

## VISCERAL LEISHMANIASIS (VL)

| ANIMAL GROUP AFFECTED | TRANSMISSION        | CLINICAL SIGNS  | FATAL DISEASE ? | TREATMENT                                | PREVENTION & CONTROL   |
|-----------------------|---------------------|---|-----------------|--|--|
| Canidae               | Phlebotomine vector | Oligosymptomatic or polysymptomatic, involving the skin and internal organs | Yes             | Allopurinol, antimonials, amphotericin B | <i>In houses</i><br>Insect repellent<br><br><i>in zoos</i><br>Quarantine and regular screening |

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| <b>Fact sheet compiled by</b><br>Francis Vercammen, Royal Zoological Society of Antwerp, Belgium   | <b>Last update</b><br>January 2009 |
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| <b>Susceptible animal groups</b><br>Visceral leishmaniasis is very well known in domestic dogs. Domestic cats are much more resistant, but can get sick occasionally. Wild canids being reported with visceral leishmaniasis are: fox ( <i>Vulpes</i> sp.), jackal ( <i>Canis aureus</i> ), wolf ( <i>Canis lupus</i> ), raccoon dog ( <i>Nyctereutes procyonoides</i> ), crab-eating fox ( <i>Cercodyon thous</i> ), hoary fox ( <i>Lycalopex vetulus</i> ), bush dog ( <i>Speothos venaticus</i> ), maned wolf ( <i>Chrysocyon brachyurus</i> ).   |                                    |
| <b>Causative organism</b><br>The etiological agent of visceral leishmaniasis is <i>Leishmania infantum</i> and <i>Leishmania chagasi</i> , respectively in the Old World and the New World.  |                                    |
| <b>Zoonotic potential</b><br>These protozoa are zoonotic. VL is spread by its phlebotomine vector (sandflies). Direct transmission has only been recorded as accidents in experimental settings.   |                                    |
| <b>Distribution</b><br>This disease is endemic in the Mediterranean basin, Latin America, Southern Arabia, Middle East, China.   |                                    |
| <b>Transmission</b><br>Transmission only occurs via the phlebotomine vectors (sandflies): <i>Phlebotomus</i> sp. and <i>Lutzomyia</i> sp. in the Old World and New World respectively.   |                                    |
| <b>Incubation period</b><br>In domestic dogs it can take several months and even years before any clinical symptoms appear.  |                                    |
| <b>Clinical symptoms</b><br>In most cases clinical signs include skin and visceral alterations. Skin problems vary from alopecia to heavy scaling and crusting and even ulcers. Lymphadenomegaly, splenomegaly and hepatomegaly are common signs. Onychogriposis, ocular lesions, anaemia, epistaxis and emaciation can occur. Hyperproteinemia with hyperglobulinemia is frequently observed.   |                                    |
| <b>Post mortem findings</b><br>These are related to the skin problems and the alterations of organs rich in mononuclear phagocytic cells (spleen and lymph nodes enlargement).   |                                    |
| <b>Diagnosis</b><br>Anamnesis and clinical signs are suggestive for leishmaniosis. A definitive diagnosis can be made by demonstrating the parasites. Serology can also be very helpful.<br><br>1. Direct methods: detection of the organism.<br>a) <u>Smears</u> : Fine needle aspirates or biopsies of lymph nodes, bone marrow, spleen (liver), skin can be examined by May-Grünwald-Giemsa staining.<br>b) <u>Histology</u> : Histopathological examination of lymph nodes, spleen, liver, skin can reveal amastigotes in macrophages.<br>c) <u>Polymerase Chain Reaction (PCR)</u> : PCR has a sensitivity higher than other methods including those culture-based methods, and is much faster.<br>d) <u>Culture</u> : Different media exist to culture the parasites: e.g. NNN (Novy-McNeal and Nicolle), Evans modified Tobie's medium, Schneider's medium. |                                    |



2. Indirect methods: detection of reaction against the organism.
- a) **Serology:** Different types of serological tests for the detection of antibodies are used with varying sensitivity and specificity. Agar gel immunodiffusion (AGID), immunofluorescent antibody test (IFAT) and enzyme-linked immunosorbent assay (ELISA) are the most known techniques.

**Material required for laboratory analysis**

Serum, lymph node, bone marrow, spleen.

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**Relevant diagnostic laboratories**

CODA, Groeselenberg 99, 1180 Brussel, Belgium

**Treatment**

Pentavalent antimonials and allopurinol are mostly used drugs. Also amphotericin B can be used.

**Prevention and control in zoos**

Screening of canids coming from an endemic region.

**Suggested disinfectant for housing facilities**

In endemic regions a repellent (permethrin, deltamethrin) can be used.

**Notification**

**Guarantees required under EU Legislation**

**Guarantees required by EAZA Zoos**

**Measures required under the Animal Disease Surveillance Plan**

**Measures required for introducing animals from non-approved sources**

**Measures to be taken in case of disease outbreak or positive laboratory findings**

**Conditions for restoring disease-free status after an outbreak**

**Contacts for further information**

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