



Figure 1. Spinal MRI obtained 2 weeks after development of symptoms, showing high T2 signal in the lower dorsal spinal cord. (A) Sagittal T2 weighted imaging. (B-D) Axial T2 weighted imaging. (E) Sagittal T1 weighted imaging post contrast.

with sensitive disturbance from T10 down. The second MRI a year after the injury showed atrophy of the spinal cord from T11 down (Figure 2). A diagnosis of SM was made for this patient, and physical therapy was offered.

Discussion

SM is a poorly known entity, which can be confused with other types of myelopathies. The body of literature remains small and the majority of information to date is case series and case reports. As we have seen in our case, another diagnosis was proposed at first, post-traumatic myelopathy. When reviewing the history, imaging, and evolution of the case in our institution, we concluded that this case is an example of SM.

Thompson et al. [1] reported nine cases of inexperienced surfers, during their first surfing class, they developed atraumatic back pain followed by paraparesis or paraplegia, and sensory and sphincter disturbances. All cases in this series reported an increased T2 signal in the thoracic spinal cord. Thereafter, multiple case reports were published with the same clinical and imaging characteristics while practicing different sports and nonsport activities [5,6]. Our patient developed lower back pain while practicing a water sport followed by sudden onset of motor, sensitive, and sphincter involvement, these findings are consistent with the literature.

Given the sudden development of symptoms, the most universally accepted etiology of the disease is vascular [1]. Being a spinal cord hyperextension the trigger event of ischemia in the distal spinal cord. Alternative etiologies proposed are compression of the inferior vena cava and embolization within the spinal arteries [2,7]. Within the hypotheses proposed as pathophysiological mechanisms of this entity, we have: 1) vasospasm of Adamkiewicz artery; 2) perforating vessel avulsion; and 3) fibrocartilaginous embolism [1,2].

As we have seen in our patient, MRI characteristics are very important for the diagnosis, as well as the history



Figure 2. Spinal MRI obtained 1 year after development of symptoms, showing atrophy of the lower dorsal spinal cord. (A) Sagittal T2 weighted imaging. (B-D) Axial T2 weighted imaging. (E) Sagittal T1 weighted imaging post contrast.

of spine hyperextension. Our patient shows extensive involvement of the lower thoracic spinal cord, leading to severe spinal cord atrophy 1 year after the onset of symptoms. Nakamoto et al. [8] found similar MRI characteristics in the distribution of spinal cord hyperintensities; he described MRI of 23 patients within 24 hours of the first symptom and found “pencil-like” T2 hyperintensities in the central region of the spinal cord from mid-thoracic segment down. Diffusion-weighted images (DWIs) are recommended to identify ischemic involvement, our case did not have DWI [9]. In Chile, Too-Kong et al. [10] reported two cases that found dissection of the left radicular artery, postulating the dissection as the pathophysiological mechanism of disease. Spinal angiography was seldom used as a diagnostic tool in this group of patients, perhaps due to the lack of resources or capacities of the primary care center.

The prognosis of the disease depends on the aggressiveness of the initial lesion. Aggressive cases or complete paraplegia have been reported, in which patients failed to see significant neurological recovery [1,2]. Our case was very severe from the beginning, and 1 year after the injury the patient had paraplegia and atrophy in the lower extremities, reflecting the severe damage produced in the spinal cord. The prognosis may be poor for patients who show severe paraplegia in the acute stage; therefore, they should receive long-term physical therapy to achieve independence in activities of daily living [11].

Understanding SM pathophysiology and increasing awareness of the disease can lead to early detection of cases and avoiding misdiagnosis. Our case highlighted the importance of awareness of the condition in neurologists and first-level physicians to avoid unnecessary diagnostic procedures and medical or surgical treatments in cases where disease mechanisms are clearly reported by the patients.

The most important procedure to prevent SM is preventative measures. Surfers and other aquatic sport

practitioners should be instructed to prevent prolonged hyperextension of the spine.

Conclusion

The importance of this work lies in being one of the few in Peru addressing this pathology and in the need for awareness for taking preventive measures by young athletes, such as adequate warm-up, hydration, and reducing the time that the back remains hyperextended.

What is new?

Spinal cord injuries while practicing sports, such as SM, can be misdiagnosed because of a lack of knowledge of the disease and the mechanism involved in its physiopathology. Therefore, increasing awareness of the disease is important for an accurate diagnosis.

List of Abbreviations

DWI Diffusion-weighted images
 MRI Magnetic resonance imaging
 SM Surfers' myelopathy

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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Consent for publication

Written informed consent was obtained from the patient for the publication of this case report.

Ethical approval

The study was approved by the Ethics Committee of the Instituto Nacional de Ciencias Neurológicas (Approval certificate N° 003-2021-CIEI-INCN, dated: January 19, 2021).

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Summary of the case

1	Patient (gender, age)	Female, 33 years old
2	Final diagnosis	Surfers' myelopathy
3	Symptoms	Painful sensation in the lower back, paresthesia, and loss of strength in the lower extremities
4	Medications	Methylprednisolone 1 g/day for 5 days
5	Clinical procedure	Physical therapy
6	Specialty	Neurology