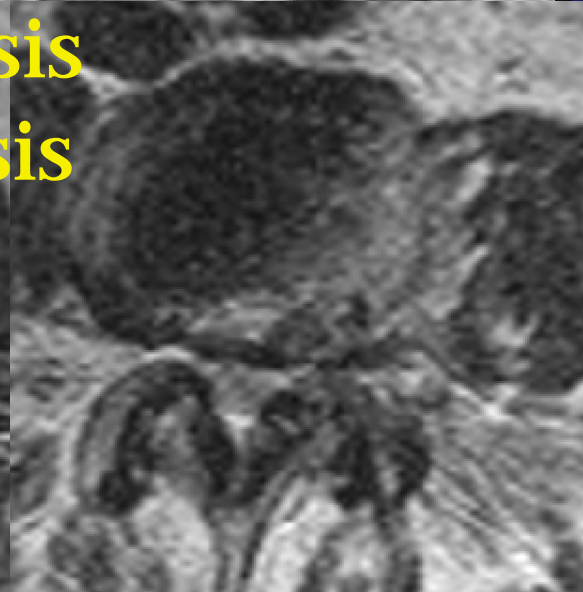
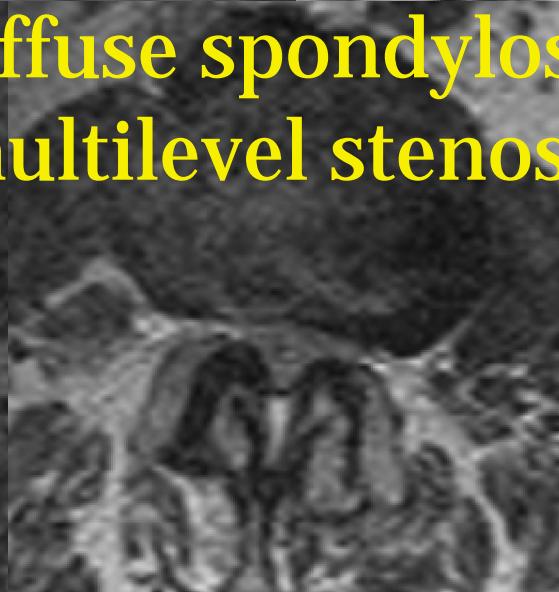
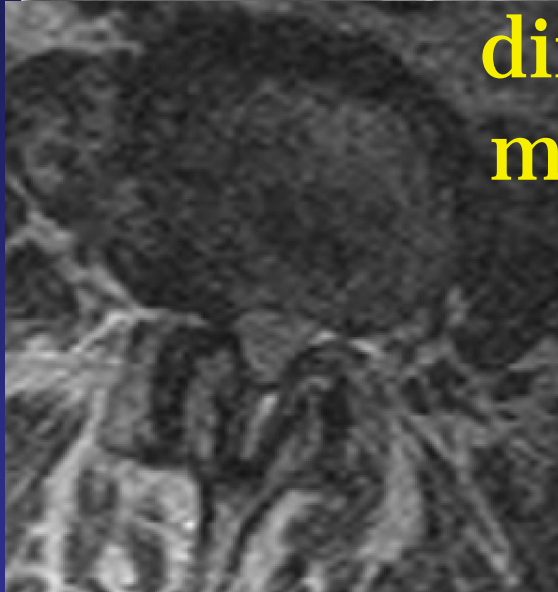
HNP & listhesis

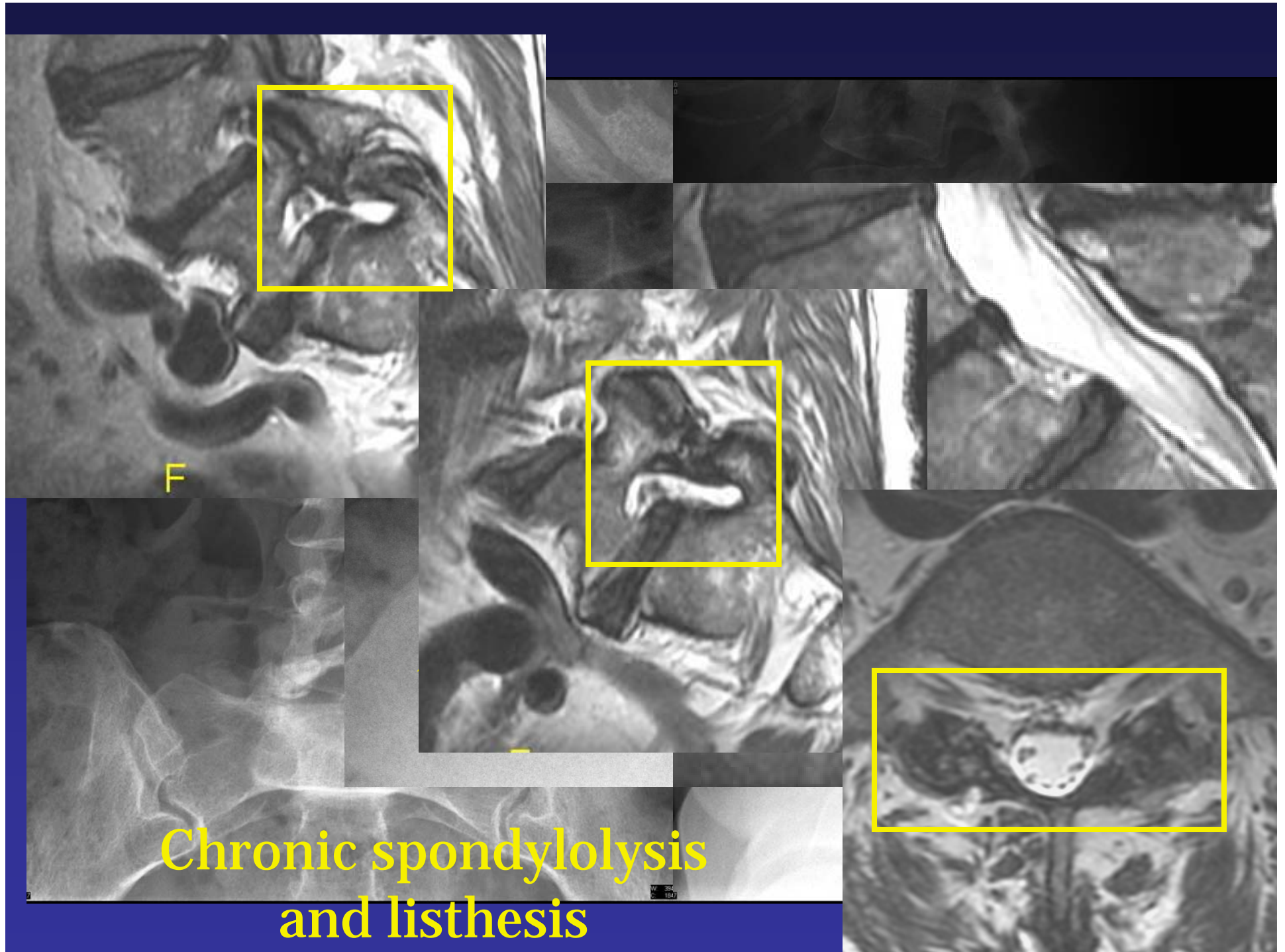


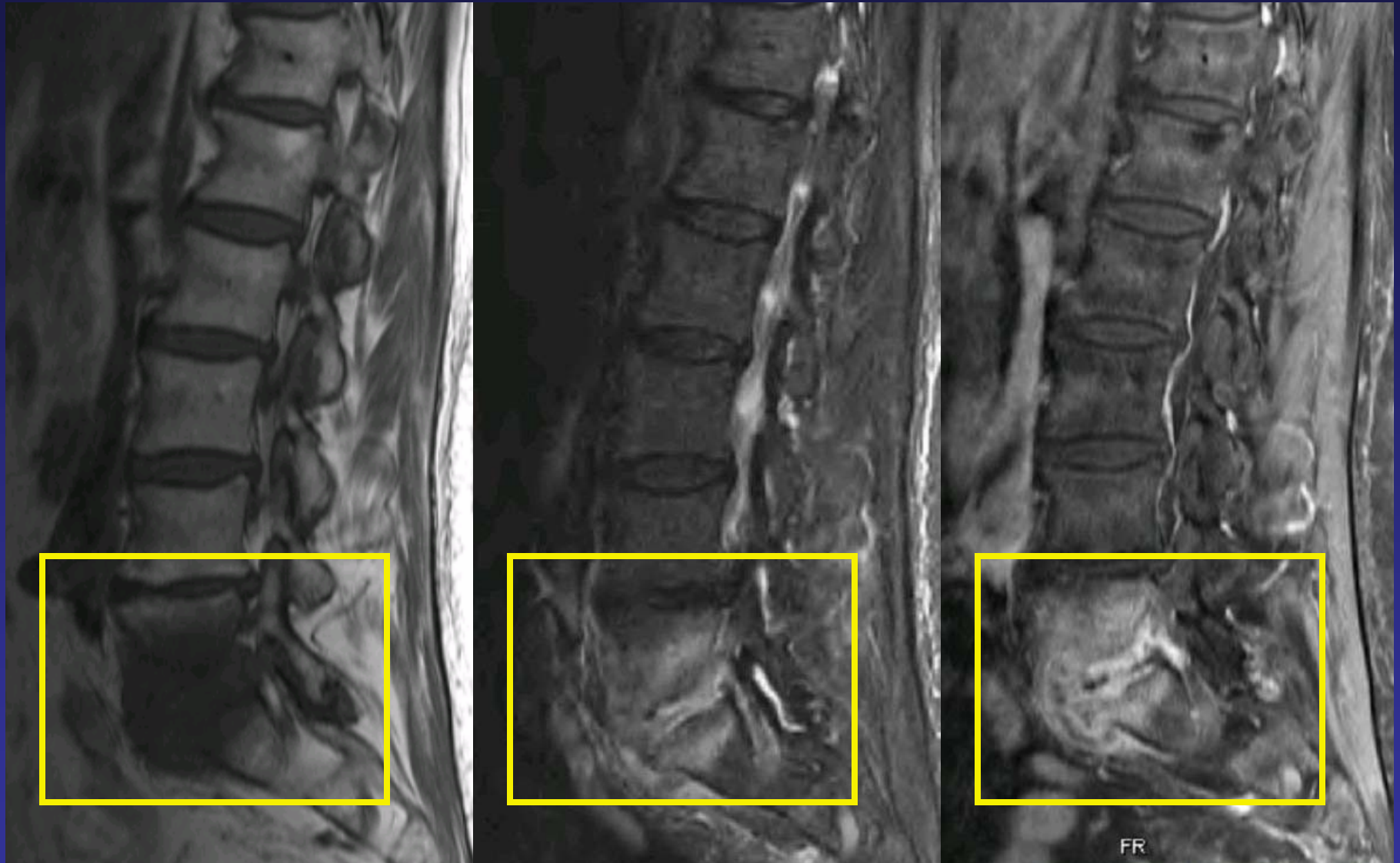
spondylosis



diffuse spondylosis
multilevel stenosis



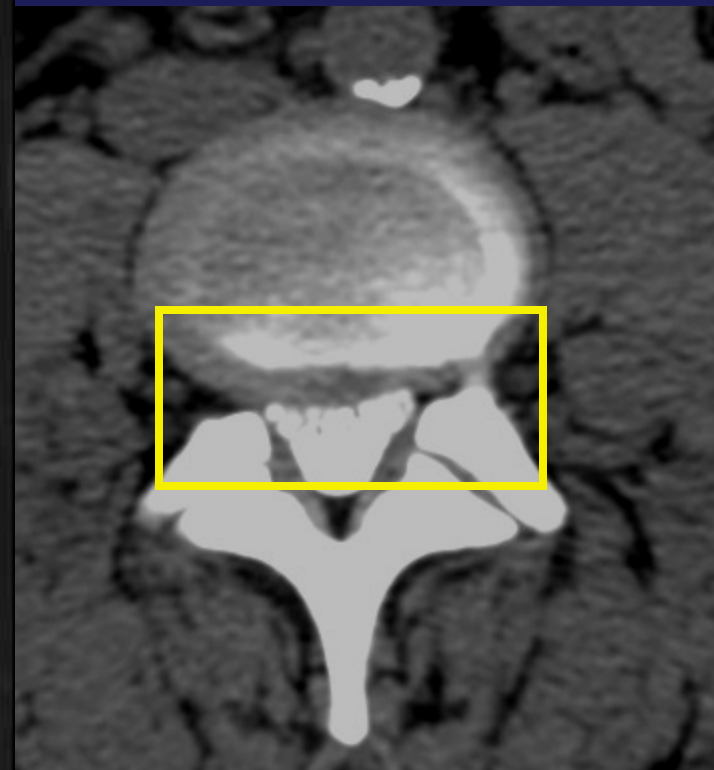
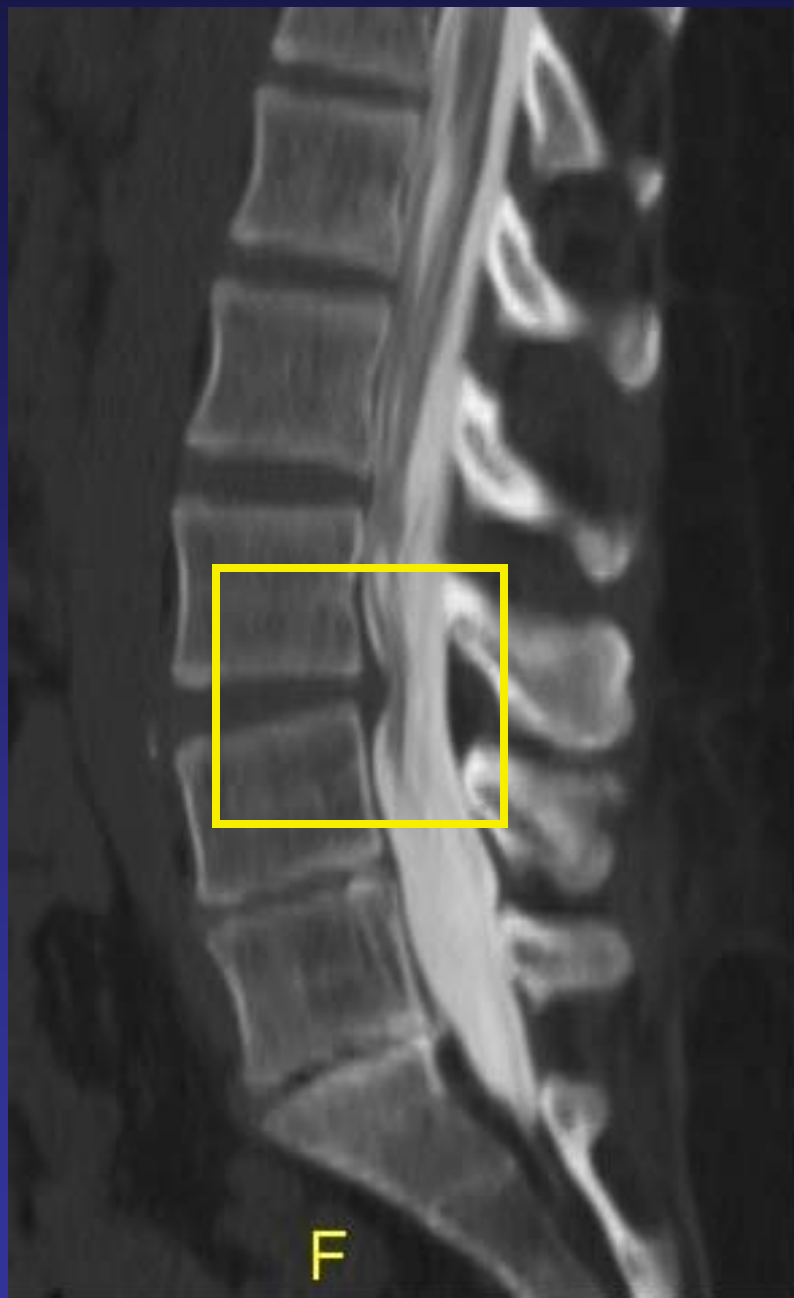




diskitis and osteomyelitis

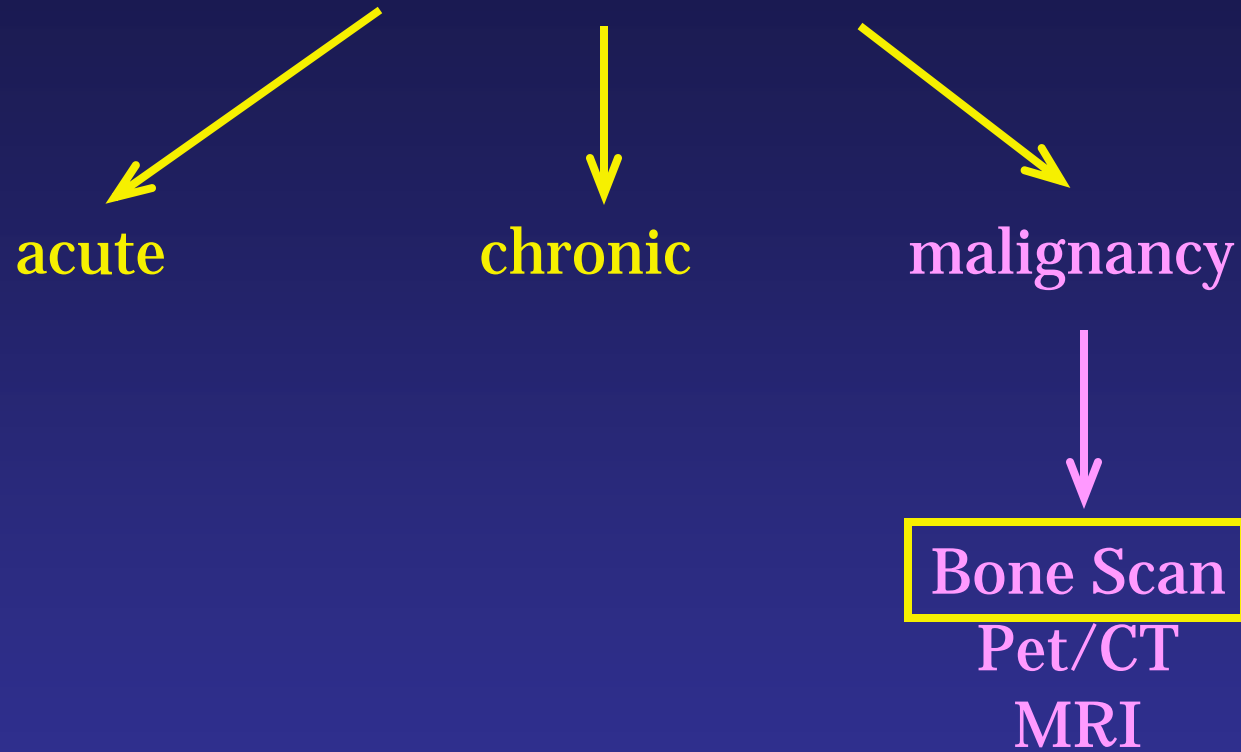


Chronic spondylolysis
Chronic apophysitis
without isthesis



disc protrusion &
nerve compression

Low Back Pain

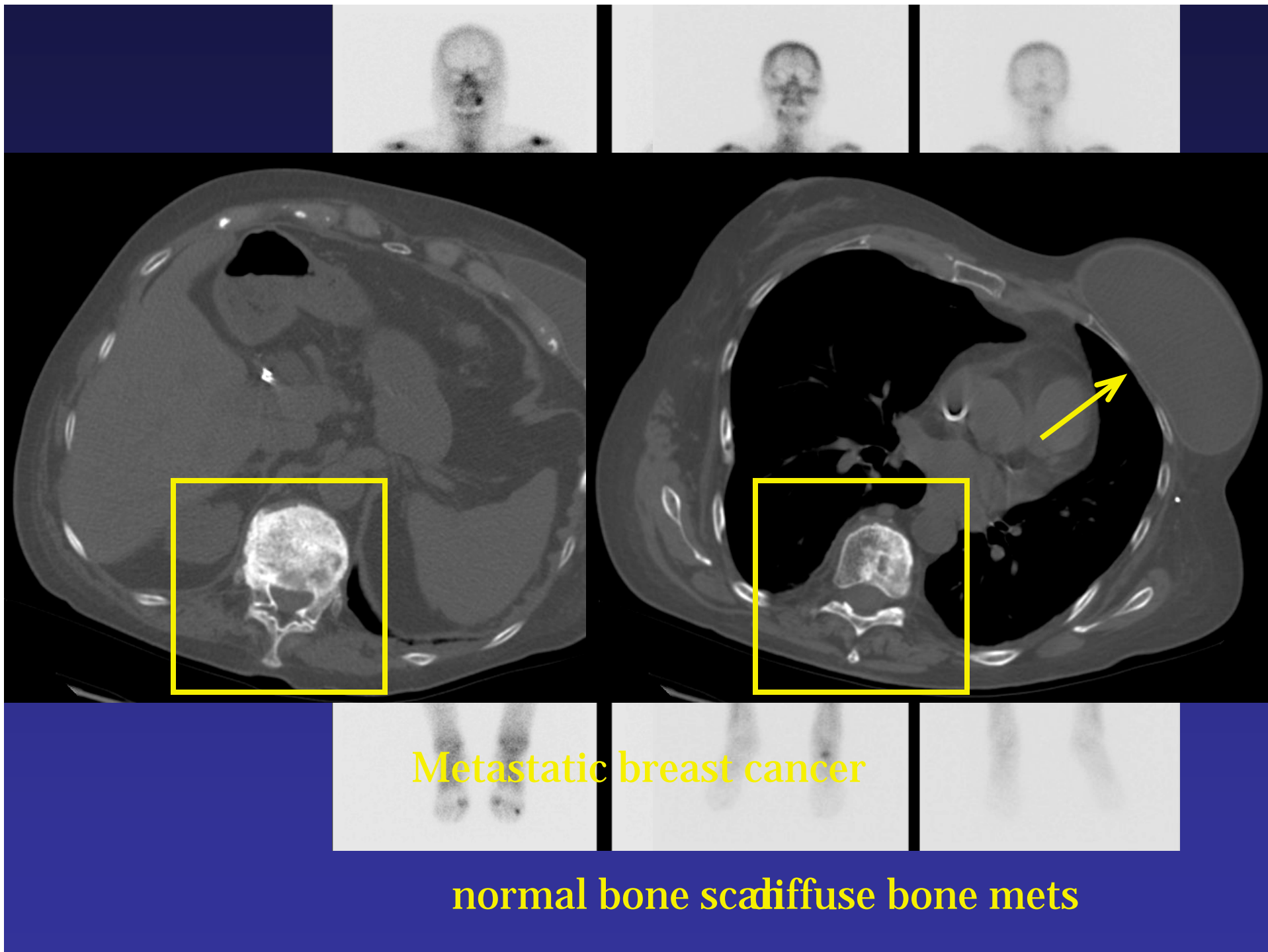


Bone Scan

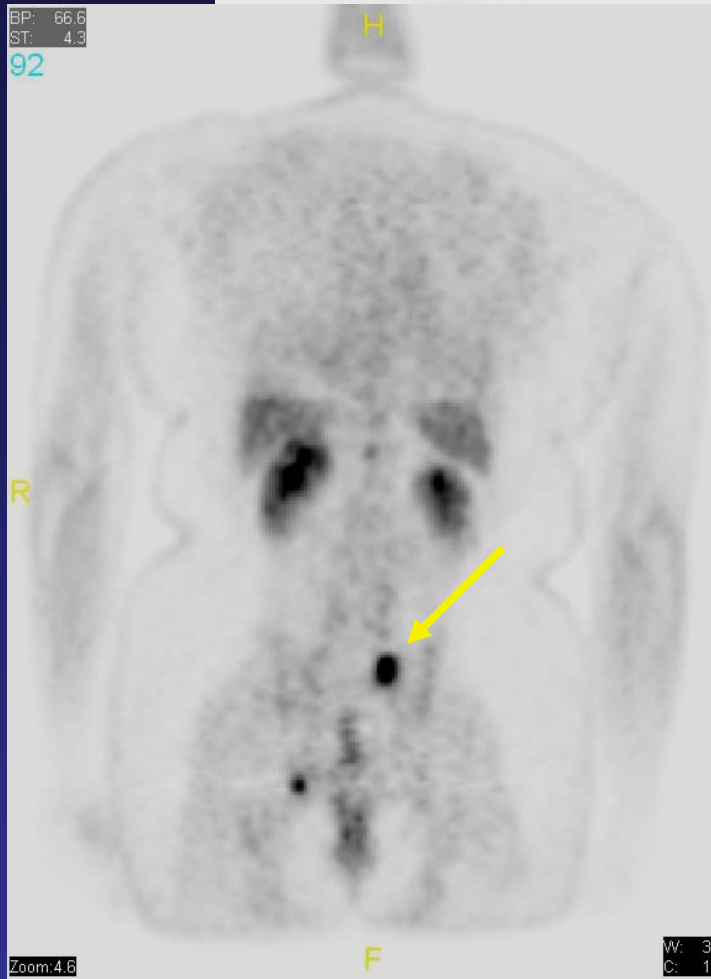
- Advantages
 - Relatively quick
 - Readily available
 - Excellent sensitivity to rapid bone turnover
 - Fractures, metastases, arthritis
 - Whole body imaging

Bone Scan

- Disadvantages
 - Low spatial resolution
 - Sensitive but not very specific
 - Ionizing radiation



BP: 66.6
ST: 4.3
92

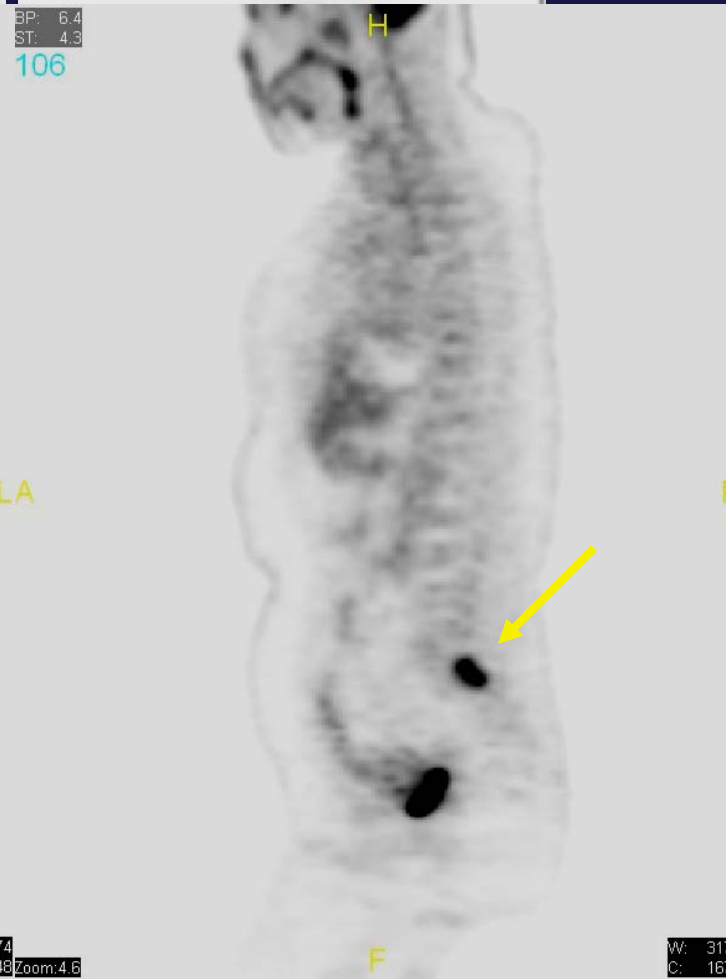


Zoom: 4.6

F

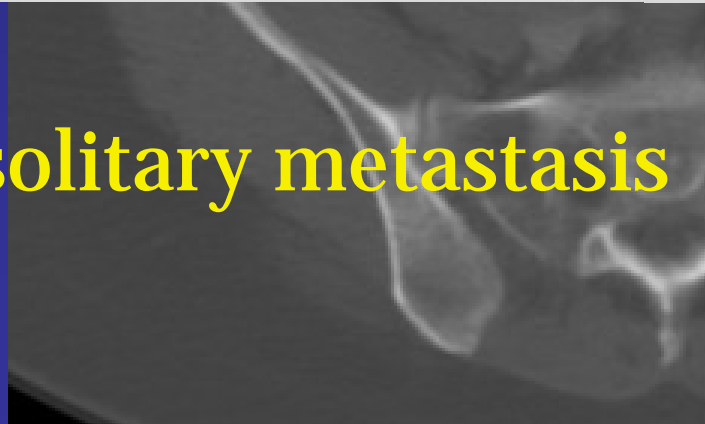
W: 3274
C: 1648

BP: 6.4
ST: 4.3
106



W: 317
C: 167

solitary metastasis



BP: 6.5
ST: 5.0

14
C

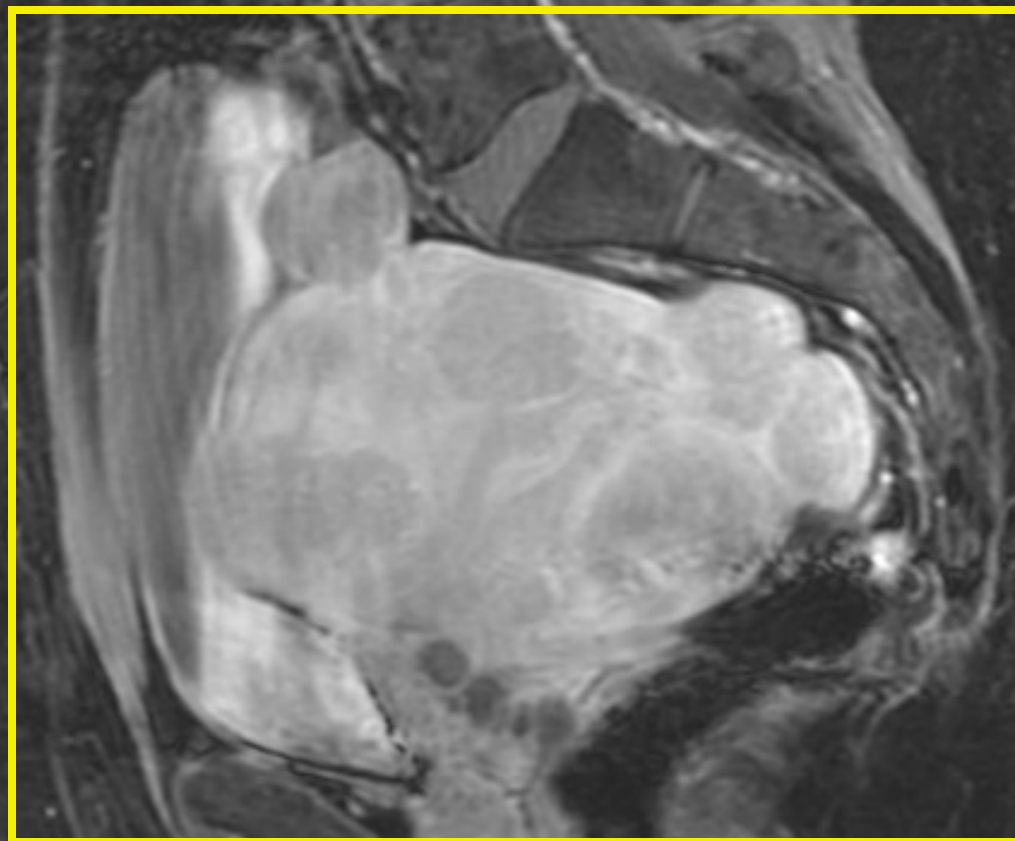
TR: 435.0
TE: 5.0
TI: 0.0
FA: 75.0
10:56

A

P

H

F

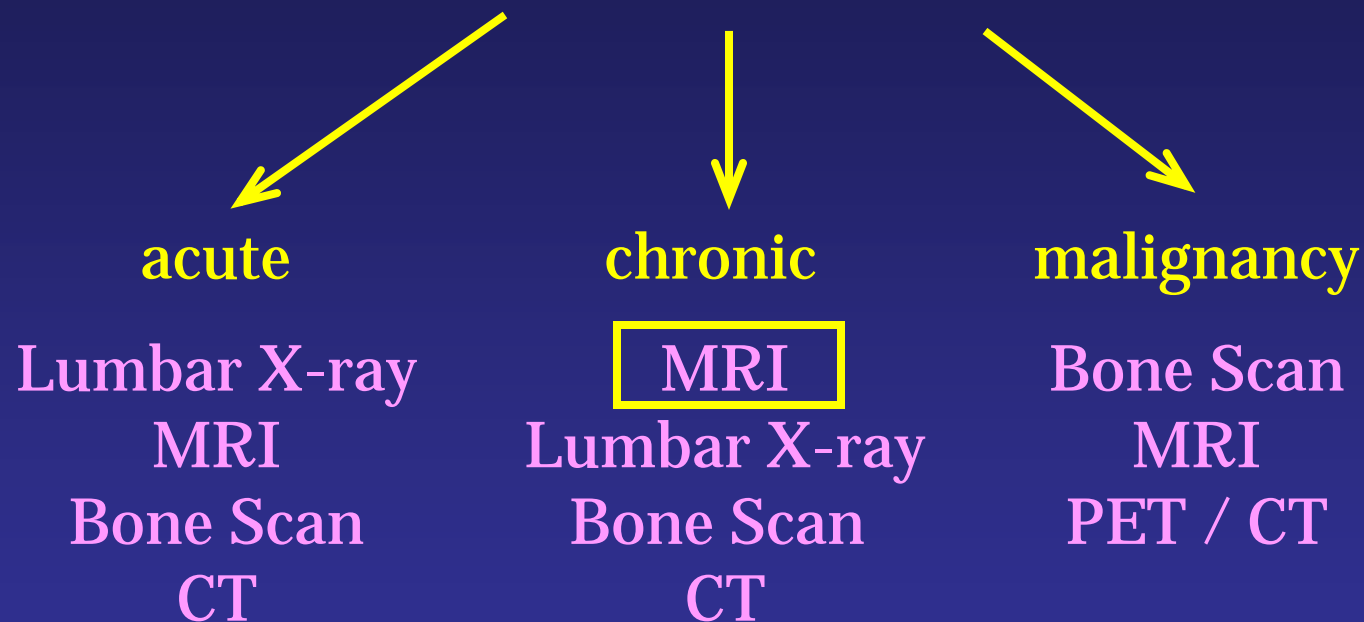


myomatous uterus with
bladder compression

Lossy 1:9
512x512
Zoom:1.2

W: 1378
C: 497
SAG FSPGR POST

low back pain Summary





Thank you . . .