

CHYLOUS ASCITES WITH LIVER CIRRHOSIS IN A DOG

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A four year old, male Labrador retriever dog was presented at Teaching Veterinary Clinical Complex, Nagpur Veterinary College, Nagpur with a history of chief complaint of inappetance, acute onset of lethargy, and bilateral abdominal distension. Physical examination revealed ~8% dehydration and palpable fluid thrills. Abdominal ultrasound confirmed the presence of abundant free peritoneal fluid in the abdominal cavity and cirrhotic liver. Paracentesis revealed abdominal fluid was pinkish white in colour with opaque clarity and estimated total protein was 7.9 and specific gravity was 1.040. Fluid triglyceride concentration was 3306 mg/dl.

Keywords: Chylous ascites (CA), Dog, Liver Cirrhosis.

Chylous ascites (CA) is an uncommon form of ascites and defined as the accumulation of a milk-like peritoneal fluid rich in triglycerides, due to the presence of thoracic or intestinal lymph in the abdominal cavity. Damage or obstruction to the lymphatic system or one of its tributaries produces ascites with a turbid or milky appearance from the high triglyceride content (Cardenas and Chopra, 2002). Lymphomas, cirrhosis, metastatic malignancies, abdominal surgeries, infections like tuberculosis commonly causes of CA (Cardenas and Chopra, 2002; Talluri *et al.*, 2011).

Chylous ascites is an uncommon finding with a reported incidence of approximately one in 20,000 admissions at a large university-based hospital over a 20-yr period (Press *et al.*, 1982). In a study analyzing 901 samples of ascitic fluid, there were 11 cases of chylous ascites; of them, 10 cases were found to be secondary to cirrhosis, and there was only a single case of malignant ascites (Runyon *et al.*, 1992). Over 60% of patient with hepatic cirrhosis develop ascites at some stage of the disease. The diagnosis of chylous effusion is usually based on gross examination, biochemical analysis (lipid studies in blood serum and effusion; triglyceride and cholesterol levels, and lipoprotein electrophoresis) and cytological examination (Borku *et al.*, 2005).

This report of chylous ascites in a Labrador retriever with liver cirrhosis is one of the rare descriptive case and the purpose of this report is to describe the diagnosis,

treatment, and outcome of chylous ascites with liver cirrhosis in a four year old Labrador.

Case History and Observations

A four year-old, male, 27 kg Labrador retriever dog was referred at Teaching Veterinary Clinical Complex, Nagpur Veterinary College, Nagpur with a history of inappetance, acute onset of lethargy, reduced exercise tolerance and bilateral abdominal distension (Fig.1). The dog had no previous trauma or illness.

Physical examination revealed tachypnoea, respiratory distress and severe abdominal distension on percussion. The dog was dull, dehydrated and febrile (rectal temperature- 39.7°C). Abdominal radiographs revealed large volume of peritoneal fluid. Ultrasonographic examination confirmed the presence of peritoneal effusion (Fig.2). Abdominal Sonography revealed large volume of peritoneal fluid with liver cirrhosis which varied from multiple hepatic nodules and hyperechoic hepatic parenchyma and decreased liver lobe size to diffuse hyperechoic (bright) but small liver with distended gall bladder and irregular contour. Ultrasound guided abdominocentesis was performed to collect ascites fluid from abdominal cavity. Abdominocentesis yielded 250 ml of milky fluid (Fig.3). The fluid was pinkish white in colour (Fig.4) with opaque clarity and lipemic with estimated total protein 7.9 and specific gravity was 1.040. Fluid triglyceride concentration was 3306

mg/dl. Ascitic fluid was centrifuged at 3000 rpm for 5 minutes; sediment smears were prepared and then fixed with Giemsa staining. The morphological features of ascitic cytology were examined. The fluid cytology

was consistent with chronic Chylous effusion (61% neutrophils, 22% lymphocytes, and 17% macrophages) and 340,000/ μ l RBCs. Bacteriologic cultures from the peritoneal fluid were negative.



Fig.-1: Abdominal Distension



Fig.-2: Ascitic Fluid in peritoneum on ultrasound



Fig.-3: Abdominal Paracentesis



Fig.-4: Pinkish – White Coloured Ascitic Fluid

Hematological findings included moderate neutrophilia (80%), 15% macrophages, 5% small lymphocytes and serum biochemical abnormalities included hyponatremia (123 mmol/l,) hypercholesterolemia (376 mg/dl). Total bilirubin, glucose, blood urea nitrogen, creatinine, phosphorus, calcium, potassium, and enzyme activities (ALT, ALP, and amylase) were within reference ranges. Medical management including intravenous fluid therapy with 5 % dextrose (120 mL/kg body weight, q 24 h) as other crystalloid solutions constituting sodium are restricted in cases of ascites, diuretic furosemide (2 mg/kg, q 12 h), enalapril (1 mg/kg, per os, q

12 h), paracentesis at 3-days interval, low-fat diet and an antibiotic ampicillin sulbactam (20 kg/mg, IV) were administered for three days but the dog succumbed on fourth day of treatment might be due to cardiac arrest.

Results and Discussion

In a normal animal, the peritoneal space contains small amount of fluid (less than 1mg/kg bodyweight), which moistens the opposing surface and serves to reduce friction between the abdominal organs. The normal peritoneal fluid is clear to slightly yellow with specific gravity less than 1.016 containing about 2g/dl protein (mainly albumin) and WBC (2000- 2500/ml, 50%

macrophages, eosinophils, mast cells, and few polymorph neutrophils) without fibrinogen and fibronectin, it is in accordance to Harbison and Godleski (1983). The WBC count is elevated in all inflammatory conditions and malignant ascites as also reported by Cardenas and Chopra (2002); Borku *et al.* (2005).

Abdominal paracentesis is the most important diagnostic tool in evaluating and managing the patients with ascites. Typically, chyle has a cloudy and turbid appearance, in contrast to the straw-coloured and transparent appearance of ascitic caused by cirrhosis and portal hypertension. The total protein content in chylous ascites varies depending on the underlying cause and ranges between 2.5 to 7.0 g/dL as also mentioned by Runyon *et al.* (1988). The triglyceride levels in ascitic fluid are very important in defining chylous ascites. Triglyceride values are typically above 200 mg/dL, although a cut off value of 110 mg/dL can be used as also recorded by Press *et al.* (1982) and Runyon *et al.* (1988).

Most chylous effusions respond to an initial approach with a high-protein and low-fat diet with medium chain triglycerides. Dietary restriction of long-chain triglycerides should be avoided for the conversion of these monoglycerides and free fatty acids, which are transported as chylomicrons to the intestinal lymph ducts. Patients with cirrhotic chylous ascites should be managed with a low-sodium diet and diuretics as also recommended by Uriz *et al.* (2000) In most cases, correction of the underlying pathology will result in resolution of symptoms and of the ascites. In patients with a large amount of ascites, a total paracentesis to relieve abdominal discomfort and dyspnea should be performed and to be repeated as needed. Repeated large-volume paracentesis is a reasonable option for patients who have end-stage disease not amenable to medical or surgical treatment.

Conclusions

Chylous ascites is a relatively uncommon disorder. Diagnosis of chylous ascites can be readily made with simple tests. Finally, treating the underlying cause is of paramount importance in the management of these patients.

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