

LEPTOSPIROSIS IN A DOG: A CASE REPORT

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SUMMARY

A case of leptospirosis in dog was diagnosed on the basis of clinical signs such as pyrexia, emesis, hematemesis, oliguria and icterus. The hematological examination revealed anemia, leucocytosis due to neutrophilia, elevated BUN, creatinine levels upon biochemical examination and high positive anti-leptospiral titre with leptodipstick method. Histopathological examination revealed interstitial nephritis and hepatitis.

Key words: Leptospirosis, dog, nephritis, hepatitis

Leptospirosis is a bacterial disease affecting many animal species with zoonotic significance. Disease is caused by antigenically distinct serovars of *Leptospira interrogans* that infects both animals and man (Greene, 2006). The common serovars in canines are *L. canicola*, *L. icterohaemorrhagiae* and sometimes *L. grippityphosa* and *L. bratislava* (Subcommittee on taxonomy of *Leptospira*, 1992). The disease has now been identified as one of the emerging infections having worldwide distribution and zoonotic significance. The epidemiology of leptospirosis has been modified by changes in animal husbandry practices, climate and human behaviour (Levett, 2001). Use of simple, quick and rapid diagnostic techniques can serve as an aid for effective and early treatment of affected animals and hence can reduce mortality among dogs. There are reports of increasing numbers of clinical cases that too with diverse clinical presentations. The present paper places on record a case of leptospirosis in a Labrador dog.

A five year old Labrador dog was brought to veterinary hospital (Dog and Cat Clinic, Meerut) with clinical signs of pyrexia, anorexia, emesis, dehydration, oliguria, lethargy, shivering and abnormal gait. In addition, hematemesis and melena were also observed. Clinical examination revealed shrunken eyeballs, yellowish discoloration of the mucous membrane of conjunctiva and ventral abdominal skin.

Blood was collected with anti-coagulant (EDTA @1mg/ml) for hematological and without anticoagulant for biochemical and serological examinations. Urine sample was collected by catheterization for microscopic examination. After centrifugation of urine sample, Fontana's silver impregnation staining technique was performed for demonstration of organisms (Luna, 1968). Hematological parameters particularly hemoglobin, packed cell volume, total leucocyte count and differential leucocyte count were estimated following standard procedures (Benzamin, 1985). Biochemical analysis was done for blood urea nitrogen (Diacetyl monoxime method) and creatinine (Alkaline picrate method) using Span diagnostic kits as per the manufacturer's protocol. The serum sample was analyzed by the Dot-Enzyme Linked Immuno Sorbent

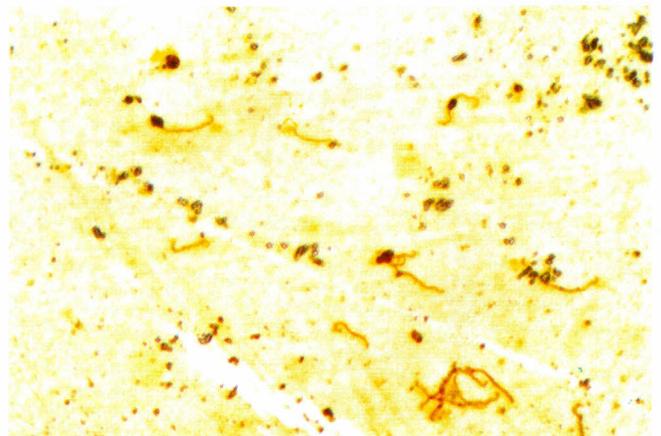


Fig. *Leptospira* organisms.
(Fontana's silver impregnation method x 400)

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Assay (LEPTO-Dipstick) based commercially available kit (Biogal's, Israel) to assess IgG antibody titer.

Dog was treated with broad spectrum antibiotics (Ampicillin-Cloxacillin), diuretics (Frusemide), anti-emetics (Perinorm) and intravenous fluid therapy (Ringer's lactate). However, the dog eventually died after 3 days of treatment. Representative pieces of the tissues from visceral organs were collected in 10% neutral buffered formalin and processed by routine method for histopathological examination (Clayden, 1962).

Clinical signs of the affected dog including pyrexia, dehydration, emesis, oliguria, hematemesis and yellowish discoloration of mucous membranes were suggestive of the systemic disease. Hematological analysis revealed hemoglobin concentration as 9.2 gm/dl, increased packed cell volume as 45% and total leucocyte count as 14,500/ μ l and differential leucocyte count as 90% neutrophils, 8% lymphocytes, 1% monocytes, 0.5% eosinophils and 0.5% basophils. The fall in the haemoglobin values might be due to the toxins released by leptospiral organisms which cause damage to erythrocytes (Ananda *et al.*, 2008).

Biochemical analysis of serum for blood urea nitrogen (BUN) and creatinine showed elevated values of 106 mg/dl and 57 mg/dl, respectively. This is in accordance with the studies of Navarro *et al.* (1981) who observed increased BUN and creatinine levels in dogs with experimental *L. interrogans* serovar *icterohemorrhagiae* infection. In dogs, *L. canicola* and *L. grippityphosa* are associated with renal dysfunction whereas *L. icterohaemorrhagiae* and *L. pomona* produce more hepatic damage (Brown *et al.*, 1996). The increase in the levels of BUN and creatinine might be due to damage in kidneys caused by leptospiral endotoxins.

Microscopic examination of the sediment from urine sample following Fontana staining method revealed dark brown spiral shaped leptospiral organism (Fig) as reported by Venkatesha *et al.* (2006). Dot-ELISA revealed very high positive titers (equivalent to 1:3200 of Microscopic Agglutination test) which is indicative of the active infection by leptospiral species and is not reached by the vaccination. Sehgal *et al.* (1999) evaluated the lepto-dipstick method for diagnosis of

leptospiral infection and it was found to have a sensitivity of 78.7%, specificity of 88.3% and positive predictive value of 91%.

Histopathological studies on kidney tissues revealed interstitial nephritis, necrosis of tubular epithelium, interstitial edema along with diffuse infiltration of mononuclear cells such as lymphocytes and plasma cells. Fibrinoid necrosis of blood vessels, alveolar and sub-pleural hemorrhages along with congestion in lungs were also evident. Liver exhibited degeneration of hepatic parenchyma with eosinophilic granular cytoplasm and shrunken dark nuclei along with infiltration of macrophages, lymphocytes and plasma cells. Greene (2006) also observed similar histopathological changes in the cases of leptospirosis in dog. The histopathological findings further supported the hematological, biochemical and serological findings indicating leptospiral infection.

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