

Lyme Disease in Livestock Guard Dogs

Dr. Jerusha (Jessie) Lay, Assistant Professor of Animal Health

Livestock guard dogs are the protectors of not only the livestock but also the investment of the producer on many small ruminant farms. These gentle giants are often easy going and low maintenance; however, there are several dangers associated with their line of work. A common problem seen in livestock guard dogs is external parasites and a higher risk of rickettsial diseases, such as Lyme disease, Rocky Mountain spotted fever, and ehrlichiosis.

Lyme disease is caused by a bacteria called *Borrelia burgdorferi*. It is more prevalent in some geographic areas than others, but we commonly see it in Kentucky. It is transmitted by multiple types of ticks; however, the deer tick or the black legged tick (*Ixodes spp.*) are the most common vectors of this disease in Kentucky. It is important to note that the ticks themselves don't cause the infection; they are simply the carriers of the disease. Therefore, not all ticks harbor the bacteria, but the ones that harbor *B. burgdorferi* do not get sick themselves. Instead, when an infected tick attaches itself to a livestock guard dog (or the livestock themselves) the ticks inject the bacteria into the animal. Once an infected tick bites the animal, it may be months before the dog begins showing symptoms of the disease.

The route of transmission is very important as we start talking about the general risks to various animals. Since livestock guard animals are housed outdoors, it makes them more likely to be exposed to ticks and bitten by ticks than the average house dog. While not every tick carries the disease, the more tick bites a dog receives increases the probability that an infected tick will bite the guard dog. In addition, livestock guard dogs often have very thick hair coats and are usually



not brushed daily, so we are less likely to notice if the guard dog has ticks on them.

Not all affected animals will display the same symptoms. Some dogs may become infected and be asymptomatic, showing no symptoms at all. The most common form of Lyme disease starts with a fever and the dog's loss of appetite. The symptoms may then progress to include swollen joints and lameness, which may be intermittent or shift affected legs. Once again, especially in older livestock guard dogs, the symptoms may be overlooked or assumed to be arthritis or hip dysplasia, so it is important to have guard dogs that show these symptoms evaluated by your veterinarian.

The most dangerous form of Lyme disease affects the animal's kidneys, and this is usually fatal. Symptoms of Lyme disease involving the kidneys mimic acute kidney failure. Dogs become anorexic, drink more water than usual, and may even vomit. Livestock guard dogs often share water sources with the livestock, making it difficult to measure or notice the increase in water consumption in the dogs.

Although it is less common, Lyme disease may also present as neurologic or cardiac disorders. In these cases, the symptoms may range from coughing to facial paralysis or even seizures.

If you suspect that a livestock guard dog has Lyme disease, it should be taken to a veterinarian. Based on history and symptoms, the veterinarian may recommend a blood test. Most blood tests can only detect whether the dog has been exposed to Lyme disease. Your veterinarian will make a diagnosis on the clinical signs the animal is displaying and a positive test for exposure to Lyme disease. If your veterinarian diagnoses or suspects Lyme disease, the treatment includes antibiotics for several weeks. Although this may eliminate some or most of the symptoms, some dogs may have lifelong joint issues or damage to the kidneys that may not be reversible.

Lyme disease itself cannot be transmitted directly from animals to people; however, the ticks involved in Lyme disease transmission may bite both animals and people. The human health risk is that ticks that become infected may then bite other animals or humans. This means that if a guard dog becomes infected, even if it's not showing symptoms, ticks that bite the guard dog after it is infected may then transmit Lyme disease to the livestock or farmers.

Prevention is the best control of Lyme disease. First and most importantly, the best preventive measure you can take is protecting your guard dogs from ticks. Many products are effective flea and tick preventatives, including topical or oral products. Talk to your veterinarian as to which product they recommend for your guard dogs.



A vaccine is available for dogs. The vaccine is generally not considered a “core vaccine,” which is a vaccine that every dog needs. The Lyme disease vaccine is generally given only to dogs that are at an increased risk for this disease. Talk to your veterinarian about the risk your guard dog may face and your veterinarian can advise you as to whether they will add it to the vaccine regimen for your livestock guard dogs.

References

<https://www.merckvetmanual.com/dog-owners/disorders-affecting-multiple-body-systems-of-dogs/lyme-disease-lyme-borreliosis-in-dogs>

<https://www.avma.org/public/PetCare/Pages/lyme-disease.aspx>