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Case Presentation
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History

This is a 73 y.o. RHBM with hx of htn, hypercholesterolemia, BPH who was admitted from the ER for distal lower extremity weakness with difficulty walking x 1 day. 3 weeks PTA he fell on the ice causing low back pain on top of his chronic low back pain that was achy in nature. 3 days PTA he noticed some numbness and tingling pain in both legs below the knees toward the shin area down to his foot.

History, Con't.

Then 1 day PTA, he noticed that his distal lower legs were weaker and had trouble walking to and back from the bathroom. This progressed to being unable to even stand up. Denies any bowel/bladder incontinence rather was constipated. Upon questioning he reports being unable to have erection x 4-5 months, but not concerned as he was not sexually active in a long time. No recent illnesses, flu, diarrhea in the past few months and received flu vaccine 4 months ago.

History, Con't.

Pt also was seen by his PCP (2 wks PTA) for L shoulder aching pain with inability to lift his LUE above 30 degrees, thought of as a possible rotator cuff tear and was being treated with analgesics and muscle relaxants. There was no neck pain or numbness, tingling associated. Family and social hx were noncontributory.

Exam

Physical exam showed awake, alert, fully oriented individual with fluent speech and all CN intact. UE exam was significant for L deltoid weakness only without any sensory deficits at all. Lower extremity strength showed predominantly distal LE weakness (L>R) with bilateral foot drop (thigh abduction 4/5, tibialis anterior 1-2/5, tib. post. 3-/5, peroneus longus 4-/5, EDB 2/5). Sensory deficits were LT and PP mostly L4, L5 distribution b/l with some dysesthesia, perineal sensations were intact. DTR were 1+ in UE, 0 patellar and achilles, toes downgoing. Unable to stand or walk independently. On admission his rectal tone was normal but later in the course he developed bowel incontinence.

Differential

- Cauda equina syndrome (sec. to Lumbar stenosis vs spinal trauma including fractures vs neoplasm vs spinal infection/abscess vs herniated nucleus pulposis)
- Lumbar polyradiculopathy
- Conus Medullaris Syndrome
- Cervical Myeloradiculopathy
- Acute Inflammatory Demyelinating Polyradiculoneuropathy

Differential, Con't.

- Spinal Cord Hemorrhage
- Spinal Cord Infarction
- Tropical Myeloneuropathies
- HIV -1 Associated Distal Painful Sensorimotor Polyneuropathy
- Syringomyelia
- Multiple Sclerosis
- Dermatomyositis/ Polymyositis
- Abdominal aortic aneurysm compressing the cord

Final Diagnosis

MRI Lumbar spine showed severe stenosis at L3-4, secondary to disk herniation. MRI cervical spine showed diffuse disc bulge at C3-4 with canal stenosis and cord compression with normal signal. EMG/NCS did not show a peripheral process. Neurosurgery did a C3-4 anterior spinal fusion without any improvement and then he had a L3 laminectomy. His back pain improved and is getting physical therapy for wheelchair training, unlikely to attain functional ambulation.

Final Diagnosis, Con't.

Cauda equina is a collection of nerve roots at the end of spinal cord, which are horse tail in appearance and hence called the cauda equina (Latin for horse's tail). Cauda equina lesion is a LMN lesion because the nerve roots are part of the PNS.

Treatment

- **Methylprednisolone - IV** started within 8 hours of injury minimizes possible inflammation that might cause worsening of the injury. No benefit if started >8 hr after injury.
- **Neurosurgery consult** - To assess the need for urgent surgical spinal decompression (Laminectomy and fusion for stabilization vs Discectomy)

Treatment, Con't.

- **Pain** should be treated appropriately
- **Rehabilitation** - physical therapy, occupational therapy and assistive devices; for range of motion and strengthening exercises, training in proper use of assisted devices.

Prognosis

In defining impairments associated with a spinal cord lesion, the American Spinal Cord Injury Association (ASIA) impairment scale is used in determining the level and extent of injury. This scale should also be used in defining the extent of conus medullaris/ cauda equina syndrome; the scale is as follows:

- A- Complete; no sensory or motor function preserved in sacral segments S4-S5
- B- Incomplete; sensory, but not motor, function preserved below the neurologic level and extends through sacral segments S4-5
- C- Incomplete; motor function preserved below the neurologic level, and the majority of key muscles below the neurologic level have a muscle grade less than 3
- D- Incomplete; motor function preserved below the neurologic level, and the majority of key muscles below the neurologic level have a muscle grade greater than or equal to 3
- E- Normal; sensory and motor function normal

Prognosis, Con't.

Prognosis can be predicted based on the ASIA impairment scale.

- ASIA A; 90% of pts remain neurologically complete and unable to have ambulation
- ASIA B; 72% of pts. are unable to attain functional ambulation
- ASIA C/D; 13% are unable to attain functional ambulation 1 year after injury.