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Therapeutic management of ascites in Rottweiler

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Abstract
A three year old Rottweiler bitch was presented to Veterinary Clinical Complex, Tirupati with the history of abdominal distension, respiratory distress, inappetence and vomiting. Fluid thrill was observed on abdominal palpation. Ascites was confirmed through imaging techniques. Ascites of hepatic origin was confirmed by estimating serum biochemical parameters of liver. The dog was successfully treated by abdominocentesis along with antibiotics, diuretics and hepatoprotective drugs and controlled diet.

Keywords: Rottweiler bitch, ascites, abdominocentesis, hepatic origin

Introduction
True ascites is defined as collection of serous or serosanguinous fluids in the peritoneal cavity (Ettinger and Feldman, 2005) [1]. The development of ascites is associated with changes in Starling's forces which involve an increase in hydrostatic pressure within the venous or lymphatic systems and a reduction in oncotic pressure of capillaries (Richter, 2003 [2]; Singh *et al.*, 2019b) [3]. Ascites is a manifestation rather than a disease. It can be a secondary symptom of cardiac, hepatic, renal and various systemic diseases in dogs (Ihedioha *et al.*, 2013) [4] and also secondary to hypoalbuminemia and portal hypertension (Center, 2015) [5]. It occurred more frequently with hepatic origin compared to instances involving a single affected organ or a combination of the two or more organs (Kumar *et al.*, 2003 [6]; Dixit *et al.*, 2018) [7]. In this report diagnosis and therapeutic management of ascites has been discussed.

Case history and observations
A three year old Rottweiler bitch was presented to Veterinary Clinical Complex, Tirupati with the history of abdominal distension since one week (Fig 1). Respiratory distress, anorexia and vomiting has been observed for three days. Water intake and urination were normal. Deworming was done eight months ago. Regular vaccination of the animal. The dog whelped two months ago. On Physical examination temperature, heart rate and respiratory rate were 102.8ºF, 120 beats/min and 40/min respectively. Conjunctival mucus membrane was pale pink and popliteal lymph node was slightly enlarged. Fluid thrill was observed up on abdominal palpation. No parasitic ova were identified on faecal examination. The dog was negative for leptospirosis by Microscopic Agglutination Test (MAT) and negative for Babesia canis, Babesia gibsoni and Ehrlichia canis on PCR.

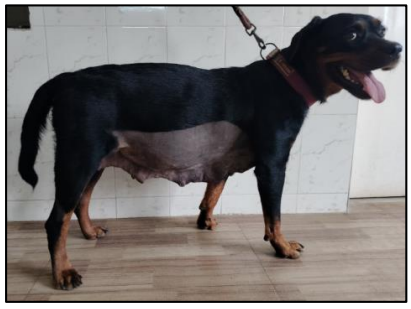

Fig 1: Abdominal distension

Radiographic examination of lateral abdomen revealed characteristic ground glass appearance with fluid density and distended abdomen. No serosal details due to presence of ascitic fluid (Fig 2). Lateral thoracic radiograph revealed normal heart shape and size with vertebral heart score of 9.2 and multiple doughness in the lungs could be bronchitis.

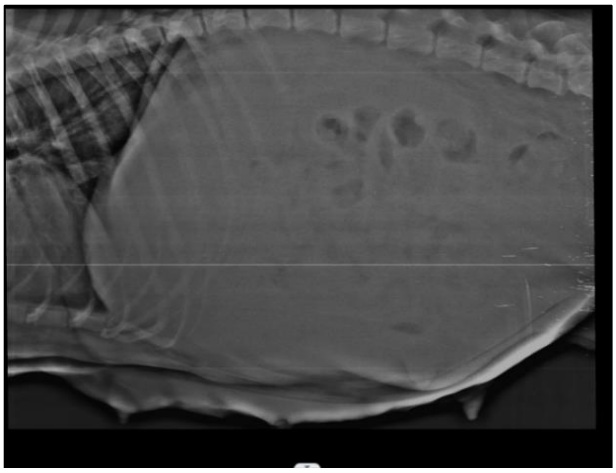

Fig 2: Characteristic ground glass appearance

Abdominal ultrasonography revealed anechoic fluid with floating visceral organs in the peritoneal cavity suggestive of ascites. Liver parenchyma was hyperechoic compared to spleen and with rounded borders suggestive of ascites of hepatic origin (Fig 3).

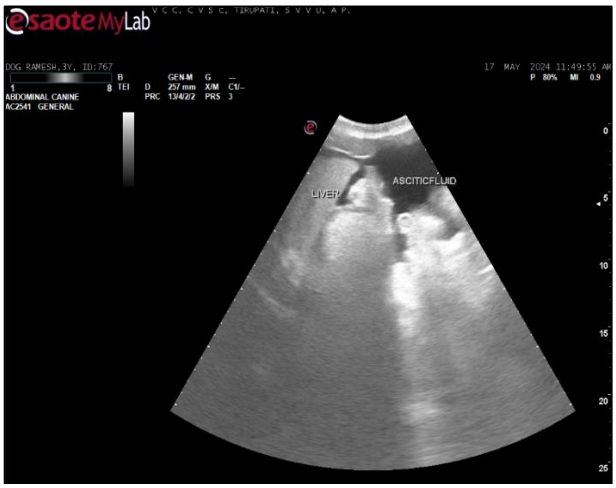

Fig 3: Ascitic fluid on USG

Haematological examination revealed Hb 8.8 gm%, PCV 28%, TEC 2.48 million/µL, neutrophils 82%, lymphocytes 16%, monocytes 1% and eosinophils 1% suggesting anaemia with neutrophilia.

Serum biochemical parameters include BUN 16 mg/dL, Creatinine 1 mg/dL, serum sodium 133 mmol/L, serum potassium 4.1mmol/L and serum chloride 102 mmol/lt. Liver function test include total bilirubin 0.4 mg/dL, direct bilirubin 0.2 mg/dL, indirect bilirubin 0.2 mg/dL, SGPT 150 IU/L, SGOT 40 IU/L, ALP 300 IU/L, total protein 4 gm/dL, albumin 1.3 gm/dL and globulin 2.7 gm/dL.

Ascitic fluid analysis

Ascitic fluid was collected by abdominocentesis and fluid was clear and light yellow colour, specific gravity was 1.020 and total protein was 2.8 gm/dL and cytological examination revealed mononuclear phagocytes and neutrophils. Based on colour, specific gravity, cytology the fluid was classified as modified transudate (Fig 4).

Fig 4: Ascitic fluid

Treatment and Discussion

Abdominocentesis was performed in order to relieve the animal from respiratory distress. About 1 litre of ascitic fluid was drained out by abdominocentesis. Administered Inj. Amoxirum forte @ 12.5 mg/kg body weight IM twice daily for a period of 5-7days. Inj. Vomikind @ 0.2 mg/kg body weight IV twice daily was given as per the requirement for 3 days. Advised the owner to use Tab. Lasilactone 50mg @ 2 mg/kg body weight PO twice daily until the regression of ascites. Tab. Lisybin large PO once daily for a period of one month. Syrup. Fe-folate @ 8 ml PO twice daily for one month. Threptin biscuits @ 2 biscuits PO once in a day for one month. Advised the owner to offer salt free and protein rich diet including egg white, chicken and cheese etc. Abdominal distension was reduced with in 10 days and animal resumed to normal appetite within 10 days.

Ascites is characterized by the abnormal accumulation of fluid in the peritoneal cavity resulting from the leakage of fluid between parietal and visceral peritoneum. This leakage may originate from blood vessels, lymphatic system, internal organs or abdominal masses as explained by Vijayakumar (2002) [8]. Anorexia in ascitic dogs may result from the buildup of harmful metabolic waste products or from a reduced elimination of specific hormones such as leptin and ghrelin, which are responsible for regulating the hunger centre in the brain (Kumar *et al*., 2020) [9]. Vomiting may be attributed to the direct stimulation of the chemotactic trigger zone resulting from the inability of the liver and kidneys to effectively clear endotoxins. (Wills and Simpson, 1994) [10]. The respiratory distress may be attributed to significant fluid accumulation within the peritoneal cavity (Peden and Zenoble, 1982 [11] and Singh *et al*., 2019a) [12].

Bhadesiya *et al*. (2015) [13] stated that the presence of abdominal effusion in dogs with ascites hinders the radiographic assessment of the liver and other abdominal organs which typically exhibit a characteristic “ground glass” appearance. The hyperechoic liver parenchyma accompanied by anechoic free fluid in the abdomen that separated the intra-abdominal organs creating the appearance of floating intestines was indicative of ascites resulting from hepatic involvement (Jana *et al*., 2019) [14]. Anaemia and neutrophilic leukocytosis was observed and anaemia occurs due to chronic inflammatory disease or various factors which impair the DNA synthesis leading to

maturation arrest of pro-rubicyte to rubicyte stage (Willard and Tvedten 1999 [15] and Singh *et al*., 2019b) [3] and neutrophilic leukocytosis occur as result of the inflammatory response associated with chronic hepatitis which subsequently progress to cirrhosis (Elhiblu *et al*., 2015) [16], in pathological conditions like infection, acute haemolysis (Singh *et al*., 2019b) [3]. Hypoproteinaemia and hypoalbuminemia in the present study might be due to reduced capacity of the liver to synthesize proteins in hepatic diseases (Webster, 2005) [17] and hepatic fibrosis (Ihedioha *et al*., 2013) [4]. Elevated ALT has been reported earlier in hepatic anoxia, hepatic perfusion, chronic hepatitis, liver cirrhosis, cholangitis and cholangiohepatitis (Willard and Tvedten, 1999 [15] and Singh *et al*. 2019b) [3]. Hepato cellular damage results in elevated serum ALT, ALP activity and the magnitude of the increase in enzyme levels is proportionate to the liver damage (Singh *et al*., 2019b) [3]. The findings of ascitic fluid was in concurrence with findings of Mondal *et al*., 2012[18]. Amoxicillin and sulbactam was used along with diuretics and supportive medication for successful treatment of ascites as reported by Regmi and Shah, 2017 [19], Neelam *et al*., 2019 [20] and Samad 2019 [21]. Amoxicillin and sulbactam proved to minimize bacterial infection in ascites cases (Neelam *et al*., 2019 [20] and Sundararajan *et al*., 2022) [22]. Furosemide and Spironolactone which effectively drained out excess ascitic fluid Kumar *et al*. (2016) [23], Singh *et al*. (2019b) [3] and Dhillon *et al*. (2020) [24]. The hepatoprotective activity of silybin can be attributed to its antioxidant, antifibrotic, anti-inflammatory and cellular signalling properties (Loguercio and Festi, 2011) [25]. Threptin biscuits were useful in relieving ascites and improving health as they contains essential amino acids, minerals and vitamins.

Conclusion

Ascites is a sign rather than a disease. It occurs mainly due to hepatic abnormalities. Ascites can be diagnosed by radiography, ultrasonography, haemato-biochemical and ascitic fluid analysis. Earlier diagnosis and prompt treatment will give good prognosis in ascitic cases.

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