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Ossification of Ligamentum Flavum: Arare Cause of Mylopathy in Saudi Patient.

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Abstract: *Ossification of ligamentum flavum (OLF) is a well-known pathology causing myelopathy, although it is a rare disease. The most commonly affected population is from the Far East and mainly Japanese. However, few reports and studies have shown the prevalence of the disease all over the world. Ossification of the ligamentum flavum (OLF) occurs mostly in adult males, with a possible association with obesity and type 2 diabetes, typically in the thoracolumbar spine where it may contribute to neurological deficits. We report the case of a 45-year-old Saudi female patient presenting with signs of progressive myelopathy. Magnetic resonance imaging (MRI) showed T9-T11 OLF with severe narrowing. A decompressive laminectomy with flavectomy was recommended to decrease the compressive symptoms but the patient refused the operation.*

Keywords: *Myelopathy, ossification of ligamentum flavum, thoracic spinal cord.*

I. INTRODUCTION

Ossification of ligamentum flavum (OLF) is a well-known pathology causing myelopathy, although it is a rare disease.[1] The disease process first causes hypertrophy of the ligamentum flavum and subsequent ossification, which narrows the spinal canal and leads to myeloradiculopathy.[2,3,4,5] The lower thoracic spine is most commonly affected. Previous hyperkyphosis and mechanical stress are thought to be predisposing conditions.[6].

This is rare case report of ligamentum flavum ossification in Saudi Arabia, seen in a healthy middle-aged female with a multi-level thoracic OLF. The lady was presenting with signs of progressively worsening myelopathy.

II. CASE REPORT

A 45-year-old Saudi female patient with a normal medical history, presented with a 11-month progressive back pain, bilateral sciatica more on the left side accompanied with significant claudication. There was no history of previous trauma. Physical examination showed exaggerated deep tendon reflexes bilaterally at the knees and ankles. Sensory level at T9 was ascertained. Vesicorectal function was not impaired.

Computed tomography (CT) demonstrated bone density along the posterior segment of the lower dorsal spinal canal and significant reduction of anteroposterior diameter [Fig1,2]. Magnetic resonance imaging (MRI) was

obtained, which showed hypertrophy and ossification of the posterior ligamentous complex from T9 to T11 and underlying myelopathy. (Fig3,4and5).

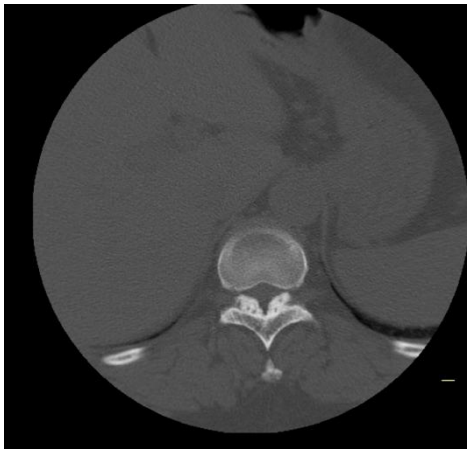

Figure 1:Axial CT scan at the level of the T11 with V shaped OLF.

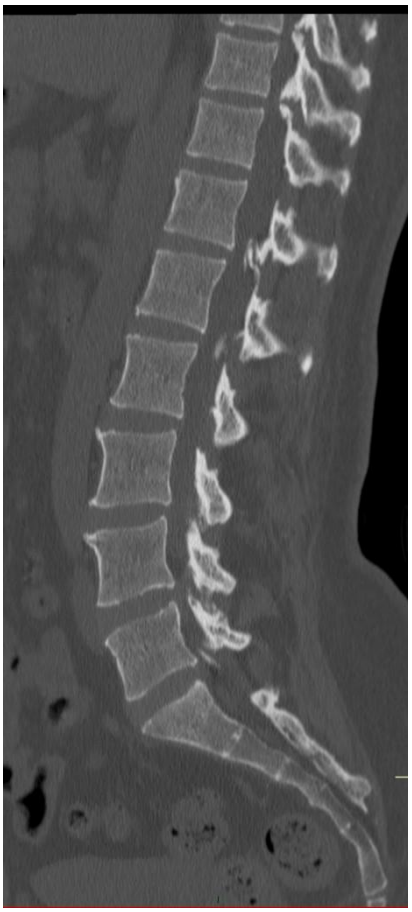

Figure2: Sagittal view, CT scan showing spinal canal narrowing with OLF more evident in lower dorsal spine.

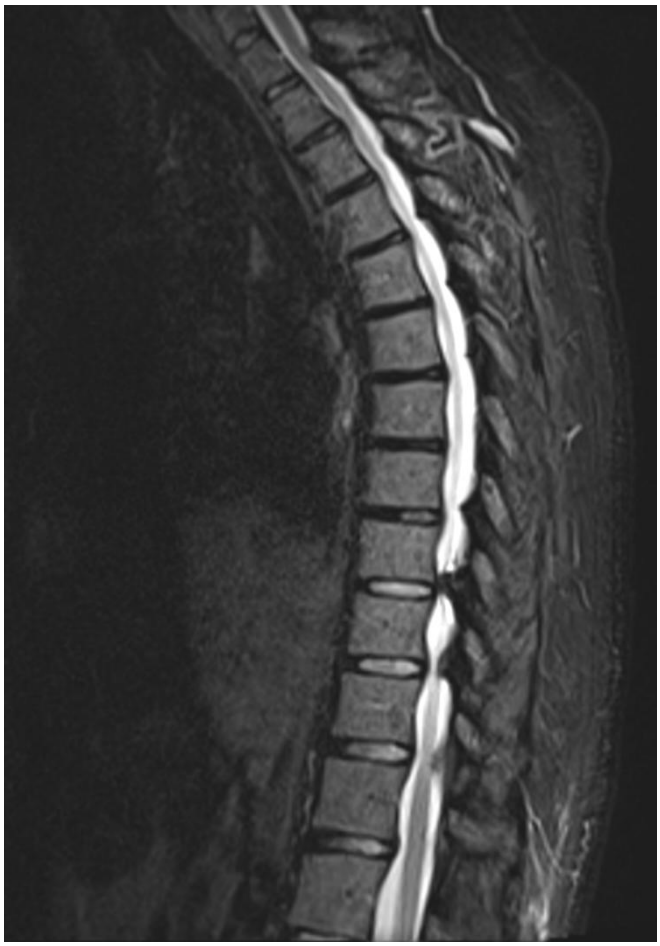

Figure3: STIR sagittal images MRI of upper thoracic spine showing T9-T11 ligamentum flavum hypertrophy with subsequent narrowed spinal canal.

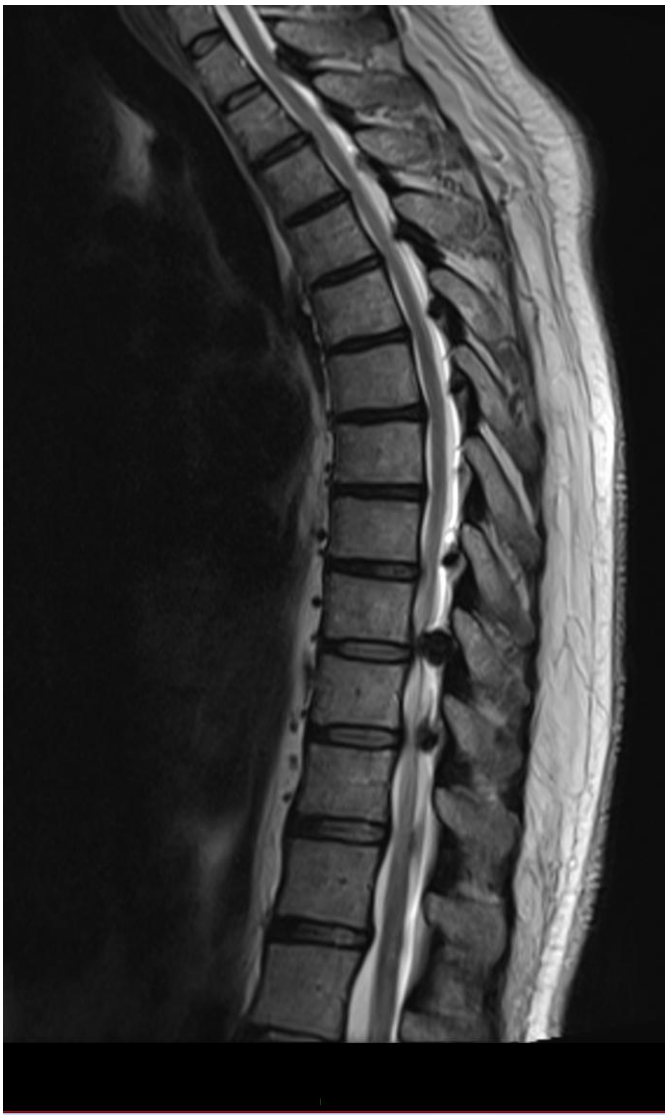

Figure4: Sagittal T2of the dorsal spine revealed ligamentum flavum hypertrophy with moderate to severe narrowed spinal more prominent at the level of T10 and T11.

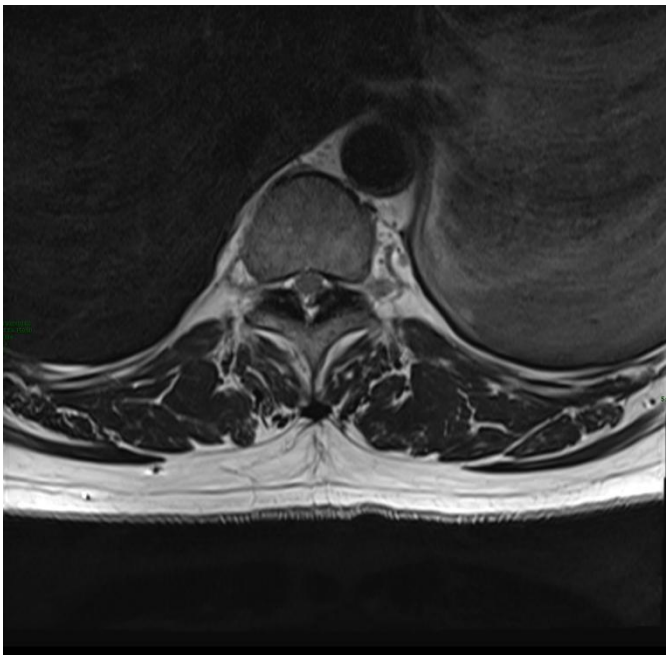

Figure 5: Axial T2-wighted images at T10-T11 level with severe narrowing of spinal canal with OLF.

Serum calcium, phosphorous, uric acid, and alkaline phosphatase were normal.

For most cases of OLF, laminectomy is the chosen technique as it provides a wide decompression of the medullarycanal. Unfortunately, our patient refused the surgical management.

III. DISCUSSION

OLF is widely recognized as a primary cause of spinal cord compression.[7]. It could occur isolated or in combination with ossification of posterior longitudinal ligament which worsens the spinal canal stenosis. OLF may be idiopathic or may occur in the context of other diseases such as ankylosing spondylitis and Forestier's disease. Our case was an idiopathic OLF; our patient did not present any other associated symptoms.

This pathology is found most commonly in the thoracic region.[6] It is thought that the hyperkyphosis of this region of the spine is associated with mechanical stress, which makes ligaments in this region more prone to ossification.[6]

The mechanism of ligament ossification is classified into five types: Type I, laterally at the origin of the ligamentum flavum at the articular processes; Type II, from the lateral origin of the ligamentum flavum to the interlaminar portion of the ligamentum flavum; Type III, protrudes into the canal posterolaterally but is not fused in the midline; Type IV, consists of bilateral ossified ligaments that are fused at the midline with a groove at the fusion in midline; and Type V, the tuberous type, occurs when the fused ossified ligamentum flavum forms a “tuberous” mass posteriorly in the midline, which protrudes into the spinal canal. According to this classification only types IV and V would develop a myelopathy, and most of types I, II, and III would remain asymptomatic. [8,9]

In general, Type IV and Type V are more likely to cause paralysis [10]. However, in our case, there were no commonalities regarding the type of OLF or the level affected. We believe that OLF has high risk of acute progression of paralysis regardless of the type of OLF or the level of spinal canal affection.

For thoracic OLF, fenestration or *en bloc* laminectomies are usually performed. The ossified ligament should be removed carefully because there might be an ossification of the dura mater.[11].Unfortunately, our patient refused the surgical management .

IV. CONCLUSION

Ligamentum flavum ossification is rare. To our understanding, this is the first case reported in king Saud medical city in Saudi Arabia.

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