



Case Report

Symptomatic thoracic ossification of the ligamentum flavum in a patient with ankylosing spondylitis: Report of a case and review

Abolfazl Rahimizadeh¹, Parviz Habibollahzadeh¹, Walter L. Williamson¹, Housain Soufiani¹, Mahan Amirzadeh¹, Shaghayegh Rahimizadeh¹

¹Pars Advanced and Minimally Invasive Medical Manners Research Center, Pars Hospital, Iran University of Medical Sciences, Tehran, Iran.

E-mail: *Abolfazl Rahimizadeh - a_rahimizadeh@hotmail.com; Parviz Habibollahzadeh - phabibollahzadeh@gmail.com;

Walter L. Williamson - wlw83@hotmail.com; Housain Soufiani - soufianihosein@gmail.com; Mahan Amirzadeh - mahan.amirzade@gmail.com; Shaghayegh Rahimizadeh - sherryrahimi@hotmail.com



*Corresponding author:

Abolfazl Rahimizadeh,
Pars Advanced and Minimally Invasive Medical Manners Research Center, Pars Hospital, Iran University of Medical Sciences, Tehran, Iran.

a_rahimizadeh@hotmail.com

Received : 22 October 2021

Accepted : 19 November 2021

Published : 08 December 2021

DOI

10.25259/SNI_1067_2021

Quick Response Code:



ABSTRACT

Background: Thoracic spinal cord compression due to both ankylosing spondylitis (AS) and ossification of the ligamentum flavum (OLF) is rare.

Case Description: A 33-year-old male with AS presented with a paraparesis attributed to MR documented T9-T10 OLF/stenosis. He was successfully managed with a decompressive laminectomy; this resulted in marked improvement of his deficit.

Conclusion: Thoracic OLF and AS rarely contribute T9-T10 spinal cord compression that may be readily relieved with a decompressive laminectomy.

Keywords: Ankylosing spondylitis, Myelopathy, Ossification of the ligamentum flavum, Thoracic spine

INTRODUCTION

Rarely, patients will present with a paraparesis attributed to the unique combination of thoracic ankylosing spondylitis (AS) and ossification of the ligamentum flavum (OLF). Here, we present a 33-year-old male with T9-T10 spinal cord compression due to both AS and OLF whose function improved following a decompressive laminectomy.

CASE PRESENTATION

A 33-year-old male with AS (i.e., initial symptoms 2014 finally diagnosed 2017) presented with a progressive paraparesis of 5 months duration. Total spine radiographs showed AS [Figure 1]. OLF was documented at the T9-T10 level on the T2 weighted MR where the typical beak shape hypointense right-sided dorsolateral mass was identified seen dorsolaterally on the right. The CT further confirmed the T9-T10 AS/OLF [Figures 2 and 3]. The T9-T10 laminectomy revealed a large right-sided OLF ossified mass that was densely adherent to the dura; it was carefully dissected free and removed. Two months later, the patient's neurological exam was much improved (i.e., preoperative mJOA score of 7 to a postoperative mJOA score of 9).

This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

©2021 Published by Scientific Scholar on behalf of Surgical Neurology International



Figure 1: Total spine plain radiographs, (a) AP view shows modified New York Grade 3 sacroiliitis with sclerosis of both sacroiliac joints and (b) lateral view demonstrates complete syndesmophytes formation in thoracic (BASRI score of 4) and interrupted in the lumbar spine (BASRI score of 3).



Figure 2: Thoracic spine MRI, (a) T2-weighted sagittal images show beak type ossification of the ligamentum flavum (OLF) at T9-T10 and (b) axial image shows right sided big OLF.

DISCUSSION

AS, with a prevalence of AS ranging from 0.1 to 0.5%, is a chronic inflammatory disease that involves the primary axial skeleton largely in males during the third decade of life.^[3-6,10] AS typically occurs in males between the ages of 50–60 years of age in the thoracic spine.^[7-9] With AS, spinal cord and/or cauda equina may result from traumatic fracture dislocations resulting in traumatic epidural hematomas, ossification

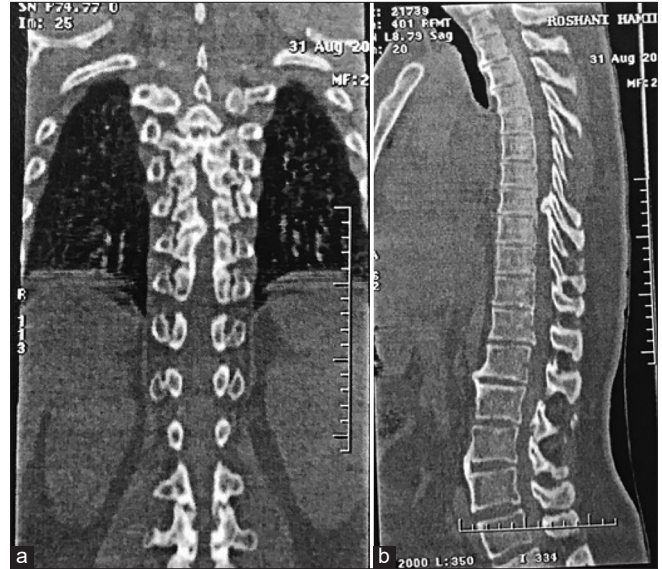


Figure 3: Reconstructed CT scan of thoracic spine, (a) coronal view shows a right sided T9-T10 ossification of the ligamentum flavum (OLF) and (b) sagittal view shows a beak type TOLF, note bamboo spine in thoracic (BASRI score of 4) and interrupted syndesmophytes formation in lumbar spine (BASRI score of 3).

of the posterior longitudinal ligament, and destructive spondylodiscitis/Anderson lesions.^[1,3,5,6,10]

OLF, a well-known entity in East Asian countries but also involving patients from Iran and other countries, may also contribute to thoracic cord compression warranting decompressive laminectomies (i.e., the US).^[2,4,7-9] OLF is characterized by ectopic bone formation within the yellow ligament which is normally composed of fibrous tissue.^[7-9] MRI is the optimal study for establishing the “soft-tissue” findings classical for OLF.^[4,7-9] However, CT is also critical for demonstrating the shape and dural ossification seen with these lesions.^[4,7-9]

Surgery for thoracic cord compression due to AS and OLF

Typically, laminectomy with the meticulous direct dissection/excision of the OLF utilizing an operating microscope with intraoperative monitoring is the procedure of choice for resecting thoracic OLF with AS.^[4,7-9]

CONCLUSION

The patients presenting with paraparesis attributed to thoracic AS and OLF demonstrating MR/CT dorsolateral cord compression should undergo timely decompressive laminectomies to maximize neurological recovery.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Bron JL, de Vries MK, Snieders MN, Horst-Bruinsma IE, Royen BJ. Discovertebral (Andersson) lesions of the spine in ankylosing spondylitis revisited. *Clin Rheumatol* 2009;28:883-92.
2. Epstein NE. Ossification of the yellow ligament and spondylosis and/or ossification of the posterior longitudinal ligament of the thoracic and lumbar spine. *J Spinal Disord Tech* 1999;10:250-6.
3. Huang TJ, Hsu RW, Liao YS, Shih HN, Chen YJ. A rare neurological presentation due to ossification of the posterior longitudinal ligament of the thoracic spine and ankylosing spondylitis: Case report. *Spinal Cord* 1997;35:550-3.
4. Jagtap S, Kamble H, Patil AS, Nair M. Ossified ligamentum flavum causing myelopathy in ankylosing spondylitis. *J Neurosci Rural Pract* 2013;4:230-1.
5. Khedr EM, Rashad SM, Hamed SA, El-Zharraa F, Abdalla AK. Neurological complications of ankylosing spondylitis: Neurophysiological assessment. *Rheumatol Int* 2009;29:1031-40.
6. Kim TJ, Kim TH, Jun JB, Joo KB, Uhm WS. Prevalence of ossification of posterior longitudinal ligament in patients with ankylosing spondylitis. *J Rheumatol* 2007;34:2460-2.
7. Rahimizadeh A, Asgari N, Soufiani H, Rahimizadeh S. Ossification of the cervical ligamentum flavum and case report with myelopathy. *Surg Neurol Int* 2018;9:263.
8. Rahimizadeh A, Soufiani H, Amirzadeh M, Rahimizadeh S. Ossification of the ligamentum flavum of the lumbar spine in caucasians: Case series. *J Spine Neurosurg* 2017;6:5.
9. Rahimizadeh A. Isolated proximal thoracic ossified ligamentum flavum causing paraparesis in a caucasian: A case report and review of literature. *World Spinal Column J* 2012;3:38-43.
10. Ramos-Remus C, Russell AS, Gomez-Vargas A, Hernandez-Chavez A, Maksymowych WP, Gamez-Nava JJ, *et al.* Ossification of the posterior longitudinal ligament in three geographically and genetically different populations of ankylosing spondylitis and other spondyloarthropathies. *Ann Rheum Dis* 1998;57:429-33.

How to cite this article: Rahimizadeh A, Habibollahzadeh P, Williamson WL, Soufiani H, Amirzadeh M, Rahimizadeh S. Symptomatic thoracic ossification of the ligamentum flavum in a patient with ankylosing spondylitis: Report of a case and review. *Surg Neurol Int* 2021;12:596.