

# RED FLAGS, INDICATIONS FOR AND INTERPRETATION OF LABORATORY TESTS IN LBP

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**Better anatomy knowledge  
=  
Better diagnoses and treatments**

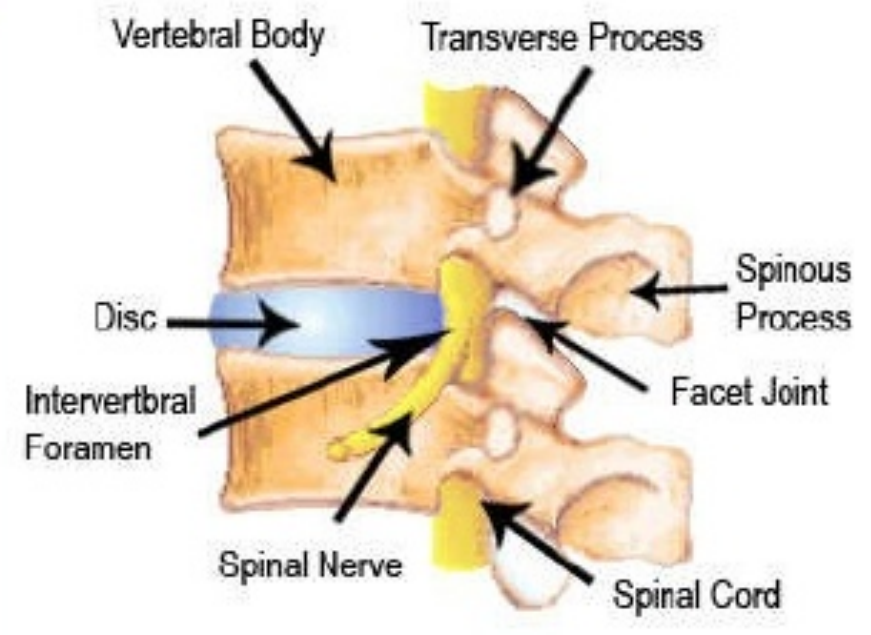
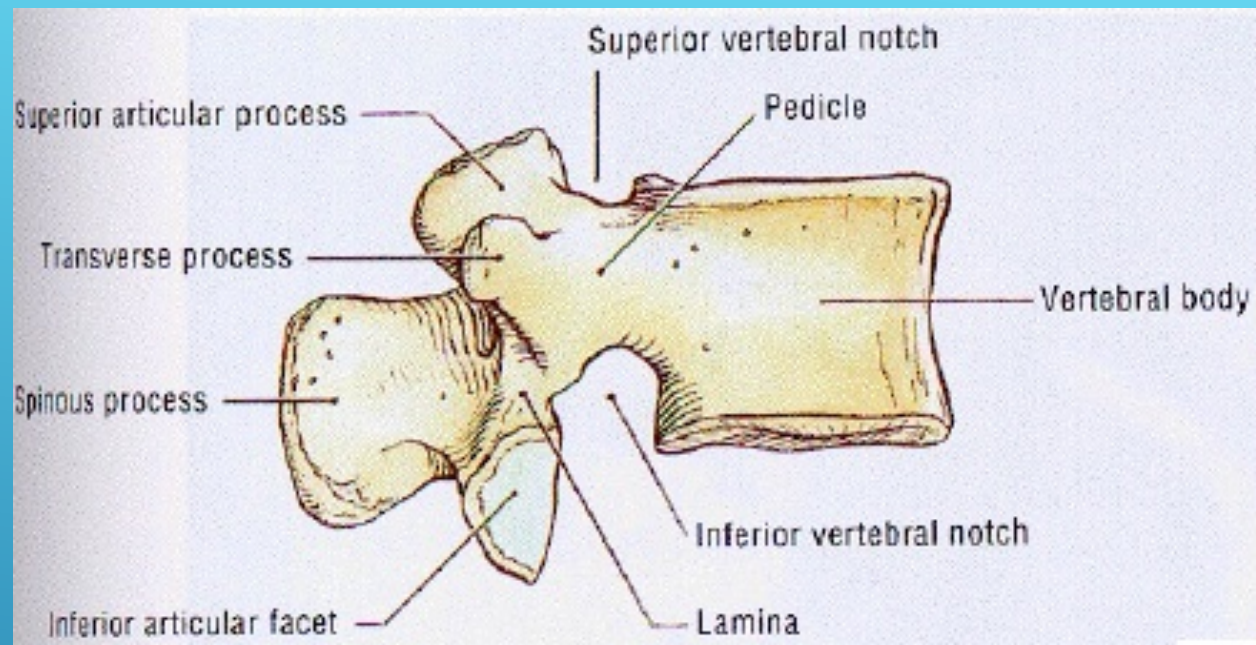


Cervical spine

Thoracic spine

Lumbar spine

Sacrum and coccyx







q Vertebra

– Body, anteriorly

q Functions to support weight

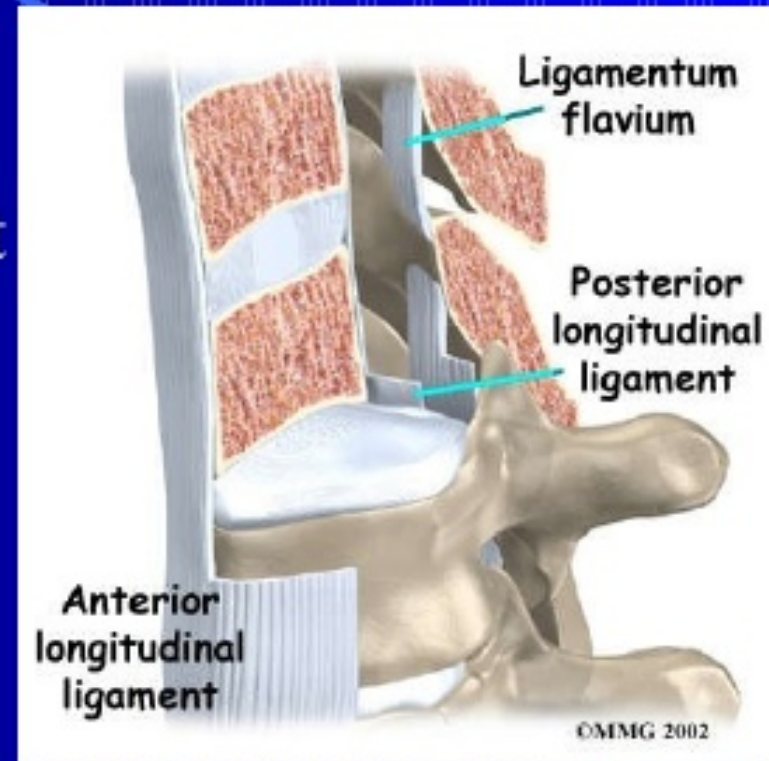
– Vertebral arch, posteriorly

q Formed by two **pedicles** and two **laminae**

q Functions to protect neural structures

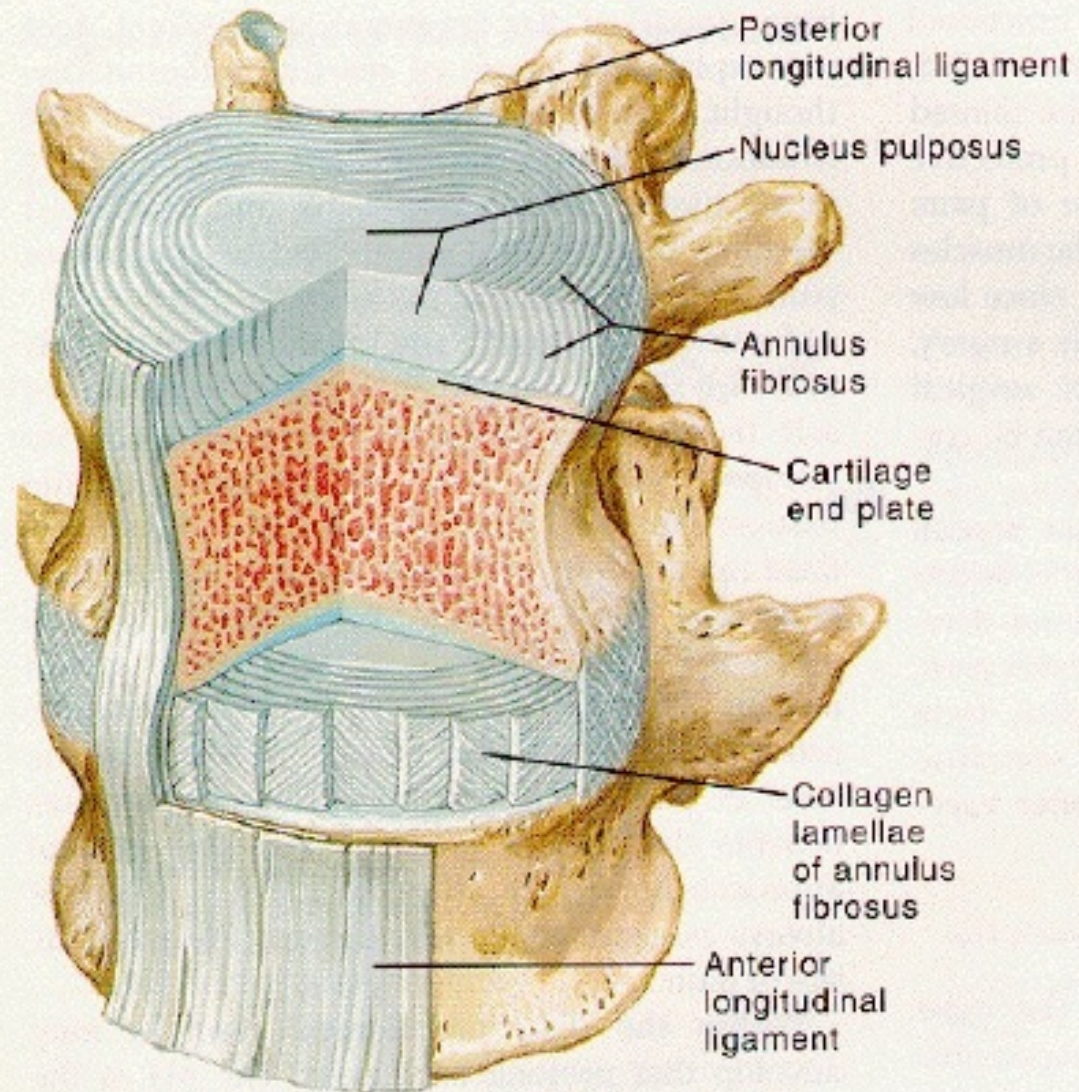
# Ligaments

- q Anterior longitudinal ligament
- q Posterior longitudinal ligament
- q Ligamentum flavum
- q Interspinous ligament
- q Supraspinous ligament



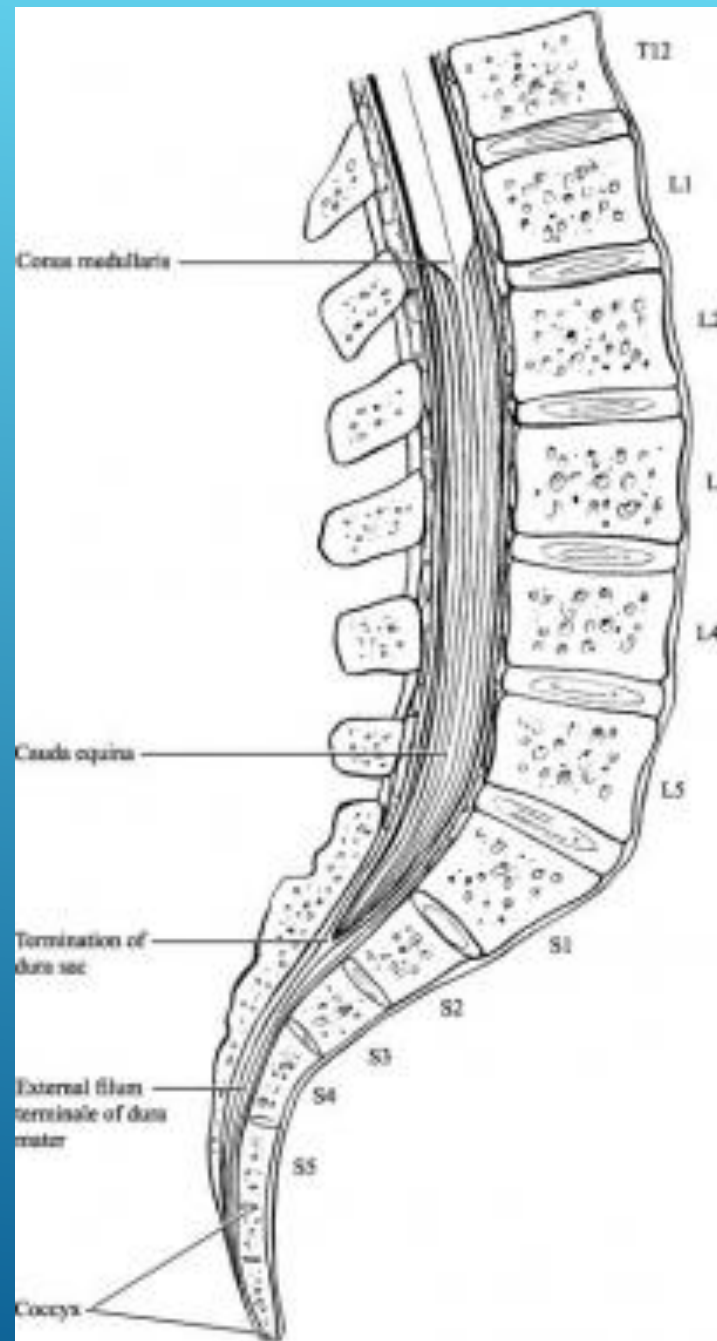


## Intervertebral Disc

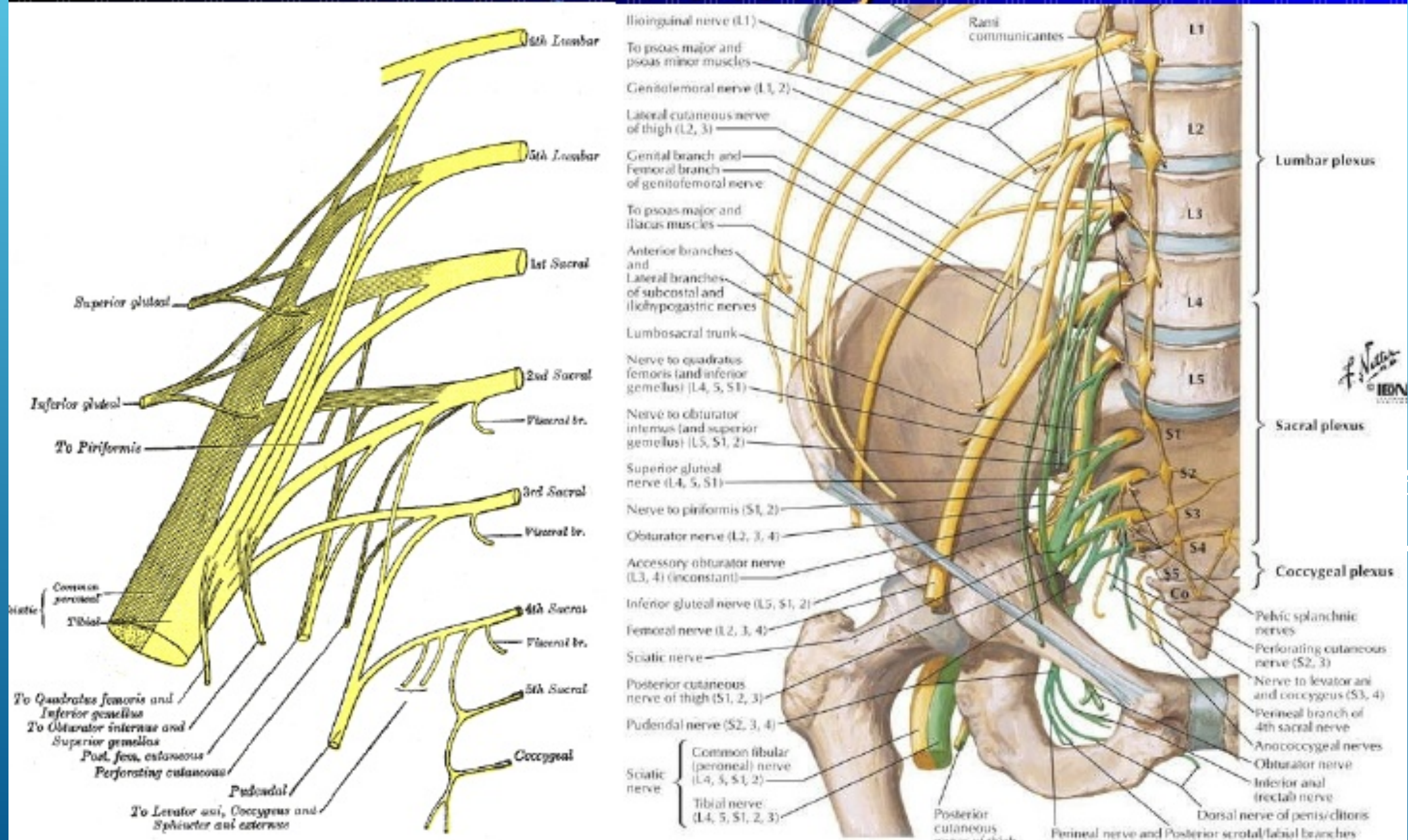


Intervertebral disc composed of central nuclear zone of collagen and hydrated proteoglycans surrounded by concentric lamellae of collagen fibers





# Neuro-anatomy





# PATIENT HISTORY “OPQRSTU”

- q Onset
- q Palliative/Provocative factors
- q Quality
- q Radiation
- q Severity/Setting in which it occurs
- q Timing of pain during day
- q Understanding - how it affects the patient

# “Red Flags” in back pain

- q Age < 15 or > 50
- q Fever, chills, UTI
- q Significant trauma
- q Unrelenting night pain; pain at rest
- q Progressive sensory deficit
- q Neurologic deficits
  - Saddle-area anesthesia
  - Urinary and/or fecal incontinence
  - Major motor weakness
- q Unexplained weight loss
- q Hx or suspicion of Cancer
- q Hx of Osteoporosis
- q Hx of IV drug use, steroid use, immunosuppression
- q Failure to improve after 6 weeks conservative tx



# Diagnoses & Red Flags

## q Cancer

- Age > 50
- History of Cancer
- Weight loss
- Unrelenting night pain
- Failure to improve

## q Infection

- IVDU
- Steroid use
- Fever
- Unrelenting night pain
- Failure to improve

## q Fracture

- Age > 50
- Trauma
- Steroid use
- Osteoporosis

## q Cauda Equina Syndrome

- Saddle anesthesia
- Bowel/bladder dysfunction
- Loss of sphincter control
- Major motor weakness

## Red Flags continued

cauda equina or cord compression – disc prolapse, cancer, fracture

Immunosuppression (HIV/AIDS, steroids, IV drug use) – infection (e.g TB)

Trauma, osteoporosis - fracture

History of cancer (lung, prostate, multiple myeloma)

Nocturnal pain, pain at rest – infection (TB, osteomyelitis), cancer

Systemic upset (weight loss, fevers, night sweats) – cancer, infection

Thoracic pain – aortic aneurysm, cancer

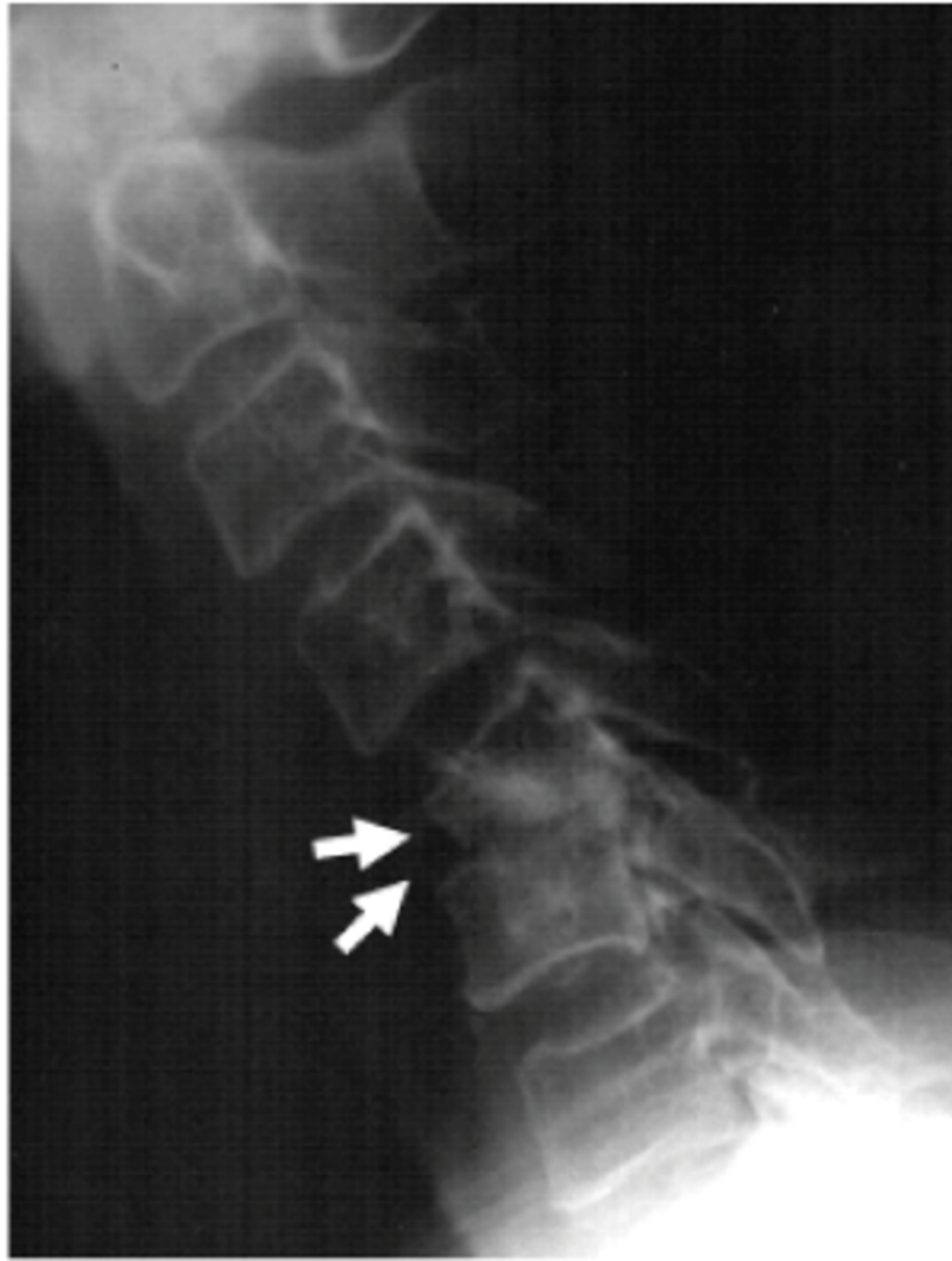
Abdominal pain - PUD, acute pancreatitis

Abnormal gait – compression of spine or nerve root

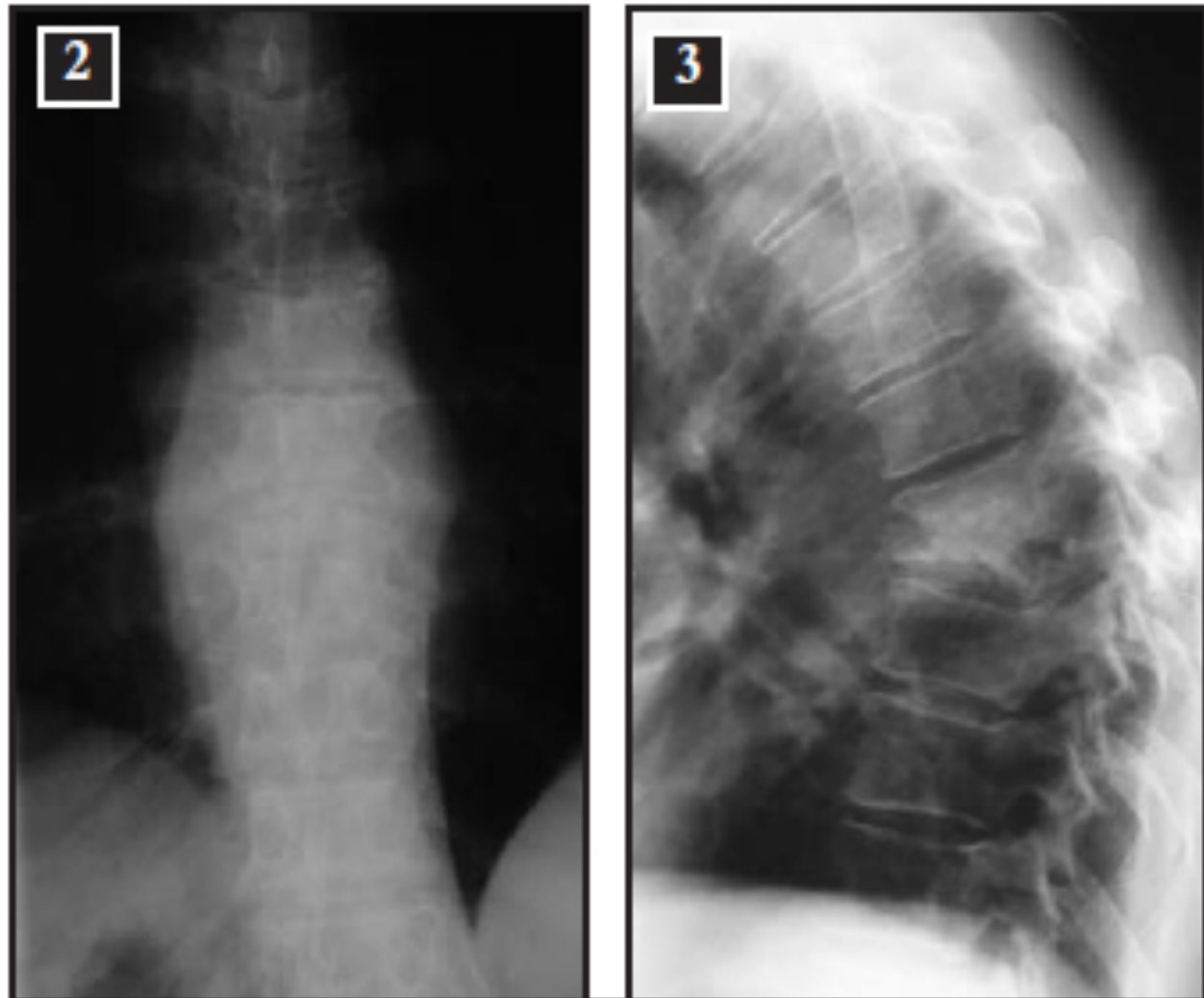
# Diagnostic Studies

- q Radiographs
  - Early if **RED FLAGS**
  - Symptoms present > 6 weeks despite tx









**Figures 2 and 3: AP and lateral thoracic spine demonstrating paraspinal abscess and focal kyphosis due to vertebral body destruction**



# Diagnostic Studies

## q MRI indications

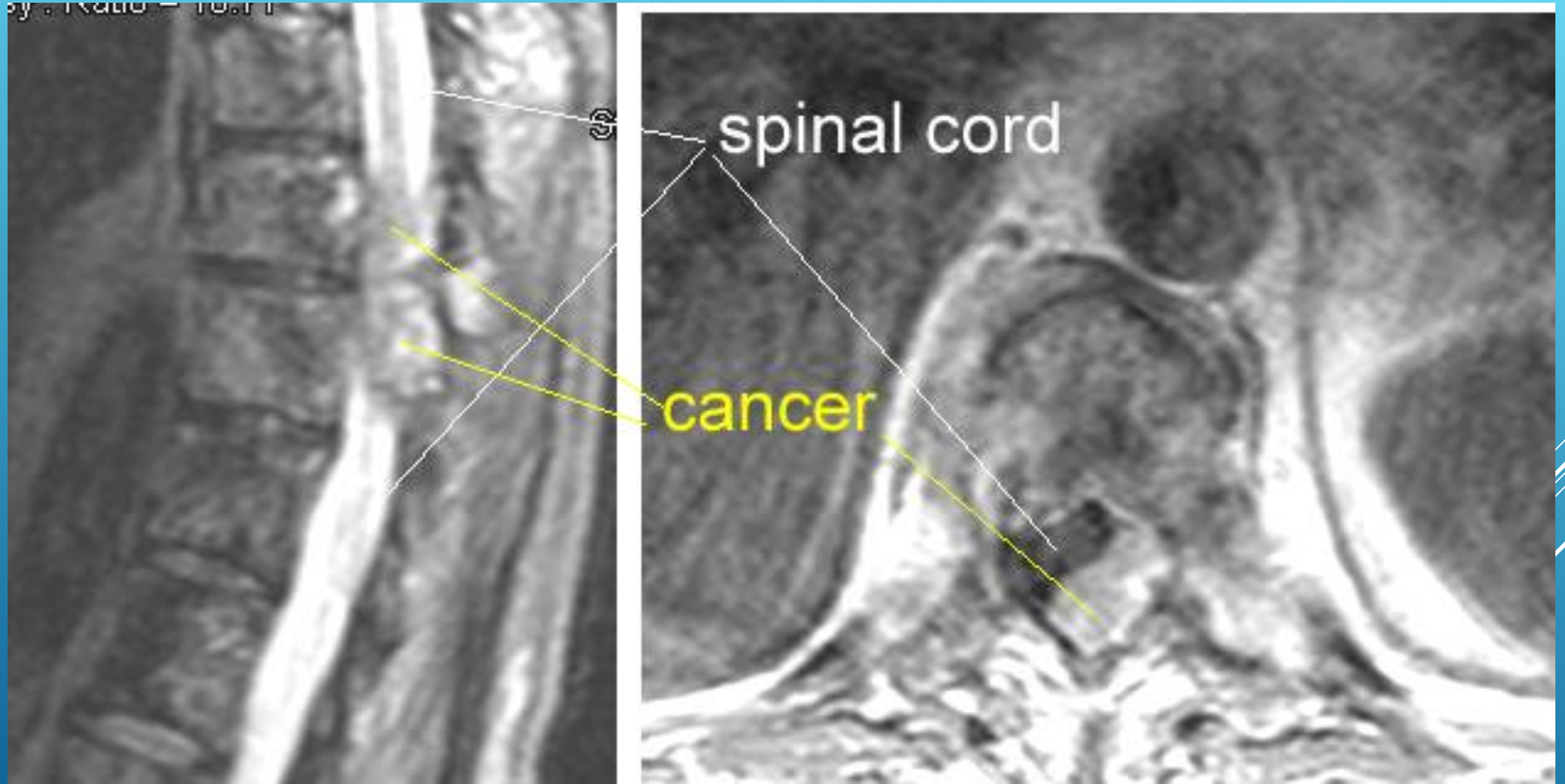
- Possible cancer, infection, cauda equina synd
- >6-12 weeks of pain
- Pre-surgery or invasive therapy

## q Disadvantages

- False-positives; may not be causing pain
- More costly, increased time to scan, problem with claustrophobic patients

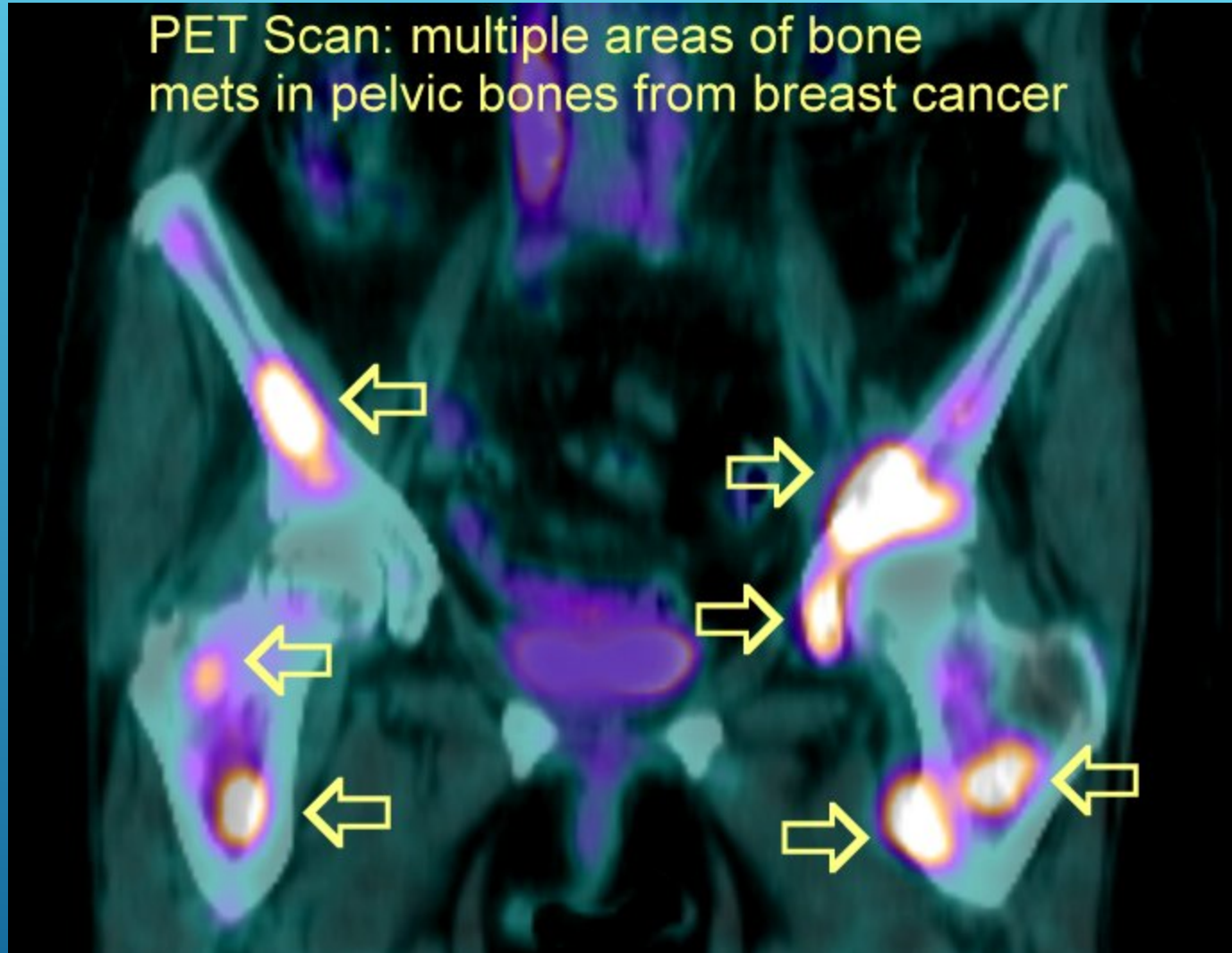


by: Kaito - 10.11





PET Scan: multiple areas of bone  
mets in pelvic bones from breast cancer



Bone infection “diagnostic” tests:

ESR – elevated, none specific, monitor disease

CRP – nonspecific, elevated, monitor disease

Blood cultures – often negative, unless haematogenous spread

**Bone biopsy + histopathology – gold standard**

Culture and sensitivity biopsy materials

Radiology – plain Xrays, MRIs, CT scans, PET scans



THANK YOU