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Case Report

A Case Report on Cervical Canal Stenosis Secondary to Ossification of Posterior Longitudinal Ligament

Korikani Lavanya*, Galanki Arundathi Kavya, Shaik Muskan, Kriti Suberi Chettri, Chinta Nageswara Rao

Department of Pharmacy Practice, Nirmala College of Pharmacy, Atmakur, Mangalgiri, Guntur, Andhra Pradesh, INDIA.

ABSTRACT

Cervical canal stenosis secondary to Ossification of the Posterior Longitudinal Ligament (OPLL) is a progressive condition that can lead to significant spinal-cord compression and neurological deficits. This case report describes a 57-year-old female who presented with back pain radiating to both lower limbs, associated with limb weakness, numbness, and difficulty in walking. The patient had a medical history of diabetes mellitus and hypertension. Clinical examination revealed reduced muscle power in both upper and lower limbs. Magnetic Resonance Imaging (MRI) of the cervical spine demonstrated multilevel (C3-C7) disc bulges with spinal-cord compression and features suggestive of OPLL, along with additional findings in the dorsal and lumbar spine. Based on clinical and radiological findings, a diagnosis of cervical canal stenosis secondary to OPLL was established. The patient underwent posterior cervical decompression with C3 to C7 laminectomy and lateral mass fusion. Postoperative management included antibiotics, analgesics, proton pump inhibitors, and supportive therapy. The patient showed gradual clinical improvement following surgical intervention. This case highlights the importance of early diagnosis, timely surgical management, and multidisciplinary care in improving outcomes in patients with OPLL-associated cervical canal stenosis.

Keywords: Cervical canal stenosis, Ossification of the posterior longitudinal ligament, Laminectomy.

Correspondence:
Korikani Lavanya
Department of Pharmacy Practice, Nirmala College of Pharmacy, Atmakur, Mangalgiri, Guntur-522503, Andhra Pradesh, INDIA.
Email: korikanilavanya@gmail.com

INTRODUCTION

Neural structures are compressed because of cervical canal stenosis, a disorder marked by the spinal canal narrowing in the neck area (Morishita *et al*., 2011). Ossification of the Posterior Longitudinal Ligament (OPLL), a degenerative process in which the ligament progressively becomes calcified, is one of the major causes of this disorder (Harsh *et al*., 1987). As a result, the spinal cord has less room, which might cause an increase in neurological disability. The illness frequently progresses slowly and may not show any signs at first, but with time, it may manifest as symptoms that interfere with everyday activities and movement. Early detection is becoming increasingly possible thanks to the growing use of sophisticated imaging methods like Magnetic Resonance Imaging (MRI), which enables prompt intervention and improved therapeutic results.

CASE REPORT

A 57-year-old female patient presented to the neurosurgery department with complaints of back pain radiating to both lower limbs for 20 days, associated with bilateral lower limb weakness, right leg numbness, and numbness in the right upper limb. She also had a history of fever 25 days before admission and reported difficulty in walking, along with a restricted range of movements. The patient was admitted for further evaluation and management of her symptoms.

The patient had a significant past medical history of type 2 diabetes mellitus for 11 years and hypertension for 3 years, for which she was on regular medication, including metformin, glimepiride, and a combination of telmisartan with hydrochlorothiazide. There was no significant family history of similar neurological conditions. Her surgical history included a tubectomy at the age of 30 years. Personal history revealed normal appetite, regular bowel and bladder habits, and adequate sleep.

On physical and systemic examination, the patient was conscious and orientated. Vital parameters were stable throughout hospitalization. Neurological examination revealed reduced muscle power (3/5) in both upper and lower limbs bilaterally. Cardiovascular and respiratory-system examinations were within normal limits, and the abdomen was soft and nontender. No focal neurological deficits were observed apart from limb weakness.

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MRI of the cervical spine with screening of the dorsal and lumbar spine revealed secondary cervical spinal canal stenosis with multilevel (C3-C7) diffuse disc bulges causing effacement of the anterior subarachnoid space and compression of the spinal cord with associated cord edema. In the dorsal spine, ligamentum flavum hypertrophy was noted at D10-D11 and D11-D12 levels, causing spinal-cord compression. Lumbar spine imaging showed diffuse disc bulges at L1-L2, L2-L3, and L5-S1 levels, leading to thecal sac indentation and bilateral L2 nerve root compression.

Based on clinical presentation and radiological findings, the case was diagnosed as cervical canal stenosis secondary to OPLL. The primary etiologic factors identified were advanced age and degenerative changes associated with OPLL.

The patient was managed surgically with posterior cervical decompression and stabilization, specifically C3 to C7 lateral mass fusion with C3 to C7 laminectomy. Postoperatively, the patient received intravenous ceftriaxone for infection prophylaxis, tramadol for pain management, pantoprazole for gastric protection, diclofenac as needed for inflammation, tranexamic acid for hemostasis, and calcium with vitamin D supplementation. Pregabalin with methylcobalamin was administered for neuropathic pain relief (Table 1).

During hospitalization, the patient's condition improved gradually with stabilization of symptoms and reduction in pain. Pharmacist interventions included monitoring for drug interactions, assessment of adverse drug reactions, and ensuring appropriate dosing and therapeutic monitoring, such as complete blood count, renal function tests, and liver function tests.

At discharge, the patient was prescribed tramadol with acetaminophen for pain relief, pantoprazole for gastric protection, paracetamol as needed, cefixime as an antibiotic, along with continuation of antidiabetic and antihypertensive medications. The patient was advised on medication adherence, physiotherapy, lifestyle modifications, and regular follow-up for neurological assessment.

Table 1: Medication chart.

Sl. No.	Drug name	Dose	Route	Frequency	Indication
1.	INJ. Ceftriaxone	2 g	IV	1-0-1	To prevent postoperative infections.
2.	INJ. Tramadol	50 mg	IV	1-1-1	For pain relief.
3.	INJ. Pantoprazole	40 mg	IV	OD	For gastric protection.
4.	INJ. Diclofenac	75 mg	IM	SOS	To reduce inflammation.
5.	INJ. TRANEXA (tranexamic acid)	1 amp 500 mg	IV	1-1-1	To prevent bleeding.
6.	TAB. SHELCAL-HD (calcium 500 mg+VitD3-500IU)	1tab	PO	OD	To improve bone strength.
7.	TAB. PBREN-M (pregabalin + methylcobalamin)	75 mg + 750 µg	PO	HS	For neuropathic pain.
8.	TAB. Ultracet® (tramadol + acetaminophen)	1tab (37.5 + 325 mg)	PO	1-0-1	For postoperative pain.
9.	TAB. ZERODOL-P (aceclofenac + paracetamol)	1tab (100 + 500 mg)	PO	1-0-1	To reduce inflammation.
10.	TAB. PANTOP (pantoprazole)	40 mg	PO	1-0-0	For gastric protection in oral therapy.
11.	TAB. Metformin-HCL	1,000 mg	PO	1-0-0	To control blood sugar levels.
12.	TAB. Glimepiride	2 mg	PO	1-0-0	To control blood sugar levels.
13.	TAB. Telmisartan + hydrochlorothiazide	40/12.5 mg	PO	1-0-0	For blood pressure control.

DISCUSSION

Cervical canal stenosis secondary to OPLL is a progressive spinal disorder characterized by abnormal calcification of the posterior longitudinal ligament, leading to narrowing of the spinal canal and compression of the spinal cord. This condition is more commonly observed in middle-aged and elderly individuals and has a higher prevalence in Asian populations (Matsunaga and Sakou, 2012). The pathogenesis involves degenerative changes, genetic predisposition, metabolic disorders such as diabetes mellitus, and mechanical stress on the spine (Harsh *et al.*, 1987).

Clinically, patients with OPLL present with symptoms of cervical myelopathy, including neck pain, limb weakness, numbness, gait disturbances, and loss of fine motor skills. In advanced cases, spinal-cord compression can lead to significant neurological deficits. In the present case, the patient exhibited typical features such as bilateral limb weakness, sensory disturbances, and difficulty in ambulation, which are consistent with cervical myelopathy.

Magnetic resonance imaging plays a crucial role in diagnosis by demonstrating spinal canal narrowing, ligament ossification, and cord compression. Multilevel involvement, as seen in this case (C3-C7), is commonly associated with severe clinical manifestations. Early diagnosis is essential to prevent irreversible neurological damage (Wilson *et al.*, 2013).

Surgical management remains the gold standard for patients with moderate to severe symptoms or progressive neurological deficits. Posterior decompression procedures such as laminectomy with lateral mass fusion are commonly performed to relieve spinal-cord compression and stabilize the spine. In this patient, surgical intervention resulted in clinical improvement, highlighting the effectiveness of timely surgical management (Matsunaga and Sakou, 2012).

Pharmacological therapy plays a supportive role in managing pain, inflammation, and associated comorbid conditions. Postoperative care includes infection prevention, pain control, and rehabilitation. Pharmacist involvement is crucial in optimizing drug therapy, monitoring adverse effects, and improving patient outcomes.

CONCLUSION

This case emphasizes the clinical significance of cervical canal stenosis secondary to OPLL as a cause of progressive neurological deficits in elderly patients. Comprehensive evaluation, including detailed clinical assessment and radiological imaging, is essential for accurate diagnosis. Early surgical intervention plays a crucial role in relieving spinal-cord compression and preventing permanent disability. Postoperative management, along with appropriate pharmacological therapy and rehabilitation, contributes to improved patient recovery and quality of life. This case also highlights the importance of a multidisciplinary approach, including pharmacist involvement, in optimizing patient care and ensuring better therapeutic outcomes.

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ABBREVIATIONS

OPLL: Ossification of the Posterior Longitudinal Ligament; **MRI:** Magnetic Resonance Imaging; **C3–C7:** Cervical Vertebrae 3 to 7; **D10–D12:** Dorsal Vertebrae 10 to 12; **L1–L5:** Lumbar Vertebrae 1 to 5; **IV:** Intravenous; **IM:** Intramuscular; **PO:** Per Oral; **OD:** Once Daily; **HS:** At Bedtime; **SOS:** As Needed; **CBC:** Complete Blood Count; **RFT:** Renal Function Test; **LFT:** Liver Function Test.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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