

Question 17 (20 marks) 6 minutes

A 45 year old previously well man is brought by ambulance in hard collar, after falling off a ladder with head strike and brief LOC. He has a GCS of 15 and his vital signs on arrival are normal. His examination reveals posterior lower cervical and upper thoracic spine tenderness, 3/5 weakness in the upper limbs and 4/5 weakness in the lower limbs.

1. Describe the CT image, **Shown in PROPS booklet - page 8**; listing two (2) relevant positive findings (2 marks).

- A. Sagittal CT with spinous process fractures C7-T4:
- B. Hypodense areas in spinal cord at these levels - ?edema. Needs MRI.
- C. Collar
- D. No vertebral body fractures
- E. Airway patent with no swelling.

2. What is the most likely diagnosis for his neurological presentation? (1 mark).

Central cord syndrome

3. List three (3) measures you would take to prevent secondary spinal injury (3 marks).

- A. Spinal immobilisation (a reminder to healthcare worker of injury).
- B. Prevent hypotension (haemorrhage, neurogenic shock).
- C. Prevent hypoxia (airway obstruction, chest injuries, respiratory insufficiency due to high spinal injury causing diaphragmatic or intercostal muscle paralysis)
- D. Normothermia, euglycaemia, etc.

4. Define neurogenic and spinal shock (2 marks).

Neurogenic Shock: Neurogenic shock is classically characterised by hypotension, bradycardia and peripheral vasodilatation. Neurogenic shock is due to loss of sympathetic vascular tone and happens only after a significant proportion of the sympathetic nervous system has been damaged – as may occur with lesions at the T6 level or higher.

Spinal Shock: Spinal shock is not a true form of shock. It refers to the flaccid areflexia that may occur after spinal cord injury, and may last hours to weeks. It may be thought of as 'concussion' of the spinal cord and resolves as soft tissue swelling improves. Priapism may be present.



Spinal Cord Syndromes

Incomplete Spinal Cord Syndromes

Anterior Cord Syndrome

- Aetiology
 - Direct anterior cord compression
 - Flexion of cervical spine
 - Thrombosis of anterior spinal artery
- Damage to corticospinal & spinothalamic tracts
- Clinical features
 - Complete paralysis below level of lesion
 - Loss of pain & temperature sensation
 - Preservation of proprioception, vibration & crude touch
- Poor prognosis

Central Cord Syndrome

- Aetiology
 - Hyperextension injury – usually seen in pre-existing cervical spondylosis
 - Ischaemia
 - Cervical stenosis
- Damage to central fibres of spinothalamic & corticospinal tracts
 - Tracts to upper limbs more medial than lower limbs
- Clinical features
 - ↓ power – arms > legs
 - May get spastic paraparesis or quadriparesis
 - Preservation of bowel & bladder control in most cases
 - ↓ pain & temperature sensation (lesser degree) – arms > legs
- Prognosis good – most don't recover fine motor use in upper limbs

Brown-Séquard

- Aetiology
 - Hemisection of cord – penetrating injury
 - Unilateral cord compression – disc, haematoma, bony injury, tumour
- Clinical features
 - Ipsilateral = motor, proprioception, vibration
 - Contralateral = pain & temperature
- Prognosis good – best prognosis of incomplete lesions

Cauda Equina

- Peripheral nerve injury
- Clinical features
 - Variable motor & sensory loss in lower limbs
 - Sciatica
 - Bowel & bladder dysfunction
 - Saddle anaesthesia
- Prognosis good – better than for spinal cord injuries