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Intramedullary Spinal Cord Lipoma Presenting as Chronic Non-Traumatic Compressive Myelopathy: A Case Report

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Abstract | **Case Report**

Intramedullary spinal cord lipomas are rare benign lesions, accounting for less than 1% of all spinal cord tumors. Most cases are associated with spinal dysraphism, whereas nondysraphic forms in adults are exceptional. To describe the clinical and magnetic resonance imaging [MRI] features of a nondysraphic dorsal intramedullary lipoma in a 54-year-old woman presenting with chronic compressive myelopathy. Clinical findings and spinal MRI performed on a 1.5-T system were analyzed, with emphasis on lesion signal characteristics and compressive features. MRI demonstrated a well-defined dorsal intramedullary lesion hyperintense on T1- and T2-weighted images, with complete signal suppression on fat-saturated sequences and no post-contrast enhancement, consistent with intramedullary lipoma. The lesion caused spinal cord expansion and compressive effect. Intramedullary lipoma should be considered in cases of chronic non-traumatic spinal cord compression. MRI provides definitive diagnosis and is essential for therapeutic planning.

Keywords: Intramedullary lipoma; Spinal cord tumor; MRI; Compressive myelopathy; Dorsal spine; Fat suppression.

INTRODUCTION

Intramedullary spinal cord lipomas are rare benign lesions composed of mature adipose tissue [1]. They represent less than 1% of spinal cord tumors and are more frequently diagnosed in pediatric populations [2].

Most intramedullary lipomas are associated with spinal dysraphism. Nondysraphic intramedullary lipomas in adults are uncommon and often present with slowly progressive neurological symptoms [3,5].

Clinical manifestations are typically related to chronic spinal cord compression, resulting in progressive sensory and motor deficits [4]. Magnetic resonance imaging [MRI] is the imaging modality of choice, allowing accurate tissue characterization and differentiation from other intramedullary tumors [2,6].

We report a case of dorsal nondysraphic intramedullary lipoma in a 54-year-old woman presenting with progressive compressive myelopathy.

Spinal MRI was performed using a 1.5-T system [GE Healthcare] with a dedicated phased-array spine coil. The patient was examined in the supine position.

CASE PRESENTATION

A 54-year-old woman presented with a several-month history of progressive neurological symptoms. She reported bilateral lower limb numbness and progressive gait disturbance. There was no history of trauma, fever, or systemic symptoms.

Clinical examination revealed a dorsal spinal syndrome characterized by a thoracic sensory level and progressive bilateral lower limb hypoesthesia. Signs of spinal cord compression were present, without sphincter dysfunction at the time of evaluation.

Spinal MRI demonstrated a well-circumscribed fusiform intramedullary lesion at the dorsal level, causing spinal cord enlargement. The lesion was homogeneously hyperintense on T1-weighted images and hyperintense on T2-weighted images. Complete signal suppression was observed on STIR and fat-saturated sequences [figure1].

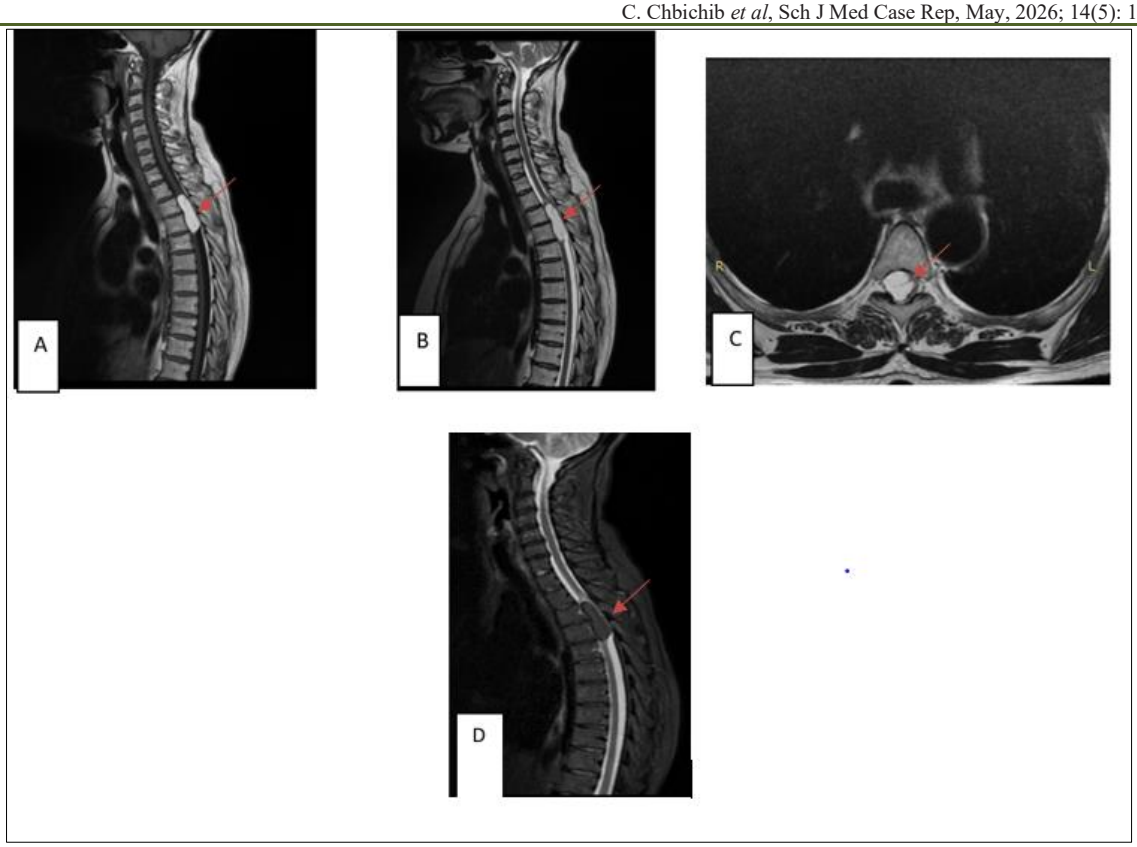

Figure 1: Sagittal spinal MRI. [A] T1-weighted image demonstrates a hyperintense intramedullary lesion at the mid-dorsal level causing cord expansion. [B][C] sagittal and axial T2-weighted image confirms hyperintensity without surrounding edema. [D] STIR sequence shows complete signal suppression, consistent with fatty tissue

No enhancement was detected following gadolinium administration [figure 2].

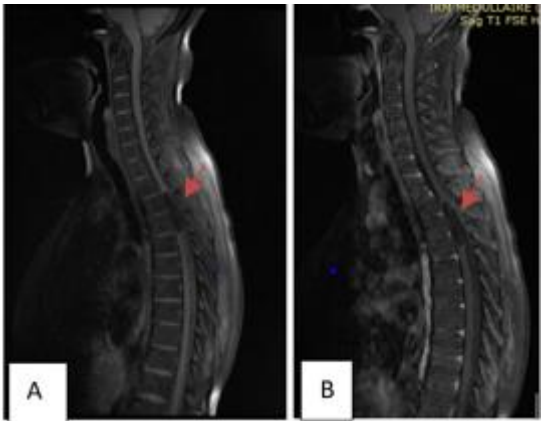

Figure 2: Sagittal T1 fat-saturated MRI images of the thoracic spinal cord before [A] and after [B] gadolinium administration. The intramedullary lesion is hypointense on T1 FS and shows no contrast enhancement, causing compression of the adjacent spinal cord

These imaging findings were highly suggestive of a nondysraphic intramedullary lipoma.

DISCUSSION

Intramedullary lipomas are rare benign lesions considered developmental malformations rather than true neoplasms, resulting from abnormal inclusion of mesenchymal tissue during neural tube closure [1,3].

Nondysraphic forms in adults are particularly rare and typically present with a slowly progressive clinical course [5]. The gradual onset of bilateral sensory disturbances and progressive myelopathy observed in our patient is characteristic of chronic spinal cord compression [4].

The dorsal spinal cord is one of the most frequently involved regions in nondysraphic intramedullary lipomas [2]. Progressive neurological

deterioration results from slow lesion enlargement within the confined spinal canal.

MRI plays a pivotal role in diagnosis. The hallmark imaging feature is marked T1 hyperintensity with complete suppression on fat-saturated sequences, confirming adipose tissue composition [6].

Differential diagnoses include ependymoma, which typically shows contrast enhancement and may be associated with cystic components or hemorrhage; astrocytoma, often presenting as an infiltrative lesion with heterogeneous enhancement; and dermoid cyst, which may contain fat but generally demonstrates a mixed internal composition. The absence of contrast enhancement and lack of perilesional edema strongly favor lipoma [2].

Surgical management remains controversial. Because these lesions are frequently adherent to neural tissue, complete excision carries a significant risk of neurological deterioration. Subtotal decompressive resection is generally recommended when progressive deficits occur [5].

Prognosis depends primarily on preoperative neurological status and duration of symptoms [4]. Early recognition is therefore essential to prevent irreversible spinal cord damage.

CONCLUSION

Non dysraphic intramedullary lipoma is a rare cause of chronic non-traumatic spinal cord compression in adults. MRI provides definitive diagnosis by demonstrating characteristic fat signal intensity and absence of contrast enhancement.

Early diagnosis and appropriate management are essential to prevent permanent neurological deficits.

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