VETERINARY SPECIALTY CENTER

2051 Waukegan Road, Bannockburn, Illinois 60015
847.459.7535 Fax 847.808.8900
vetspecialty.com

Leptospirosis

Leptospirosis is a potentially life-threatening bacterial infection of dogs that is common in the United States.

Cause
Leptospirosis is caused by a spirochete (spiral-shaped) microorganism known as *Leptospira interrogans*. There are several serovars or variations of this organism that exist in the United States.

This bacteria can infect many different types of wildlife, including rodents, raccoons, opossums, deer, and skunks. Domesticated animals, such as pigs, cattle, horses, and dogs are susceptible to infection, as are human beings; domesticated cats are resistant to Leptospira infection. After exposure, some animals will show no symptoms but may still shed the bacteria in their urine, while other animals become profoundly ill and from the infection. Leptospira organisms are transmitted through contact with infected animals, their urine, or contaminated soil and water.

Leptospira interrogans is an organism found commonly throughout the United States. It thrives in moist soil or stagnant water. Infections are more commonly observed in the spring and early fall when the wet soil conditions and moderate temperatures allow this organism to survive in the environment. There tends to be an increase in prevalence after heavy rainfall.

Clinical Signs
Although some patients can have a milder form of infection, most patients with Leptospirosis are profoundly ill. Leptospirosis can cause acute, severe illness that includes fever, weakness, stiffness, red eyes, pain, nausea, vomiting, and lethargy. As the disease progresses, the patient's signs worsen as the liver and kidney function is adversely affected. Patients can become icteric (jaundiced), have difficulty breathing, bleeding tendencies, and decreased urine output. Without aggressive therapy, patients in this condition will die rapidly of liver and kidney failure.

Diagnosis
Patients that present for suspected Leptospirosis will have blood and urine tests in an attempt to identify the organism as well as assess the status of the patient's organ function. Diagnostic tests for Leptospirosis include a urine PCR test and a serum (blood) antibody titer. The urine PCR determines if DNA from the bacterial organism is present; this test is not affected by Leptospira vaccines. Serum antibody titers can be positive if the patient was vaccinated for Leptospirosis, but the test is valuable as a baseline regardless of vaccine status. Knowing the timing and type of recent vaccinations will help with diagnostic test interpretation.

Leptospirosis is a serious systemic disease that can affect the function of every organ system in the body. In addition to blood and urine tests, imaging studies such as radiographs (X-rays) and ultrasound are often done to assess patient status. These tests are particularly important if the patient is having difficulty breathing, has developed a coagulopathy (bleeding tendency) or if kidney function has reached life-threatening levels.

Treatment
There are antibiotics that are effective against Leptospirosis and, when patients are diagnosed in a timely manner, therapy is often successful. Early antibiotic therapy is effective in shortening the duration of the disease and decreasing the severity of kidney and liver damage. Some patients require a significant amount of supportive care to survive the infection. This is likely to include intravenous fluids, medications to control blood pressure, nausea and vomiting, nutritional support, and other intensive care.

All patients with suspected Leptospirosis will have a urinary catheter placed in order to reduce the risk of other patients, hospital staff or family being exposed to the organism. This will also allow careful monitoring of the patient's urine output, which is an indication of kidney function. The most severely affected patients can develop kidney failure that requires dialysis in order to recover. This involves the placement of a dialysis catheter in the neck so the patient can spend several hours on a hemodialysis machine that performs the filtering function for the damaged kidneys. Though this therapy is not without risk, hemodialysis has allowed many patients to recover that would otherwise have succumbed due to the severity of kidney failure. While a patient is undergoing dialysis therapy, antibiotics to clear the infection are continued. The goal is to support the patient's kidneys to allow a good recovery.

Because of the infectious nature of this organism, avoiding contact with an infected pet is critical. When one pet in a household is infected, it is important to closely observe the other pets for a sign of disease. Housemates of the infected pet are often placed on antibiotic treatment as a precaution.

Humans are also susceptible to Leptospirosis. For this reason, strict precautions are taken for patients that are hospitalized for an infection. Humans handling pets with suspected or confirmed Leptospirosis should inform their physician of possible exposure.

Immunization against Leptospirosis has been effective in reducing the prevalence and severity of the infection in canine patients; however, but the vaccine is not 100% effective. Because this disease is common in the United States, vaccination is recommended to reduce the likelihood of severe, life-threatening illness due to exposure.

Prognosis

Leptospirosis is a treatable infection and patients that are diagnosed quickly and treated rapidly, before the onset of kidney or liver failure, have a very good chance of full recovery. Some patients develop life-threatening organ failure; some may still be saved with dialysis and prolonged intensive care. Some patients that survive will have challenges due to damage to the liver or kidneys that can affect long-term survival.

Long Term Follow-Up

Patients with Leptospirosis are generally diagnosed and treated by the internal medicine specialists at Veterinary Specialty Center, particularly if severe organ dysfunction occurs. Many of these patients will require lifelong therapy, symptom management, and monitoring to improve the likelihood of long-term survival. Follow up is likely to include blood and urine tests to assess organ function, as well as monitoring of blood pressure and other parameters, if necessary. Because decisions about changes in medications and home therapy are based on observations made during the physical exam in addition to other testing, our recommendation is that follow-up for this serious disease be done at Veterinary Specialty Center. All routine preventive care should continue with your primary care veterinarian.