

## Diagnosis and treatment of Leptospirosis in a dog - A Case report

K. J. Ananda,\* , Suryananarayana, T., Prathiush, P. R. and Sharada, R. and Placid E. D'souza

Department of Veterinary Microbiology,  
Veterinary College, KVAFSU, Hebbal, Bangalore-24

Leptospirosis continues to be a significant clinical presence in canine medicine. In addition to an increased number of cases, more diverse clinical presentations are being recognized. Selection of appropriate vaccines and interpretation of serological results in the presence of vaccinal titers are emerging issues in clinical practice. Leptospirosis is caused by *Leptospira* are thin, filamentous, aerobic spirochete bacteria measuring approximately 6-12  $\mu\text{m}$  long. More than 200 serovars of leptospira were identified worldwide; most of them are pathogenic in dogs including *Leptospira serovars bratislava, canicola, icterohemorrhagica, pomona, and grippotyphosa*. Infected animals become bacteremic and leptospira organisms multiply in the kidney, liver, spleen, central nervous system, ocular tissue and genital tract. In dogs, serovars *canicola* and *grippotyphosa* results in more renal dysfunction, whereas serovars *icterohemorrhagiae* and *pomona* produce more hepatic damage (Brown, et al., 1996). Reservoir hosts may be sub clinically infected and shed organisms for months to years after recovery.

### History and Clinical Examination

A 6-year-old male Dobberman dog was brought to the peripheral hospital with a history of not taking food since three days, unable to walk, passing bloody motions, lethargy, vomiting and weight loss. On clinical examination the animal was dehydrated with sunken eyeball, conjunctival mucus membrane of the eye and the skin of the ventral abdomen appears icteric. There were large circular erythematic lesions observed on the ventral abdomen and at base of the tail. The rectal temperature was 98.6 °F, animal was on lateral recumbency and unable to bear the weight on hind limbs. Based on the clinical symptoms, the animal was suspected for leptospirosis. The blood sample

was collected in a sterilized glass vials with and without EDTA for estimation of haematological and biochemical parameters like Hb, PCV, WBC and BUN, creatinine, phosphorus, SGPT, SGOT respectively. The serum was used for microscopic agglutination test (MAT). The urine sample was also collected in a sterilized glass vial by catheterization for detection of leptospira organism under dark field microscopy for confirmatory diagnosis.

### Treatment

The animal was treated with streptopenicillin @ 40,000 IU/kg body wt. Other supportive therapy included imferon 1ml i/m, neohapate 2ml i/m, rantac 1.5ml s/c, and stadren 2ml i/m. Fluids were also given during the five day treatment period.

### Results and Discussion

The physical examination of the dog showed severely icteric, moderately dehydrated. Blood analysis of the dog revealed azotemia and hyperphosphatemia. The biochemical analysis revealed BUN-101 mg/dl, creatinine-9.1 mg/dl and phosphorus-17.7 mg/dl, SGPT and SGOT showed 190U/L and -140U/L, respectively.

According to Greene, et al., (1998), the kidney and liver are the major organs affected by leptospiremia. The increased levels of liver and kidney specific enzymes might be due to damage caused by leptospiral organism on liver and kidney. Leptospiral endotoxins may cause hepatocellular injury and the persistence of the organism in the liver results in altered circulation, fibrosis, and immunologically mediated injury that may perpetuate to chronic active hepatitis, particularly with *L.grippotyphosa* infections. Similar results were found by Greene, et al., (1998).

The haematological analysis revealed decreased hemoglobin level of 9.4g/dl and

\*Corresponding author: Asst. Professor, Dept. of Parasitology, Veterinary College, Shimoga-577 203.  
E-mail: dranandakj@yahoo.co.in, Mobile: +91-9845313244.

increased PCV of 44 percent and WBC of 13,600 with 12,784 neutrophils and 2,54,000 platelets. The decreased hemoglobin and increased packed cell volume and total leucocyte counts can be attributed to toxins released by leptospiral organisms, which cause damage to RBCs.

According to Birnbaum, 1998, Microscopic agglutination test (MAT) is considered as the "gold standard" diagnostic test for leptospirosis. The serovar with the highest titer is assumed to be the strain causing clinical disease. In the present study the highest titre (1:3200) was observed for serovar *grippotyphosa* and microscopic agglutination test was found to be the confirmatory technique for the diagnosis of leptospirosis. In the present study the motile organisms were detected in the urine sample by dark-field microscopy. This was found to be quick test for the detection of leptospirosis infection in dogs at field level and easy to perform. This is in accordance with *Brown, et.al.*, 1996 and *O'Keefe*, 2002, they reported dark-field microscopy is a good screening tool for urine.

Successful therapy is dependent on good supportive care and appropriate antibiotics. In the present case, Animal shows great improvement after the treatment. This is in agreement with *Greene, et.al.*,

1998, who reported Procaine penicillin-G can be given at a dose of 40,000 IU/kg IM or S/C b.i.d. and found Penicillin and its derivatives are the drug of choice for leptospiremia.

#### Summary

The microscopic agglutination test and dark field microscopy can be used for the diagnosis of leptospirosis infection in dogs. Blood analysis of the dog revealed azotemia and hyperphosphatemia, the biochemical values showed elevated liver enzymes. The haematology revealed decreased hemoglobin level, increased PCV and TLC. The infected animal can be successfully treated with streptopenicillin with supportive treatment.

#### References

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## FAO says H5N1 situation in birds has improved

The global H5N1 avian influenza situation in birds improved in the first half of this year, but an H5N1 strain not previously seen in Africa recently cropped up in Nigeria, according to the United Nations Food and Agriculture Organization (FAO). "Considering the number of outbreaks reported worldwide, the global HPAI (highly pathogenic avian influenza) situation can be said to have improved markedly in the first half of 2008," the FAO said in the latest issue of its avian flu bulletin, *AIDEnews*. However, four countries where H5N1 is endemic- Egypt, China, Indonesia, and Vietnam -continued to report outbreaks during the 6-month period, and the virus re-emerged in Pakistan and in Hong Kong's live bird markets, the agency noted. In June, 11 H5N1 outbreaks were reported in five countries (China, Egypt, Indonesia, Pakistan, and Vietnam), compared with 65 outbreaks in June 2006 and 55 in June 2007, the FAO said. Europe reported no outbreaks, unlike in June of previous years, and no cases were reported in wild birds. However, Indonesia has not submitted reports on H5N1 events since May, because the new database for the country's participatory Disease Surveillance system is being modified, according to the report. "Although there has been an improvement in disease awareness, outbreaks/cases of HPAI are still underestimated and underreported in many countries because of limitations in country disease, surveillance systems, which may affect considerably the shape of the distribution of outbreaks by region," the FAO said.

<http://www.fao.org/docs/eims/upload/246457/aj097e00.pdf>