

## **Six cases of neuroinvasive Lyme disease**

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Bannwarth syndrome is characterized by painful radiculopathy, neuropathy, varying degrees of motor weakness and facial nerve palsy, and cerebrospinal fluid (CSF) lymphocytic pleocytosis. [Five patients, Shah says](#), presented with PNS involvement (primarily axonal in nature), which is consistent with BWS. We discuss three of the cases below.

### **61-year-old male**

A 61-year-old male, who had a history of daily exposure to ticks, presented with “progressive back pain, upper torso and extremity paresthesias, right-sided facial droop, and blurry vision in the right eye,” writes Shah. Four weeks prior, he was treated for an EM rash with 5 days of doxycycline, given twice daily.

Test results indicated positive IgM and IgG antibodies to *B. burgdorferi* and he was diagnosed with LNB/BWS. According to Shah, “the patient demonstrated significant neurologic improvement following 4 weeks of intravenous (IV) ceftriaxone.”

### **62-year-old female**

A 62-year-old female presented with subacute onset of lower extremity weakness. This progressed over a 3-week period to flaccid paralysis, writes Shah. The woman also complained of radiating low back and abdominal pain with associated numbness.

Tests confirmed the diagnosis of BWS and Lyme neuroborreliosis (LNB). “A magnetic resonance image (MRI) of her spine showed diffuse inflammation of the cauda equine,” says Shah. A pleocytosis by spinal tap and a positive real-time polymerase chain reaction (RT-PCR) assay confirmed the diagnosis.

The patient was diagnosed with LNB/BWS and discharged on a 4-week course of IV ceftriaxone. “The patient reported improved mobility,” says Shah, “though she still required extensive assistance 2 months post-treatment.”

### **29-year-old male**

In June 2017, a 29-year-old male developed fever, myalgias, chills, headache and fatigue. He also reported a transient erythematous rash on his trunk. Two weeks later, he developed “right foot drop, Trendeleberg gait, lower extremity radiculopathy, and painful L5-S1 paresthesias,” explains Shah. And over the next 10 weeks, he lost 15 pounds.

After refusing a spinal tap, the man was diagnosed based on his clinical presentation and positive Lyme

test results. The man was given IV ceftriaxone and two weeks later reported having no symptoms. It is not clear how often BWS occurs in actual practice with or without a confirmatory spinal tap.

All five patients presented with upper or lower extremity radiculopathy and/or paresthesias. There were, however, several other findings. “The more widespread peripheral neuropathy observed for the remaining 3 patients in this series is somewhat atypical,” writes Shah. “2 patients developed visual disturbances and nerve root enhancement in the cauda equine or lumbar spine, and 1 presented with Lyme disease–associated facial nerve palsy.”

The authors recommend, “The constellation of neurological symptoms, particularly when associated with a recent or suspected tick bite in an LD-endemic region, should prompt clinical evaluation for LNB and assessment for BWS as this syndrome may be more common than previously presumed in North America.”

### **References:**

1. Shah A, O'Horo JC, Wilson JW, Granger D, Theel ES. An Unusual Cluster of Neuroinvasive Lyme Disease Cases Presenting With Bannwarth Syndrome in the Midwest United States. *Open Forum Infect Dis.* 2018;5(1):ofx276.

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