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Spinal Cord Infarction: A Rare Complication of Diabetes, About a Case

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Abstract **Case Report**

Introduction: Spinal cord infarction is a rare condition, often linked to underlying vascular disorders, including diabetes and atherosclerosis. ***Observation***: We report the case of a 64-year-old man, diabetic, who presented with proprioceptive ataxia with progressive motor deficit. Spinal MRI revealed infarction at levels D2-D3 and D3-D4. ***Conclusion***: Magnetic resonance imaging (MRI) is the examination of choice to confirm the diagnosis of spinal cord infarction. Rapid management, including strict control of risk factors and adapted rehabilitation, is essential to improve functional prognosis.

Keywords: Spinal cord infarction, Diabetes mellitus, Proprioceptive ataxia, Magnetic resonance imaging (MRI), Rehabilitation.

INTRODUCTION

Spinal cord infarction is a rare neurological emergency that can lead to severe deficits. Although often of vascular origin, with contributing factors such as atherosclerosis, coagulation disorders and diabetes [1, 2], its diagnosis is frequently unrecognized due to the rarity of the pathology and the low sensitivity of early clinical examinations.

CLINICAL OBSERVATION

A 64-year-old patient, with type 2 diabetes for 20 years and diabetic neuropathy, was admitted for progressive heaviness of the lower limbs evolving for a month, with notable aggravation in the two days preceding hospitalization.

The patient also presented with urinary incontinence and constipation, without fever or alteration of general condition.

On examination, the Glasgow score was 15, while the neurological examination objectified right proprioceptive ataxia, a deficit of bilateral dorsiflexion (4/5) and decreased muscle strength (3/5) in the lower limbs.

Complete spine MRI was performed using a standardized protocol, including T1-weighted, T2-weighted, diffusion-weighted imaging (DWI), apparent diffusion coefficient (ADC) maps, post-contrast sagittal and axial T1 FatSat sequences.

MRI Findings Included:

Diffusion hyperintensity with low ADC values, consistent with diffusion restriction suggestive of spinal cord ischemia.

It was associated with high signal intensity extending from T2 to T4 levels, suggestive of spinal cord edema.

In post-contrast T1-weighted sequences with Gadolinium, ther was no significant enhancement in the acute phase, ruling out a tumoral or inflammatory etiology.

The patient benefited from strict control of his diabetes associated with neurological rehabilitation in order to optimize functional recovery.

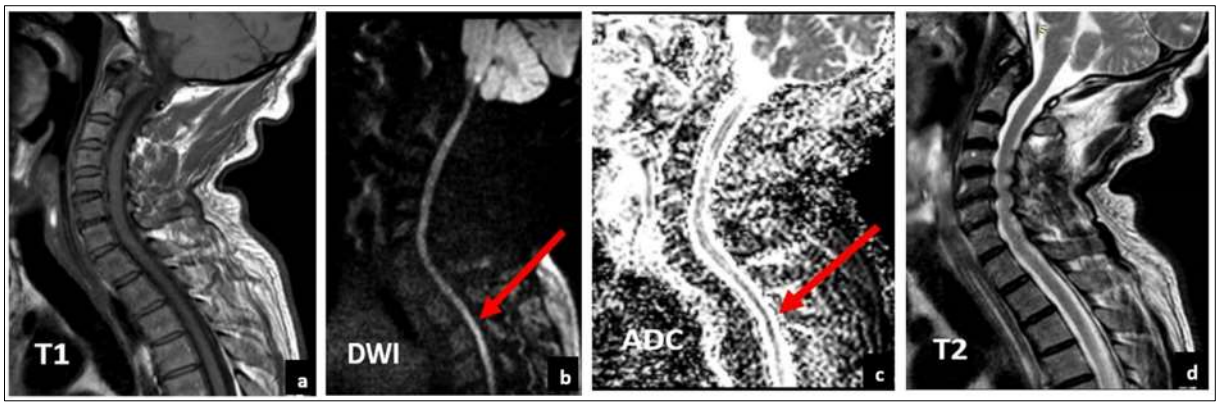

Figure1: MRI in sagittal section Diffusion B1000 (a), ADC (b), T1 (c) and T2 (d): Diffusion hypersignal (red arrow) with low medullary ADC (red arrow) at levels D2-D3 and D3-D4

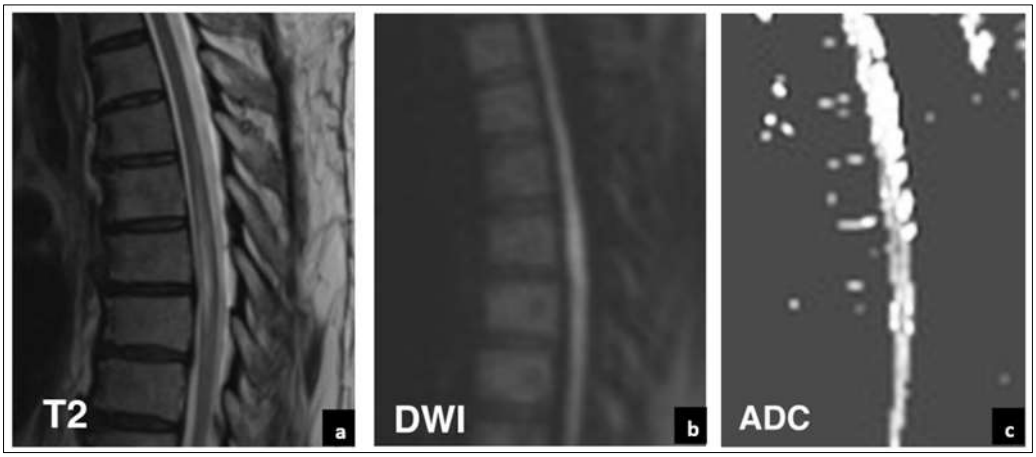

Figure2: Spinal MRI in sagittal sections T2 (a), Diffusion (b) and ADC (c): Spinal cord infarction in iso signal T2, Diffusion hypersignal with low ADC at the vertebrae T6 to T9

DISCUSSION

Spinal cord infarctions are infrequent vascular events, representing less than 1% of strokes [1]. They generally occur due to ischemia of the territory of the anterior spinal artery, responsible for a predominant involvement of the anterior horns and spinothalamic tracts, which explains the appearance of motor deficits and proprioceptive disorders [2].

MRI is the reference examination for diagnosing spinal cord infarction.

The protocol includes sagittal and axial sequences weighted in T1 and T2 in order to evaluate the morphology of the spinal cord and to detect signal abnormalities. In the acute phase, the lesion is often iso-intense in T1 and only becomes visible in T2 hypersignal after about six hours [3].

Diffusion sequences (DWI) and ADC allow very early detection of ischemia, showing a hypersignal associated with a low ADC, a sign of cytotoxic edema. Furthermore, the absence of contrast enhancement after injection of gadolinium helps to distinguish spinal cord infarction from inflammatory or compressive processes [4].

A characteristic sign on MRI is the so-called "snake eyes" or "owl eyes" appearance, corresponding to a bilateral nodular hyperintensity of the anterior gray matter, attesting to the involvement of the territory of the anterior spinal artery [5].

In our case, the MRI showed medullary signal abnormalities at the D2-D3 and D3-D4 levels, perfectly consistent with the observations described in the literature [4]. For example, Leys *et al*., [4], describe that spinal cord infarction typically manifests as a hypersignal in the T2 sequence associated with a low ADC, and sometimes by the "snake eyes" appearance.

Similarly, Novy *et al*., [2], insist on the major role of vascular risk factors – notably diabetes – in the occurrence of these accidents.

Magnetic resonance angiography, although not systematic, may be useful for searching for possible underlying vascular abnormalities (stenoses, dissections) [4]. In our patient, the MRI confirmed the diagnosis without highlighting such anomalies, thus orienting the management towards the control of risk factors and rehabilitation.

The management of spinal cord infarctions is based on strict control of risk factors (glycemia, blood pressure) and on symptomatic treatment. In the acute phase, rapid vascular management is essential [3]. Neurological rehabilitation, started early, is essential to improve functional rehabilitation were implemented in order to optimize motor recovery.

CONCLUSION

This case highlights the importance of early diagnosis of spinal cord infarction in patients with vascular risk factors, especially diabetes. MRI, thanks to its diffusion and T2 sequences, is an essential diagnostic tool allowing early detection of medullary ischemia. Rapid and adapted management, including control of risk factors and rehabilitation, is essential to improve neurological recovery and reduce disabling complications.

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