

## **Case Report: Fatal Powassan virus infection: a.k.a. Deer tick virus**

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<http://danielcameronmd.com/case-report-fatal-powassan-virus-infection-k-deer-tick-virus/>

by Daniel J. Cameron, MD, MPH

A 72-year-old woman, from Maine, who reported having two tick bites over the course of one month was admitted to the emergency room for myalgias, chills, and an erythema migrans rash on her left scapula. She was discharged and prescribed 14 days of doxycycline 100mg twice daily.

A 72-year-old woman from Maine dies from the tick-borne Powassan virus.

The following day, she was admitted to the hospital, acutely ill with fever, arthralgias, and headache. Intravenous ceftriaxone was added to her treatment regime. But her condition continued to deteriorate. Within 24 hours of admission, she developed hemodynamic instability, visual hallucinations, and confusion.

“By hospital day 4 she was obtunded and hypotensive. On day 5 she was intubated. Her antibiotics were changed to Vancomycin, piperacillin-tazobactam, doxycycline, and acyclovir followed by vancomycin and meropenem.

She was thrombocytopenic (platelets 21 000) and had developed oliguric acute kidney injury,” according to [Cavanaugh, from Lincoln Medical Partners Internal Medicine in Damariscotta, ME.](#) [1]

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### **Types of Powassan virus**

Powassan virus (POWV) lineage 1 and lineage II (DTV) each have their own enzootic cycles and primary tick vectors. POWV lineage 1 is predominantly maintained in an enzootic cycle between the tick vector *Ixodes cookei* and groundhogs, explains Cavanaugh.

This type of infection in humans, he says, is rare and “likely due in part to limited human contact with *I. cookei*, which is highly host-specific and lives in the nest or burrow of medium-sized mammals.” The *I. cookei* tick rarely bites humans.

The second variant is POWV lineage II, a.k.a., deer tick virus. This subtype can be found in the same *Ixodes scapularis* tick and white-footed mouse that carry the spirochete that causes Lyme disease.

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Ten days after entering the hospital, the 72-year-old woman died. She was diagnosed post-mortem with the deer tick virus using acute and convalescent serologic testing with plaque-reduction neutralization test (PRNT) for confirmation. Serologic tests also revealed positive IgG serologic test for Anaplasmosis.

Her limited autopsy revealed “severe loss of anterior horn cells in the spinal cord and a diffuse

meningoencephalitis of the brain,” writes Cavanaugh. “The temporal lobes, hippocampus, putamen, brainstem, and cerebellum were most prominently involved. Cerebellar histology showed a severe loss of Purkinje cells.”

Unfortunately, there is no treatment for Powassan virus.

**Related articles:**

[No neurologic damage in three children with Lyme disease and Powassan virus](#)

**References:**

1. Cavanaugh CE, Muscat PL, Telford SR, 3rd, et al. Fatal Deer Tick Virus Infection in Maine. Clin Infect Dis. 2017;65(6):1043-1046.

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