

Leishmaniosis

Michael G. Levy, PhD. (MGLevy@ncsu.edu)

Tests available at VBDDL: Serology (IFA) and PCR on blood or Lymph node.

Leishmaniosis is a life threatening zoonotic disease affecting dogs and humans with a wide distribution over four continents. Canine Leishmaniosis is caused by *Leishmania infantum* or *L.donovani* spread by sandflies or possibly direct contact with body fluids of an infected animal.

Link to the CAPC (Companion Animal Parasite Control) 2011 Leishmania statement:

<http://www.capcvet.org/capc-recommendations/canine-leishmaniasis/>

Risk factors

- Breed- American Foxhound. Visceral leishmaniasis is endemic in American Foxhounds but has also been recognized in other dog breeds.
- As leishmaniasis can have a very prolonged incubation period (months to years) the disease should be considered in any dog (rare in cats) that has traveled to a leishmania endemic region (Central America, South America, Southern Europe, Africa and Asia).

Disease

- Forms of Leishmaniasis
 - cutaneous (ulcer or granuloma),
 - mucocutaneous
 - visceral.
- Clinical manifestations
 - focal nonpurulent alopecia
 - generalized wasting
 - atrophic myositis
 - glomerulonephritis
 - renal failure.

Testing

- Serology (requires 2mls serum) by IFA using *L.infantum* antigen.
 - Dogs can be chronically infected without developing a detectable or diagnostic ($\geq 1:64$) antibody titer.
 - The presence of low antibody levels is not necessarily indicative of disease and further work-up is necessary to confirm leishmaniosis by other diagnostic methods such as cytology, histopathology and PCR.
 - High antibody levels are associated with severe parasitism and disease and are diagnostic of clinical leishmaniosis.
- PCR (requires 2mls EDTA blood or Lymph node aspirate). Tests on a genus level for *L.infantum* or *L.donovani*. The presence of *Leishmania* DNA in the blood indicates active infection.

Treatment

Infection does not equal clinical illness due to the high prevalence of subclinical infection among dogs in endemic regions. Although treatment with meglumine antimoniate and/or allopurinol will induce clinical remission, no currently available treatment is curative as infected dogs have been shown to relapse. Treated dogs should be monitored with complete blood counts, serum biochemistry, urinalysis, serology and PCR.

Prevention:

Protection against sandfly bites by topical insecticides is effective in reducing infection in regions in which vector competent sandflies are known to exist. Recent vaccine development has proven promising.

Insights gained from VBDDL associated research.

The initial recognition of Leishmaniasis in the VBDDL came after a veterinarian north of NYC called concerning fatalities amongst some 120 hounds in a breeding and foxhunting kennel. Upon the suspicion of a tick borne disease, serological testing was requested. Extensive workups, both serological and molecular, on all 120 hounds, including cytology and full necropsies on several at NCSU CVM Teaching Hospital finally resulted in a diagnosis of *L.infantum*. Further epidemiological workups on the part of the CDC defined the outbreak in this kennel and in other foxhound kennels that trained in southern states as an epidemic of Leishmaniasis unrecognized previously in North America. The VBDDL developed specific IFA and PCR assays to address the diagnosis of Leishmaniasis in the future and aided in the screening of all foxhound kennels in the US. Published article: [Visceral leishmaniasis in a New York foxhound kennel](#). Gaskin AA, Schantz P, Jackson J, Birkenheuer A, Tomlinson L, Gramiccia M, Levy M, Steurer F, Kollmar E, Hegarty BC, Ahn A, Breitschwerdt EB. J Vet Intern Med. 2002 Jan-Feb;16(1):34-44.

References:

Laia Solano-Gallego, Guadalupe Miró, Alek Koutinas, Luis Cardoso, Maria Grazia Pennisi, Luis Ferrer, Patrick Bourdeau, Gaetano Oliva and Gad Baneth.
Leishvet Guidelines for the Practical Management of Canine Leishmaniosis. *Parasites & Vectors* 2011, **4**:86.

The electronic version of this article can be found online at:

<http://www.parasitesandvectors.com/content/4/1/86>

L. Solano-Gallego, A. Koutinas, G. Miro', L. Cardoso, M.G. Pennisi,
L. Ferrer, P. Bourdeau, G. Oliva, G. Baneth. Directions for the Diagnosis, Clinical Staging,
Treatment and Prevention of Canine Leishmaniosis. *Veterinary Parasitology* 165 (2009) 1–18.