

Case Report

A rare cause of thoracic cord compression

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Abstract

Background: The posterior longitudinal ligament (PLL) extends from the foramen magnum to the sacrum. In some cases, it becomes calcified/ossified; the term for this is ossification of the PLL (OPLL).

Case Description: A 50-year-old female presented with acute sphincter dysfunction and paraparesis attributed to T2–T4 OPLL. The patient underwent a C7–T5 laminectomy to decompress the spinal cord. After 1 postoperative week, and certainly by 6 months postoperatively, the patient’s motor and sensory deficits showed improvement.

Conclusion: Surgery for thoracic OPLL includes laminoplasty, laminectomy with/without fusion, anterior decompression through a posterior approach (transpedicular, costotransversectomy), and circumferential decompression (e.g. combined anterior/posterior approaches). In cases like the one presented, patients who originally present with acute paraparesis/sphincter dysfunction may demonstrate postoperative improvement.

Key Words: Ossification of posterior longitudinal ligament, spinal cord compression, Thoracic vertebrae

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INTRODUCTION

Ossification of the posterior longitudinal ligament (OPLL) occurs most frequently in Asian patients, but may also present in other populations. It involves the thoracic spinal cord (T-OPLL) in 15% of cases, while 70% appears in the cervical region.^[4] Although symptoms are typically slow in onset, about 10% may present with acute cord compression and paralysis.

CASE REPORT

A 50-year-old Brazilian female presented with 6 months of lower extremity paresis (not walking for the past 2 months) accompanied by 1 week of urinary and fecal incontinence. On examination, the patient

had diffuse lower extremity weakness, hyperactive reflexes with bilateral Babinski responses, and absent vibratory/proprioception at the T10 level. A computed tomography (CT) scan showed extensive thoracic OPLL extending from the T2–T4 levels, with some fractures within the OPLL mass [Figure 1].

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Figure 1: Computed tomography in sagittal section, bony window. There was extensive and gross high-density lesion suggesting calcification of the posterior longitudinal ligament causing reduction in the vertebral canal caliber, especially at T2–T4 levels

The patient underwent an emergent C7-T5 laminectomy to decompress the spinal cord. One week postoperatively, her paraparesis improved (e.g., regarding motor/sensory findings): the patient started to walk again. Six months later, the patient exhibited continued improvement in her motor deficit and sphincter dysfunction.

DISCUSSION

OPLL is almost exclusively found in the Japanese, Chinese, and Korean patients; the prevalence is between 1.9% and 4.8% in the Japanese literature, but it also occurs in the Caucasian American population (e.g., 0.12%).^[3,7] Multiple genetic factors contribute to thoracic OPLL (T-OPLL); rs201153092 and rs13051496 in the COL6A1 gene; and rs199772854, rs76999397, and rs189013166 in the IL17RC gene.^[8] Although T-OPLL typically presents as a slowly progressive condition, up to 10% may become acutely symptomatic from severe spinal cord compression.^[5,7]

Thoracic ossification of the posterior longitudinal ligament types

T-OPLL is subclassified into flat or nozzle types; The flat type is continuous or mixed T-OPLL and presents as sharp protrusions behind the disk space.^[1] CT usually shows early signs of ossification, including multiple small areas of bony pearls contained within the PLL that increasingly coalesce to form OPLL.

Surgery for thoracic ossification of the posterior longitudinal ligament

Surgical for T-OPLL may be warranted to relieve spinal cord compression.^[1] There are various surgical options for T-OPLL documented on both CT and magnetic resonance (MR): a sternum splitting

approach, an anterior decompression through a lateral, a subscapular approach, an anterolateral decompressive transversectomy, a posterior decompressive laminectomy or laminoplasty, a circumferential decompression through a posterior approach, a posterior decompression with internal fixation, and a circumferential (e.g., posterior and/or anterior decompression).^[6,9] MR imaging may also assist in planning an anterior versus posterior approach as it best documents the ossification-kyphosis angle.^[2] Dural ossification/penetration of the dura with T-OPLL is another concern, as it increases surgical risks/complications for an accompanying cerebrospinal fluid (CSF) fistula. Surgery can improve neurological functional in up to 50.4% of patients. However, functional improvement is associated with a 39.4% complication rate including predominantly CSF leakage and greater neurological dysfunction.

CONCLUSION

About 10% of patients with T-OPLL may present with acute paraparesis and sphincter dysfunction. The diagnostic work-up should include both MR and CT studies. Surgical management should depend on the type/location of the T-OPLL and may include anterior, posterior, and/or circumferential surgery with/without fusion.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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