

Hepatozoon Canis in a Labrador Dog with Azotaemia and its Therapeutic Management

Suryawanshi A. A.¹, Gaikawad R. V.², Galdhar C. N.² and Patil J. U.³

¹Department of Teaching Veterinary Clinical Complex, ²Department of Clinical Medicine, Ethics and Jurisprudence, ³Department of Veterinary Epidemiology and Preventive Medicine, Mumbai Veterinary College, Parel, Mumbai-400012.

Abstract

A 10 year old female Labrador dog weighing around 30 kg was presented at Department of Teaching Veterinary Clinical Complex, Mumbai Veterinary College, Parel, Mumbai (Maharashtra). Previous history of oral medications of doxycycline that leads to vomition, recent tooth eruption which leads to anorexia, dull in appearance, lethargic. Clinical examination revealed pyrexia (103°F), pale mucous membrane, dehydration (+), azotemic. Upon blood reports revels low haemoglobin and platelet count and high kidney and liver enzyme values. The dogs were treated with inj. Imidocarb dipropionate @5 mg/ kg B.W. twice in month and inj. Metronidazole @ 20mg/kg B.W. for 10 days along with haematinics, liver tonics and antacids. Dogs showed complete recovery after 8 days of therapy.

Keywords: *Hepatozoon Canis*, Azotaemia, Labrador Dog.

Old World hepatozoonosis is a tick-borne disease of wild and domestic canids caused by the protozoal agent *Hepatozoon canis*. The organism is transmitted by the brown dog tick, *Rhipicephalus sanguineus*. *H canis* is reported in many regions of the world, including Asia, Africa, the Caribbean islands, Europe, and South America. The mode of transmission of hepatozoonosis is not typical in the classical sense of a tickborne disease; like other species in the genus, *H canis* and *H americanum* infections occur when infected ticks, the definitive host, are ingested by canine hosts. *H canis* tissue stages reside within bone marrow, lymph nodes, and spleen, and unlike ACH patients, dogs infected with the Old World parasite do not appear to be in pain at presentation; in dogs with overt disease, nonspecific clinical signs including fever, lethargy, depression, and anemia may be observed (Allen, 2022). The present paper deals with a case of *Hepatozoon canis* in Labrador dog with azotaemia and its therapeutic management.

Case History and Observation

A 10-year-old female Labrador dog weighing about 30 kg was presented to Department of Teaching Veterinary Clinical Complex, Mumbai Veterinary College, Parel, Mumbai. Previous history of *E. canis* positive with oral medications of doxycycline that leads to vomiting, so owner did not continue oral medicines.

Dog had sensitivity towards oral doxycycline which leads acidity and vomiting. Recent history of tooth eruption which leads to bleeding, pyrexia, anxiety, anorexia, dull in appearance, and lethargic

Clinical examination revealed pyrexia (103°F), pale mucous membrane, dehydration (+), azotemic, bleeding from gums due tooth eruption, lethargic, blood in urine. Previous history of azotemic (Creatinine 2.7 mg/ dl). Upon blood reports revels low haemoglobin and platelet count and high kidney and liver enzyme values (Table 1). On X- ray examination revealed severe hepatomegaly and splenomegaly and spur formation on lumbar vertebrae (Fig 1). Blood smear examination revels positive for *Hepatozoon canis* (Fig. 2).

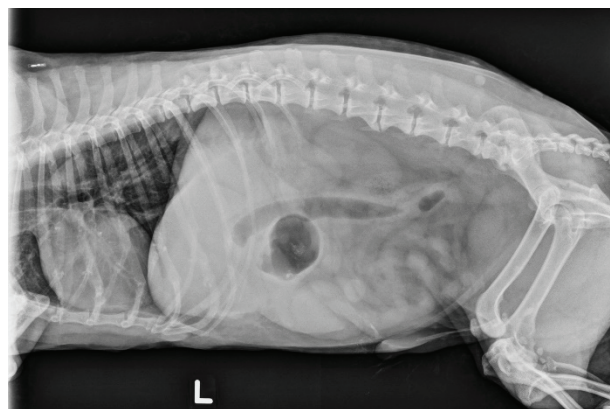


Fig. 1: Severe hepatomegaly in Labrador

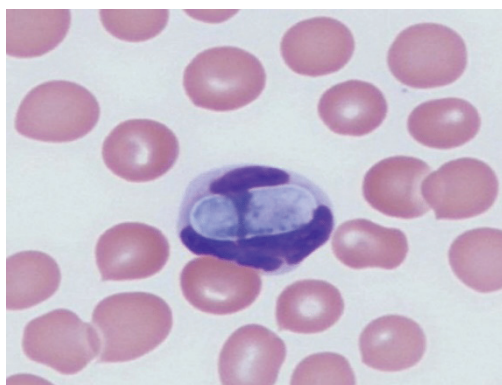


Fig. 2: *Hepatozoon canis* gamont within canine leukocyte

Results and Discussion

On the basis of history of owner, dogs had Dog had sensitivity towards oral doxycycline which leads acidity and vomition. Recent history of tooth eruption which leads to bleeding, pyrexia, anxiety, anorexia, dull in appearance, and lethargic. Haematological examination revels low haemoglobin (11.6 gm %), thrombocytopenia (97k/ μ L), elevated levels of creatinine (2.7 mg/dl) and SGPT (144 IU/L). There is previous history of sensitivity towards oral doxycycline, so dog shifted to inj. Imidocarb dipropionate @5 mg/ kg B.W. twice in month and inj. Metronidazole @ 20mg/ kg B.W. for 10 days. Dog has azotaemia (Creatinine 2.7 mg/kg) so, aggressive fluid therapy along with inj. Astyamin @ 2ml/ kg B.W., inj. Fructodex @5ml/

kg B.W., Inj. Imferon 1.5 ml, Inj. Vitcofol 1 ml along with oral medications of haematinics, liver tonics and antacids. After 8 days of treatment dog were recovered with normal food intake.

According to Sarma (2012), *Hepatozoon canis* positive dog serum biochemical analysis indicated increase ALP, ALT, globulin BUN and creatinine and decrease in the value of total protein and albumin, similar findings were reported in above case. Blood urea nitrogen (BUN) increase was similar to findings of Pawar and Gatne (2005) which might be due to dehydration or due to secondary glomerulonephritis or renal amyloidosis in the chronic stage of the disease. Increased levels of BUN and creatinine points towards damage to kidney as *H. canis* has also been incriminated as cause of glomerulonephritis, schizogony can also progress in kidney, Hari Krishnan *et al.*, (2003). Similar suggestions by Medici and Heseltine, (2008). Hypoalbuminemia is attributed to decreased protein intake, chronic inflammation, or protein-losing nephropathy. According to Klopfer *et al.*, (1973) Hypoproteinemia may be due to increased destruction of hepatocytes as *H. canis* is believed to affect liver and spleen on a great scale. According to Mondal *et al.*, (2021) combination therapy of imidocarb dipropionate and doxycycline along with supportive therapy (fluids, antiemetics, hematinic and hepato-protectives) might be a successful choice for proper management of hepatozoonosis induced acute hepatitis in canine.

Table 1

Sr. No.	Parameter	Day 1	Day 4	Day 8	Reference Range
1	Hb (g %)	11.6	8	9.1	12 - 18 gm %
2	TEC (million/cmm)	4.94	3.06	3.65	5.5 – 8.5 million / cmm
3	PCV (%)	34.98	23.48	26.83	37 - 55 %
4	TLC (thousand/cmm)	10.2	7.6	13.0	6.0 -17 x 10 ³ / cmm
5	Neutrophils (%)	77	86	81	60 - 77 %
6	Lymphocyte (%)	22	13	17	12 - 30 %
7	Monocyte (%)	01	01	02	03 - 10 %
8	Eosinophil (%)	00	00	00	02 – 10 %
9	Platelets(thousand/cmm)	97000	202000	215000	200000 - 500000 /cmm
10	Total bilirubin (mg/dl)	0.4	0.3	0.3	0 - 0.4 mg/dl
11	Direct bilirubin (mg/dl)	0.3	0.1	0.2	0.0 - 0.1 mg/dl
12	Indirect bilirubin (mg/dl)	0.1	0.2	0.1	0 - 0.3 mg/dl
13	SGOT (IU/L)	25	26	34	05 - 55 IU/L
14	SGPT (IU/L)	144	77	63	05- 60 IU/L
15	Albumin (g/dl)	2	2.2	2.1	2.6 - 4.3 g/dl
16	Globulin (g/dl)	2.7	2.6	3.0	2.3 – 4.5 g/dl
17	Total Protein (g/dl)	4.7	4.8	5.1	5.1 – 7.8 g/dl
18	Blood Urea Nitrogen	40.1	9.8	25.1	7 - 27 mg/dl
19	Serum creatinine (mg %)	2.7	1.2	0.8	0.4 - 1.8 mg/dl

References

- Harikrishnan TJ, Pazhanivel N, Chellappa DJ. Observations on the development of *Hepatozoon canis* in a dog. *Journal of Veterinary Parasitology*. 2008; 22:35-40.
- K. Sarma, D.B. Mondal, M. Saravanan, M. Kumar and K. Mahendran, (2012). Haemato-biochemical changes in *Hepatozoon canis* infected dog before and after therapeutic management. *Journal of Veterinary Parasitology*, 26(1) 2012: 35-38.
- Kelly E. Allen (2022). Old World Hepatozoonosis and American Canine Hepatozoonosis. MSD veterinary manual. Cited online on 13/11/2023. <https://www.msddvetmanual.com/circulatory-system/blood-parasites/old-world-hepatozoonosis-and-american-canine>.
- Medici, E.M. and Heseltine, J., 2008. American canine hepatozoonosis. *Compendium*, 30: E1-E9.
- Mondal, M., A. Maity, D. Mandal, P. S. Jana, M. Roy, M. C. Pakhira, F. Mridha, A. Soren, R. Raj and Kumar, K. 2021. Diagnosis and Therapeutic Management of Hepatozoonosis in Dog. *Int.J.Curr.Microbiol.App. Sci.* 10(08): 550-555. doi: <https://doi.org/10.20546/ijcmas.2021.1008.065>
- Pawar, S.D. and Gatne, M.L., (2005). Some haematological and biochemical profiles in canine hepatozoonosis. *J. Vet. Parasitol.* 19: 171-172.