



Ixodes scapularis – the vector of Lyme disease

PIC QUESTION OF THE WEEK: 4/13/09

Q: What are the current recommendations for treatment of the early symptoms of Lyme disease?

A: Lyme disease is caused by tick-transmission of the spirochete *Borrelia burgdorferi*, an organism most commonly found on dogs, mice, and deer. Approximately 90% of reported cases occur in the north central and northeastern regions of the United States. Lyme disease is typically divided into three stages: early localized infection, early disseminated infection, and late infection. During the early localized stage, a lesion known as erythema migrans appears in nearly 75% of patients within 3 to 32 days after the tick bite. The characteristic target-like rash begins as a single macule or papule located at the site of contact, but can expand to a diameter of fifty centimeters. Atypical presentation may include borrelial lymphocytoma (nodule often occurring on the ear lobe) or acrodermatitis chronica atrophicans (thinning and transparency of the skin). The early disseminated stage develops days to weeks after appearance of the primary lesion. It is characterized by recurrence of single papular lesions, flu-like symptoms (fever, chills, fatigue, etc.), headache, stiff neck, and joint/muscle pain. Myocardial abnormalities (8%), neurological manifestations (15%), and musculoskeletal symptoms (60%) may also occur within weeks to months of the initial skin lesion. Early stage treatment of Lyme disease consists of appropriate antibiotic selection. Optimal duration of therapy is dependent on the stage and/or severity of infection. Skin lesions generally require 14 days of therapy. Early signs of disseminated disease usually respond to 21 days of treatment while arthritic complaints may only resolve after 30-60 days of antimicrobial administration.

DRUG	DOSAGE REGIMEN	PLACE IN THERAPY
Doxycycline	100 mg bid	1 st line in patients \geq 9 years of age
Amoxicillin	500 mg tid (+/- probenecid 500 mg tid) OR 1000 mg every 8 hours	2 nd line in patients \geq 9 years old OR 1 st line in patients < 9 years old and in pregnancy
Cefuroxime axetil	500 mg bid OR 30 mg/kg/d divided into 2 doses	3 rd line if patient is allergic to penicillin or is unable to take tetracyclines
Erythromycin	250 mg qid OR 30-50 mg/kg/d in 3 or 4 divided doses	

The diagnosis of early Lyme disease is usually based on travel history and evaluation of skin lesions; however, an enzyme-linked immunosorbent assay (ELISA) followed by a Western immunoblot test may be required for disease confirmation. Treatment of late stage Lyme disease is discussed in the accompanying references.

References:

- Bratton RL, Whiteside JW, Hovan MJ et al. Diagnosis and treatment of Lyme disease. Mayo Clin Proc 2008;83:566-71.
- American Lyme Disease Foundation. Treatment of Lyme disease. <http://www.aldf.com/lyme.shtml#treatment>. Accessed 2 April 2009.

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