

No neurologic damage in three children with Lyme disease and Powassan virus

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Unlike Lyme disease, there is no treatment for Powassan virus (POWV), yet it can cause devastating neurologic damage including encephalitis and meningitis and even death. "About 15% of patients who are infected and have symptoms are not going to survive," Dr. Jennifer Lyons, chief of the Division of Neurological Infections and Inflammatory Diseases at Brigham and Women's Hospital in Boston [told CNN](#). "Of the survivors, at least 50% will have long-term neurological damage that is not going to resolve." [2]

From 2006 through 2015, Powassan virus neuroinvasive disease cases have been reported in Maine (2), Massachusetts (8), Minnesota (20), New Hampshire (1), New Jersey (3), New York (16), Pennsylvania (1), Virginia (1) and Wisconsin (16). Source: CDC

The virus can be transmitted in as little as 15 minutes, primarily through the bite of an infected deer tick. It can affect anyone at any age. Just this year, two men from Cape Code died from the virus, along with a man from upstate New York and a woman from Maine. A 3-month-old baby in Connecticut was diagnosed with POWV after developing neurologic symptoms.

With so much media attention focused on the deaths caused by Powassan virus, both parents and the public are understandably worried. However, [a new study published in the journal *Emerging Infectious Diseases* provides a more optimistic outlook, finding not all subjects had neuroinvasive disease.](#)

Frost and colleagues, from the Marshfield Clinic in northern Wisconsin, an area endemic for Lyme disease, looked at serologic evidence of Powassan virus from 95 patients who had a serologic test for *Borrelia burgdorferi*. The patients had visited their clinic between July and August of 2015. [3]

Clinical data was available for only 51 of the 95 patients (53.7%) suspected of having a tick-borne illness. Out of the 51 patients, three were children, all of whom had IgM evidence of Powassan virus, as well as IgM and IgG evidence of *B. burgdorferi*, the causative agent of Lyme disease. However, none of the children had neuroinvasive disease. [3]

1. 14-year-old girl with a 3-day history of urticarial rash. She was treated with doxycycline for 14 days.
2. 4-year-old girl with a 1-week history of fever (103°F), listlessness, headache, fatigue, and a maculopapular rash. She was treated with amoxicillin for 21 days.
3. 3-year-old girl with a 1-week history of intermittent fever, fussiness, and erythema migrans rash. After developing a urticarial rash on cefuroxime, she was treated with amoxicillin for 21 days.

“In POWV-endemic regions, up to 7% of ticks carry the virus, and seroprevalence among small mammalian hosts can exceed 90%,” the authors point out. Meanwhile, the seroprevalence of the Powassan virus in some regions of North America ranges from 0.5% to 3.3%. [3]

The authors’ report of three children with a combination of Lyme disease and Powassan virus without neuroinvasive disease is encouraging. “The spectrum of disease is broader than previously realized, with most patients having minimally symptomatic infection,” concludes Frost.

References:

1. Centers for Disease Control and Prevention (CDC). <https://www.cdc.gov/powassan/index.html>
2. CNN. <http://www.cnn.com/2017/05/03/health/powassan-tick-virus/index.html>
3. Frost HM, Schotthoefer AM, Thomm AM, et al. Serologic Evidence of Powassan Virus Infection in Patients with Suspected Lyme Disease. *Emerg Infect Dis.* 2017;23(8):1384-1388.

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