Demonstration of Injury of the Corticospinal Tract in a Patient with Suspected Motor Conversion Disorder

Sung Ho Jang, MD and Jeong Pyo Seo, PhD

A 54-year-old, right-handed woman presented with a 4-year history of quadriparesis. While arguing with other people, she suddenly showed weakness of the right upper and lower extremities. She underwent evaluation and conservative management with the suspicion of a cerebral infarct at the neurology department of a university hospital. However, no lesion was detected, except for a meningioma in the left posterior horn of the lateral ventricle (Fig. 1A). For precise diagnosis, she underwent thorough evaluation at 2 other university hospitals; following evaluation including conventional brain magnetic resonance imaging and electromyography, a conversion disorder was suspected. Subsequently, at approximately 3.5 years after onset, her right-sided weakness became slowly aggravated and spread to the left side. At 4 years after the onset of right-sided weakness, she was admitted to the rehabilitation department of the first university hospital for rehabilitation, and she showed quadripareisis (manual muscle test: shoulder abductor, 2−/4; elbow flexor, 2−/4; finger extensor; 2−/4; hip flexor; 1/4; knee extensor, 1/4; ankle dorsiflexor, 1/4).

Diffusion tensor imaging data were obtained at 4 years after onset using a 6-channel head coil on a 1.5 T. For analysis of the corticospinal tracts (CSTs), the seed region of interest was placed on the anterior pontomedullary junction. The target regions of interest were placed in the primary motor cortex based on known anatomy (whole—primary motor cortex, hand—the precentral knob, leg—mediodorsal portion).1 On 4-year diffusion tensor tractography (DTT), suspicious narrowing of the whole CST at the subcortical white matter level was observed in both hemispheres, whereas narrowing and partial tearing of the right CST for the hand and the left CST for the leg were observed. In addition, suspicious narrowing of the left CST for the hand at the subcortical white matter level was observed (Fig. 1B). Partial tearing and narrowing indicate injury of a neural tract. Therefore, we believe that her quadripareisis was ascribed at least in part to injury of the CST in both hemispheres.

Conversion disorder is a somatoform disorder defined by the presence of pseudoneurologic symptoms.2 Correct diagnosis of conversion disorder presenting with motor symptoms has been limited by the lack of criterion standard diagnostic tests and the absence of a universally accepted set of positive diagnostic criteria.3 As a result, the diagnosis of conversion disorder presenting with motor weakness has been based on the physical examination.3,4 In conclusion, DTT for the neural tracts for motor function may be helpful in ruling out the possibility of a conversion disorder with motor weakness.

ACKNOWLEDGMENTS

This work was supported by a National Research Foundation of Korea grant funded by the Korean Government (MSIP) (2015R1A2A2A01004073).

REFERENCES


From the Department of Physical Medicine and Rehabilitation, College of Medicine, Yewungnam University, Namku, Taegu, Republic of Korea.

All correspondence and requests for reprints should be addressed to: Jeong Pyo Seo, PhD, Department of Physical Medicine and Rehabilitation, College of Medicine, Yewungnam University 317-1, Daemyungdong, Namku, Taegu, 705-717, Republic of Korea.

Financial disclosure statements have been obtained, and no conflicts of interest have been reported by the authors or by any individuals in control of the content of this article.

Copyright © 2016 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 0894-9115
DOI: 10.1097/PHM.0000000000000576

American Journal of Physical Medicine & Rehabilitation • Volume 96, Number 3, March 2017 www.apmr.com | e53
FIGURE 1. A, Diffusion-weighted images at onset and T2-weighted images at 4 years after onset show no abnormal lesion except for a meningioma (white arrows) in the left posterior horn of the lateral ventricle. B, Results of DTT. On 4-year DTT, suspicious narrowing (red arrows) of the whole CST at the subcortical white matter level is observed in both hemispheres, whereas the right CST for the hand and the left CST for the leg show narrowing and partial tearing (yellow arrows). In addition, suspicious narrowing of the left CST for the hand (green arrow) at the subcortical white matter level is observed.