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Case Report

Thoracic myelopathy due to ossification of the posterior longitudinal ligament shown on dynamic MR

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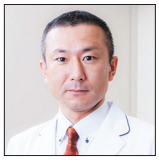

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ABSTRACT

Background: Magnetic resonance (MR) and computed tomography (CT) studies combined are the optimal studies for diagnosing thoracic ossification of the posterior longitudinal ligament (OPLL) contributing to myelopathy. Here, we report a 71-year-old female, whose additional dynamic thoracic MR demonstrated transient T6–T9 anterior OPLL with cord compression.

Case Description: A 71-year-old female presented with a progressive myelopathy originally attributed to cervical cord compression resulting in a cervical laminoplasty. However, when she failed to improve postoperatively, a dynamic thoracic MR was performed. On the flexion study, it demonstrated significant although transient T6–T9 anterior thoracic cord compression due to both OPLL and kyphosis. The patient's symptoms resolved following a posterior thoracic fusion alone (i.e., no decompression was warranted).

Conclusion: Dynamic MR studies (i.e., flexion studies) in addition to the routine MR and CT evaluations should be performed for patients with myelopathy attributed to thoracic OPLL/kyphosis.

Keywords: Dynamic magnetic resonance imaging, Ossification of the posterior longitudinal ligament, Posterior fusion with dekyphosis

INTRODUCTION

Dynamic factors can significantly contribute to the onset/severity of a progressive myelopathy attributed to cervical or thoracic ossification of the posterior longitudinal ligament (OPLL) with kyphosis.[5] If cervical disease has been ruled out and/or adequately treated, continued myelopathy may warrant both routine and dynamic thoracic magnetic resonance (MR) studies to best evaluate for thoracic OPLL with instability and particularly kyphosis on flexion studies resulting in transient cord compression. Here, a 71-year-old female presented with symptomatic thoracic cord compression from OPLL/kyphosis documented on a dynamic MR study that warranted a posterior fixation without an accompanying decompressive procedure.

CASE REPORT

A 71-year-old female presented with a progressive paraparesis of 3 months' duration. The cervical and thoracic computed tomography (CT)/MR scans revealed OPLL at the C4–6 (i.e., with stenosis)

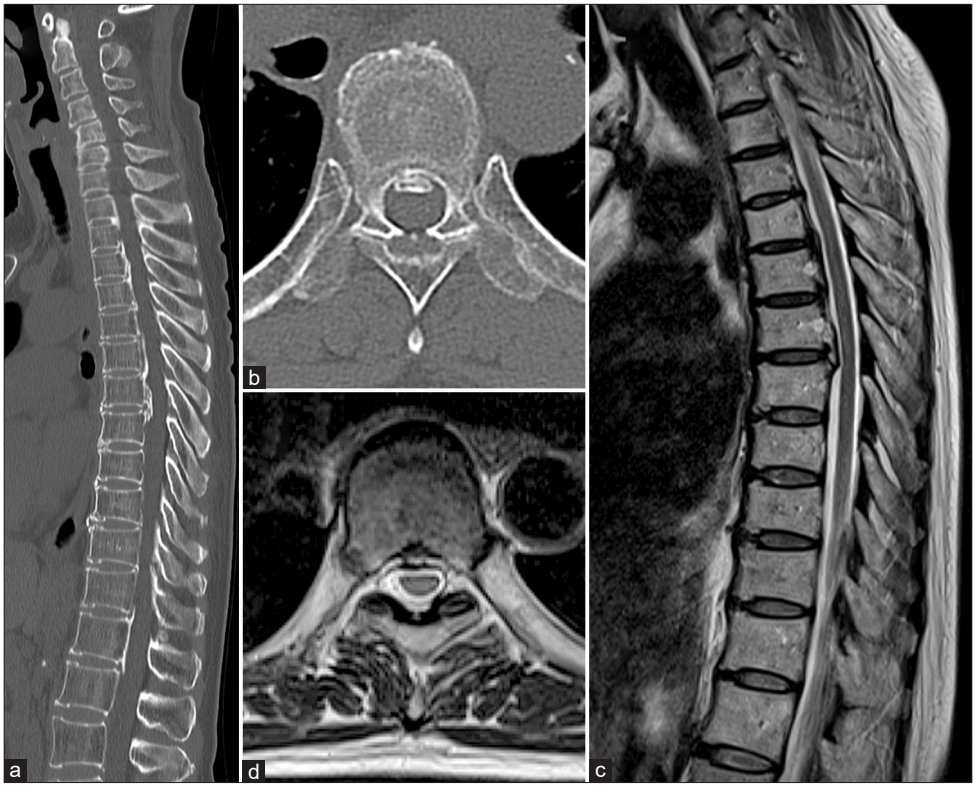

Figure 1: Images before the initial surgery. (a) CT sagittal image showed OPLL at T2–8 levels. (b) Ossification lesion at T7–8 level. (c) MRI sagittal image showed no suggestion of spinal cord compression. (d) MRI trans image showed no spinal cord compression but a mild flattening of the spinal cord and signal changes within the medulla. CT: Computed tomography, MRI: Magnetic resonance imaging, OPLL: Ossification of the posterior longitudinal ligament.

and T2–T8 levels [Figure 1a-d]. The patient first underwent a C3–C6 double-door laminoplasty but failed to improve (i.e., exhibited continued paraparesis) [Figure 2a and b]. Review of the routine thoracic magnetic resonance imaging (MRI) revealed a flattened spinal cord with anterior concavity and slight signal change, while the dynamic MR (i.e., flexion study) showed motion/kyphosis between the T6 and T9 levels resulting in transient cord compression (i.e., 8° in extension and 18° in flexion resulting in ventral OPLL-cord compression at T7–T8 level) [Figures 1d and 3]. The patient underwent a T1–T9 posterior fusion without decompression; the extension cephalad was due to an upper thoracic T2 OPLL lesion (i.e., fixation range of less than T2 can cause future stenosis due to worsening upper thoracic OPLL). Postoperatively, her gait disturbance improved, and MR studies continued to confirm no residual anterior cord compression from OPLL [Figure 4].

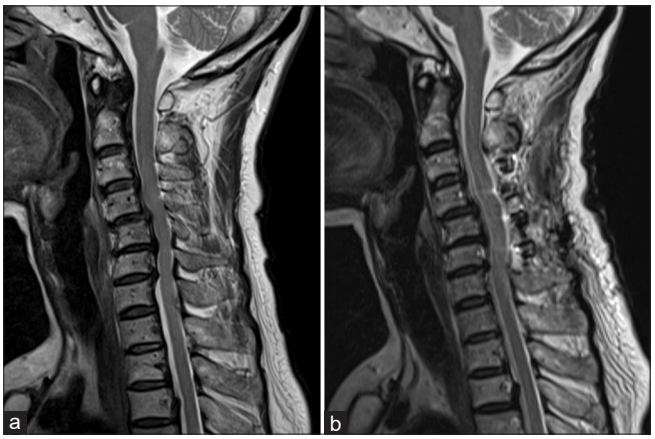

Figure 2: MRI images of the cervical spine before and after the initial surgery. MRI sagittal images (a) before initial surgery and (b) after surgery. The cervical spinal cord was decompressed. MRI: Magnetic resonance imaging.

DISCUSSION

Dynamic spinal cord compression by OPLL

Thoracic OPLL lesions without a large spinal canal occupancy ratio can contribute to myelopathy best demonstrated on dynamic flexion-MR studies. Good outcomes can be achieved by fusing multiple mobile thoracic levels, even without decompression.[2,3] Up to 82.8–97.7% of thoracic OPLL fuses with instrumentation, and such arthrodesis prevents OPLL progression and in some instances, regression.[1,4] Here, a posterior fusion without decompression [Figure 4a] resulted in symptom resolution (i.e., the ventral thoracic cord was

Figure 3: Dynamic MRI images of the thoracic spine. (a and c) MRI images with backward bending showed the same findings as during routine MRI. (b and d) MRI images with forward bending revealed that the spinal cord was in close contact with the OPLL at T7–8 level and was compressed from the front. MRI: Magnetic resonance imaging, OPLL: Ossification of the posterior longitudinal ligament.

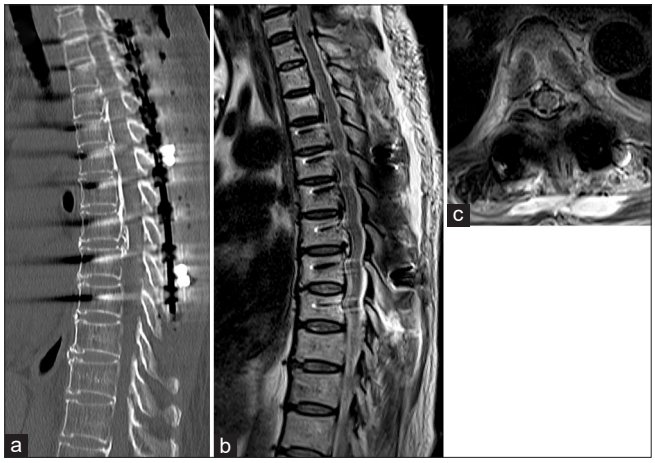

Figure 4: Images after additional surgery. (a) CT sagittal image showed that the thoracic spine was fixed in the intermediate position. (b and c) MRI images showed that the spinal cord was not in contact with the OPLL. CT: Computed tomography, MRI: Magnetic resonance imaging; OPLL: Ossification of the posterior longitudinal ligament.

decompressed by preventing further flexion maneuvers [Figures 1c and d, 4b and c]).

CONCLUSION

A 71-year-old female first underwent a cervical C3–C6 laminoplasty for the diagnosis of cervical OPLL/stenosis. However, when her myelopathy progressed (i.e., paraparesis), both routine and dynamic thoracic MR studies documented OPLL with instability/kyphosis seen on flexion studies that warranted a posterior T1–T9 fusion without necessitating decompression.

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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