Leptospirosis & Vaccine (Bacterin)

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About Lepto vaccines

Leptospirosis, a zoonotic bacterial disease with worldwide distribution, is a highly treatable illness. It is most commonly seen in warm, wet seasons, and in areas with high rainfall. The prescribed treatment is antibiotics, with doxycycline preferred, since it sterilizes the kidneys, thereby eliminating both the bacteremic and the carrier states, according to some veterinary sources. Other veterinarians prefer to use penicillin G for the bacteremic phase, intravenously, and doxycycline for the carrier state. One study shows that doxycycline cleared the organisms from all sites (kidneys and blood) within three days of infection[1].

The vaccine for Leptospirosis in dogs is not a core vaccine, and has the highest rate of, and most serious, recorded reactions, possibly second to rabies vaccine, according to Dr. Ron Schultz, University of Wisconsin-Madison School of Veterinary Medicine. The typical reactions have not only included vomiting or diarrhea, but anaphylaxis with shock or death and serious immune-mediated diseases, which may manifest as bleeding disorders (like IMHA). If you live in a high risk area, there are some things to consider in your decision process, and timing of injection.

Inefficacy of vaccination

A leptospira is technically a spirochete, a corkscrew shaped bacterium; it's not a virus like parvo or distemper. So the injection given to prevent an infection with this organism is not really a vaccine, but rather a bacterin. Unlike viral vaccination, bacterin vaccines like leptospirosis don't always prevent infection; they often only decrease the severity of symptoms. Unlike many other vaccines, the bacterin vaccine can be shed in the environment, potentially infecting your

[1] Quantitative PCR assay to evaluate ampicillin, ofloxacin, and doxycycline for treatment of experimental leptospirosis. Truccolo J, Charavay F, Merien F, Perolat P; Antimicrob Agents Chemother. 2002 Mar; 46(3):848-53.

dog, other dogs, wildlife and you. Unfortunately, the "vaccine" does not provide protection against all of the more than 250 strains, and protection is limited in duration. Not only is infection not prevented, but because symptoms are less severe, some feel you may not notice that your pet is very ill. You might think your pet has some gastrointestinal upset which will pass. Instead of seeking veterinary care early on in the disease process, the infection will settle into the renal system, causing permanent harm.

The "vaccine" for leptospirosis lasts for well less than one year, so it is given annually, or in some areas is given 2x/year, which increases risk of reactions. Based on serologic data, the main lepto serovars causing disease in dogs include L. pomona, L. grippotyphosa, occasionally L. autumnalis and L.bratislava, and rarely, L. canicola, L. hardjo, and L. icterohaemorrhagiae. What most people don't know is that primary lepto vaccine (there is a newer one with two additional serovars) only protects dogs against the main two serovars for about two weeks, if at all according to these reports:

- Andre-Fontaine G, Branger C, Gray AW, et al. Comparison of the efficacy of three commercial bacterins in preventing canine leptospirosis. Vet Rec 153:165-169, 2003.
- Dr Stephen Barr of Cornell University states: "most [vaccines] claim year efficacy except those subunit vaccines covering L. pomona and L. grippotyphosa (protect for 2 to 2½ weeks post-booster)"

Symptoms and Treatment

Without early detection, leptospirosis is very difficult to treat. For this reason, it is important to understand the symptoms of leptospirosis. Acute renal failure is now the most commonly reported presentation of canine leptospirosis, according to Dr. Katharine Lunn, BVMS, MS, PhD, MRCVS, DACVIM (Wisconsin Veterinary Referral Center). Clinical signs usually include anorexia, lethargy, vomiting, fever, stiffness, abdominal pain, polyuria (excessive and diluted urine),

and polydipsia (excessive thirst). Other signs may include one or more of the following: joint or muscle pain, weakness, diarrhea, discharge from the nose and eyes, frequent urination, and yellowing of gums and around the eyes. If you observe these signs in your dog, you should take your dog to your veterinarian immediately.

As previously state, leptospirosis can be easily treated with early detection. Doxycycline is the antibiotic of choice. This antibiotic has the ability, even in renal compromise, to sterilize the urinary tract of leptospira infection. The following treatment notes support the general and immediate treatment with doxycycline, and the general consensus is that treatment can be prophylactic in high risk area, or begin without waiting for confirmation of diagnosis.

- Doxycycline can be administered to dogs with renal insufficiency and is effective in both the infection of the blood or urine stage, clearing the organism from the kidneys. *-Goldstein RE Leptospirosis Epidemiology and Pathogenesis and Zoonotic Impact on Veterinary Practitioners. Insights in Veterinary Medicine Aug 2007:5 (2):4.*
- Antibiotic treatment is quickly effective. The possibility of human infection from their dog disappears after the first day of treatment with antibiotics, so early detection of a real problem impacts human public health issues as well. *-Goldstein R, Canine Leptospirosis epidemiology and Pathogenesis and Zoonotic Impact on Veterinary Practitioners. Insights in Veterinary Medicine Aug 2007:5(2):4.*
- Doxycycline (chemoprophylaxis) is also used successfully to prevent human infections (weekly 200 mg for military personnel without previous exposure to Leptospirosis who are going for jungle training) when taken prior to the possibility of Leptospira exposure. *- Takafuji ET, Kirkpatrick JW, Miller RN et al., An efficacy trial of Doxycycline chemoprophylaxis against Leptospirosis NEJM Feb 23 1984:310(8):497-500.*

Prevention could be your best medicine

The leptospira organism survives for weeks to months in stagnant warm water, and warm, moist soils – so veterinarians see more cases in late summer and fall. Since the renal tubules of animals with leptospirosis are persistently infected; those animals shed the organism in their urine for months or longer. More cases are seen after periods of heavy rain fall, when animals may drink from standing puddles of water.

The most common mechanism of infection is through indirect contact with urine, through contaminated water or soil. Pets can become infected by sniffing infected urine, or by wading in, swimming in, or drinking contaminated water. Leptospira can also enter through a wound or through the pets eating infected materials.

Preventing your pet from drinking or playing in contaminated water is the best way to avoid exposure to leptospirosis. You can help prevent contamination of water and soil on your property by not leaving food outdoors where it can attract feral cats, raccoons, skunks, rats etc. Raccoons are known vectors for leptospirosis.

Winter conditions lower the risk of infection because leptospira do not tolerate the freezing and thawing of near-zero temperatures. They are killed rapidly by drying, but they persist in standing water, dampness, mud and alkaline conditions.

In summary…

You as a pet owner, are the patient advocate for your dog. Ultimately, only you can ultimately decide if leptospirosis vaccination makes sense, knowing that it brings higher risk of reactions, and may reduce symptoms of leptospirosis infection to a point where you may not recognize your dog is ill. If you do choose to use the leptospirosis vaccine, remember:

1. It must be given at the right time (during times of higher risk in climate),

2. It may only last two weeks for serovars in your region,
3. It might minimize symptoms, so you must be vigilant in observing your dog,
4. Most importantly, a delay in treatment can be detrimental.

Homeopathy and leptospirosis, for further reading

Prevention of Leptospirosis Epidemic in Cuba (in humans) with homeopathic nosodes -- http://www.sphq.org/pdf/leptospiros...

Large-scale application of highly-diluted bacteria for Leptospirosis epidemic control -- http://www.ncbi.nlm.nih.gov/pubmed/...