

Lyme Disease Prevention

By Kristian Ulloa M.D.

I remember emerging from a long winter and stepping out onto the balcony of my condo, greeted by a warm spring sun. After months of vitamin D deprivation, I yearned to be in the great outdoors. On a whim, my brother and I decided to go on a long hike in Western Maryland. We packed our sleeping bags and a few essentials and proceeded to our mini-expedition. Desiring to take the road less traveled, we went off-trail and hiked through high brush. It was nearly dark when we reached our destination. We set up camp. In the morning, we checked our gear and clothing. Our pants and jackets were speckled with several poppy

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seeds, although we'd eaten plain bagels the day before. Upon closer inspection, I spied the eight-legged passengers on our clothing.

Fortunately, I was well aware of the Lyme disease epidemic in the Northeast and Mid-Atlantic United States. My brother and I had both applied 20% DEET to our exposed areas which had protected us. However, we made several errors during our brief journey, and this close encounter with an often debilitating disease inspired me to be better prepared.

One may ask, "Why should we worry about Lyme disease in Roland Park? Aren't deer ticks relegated to the woods?" I shared this sentiment as well until I saw a family of deer strolling through our backyard. We live a stone's throw from a major intersection in the city and have no woods nearby.

As of 2015, Maryland had the 11th highest incidence of Lyme disease in the country according to the Centers for Disease Control (CDC). Although 30,000 cases of this disease are reported yearly in the U.S., the CDC estimates that there are ten times that many new cases annually. Lyme disease is a multi-system inflammatory disease caused by the bacterium *Borrelia burgdorferi*. This bacteria is carried by *Ixodes Scapularis*, or the deer tick (also known as the black-legged tick). The deer tick has several life cycles during which it feeds on various hosts. The most well-known host is the deer, but mice, chipmunks, birds and even some reptiles and amphibians can be hosts.

The deer tick is most likely to infect humans during the nymph stage, which occurs in late spring and early summer. At this stage, the tick is the size of a poppy seed and is thus more difficult to detect. Early detection is vital because the longer the tick feeds on a person, the more likely it is to transmit Lyme disease. In fact, studies on mice have shown that transmission of the disease is 0 % within 24 hours, 10 % within 48 hours and 70 % within 72 hours. During the adult stage, the tick is the size of the small letters on a dime. Therefore, it is more likely to be

detected and removed in a timely fashion. Detection occurs via careful inspection of moist areas of the body and the hairline, especially in and around the ears, armpit, groin, behind the knees and belly button. If a tick is identified, use fine tweezers to gently pull the tick straight out of the skin without twisting. In this fashion, the tick is most likely to come out intact and not leave the head embedded and potentially continuing to transmit the bacteria.

Once infected, the classic finding is erythema migrans or bulls-eye rash. This rash develops between three to thirty days after infection and is exhibited in about 75% of those infected. Other early symptoms can mimic the flu — fever, chills, fatigue, headache, swollen lymph nodes, muscle and joint aches. If one experiences any of these symptoms, they should seek medical attention. Blood tests can confirm the diagnosis and then treatment can ensue. Usually, a 10-21 day course of antibiotics, such as doxycycline, can eradicate the disease if caught early enough. However, there are cases of persistent symptoms called post-treatment Lyme disease.

I now harken back to the adage, "An ounce of prevention is worth a pound of cure." Despite the prevalence of Lyme disease, several steps can be taken to avoid infection. The most obvious method of prevention is avoidance of the source. When it comes to home protection, keep deer out of the yard with a fence or thick foliage in the perimeter of the yard. There are several plants that deer dislike as well. Bait boxes to keep rodents at bay are also useful. Ticks seek out damp, shady areas, and thus keeping leaf piles and underbrush to a minimum is essential.



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There should also be a tick border of at least 9 feet from brush to gardens, patios and play areas. The tick border is a well-groomed lawn or gravel/stone barrier to prevent ticks from migrating into the most frequented areas of the yard.

Personal barriers are also extremely important. Long-sleeved shirts, pants tucked into high socks and hats prevent ticks from latching on to the skin. The clothing should be light colored or white to make detection of the black or brown colored ticks easier. Also, 0.5% permethrin can be sprayed onto one's clothing, boots, and equipment to prevent the ticks from attaching. To protect exposed skin, picaridin or a 20% DEET solution can be applied. Although the true efficacy is unknown, those who would like a more organic approach can use essential oils such as rosemary, lemongrass, cedar, peppermint, and thyme, which are natural repellants. However, the CDC does not recommend these oils as primary prevention.

In conclusion, Roland Park boasts some of the most beautiful, natural open spaces in Baltimore. We should make the most of our time outdoors and also take the necessary precautions to prevent infestation by a small yet pervasive pest, the deer tick. ❖

About the Author: Kristian Ulloa M.D. is a local Vascular Surgeon with Vascular Surgery Associates. He resides in Roland Park with his wife and two children.