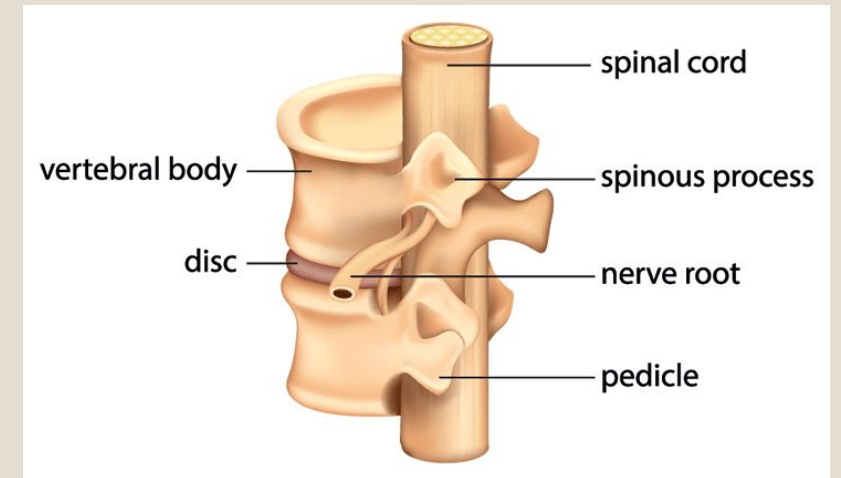
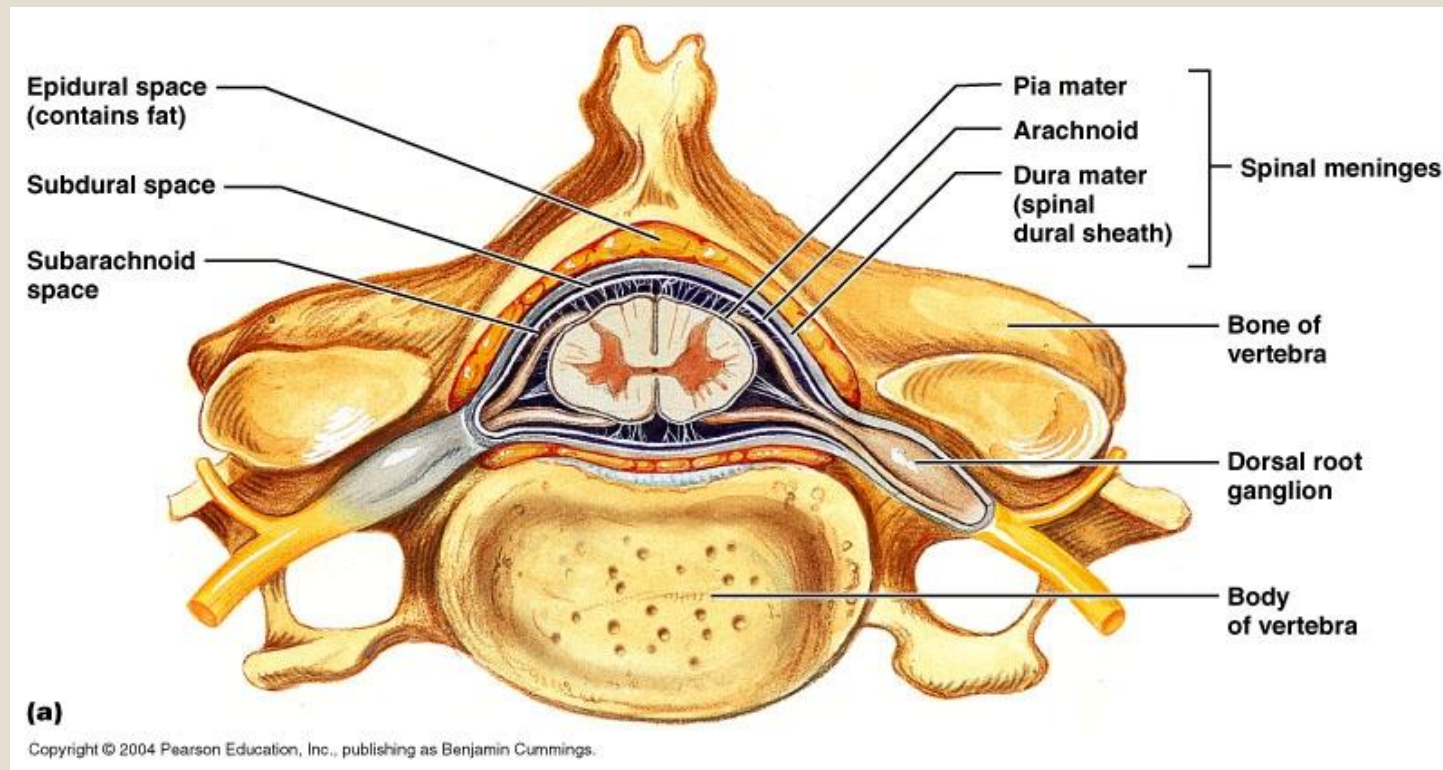




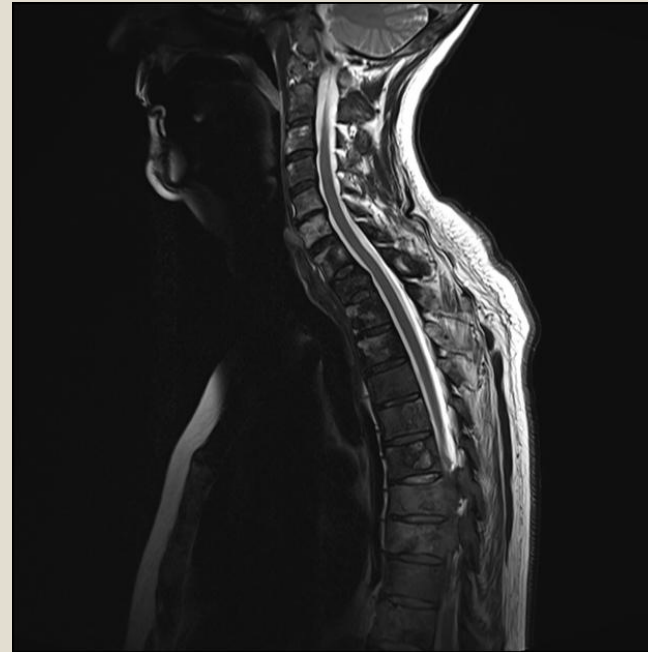
NEUROLOGY

Spinal cord



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**

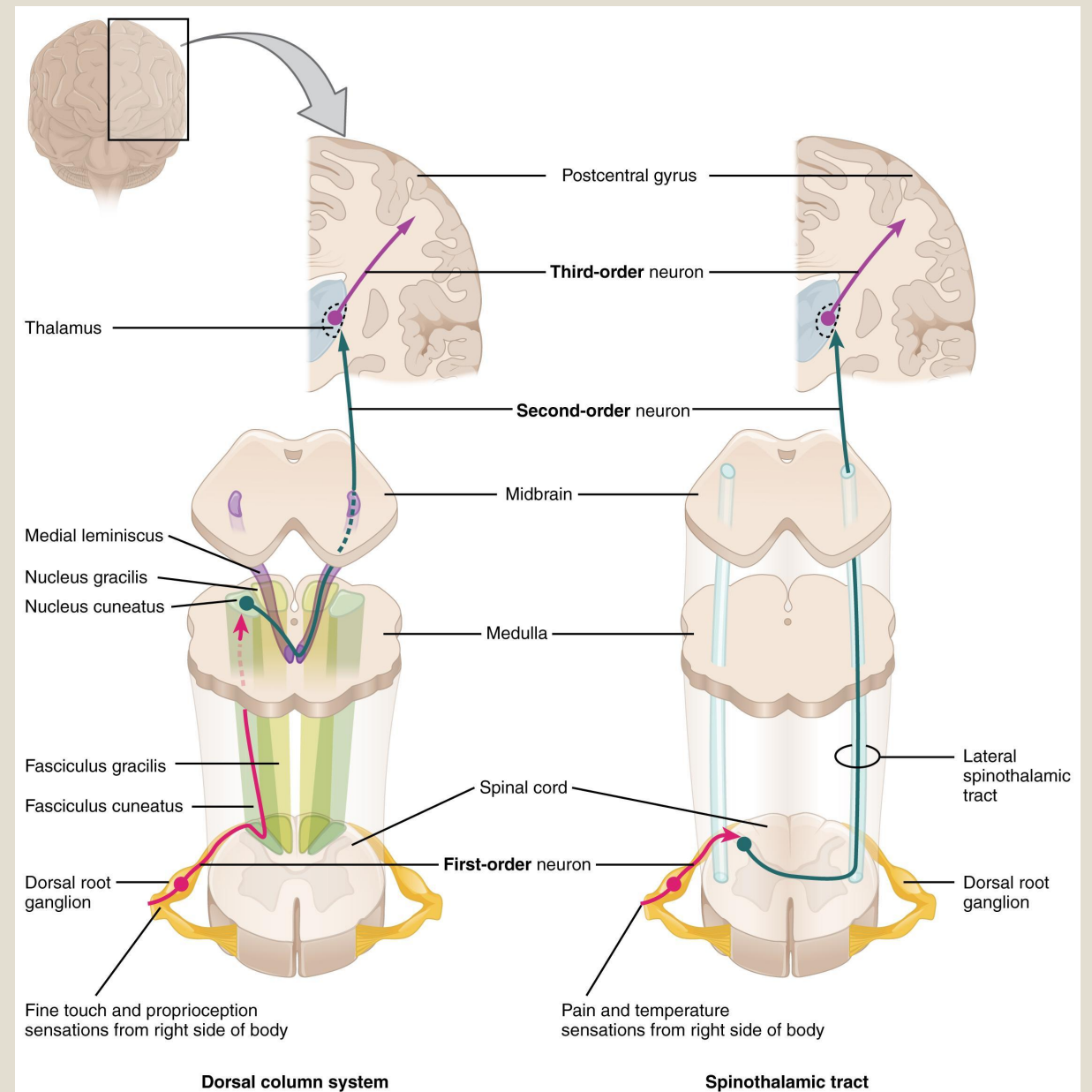


Syringomyelia

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

Causes:

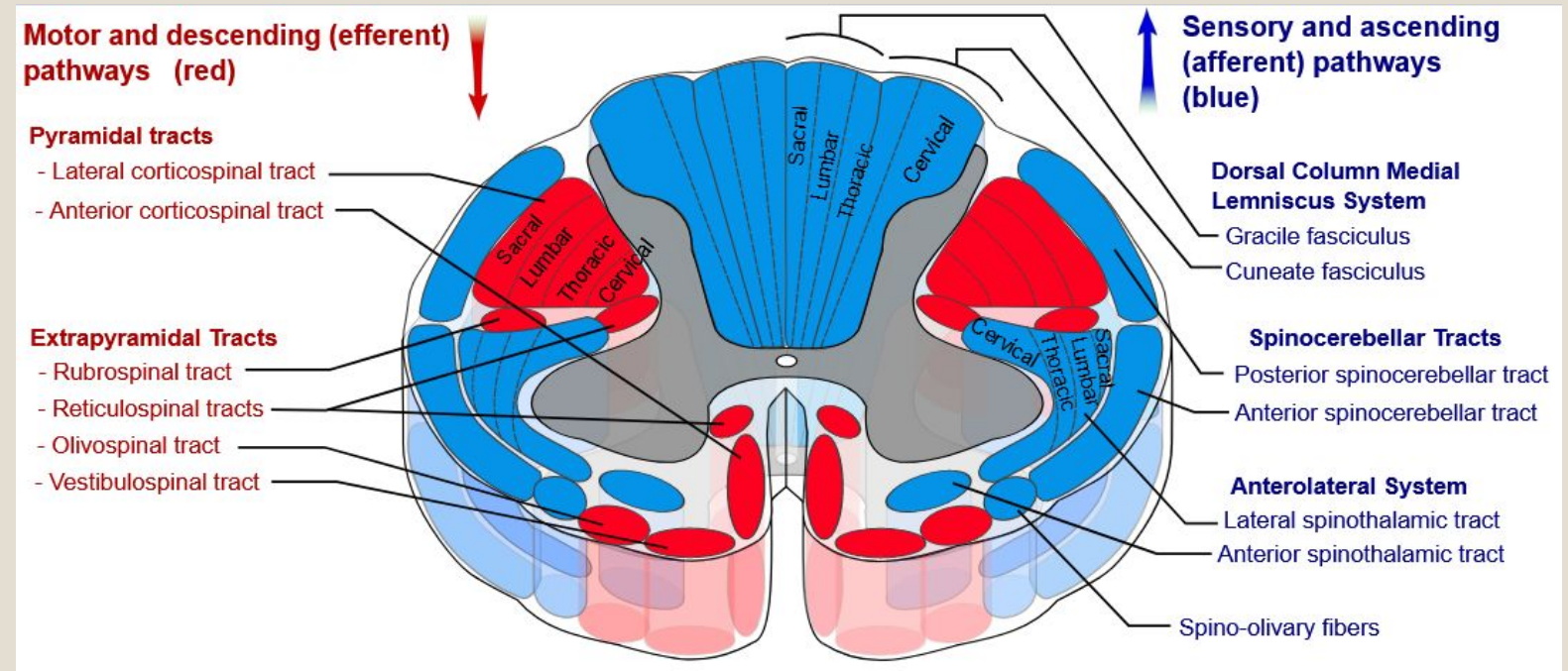
- trauma,
- tumors,
- abscess,
- congenital (Arnold-Chiari II Malformation)



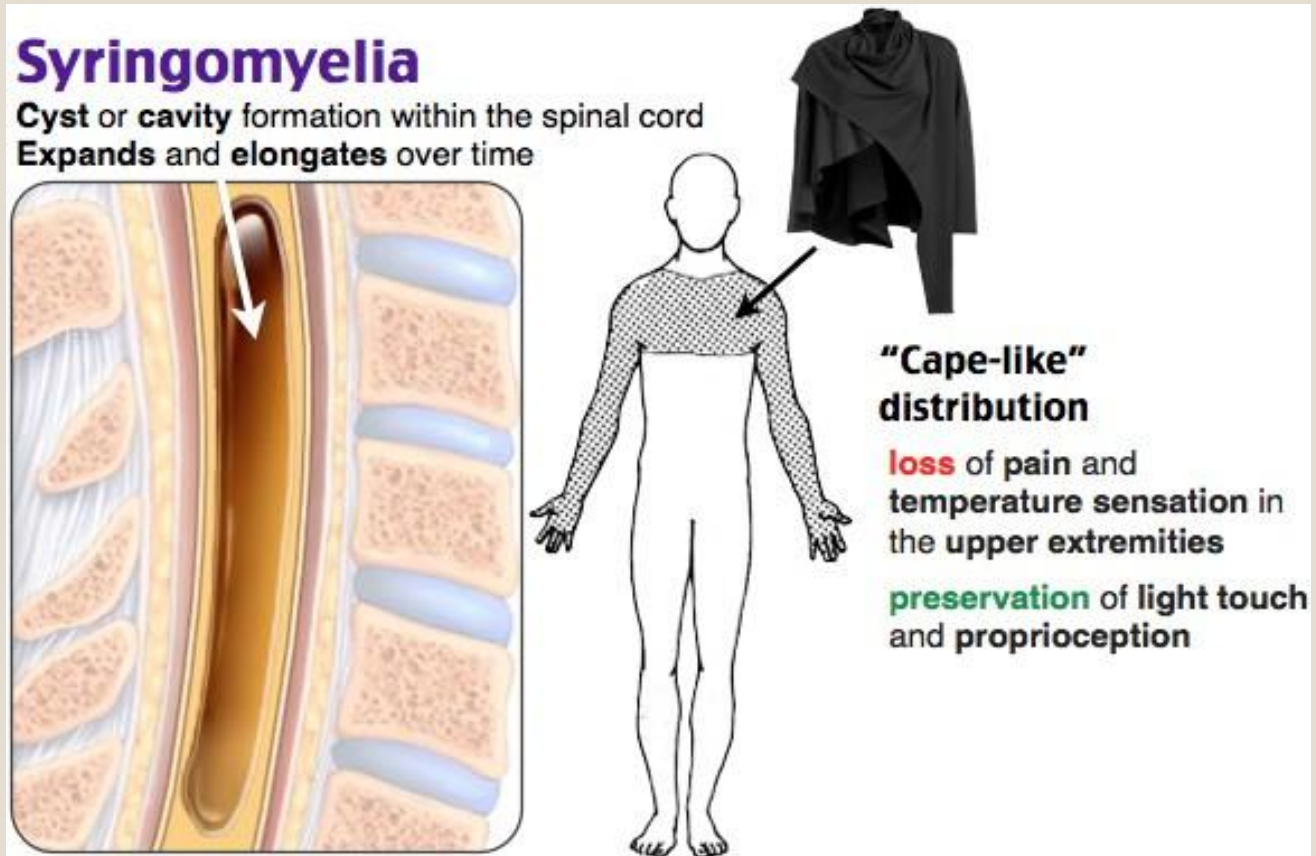
Syringomyelia

- 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

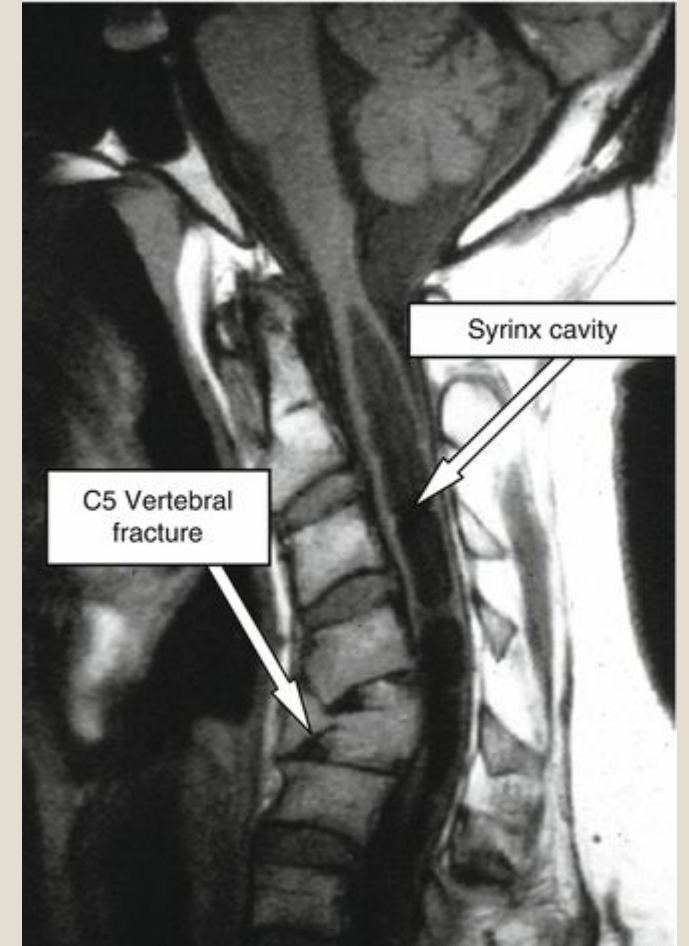
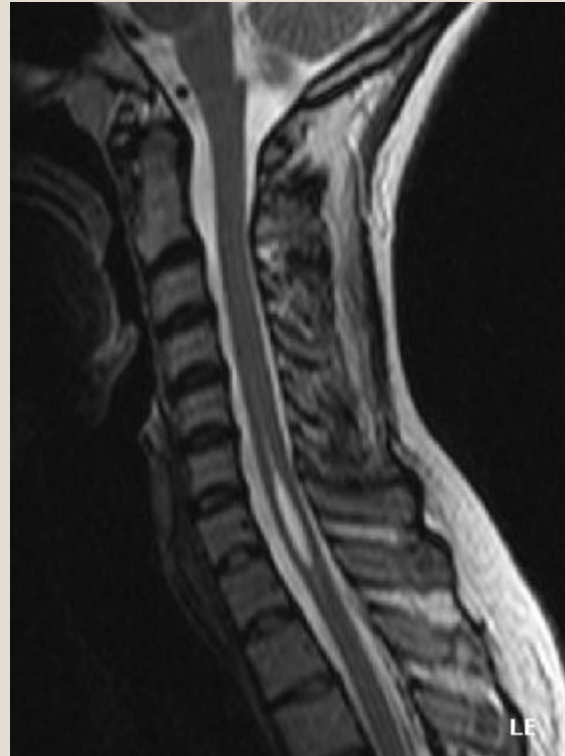
Diagnosis: MRI

(Chiari malformation/spinal tumors)

Treatment: surgery

Chiari malformation – posterior fossa decompression

Hydrocephalus – shunt, catheter to drain syrinx

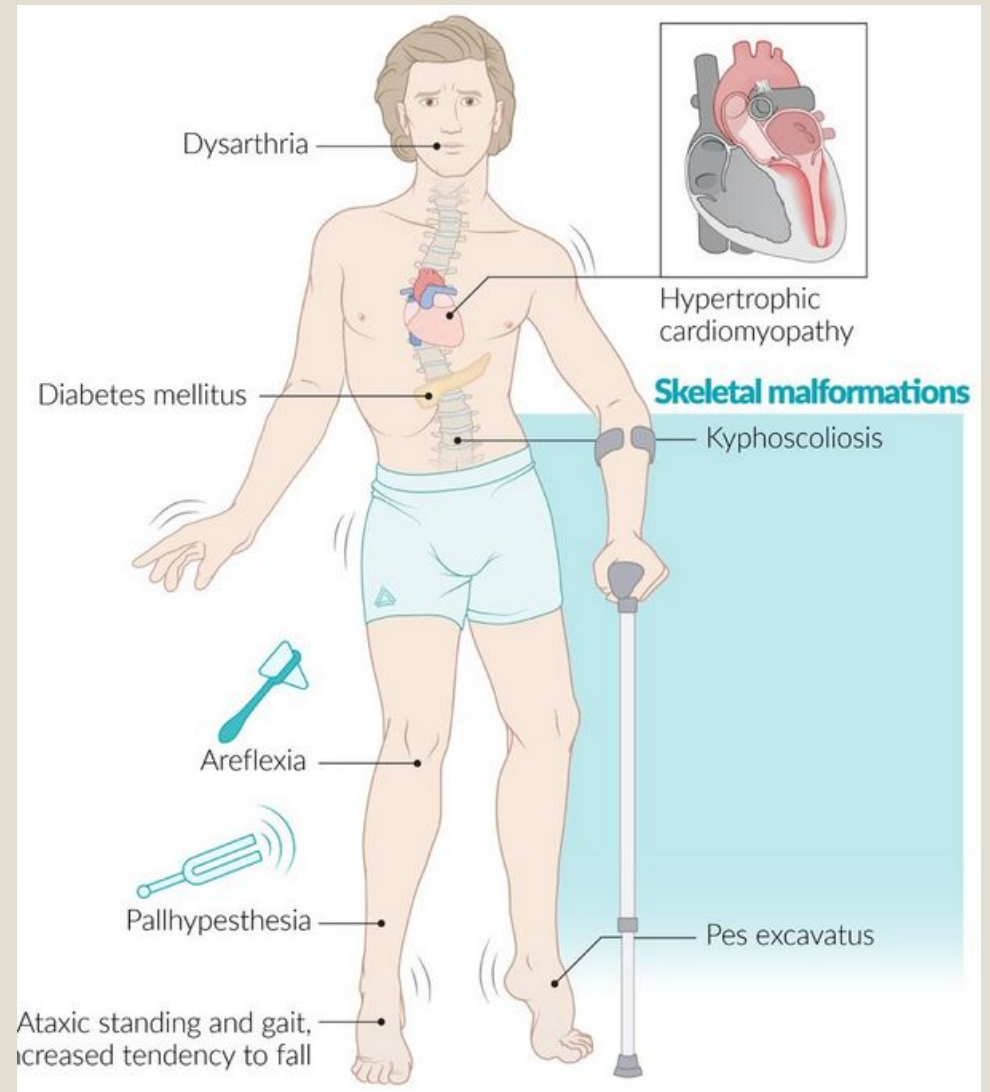


Friedreich's ataxia

- 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



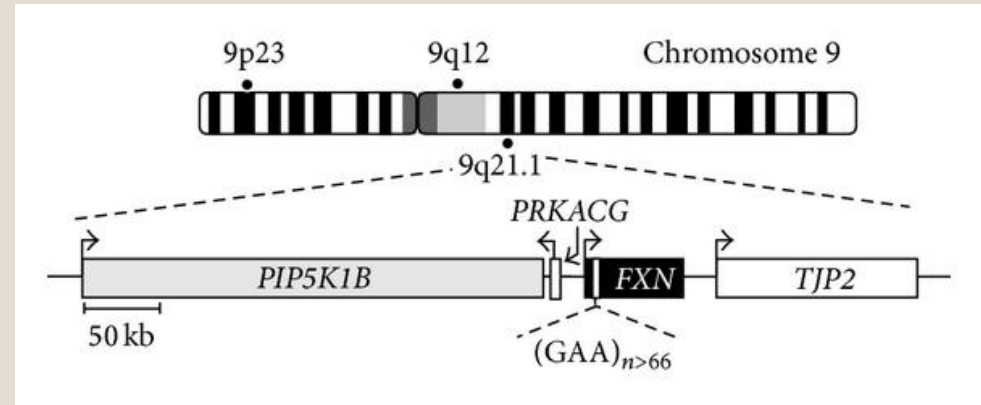
Friedreich's ataxia

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