Intradural Disc Herniation: A Case Study

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ABSTRACT

Intradural disc herniation is often observed in the lumbar area, accounting for nearly 90% of all cases. Less than 5%, however, happen in the thoracic or cervical areas[1]. We report a case of an intradural thoracic disc herniation at the T5–T6 level that resulted in a progressive onset neurological impairment; the intradural nature of the pathology was identified on preoperative Magnetic resonance imaging (MRI) revealed displacement and compression of the thoracic spinal cord at T5-T6 caused by a large central mass lesion.

A non-surgical approach was settled with clinical and radiological follow up.

Keywords: intradural; disc herniation; surgery;

INTRODUCTION

Intradural disc herniation is a rare and severe condition involving the displacement of intervertebral disc material into the intradural space, This type of herniation is less common than extradural disc herniation and presents unique diagnostic and therapeutic challenges [1],

Degenerative changes in the intervertebral discs, such as annulus fissures, prolapse, or endplate fracture, are often the underlying cause of intradural disc herniation [2]

Intradural disc herniations (IDH) are uncommon, accounting for only 0.27% of all ruptured discs. They mostly affect the lumbar spine (more than 90% of cases), with only 5% occurring in the thoracic spine [3].

This condition can lead to significant neurological deficits and requires prompt diagnosis and appropriate treatment.

In this current paper, we reported a rare case of T5 – T6 thoracic disc herniation occuring in a 43 – year – old woman.

Case Report

A 43-year-old woman with a 2-months history of left leg weakness and paresthesia was brought to our neurosurgical department. Her sensations in the bladder and bowel were normal. She had been experiencing radiation to her left leg and buttock for the past two months as her back pain, which had been there for several years, grew worse. There was no prior spinal surgery, fever, or trauma history. On examination, the left lower extremity was found to be hypotonic. The left side had 4/5 power in the hip and 4/5 power in the knee. She demonstrated 4/5 ankle plantarflexion, and 4/5 ankle dorsiflexion. On the left, there was no ankle jerk, and the L4 distribution showed less pinprick and light touch sensitivity on the left.

On the left, proprioception was likewise diminished. The rectal exam revealed no saddle anesthesia and was normal. The results of the neurological evaluation for the upper limbs and right leg were normal. Interestingly, the right leg showed no signs of sensory loss.

Magnetic resonance imaging (MRI) pre- and postcontrast revealed displacement and compression of the thoracic spinal cord at T5 – T6 due to a large central degenerative disc herniation (fig 1) ; The lesion was

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isointense on T1 and hypointense on T2, T1-weighted postgadolinium-enhanced MRI showed no enhancement of the intradural component.

A somaesthetic evoked potentials in all 4 limbs, was performed and shows damage to lemniscal pathways in the lumbodorsal region (fig 2)

After clearly informing the patient of the treatment modalities and the natural evolution of her pathology, and given the absence of motor deficit on neurological examination, a clinical and radiological follow up without undergoing surgery was settled.

At a 6-month follow-up, there was a relief of leg and back pain, the patient showed significant sensitive improvement.

DISCUSSION

Intradural thoracic disc herniation, is a very uncommon clinical condition that has mostly been documented in case reports [4, 5, 6].

While magnetic resonance imaging (MRI) is the ideal modality for detecting disc herniation, its imaging resolution might not be sufficient to preoperatively identify the intradural component of the disc herniation [7, 8].

More than 80 % of disc herniations occur during the third to fifth decades of life. Their localisation in the thoracic spine accounts for only 0.15 to 4.0 % of cases involving mostly T6 – T11 region [8].

Clinical presentation consists commonly in back and radicular pain, sensory impairment, and/or motor changes [3].

Intradural disc herniation in the lumbar region is a well-recognized entity because more than 90% of all intradural herniations occur there [8]. Less than 5% occur in either the cervical or thoracic regions [8].

Several anatomical factors have been described that predispose to intradural disc herniation. The most consistent of these are adhesions between the annulus fibrosus, posterior longitudinal ligament and dura mater, which may be anatomically present or occur secondary to chronic disc protrusion [2].

A chronic process is established in the majority of intradural herniation whereupon the intradural discs become heavily calcified [4].

In the thoracic region this calcification contributes to their ability to cause gradual intradural erosion, thus allowing thoracic intradural discs to commonly present with relatively minor spinal cord compression given the narrowness of the thoracic spine.

For investigating disc protrusion, contrast-enhanced MRI is the most useful imaging tool. The preoperative diagnosis of disc herniation in the thoracic spine is uncommon. It's worth taking into consideration if there's a lot of calcified disc material visible in the spinal canal [5,8].

Intervertebral Disc Herniation (IDH) can be challenging to diagnose, but several MRI features have been identified to aid in preoperative diagnosis. After gadolinium administration, the most frequent finding is a ring enhancement pattern, attributed to peripheral neovascularization and chronic granulation tissue. However, this appearance can also be observed in other spinal tumors, such as schwannomas. In T2-weighted sequences, a distinct sharp or hawk beak-shaped appearance is a characteristic indicator of IDH.

Another common preoperative sign of IDH is the presence of "crumb disc," caused by an irregularly bordered mass.

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IDH is classified into two types based on its anatomical characteristics. Type A involves disc herniation protruding into the dural sac, commonly found in the lower cervical and lumbar regions. Type B occurs when the disc herniates through the dural sheath of the nerve roots, making it diagnosable only during surgery. The primary treatment for IDH is surgical removal of the herniated disc material, with careful attention to the dura mater and nerve roots during the procedure to avoid complications [9].

Conservative therapy is usually enough to treat the symptoms caused by a disc herniation. This mainly involves exercise, relaxation and positioning, painkillers in tablet form or as injections, and manual and physical therapy [10].

CONCLUSION

We described a rare case of a woman with thoracic intradural disc herniation at T5 – T6 who presented with left leg weakness and paresthesia.

A non-surgical approach was conducted and the patient had good neurologic recovery and remains pain-free 6 months later.

CONFLICTS OF INTEREST

The authors declare that they have no financial or other conflicts of interest in relation to this research and its publication.

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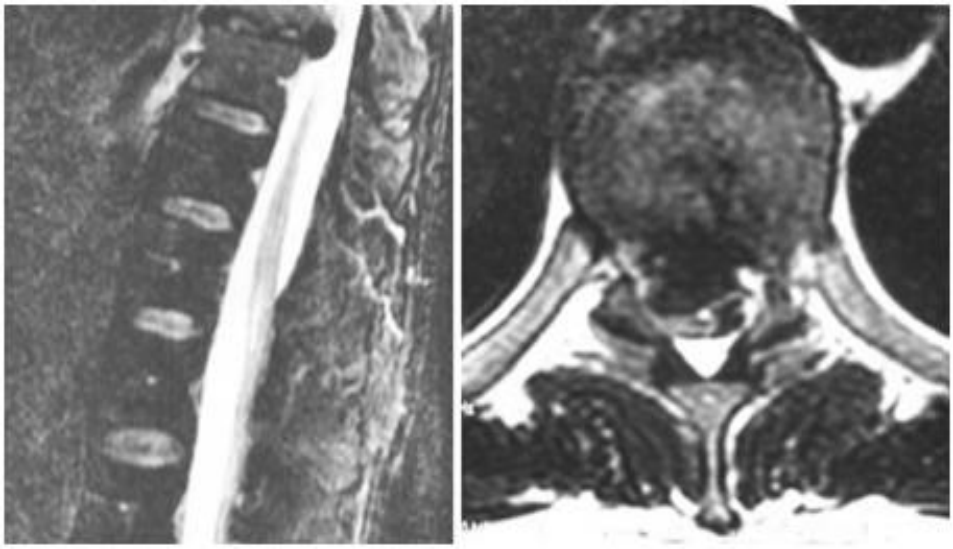
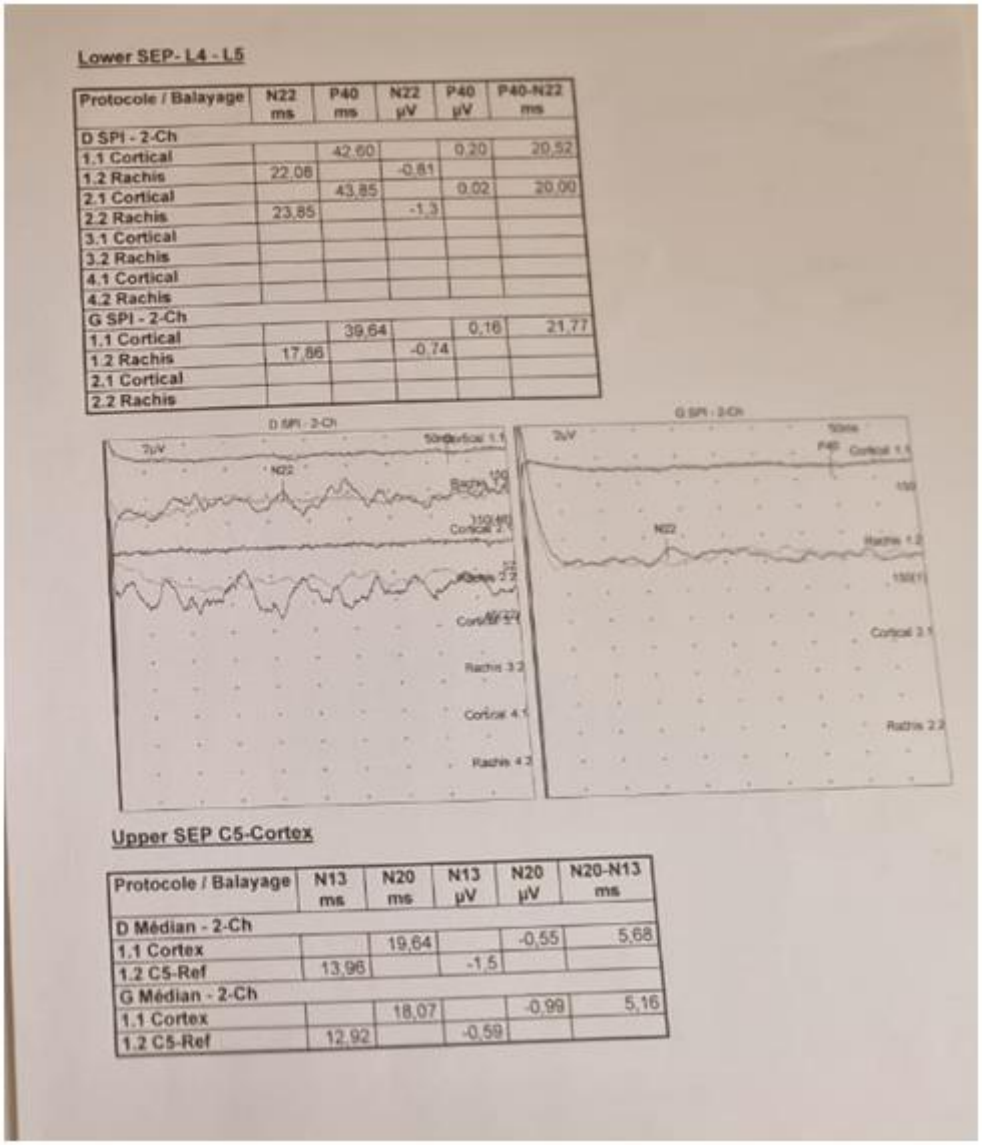
FIGURES



spinal T2-weighted MRI: bulging thoracic disc herniation at the T5–T6 level



Lower SEP- L4 - L5

Protocole / Balayage	N22 ms	P40 ms	N22 µV	P40 µV	P40-N22 ms
D SPI - 2-Ch					
1.1 Cortical		42,60		0,20	20,52
1.2 Rachis	22,08		-0,81		
2.1 Cortical		43,85		0,02	20,00
2.2 Rachis	23,85		-1,3		
3.1 Cortical					
3.2 Rachis					
4.1 Cortical					
4.2 Rachis					
G SPI - 2-Ch					
1.1 Cortical		39,64		0,16	21,77
1.2 Rachis	17,86		-0,74		
2.1 Cortical					
2.2 Rachis					

Upper SEP C5-Cortex

Protocole / Balayage	N13 ms	N20 ms	N13 µV	N20 µV	N20-N13 ms
D Médian - 2-Ch					
1.1 Cortex		19,64		-0,55	5,68
1.2 C5-Ref	13,96		-1,5		
G Médian - 2-Ch					
1.1 Cortex		18,07		-0,99	5,16
1.2 C5-Ref	12,92		-0,59		

A somaesthetic evoked potentials in all 4 limbs, was performed and shows damage to lemniscal pathways in the lumbodorsal region