

## **MSU Extension Publication Archive**

Archive copy of publication, do not use for current recommendations. Up-to-date information about many topics can be obtained from your local Extension office.

Lyme Borreliosis in Domestic Animals

Michigan State University

Cooperative Extension Service

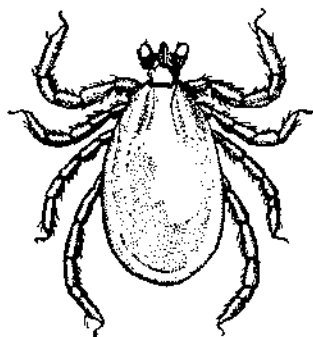
Ann Donoghue, and Charles D. Gibson, Department of Large Animal Clinical Sciences

January 1990

2 pages

The PDF file was provided courtesy of the Michigan State University Library

**Scroll down to view the publication.**



Hard tick: *Ixodes dammini*

# LYME BORRELIOSIS IN DOMESTIC ANIMALS

Ann Donoghue, D.V.M.  
Charles D. Gibson, D.V.M., Ph.D  
Department of Large Animal Clinical Sciences  
College of Veterinary Medicine

**L**yme borreliosis is a disease caused by the spirochete bacterium *Borrelia burgdorferi* and affects people and animals. It is transmitted by the hard tick *Ixodes dammini*, commonly called the deer or bear tick. How the bacteria is transmitted from the tick to animals and between individual animals in a herd is not well understood. The pathogenesis (creation of disease) of *B. burgdorferi* infection in domestic animals is not known. A definitive diagnosis by culture techniques is very difficult as the spirochete is not readily found in high numbers. The currently used laboratory serological test identifies antibodies against the genus *Borrelia* and is not completely specific for *B. burgdorferi*. There are other species of *Borrelia* known to infect domestic animals and humans. It is not known if these other species are present in Michigan.

## Clinical Signs in Domestic Animals

There are very few documented reports of Lyme disease in domestic animals. Dogs, horses and cattle are the only species that have been described in the literature. Lyme disease has not been

reproduced experimentally in any of these species, so describing the disease is difficult because it has not been well studied. How the spirochete causes damage is not known.

### Dogs

Clinical signs of Lyme borreliosis in dogs as reported in the literature include fever, lymphadenopathy (swollen lymph nodes), and lameness in one or more joints. Spirochetes have been cultured from dogs with these clinical signs. There has been one case of a dog with kidney failure attributed to the presence of spirochetes in the kidney.

### Cats

There are no reported cases in the literature. There are some reports from veterinarians indicating that cats have similar signs as dogs.

### Horses

Clinical signs associated with positive test results have been reported in horses. However, there have been few cases where the spirochete has been cultured from the animal. The clinical signs reported include lameness,

encephalitis (inflammation of the brain), uveitis (inflammation of the middle coat of the eye), and a transient edema of the legs in foals. Many of these cases were diagnosed on positive test results.

An attempt at culturing the spirochete was not done. It is difficult to make definite conclusions on the cause of clinical signs. Also in several cases other causes for disease were not dismissed.

### Cattle

There has been only one case report of *B. burgdorferi* infection in cattle, a heifer which developed laminitis in the forefeet following calving. The animal was treated and improved, but subsequently deteriorated and was euthanized. Arthritis, weight loss, kidney, liver and lung damage were found. The spirochete was found in the lungs and liver. There have been numerous field reports of presumed Lyme disease in cattle herds. However, other causes of the clinical signs were not ruled out in each case. Identification of the spirochete was not attempted in most cases.

### Pigs, Sheep and Goats



Adult Deer Tick—actual size



Nymph Deer Tick—actual size



Adult Deer Tick—partially engorged

It is not known if these species develop Lyme borreliosis.

### ***Treatment and Prevention***

Treatment with penicillin or tetracycline is very effective in humans and dogs. Since the organism “hides” in tissue, it is necessary to treat for a minimum of 14 days to reach and kill all organisms. In some cattle herds, tetracycline given during the dry cow period appears to be beneficial in alleviating signs attributed to Lyme disease. When treating livestock, it is important that meat and milk withdrawal times

are strictly observed. Because the tick prefers mice and deer as its host, strict rodent control and fencing out deer will help decrease exposure to the ticks. Keeping brushy areas around the barn, house and fields mowed will also decrease tick habitat. Checking animals (and humans) thoroughly for ticks and removing any that are found is recommended. Place ticks in alcohol for later identification.

### ***Conclusions***

There are many unanswered questions about Lyme borreliosis in domestic animals. Researchers

are investigating other possible means of transmission including biting insects, animal-to-animal contact, and urine. The form of the disease in each species is also being looked into to determine if different species have different responses to the spirochete. At this time, a presumptive diagnosis of Lyme disease is made if all other reasons for the clinical signs are ruled out, the animal has a high or rising antibody titer and responds to treatment. For further information, contact Dr. Charles Gibson or Dr. Ann Donoghue.



MSU is an Affirmative Action/Equal Opportunity Institution. Cooperative Extension Service Programs are open to all without regard to race, color, national origin, sex or handicap. ■ Issued in furtherance of Cooperative Extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the U.S. Department of Agriculture. J. Ray Gillespie, interim director, Cooperative Extension Service, Michigan State University, East Lansing, MI 48824. ■ This information is for educational purposes only. Reference to commercial products or trade names does not imply endorsement by the Cooperative Extension Service or bias against those not mentioned. This bulletin becomes public property upon publication with credit to MSU. Reprinting cannot be used to endorse or advertise a commercial product or company.

New-20M-1-90-TCM-UP, Price 10¢, single copy free to Michigan residents.

FILE 21 (Livestock—Health)