2016

Comparing Short Versus Long Term Antibiotics for Reducing Persistent Lyme Symptoms

Joe Webster
University of North Dakota

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Lyme disease is caused by spirochetes called Borrelia burgdorferi senso lato that is transmitted to humans by ticks. The transmission happens through injection of tick saliva during feeding. Infection in humans activate innate and adaptive immune responses that kill spirochetes.

Virulence factors that can cause persistent infection including downregulation of immunogenic surface proteins, alteration of antigenic properties of lipoproteins and binding to components of extracellular matrix.

Horowitz (2013) described that Borrelia has 3 major forms: cell wall, cystic, and intracellular which can protect itself from the body’s immune system depending on the internal environment it’s in.

Bratton (2007) reported Lyme Borrelia spirochetes are susceptible to tetracyclines, penicillins, macrolides, and 2nd and 3rd cephalosporins.

IDSA recommends treatment with antibiotics 14-21 days and ILADS recommends using treatment regimens of minimum of 4-6 weeks.

Borgermans (2014) found when Lyme is treated early, the outcomes are good. 20% of people display recurrent symptoms after antibiotic treatment.

Cameron (2014) found Lyme Borrelia spirochetes are treated with different regimens of 4-6 weeks of antibiotics.

Warshafsky (2005) found that those who received antibiotic prophylaxis by single dose or antibiotic <10 days duration, within 72 hours of Ixodes tick bite accompanied by erythema migrans as the presenting symptom were less likely to acquire Lyme disease than those given placebo with a RR of 91%.

Kowalski (2010) reported patients with early disseminated Lyme disease treated for <10 days with antibiotics have long-term outcomes similar to those of patients treated with longer courses of antibiotics.

Fallon (2008) found that patients with Lyme encephalopathy treated with additional 10 weeks of IV ceftriaxone had greater improvement in cognition, physical function and pain.

Delong (2012) found that when patients with confirmed Lyme disease received one standard course of antibiotic therapy for 21 days, who continued to have symptoms within 6 months of disease and received an additional 4 week course of IV ceftriaxone were found to have improved function and pain levels.

Krupp (2003) reported that when patients received 28 days of IV ceftriaxone, after being treated with the standard course of 21 days of antibiotics, within 6 months of treatment they were found to have improvements in fatigue but not cognitive function (95% CI, P<0.001).

Horowitz (2013) reports that 75% of patients with acute Lyme disease will have resolution of symptoms in <2 months if all 3 forms of Lyme Borrelia are treated with different regimens of antibiotics. Close to 25% of patients may need a longer course >2 months of antibiotic treatment if symptoms persist.


Applicability to Clinical Practice

- Most clinicians in the United States use the IDSA guidelines for treatment of Lyme disease of 14-21 days.
- Improvements are seen in the majority of patients when treated early.
- Be aware of ongoing symptoms of Lyme disease which can include: fatigue, arthralgias, myalgias, headaches, sleep insomnia and numbness or tingling in the extremities.
- Testing for Lyme disease with the current diagnostic tests has low specificity and sensitivity. A clinical diagnosis is usually needed.
- Lyme disease treatments should be clinical and patient based.
- Horowitz questionnaire is a great tool to use for initial screening to help with clinical diagnosis of Lyme disease.

References


Acknowledgements

I would like to express my appreciation to my family for being there to support me during the past two years and Dr. Arden Brachy for being my preceptor and taking time to instruct me in the clinic.