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PREVELENCE OF HEPATIC DISORDERS AMONG DIFFERENT BREEDS, SEX, AND AGE GROUPS OF DOGS

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Abstract: A total of 45 cases of dogs with history and clinical signs of hepatic disorders were included for the present study at Centralised Clinical Laboratory, Madras Veterinary College, for a period of six months. The incidence of canine liver disorders was recorded more in animals aged 8 years and above. Among breeds, Spitz had the highest predisposition followed by Mongrels and Labrador. The incidence was higher in males than females. The haematological alterations detected in hepatic disorders were anaemia and leucocytosis with relative neutrophilia. The serum biochemical alterations detected in hepatic disorders were hypoproteinemia and hypoalbuminemia. Hyperbilurubinaemia and increases conjugated bilirubin were also found to be increased in all hepatic disorders and Leptospira cases showed a significant increase in these parameters than other liver disorders. Increased BUN and creatinine levels were also observed in Leptospira cases. Elevated levels of serum enzymes ALT, AST, and ALP was also observed in most of hepatic disorders except in cases of chronic hepatitis and tumors of liver.

In conclusion, the results of this study increased the knowledge and awareness of various risk factors predisposing liver disorders. It further highlights the significance of performing biochemical study as a routine for clinical cases to make better diagnosis of hepatic disorders in cases without overt clinical signs as well.

Keywords: Hepatic Disoders, Prevalence, Breeds, Sex, Age.

INTRODUCTION

Liver is a very diverse organ which plays a central role in a wide array of diseases including metabolism, detoxification, storage, digestion, immunological surveillance etc. The clinical manifestation of hepatic disorders is directly attributable to alterations in metabolic, excretory, synthetic, and digestive functions of the liver. The incidence of liver disorders in small animals is increasing every year. This may be due to urbanization, environmental pollution, pollution, unscientific feeding practices, inappropriate use of drugs, stress level.The location of the liver, dual blood supply and extensive sinusoidal sinusoidal system render it susceptible to disseminated infectious organism, toxins, immunoreactive substances and gut- derived debris and organisms when normal defense mechanism fail [7, 4] reported that there were many infectious diseases that primarily

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affect the liver. Leptospirosis is an extremely common bacterial infection in canine liver.

The examination of blood chemistry profile helps to determine whether the liver is functioning normally or not. Among the common blood profiles, complete blood picture, total protein, albumin, blood urea nitrogen (BUN), creatinine, ALT, AST, ALP, GGT, total bilirubin and direct bilirubin, glucose, and cholesterol are very important to identify liver disorders. The results of routine blood serum biochemical profile are early indicators of liver disease even before the exhibition of clinical signs.

MATERIALS AND METHODS

A study on hematobiochemical profile of 45 cases of canine liver disorders was carried out at Centralised Clinical Laboratory, Madras Veterinary College, for the period of six months.

Hematology

2ml of blood was collected in a clean and dry vial containing EDTA as anticoagulant for complete hematological study. Peripheral blood smears were prepared from tip of the ear and stained with Leishman Geimsa stain.Hematological parameters like hemoglobin, PCV, Total erythrocyte count, Total leukocyte count and platelet count were estimated in Auto hematology analyser BC 2800 Vet. Differential leukocyte count and blood picture variations were studied from Leishman Geimsa stained blood smears.

Serum Biochemistry

Samples of blood collected in test tubes were allowed to clot and centrifuged at 1500 rpm for 20 min to separate the sera. The sera samples were immediately used for biochemical analysis.The serum constituents like ALT and AST were estimated by IFCC method (International federation of clinical chemistry), ALP by DGKC-SE, DEA buffer method, Total protein by Biuret, albumin by modified Dumas, BUN by DAM (Diacetyl monoxime) method, creatinine by Jaffe's method, cholesterol by CHAD-PAP method and glucose was estimated by GOD PAP method using commercial reagent kits in auto analyzer (A15 Biosystem).

RESULTS AND DISCUSSION

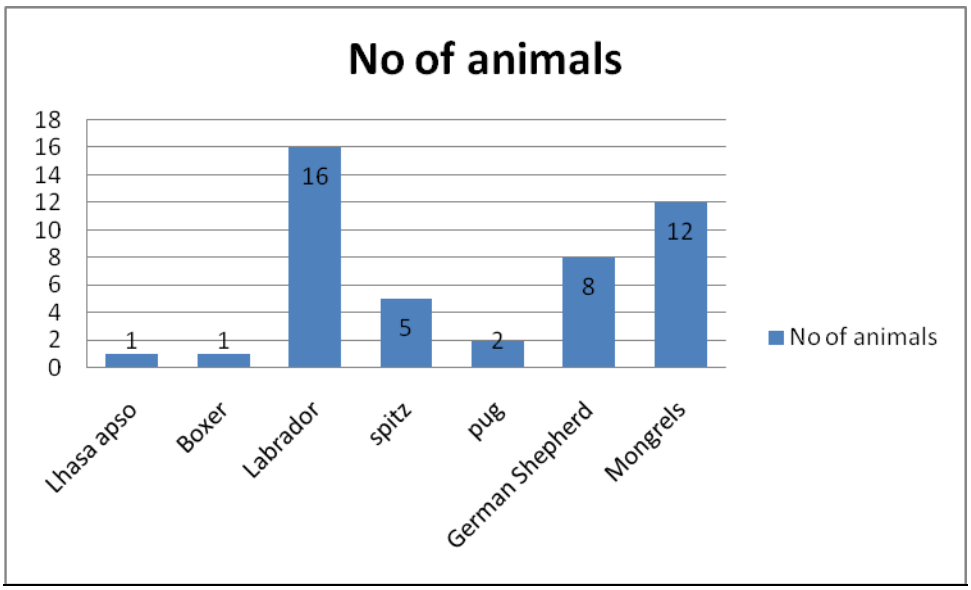
Clinical signs

The clinical signs observed in animals presented with hepatic disorders were decreased appetite, vomiting, lethargy and weight loss, jaundice and ascites. This correlated with the earlier findings of [9] Among the breeds more number of cases belonged to Labrador (16 cases), German shepherd (8 cases) and Spitz (5 cases). However [13] observed a higher incidence of liver disease in nondescript dogs.

Table 1: Prevalence of hepatic disorders in different breeds of dogs

Breed	No of animals
Lhasa apso	1
Boxer	1
Labrador	16
spitz	5
pug	2
German Shepherd	8
Mongrels	12

Fig 1: Prevalence of hepatic disorders in different breeds of dogs



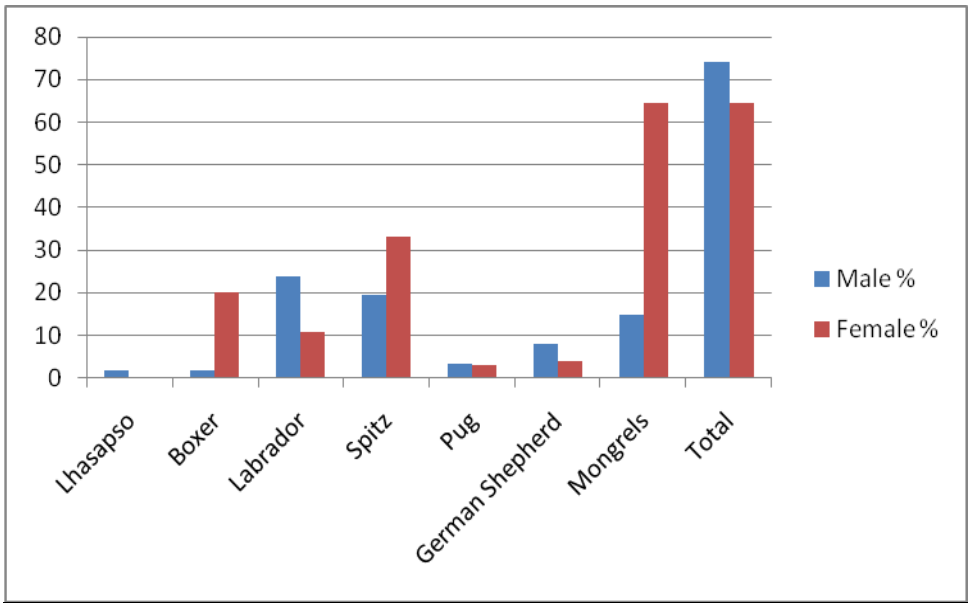
Sexwise Prevalence of Hepatic Disorders

Out of 45 animals screened for hepatic disorders more incidence was recorded in males than females. This is in agreement with the findings of [8] who reported on American and English Cocker Spaniel. However [11] observed no significant difference between males and female dogs in the incidence of hepatic disorders.

Table 2: Sexwise Prevalence of Hepatic Disorders

Breed	Male %	Female %
Lhasaapso	2	0
Boxer	2	20
Labrador	24	11
Spitz	19.65	33.33
Pug	3.41	3.03
German Shepherd	8	4
Mongrels	15	13
Total	74.06	64.36

Fig 2: Sexwise Prevalence of Hepatic Disorders



On age wise comparison more animals fell in the age group of more than eight years. [9] Observed that the age of dogs with histological confirmed hepatitis was 5 to 7 years. [5] Stated that liver disease was mostly encountered in the age group of 4-6 years.

Table 3: Prevalence of hepatic disorders in different age groups of dogs

Breed	**<1**	**2-4**	**5-7**	**>8 years**
Boxer	0	0	0	2.22
Labrodar	6.66	15.55	8.88	4.44
Spitz	0	2.22	4.44	4.44
Pug	0	4.44	0	0
German Shepherd	0	8.88	2.22	6.66
Mongrels	6.66	6.66	4.44	11.11
Total no of animals	4	21	9	11

Fig 3: Prevalence of hepatic disorders in different age groups of dogs

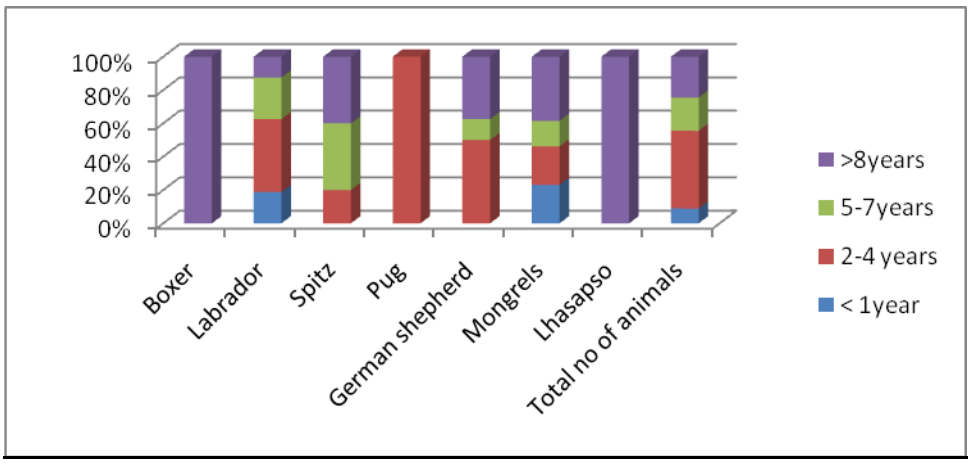
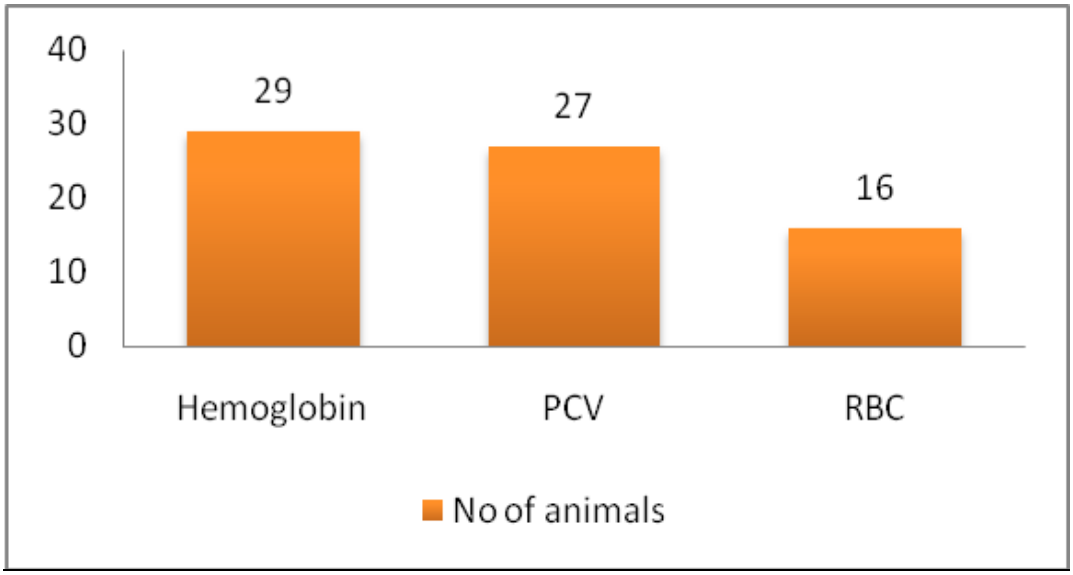


Table 4: Decreased hematological values in different dogs

Hematological Parameter	**No of animals**
Hemoglobin	**29**
PCV	**27**
RBC	**16**

Fig 4: Decreased Hematological values



Hematology

Hematological study revealed anemic changes represented by decrease in Hemoglobin, PCV and RBC values. These findings are in accordance with the reports by previous authors where anaemia was found as clinicopathological finding in liver isorders due to inflammatory disease or abnormal proteins as amino acid metabolism impaired [12] Blood smear examination revealed anemic changes with relative neutrophilia.

Blood smear examination

Neutrophilia evidenced in this study indicate the ongoing inflammatory processes in the liver disorders as reported by [6] as a result of inflammation and necrosis of the liver.

Serum Biochemistry

Liver enzymes

Serum biochemical study revealed elevation of ALT, AST and ALP. These findings were in accordance with previous reports of [3, 10, and 1]. A decrease in total protein and albumin values was observed. Earlier reports of hypoalbuminaemia and hypoproteinaemia were found as a clinicopathological finding in liver disorders of decreased functional mass due to decreased production of albumin and globulin [12] Increase in the values of BUN and Creatinine was observed in 4 cases of hepatic disorders due to Leptospirosis.Hyperbilirubinaemia was found in different hepatobiliary disorders (21 cases). The values of both total and direct bilirubin were found to be increased. This is in accordance with previous studies of [2] who found an abnormal serum bilirubin with

more advanced injury of liver stated that an elevated total bilirubin concentration was more common in many studies of canine leptospirosis.

CONCLUSION

Out of 45 animals screened for hepatic disorders more incidences was recorded in males than females. Among the breeds more number of cases belonged to Labrador, followed by German shepherd and Spitz. On age wise comparison more animals fell in the age group of more than eight years. The clinical signs observed in animals with hepatic disorders were decreased appetite, vomiting, lethargy and weight loss, and jaundice and ascites. Hematological study revealed anemic changes represented by decrease in Hemoglobin, PCV and RBC values. Blood smear examination revealed anemic changes with relative neutrophilia. Serum biochemical study revealed elevation of ALT, AST and ALP. A decrease in total protein and albumin values was observed. Hyperbilirubinemia was found in different hepatobiliary disorders. The values of both total and direct bilirubin were found to be increased. Increased values of BUN and Creatinine were observed in hepatic disorders cases with Leptospirosis.

In the end, the results of this study increased the knowledge and awareness of various risk factors predisposing liver disorders. It further highlights the significance of performing biochemical study as a routine for clinical cases to make better diagnosis of hepatic disorders in cases without overt clinical signs as well.

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