Leishmaniasis

Leishmania infections in dogs are predominantly caused by a parasite called *Leishmania infantum,* which has a very wide distribution including the Mediterranean, parts of Asia and America. Many species of *Leishmania* infect humans and animals, and are zoonotic.

Leishmania is typically transmitted by insect vectors, specifically sand flies. These vectors represent the major route of transmission in endemic areas. Sand flies are not present in the UK.

Other transmission routes have also been demonstrated, such as via mating, from mothers to puppies and via blood transfusions with infected blood.

Infection in the canine population in endemic areas is widespread, and the proportion of infected dogs is much higher than that of dogs with clinical leishmaniosis. Therefore, subclinical infection is common in endemic areas (clinically healthy but infected dogs). Leishmania is also often diagnosed in non-endemic countries like the UK when dogs are imported from endemic areas).

What are the symptoms of Leishmania?

Some dogs have no symptoms for months or years (subclinical cases). When a dog becomes ill with Leishmania, they often develop skin lesions and kidney failure, which can manifest itself as increased thirst, decreased appetite and weight loss.

The general clinical signs are:

- lymphadenomegaly (enlarged lymph nodes)
- splenomegaly (enlarged spleen)
- poor appetite
- weight loss
- lethargy
- pale mucus membanes
- polydipsia (increased thirst)
- polyuria (increased urination)
- vomiting
- diarrhoea
- fever
- lameness (erosive or non-erosive polyarthritis, osteomyelitis and polymyositis)
- ocular (eye) lesions
- vascular disorders
- neurological disorders

Skin lesions:

- dermatitis
- nail abnormalities

- alopecia
- erosive and ulcerative skin lesions
- lesions at the mucocutaneous junctions
- epistaxis (nose bleeds)

Weight loss

Ulcerated papules (crater-shaped) on the dorsal part of the nose

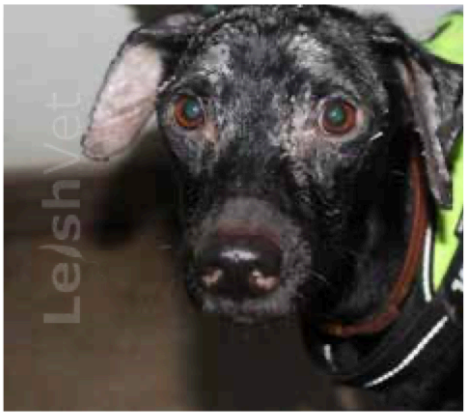
Ulcerated nodule on one digit

Circular, large foot-pad ulcer

Uveitis, glaucoma, nasal hyperkeratosis and amyotrophia

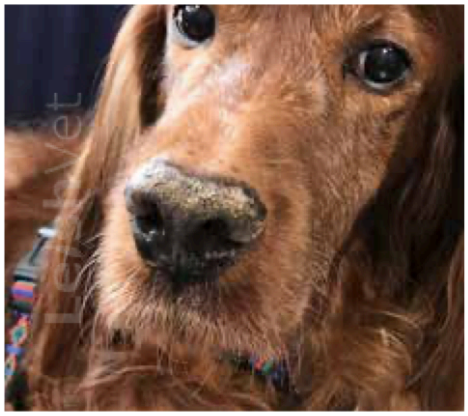
Ulcerative dermatitis on the inner pinae

Vasculitis



Facial exfoliative dermatitis

Nasal ulcerative dermatitis



Nasal hyperkeratosis

How do you diagnose Leishmania?

Leishmania can cause a host of abnormalities on blood tests including:

- Mild to moderate normocytic normochromic non-regenerative anemia
- Leukocytosis or leukopenia: lymphopenia, neutrophilia, neutropenia
- Thrombocytopenia
- Impaired secondary hemostasis and fibrinolysis (causing clotting disorders)
- Hyperproteinemia
- Hyperglobulinemia
- Hypoalbuminemia
- Decreased albumin/globulin ratio
- Renal azotemia
- Elevated liver enzyme activities
- Proteinuria

Diagnosis is based on clinical signs and abnormalities on blood tests, as well as PCR tests, cytology and histology with samples sent off to an external laboratory.

Samples that can be used for PCR testing include:

- any lesions tissue or abnormal fluid compatible with L.infantum infection
- samples from target organs including bone marrow, lymph nodes, the spleen and skin
- conjunctival or nasal swabs
- blood and urine (although these methods are less sensitive).

The main purposes for the diagnosis of Leishmania are:

1. Confirming the disease in a dog with clinical signs
2. Screening apparently healthy dogs living in or travelling from endemic areas for;
    - blood donors
    - breeding dogs
    - dogs prior to vaccination against Canine Leishmaniasis
    - dogs admitted for annual serology testing for imported dogs from endemic areas.

Staging, treatment and prognosis

CLINICAL SIGNS

LABORATORY FINDINGS*

Staging is performed following canine patient diagnosis of *L. infantum* infection with clinical signs and/or clinicopathologic abnormalities to facilitate appropriate treatment and monitoring of the patient). Infected but clinically healthy dogs are not included in this staging (see below).

QUANTITATIVE SEROLOGY** SPECIFIC THERAPY PROGNOSIS

STAGE I Mild clinical signs such as
Mild disease example papular dermatitis or localized lymphadenomegaly.

No clinicopathological abnormalities observed. Negative to low positive antibody Scientific neglected*** Usually good
Normal renal profile: creatinine < 1.4 mg/dL, levels.
non-proteinuric: UPC< 0.5

STAGE II

Moderate disease

Diffuse or symmetrical cutaneous and/or mucocutaneous lesions such as example exfoliative, ulcerative or nodular dermatitis, onychogryphosis, generalized lymphadenomegaly, loss of appetite and weight loss.

Clinicopathological abnormalities compatible with *L. infantum* infection
such as example mild non-regenerative anemia, hypergammaglobulinemia and hypoalbuminemia.
Substage
a) Normal renal profile: Creatinine < 1.4 mg/dl; non-proteinuric: UPC < 0.5
b) Creatinine < 1.4 mg/dL;
proteinuric (UPC= 0.5-1)

Low to high positive antibody levels.

Meglumine antimoniate + allopurinol

Miltefosine + allopurinol

Substage b:

Follow IRIS Guidelines (†) for CKD

Good to guarded

STAGE III

Severe disease

Dogs, which apart from the signs listed in stages I and II, may present signs originating due to immune-complex deposition (e.g. glomerulonephritis, uveitis).

Clinicopathological abnormalities listed in Stage II.

CKD IRIS stage 1 with proteinuria UPC > 1 or CKD IRIS stage 2 (creatinine 1.4-2.8 mg/dl)

Usually high positive antibody levels.

Meglumine antimoniate + allopurinol Miltefosine + allopurinol
Follow IRIS Guidelines (†) for CKD

Guarded to poor

STAGE IV

Very severe disease

Dogs with clinical signs
listed in Stage III. Pulmonary thromboembolism, or nephrotic syndrome and end stage renal disease.

Clinicopathological abnormalities listed in stages II and III.

CKD IRIS stage 3 (creatinine 2.9-5 mg/dl) and CKD IRIS stage 4 (creatinine > 5 mg/dl) or nephrotic syndrome or marked proteinuria UPC > 5

Usually high positive antibody levels.

Specific treatment should be Poor instituted individually.

Follow IRIS Guidelines (†) for CKD

How to prevent Leishmania if taking your dog abroad

Prevention for individual dogs (healthy, infected clinically healthy and sick) should always include either the use of a topical insecticide or a collar impregnated with deltamethrin or flumethrin + imidacloprid. The products need to be proven to maintain efficacy throughout the time period that your dog would be exposed to sandflies. The spot-on products (e.g. Advantix) should be applied at least two days before exposure when travelling to an endemic area, or the collars should be fitted at least 1-2 weeks prior to exposure. Additionally, vaccination should be considered as a part of a multimodal approach.

To book in for your pet in for a health check, please call us on 01423 228080 or visit www.clarohillvets.co.uk