What we can learn from the 2010 American College of Veterinary Internal Medicine Small Animal Consensus Statement on Leptospirosis

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A new report, based on a literature review, offers a consensus opinion on leptospirosis and provides evidence-based justification for recommendations regarding the diagnosis, treatment, and prevention of this disease.

This consensus statement was presented at the 2010 American College of Veterinary Internal Medicine (ACVIM) forum and was published in the Jan/Feb 2011 issue of the *Journal of Veterinary Internal Medicine.*

Here are some of the questions the consensus statement may help us answer:

1. **What clinical signs are associated with canine leptospirosis infection?**

While we should still suspect leptospirosis in dogs with kidney or liver disease, the clinical presentation of leptospirosis can vary widely. Some dogs may not even show signs of clinical illness while others will become severely ill and ultimately die of the disease. Dogs with renal involvement may have signs typical of renal disease such as polyuria, polydipsia, dehydration, vomiting, and diarrhea. It is important to note, however, that even dogs that are not azotemic may be polyuric and polydipsic when infected with leptospirosis. This may be due to a decrease in their glomerular filtration rate or may be a form of acquired nephrogenic diabetes insipidus. Dogs that present with liver involvement may show signs of icterus. Respiratory signs such as tachypnea and/or dyspnea may be noted in dogs with leptospirosis that have leptospiral pulmonary hemorrhage syndrome (LPHS).

2. **What are the risk factors that predispose dogs to leptospirosis?**

Typically dogs become infected with leptospirosis by exposure to contaminated water, soil, food, or bedding that comes in contact with mucous membranes or abraded skin. Outbreaks of leptospirosis tend to be seen after periods of high rainfall, but peak incidence overall varies geographically. Dogs that drink from or are exposed to rivers, streams, or lakes may have an increased risk; however, it is important to note that even dogs in urban environments may contract the illness. “In areas where wild animal species access suburban backyards, small breed dogs that have minimal contact with water sources may be at risk,” the panel notes.

3. **Do cats become ill from leptospirosis?**

Leptospirosis has been isolated from cats but clinical disease is rare. Whether cats may play a role in environmental contamination is not clear.

4. **What is the best way to diagnose leptospirosis?**

The current test of choice is still the MAT (microscopic agglutination test), which tests for antibodies to various leptospirosis serovars. The concern with this methodology is that interpretation is subjective and standardization is difficult. Dogs who are acutely ill may have negative test results within the first week of illness, so acute and convalescent titers (7-14 days apart) are recommended. A 4-fold increase in the titer is supportive of a recent infection. Previous vaccination against leptospirosis may also cause an elevated titer and vaccine serovars may cross-react with non-vaccine serogroups. Post-vaccinal titers are expected to be low but high titers (≥1600) may persist after vaccination. Thus, while a single elevated titer may raise suspicion for leptospirosis, it does not confirm the disease.

In dogs with acute illness (<10 days) who would likely have negative serology, molecular diagnostics such as polymerase chain reaction (PCR) may be more beneficial. In dogs with a history of leptospirosis vaccination and positive serology, PCR can confirm active infection. Negative PCR results do not rule out the disease, and the test still needs to be interpreted in conjunction with antibody testing and supportive clinical signs. PCR testing of urine in dogs with known current or previous leptospirosis infection may help identify a chronic carrier state.

5. **What is the best way to treat leptospirosis?**

While the ideal treatment for canine leptospirosis is unknown, the consensus panel recommends treatment with doxycycline, 5 mg/kg IV or PO q 12 hours for 2 weeks. If doxycycline is not available or not tolerated by the patient, ampicillin at 20 mg/kg IV q6 hours should be given. This dose should be reduced for azotemic dogs. Once the patient is able to take oral medications again, doxycycline should be administered for 2 weeks to clear the organisms from the renal tubules.

The prognosis for dogs that are treated appropriately and aggressively and that do not have complicating respiratory involvement is good. Renal parameters would be expected to return to normal by 2 weeks although it may take over 4 weeks in some cases. In some dogs, permanent kidney damage may occur. Once discharged from the hospital, follow up exams will vary depending on the severity of their illness. The panel recommends, at minimum, a follow up visit one week after discharge to assess a chemistry panel and urinalysis and, if indicated, a CBC.

6. **If I diagnose my patient with leptospirosis, will clinical signs or serology identify which is the infective serovar?**

According to the panel, "at this time, no clear correlation has been made between the suspected infecting serovar based on antibody testing and clinical manifestations of disease in naturally occurring canine leptospirosis." In the future, a combination of tests including genetic studies may ultimately aid in the correlation of clinical signs and infecting leptospiral strain and allow more specific mapping of the geographic distribution of leptospirosis. The treatment for leptospirosis is the same regardless of the infecting serovar.

7. **What are the zoonotic concerns with leptospirosis?**

Most human cases of leptospirosis infection in the US result from recreational water activities. The incidence of transmission from pet contact is low; however, while the risks of zoonotic exposure require further study, appropriate handling of these patients is warranted. Pregnant or immunocompromised individuals should avoid contact with patients suspected of having leptospirosis. Antimicrobial therapy may help lessen zoonotic risk by decreasing the amount of organisms shed in the urine. Movement of these patients around the hospital should be kept to a minimum but, because dog to dog transmission is rare and these patients typically require more intensive monitoring, the panel does not feel they need to be kept in isolation. Disposable gowns, gloves, facemask and protective eyewear should be worn when cleaning cages or handling infected urine. Due to the risk of aerosolization of infective organisms, pressure washing runs should be avoided. Patients should be allowed to urinate in a restricted area that can be easily disinfected and disposable bedding should be placed in biohazard bags. Other bedding can be laundered normally to inactivate leptospires. Urine collected from infected dogs-such as those with indwelling urinary catheters-should be disinfected prior to disposal. A 1:1 combination with a 10% bleach solution is effective as are iodine-based disinfectants, quaternary ammonium solutions or accelerated hydrogen peroxide. All blood, tissues and urine from infected dogs should be handled as medical waste and disposed of according to local regulations. All personnel in contact with infected dogs should be informed of the risks so that proper precautions may be taken.

Once these patients are home, owners should still avoid contact with their dog's urine until antimicrobial therapy is completed and should wash their hands after touching the dog. Vaccination of other dogs in the household at risk of exposure may help decrease zoonotic potential.

The consensus panel recommends that other dogs in the household be treated with a 2-week course of doxycycline if there is a common source of exposure. Monitoring of acute and convalescent titers in these dogs is also recommended.

8. What about vaccines for leptospirosis?

While there have been concerns in the past regarding the safety of leptospirosis vaccines, a large study published in 2005 found these vaccines to be no more reactive than other canine vaccines. At this time there has been no evidence of leptospirosis in dogs that have received the 4-serovar vaccines; however, data are insufficient regarding the prevalence of leptospirosis in this population of dogs. The consensus panel recommends that dogs considered to be at risk for leptospirosis infection be vaccinated annually with the 4-serovar vaccine.

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