THERAPEUTIC MANAGEMENT OF ASCITES ASSOCIATED WITH DIPHYLLOBOTHRIOSIS IN A DOG – A CASE REPORT

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A 3-month-old Golden Retriever dog was reported to VCC, Nagpur Veterinary College, Nagpur, with complaints of inappetence, abdominal distension, and weakness for the last 15 days. Physical examination revealed normal rectal temperature, tachycardia, tachypnoea, pale mucus membrane, and distended abdomen showed fluid thrills on tactile percussion. Haemato-biochemical examination revealed anaemia(9.2 gm/dl), low RBC count (4.49X 10^6 cmu), low haematocrit (27.9%), Hypoproteinaemia(4.2 gm/dl), hypoalbuminemia (1.6 gm/dl), and slight elevation in Serum Creatinine (2.0 mg/dl) and BUN (29.0 mg/dl). Faecal sample examination revealed the presence of Diphyllobothrium spp. ova. Anamnesis revealed the history of the consumption of raw fish. Treatment with Praziquantel @7.5 mg per kg body weight for two consecutive days was given and symptomatic treatment was given to treat ascites. The dog showed an uneventful recovery post-treatment.
Keywords: Ascites, *Diphyllobothrium latum*, Hypoproteinaemia.

Ascites is a term used to describe the condition of accumulation of fluid in the abdominal cavity resulting in distension of the abdomen. Ascites is a manifestation of an underlying serious systemic disease condition and not a disease in the real sense.The most common causes of ascites include hypoproteinaemia, left-sided heart failure, congestive heart failure, cirrhosis, hepatic diseases, renal diseases, ancylostomiasis, bacterial infections such as tuberculosis, malnutrition and parasitic diseases including ancylostomiosis (Randhawa *et al.*,1988). Diphyllobothriosis is caused by a parasite flatworm *Diphyllobothrium latum* that infects the small intestine of fish-eating mammals (reservoir host) including human beings (definitive host).In dogs, the incidences are not common and mostly occur when dogs consume raw uncooked fish or tadpoles carrying plerocercoid stages of the worm. The adult worm can grow 4 to 25 meters long. The adult worm can grow 4 to 25 meters long. Although notallDiphylobothrium spp. infections in dogs and cats result in overt clinical disease, clinical signssuchasvomiting, diarrhoea, and weight loss are observed. The worm in the intestine directly competes for nutrition with the host and results in deficiency, especially of vitamin B 12 which is responsible for the development of Pernicious anemia. The development of ascites in Diphyllobothriosis could be attributed to hypoproteinemia due to (i) Vitamin B 12 deficiency which is involved in protein assimilation/ metabolism (ii) Protein-losing enteropathy due to the worms (Kubas *et al*., 2022 and Schmidt *et al*., 2016).

Materials and Methods

A 3-month-old Golden Retriever dog was reported to VCC, Nagpur Veterinary College, Nagpur, with complaints of inappetence, abdominal distension, and weakness for the last 15 days. Physical examination revealed normal rectal temperature (101.7 ^{0} F), tachycardia, tachypnoea, pale mucus membrane, and distended abdomen showed fluid thrills on tactile percussion.The blood sample was collected in EDTA and Clot Activator vial to perform haematology and serum biochemistry respectively (Table.-1). Abdominocentesis procedure was performed for the collection of Ascitic fluid for evaluation. Faecal sample was collected from the rectum in a wide mouth container and subjected to microscopic examination (endoparasites evaluation) as per standard method. The faecal sample examination revealed the presence of ova of *Diphyllobothrium spp.*

Based on history, clinical signs and laboratory findings the case was diagnosed to be a case of ascites associated with Diphyllobothriosis and treated with Praziquantel at a dose rate of 7.5 mg/Kg body weight for two consecutive days orally. Symptomatic treatment was instituted to treat the ascites including Fluid Therapy – 0.9% Normal saline I/V, Ringers Lactate I/V, Diuretics – Inj. Frusemide @ 2mg/kg body weight I/M Amino acid intravenous infusion (Aminowel) @200 ml daily (Recommended dose 1.0 – 1.5g amino acids/kg body weight/day), Tab. Lasilactone @ 2 mg/kg body weight TID orally, Astymin Forte Syrup 5ml BID orally, Sharkoferrol pet syrup 5ml BID orally.

Table-1. LABORATORY INVESTIGATION

Haematology			**Blood Biochemistry**		
Test	**Observed Values**	**Normal Range**	**Test**	**Observed Values**	**Normal Range**
Haemoglobin	**9.2 gm/dl**	**12-18 gm/dl**	BUN	29.0 mg/dl	12-25mg/dl
TLC	17200	6-17 X 10^3	Creatinine	2.0 mg/dl	0.5-1.5mg/dl
RBC	**4.49X 10^6**	**5.5-8.5 X 10^6**	**Total Protein**	**4.2 gm/dl**	**5.4-7.7 gm/dl**
PCV	27.9%	37-55%	**Albumin**	**1.6 gm/dl**	**2.3-3.8 gm/dl**
Neutrophil	68.9%	60-70%	SGPT	29.3 IU/L	10-88 IU/L
Lymphocyte	23.5%	12-30%	SGOT	57.0 IU/L	10-88 IU/L
Monocyte	8.3%	3-10%	**Ascitic fluid examination**		
Eosinophil	5.7%	2-10%	**Ascitic Fluid Total Protein**	**1.9 gm/dl**	
MCV	62 um3	60-77 um^3			
MCH	20.6 pg	19.5-24.5	**Ascitic Fluid Albumin**	**0.7gm/dl**	
MCHC	33.1 g/dl	32-36 g/dl			
Pletlets	175 000/mm3	200-500 X 10^3	**SAAG**	**0.9**	

Results and Discussion

Diphyllobothriosis although not common in dogs but can cause serious illness. The worms present in intestine directly compete for nutrition with the host resulting in deficiency of nutrients especially of vitamin B 12. In the present case anemia was there but not indicative of due to Vit. B 12 deficiency, it could be due to other reasons. Serum Ascites Albumin Gradient (SAAG) concentrationis helpful in classifying types of ascites (Table-2), in the present case the SAAG was 0.9 (< 1.1 g/dl) suggestive of low gradient ascites.

Table -2. CLASSIFICATION OF ASCITES BASED ON SAAG

High Gradient (>1.1 g/dl) SAAG	**Low Gradient (< 1.1 g/dl) SAAG**
Portal Hypertension	Bacterial Infection
Cardiac Disease	Peritoneal Tuberculosis
Liver Cirrhosis	Pancreatic ascites
Myxoedema	Parasitic disease
Budd Chiari Syndrome	Ancylostomosis
Hepatitis	Nephrotic syndrome
Portal Vein Thrombosis	Trauma and rupture of blood vessels and lymphatic vessels
Hypoproteinaemia	Rupture of the urinary bladder, left-sided heart failure, right-sided heart failure, congestive heart failure

Praziquantel is an anthelminthic intended for use against many tapeworms'infections including Diphyllobothrium spp. Praziquantel works by disrupting calcium ion homeostasis inside the worm resulting in spastic paralysis of theworm's muscles. Same has been reported by many researchers also, who have used praziquantel in the treatment of Diphyllobothriosis successfully. In agreement to our study Kirkpatrick *et al.*, 1987 also used a single dose of praziquantel to treat Diphyllobothriosis in a Siberian husky dog. In the present study, praziquantel dose was administered for two consecutive days. In the given case praziquantel was found effective in the management of Diphyllobothriosis in dogs and with symptomatic treatment for ascites the dog recovered uneventfully.

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