Spinal epidural lipomatosis and focal posterior longitudinal ligament hypertrophy causing severe cauda equina crowding

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DESCRIPTION
A male in his early fifties was referred to the local emergency department with severe lower back pain, bilateral radiculopathy and lower limb weakness. He initially presented to his general practitioner (GP) with a five-day history of bilateral radicular pain and numbness in the feet, on a background of a three-week history of worsening lower back pain. His GP referred him for MRI of the lumbar spine, which was performed two weeks later. MRI lumbar spine demonstrated a large disc extrusion producing severe cauda equina crowding with effacement of the majority of the thecal sac cerebrospinal fluid (CSF) at L3/L4 with a prominent multilayer lumbar dorsal epidural fat layer, focal posterior longitudinal ligament hypertrophy and disc protrusion at L5/S1 with moderate-to-severe bilateral foraminal stenosis (figures 1–4).

The patient was advised by the reporting radiologist to attend the on-site emergency department immediately. He was assessed by the emergency department and referred to the on-call orthopaedic surgeons. On assessment, the patient was haemodynamically stable and had no saddle anaesthesia, perianal dysaesthesia, loss of anal tone, urinary retention or faecal incontinence. His medical history was significant for hypertension and obesity. An American Spinal Injury Association (ASIA) score was performed and demonstrated multilevel neurological deficits, leading to a score of D (figure 5). He had 5/5 power in hip flexors (L2) and knee extensors (L3) bilaterally, but only 3/5 power in ankle dorsiflexion (L4) bilaterally and 4/5 power in halluc extensors (L5) and also ankle plantarflexors (S1) bilaterally. The patient also exhibited 2/2
sensation in L1-L4 dermatomes, but showed reduced sensation of 1/2 in L5 and S1. Lower limb reflexes and tone were normal.

The patient was referred to the on-call neurosurgical team and underwent lumbar decompression surgery. His postoperative course was uneventful.

Hypertrophy of the posterior longitudinal ligament (HPLL) is a rare pathological condition that is characterised by thickening of the PLL, while spinal epidural lipomatosis (SEL) is a rare condition characterised by an overgrowth of adipose tissue in the extradural space, usually deposited in the thoracic or lumbar spine. This can lead to stenosis of the central canal and compression of adjacent neural structures. First documented in 1975, the most common cause of SEL is exogenous steroid therapy, but other causes have been shown to be idiopathic, iatrogenic or due to obesity. The pathogenesis resulting in neurological compromise still remains unclear. SEL can present with radiculopathy, myelopathy, bladder or bowel dysfunction, claudication, motor weakness, sensory deficits and rarely cauda equina syndrome. Conservative measures in the treatment of SEL are aimed to treat the underlying cause, including cessation of steroid use and weight loss. However, in patients presenting with severe symptoms, decompression surgery has proven to be effective.

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**REFERENCES**

**Learning points**
- Spinal epidural lipomatosis (SEL) is a rare condition characterised by an overgrowth of unencapsulated adipose tissue in the extradural space.
- SEL can present with radiculopathy, myelopathy, bladder or bowel dysfunction, claudication, motor weakness, sensory deficits and rarely cauda equina syndrome.
- Conservative measures in the treatment of SEL are aimed to treat the underlying cause; however, in severe cases, surgery is indicated.

**Figure 5** American Spinal Injury Association impairment scale.

**Steps in Classification**
The following order is recommended for determining the classification of individuals with SCI:
1. Determine sensory levels for right and left sides.
2. Determine motor levels for right and left sides.
3. Determine the neurological level of injury (SCI). The more severe the neurological level of injury is, the less likely there is a normal sensory and motor level. The SCI classification is as follows:
- AIS A: Complete SCI; there is no motor function or sensation below the lesion.
- AIS B: Incomplete SCI; there is motor function below the lesion but no sensation.
- AIS C: Incomplete SCI; there is sensation below the lesion but no motor function below the lesion.
- AIS D: Incomplete SCI; there is motor and sensory function below the lesion.
- AIS E: Complete SCI; there is normal sensory and motor function below the lesion.

**Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.**