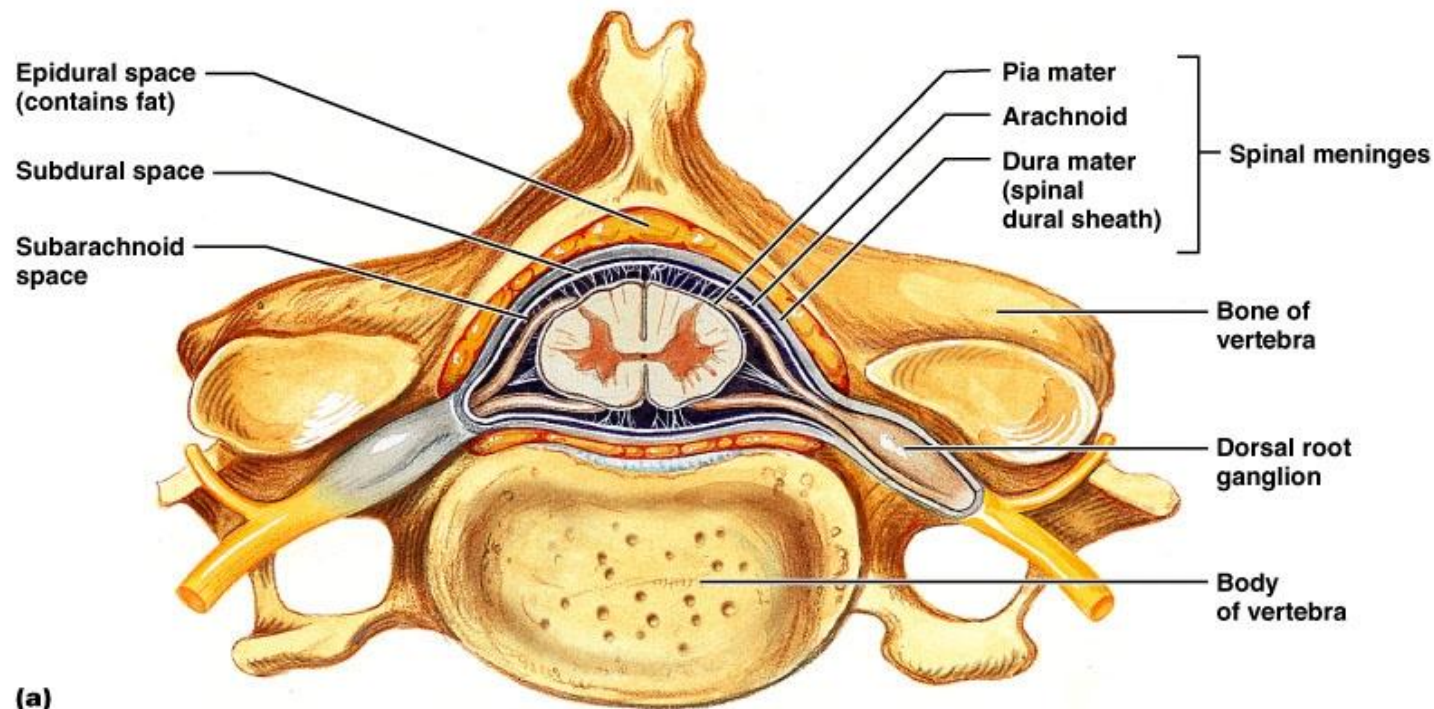


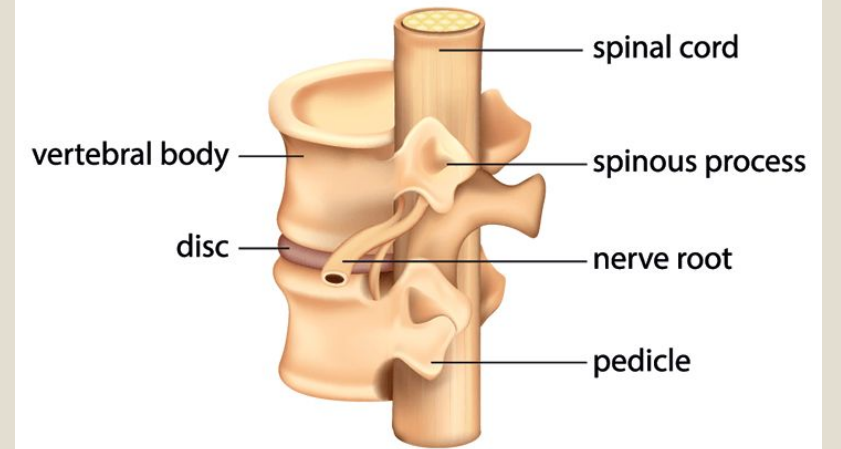


# NEUROLOGY

# Spinal cord

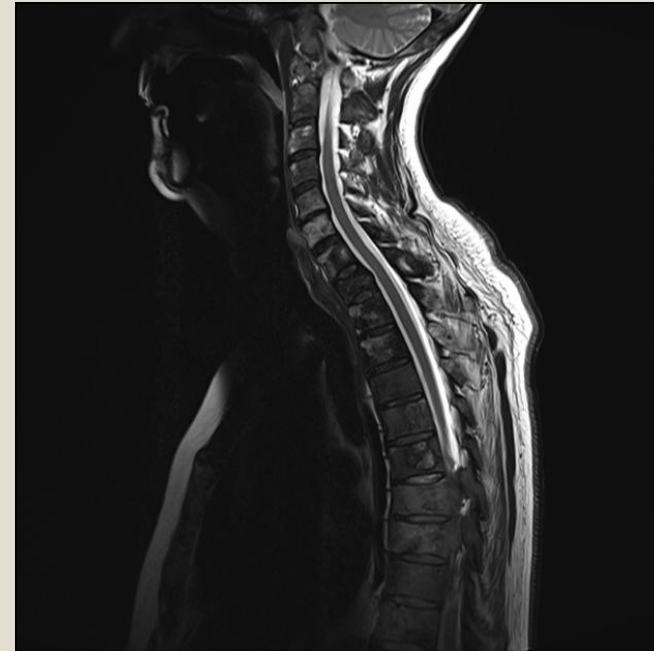


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# Spinal cord compression

- Causes:
  - Metastasis (lung, breast, prostate, lymphoma)
  - Primary bone tumor (multiple myeloma and osteogenic sarcoma)
- Thoracic spine between (60-80%)
- Clinical: back pain (worse with recumbency); limb weakness; radicular pain, sensory changes; urinary and bowel dysfunction; paralysis of limbs below the level of compression
- Diagnosis: MRI whole spine
- Treatment: steroids (high dose dexamethasone ), radiation therapy, surgery(decompression)



# Cauda equina syndrome

- Extreme pressure and swelling of the nerves at the end of the spinal cord
- Nerve Root levels
  - Lumbar(L2-L5), Sacral (S1-S5), Coccygeal(C0)

## Risk factors:

- Low back injury
- Central disc herniation
- Central spinal stenosis
- Spinal fracture
- Ankylosing spondylitis

# Cauda equina syndrome

Signs and symptoms:

Severe low back pain, motor weakness ,  
sensory loss , radicular pain, saddle  
anesthesia (S3-S5),

Bladder dysfunction, bowel  
incontinence, sexual dysfunction

Diagnosis: MRI of spinal cord

Treatment: surgery - **decompression**

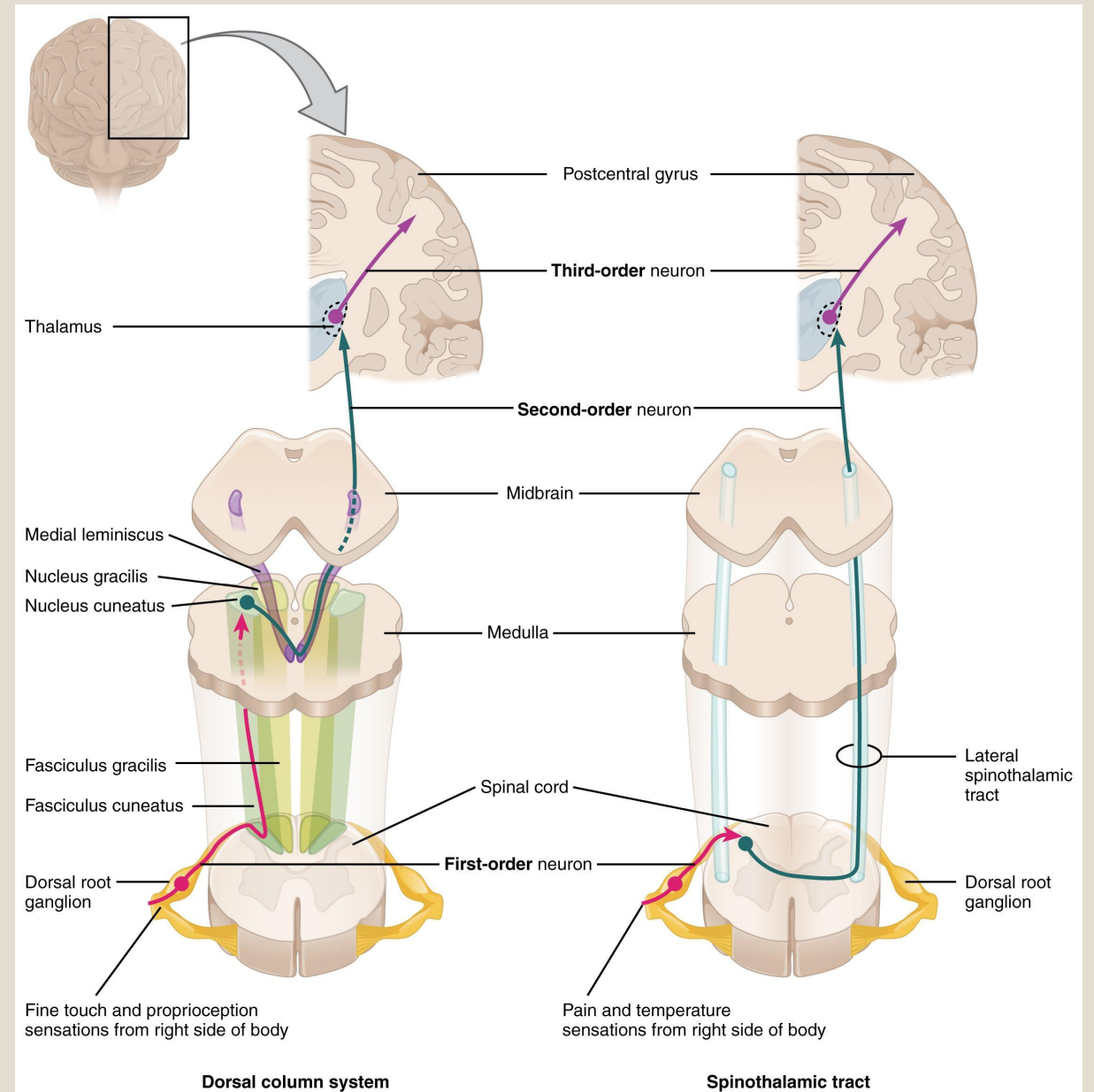


# Syringomyelia

A cavity formed in the brainstem or spinal cord, containing CSF

Causes:

- trauma,
- tumors,
- abscess,
- congenital (Arnold-Chiari II Malformation)

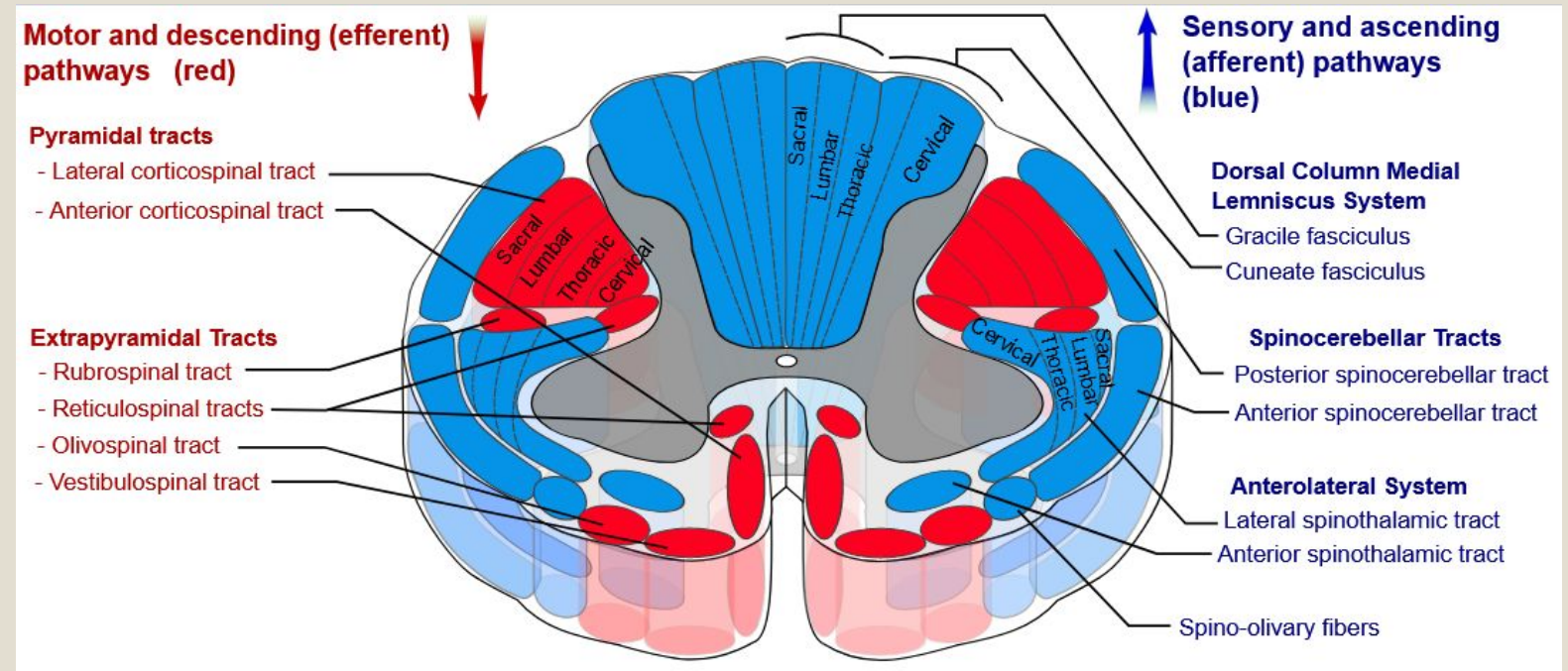




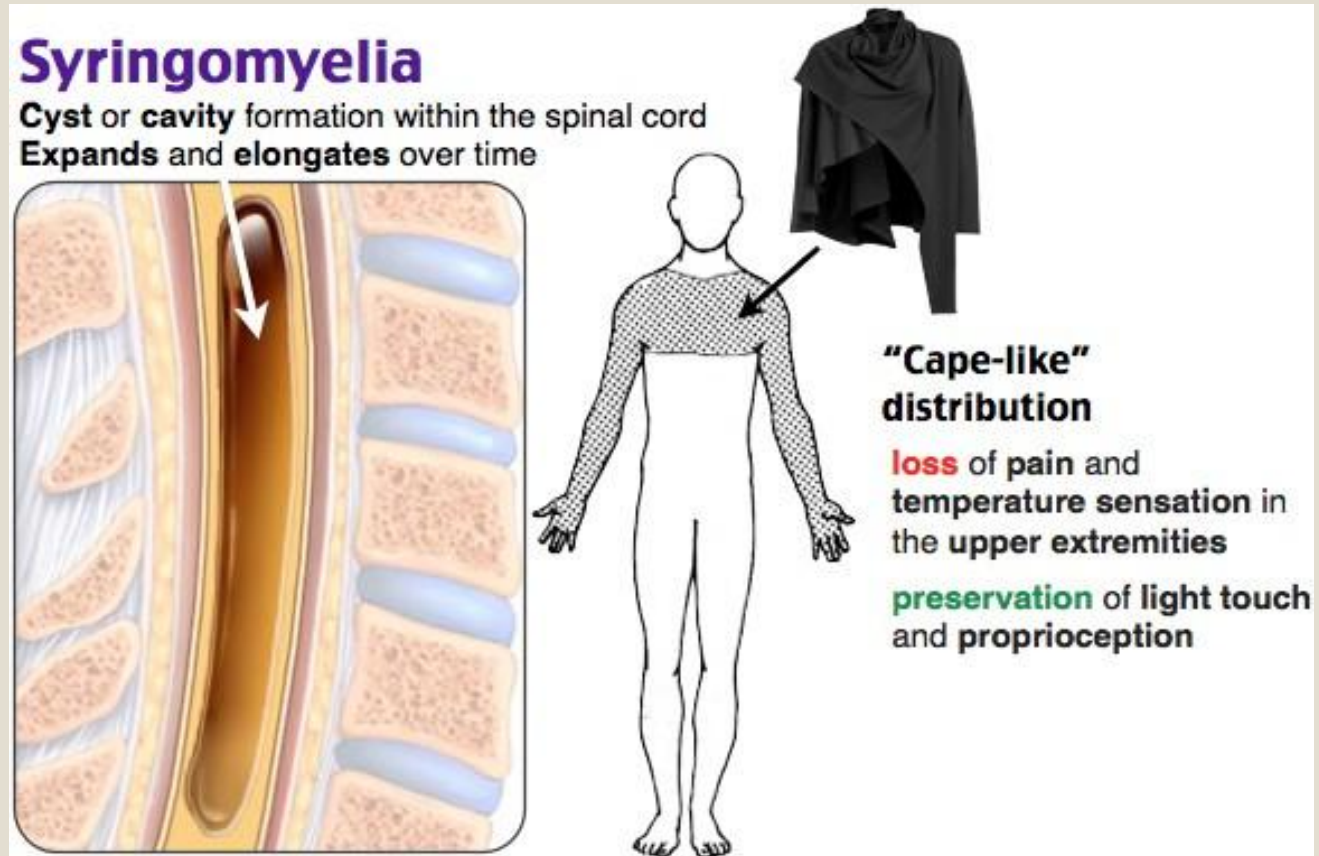
# Syringomyelia

- Anterior white commissure of spinothalamic tract
  - **pain, pressure, temperature, crude touch**
- Lower motor neurons corticospinal tract
  - Muscle atrophy
  - Muscle weakness
  - Paralysis
- Dorsal column
  - Pressure
  - Vibration
  - Fine touch
  - Proprioception

- Destruction of the spinothalamic tract
  - **Bilateral loss pain and temperature**
  - **(cape-like distribution)**
- Lower motor neuron damage
  - Weakness, muscle atrophy and paralysis
  - Scoliosis and Charcot joints



# Syringomyelia





# Syringomyelia

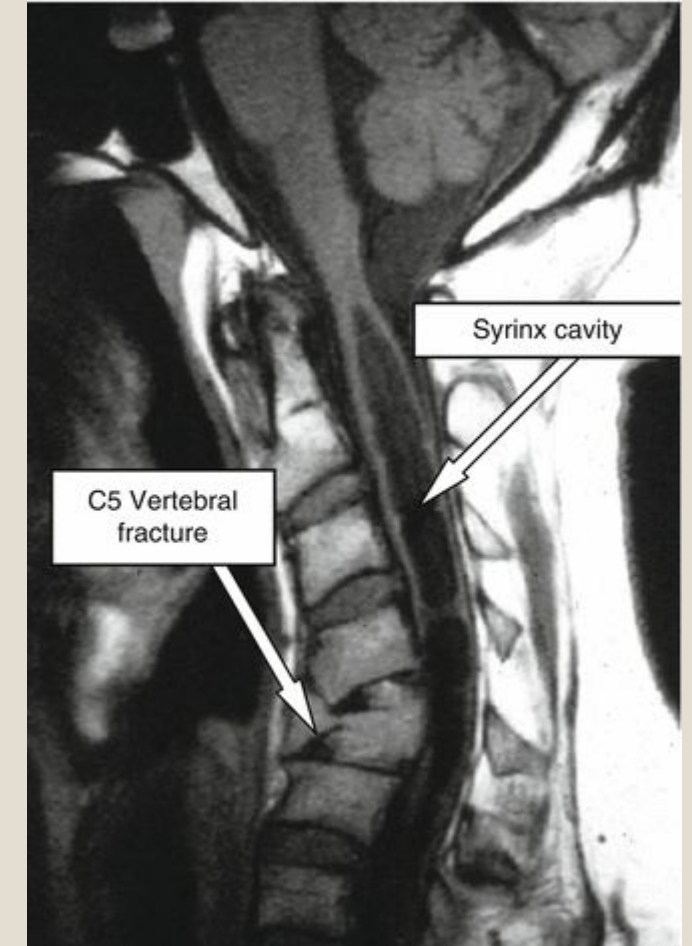
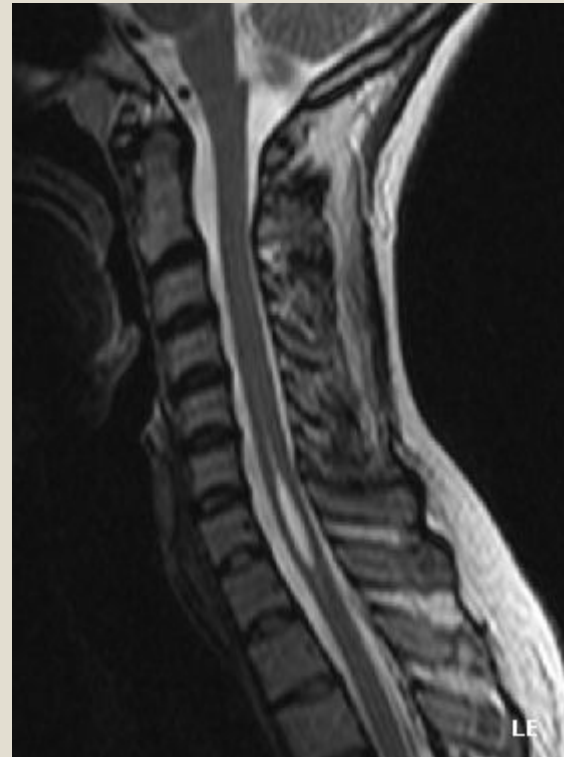
Diagnosis: MRI

(Chiari malformation/spinal tumors)

Treatment: surgery

Chiari malformation – posterior fossa decompression

Hydrocephalus – shunt, catheter to drain syrinx

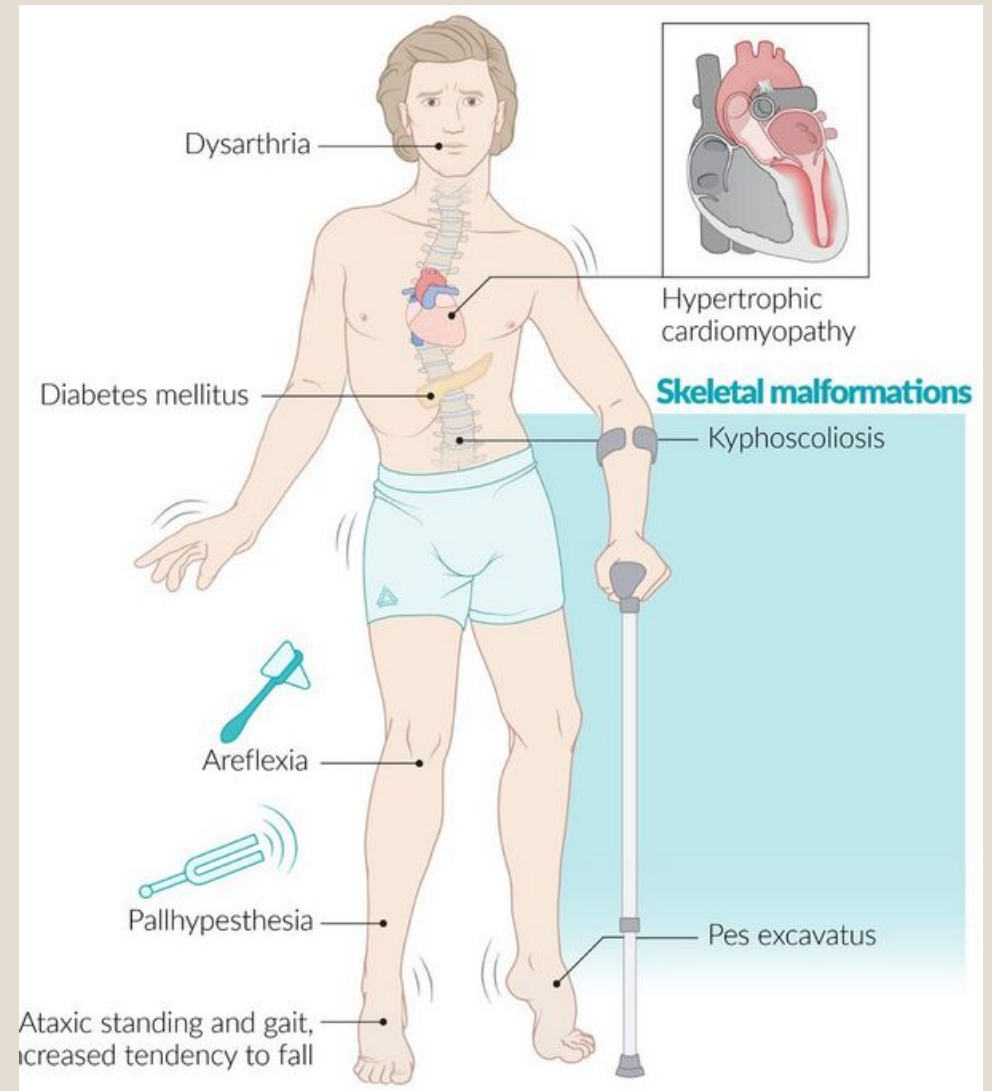


# Friedreich's ataxia

- inherited condition of the nervous system characterized by the gradual loss of coordination
- Impaired mitochondrial function

## Symptoms:

- Ataxia, Hypertrophic cardiomyopathy, Diabetes mellitus
- Difficulty walking, muscle weakness, loss of proprioception, fatigue, heart failure, losing vision and hearing



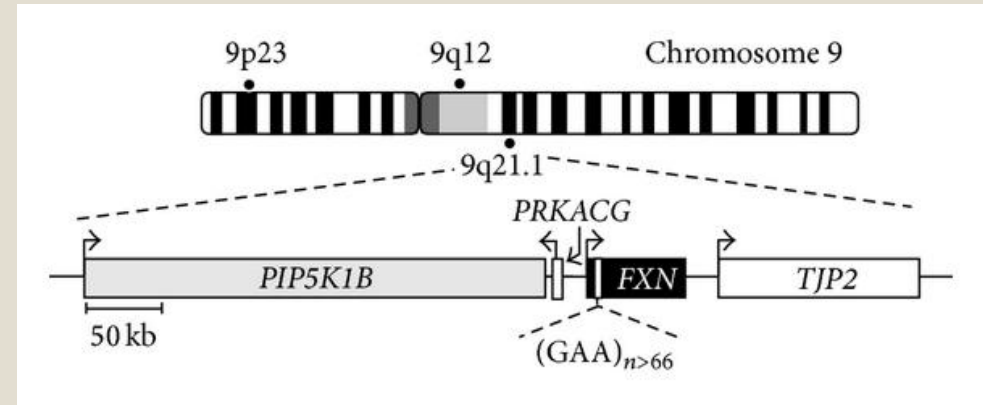
# Friedreich's ataxia

Diagnosis: genetic testing

MRI of brain and spinal cord,  
echocardiography

Treatment: no cure

Symptom managed: physical therapy



# Paraplegic patient management

The primary goals of rehabilitation are

- prevention of secondary complications
- maximization of physical functioning
- reintegration into the community

## ***Concomitant diseases***

Pressure ulcer

- common location of pressure injury is over the sacrum
- Atelectasis and/or pneumonia
- Deep vein thrombosis
- Pulmonary embolus
- Autonomic dysreflexia (hyperreflexia)
- Urinary tract infection
- Cardiometabolic syndrome (obesity, insulin resistance, hypertension, and dyslipidemia)

# Paraplegic patient management

## Thromboembolic Disease

- Venous imaging with ultrasonography
- Pneumatic compression devices for the first 2 weeks->compression hose
- **Unfractionated heparin** (UFH; 5000 units SC every 12 hours) or **a low-molecular-weight heparin** (LMWH; 30 mg SC every 12 hours) for 2-3 months following injury
- Placement of a caval filter

## Autonomic Dysfunction

- Orthostatic blood pressure changes (*weakness, light-headedness, and fainting*)
  - gradual mobilization, liberal sodium intake, use of compression hose, and an abdominal binder
- Symptomatic bradycardia
  - intravenous (IV) atropine
- Autonomic hyperreflexia  
(a profound headache in the presence of elevated blood pressure)
  - noxious stimulus: bladder distention and bowel distention
  - prophylaxis with alpha-blocking agents



# Paraplegic patient management

## Neuropathic Pain

- Descriptors often involve **temperature** (eg, hot, burning, sunburned, or frostbitten) and **electricity** (eg, an electric shock)
- Anticonvulsants (Gabapentin) and antidepressants (Amitriptyline)

## Neurogenic Bladder Dysfunction

- Indwelling catheter
- Clean intermittent catheterization
- Bladder management by electrical stimulation

## Neurogenic Bowel Dysfunction

- Stool that is too hard -adequate intake of fluid and fiber, Docusate sodium
- Incontinence
  - UMN injury – trigger by the application of an irritant to the anorectal area
  - LMN injury - Valsalva maneuver and digital removal

## Pressure Injury

- limiting or eliminating pressure to the area
- removal of necrotic tissue
- proper nutrition
- stopping smoking