S/S: gait ataxia, spasticity, hyperreflexia

Myelopathy (NB "transverse myelopathy" refers to clinical picture of severe motor/sensory/autonomic dysfxn due to an acute/sub-acute process regardless of the exact cause, "myelitis" refers specifically to an inflammatory process)

- **Outside** Spinal Cord
  - Epidural Tumors: DDx: mets, MM, meningioma, drop down metastasis, etc, Tx: emergency requiring surgery/radiation/steroids
  - Epidural Abscess: midline back pain w/ elevated ESR but classically w/o systemic systems and nl WBC, seen in immunocompromised pts, 2/3 hematogenous spread from skin/tissue/valve infection vs 1/3 direct extension from vertebral osteo / sacral decub / surgery / LP, Pathogen: Staph, Dx: MRI, Tx: emergency abx/surgery (decompression laminectomy)
  - Trauma
  - Epidural Hematoma
  - Spondylosis: chronic degenerative/hypertrophic changes of the spinal canal resulting in canal narrowing, Tx: surgery
  - Congenital Spinal Stenosis
  - Tethered Cord: congenital/acquired scarring that pulls on cord
  - Spina Bifida: occulta (just soft tissue defect, no neuro Sx), w/ meningomyelocele (+ neuro Sx), rachishisis (completely open, + neuro Sx)
  - Disk Herniation (refer)
- **Inside** Spinal Cord
  - Inflammatory Demyelinating Disorders (refer)
  - Vitamin B12 Deficiency (refer)
  - Tumor: usual CNS tumors
  - Radiation
  - Trauma
  - Fasciculation Movement Disorders (refer)
  - Genetic Cerebellar Disorders (refer)
  - Infection: Bacteria, TB, Syphilis causing Tabes Dorsalis, HIV causing Vacuolar Myelopathy, HTLV-1 causing tropical spastic paraparesis, Lyme, Parasites, Enterovirus
  - Brown Sequard: spinal cord hemisection w/ ispilateral plegia/numbness and contralateral pain/temp
  - Vascular: ischemia/infarction of anterior cord b/c 2/3 of cord is supplied by one artery while two arteries supplies posterior cord, AVM, etx
  - Cauda Equina Syndrome (motor/sensory Sx) and Conus Medullaris Syndrome (autonomic Sx): compression of cauda equina resulting in asymmetric vs symmetric saddle anesthesia, sciatica urinary/fecal incontinence/retention, Dx: emergent MRI, Tx: emergent NS
  - Syrinx: cystic dilation of cord, esp cervical, associated Arnold-Chiari malformation (cerebellar tonsil herniation) or cancer
  - Drugs: NO, Li, Cyanide, Strychnine
  - Meds: intrathecal MTX, AmphoB
  - Amyotrophic Lateral Sclerosis (ALS) aka Lou Gehrig's Disease
    - Epidemiology: 95% sporadic vs 5% familial (w/ 20% 2/2 mutation of SuperOxide Dismutase 1 SOD-1 gene), M>F, 2/100,000, ~50yo but can occur as young as ~20yo, some reports of ALS higher in pts who fought in Operation Desert Storm, following trauma, dairy use, athletic, thin stature, etc
    - Etiology: ?
    - Mechanism: degeneration of anterior horn cells and lateral corticospinal/bulbar tracts
    - S/S (begins as asymmetric weakness of a LE then progresses over years w/ motor deficits including distal to proximal extremities and tongue (UMN-hypereflexia, spasticity, Babinski) & LMN (fasciculations, atrophy, cramps, hyporeflexia, weakness) then bulbar esp dysarthria/dysphagia/respiratory failure but usually sparing eyes) w/ normal sensation and cognitive fxn (eg Stephen Hawkins) but some dementia and emotional lability does occur, usually nl bowel/bladder fxn
    - Dx: NCS/EMG, MRI, mildly elevated CK
    - Tx: very poor and is mainly supportive, Riluzole (glutamate blocking agent) which only extends survival by a few months, BiPAP, nerve growth factors are being developed
    - Prognosis: 50/100% mortality in 3.5/10ys
  - Poliomyelitis
    - Epidemiology: fecal-oral transmission of Polio Virus
    - S/S: 95% asymp, 4% constitutional symptoms (malaise, F, H, N, V, ab pain, sore throat), 1% CNS symptoms (muscle weakness, atrophy, fasciculations and ultimately paralysis as the virus infects and causes necrosis of Anterior Horn Cells of the Spinal Cord)
    - Px: vaccine
    - Tx: supportive
- Tetanus
    - *Clostridium tetani* exotoxin in IVDU or deep puncture wound (NB many times puncture injury is not known) contaminated with dirt, feces, saliva, rusty nails → Retrograde into Cell Body in Spinal Cord → Enters Renshaw Inhibitory Neuron → Cleaves Synaptobrevin and thus No Release of GABA → Constant Activation of Motor

AND Sympathetic Neuron → Muscle Rigid Paralysis + Hypersympathetic Activity (symptoms begin ~12hrs after ingestion) →

- Early: Trismus ("Lock Jaw") contraction of the masseter, Signs of Sympathetic System (arrhythmias, hyperTN
- Late: Risus Sardonicus ("Sardonic Smile") contraction of other facial muscle, Opisthotonos (flexed arm and extended back/extremities) contraction of all other muscles
- End: Death from Respiratory Failure w/ Laryngospasm (head → trunk → extremities)

- Px: vaccine
- Tx: active/passive vaccination (refer), general support, diazepam for tetany, clean wound