Backache

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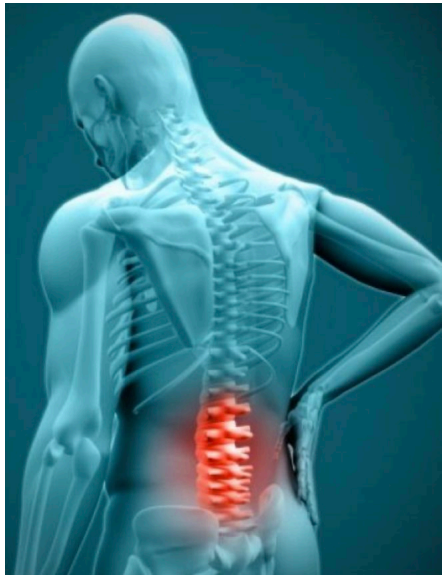


What is backache?

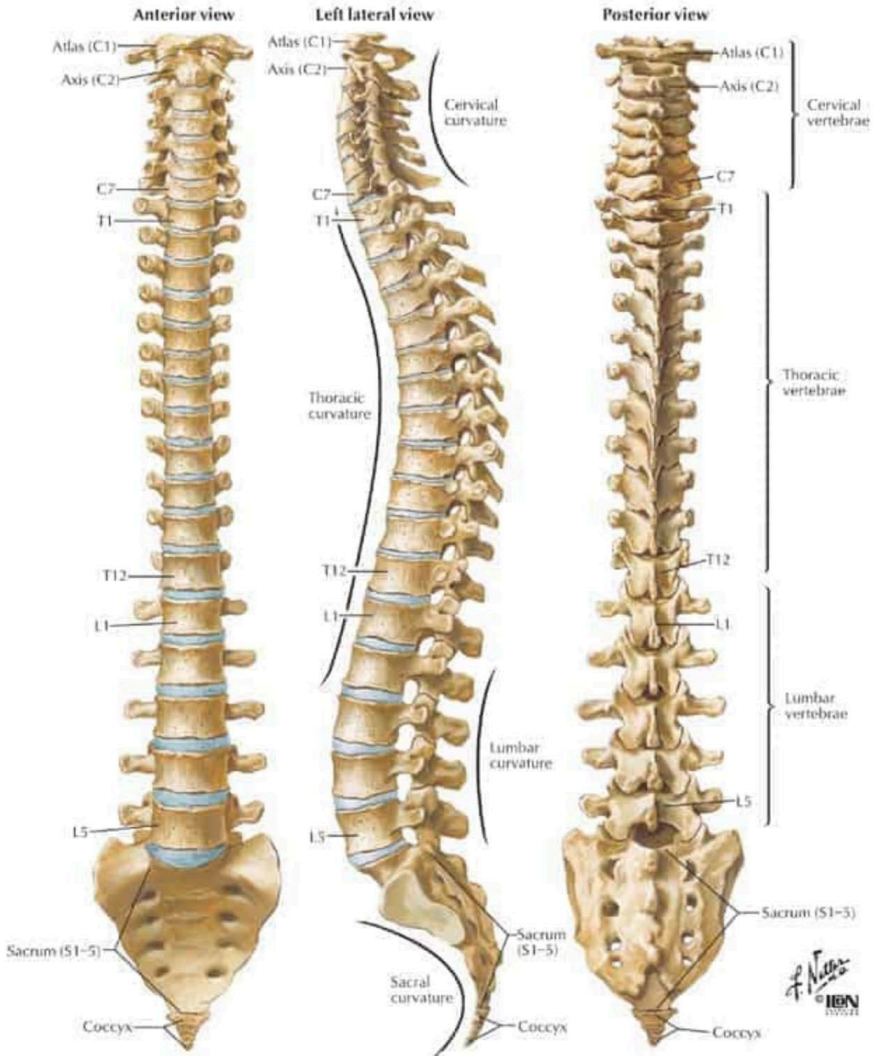
- “Pain in the axial skeleton from neck to sacroiliac joints”.

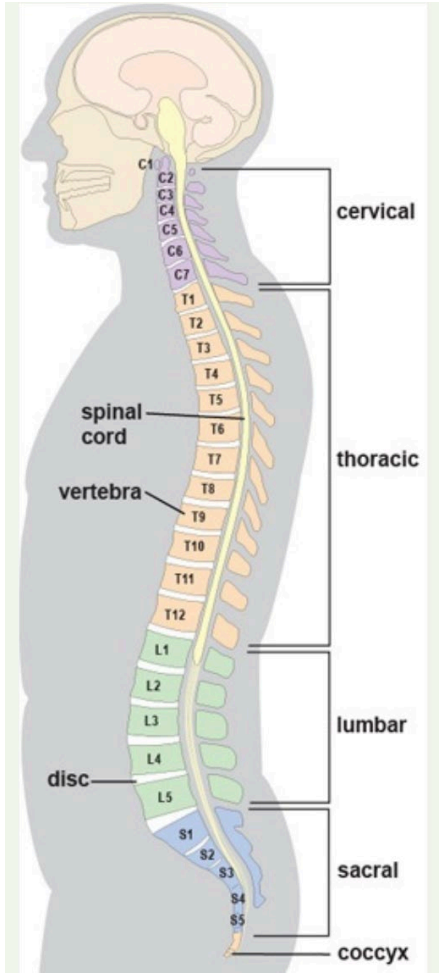
- Lower back pain (LBP)- **pain in the area on the posterior aspect of the body from the lower margin of the twelfth ribs to the lower gluteal folds with or without pain referred into one or both lower limbs that lasts for at least one day.**

Epidemiology

- Backache is the most common symptom and most common musculoskeletal complaint seen by general practitioners.
- It is the most common cause of disability globally with more than half a billion prevalent cases of backache in 2020.
- The prevalence increases with age, with the greatest number in the 50-54 year age group.
- The estimated cost (Europe) associated with backache varies between 0.2-2% of GDP.

Anatomy


Anterior view
Left lateral view
Posterior view
Atlas (C1)
Axis (C2)
C7
T1
T12
L1
L5
Sacrum (S1–5)
Coccyx
Cervical curvature
Thoracic curvature
Lumbar curvature
Sacral curvature
Cervical vertebrae
Thoracic vertebrae
Lumbar vertebrae
©IBN


C1
C2
C3
C4
C5
C6
C7
T1
T2
T3
T4
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T10
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T12
L1
L2
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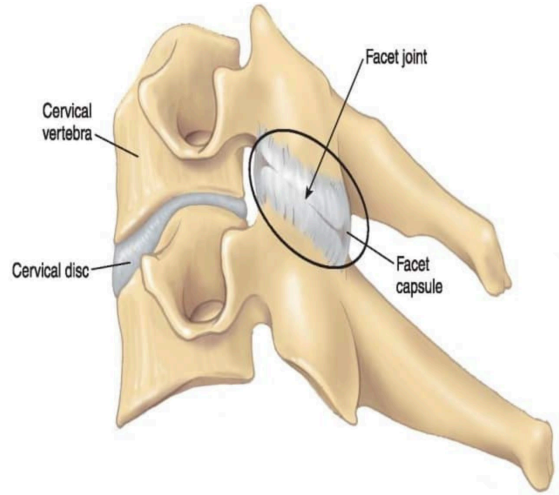
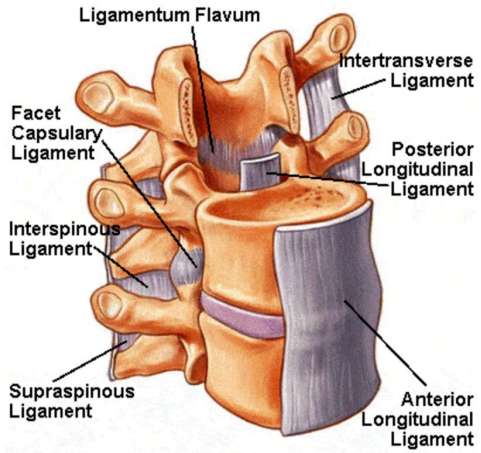
vertebra
disc
cervical
thoracic
lumbar
sacral
coccyx


Facet joint
Cervical vertebra
Cervical disc
Facet capsule


Ligamentum Flavum
Intertransverse Ligament
Facet Capsulary Ligament
Posterior Longitudinal Ligament
Interspinous Ligament
Supraspinous Ligament
Anterior Longitudinal Ligament

CASE 1

A 40-year-old lady presents with a 5-day history of lower backache, worse when walking or standing. She reports no history of trauma. On examination she has BMI of 32. Apart from pain on bending forward, examination is unremarkable.

- What is the most likely diagnosis?

- What investigations would you do (She requests an X-ray to assist with diagnosis.

CASE 2

A 60 -year- old woman with asthma since childhood presents with a 4-month history of backache worse in the area between shoulders. The pain is worse on movement. On examination, she is cushingoid and hyperinflated with wheezes bilaterally. She is tender over the mid-thoracic region but further examination is normal.

- What is the mot likely diagnosis?
- What are the concerns in the history of this lady?
- How would you investigate her problem?

CASE 3

A 36-year-old man presents with backache from the neck to lower back. He also reports pain over the buttocks and feeling stiff in the morning on waking up until he arrives at work. He also struggles to bend the back, requires help to put on shoes. On examination, he has restriction of movement on the entire spine.

- What is the diagnosis ?

- How do you investigate his problem?

Classification of backache

- **Acute, subacute and chronic**
  - -**acute** < 6 weeks
  - -**subacute** 6 to 12 weeks
  - -**chronic >**12 weeks

- **Mechanical vs inflammatory**

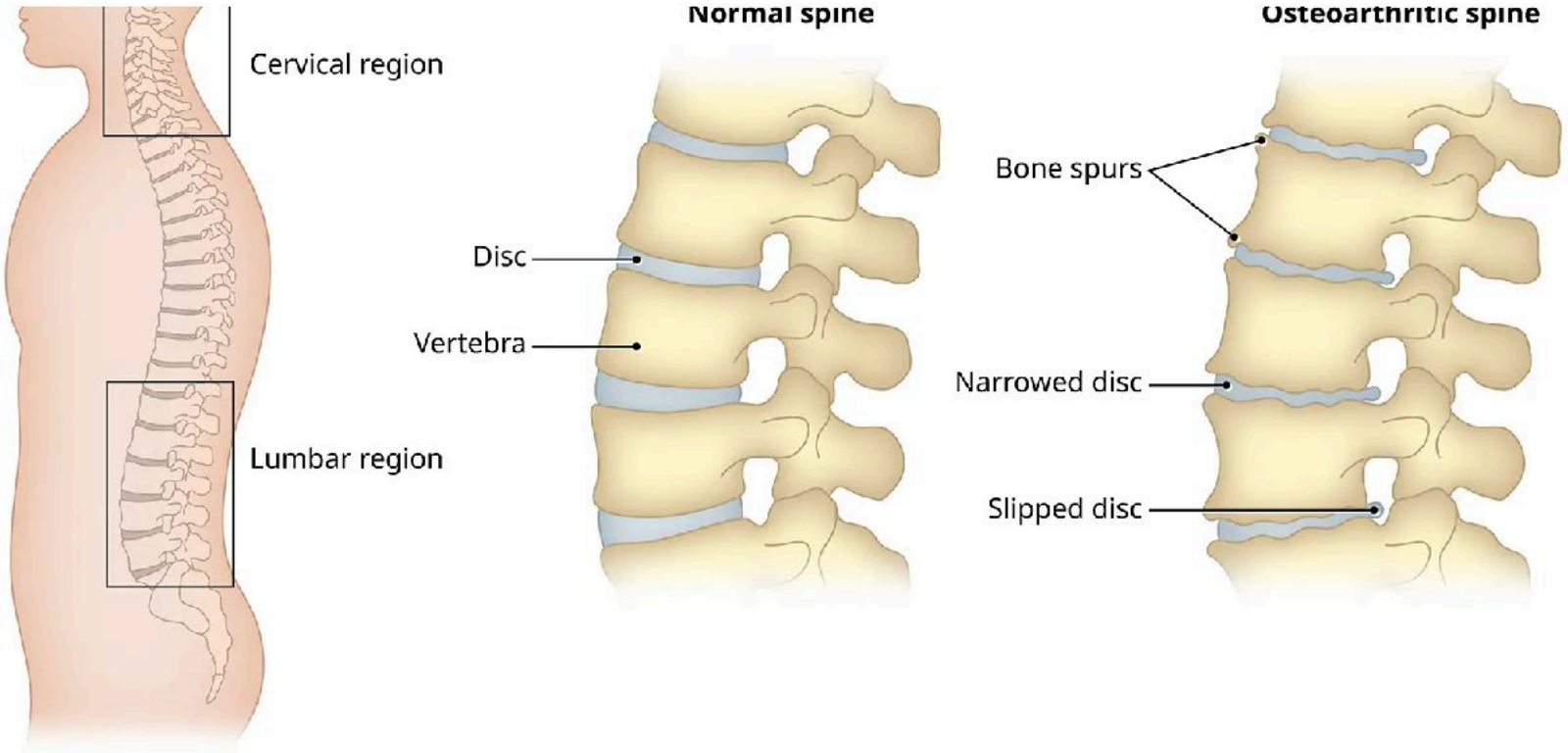
Inflammatory LBP	Mechanical LBP
20–40 years	Any age
Males > Females	M = F
Subacute onset	Often acute
Morning stiffness present	No morning stiffness
Pain relieved by activity	Pain worsened by activity
Pain worsened by rest	Pain improves with rest
No neurodeficit	Neurodeficit may be present
Gluteal and hip pain often present	Absent
Seen in any profession	Commonly seen in sedentary sitting jobs

Causes of backache

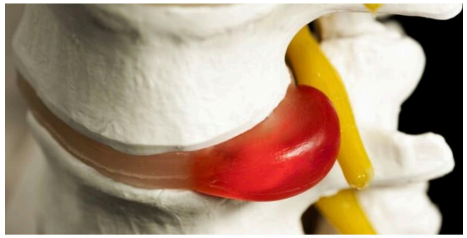
Primary Back Pathology
Musculoligamentous injury (a.k.a. lumbosacral strain) **Spondylosis** (i.e. degenerative arthritis of the spine) **Intervertebral disc herniation** **Anatomic abnormalities** • Scoliosis • Spondylolisthesis **Spinal stenosis** **Compression fracture** • Traumatic compression fracture • Spontaneous osteoporotic compression fracture • Pathologic fracture secondary to metastatic disease

Spondylosis

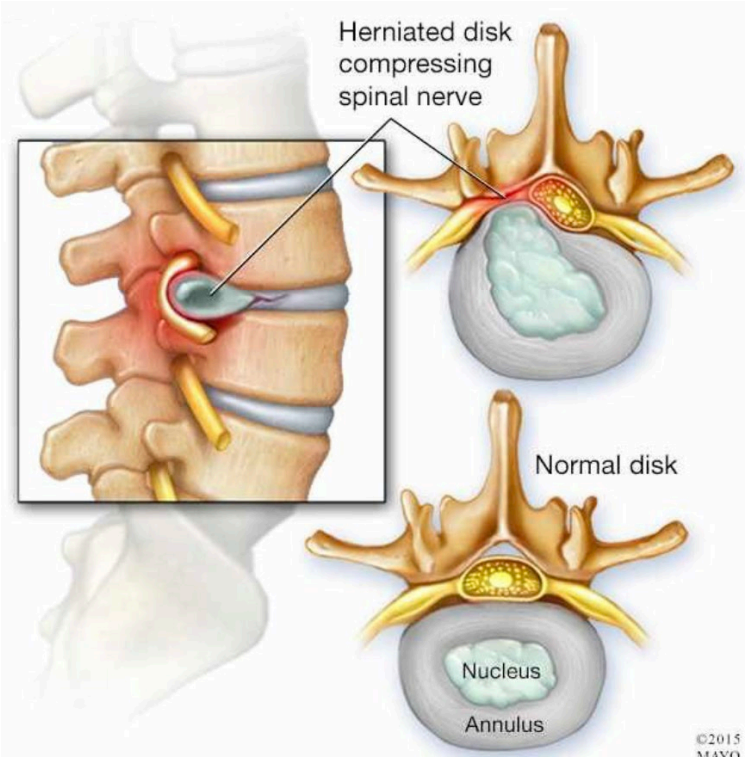
- Osteoarthritis of the spine

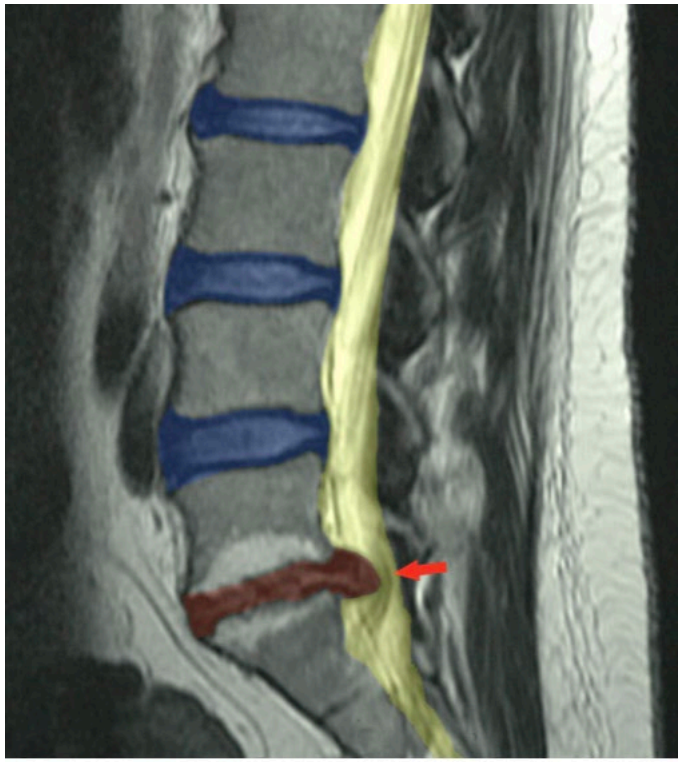


Disc herniation

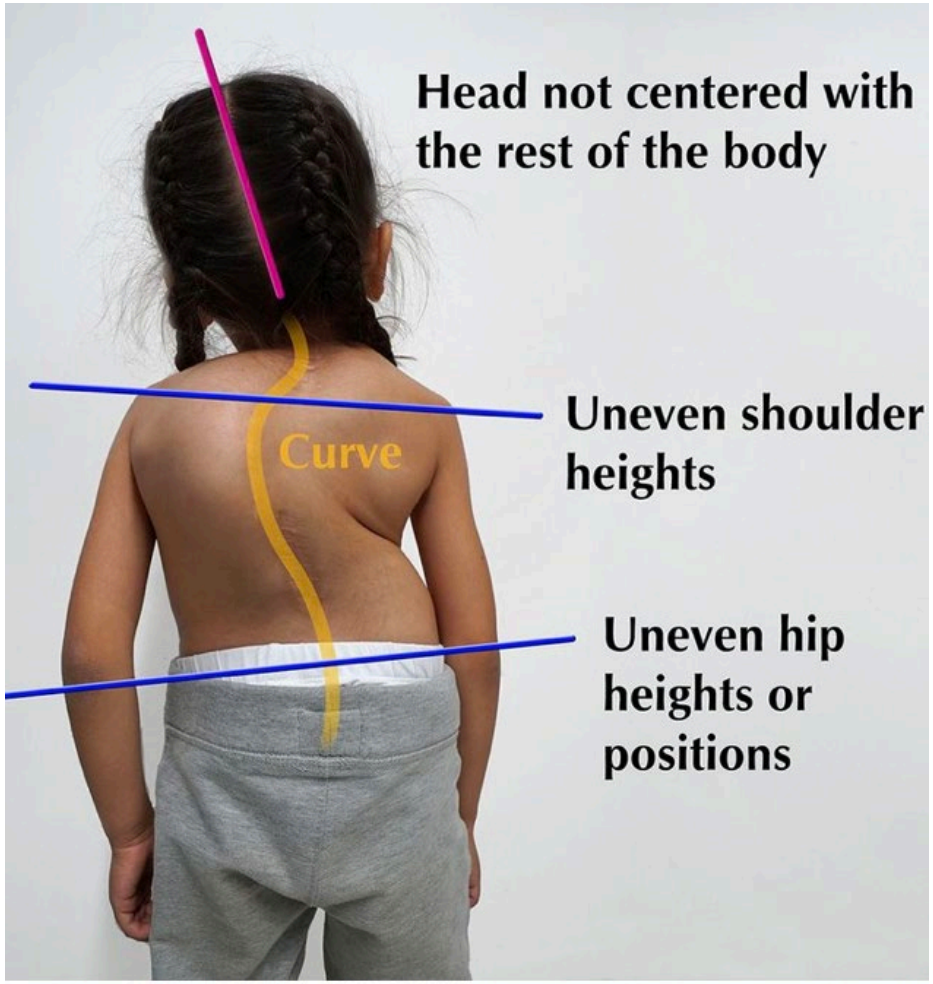


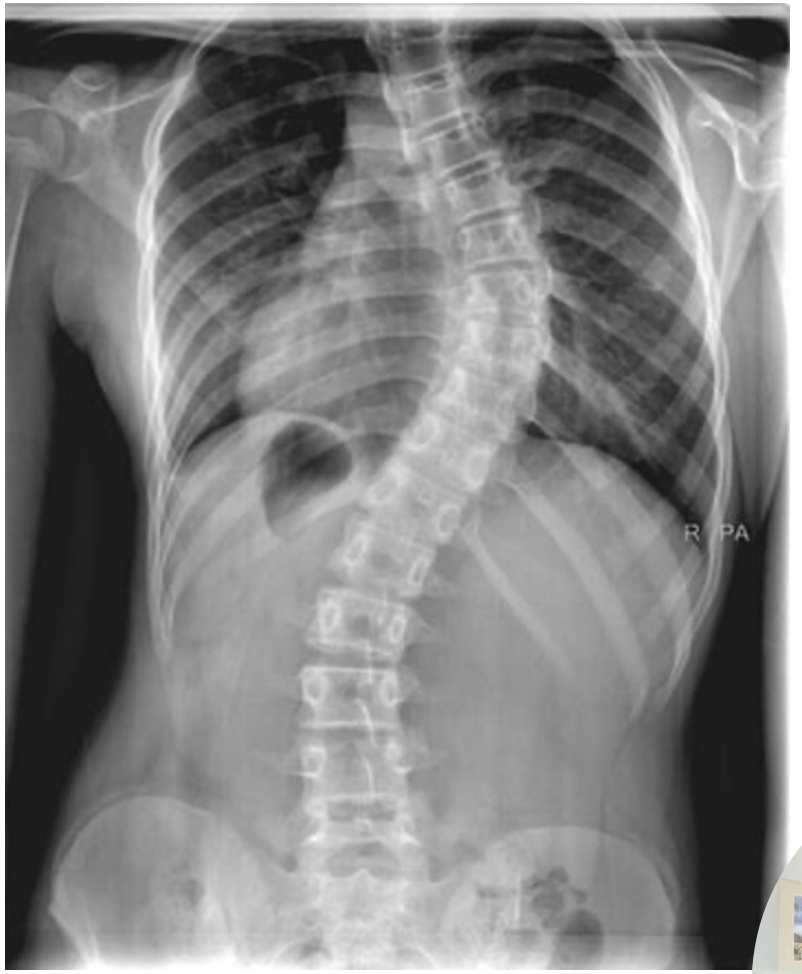
- Condition during which a nucleus pulposus (disc) is displaced from intervertebral space.
- Pain on sitting and better on standing or lying.





Scoliosis

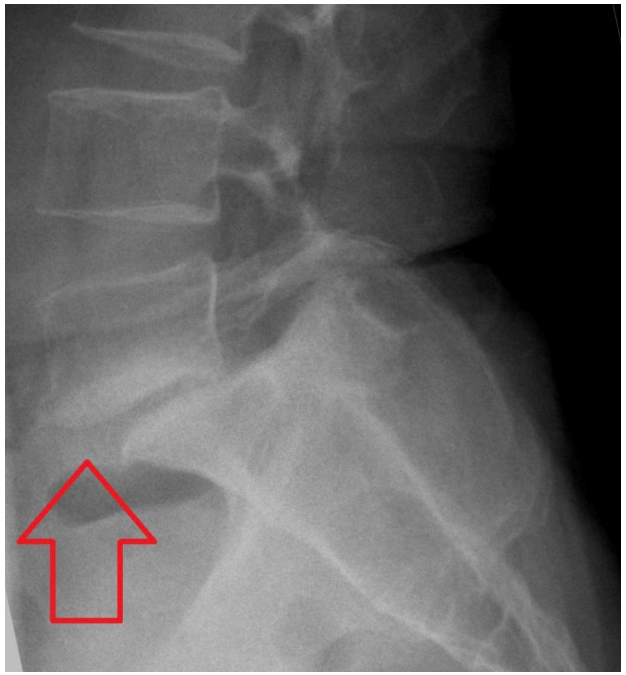


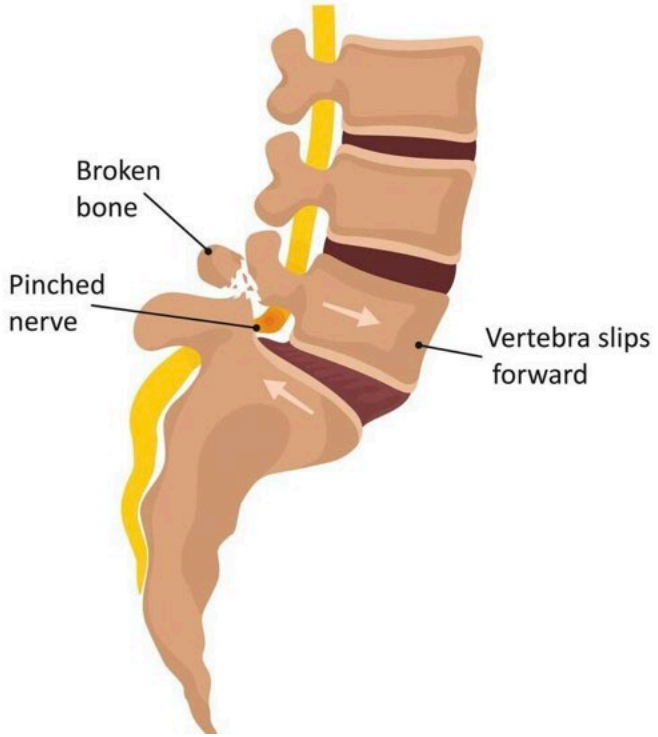


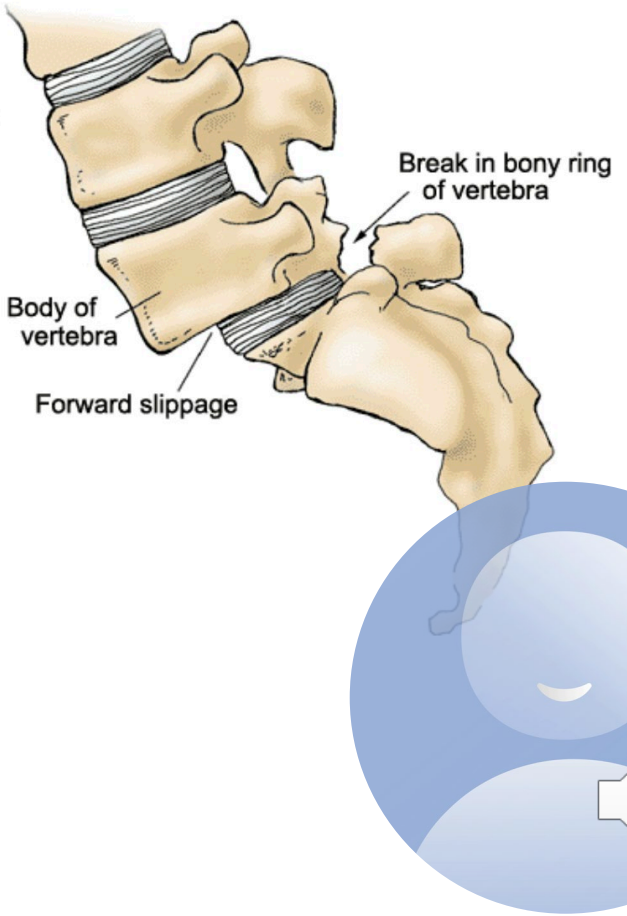
- Abnormal lateral curvature of the spine

Spondylolisthesis

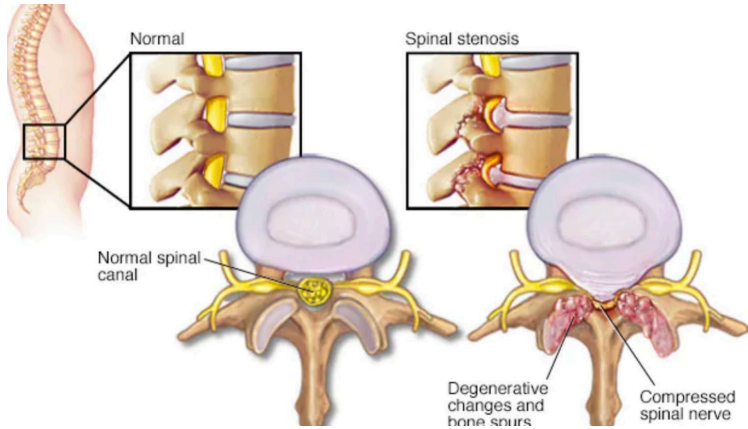
- It is the slippage of one vertebral body with respect to the adjacent vertebral body.





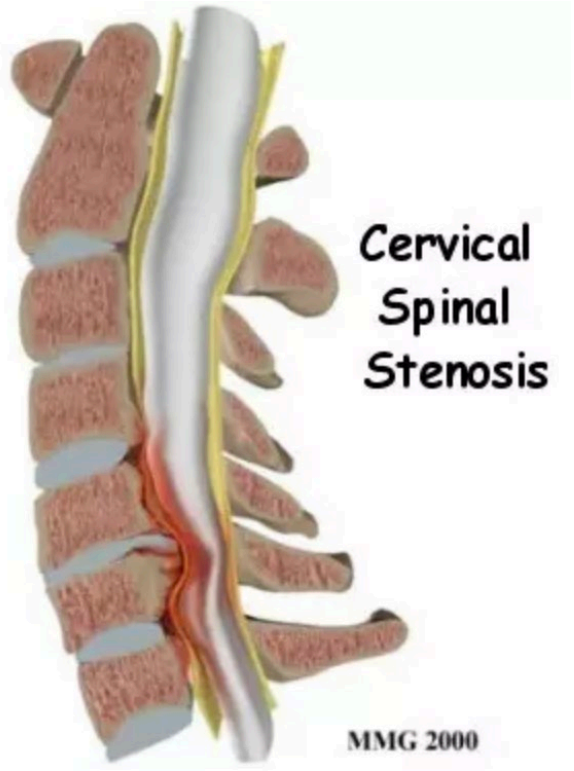


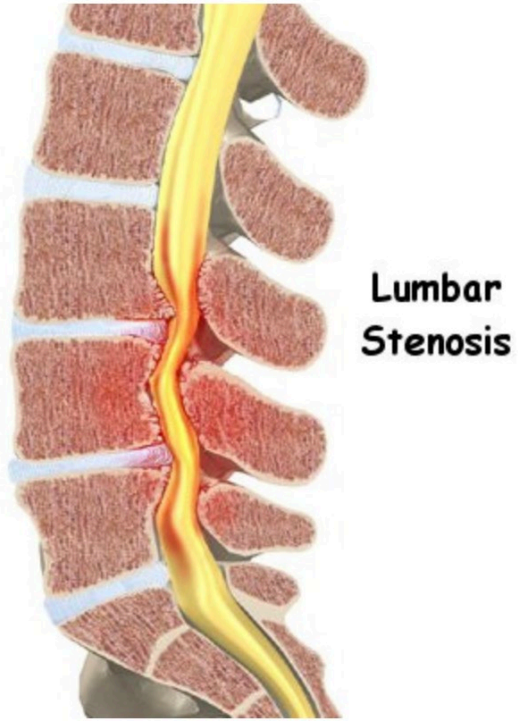
Spinal stenosis

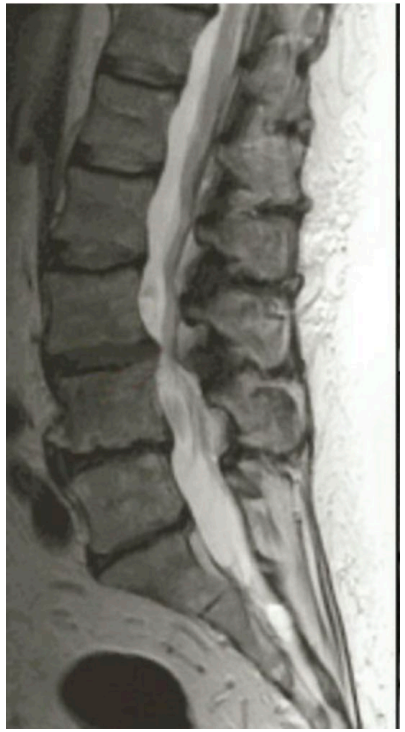


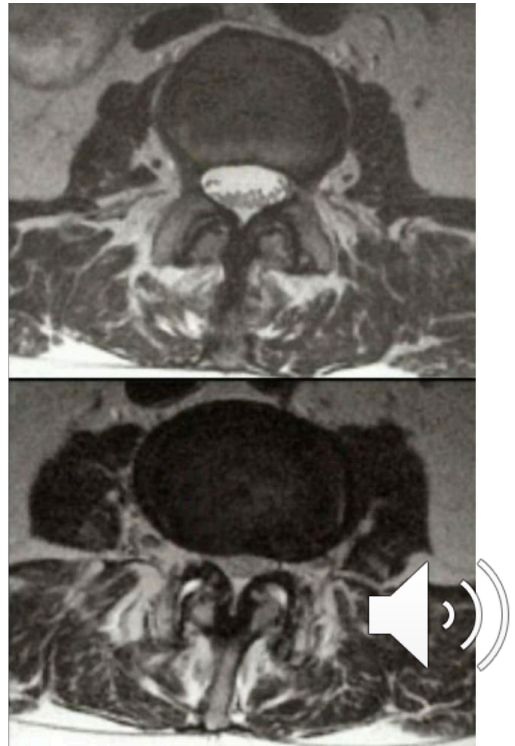
- It is a condition where the small spinal canal containing nerves and spinal cord becomes compressed.

- Pain worse on walking or standing relieved by sitting.



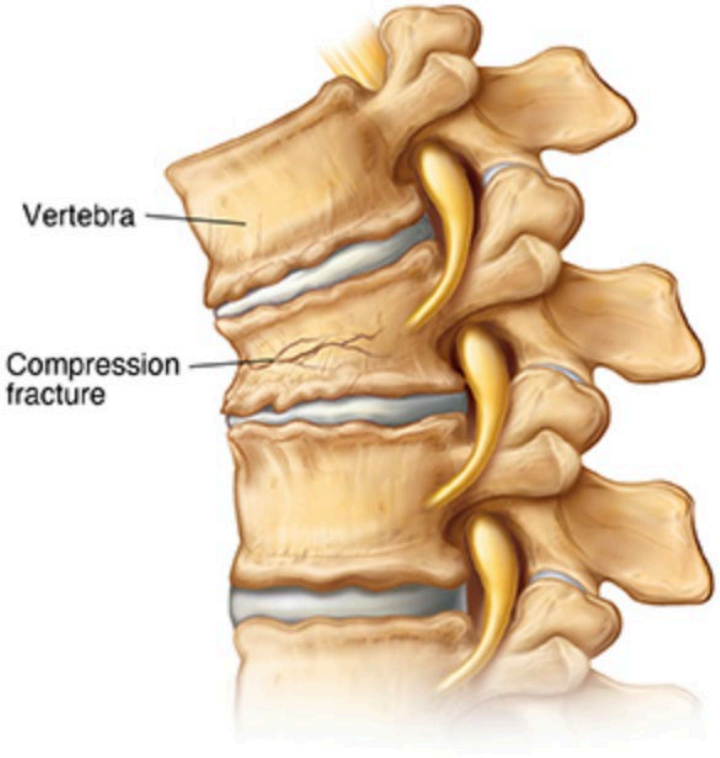


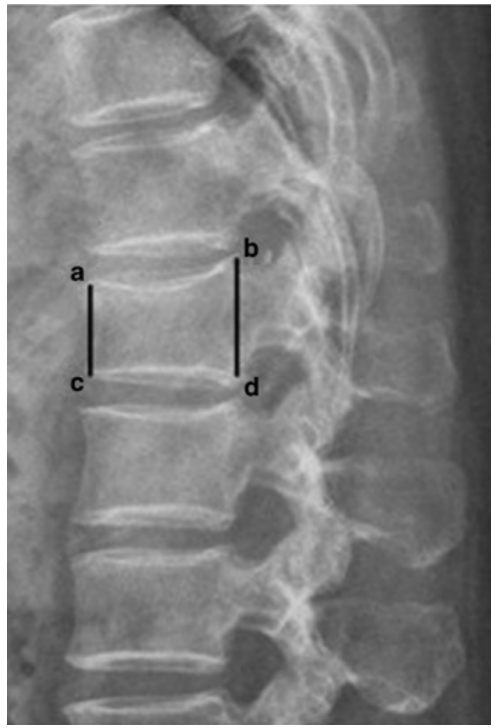


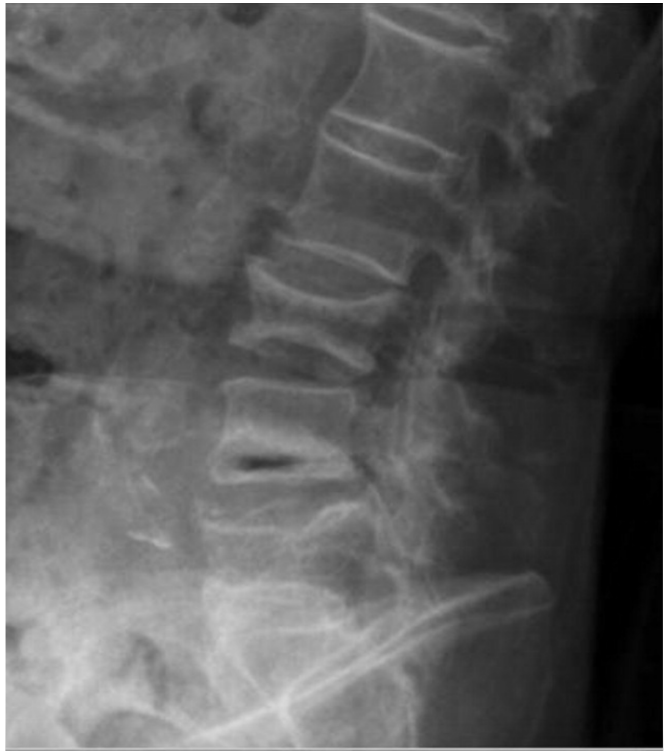


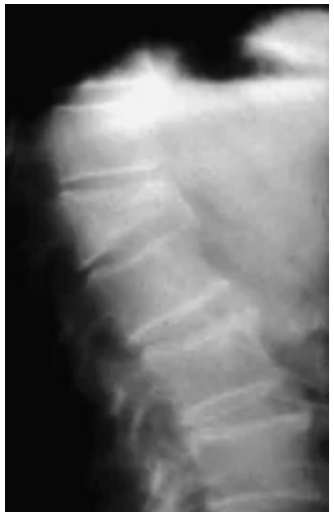
Compression fracture

- Collapse of the vertebra and loss of vertebral body height of more than 15%.









Causes of backache

Primary Back Pathology

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(a.k.a. lumbosacral strain)

Spondylosis
(i.e. degenerative arthritis of the spine)

Intervertebral disc herniation

Anatomic abnormalities
- Scoliosis
- Spondylolisthesis

Spinal stenosis

Compression fracture
- Traumatic compression fracture
- Spontaneous osteoporotic compression fracture
- Pathologic fracture secondary to metastatic disease

Systemic Diseases with Back Manifestations

Infection
- Epidural abscess
- Vertebral osteomyelitis / discitis

Metastases
- Vertebrae
  (most common: lung, breast, prostate, renal, thyroid, and myeloma)
- Leptomeningeal carcinomatosis
  (most common: lung, breast, melanoma, lymphoma, leukemia)

Inflammatory back pain
- Axial spondyloarthritis (e.g. ankylosing spondylitis)
- Peripheral spondyloarthritis (e.g. psoriatic arthritis, reactive arthritis, & enteropathic arthritis)

Spinal infection

Causes

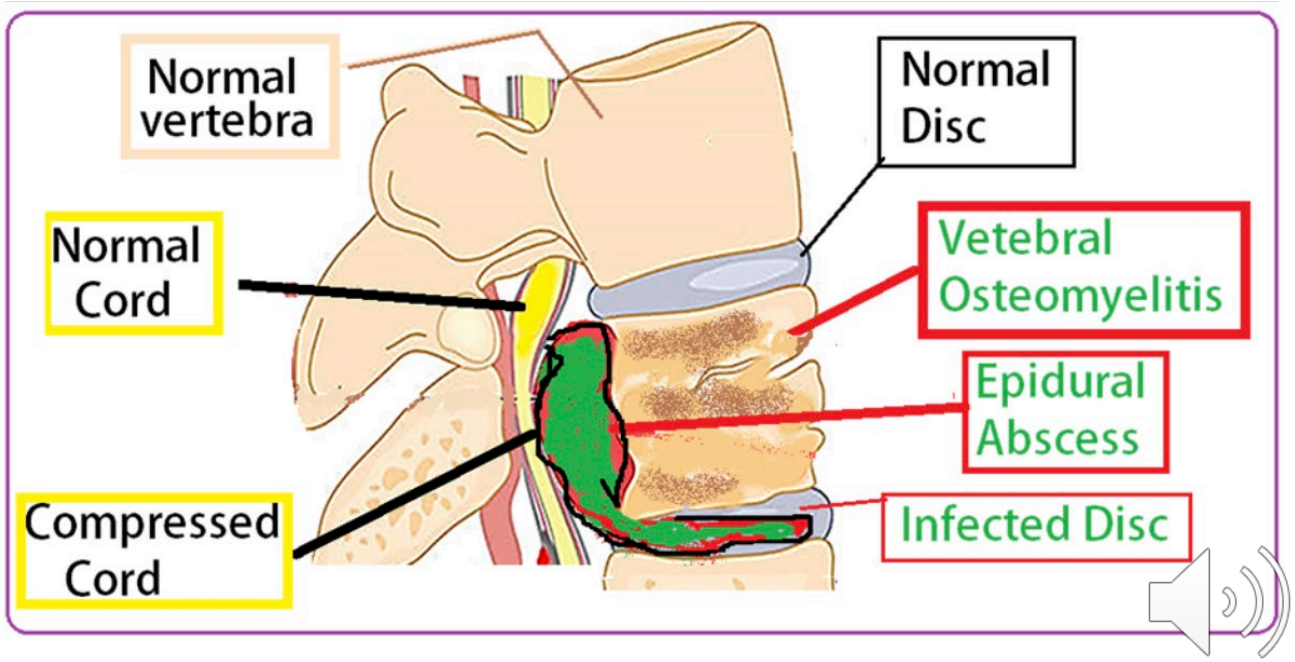
-Bacterial

-Tuberculosis

-Fungal

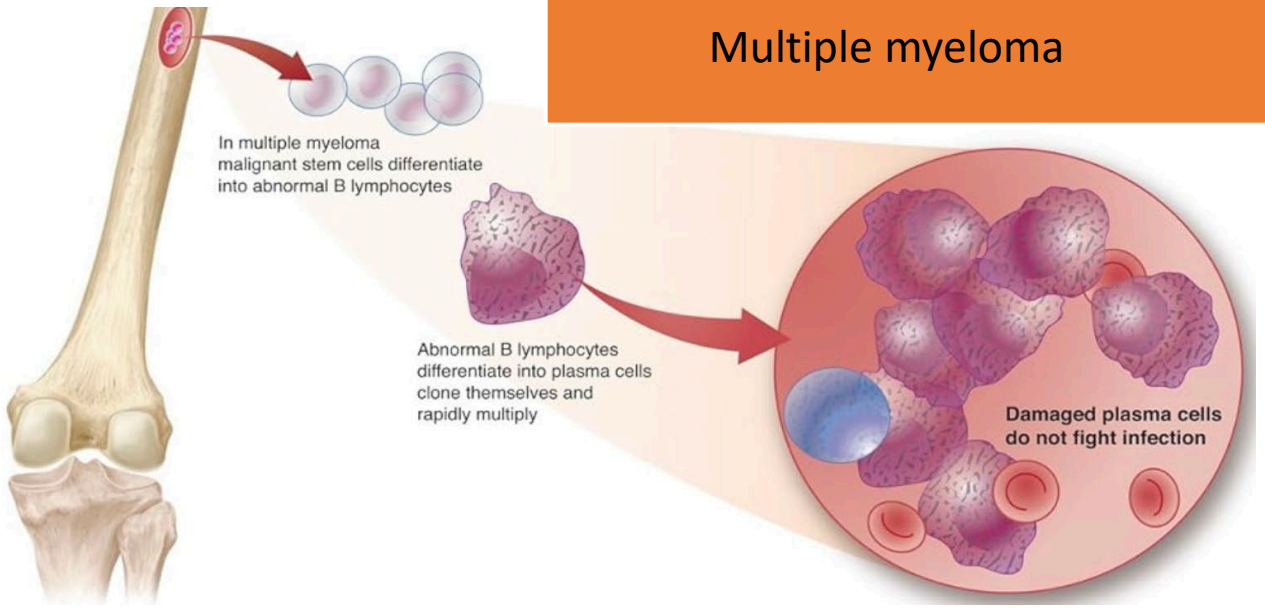
-Syphillis

-Viral



Malignancy

Multiple myeloma



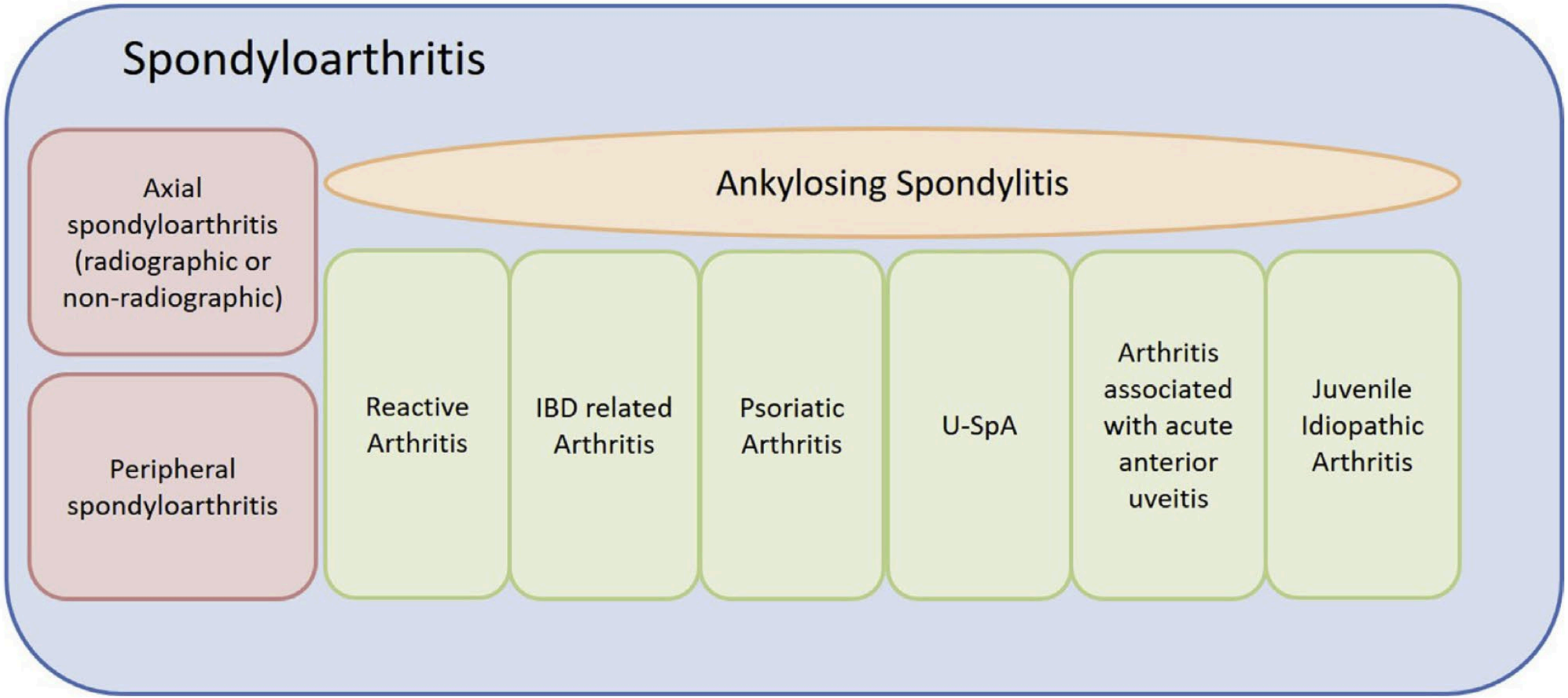
Clinical features

- **Calcium increase** - May cause confusion, constipation & weakness.
- **Renal failure** or kidney dysfunction.
- **Anemia**- decrease in hemoglobin, leading to fatigue & weakness.
- **Bone lesion** - leading to bone pain, fractures that are difficult to heal.

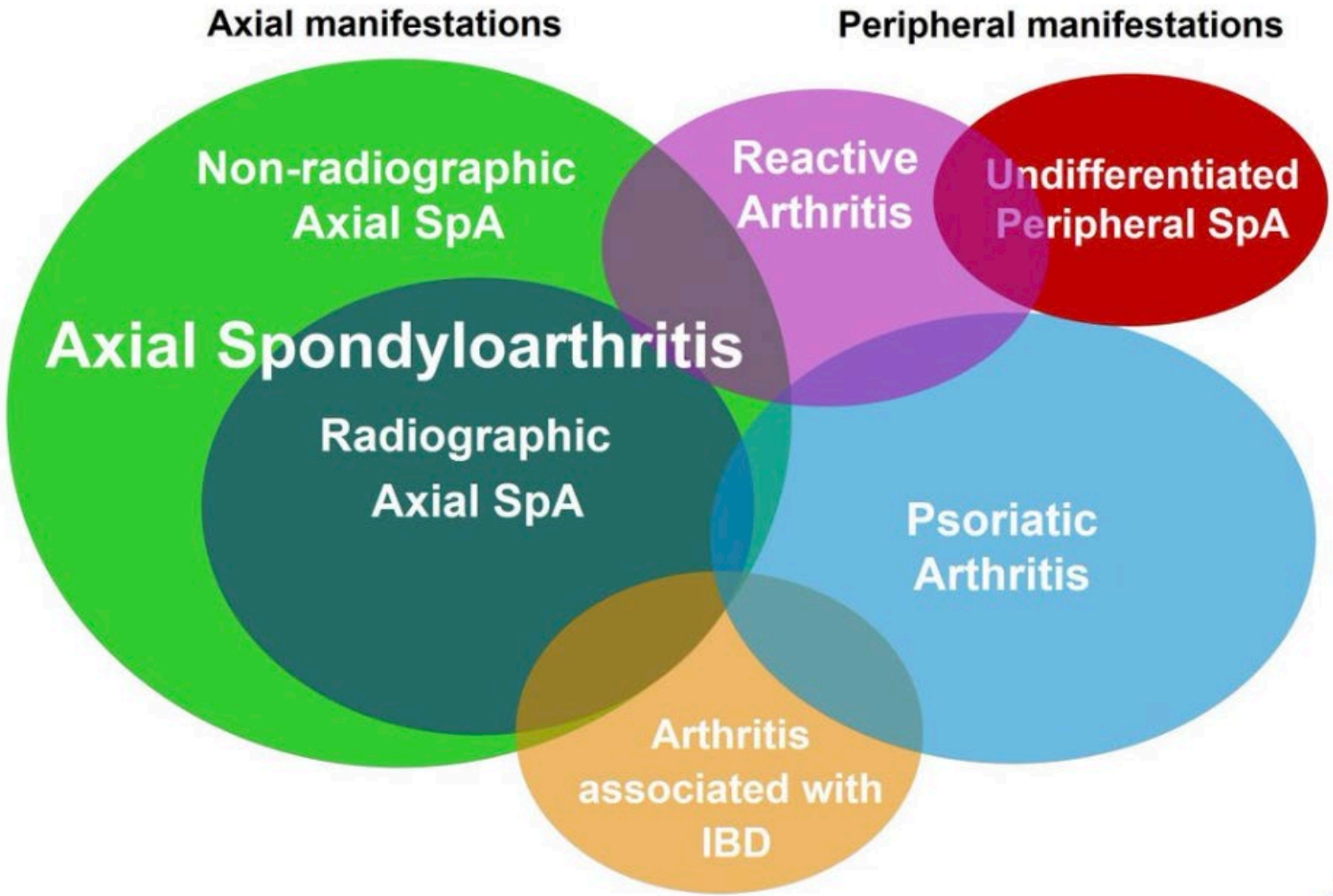
Metastasis

- **Spinal metastases are the most common tumors of the spine.**
- **These are more commonly found as bone metastasis and may present with symptoms of spinal canal invasion and cord compression.**

Spondyloarthritis


Spondyloarthritis
Axial spondyloarthritis (radiographic or non-radiographic)
Peripheral spondyloarthritis
Ankylosing Spondylitis
Reactive Arthritis
IBD related Arthritis
Psoriatic Arthritis
U-SpA
Arthritis associated with acute anterior uveitis
Juvenile Idiopathic Arthritis

Spondyloarthritides (SpA)



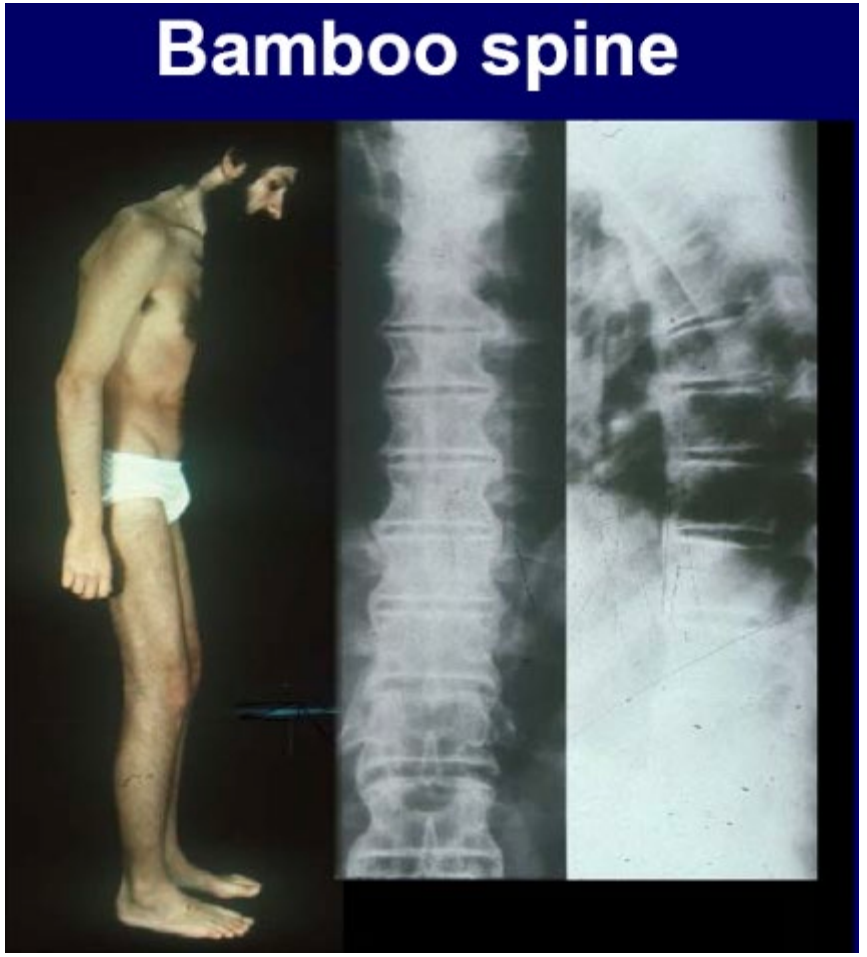
Modified from Proft F et al. Ther Adv Musculoskelet Dis 2018;10:129-39

What are the manifestations of a SpA?

Inflammatory backache

- Age at onset <40 years
- Insidious onset
- Improvement with exercise
- No improvement with rest
- Pain at night (with improvement upon getting up)

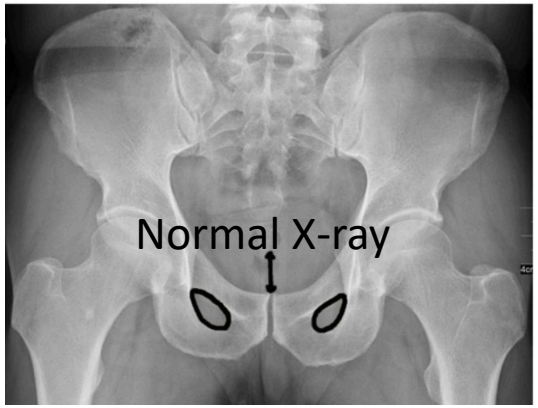
The criteria are fulfilled if at least four out of five parameters are present.

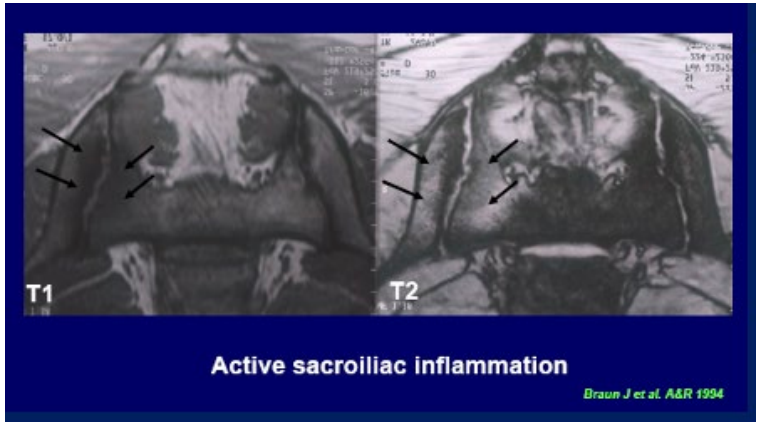


Sacroilitis

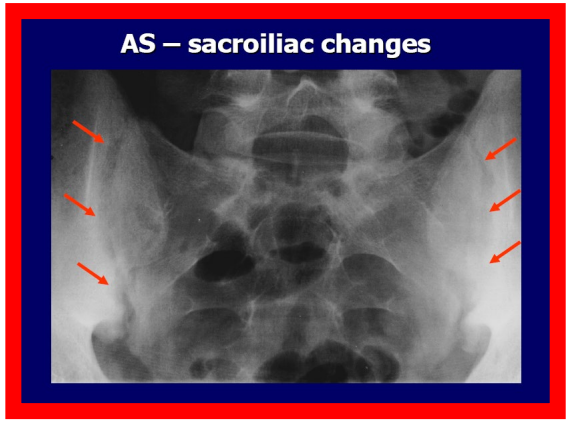
Presents with alternating buttock pain or lower backache.

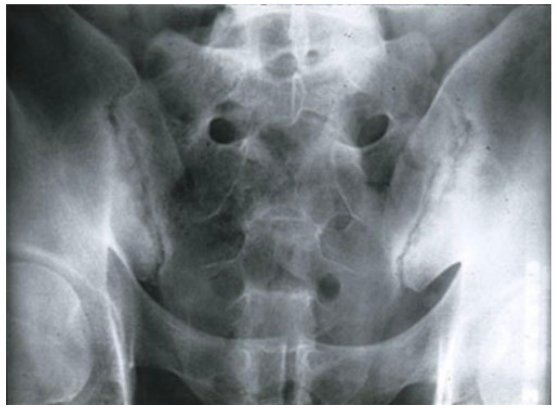
Non radiographic axial SpA

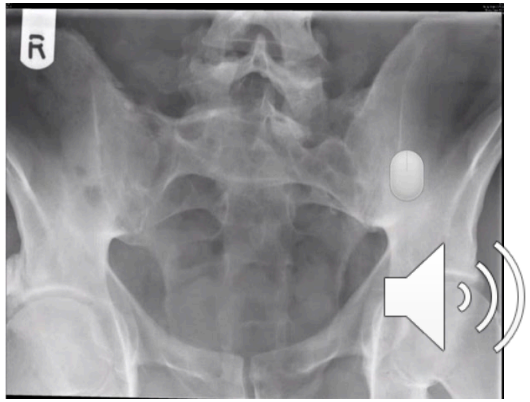




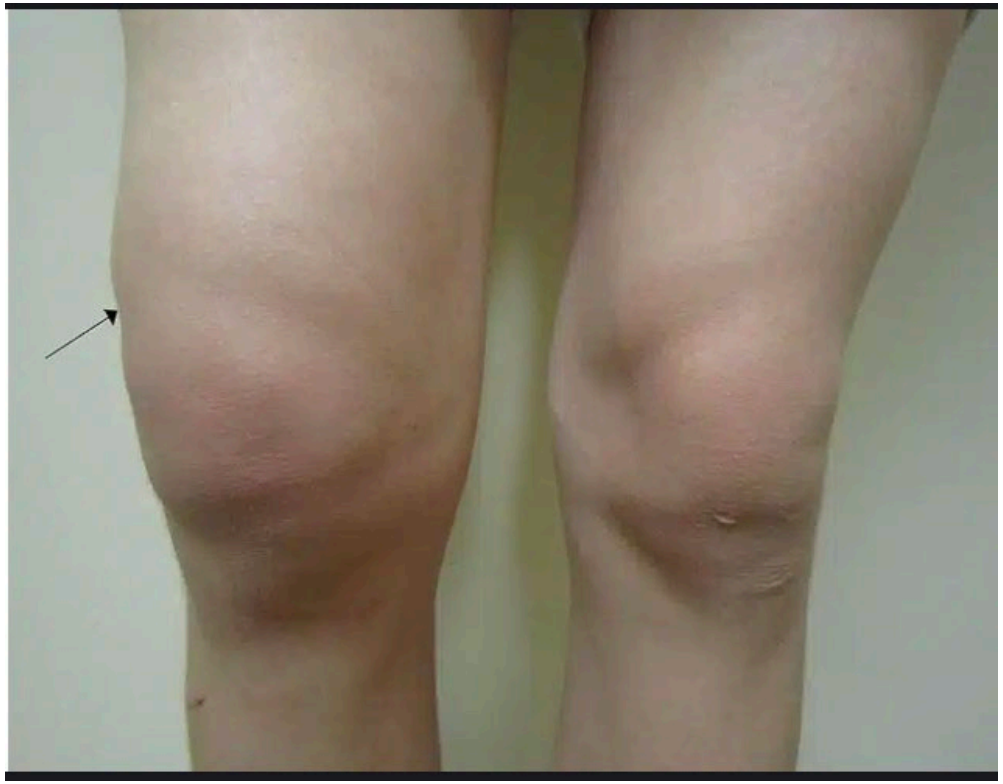
Radiographic axial SpA





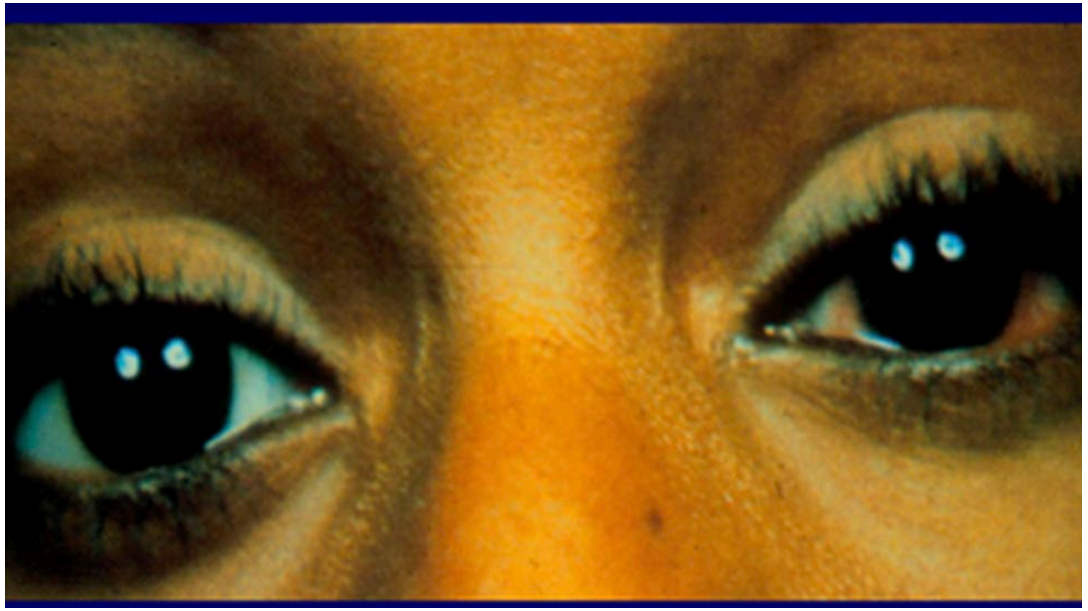


2. Peripheral arthritis

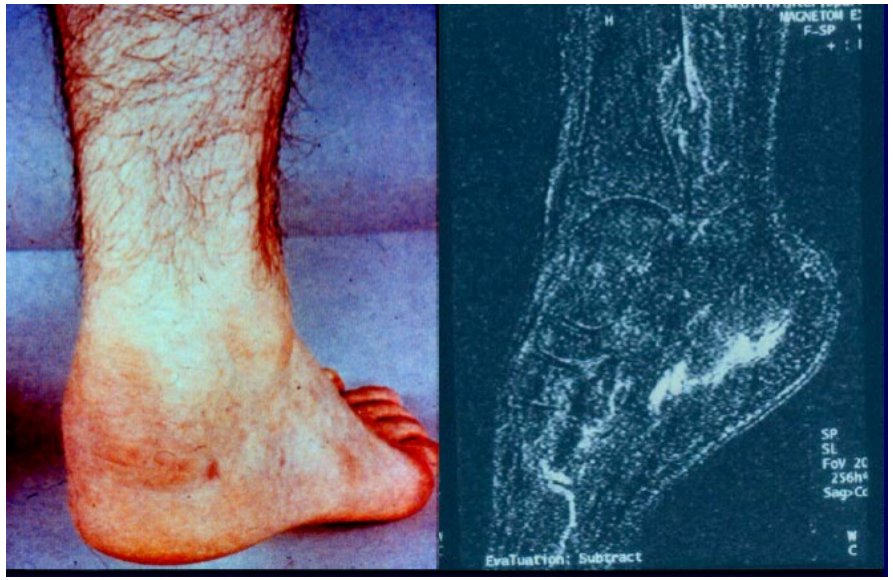


Arthritis is typically asymmetrical and predominantly involves the lower extremities, especially the knees and ankles.

3.Unilateral anterior uveitis

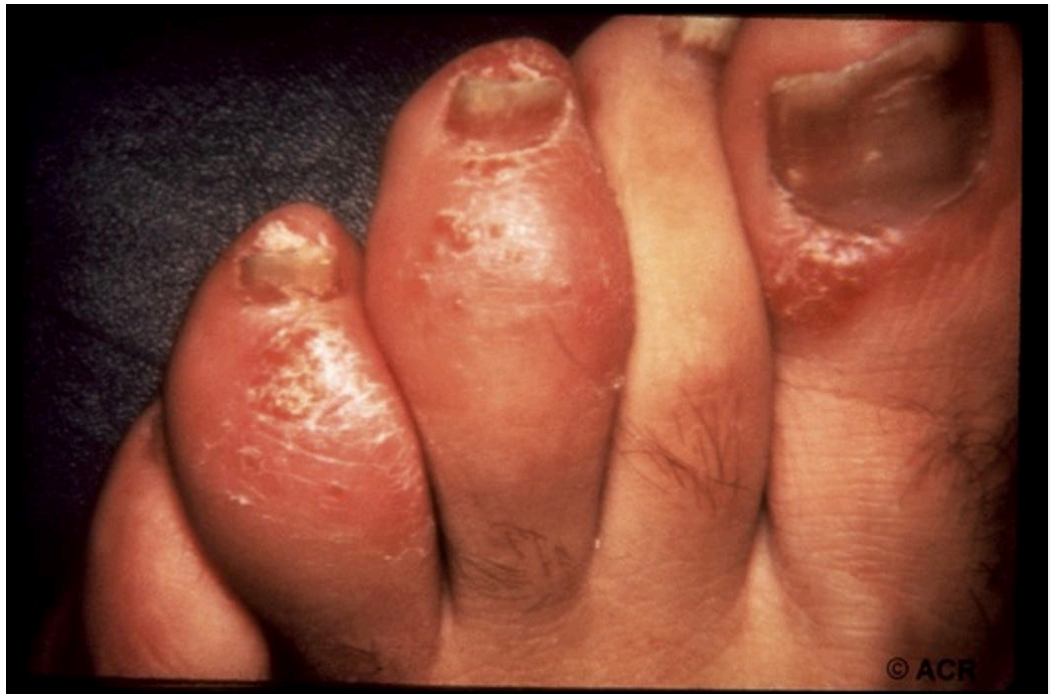


4. Enthesitis



- **The enthesis is the site of insertion of ligaments, tendons, joint capsule, to bone.**
- **Enthesitis refers to inflammation around the enthesis.**
- **It is usually associated with swelling, severe pain and tenderness.**
- **Achilles’s tendon and plantar fascia are most commonly involved sites.**

5. Dactylitis

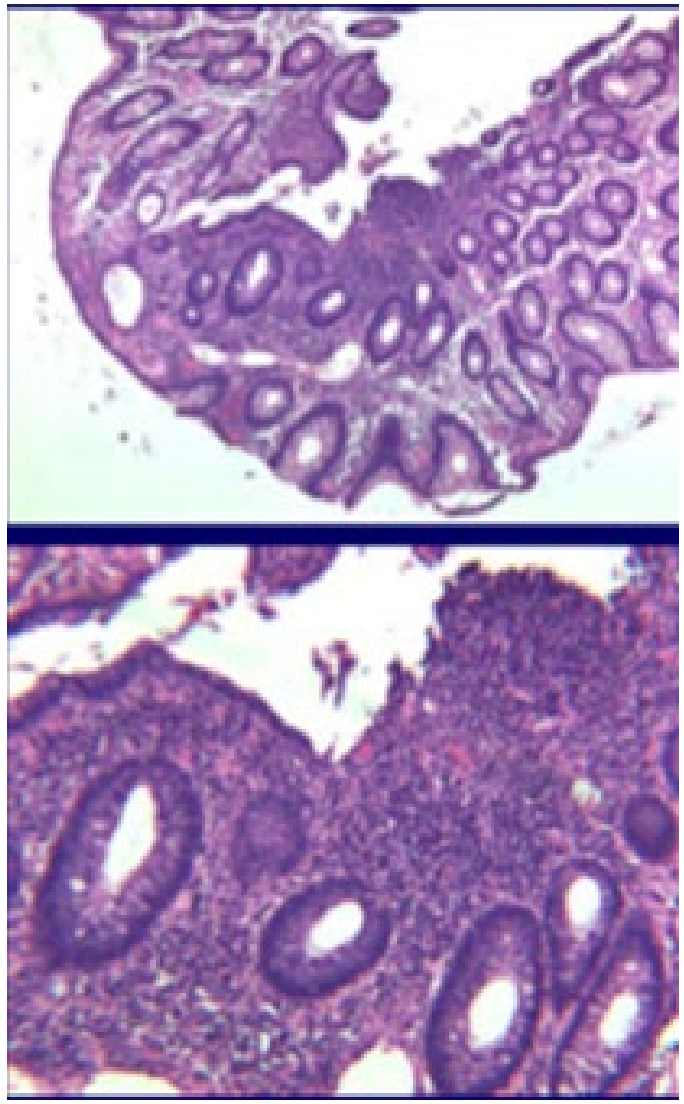


Swelling of the whole digit longitudinally (sausage digit)

6. HLA B27

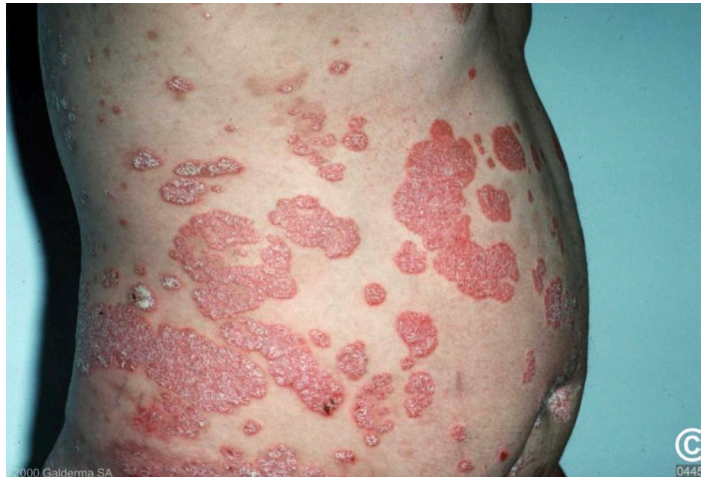
- It is a class 1 surface molecule encoded by the B locus in the MHC on chromosome 6.
- Strongly associated with sacroilitis and spondyloarthritides.
- The prevalence varies in global population.

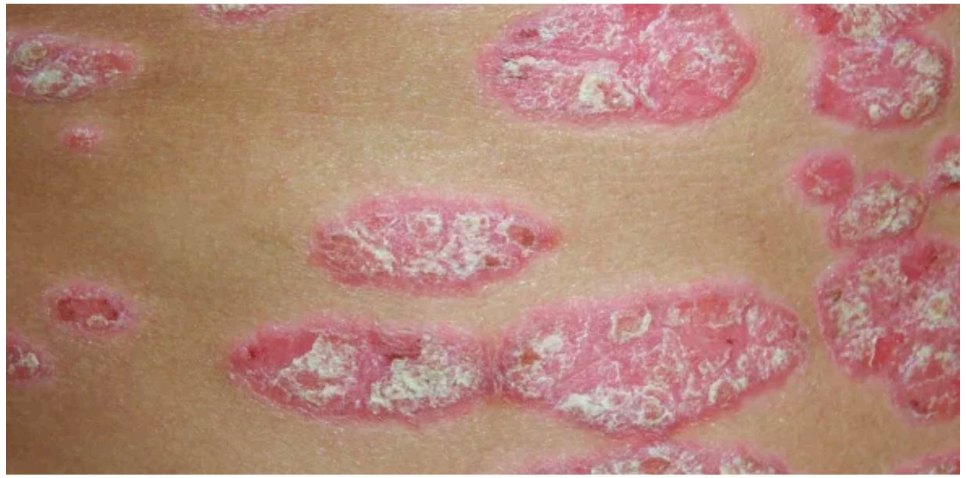
7. Inflammatory bowel disease

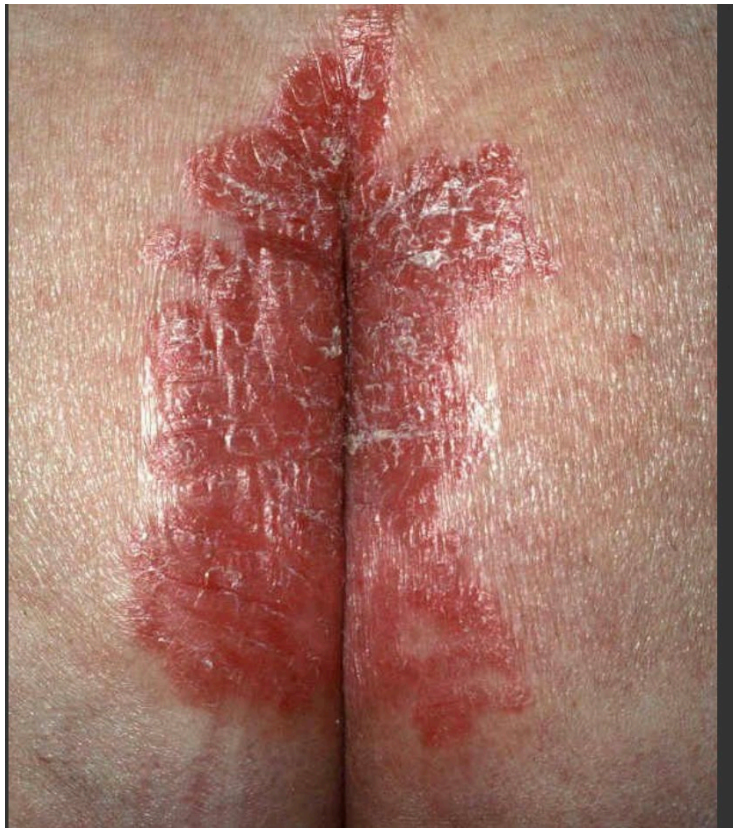


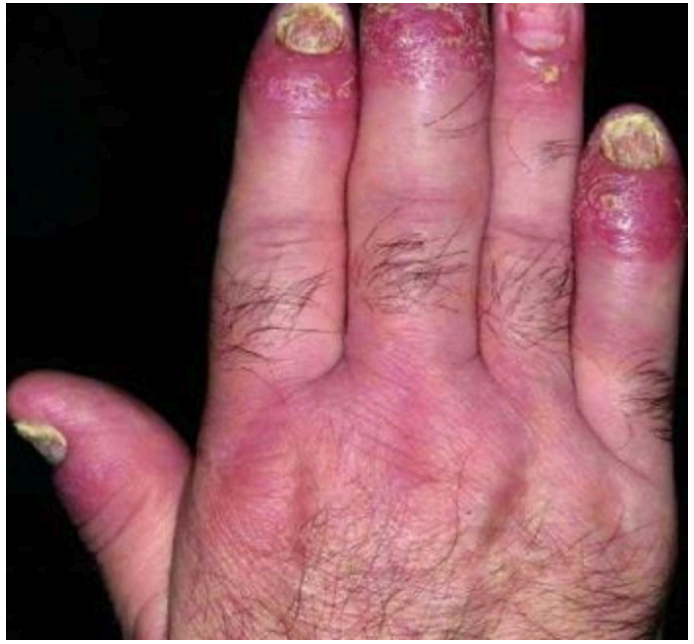
Micro- and macroscopic gut lesions similar to Chron's disease in 20-60% of patients with axial/peripheral manifestations in SpA.

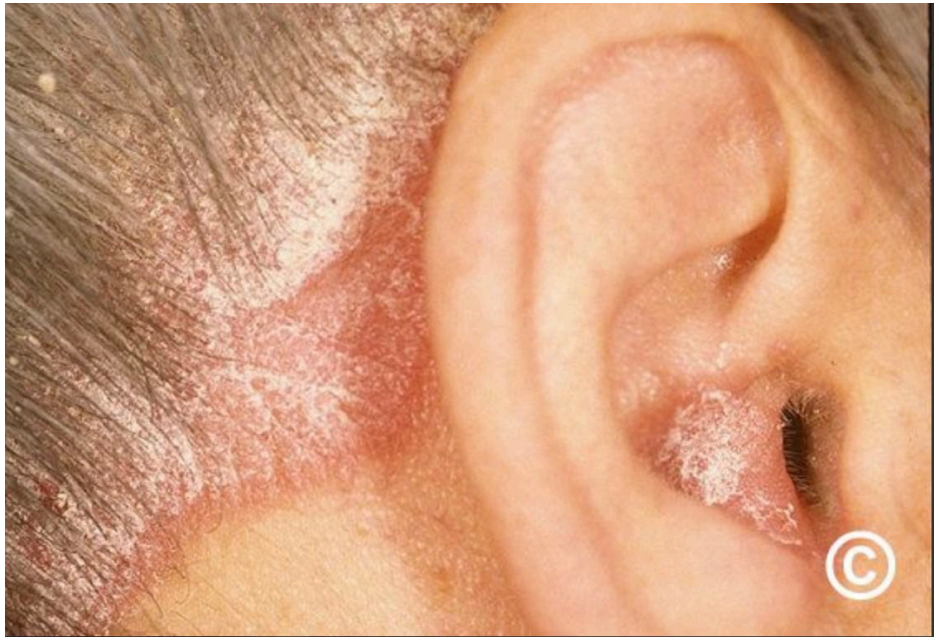
8. Psoriasis











Causes of backache

Primary Back Pathology	Systemic Diseases with Back Manifestations	Referred Pain
Musculoligamentous injury (a.k.a. lumbosacral strain) **Spondylosis** (i.e. degenerative arthritis of the spine) **Intervertebral disc herniation** **Anatomic abnormalities** • Scoliosis • Spondylolisthesis **Spinal stenosis** **Compression fracture** • Traumatic compression fracture • Spontaneous osteoporotic compression fracture • Pathologic fracture secondary to metastatic disease	**Infection** • Epidural abscess • Vertebral osteomyelitis / discitis **Metastases** • Vertebrae (most common: lung, breast, prostate, renal, thyroid, and myeloma) • Leptomeningeal carcinomatosis (most common: lung, breast, melanoma, lymphoma, leukemia) **Inflammatory back pain** • Axial spondyloarthritis (e.g. ankylosing spondylitis) • Peripheral spondyloarthritis (e.g. psoriatic arthritis, reactive arthritis, & enteropathic arthritis)	**Aorta** • Dissection • Aneurysm **Pancreas** • Pancreatitis • Pancreatic pseudocyst / other peripancreatic fluid collection **Kidney** • Pyelonephritis • Perinephric abscess • Nephrolithiasis **Retroperitoneal hemorrhage**

Diagnosis

- 80% non-specific diagnosis(idiopathic) despite workup.

- Mostly on history and physical examination- RED FLAGS

- Age >60 years or <20
- History of trauma
- Fever
- Involuntary weight loss
- Pain at night
- Inflammatory pain
- Focal neurologic signs
- Previous fracture
- Prolonged glucocorticoids use
- Underlying of history of malignancy
- Thoracic spinal pain

Diagnosis continued...

Imaging

- X-rays: (Spine[AP and lateral] and SIJ)
  - Rarely indicated as part of initial workup.
  - No evidence to prove that obtaining X-rays is associated with better patient outcomes.
  - X-rays are indicated when the history and physical exam suggests:
    - **Non mechanical cause of back pain or**
    - **Red flags are present**

- MRI/CT scan
  - **Reserved for those with neurological symptoms.**

- DEXA Scan for bone mineral density.

Diagnosis continued

Blood test

- FBC
- Inflammatory markers
- Creatinine
- HLA-B27

Management

- Multidisciplinary
- Weight loss
- Exercise
- Acupuncture/mindfulness-based exercises.
- Medications: NSAIDs/ duloxetine / weak opiods

Conclusion

- Backache is common and it is the leading cause of disability.
- Inflammatory vs mechanical backache- definition.
- Important to look for RED FLAGS which will guide your investigations and therapy.
- Not all people with backache require invesstigations.