

Brief Communication: Erythema Migrans in Lyme Disease

Grace Perez-Lirio, MD

[*NA J Med Sci. 2009;2(4):130.*]

History

JD is a 44 year old White male who was seen in urgent care because of painful swelling behind his left knee for 2 days. He described the area as red and itchy for which he applied aquaphor. He had no history of insect bites or trauma and had no associated symptoms like fatigue, fever, chills, headache, dizziness, rhinorrhea, sore throat, cough, shortness of breath, abdominal pain, nausea, vomiting, muscle aches or joint aches. He had an uncomplicated vasectomy 1 week prior and otherwise had no health issues. His family history was unremarkable. He was not on any medications, both prescribed and over the counter. He never smoked or used illicit drugs. He consumed a drink or two of beer a week. He is married with 2 children, lives in a western suburb of Massachusetts. He works as a software engineer and is otherwise very active. He is a volunteer for his son's boys scout troop and just came from outdoor camping in New Hampshire.

His physical exam revealed normal vital signs. Head, ears, eyes, nose and throat were all within normal limits. His chest was clear and he did not have any murmurs. His abdomen was soft and non-tender. The posterior aspect of his left knee showed non-blanching erythema with no note of other lesions. His pulses were full and his neurologic exam was otherwise normal.

A lower extremity ultrasound was done to rule out Baker's cyst and deep venous thrombosis. He was subsequently treated for cellulitis with a 10 day course of cephalexin. On follow up 4 days later, he reported remarkable improvement of his symptoms. However, he again noticed recurrent redness and swelling on the same area 1 day after his last dose of cephalexin. On exam, there were 3 distinct rashes on his left upper arm and chest, the largest one was approximately 6 cm in diameter around the upper biceps region with blanching erythema and central clearing. He was sent for blood test which revealed positive Lyme antibody titre ~ 476 and was immediately started on doxycycline. He has done well since and reported no complications. He is planned for repeat antibody titre in 6 weeks.

Discussion

Lyme disease is named after a small town in Connecticut where it was initially identified in a cluster of children diagnosed with juvenile arthritis.² Although it is highly endemic in the Northeastern United States, it affects virtually anyone regardless of sex, age, race and socioeconomic status. Because this is a deer tick-borne illness, residents with large deer populations like the New England and Tri-State areas

are at increased risk. Those whose occupation or lifestyle involve outdoor activities like hunters or park rangers are also at more risk.

The United States Centers for Disease Control, reported that there was approximately 36,000 cases of confirmed and probable Lyme disease in 2008.¹ Documented cases have been highest around June to August, mostly as a result of the incubation period and feeding pattern of the deer ticks which is during the warm days of spring followed by human activities during the summer.^{1,2}

The cause of Lyme disease is *Borrelia Burgdorferi*, a spirochete or corkscrew shaped organism, similar to the causative agent of syphilis. It is carried by the tick species, *Ixodes* which is commonly found in deers. Because this organism is highly competent, when affected deer ticks bite humans, infection is likely to follow. The most common initial symptoms are related to the tick bite itself and although recovering the tick from the skin is rare, it does happen. Patients are usually unable to identify an insect bite prior to the rash, as in this patient. Aside from the rash, constitutional signs like fatigue, fever, chills, headache, arthralgia, myalgia and lymphadenopathy can also develop but not always.

Erythema migrans is a characteristic rash that occurs in up to 70-80% of Lyme disease cases.¹ It is described as a local area of redness and warmth which, over time resolves spontaneously. There is a distinct area of central clearing which is also known as the target or bull's eye lesion. A similar rash on the same area later on reoccurs along with additional lesions in other parts of the body.

Treatment is available for early Lyme disease with a 21 day course of doxycycline. Initiation of treatment early in the disease is important to prevent complications including severe arthritis, meningitis, cognitive defects and heart block. Prevention with the use of appropriate personal protective equipment including outdoor clothing, insect repellants with 20-30% DEET and nets are all very important.

In this patient, although he was unable to identify an insect bite, it is presumed that the initial rash on the popliteal area was from an infected deer tick bite which he got while camping. Recurrence after treatment on the same area followed by additional rashes characteristic of erythema migrans along with positive Lyme antibody titre make a firm diagnosis of Lyme disease. He is expected to do well with no progression anticipated in the future.

References

1. Centers for Disease Control. http://www.cdc.gov/ncidod/dvbid/lyme/ld_statistics.htm. December 12, 2008.
2. Spielman A. The emergence of Lyme disease and human babesiosis in a changing environment. *Ann N Y Acad Sci.* 1994;740(15):146-156.

Grace Perez-Lirio, MD

Beth Israel Deaconess Medical Center