Lyme Prophylaxis Risk Often Outweighs Benefit

BY BRUCE JANCIN

FROM THE ANNUAL CONFERENCE ON PEDIATRIC INFECTIOUS DISEASES

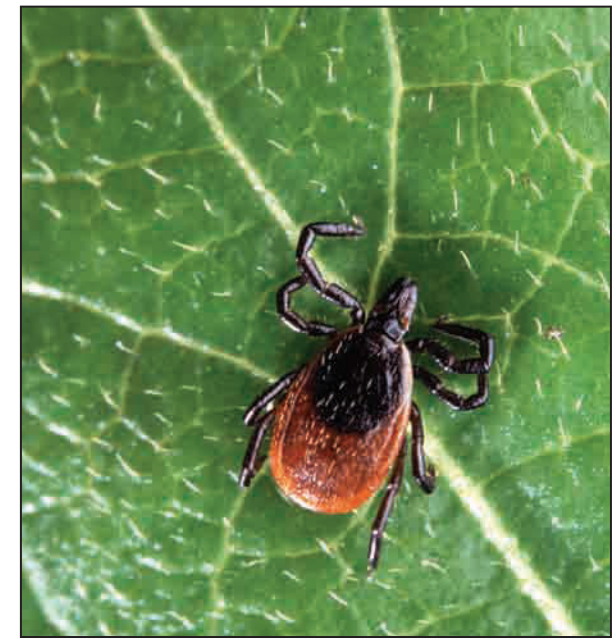
VAIL, COLO. – A patient arrives at the clinic with a recognized tick bite. To use prophylaxis for Lyme disease or not?

"This is actually a fairly common call to our infectious diseases division in the summertime: 'I had a child come into the office. We've got the tick. What do we do?'" Dr. Sean O'Leary said at the annual conference on pediatric infectious diseases sponsored by the Children's Hospital, Denver.

The answer he and his pediatric infectious disease colleagues at the hospital almost always provide is a strong "no" to antimicrobial prophylaxis. That's consistent with detailed Infectious Diseases Society of America guidelines on the topic, Dr. O'Leary noted.

The risk/benefit numbers argue against prophylaxis under most circumstances, he continued. Assuming a 1.4% attack rate of Lyme disease following a tick bite in an endemic area, the number needed to treat in order to prevent 1 infection is 83 patients – a hefty NNT. With the use of amoxicillin for prophylaxis, for every 10 cases of early Lyme disease prevented, it's to be expected that 1 patient would develop a severe, life-threatening drug reaction and 10 would experience a drug-induced rash. And, in a study involving prophylaxis with doxycycline, 30% of patients had adverse events.

The Infectious Disease Society of America guidelines specify the limited circumstances in which prophylaxis is "moderately" favored. The tick must be reliably identified as an adult or nymphal *Ixodes scapularis*, commonly known as the deer tick, that's been attached to the skin for more than 36 hours based upon the extent of engorgement with blood.



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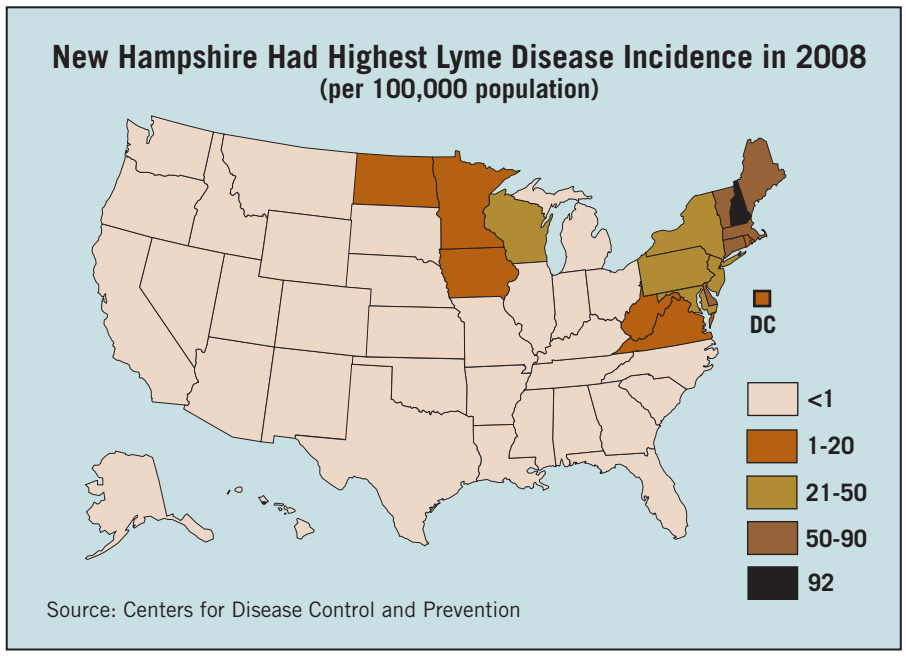

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The local rate of infection of this tick species with *Borrelia burgdorferi* has to exceed 20%, as is generally true in areas of New England, the Mid-Atlantic states, and the upper Midwest. And prophylaxis can be started less than 72 hours after removal of the tick.

When all those conditions are met, the IDSA guidelines state that it's reasonable to offer a single dose of doxycycline in patients without a contraindication to the drug. The dose for Lyme prevention is 200 mg in adults and 4 mg/kg up to a maximum of 200 mg in children above 8 years of age.

As for prophylaxis against other tick-borne pathogens, Dr. O'Leary said that fewer than 1 in 1,000 *Dermacentor* ticks carry *Rickettsia rickettsii*, the cause of Rocky Mountain spotted fever. And while there are very few studies on other tick-borne diseases, the risk is considered "very, very low," he noted.

"In general, the risk of prophylaxis far outweighs any potential benefit," Dr. O'Leary stressed.

Dr. O'Leary disclosed having no relevant financial conflicts. ■

Misdiagnosed Tick Paralysis Fatal in About 10% of Cases

BY BRUCE JANCIN

FROM THE ANNUAL CONFERENCE ON PEDIATRIC INFECTIOUS DISEASES

VAIL, COLO. – Tick paralysis is often misdiagnosed – with potentially dire consequences – as one of the other diseases that cause an acute ascending paralysis with preserved mental status.

The arthropod-inflicted paralysis is most often confused with Guillain-Barré syndrome. Other causes of an acute ascending paralysis with preserved mental status include spinal cord tumors and acute poliomyelitis.

Botulism, in contrast, causes a descending paralysis with preserved mental status, Dr. Sean O'Leary said at the conference, which was sponsored by the Children's Hospital, Denver.

Conducting a thorough search for an embedded tick is essential in a patient with an acute ascending paralysis with preserved sensorium, particularly when there is a history consistent with potential tick exposure. Treatment of tick paralysis is simple: remove the tick. Clinical improvement will follow within hours.

In unrecognized and untreated cases of tick paralysis, however, the fatality rate is about 10%, with death typically occurring just 18-30 hours after symptom onset, according to Dr. O'Leary of the Children's Hospital and the University of Colorado, both in Denver.

Tick paralysis is more common in children than adults. The highest-risk group is young girls with long hair that can readily hide an engorged tick that's had a blood meal.

At 3 days after attachment, the tick (usually a female) begins secreting the neurotoxin that causes the paralysis. Symptoms appear 4-7 days after attachment. The peak time for tick paralysis is tick mating season: April through June.

The clinical scenario typically begins with loss of appetite and voice, followed by gait instability, ascending flaccid paralysis, excessive salivation, eye irritation, pupillary asymmetry, and vomiting. Death is usually from respiratory failure.

The peak time for tick paralysis is tick mating season: April through June.

DR. O'LEARY

For more than half a century, there have been postmortem reports of ticks being found embedded in the skin of people who died suddenly of unexplained paralytic illnesses.

About 8% of the 870 named tick species have been associated with intoxication syndromes. The species that cause the most cases of human, dog, and livestock paralysis in North America are *Dermacentor andersoni* and *D. variabilis*, both of which are vectors for the rickettsial disease Rocky Mountain spotted fever. In the United States, tick paralysis occurs most often in the Pacific Northwest and Rocky Mountain states.

The tick toxin's pathogenic mechanism isn't fully understood. Australian investigators have reported that the toxin inhibits acetylcholine release at the neuromuscular synapse, but tick paralysis there is caused by *Ixodes* species, and it's not clear that the same mechanism is at work in the paralysis caused by *Dermacentor* species, Dr. O'Leary said.

Dr. O'Leary declared having no relevant financial relationships. ■

Do's and Don'ts of Proper Tick Removal

The proper way to remove a tick is to grab it with blunt forceps as close to the skin as possible and pull it straight out with steady pressure, according to Dr. O'Leary.

Don't apply a hot nail or blown-out match to the critter's backside. Don't use tweezers or sharp forceps. Avoid using a twisting or corkscrew motion in removing the tick. Don't crush or squeeze the tick's body, as that can cause the tick to release more of the infectious organism or toxin.

Don't handle the tick barehanded. "There have been documented cases of disease transmission" in people who did that, said Dr. O'Leary.

And although in bygone days it was a popular practice to apply gasoline, lidocaine, petroleum jelly, or other substances to the embedded tick to encourage it to back out, the current thinking is, don't do it.

"There are horror stories about the use of those things," he said.