Could tragic case be linked to chronic infection from Lyme bacteria?

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A new case study explores whether untreated, chronic Lyme disease could have played a role in a tragic case of substance abuse and violence. (Photo from Shutterstock)

A new Tulane University case study published in the journal *Heliyon* explores whether untreated, chronic Lyme disease could have played a role in a tragic case of substance abuse and violence.

The case study focused on a 32-year-old male patient with a long history of multiple tick bites who suffered from progressively worsening symptoms. Despite this, his

diagnosis and treatment for Lyme disease were delayed. The patient turned to substance abuse, particularly phencyclidine (PCP), to self-medicate. Tragically, while experiencing PCP withdrawal, he committed one homicide, two assaults, and took his own life.

The patient’s family suspected the tick-borne infection may have played a role in his mental health issues and asked researchers to test autopsy tissue for evidence of infection with the Borrelia bacteria responsible for Lyme disease. Prior research has shown a link between Lyme disease and higher risks for mental health disorders and suicidality.

The case study, led by Monica Embers, PhD, associate professor of microbiology and immunology at Tulane National Primate Research Center and Robert Bransfield, MD, clinical associate professor of psychiatry at Rutgers University, provides evidence of infection with the bacteria responsible for Lyme disease. The research team found Borrelia spirochetes in the patient's heart and pancreas, suggesting a systemic spread of a long-lasting infection, exacerbating both physiological and psychological symptoms.

The patient's brain also showed signs of neuroinflammation, with activated microglia and elevated levels of quinolinic acid, which can disrupt neurotransmitter balance in the brain, affecting mood regulation, cognition, and behavior. The study authors propose that the patient's PCP withdrawal may have exacerbated symptoms caused by biochemical imbalances in the brain due to the Borrelia infection. They suggest this perfect storm of factors could have drastically increased his risk of violent and suicidal behavior.

While researchers can not directly link the outcome to Lyme disease, the autopsy results paint a stark picture of how deeply Borrelia infections can infiltrate bodily systems and cause a range of severe, life-altering symptoms. It also highlights the established association that links chronic disease to substance abuse and mental illness.

"Understanding the profound implications of tick-borne diseases on both physical and mental health is crucial," Embers said. "This research underscores the urgent need for early detection and comprehensive treatment of Lyme and other tickborne diseases to prevent the sometimes-tragic consequences that can arise when these infections are left unchecked and patients become desperate.”

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