

Leptospirosis – a major infectious disease of the dog

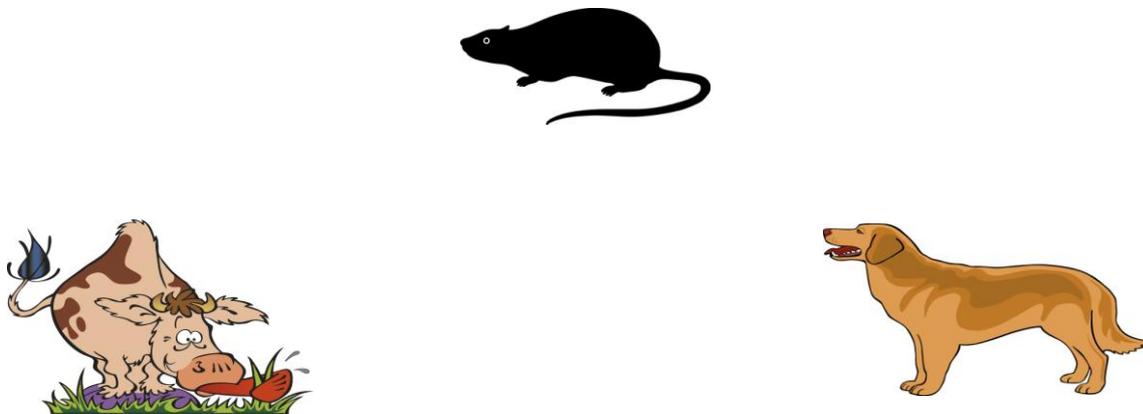
(By Fiona Linnane RVN, Glenina Veterinary clinic, Galway)

Leptospirosis is a bacterial disease of worldwide significance which affects many species. It is maintained in nature by numerous wild and domestic animal reservoir hosts and is a zoonotic disease (passed on from animals to people). It is caused by spiral shaped bacteria called *Leptospira interrogans* and there are many different strains (serovars) within this species. These multiply rapidly when entering the blood stream and can affect multiple organ systems including liver and kidney.

The severity of symptoms varies depending on various factors such as age of the dog, immune response, vaccination status, the strain of *Leptospira*, and other considerations. Some dogs may have mild symptoms or no symptoms at all, but severe cases can be fatal. While cats can be infected, they rarely show signs of disease. It is much more of a problem in dogs, people and livestock.

Mode of transmission

It is transmitted through the urine of an infected animal and rats are the important primary hosts. Secondary hosts and carriers include a wide range of other mammals such as dogs, cows, hedgehogs and sheep. The urine of an infected animal may be ingested by animals from contaminated grass, soil or puddle. Pet to human transmission is through direct or indirect contact with contaminated animal tissue, organs, or urine and incubation periods range from 5-15 days.



Two main species of *Leptospira* strains seen in dogs

	<i>L. icterohaemorrhagiae</i>	<i>L. canicola</i>
Occurs in	Rural areas	Urban areas

Transmitted by	Primary host- Rat Others- Cow , pig ,horse	Primary host-Dog Others-cow, rat, pig
Results in	Acute hepatitis and perivascular haemorrhage	Acute interstitial nephritis
Disease may be	Sporadic but severe when occurs	Mild or sub acute
Clinical signs	Acute cases sudden onset pyrexia, depression, petechial haemorrhages in mucosae and bleeding from gum margins, vomiting and diarrhoea often with blood ,jaundice and anterior abdominal pain	Transient pyrexia, anorexia, depression, vomiting, thirst, diarrhoea may develop. Dehydration and often pain over kidneys.

Diagnosis

Blood and urine samples are required for in house analysis and can also be sent for laboratory testing. These can show extended damage from the disease such as liver and kidney damage etc. A definitive diagnosis for leptospirosis is crucial prior to the start of antibiotic therapy for external lab tests such as real time PCR as it may affect the results of this test.

In house haematology results from a complete blood count (CBC) usually show anaemia, leukocytosis characterised by neutrophilia and thrombocytopenia. Azotemia, increased liver enzymes, hyperbilirubinemia and electrolyte disturbances are the most common biochemical changes. On urinalysis, there may be decreased specific gravity.

Treatment:

- 1) Antibiotics- initially penicillin and streptomycin- these drugs terminate leptospiremia within 24 hours, however shedding may persist. Doxycycline should be administered for three

weeks once oral medication is possible. This is to aid in the clearance of renal infections and eliminate the carrier state and chronic shedding.

- 2) I/v fluids as supportive therapy for dogs presenting with acute kidney disease. Also helps replace electrolyte imbalance due to vomiting/diarrhoea.
- 3) Vitamin K - due to clotting abnormalities.
- 4) Vitamin B 12- required for synthesis of proteins and the production of red cells
- 5) Diet varies according to status of patient and also disease progression.
- 6) Husbandry-includes barrier nursing and routine disinfectants that rapidly inactivate the delicate organism.

Prognosis and Prevention

Full recovery from leptospirosis infection is possible, however long term management of liver, kidney and other organ damage may be required in many patients. The risk factor of zoonotic and interspecies transmission when a dog is asymptomatic and continues to shed the virus for extended periods should not be underestimated.

Prevention measures include routine vaccination, rodent control, and inhibiting access of the pet to slow moving water/ponds and implementing strict hygiene measures. Annual vaccinations against both types of leptosirosis are required due to the property of the vaccines and owners must be conscientious in this respect. Two doses are required in any age of dog for primary vaccination 2-4 weeks apart.

For further information please contact the clinic on 091-752014