Lyme Disease

It's Sunday night and you have just returned home after camping all weekend with your family and your dog. You enjoyed fishing, hiking and s'mores around a campfire. As you are petting your dog you notice a little lump that was not there before and discover a tick. The next morning you call the veterinarians office and schedule an appointment to come in and have the tick removed. Once the tick is removed the doctor or technician recommends that you come back in 4 to 6 weeks to have a test done to check for Lyme disease.

The deer tick has four different stages in its life cycle. They are the egg, larval, nymph and adult stages. During the larval and nymph stages the ticks are infected with *Borrelia burgdorferi* from feeding on wild rodents. There is not direct bacterial transfer from the adult to the next generation of ticks. The adult deer tick then passes on the bacteria to whatever animal it attaches to. Although deer are the preferred hosts for deer ticks, they are not considered to be a disease reservoir. The ticks that carry *Borrelia burgdorferi* are most often found in the northeastern, upper midwestern and western coastal states where tick infestation are more common.

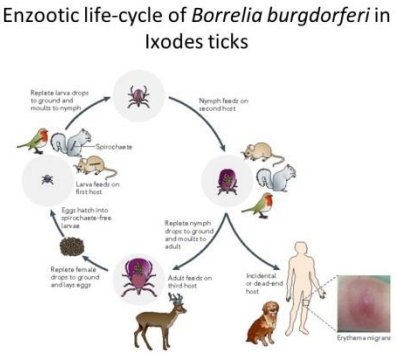

Figure 1 Life Cycle of *Borrelia burgdorferi*

Dogs, and even cats, become infected with Lyme disease when the infected deer ticks take a blood meal on them. The tick is not able to transmit the *Borrelia burgdorferi* bacteria as soon as they attach to the animal, instead they require 24 to 48 hours of feeding to inoculate the animal. The tick passes the bacteria through their salivary glands and into the host animal. Once inoculated the bacteria migrates through the connective tissue and eventually take up permanent residence in tissue such as the heart and lungs.

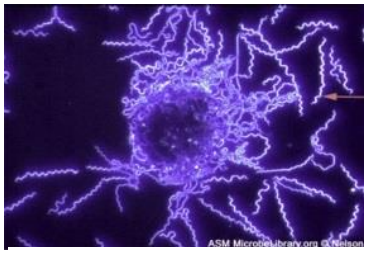

Figure 2 Spirochete bacteria, *Borrelia burgdorferi*.

Most of the dogs and cats that are exposed to *Borrelia burgdorferi* do not develop clinical infections. However when a dog or cat does develop a clinical infection signs can include fever, stiffness of the legs, limping, swollen joints and lymph nodes, a reluctance to move, lethargy, depression, vomiting and/or a loss of appetite. Some of the less common signs of Lyme disease include diarrhea, weight loss and edema. In severe cases, destructions of the kidney's filtration system occurs resulting in protein loss and irreversible kidney failure.

Diagnosis of Lyme disease is determined by the presence of a positive blood test and observation of clinical signs. A C6 blood test is a test that is sensitive to a peptide based on a surface protein of the *Borrelia burgdorferi* bacteria. This test is included in the 4Dx SNAP test that is available through your veterinarian. This test is considered a patient side test meaning that it can be done in the clinic and can take 15 to 20 minutes to get the results. The 4Dx SNAP test also tests for Anaplasmosis and Erlichiosis, which are two additional tick-borne diseases, and heartworm disease.

If your pet is diagnosed with Lyme disease your veterinarian may want to submit a urine sample to check their protein-creatinine ratio for kidney failure. To treat your pet for Lyme disease, your veterinarian will start them on a course of antibiotics that lasts for about 1 month. Vaccination against Lyme Disease during the antibiotic course is also highly recommended. It is very important to give these antibiotics with food to prevent stomach upset and vomiting. If you do notice vomiting or a lack of appetite while on the medication contact your veterinarian.

Ticks are most commonly found in taller grassy areas and can even be found in the grass alongside the road as well as in wooded areas. Also, ticks only need temperatures above 32 degrees for a few days to become active. Due to these reasons it is recommended to keep your dog on a monthly flea and tick preventative year round.

Lyme disease can be prevented through the monthly use of a flea and tick preventative product such as Frontline Gold ®, Nexgard® or Revolution®. If your dog frequents areas that are known to have a lot of ticks it would also be beneficial to have them vaccinated against Lyme disease every year. While the vaccination is not a 100 percent guarantee it does dramatically reduce the severity of the infection. It is also important to remove ticks as soon as you find them on your pet. To remove the tick, grasp them as close to the skin of your pet as possible with a tweezers and pull slowly but firmly. It is very uncommon to leave the head of the tick in your pet if you remove the tick this way. Yearly 4Dx testing for the three tick-borne diseases as well as heartworm disease is highly recommended. Once your dog has been diagnosed as having Lyme disease through a 4Dx test future tests may show a positive result because of residual antibodies present in the blood.

Figure 3 Idexx 4Dx Snap test

While dogs cannot give Lyme disease directly to people, ticks do not differentiate between biting animals and humans. The best way to avoid this is to use a repellent product and remove ticks as soon as they are found. It is also recommended that you wear light colored clothing so that the ticks crawling on you are easier to spot.

If you have any further questions please feel free to contact us at (920) 668-6212 or send us an e-mail at info@cgvet.com. You can also learn more about Lyme disease by going to http://www.capvet.org/capc-recommendations/Lyme-disease and http://usa.nobivac.com/disease-info-canine-infectious-diseases-canine-lyme-disease.aspx.