

VISCERAL LEISHMANIASIS

Animal Group(s) Affected	Transmission	Clinical Signs	Severity	Treatment	Prevention and Control	Zoonotic
Canids Humans	Phlebotomine sand flies (<i>Lutzomyia</i> spp.); transplacental, sexual, and via blood transfusion also reported in dogs	Lymphadenopathy, onychogryphosis, weight loss, alopecia, conjunctivitis (Dogs); Fever, weakness, lethargy, weight loss, hepatosplenomegaly, lymphadenopathy (Humans)	Fatal if not treated	Allopurinol, meglumine antimoniate, liposomal amphotericin B	Insecticides for sandfly control	Yes, but requires vector

Fact Sheet compiled by: Christine Fiorello

Sheet completed on: 20 January 2011; updated 1 November 2012

Fact Sheet Reviewed by: Sara Childs Sanford, Walter Boyce

Susceptible animal groups Domestic and wild canids are the main host species. Humans are commonly infected, and the infection is becoming more commonly recognized in domestic cats. Opossums and some rodents are also commonly infected, although usually asymptomatic. However, the domestic dog is the only epidemiologically important reservoir.

Causative organism Protozoal organisms *Leishmania donovani* (Asia, Middle East, Africa) and *L. infantum* (Asia, Middle East, Europe, South America)

Zoonotic potential Transmission occurs via sandfly bites; dogs are the reservoir host. Humans are accidental hosts and not considered important in the epidemiology of the disease. Dog to human and human to human transmission does not seem to occur

Distribution Europe, South America, Africa, Middle East, Asia. Dogs in North America are occasionally infected.

Incubation period Weeks to months

Clinical symptoms Humans: Fever, weakness, lethargy, weight loss, muscle wasting, hepatosplenomegaly, lymphadenopathy, pallor; anemia & thrombocytopenia are common. **Dogs:** lymphadenopathy, onychogryphosis, weight loss, conjunctivitis, alopecia.

Post mortem, gross, or histologic findings: Inflammation and parasites found in macrophages of infected organs; specific findings vary with parasite and host species, chronicity of disease, and immune status of host.

Diagnosis Gold standard: demonstration of parasites (amastigote form) in splenic or bone marrow aspirates. Serologic tests include an IFAT, ELISA (rK39 antigen most promising), DAT, and immunochromagrapic test strip. Numerous blood and bone marrow PCR protocols are also often used.

Material required for laboratory analysis Depends on diagnostic method; could include bone marrow, lymph node, or splenic aspirates or blood.

Relevant diagnostic laboratories In the US, Cornell University Animal Health Diagnostic Lab, Michigan State Diagnostic Center for Population and Animal Health, National Bio Vet Lab are some of the many labs that have commercial tests available.

Treatment Humans: Liposomal amphotericin B is first choice. Meglumine antimoniate is less expensive but has more adverse effects. Miltefosine is a newer oral drug that has shown good efficacy in India. **Dogs:** Allopurinol, meglumine antimoniate, and liposomal amphotericin B have all been used; a complete cure is

VISCERAL LEISHMANIASIS

usually impossible and euthanasia is often recommended.
Prevention and control: Culling of dogs does not seem to be effective. Insecticide spraying around human settlements to control sandflies has been effective in some areas but not in others. Insecticide-impregnated nets can provide protection for individuals. Deltamethrin-impregnated collars and various insecticide pour-ons for dogs provide limited efficacy in decreasing transmission.
Suggested disinfectant for housing facilities Control of the disease is based on control of the insect vector.
Notification Not a nationally notifiable disease in the US; it is notifiable in a few states such as Texas.
Measures required under the Animal Disease Surveillance Plan:
Measures required for introducing animals to infected animal: Not relevant (vector-borne disease)
Conditions for restoring disease-free status after an outbreak: Not relevant (vector-borne disease)
<p>Experts who may be consulted: Dr. Edward Breitschwerdt North Carolina State University College of Veterinary Medicine CVM Main Building 454, Box 8401 NCSU Campus Raleigh, NC 27695 Phone: 919-513-8277 Fax: 919-513-6336 Email: ed_breitschwerdt@ncsu.edu</p>
<p>References</p> <ol style="list-style-type: none"> 1. Cruz, I. L. Acosta, M.N. Gutierrez, J. Nieto, C. Cañavate, J. Deschutter, F.J. Bornay-Llinares. 2010. A canine leishmaniasis pilot survey in an emerging focus of visceral leishmaniasis: Posadas (Misiones, Argentina). <i>BMC Infectious Diseases</i> 10: 342-49. 2. Maroli, M., L. Gradoni, G. Oliva, M. Castagnaro, A. Crotti, G. Lubas, S. Paltrinieri, X. Roura, E. Zini, and A. Zatelli. 2010. Guidelines for prevention of leishmaniasis in dogs. <i>Journal of the American Veterinary Medical Association</i> 236 (11): 120-1206. 3. Patra, P., S.K. Guha, A.K. Maji, P. Saha, S. Ganguly, A. Chakraborty, P. Kundu, S. Sarker, and K. Ray. 2012. Efficacy of oral miltefosine in visceral leishmaniasis in rural West Bengal, India. <i>Indian Journal of Pharmacology</i> 44 (4): 500-503. 4. Pavli, A. and H.C. Maltezos. 2010. Leishmaniasis, an emerging infection in travelers. <i>International Journal of Infectious Diseases</i> 14: 1032-1039. 5. Quinnell, R.J. and O. Courtenay. 2009. Transmission, reservoir hosts and control of zoonotic visceral leishmaniasis. <i>Parasitology</i> 136: 1915-34. 6. Savani, E.S.M.M., M.C.G.O. Camargo, M.R. de Carvalho, R.A. Zampieri, M.G. dos Santos, S.R.N. D'Auria, J.J. Shaw, L.M. Floeter-Winter. 2004. The first record in the Americas of an autochthonous case of <i>Leishmania (Leishmania) infantum chagasi</i> in a domestic cat from Cotia County, São Paulo State, Brazil. <i>Veterinary Parasitology</i> 120: 229-33. 7. Schantz, P.M., F.J. Steurer, Z.H. Duprey, K.P. Kurpel, S.C. Barr, J.E. Jackson, E.B. Breitschwerdt, M.G. Levy, and J.C. Fox. 2005. Autochthonous visceral leishmaniasis in dogs in North America. <i>Journal of the American Veterinary Medical Association</i> 226 (8): 1316-1322. 8. Srivastava, P., A. Dayama, S. Mehrotra, S. Sundar. 2011. Diagnosis of visceral leishmaniasis. <i>Transactions of the Royal Society of Tropical Medicine and Hygiene</i> 105: 1-6 9. Vercammen, F. 2009. Visceral leishmaniasis. <i>EAZWV Transmissible Disease Fact Sheet No. 113.</i>