



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2018; 7(3): 638-640

© 2018 TPI

www.thepharmajournal.com

Received: 10-01-2018

Accepted: 12-02-2018

K Lakshmi

Assistant Professor, Part of Ph.D thesis submitted to PVNRTVU, Rajendranagar, Hyderabad, Telangana, India

K Padmaja

Professor, Department of Veterinary Medicine, College of Veterinary Science, Rajendranagar, Hyderabad, Telangana, India

P Nagaraj

Professor, (Veterinary Medicine), Veterinary clinical complex, Bhoiguda, Hyderabad, Telangana, India

A Gopala Reddy

Professor, Department of Veterinary Pharmacology, College of Veterinary Science, Korutla, Telangana, India

M Gnana Prakash

Professor, Department of Animal Genetics & Breeding, College of Veterinary Science, Rajendranagar, Hyderabad, Telangana, India

Ascitic fluid analysis in hepatobiliary disorders affected dogs

K Lakshmi, K Padmaja, P Nagaraj, A Gopala Reddy and M Gnana Prakash

Abstract

A total of 140 dogs were diagnosed with hepatobiliary disorders based on clinico, hemato-biochemical and diagnostic imaging. Out of which, 32 dogs were diagnosed with diffuse parenchymal disorders with ascites, 32 dogs with diffuse parenchymal disorders without ascites, 24 with focal parenchymal disorders and 52 with biliary tract disorders. Transparent and clear ascitic fluid with mean values of specific gravity, total protein, albumin, nucleated cells and SAAG were 1.02 ± 0.01 , 1.78 ± 0.04 g/dl, 0.87 ± 0.02 g/dl, $382 \pm 34.23 \times 10^9$ /L and 1.17 ± 0.10 g/dl, respectively along with few mesothelial cells and degenerated neutrophils were observed on ascitic fluid analysis.

Keywords: Hepatobiliary disorders, Dogs, Ascitic fluid analysis, SAAG

Introduction

Liver plays a central role in a diverse array of processes including carbohydrate, lipid and protein metabolism; storage of vitamins, trace minerals, fat, glycogen and immune regulation. Liver is uniquely susceptible to damage as a consequence of its role as a filter for portal blood, metabolism of endogenous metabolites and xenobiotics (Cynthia, 2013) [2]. Symptoms, clinical signs and diagnostic results reflect impairments in these functions (Meyer and Rothuizen, 2013) [6]. Liver has great functional reserve capacity; detection of hepatic function or impairment by conventional means is possible only when $\geq 55\%$ hepatic dysfunction is present (Hall and German, 2005) [3]. As the liver is physiologically and anatomically diverse, there is no single test that adequately identifies hepatic disease or its underlying cause. For this reason, a battery of tests must be used to diagnose the hepatobiliary affections. A reasonable package of screening tests recommended for an animal suspected of having hepatobiliary disease includes a complete blood count (CBC), serum biochemical profile, ascitic fluid analysis, survey radiography and Ultrasonography (Kumar *et al.*, 2013) [5].

Materials and Methods

Dogs presented to Veterinary Hospital, Bhoiguda with the clinical signs of anorexia, ascites, jaundice, pale mucous membranes, vomiting, lethargy, polyuria and polydipsia or other manifestations suggestive of hepatobiliary disorders were selected. The ascitic fluid was collected by abdominocentesis in lateral recumbency by using sterile 22 gauge 1 inch needle percutaneously following aseptic precautions (Fig.1). The ascitic fluid was allowed to flow out of the needle under the influence of gravity (Rudloff, 2005) [9]. The fluid collected by abdominocentesis from the peritoneal cavity of ascitic dogs was evaluated for color, total protein, turbidity and specific gravity. The serum ascites albumin gradient (SAAG) was calculated by subtracting the albumin concentration of the ascitic fluid from the albumin concentration of the serum specimen obtained on the same day (Saravanan *et al.*, 2014) [10].

Results and Discussion

The fluid was clear colorless and transparent indicating that the fluid was a pure transudate. The mean levels of specific gravity, total protein, albumin, nucleated cells were 1.024 ± 0.01 , 1.78 ± 0.04 g/dl, 0.87 ± 0.02 g/dl, and $382 \pm 34.23 \times 10^9$ /L, respectively. While the serum ascites albumin gradient (SAAG) calculated was 1.17 ± 0.10 g/dl. Cytologically, few mesothelial cells along with degenerated neutrophils were observed (Table 1; Fig. 2 and 3). Ascites and increased weight also found to increase the likelihood of short survival (Selgas *et al.*, 2014) [11]. Ascites has been described as a negative prognostic indicator in canine chronic hepatitis and may be accompanied by limb edema. (Raffan *et al.*, 2009) [8].

Correspondence

K Lakshmi

Assistant Professor, Part of Ph.D thesis submitted to PVNRTVU, Rajendranagar, Hyderabad, Telangana, India

Weight loss could be due to the inadequate nutrient intake as a result of inappetence and enhanced tissue catabolism (Hess and Bunch 2000). Cytological examination of ascitic fluid revealed few mesothelial cells along with degenerated neutrophils. These findings are in agreement with Bhagat *et al.* (2013) [1], who observed clear, colorless transudate with specific gravity of 1.013. Removal of ascitic fluid by abdominal paracentesis is seldom necessary when the accumulated fluid is severe enough to impair respiration or renal function or to complicate diagnostic procedures (Webster and Centre, 1995) [13]. Analysis of ascitic fluid is an important component of diagnosis. It can either assist in timely identifying the pathological process responsible for the fluid accumulation or it can help in indicating further investigative procedures, which may be helpful in diagnosing the affections (Papasouliotis and Dewhurst, 2005) [7]. SAAG reflects the oncotic pressure gradient between the vascular bed and elevated gradient (greater than or equal to 1.1 g/dl) usually being associated with increased portal pressure, whereas a low gradient (< 1.1 g/dl) is associated with conditions where ascites is not related to portal hypertension (Tarn and Lapworth, 2010). The present findings corroborated with Saravanan *et al.* (2014) [10], who reported few mesothelial cells, lymphocytes, monocytes and neutrophils upon cytological examination of ascitic fluid.

Conclusions

Ascitic fluid analysis in 32 dogs affected with diffuse parenchymal disorders with ascites on day zero was conducted and the mean levels of specific gravity, total protein, albumin, nucleated cells, serum ascites albumin gradient (SAAG) and cytology of ascitic fluid was analyzed and observed that it was of transudate type.

Table 1: Ascitic fluid analysis in Hepatobiliary disorders affected dogs.

S. No	Parameter	Character/ Mean ± SE
1.	Colour	Colorless
2.	Turbidity	Transparent
3.	Specific gravity	1.024 ± 0.01
4.	Total protein (g/dl)	1.78 ± 0.04
5.	Albumin (g/dl)	0.87 ± 0.02
6.	Nucleated cells (x 10 ⁹ /l)	382 ± 34.23
7.	SAAG (g/dl)	1.17 ± 0.10



Fig 1: Abdominocentesis in a dog affected with ascites.



Fig 2: Transudate type of ascitic fluid

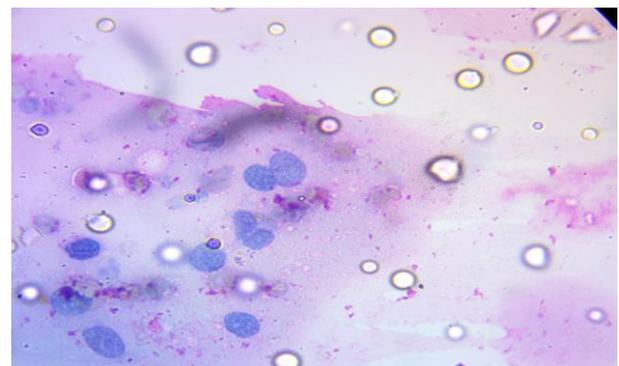


Fig 3: Ascitic fluid analysis- mesothelial cells and degenerated neutrophils.

References

- Bhagat L, Sigh JL, Das AK, Arora N, Mamta. Therapeutic management of ascites in canines. Indian Veterinary Journal. 2013; 90(1):26- 29.
- Cynthia R W. Weight loss and cachexia. In Washabau R J and Day M J. Text book of canine and feline gastroenterology, Chapter 24. Elsevier publishers. 2013, 174-176.
- Hall EJ, German AJ. Laboratory evaluation of hepatic disease, In BSAVA Manual of Canine and Feline Clinical Pathology, E. Villiers and L. Blackwood, Eds. 2005, 184-206,BSAVA, Gloucester, UK, 2nd edition.
- Hess PR, Bunch SE. Diagnostic approach to Hepatobiliary diseases. In: Kirks current Veterinary Therapy- Small animal practice. XIII Ed. W.B. Saunders and co. Philadelphia. 2000, 659-663.
- Kumar M, Mondal DB, Saravanan M, Sharma K. Therapeutic management of hepatobiliary dysfunction in canines, Intas polivet. 2013; 14(1):117-120.
- Meyer HP, Rothuizen J. Liver.Chapter.61 Liver In: Washabau R J and Day M J. Text book of canine and feline gastroenterology. Elsevier publishers. 2013, 849-972.
- Papasouliotis K, Dewhurst E. Body cavity effusions. In: BSAVA manual of canine and feline clinical pathology, E. Villers and L. Blackwood, Eds, BSAVA, 2nd edition, Gloucester, UK. 2005, 340-354.
- Raffan E, Mc Callum A, Scase TJ, Watson PJ. Ascites is a negative prognostic indicator in chronic hepatitis in dogs. Journal of Veterinary Internal Medicine. 2009; 23: 63-66.
- Rudloff E. Abdominocentesis and diagnostic peritoneal lavage. Chapter72. In. Ettinger SJ and Feldman F C, (eds). Text book of Veterinary internal Medicine. V edn., W B Saunders Co., Philadelphia. 2005, 693-713.
- Saravanan M, Mondal DB, Sharma K, Kumar M,

Vijayakumar H, Sasikala V. Comprehensive study of hematobiochemical ascitic fluid analysis and ultrasonography in the diagnosis of ascites due to hepatobiliary disorders in dogs. *Indian Journal of Animal Sciences*. 2014; 84(5):503-506.

11. Selgas AG, Bexfield N, Scase TJ, Holmes MA, Watson P. Total serum bilirubin as a negative prognostic factor in idiopathic canine chronic hepatitis. *Journal of Veterinary Diagnostic Investigation*. 2014; 09:1-6.
12. Tarn AC, Lapworth R. Biochemical analysis of ascitic fluid: what should we measure. *Annals of Clinical Biochemistry*. 2010; 47:397-407.
13. Webster CRL, Centre. Chronic hepatitis: Therapeutic considerations. In *Text book of Kirks current therapy XII Small animal practice* by Bonagura JD, Kirk RW, WB Saunders company, Philadelphia, 1995, 749-756.