

Posterior Neck Pain and Shoulder Hypoesthesia Caused By C3,4,5 radiculopathies: a Case Report

Jun Yeon Lee, Dong Hwee Kim* (rmkdh@chol.com)

Department of Physical Medicine and Rehabilitation, Korea University College of Medicine



INTRODUCTION

C3,4 radiculopathy is a rare condition, characterized by compression or irritation of the nerve root that exit the spinal cord at the C3-4 level of the cervical spine and can result in various symptoms, including pain, weakness, and numbness in the neck, shoulder, and arm. C3,4 radiculopathy is relatively uncommon compared to other levels of cervical radiculopathy such as C5/6 or C6-7 and can be challenging to diagnose due to its nonspecific symptoms and it can be attributed to other conditions such as shoulder or neck pain.

CASE REPORT

Patient information

- Female, 64 years old

Chief complaint

- Posterior neck pain, left upper extremity radiating pain and shoulder hypoesthesia (Onset: 6 months ago)

Physical examination

- Motor : **Grossly intact (shoulder, elbow, wrist, and finger)**
- Sensory : **Light touch, pinprick - Lt. shoulder paresthesia**
- DTR(BJ, BRJ, TJ): **++/+,**
- Pathologic reflex: **Hoffman sign -/+**

Previous management history

- Laminoplasty C4-6 (6 months ago)

Tests

- Initial MRI: C3/4 - Central disc protrusion
C4/5 - Left central disc extrusion with posterior osteophytes, and hypertrophy of ligamentum flavum, causing severe central canal spinal stenosis and compressive myelopathy.
- follow-up MRI after surgery: Well decompressive state of central canal. Residual myelopathy in left side with atrophic change.

IMAGING and ELECTRODIAGNOSTIC STUDY

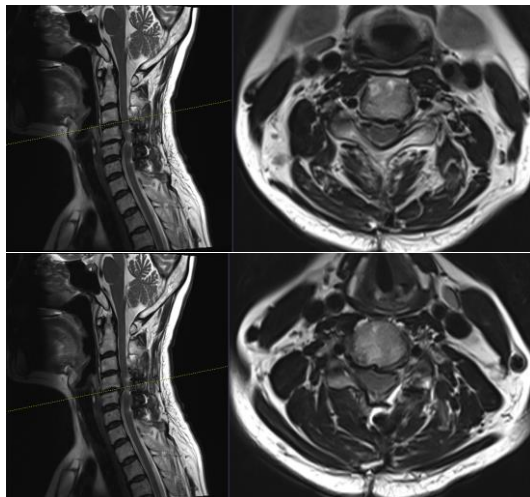


Figure 1. Follow-up cervical spine MRI after C4-6 laminoplasty revealed decompressive state of central canal and residual myelopathy in left side with atrophic change. Also, there is No unusual post operative finding. In initial MRI, central disc protrusion of C3/4 level and left central disc extrusion with posterior osteophytes, and hypertrophy of ligamentum flavum, causing severe central canal spinal stenosis and compressive myelopathy of C4/5 was noted. Bilateral uncovertebral hypertrophy resulting in neural stenosis was noted.

Motor		Stimulation site	Recording site	Latency (msec)	Amplitude (uV)
Side	Nerve				
Lt.	Phrenic	Posterior border of the SCM	Diaphragm	7.6	0.1*
Rt.	Phrenic	Posterior border of the SCM	Diaphragm	6.3	0.5

Muscle	Insertional activity / Abnormal spontaneous	Motor unit action potentials			Recruit ment
		Configuration	Amplitude	Duration	
SCM	N	Polys	-	-	R
Upper trapezius	N	Polys	-	-	R
Rhomboid	N	Polys	-	-	R
Lt. Deltoid	N	N	N	N	F
Biceps brachii	N	N	N	N	F
Pronator teres	N	N	N	N	F
Rt. SCM	N	N	N	N	F

Table 1. Nerve conduction study and needle electromyography. Left phrenic nerve motor response was of low amplitude compared to contralateral side. Polyphasic MUAPs with reduced recruitment patterns were noted in left SCM, upper trapezius and rhomboid muscles. (Phrenic nerve conduction reference value: Amplitude > 0.4mV, Markand ON et al. Electrophysiologic evaluation of diaphragm by transcutaneous phrenic nerve stimulation. Neurology 1984; 34: 604-614.)

DISCUSSION & CONCLUSION

In this case, left upper extremity radiating pain and shoulder paresthesia of the patient was caused by upper cervical radiculopathies, including C3,4 radiculopathies. The diagnostic challenges associated with this condition stem from its nonspecific symptoms and its rarity compared to other levels of cervical radiculopathy. Through a thorough history taking, physical examination, imaging findings, and detailed electrodiagnostic study, we were able to accurately diagnose and manage the patient's condition.

The importance of accurate physical examination and detailed electrodiagnostic studies in diagnosing C3,4 radiculopathy cannot be understated, as it can present similarly to other conditions such as neck or shoulder pain. In this case, the patient had already undergone laminoplasty C4-6 without resolution of symptoms, emphasizing the need for accurate diagnosis to guide appropriate treatment strategies.

Further research and case reports are needed to better understand the pathophysiology of C3,4 radiculopathy and to optimize its management. By increasing awareness of this rare condition and improving diagnostic accuracy, healthcare professionals can better address the needs of patients with C3,4 radiculopathy and ultimately enhance their quality of life.