

Autopsy finds Lyme disease spirochetes in patient with Lewy body dementia

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In a recent study entitled “[Detecting Borrelia Spirochetes: A Case Study With Validation Among Autopsy Specimens.](#)” researchers describe a woman with Lyme disease who was later diagnosed with Lewy body dementia.²

Lyme disease diagnosed at age 54

At age 54, the woman was diagnosed with Lyme disease based upon a well-documented erythema migrans rash, along with severe headaches, joint pain and a fever of 104°. Test results for Lyme disease were also positive by ELISA and both IgM and IgG Western blots.

The patient’s symptoms resolved with 10 days of doxycycline treatment. But, she later developed a sleep behavior disorder and cognitive problems, including slower processing speed, difficulty with mental tracking and word-finding.

“Other symptoms included photophobia, paresthesias, fasciculations, and myoclonic jerks,” writes Gadila and colleagues.

“Neurocognitive testing revealed deficits in visuospatial skills and executive functions with preservation of verbal skills, suggesting a neurodegenerative process.”

Symptoms worsen, MRI and PET scan abnormal

The woman’s brain MRI and PET scan were abnormal. “Brain Magnetic Resonance Imaging with and without contrast showed mild atrophy and non-specific scattered white matter hyperintensities without enhancement,” the authors write. “Brain Single Photon Emission Computed Tomography scans showed decreased perfusion in the right posterior parietal and temporal lobes.”

At age 60, the woman was treated with an 8-week course of intravenous ceftriaxone, followed by 6 months of oral amoxicillin.

The treatment resulted in a 60% improvement in cognition and interpersonal engagement, according to the authors.

Unfortunately, “The initial improvement was not sustained and subsequent antibiotic therapy with minocycline was of no clear benefit; gradually her visual spatial skills and executive functions deteriorated further, and anxiety worsened.”

Lewy body dementia diagnosed at age 62

At age 62, the woman was diagnosed clinically with Lewy body dementia.

“Early and severe movement disorders, REM behavioral disorder, paranoia, and personality changes all favored a clinical diagnosis of dementia with Lewy bodies,” the authors explain.

Sadly, the woman died at age 69, 15 years after the initial infection with *Borrelia burgdorferi*, the causative agent of Lyme disease.

Autopsy reveals spirochetes in the brain

The authors performed an autopsy to evaluate whether antibiotic treatment had failed to eradicate Lyme disease or whether there was a re-infection.

An autopsy later revealed spirochetes in the brain and central nervous system. However, the authors could not determine if the dementia was caused by the *Borrelia burgdorferi* infection.

“Our study confirms that *Borrelia burgdorferi* was detected in the brain and spinal cord tissue of this patient with a history of previously treated Lyme disease.”

The authors could not directly attribute Lyme disease (*B. burgdorferi* infection) as causing the woman’s Lewy body dementia.

“These results however do not clarify whether the *Borrelia* infection had anything to do with her progressive neurodegenerative disorder,” the authors explain.

“It is possible this is an unrelated incidental finding or that there is a relationship between CNS infection with [*Borrelia burgdorferi*] and the development of a neurodegenerative dementing disorder.”

Editor’s perspective: Researchers have been investigating reversible causes of dementia. This case should encourage physicians to consider Lyme disease as a possible cause of dementia in some patients.

It is not clear whether treating longer than 10 days at onset or retreating earlier would have been helpful for this patient.

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References:

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2. Gadila SKG, Rosoklija G, Dwork AJ, Fallon BA, Embers ME. Detecting Borrelia Spirochetes: A Case Study With Validation Among Autopsy Specimens. *Front Neurol.* 2021;12:628045. doi:10.3389/fneur.2021.628045

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