

Case Report of a Patient with Cervical Radiculopathy and a Deceptive Magnetic Resonance Imaging

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ABSTRACT

Introduction: Cervical disk herniation causes neck pain and arm pain due to direct impingement of nerve roots along with the associated inflammation. Clinical features generally correspond to the side of herniation.

Case description: Our case report is about a 38-year-old female, schoolteacher by occupation presenting to hospital with neck pain radiating to right upper limb with tingling sensation along the C5 and C6 nerve root distribution. Magnetic resonance imaging of cervical spine showed posterolateral protrusion in C3–C4, C4–C5, C5–C6, disk compressing exiting nerve roots left more than right along with osteophytes causing canal stenosis.

Keywords: Cervical disk herniation, Cervical radiculopathy, Magnetic resonance imaging spine.

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INTRODUCTION

Intervertebral disks are structures found in between the vertebral bodies extending from neck to sacrum. Disk absorbs the stress applied to spinal column and allows six degrees of freedom of motion where the largest amount of motion occurs in the sagittal plane, i.e., flexion and extension.¹ At the level of cervical spine, range of motion that occurs includes 50° of flexion, 60° of extension, 45° of lateral flexion, and 80° of rotation.¹

Disk is composed of two parts, nucleus pulposus in the center which provides cushion and annulus fibrosus forming the outer portion mainly maintaining disk height and attaches to the vertebral bodies above and below.^{2,3} One of the most common problems associated with disk is disk herniations, which are abnormal protrusions of a portion of disk material.

Cervical disk can prolapse (rupture or herniation) without any symptoms or may produce neck pain, compression of the nerve root (radiculopathy), or compression of spinal cord (myelopathy).² Disk herniation occurs when flexion, extension, rotation, and their combined movements exceed the strength of annulus fibrosus and the supporting anterior and posterior ligaments. Cervical flexion produces maximum compressive force on the disk.³ When the disk becomes less hydrated, the annular fibers become stiffer and they crack. In such a situation, any increase in intradiskal pressure causes nucleus pulposus to escape through the cracked annular fibers.⁴ Most common site for herniation to occur is posterolaterally as the posterior longitudinal ligament is weak in comparison with other structures containing the disk.⁵

CASE DESCRIPTION

A 38-year-old female patient, teacher by occupation, presented to our outpatient department with complaints of pain in the neck radiating to the right upper limb for the past 2 weeks. The numerical rating scale was 10. Patient also gave history of tingling sensation along the outer part of arm, outer part of forearm extending up to right thumb. Pain was continuous, aggravated by writing on blackboard or in book and doing household activities such as cooking, moping floor, and

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washing vessels and relieved only minimally with medication. Application of crepe bandage provided little relief. Pain was more during the night in comparison with daytime and she presented with tactile allodynia so much so that she could not wear full-sleeve dress. Pain detect tool score was 13 indicating neuropathic type of pain, and patient health questionnaire 9 score was 8 which indicated mild depression. Patient was a known case of hypothyroidism on tablet thyroxine 75 µg once daily, known case of type II diabetes mellitus for 5 years on fixed dose insulin regime, and a known hypertensive for 2 years on tablet cilnidipine 10 mg once a day.

On examination, there was nothing obvious on inspection. Flexion of neck increased pain. There was tenderness in the right and left paramedian regions at C3–C6 levels, but right was more tender than the left. There was tenderness in the trapezius muscle on both sides, but right was more tender than the left. Spurling test and Jackson compression test were positive on the right side. Relief sign was positive on the right side.

Sensations in the distribution of C5 and C6 regions were reduced on the right side. Tone and power of muscles were normal bilaterally. Biceps and supinator reflexes were diminished on the right side, while it was normal on the other side.

Patient had undergone a magnetic resonance imaging (MRI) of cervical spine (Figs 1 and 2) which revealed degenerative disk changes at C3–C4, C4–C5, and C5–C6 levels, compressing exiting

nerve roots left more than right, further contributed by osteophytes at uncovertebral joints causing canal stenosis.

DISCUSSION

Cervical disk herniation is a progressive disorder which typically presents as pain in the neck and arm involving ipsilateral myotomes and dermatomes corresponding to the cervical level affected.⁶ Our patient's presentation was unusual as she presented with

neck pain and right-sided symptoms. Herniation could lead to compression of nerve root at spinal level producing cervical radiculopathy. In a study by Kobayashi et al.,⁷ contralateral loss of pain and temperature with ipsilateral weakness was seen in a patient with cervical disk herniation. In our study, we could find sensory loss on side opposite to the MRI report, but there was no ipsilateral motor weakness unlike in their study. The spinothalamic tract carrying sensory signal enters the dorsal horn of the corresponding spinal level and synapses with secondary neurons. The secondary neurons cross over to the opposite side through the anterior white commissure and ascend up to terminate at the ventral posterolateral nucleus, ventral posterior oralis nucleus, ventral posterior inferior nucleus, and posterior part of ventral medial nucleus of thalamus.⁸ The lateral spinothalamic tract is of greater clinical significance than the anterior spinothalamic tract as it transmits impulses concerned with pain. We propose the possibility of this tract being affected by the disk herniation at the multiple cervical levels resulting in the symptoms unusual from expected site of occurrence.

CONCLUSION

In summary, our patient had neck pain radiating to right upper limb with reduced sensation and reflexes on the right side with MRI cervical spine showing disk herniation at multiple levels with compression of exiting nerve roots on the left side more than the right side. Magnetic resonance imaging can be of great help in diagnosing the disease process, but relying exclusively on it



Fig. 1: Magnetic resonance imaging of cervical spine (lateral view)

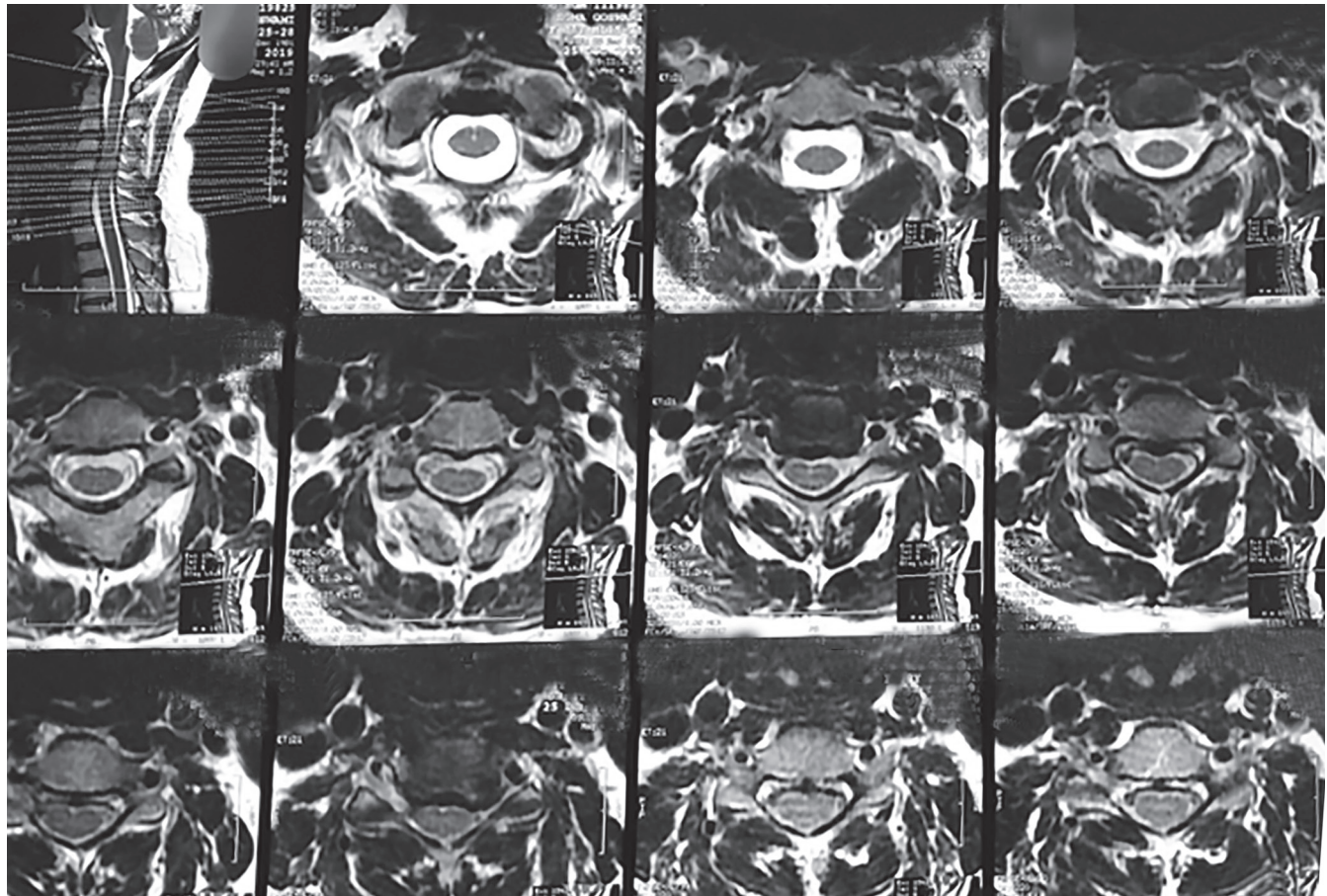


Fig. 2: Magnetic resonance imaging of cervical spine (different sections)

might be unfruitful and deceptive like in our case report. Hence, clinical examination must be given prime importance to reduce the likelihood of misdiagnosis and unwanted treatment.

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