After a Walk in the Woods: A Case of West Nile Meningoencephalitis in New England

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Background

While most prevalent in the Western and Central United States, West Nile Virus (WNV) cases are seen seasonally in New England with incidence peaking between July and September[1]. This poster outlines a case of neuroinvasive WNV and demonstrates that the virus should be considered in cases of encephalitis in New England in distinct at-risk populations during high-risk seasons.

Patient Presentation

In September, a healthy 57-year-old man reported neck stiffness to his brother six days before his eventual hospitalization. Notably, the patient had recently moved to Rhode Island from Southeastern Massachusetts where he hiked frequently. After not being able to contact the patient for 48 hours, the patient's brother called EMS to the patient's home where he was found to be only responsive to painful stimuli. He was then brought to Rhode Island Hospital.

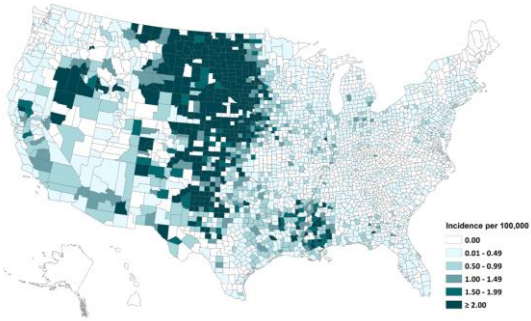
Early Hospital Course

Upon arrival to the emergency department the patient was febrile to greater than 107 °F, somnolent, and alert only to self and hospital. After antipyretic measures were taken, a lumbar puncture was performed which demonstrated 66 nucleated cells with 52% lymphocytes and 47% monocytes alongside elevated CSF protein and normal CSF glucose. He was started on antibacterial and antiviral treatment for meningitis and admitted to a general medicine team. After arrival to the medicine floor the patient's mental status worsened, and he became fully disoriented, unable to follow commands, and only able to speak 2-3 words. He became hypoxic, raising concern for aspiration given his worsening mental status and was transferred to the Medical ICU and intubated.

Intensive Care Course

By time of transfer the patient exhibited upper and lower extremity flaccidity and lacked spontaneous lower extremity movement. Given the lymphocytic pleocytosis, a plethora of labs were sent to identify viral etiologies of meningoencephalitis. On hospital day three, blood testing revealed an elevated WNV IgM and negative IgG.

West Nile Virus in the United States



While disease is more prevalent in the Western United States, West Nile Virus is endemic to all lower 48 states

Intensive Care Course (cont.)

Later, CSF results from the initial lumbar puncture revealed a positive WNV IgM and negative IgG. Further testing at the CDC confirmed the case of Neuroinvasive WNV on hospital day 20. The patient continued to receive supportive care and was extubated on hospital day 12. On hospital day 40 the patient was speaking in short sentences and following commands in all 4 extremities but with residual encephalopathy and diffusely reduced muscular strength. He was eventually discharged to an LTACH.

Discussion and Conclusion

While most prevalent in warmer regions, West Nile virus has become endemic in all 48 contiguous United States. The diagnosis of West Nile Virus meningoencephalitis is reliant on the detection West Nile IgM in the CSF which is present in 90% of patients with CNS disease[2]. However, WNV should be suspected in severely meningitic patients during the warmer months in patients with elevated protein, normal glucose and lymphocytic pleocytosis in the CSF. Treatment remains supportive and interestingly long-term outcomes may not correlate with disease severity but are more influenced by patient age and underlying medical conditions[2]. However, due to the severity of fever and encephalopathy in this disease process, patients with suspected WNV benefit from triage to an ICU setting.

References

1. Lyle R Petersen, Epidemiology of West Nile Virus in the United States: Implications for Arbovirology and Public Health, *Journal of Medical Entomology*, Volume 56, Issue 6, November 2019, Pages 1456–1462.
2. Petersen LR, Brault AC, Nasci RS. West Nile virus: review of the literature. *JAMA*. 2013;310(3):308-315. doi:10.1001/jama.2013.8042