Adding Incapacity to Injury: A Case of Trauma and Central Cord Syndrome

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Central cord syndrome occurs with a lesion or soft tissue injury affecting the central anatomy of the spinal cord, causing weakness more prominent in the arms than legs, and sensory abnormalities at the level of the lesion. Here I present a case of central cord syndrome caused by a traumatic fall.

**Case**

**Patient**
A 71 year old man with history of ESRD, CAD, CHF, and atrial fibrillation

**HPI**
Admitted to the hospital after a syncopal event at home with traumatic fall and subsequent development of weakness

**Exam**
Weakness was greater in the upper extremities than lower extremities and had a left sided predominance. This was accompanied by a severe hyperesthesia of the upper extremities with severe pain noted on light touch

**Objective**
Vital signs: Normal
Labs: Unremarkable

**Imaging**
CT head: No evidence of bleed or CVA
MRI C spine (pictured at right): Multilevel degenerative changes; significant stenosis at C3-C4 with complete effacement of the thecal sac and mild cord compression

**Clinical Course**
- Neurosurgery was consulted symptoms attributed to central cord syndrome, not cervical stenosis; invasive intervention was deferred
- Syncope was attributed to hypovolemia from persistent vomiting
- Weakness slowly improved over the 12 days of hospitalization with physical and occupational therapy
- Hospital course was complicated by urinary retention and orthostatic hypotension
- Transferred to inpatient rehabilitation for additional 13 days.

**Discussion**

**Typical Presentation**
- Central cord syndrome is most commonly caused by a hyperextension injury of the neck in the setting of preexisting cervical stenosis
- Other causes include syringomyelia or a slow growing tumor
- Results in predominantly upper extremity weakness greater than lower extremity weakness, along with sensory abnormalities near the level of the lesion, and sometimes bladder dysfunction

**Pathology**
- Affects the anterior horn gray matter or the medial aspect of the descending corticospinal tracts, resulting in weakness.
- Additionally, disruption of crossing spinothalamic nerve fibers can result in sensory abnormalities at the level of the lesion.
- In our case neurological symptoms resulted from soft tissue swelling and injury after his traumatic fall
- Analogous to a concussion of the spinal cord.

**Management**
- Central cord syndrome is treated conservatively with an emphasis on physical therapy and supportive management.
- High dose methylprednisolone can be considered in acute spinal cord injury, but its use is controversial and not currently standard of care.
- This patient did not receive steroids, and had a good outcome with near complete return of function.
- Recovery is variable, and can occur over a period of weeks to months.

**Takeaways**
- Central cord syndrome causes sensory and motor abnormalities that preferentially affect the upper extremities more than lower extremities due to the arrangement of the neural pathways.
- Preexisting stenosis of the cervical spinal cord is a risk factor for the development of central cord syndrome, which can occur with a traumatic hyperextension injury.
- Initial treatment of central cord syndrome is nonsurgical, instead relying on therapy and supportive care while allowing swelling and inflammation to dissipate. Surgical correction of preexisting abnormalities can be considered later in the course, but should be delayed until initial healing and recovery has occurred, and is not essential to management.

**References**