Prominent Corticospinal Tract Changes Secondary to Neuroinvasive West Nile Virus Disease

The Neurohospitalist
2020, Vol. 10(4) 329-330
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DOI: 10.1177/1941874420924890
journals.sagepub.com/home/NHO

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Keywords

central nervous system viral diseases, central nervous system infections, meningoencephalitis, myelitis, neurocritical care, clinical specialty, West Nile virus

Case Caption

A 67-year-old right-handed man with history of hypertension, diabetes, and arthritis (on chronic immunosuppressive therapy with methotrexate and tofacitib) was admitted to the neurologic intensive care unit for acute encephalopathy, generalized weakness, fever, and malaise. On the day of admission, magnetic resonance imaging (MRI) of the brain

was unremarkable and lumbar puncture results were consistent with aseptic meningitis. Cerebrospinal fluid (CSF) viral polymerase chain reaction (PCR) panel, gram stain, and cultures were negative.

Despite aggressive supportive care, he continued to have neurologic decline and required intubation for neuromuscular respiratory failure. Repeat MRI on hospital day 10 revealed new changes involving the corticospinal tracts (Figures 1-3). Repeat CSF PCR analysis was now positive for West Nile virus (WNV) immunoglobulin M, and his CSF profile was consistent with viral meningitis. He received 5 sessions of plasma exchange without significant functional improvement. He was able to participate in the decision to forego tracheostomy and was extubated to comfort measures resulting in death.

West Nile virus is a mosquito transmitted flavivirus that is endemic in the United States. Infection is usually asymptomatic or mild; however, it can rarely progress into neuroinvasive disease¹⁻⁵. In 2018, Louisiana was observed to have one of the highest rates of neuroinvasive WNV disease with an incidence of >1.00 per 100 000 population. West Nile virus PCR may remain negative on initial laboratory results for several days due to seroconversion. When there is high level of clinical suspicion, repeat testing should be performed. We report a severe case of neuroinvasive WNV disease with prominent radiographic findings.

Figure 1. Brain magnetic resonance imaging (MRI), diffusion weighted imaging (DWI) sequence, axial view. Diffusion restriction involving bilateral corticospinal tracts (red arrows).

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Figure 2. Cervical spine magnetic resonance imaging (MRI), T2 STIR sequence, sagittal view. Hyperintense changes of the corticospinal tracts (red arrows).

Figure 3. Cervical spine magnetic resonance imaging (MRI), T2 sequence, axial view. Hyperintense cord signal change along the corticospinal tracts (red arrows).

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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