Clinical History:

A 54-year-old patient presented with a four-week-history of unsteady gait, bilateral leg weakness and altered sensation below her umbilicus.

Imaging Findings:

A 54-year-old Caucasian lady, previously fit and well, presented to the neurologist with a gradual onset of unsteady gait, bilateral leg weakness and altered sensation below her umbilicus over the past four weeks. There was no involvement of the bladder or the bowel. On examination, it was found that she had a spastic gait, increased tone in the lower legs, with exaggerated reflexes and bilaterally upgoing plantars. She had a sensory level at L1 and a band of hyperaesthesia at T11–12. On investigation, her blood tests were found to be normal, and an MRI scan revealed a low signal intensity-causing posterior compression of the cord at the T11–12 level. A CT scan through this level revealed an ossified ligamentum flavum. The plain X-rays, which were taken, of the cervical and dorsal spine revealed only degenerative changes. Surgical decompression was undertaken and the ossified ligament was excised. Trans-pedicular decompression was undertaken and no significant disc was seen. Following surgery, there was no significant improvement in the patient's symptoms after ten days, and she still had myelopathic features. Her sensory level improved with a residual band of decreased pinprick at the T12 level. She was referred for further rehabilitation and will be followed-up in the outpatient clinic.

Discussion:

Ossification of the ligamentum flavum (OLF) and the posterior longitudinal ligament (OPLL) of the spine are described as occurring mainly in the Japanese (2). OLF is an uncommon condition in Caucasians, although several cases have been described in the literature since 1993 (1). It is more predominant in males, and commonly involves the lower thoracic spine. OLF can occur at multiple levels in the thoracic spine. Ossification of the cervical spine is extremely rare (2). However, calcification is more common. The aetiology of OLF is unclear (3) but some of the postulated causes and associations are: trauma and fractures, skeletal fluorosis, ankylosing spondylitis, diabetes mellitus, diffuse idiopathic skeletal hyperostosis (DISH), thyroid and parathyroid disease (Kojima et al 1989), haemochromatosis, crystal deposition disease (calcium pyrophosphate dihydrate) and ageing. It is unclear whether the incidence of this disease is higher in Japan or whether it is under diagnosed in other countries. One reason may be the smaller diameter of the spinal canal in the Japanese. Oestrogen deficiency in menopause may also be a cause. The diagnosis is achieved by a radiological investigation. Plain X-rays are often unhelpful but roundish nodules in the vertebral foramen can be seen on oblique views (2). The role of the MRI scan is important in the diagnosis of OLF. On the MR scan, a hemispheric low signal intensity at the level of the posterior margin of the cord is seen in both T1- and T2-W images. The T1-W images will pick up large areas of calcification but small ossifications are difficult to differentiate from CSF signals. The MRI technique is also very useful in demonstrating cord compression. CT scans are essential for the diagnosis as well. Axial CT scans will show a V-shaped, irregular
and hyperdense mass along the postero-lateral aspect of the lamina, which may be symmetrical or asymmetrical (2). A CT myelogram might be useful in cases of spinal cord compression (1). The ossification usually begins in the lateral region of the lamina of the upper and lower vertebrae, and extends upwards and downwards along the ligamentum flavum. The main differential diagnosis will include calcified meningioma, exuberant ossification of the facet joints, facet joint cyst on MR imaging and also chemical shift artefacts on MR imaging. The presentation can be slow chronic and progressive, and therefore despite decompression surgery recovery of cord function can be incomplete as in this patient.

**Differential Diagnosis List:** Ossification of the ligamentum flavum.

**Final Diagnosis:** Ossification of the ligamentum flavum.

**References:**


Figure 1

a

Description: An axial T1-weighted image through the T11 vertebral body showing the ossified ligamentum flavum compressing the spinal cord. Origin:

b

Description: An axial T2-weighted image through the T11 vertebral body showing the ossified ligamentum flavum compressing the spinal cord. Origin:
**Figure 2**

*a*

*Description:* A coronal T1-weighted image of the lower thoracic spine showing the ossified ligamentum flavum compressing the posterior spinal cord. *Origin:*

*b*

*Description:* A coronal T2-weighted image of the lower thoracic spine showing the ossified ligamentum flavum compressing the cord. *Origin:*