Case Report

Cervical cord compression due to ossification of the ligamentum flavum – A case report and literature review

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ABSTRACT

Background: Symptomatic compression of the cervical spinal cord by ossification of the ligamentum flavum (OLF) is rare. It typically involves the elderly and is particularly prominent in the Asian male population. Here, we present a 70-year-old Pakistani female who became quadriparetic due to OLF.

Case Description: A 70-year-old female became increasingly quadriparetic over 3 months duration, but exhibited preservation of vibration and proprioception. The cervical magnetic resonance/computed tomography revealed dorsal OLF measuring 7 mm × 25 mm × 14 mm. Two months following a decompressive laminectomy, her symptoms fully resolved.

Conclusion: Although rare in older patients, cervical OLF may contribute to significant cervical myelopathy characterized by a progressive quadripareisis that can be readily resolved with a decompressive laminectomy.

Keywords: Ligamentum flavum, Ossification of ligamentum flavum, Quadripareisis

INTRODUCTION

Ossification of the yellow ligament (OYL) (ossification of the ligamentum flavum [OLF]) most frequently occurs in the thoracic spine of elderly males of Asian descent.¹,² It is typically responsible for the onset of myelopathy. Here, we present a rare case of cervical OLF occurring in a 70-year-old Pakistani female who became progressively quadriparetic over 3 months duration. Both the magnetic resonance imaging (MRI) and computed tomography (CT) scans confirmed marked cervical OLF contributing to significant dorsal/lateral thecal sac/cord compression/spinal stenosis. Two months following a cervical laminectomy, she regained normal neurological function.

CASE REPORT

Presentation of spastic quadripareisis

A 70-year-old female presented with a progressive spastic cervical myelopathy/quadripareisis of over 3 months duration. She exhibited 4/5 strength in the right upper/right lower extremity, 3/5 strength in the left lower extremity, and bilateral Babinski responses without any sensory findings.
MR/CT findings

The CT scan directly confirmed hyperdense posterolateral ossification indicative of OYL measuring 25 mm × 14 mm × 7 mm [Figure 1]. The MRI examination of the cervical spinal documented cervical stenosis with cord compression at the C2 level due to OLF; the T2-WT MRI demonstrated a hypointense posterolateral lesion consistent with OLF measuring approximately 7.02 cm × 2.58 cm (CC × AP) [Figure 2]. Both MR and CT studies demonstrated that OLF reduced the sagittal canal diameter of the spinal canal to just 3.55 mm.

Patient outcome

The patient underwent a decompressive C1-C2 cervical laminectomy. At surgery, OLF had to be carefully dissected away from the dura using an operating microscope; a cerebrospinal fluid (CSF) leak was averted. Eight days postoperatively, the patient exhibited significant improvement, and within 2 postoperative months, regained normal function.

DISCUSSION

Frequency of OLF

The prevalence of OLF varies from 3.8% to 26.0% and is mostly typically found in the thoracic spine of older men of East Asian descent. One report suggested that the overall incidence of asymptomatic OLF was 38.5%, 26.5%, and 0.9%, respectively, in the thoracic, lumbar, and cervical spine. Rahimizadeh et al. found the prevalence of C1-C2 OLF to be 0.9% out of 69 cervical cases. Here, we observed C1-C2 OLF in a 70-year-old female.

Pathology of OLF

The ligamentum flavum is composed primarily of elastic fibers. Overtime, and with continued mechanical stress, the normal fibrous tissue can become hypertrophied and become replaced by cartilaginous cells (e.g., chondrometaplasia). The deposition of calcium pyrophosphate dihydrate crystals further contributes to the formation of the OLF mass. OLF may be also linked to environmental comorbidities including obesity, diabetes, and a poor diet, while others invoke a genetic predisposition.

Treatment of OLF

There are no current pharmacological treatments for cervical OLF. Therefore, patients presenting with cervical myelopathy typically warrant surgery consisting of decompressive laminectomy with/without fusion. Due to OLFs potential for penetrating the dura mater, an operating microscope should be used to carefully remove OLF and avert a CSF leak. Notably, the overall prognosis of cervical OLF is strongly linked to the preoperative neurological examination, duration/severity of myelopathy, and efficacy/safety of surgery.

CONCLUSION

Although rare, ossification of ligamentum flavum should be kept on the differential when faced with symptoms of decreased strength and mobility, especially in the elderly population.
Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest
There are no conflicts of interest.

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