Running head: LYME DISEASE

Lyme Disease

Author

Instution

## **Summary**

Lyme disease is a bacterial infection transmitted by tick bites. There are a variety of symptoms of Lyme disease including a skin rash around the tick bite and various later general symptoms such as fever, fatigue and many other possible symptoms. Lyme disease is difficult to diagnose, especially if the characteristic skin rash around the tick bite is absent. Lyme disease is one of a group of conditions with vague symptoms such as fatigue, aches, or malaise. In mild cases, people may not even seek medical advice unless symptoms become more severe The disease is named after the village of Lyme, Connecticut where a number of cases were identified in 1975. Although Allen Steere realized in 1978 that Lyme disease was a tick-borne disease, the cause of the disease remained a mystery until 1982, when B. burgdorferi was identified by Willy Burgdorfer.

## **Biology of the Pathogen**

Lyme disease is caused by Gram-negative spirochetal bacteria from the genus *Borrelia*. At least 11 *Borrelia* species have been discovered, 3 of which are known to be Lyme-related.<sup>1</sup> The *Borrelia* species that cause Lyme disease are collectively known as *Borrelia burgdorferi sensu lato*, and show a great deal of genetic diversity. Single photon emission computed tomography (SPECT) imaging has been used to look for cerebral hypoperfusion indicative of Lyme encephalitis in the patient. Although SPECT is not a diagnostic tool itself, it may be a useful

method of determining brain function.



The group Borrelia burgdorferi sensu lato is made up of three closely-related species that are probably responsible for the large majority of cases: B. burgdorferi sensu stricto (predominant in North America, but also present in Europe), B. afzelii, and B. garinii (both predominant in Eurasia). <sup>2</sup> Patients with late stage Lyme disease have been shown to experience a level of physical disability equivalent to that seen in congestive heart failure. In rare cases, Lyme disease can be fatal. Hard-bodied ticks of the genus Ixodes are the main vectors of Lyme disease.Most infections are caused by ticks in the nymphal stage, as they are very small and may feed for long periods of time undetected.<sup>3</sup>

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