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Unusual Presentation of a Transdural Spinal Cord Herniation

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Abstract **Case Report**

Idiopathic transdural spinal cord herniation (ITSCH) most commonly occurs through a ventral dural defect at the midthoracic levels with a predilection to affect middle-aged females. It can have various presentations, the most common of which are Brown-Sequard syndrome and spastic paraparesis. Due to its rarity in clinical practice, the diagnosis of ITSCH can be challenging to physicians unfamiliar with this entity. We report an unusual presentation of an ITSCH in a 23-year-old female. The diagnosis was made based on the findings of the spinal cord magnetic resonance.

Keywords: Dural defect; idiopathic transdural spinal cord herniation; spinal cord magnetic resonance.

INTRODUCTION

ITSCH is a rare cause of spinal cord injury that most commonly occurs through a defect in the ventral or ventrolateral dura at the midthoracic levels with a predilection to affect middle-aged females. ITSCH leads to the gradual development of myelopathy, most frequently presenting as Brown-Sequard syndrome [1]. Here we report an extremely rare case of ITSCH in a young women presenting with sudden-onset of lower-limbs weakness of presumed spinal origin.

CLINICAL CASE

23-year-old female, footballer, without significant pathological history, presented due to the sudden onset of lower-limbs weakness the day after a football match, without notion of sensory or sphincter disorders. Neurologic examination found arelectic flaccid paraparesis without any sensory impairment. The sagittal and axial MRI of the spine showed anterior focal displacement of the spinal cord ranging from T4 to T8 vertebral levels, erasing the anterior subarachnoid spaces and widening the posterior perimedullary spaces without signs of underlying spinal cord injury (Fig. 1 and 2). The double spinal cord appearance linked to cerebrospinal fluid flow artifacts made it possible to eliminate an arachnoid cyst a priori and to retain the diagnosis of transdural spinal cord herniation (fig. 3). The patient was not operated on due to the spontaneous and complete resolution of the symptoms.

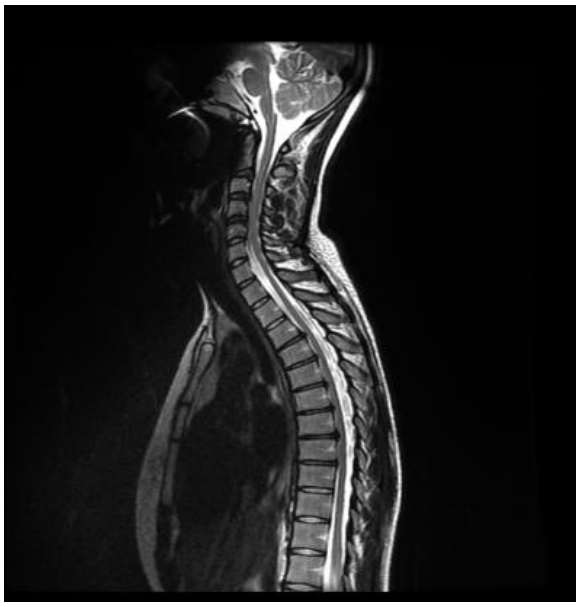

Figure 1: Spinal MRI: sagittal T2 section showing an anterior displacement of the spinal cord adhering to the vertebral body ranging from T4 to T8, erasing the anterior subarachnoid spaces and widening the posterior perimedullary spaces

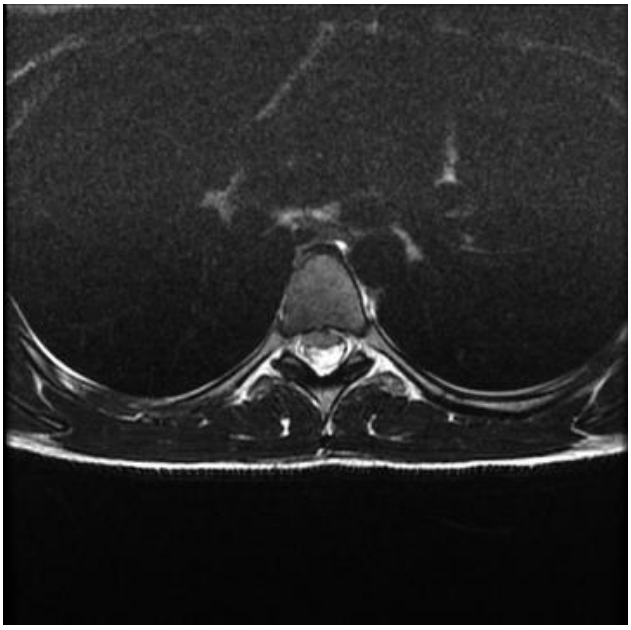

Figure 2: Spinal MRI: axial T2 section passing through T5, showing the spinal cord drawn forward. No visible CSF between the vertebral body and the spinal cord

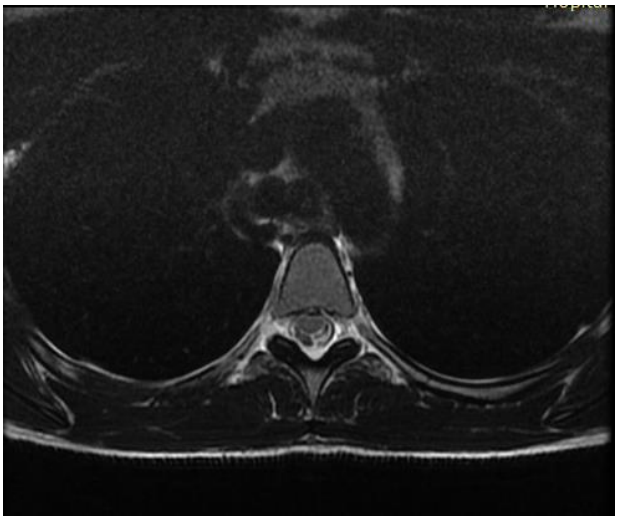

Figure 3: Spinal MRI: axial T2 section passing through T4 showing the double spinal cord appearance linked to CSF flow artifacts, a priori eliminating an arachnoid cyst

DISCUSSION

Idiopathic transdural herniation of the spinal cord through a dural defect is an unusual cause of myelopathy. Most patients present with slowly progressive spastic paraparesis, sensory disturbances, or Brown-Sequard syndrome [2- 3]. The ethiopathy of ITSCH remains uncertain. Several phenomena could be the cause of a dural breach: repetitive occult microtrauma, congenital posterior arachnoid cyst, calcified disc herniation eroding the dura mater, and dural duplication. Once the dural breach is established, the attachment of the cord to this orifice is favored by its anatomical position in the spinal canal at the thoracic level, and is accentuated by the physiological pulsatility of the cerebrospinal fluid. When the cord is herniated, a phenomenon of strangulation is responsible for the clinical symptoms [4]. Since there was no history of trauma or inflammatory process involving the spinal cord, and no evidence of degenerative disease in the adjacent vertebrae and intervertebral disc, a congenital etiology might be the most appealing explanation for the dural defect in our case. Diagnosis of ITSCH is made by MRI. Diagnostic features include ventral displacement or ‘‘kinking’’ of the spinal cord at the level of the dural defect, enlargement of the dorsal subarachnoid space, cord signal changes and atrophic changes with thinning of the cord. Phase contrast MRI can be helpful in differentiating from an arachnoid cyst [5]. Due to little being known about the natural history of idiopathic thoracic ventral spinal cord herniation, the optimal management strategy is still currently unknown. The attending spinal neurosurgeon must however decide whether a conservative or surgical approach is to be employed [6]. In patients with a motor deficit or progressive neurological symptoms, most papers advocate surgical intervention [7]. While in an asymptomatic patient a conservative approach with close neurological follow-up has been advocated, these patients should be counseled regarding the presence of an unknown risk of sudden catastrophic neurological deterioration [8].

CONCLUSION

ISCH is a rare clinical entity that should be considered in the differential diagnosis of a sudden-onset of lower-limbs weakness of presumed spinal origin. Establishing the accurate diagnosis can be challenging but cannot be missed as surgical intervention can retard neurologic deterioration and improve outcomes.

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