

# A Case of Surfers' Myelopathy

Melanie KTH Kelly, MD

Kai Me Wright, BA

## Introduction

Surfer's Myelopathy is a rare, non-traumatic spinal cord injury that occurs with first-time surfers. This syndrome has been described in the emergency medicine literature only twice; first by Thompson et al. in 2004. This is a case of Surfer's Myelopathy with a similar presentation as first reported by Thompson et al.

## Case Report

A 29-year-old man was brought to the emergency department via EMS because of lower extremity weakness. He was surfing for the first time, with an instructor, when he felt a "spasm" in his back. He continued to surf, and, shortly after he finished, he noticed weakening of his legs. By the time he reached the ED by ambulance, he had total motor deficit (0/5) of the lower extremities. There was no alteration of consciousness. The patient developed tactile hyperesthesia to the level of the waist, which he described as "like frostbite."

The patient has a past medical history of bilateral thrombectomies for lower extremity DVTs in the distant past. He was taking aspirin at home daily and has a vague history of an allergic reaction to penicillin. The patient was a fitness trainer from Canada, visiting Hawaii. He denies tobacco, alcohol, or drug use, and he was not currently on any medications.

On physical examination in the ED the patient was alert and oriented with mild pain in his extremities. His blood pressure was 127/79 mmHg, pulse 97 beats/minute, respiratory rate 16 breaths/minute, and temperature 98.7°F. His ears, nose, throat, neck, cardiovascular, respiratory, rectal, and skin examinations were all normal. He had urinary retention. His back was grossly normal with decreased range of motion and pain with range of motion. His neurologic examination showed a motor deficit with decreased strength bilaterally. The patient had 0/5 strength in his quadriceps and hamstrings bilaterally, 0/5 strength in his

foot flexor and extensor, and slight movement of his right hip. Sensation was intact but decreased to pinprick on his feet. He also had hyperesthesia to touch. His reflexes were 1+ bilaterally, but deep tendon reflexes were absent at the patellar and Achilles' tendon. His mood and affect were normal. His extremities were without clubbing, cyanosis, or edema. Pulses and capillary refill were full throughout.

In the ED the patient was given Solu-Medrol empirically per spinal cord injury protocol. He was also given Dilaudid with resolution of his back pain. A Foley catheter was inserted to relieve urinary retention.

The patient's laboratory values were within normal range. The patient had an MRI done of his lumbar spine. There was a 1.3 cm high signal posterior to the L3 vertebral body, which was a benign hemangioma. There was also a minor disc bulge at L4-5 with mild spinal stenosis and minor disc bulge at L3-4 with no stenosis. There was no enhancement of the conus and no enhancing masses.

The clinical impression at this time was spinal cord insult without radiologic evidence of injury, consistent with Surfer's Myelopathy. The patient was admitted to the intensive care unit (ICU).

While in the ICU the patient had a neurologic consult where he revealed a past history of blurring vision and ptosis of the eyes. A brain MRI was done, which was normal. An MRI of the cervical spine was unremarkable. A follow-up MRI of the spine showed increased linear signal in the thoracic cord from T9 through the conus. There was no significant central stenosis, cord enlargement, disc protrusion, or abnormal marrow signals.

The patient was kept on Solu-Medrol for the next 23 hours and had motor strength checks every two hours. After 12 hours in the ICU the patient had plantar and dorsiflexion capabilities in both his feet. After 24 hours the patient was able to flex

and extend his knees and eventually progressed to abduction and adduction at the hip. By the time of discharge, the patient was able to plant his feet on the ground, though his legs were unable to bear weight. His strength had progressed to 4/5 bilaterally in all muscle groups. The patient had some lingering urinary retention, but he was taken off the Foley and put on a straight catheter. He also had back muscle spasms, which were treated with baclofen and Tylenol. The patient was discharged to a physical therapy and rehabilitation clinic at his home. His prognosis for full recovery was felt to be good, given his health, age, and progress.

## Discussion

The patient was diagnosed with Surfer's Myelopathy, a relatively new condition first reported by Thompson et al. in 2004.<sup>1</sup> Thompson's series of cases were collected by retrospective review of hospital records between 1998 and 2003. All of the cases were first-time surfers who experienced back pain and then progressive paralysis. Various diagnostic tests were done on the patients, though no tests were definitive in confirming the diagnosis or etiology of the condition.

Another case of Surfer's Myelopathy was reported by Aviles-Hernandez et al. in 2006.<sup>2</sup> This case is thought to be Surfer's Myelopathy because of the progression of paralysis, lack of diagnostic imaging abnormalities, and, most importantly, the patient was injured while learning to surf. Interestingly, the patient had experience with another water sport, body surfing, and also was physically fit. Although he did have experience body surfing, bodysurfers will often wear fins and kick their legs to catch the wave without the use of a surf board. When surfing with a board the arms are the main means of locomotion, while lying prone on the surf board, and Thompson et al. postulated that this position and associated hyperextension was most likely the cause of Surfer's Myelopathy.

Surfer's Myelopathy is thought to be a non-traumatic ischemic event to the spinal cord caused by the hyperextended prone position required to paddle on a surfboard. The area of ischemia would most likely occur in the watershed region of the lower thoracic spine, before the largest of the radicular arteries, the artery of Adamkiewicz, joins the anterior spinal artery.<sup>6</sup> This type of ischemic injury is mostly seen with disease and subsequent repair of the aorta, which compromises the blood flow to the radicular arteries.<sup>5</sup> Signal changes in this area are reported in the cases presented from Thompson et al. and Aviles-Hernandez et al., increasing the probability of ischemic injury in this area.<sup>1,2</sup>

As to why only certain first-time surfers are afflicted with Surfer's Myelopathy, it would require more research into the body mechanics of first-time surfers.

There is still relatively little known about Surfer's Myelopathy due to lack of recognition and study into the condition. Since it only affects inexperienced surfers, the incidence is small compared with more traumatic injuries associated with surfing. To

date, there have been only ten cases reported in the literature, and all cases occurring in Hawaii. Since Hawaii is not the only area that is popular for surfing, it is important that physicians and surfers in other popular surfing destinations have an awareness of this condition. It is also important to increase awareness in surfing instructors who may be able to stop additional injury in those first-time surfers who begin to experience back pain.

The Surfer's Myelopathy Foundation works to increase awareness among surfers and to support the victims of Surfer's Myelopathy. They are currently working on a "Surf Safe" program that is a training program for surfing instructors to improve awareness of this condition. They are also developing a database for cases of Surfer's Myelopathy, which will help in tracking the incidence and progression of the condition and may support further research efforts in prevention.

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*Melanie KTH Kelly, MD, is CEO, Pacific Emergency Physicians, and Associate Professor, Department of Surgery, University of Hawaii, John A. Burns School of Medicine.*

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*Kai Me Wright received her Bachelor of Arts from the University of Hawaii.*

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