SHORT COMMUNICATION

Incidence of Ascites in Canines: Analysis and Prospective Study

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Abstract

A detailed study was conducted from April 2022 to March 2023 at the Veterinary Clinical Complex, Kamdhenu University, Junagadh, Gujarat, involving examination of 1532 dogs for various clinical conditions. Among them, 61 (3.98 %) dogs exhibited ascites which was confirmed through different diagnostic methods. The study revealed a significantly ($p<0.01$) higher incidence of ascites in Labrador retrievers (37.70%) and dogs between 1 to 5 years of age (54.10%). Additionally, female dogs showed a significantly ($p<0.01$) higher incidence (62.30%) than males, with the month of May showing the highest occurrence (11.48%).

Key words: Age, Breed, Ascites, Gender, Incidence, Labrador retriever.

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Introduction

Ascites refers to the accumulation of fluid within the peritoneal cavity (Moore *et al*., 2003). While not classified as a standalone disease, it serves as a clinical manifestation of a complex condition involving various organs in the body, either individually or in combination. Cardiac, renal, and hepatic disorders are closely linked to the development of ascites, either occurring independently or simultaneously, as they play significant role in its underlying causes. portal hypertension and low albumin concentration also contribute to the onset of ascites (Center, 2015). The clinical manifestations of this condition include abdominal distension, difficulty in breathing, lethargy, loss of appetite, vomiting, weakness and discomfort (Regmi and Shah, 2017). A timely and accurate diagnosis, along with treatment is crucial for managing ascites in dogs effectively. For this, a comprehensive approach that includes haemato-biochemical analysis, ascitic fluid analysis and ultrasonography are essential. There is a noticeable lack of comprehensive research on the incidence of canine ascites and literature pertaining to its occurrence is limited. To bridge this gap in knowledge, the current study was conducted with the primary aim of investigating the incidence of ascites in dogs in Saurashtra region.

Materials and Methods

The present study was conducted at the Veterinary Clinical Complex of the College of Veterinary Science and Animal Husbandry, Kamdhenu University, Junagadh (Gujarat, India), spanning a one-year period from April 2022 to March 2023. During the study, a total of 1532 dogs from different areas around Junagadh district were presented at the clinic and included in the evaluation. The study was aimed to assess the incidence of ascites in different dog breeds at different age and in different sex, regardless of any specific causative agent.

Each dog underwent a comprehensive clinical examination, during which various clinical findings were recorded. To confirm the presence of ascites, abdominal palpation was performed to assess the consistency of the accumulated fluid. Ascites in dogs was confirmed based on clinical examination, haematology, serum biochemistry, peritoneal fluid analysis and ultrasonography. Based on collected data, the age-wise, sex-wise breed-wise and month-wise incidence of ascites was calculated. Age wise incidence was categorized into four groups: below 1 year, 1-5 years, 5-10 years and above 10 years dogs. Collected data was analysed by chi-square test using graph pad prism 9.0 software. Differences between means was considered statistically significant at $p<0.05$.

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Results and Discussion

Among the 1532 dogs screened, a total of 61 dogs were identified to be suffering from ascites, irrespective of the specific causative factors. This indicates an overall incidence rate of 3.98%. Prajapati *et al.* (2022) also documented 3.25% (48/1479) incidence of ascites. Singh *et al.* (2019) observed an incidence rate of 2.9% of ascites in dogs. Saravanan *et al.* (2014) documented incidence of 2%, while Dixit *et al.* (2018) reported a higher incidence of 8.03%.

In the present study, dogs with ascites were observed in various age groups. The most incidence of ascites was observed in dogs of age between 1 to 5 years with 54.10% of the total ascites cases, which was significantly ($p<0.01$) higher than other age groups. This was followed by dogs of age group 5 to 10 years with 26.23% of the cases. Dogs older than 10 years comprised 13.11% of the reported ascites cases, while those below 1 year of age constituted 6.56% (Table 1). Present results showing a higher incidence of ascites in age group of 1-5 years aligned with the findings of Prajapati *et al.* (2022), who also reported a greater susceptibility to ascites in dogs aged between 1 to 5 years. On the other hand, Saravanan *et al.* (2014), Behera *et al.* (2017), Dixit *et al.* (2018), Singh *et al.* (2019) and Kumar *et al.* (2022) documented a higher incidence of ascites in dogs above 5 years of age.

Table 1: Age wise incidence of ascites in dogs

Age of affected dogs	Number of dogs affected	Percentage
Below 1 year	4	6.56
1-5 years	33	54.10
5-10 years	16	26.23
Above 10 years	8	13.11
Total	**61**	**100**

$\chi^2 = 17.99$, $p<0.0001$

Among the recorded cases of ascites, female dogs showed significantly ($p<0.01$) higher incidence (62.30%, 38/61) compared to male dogs (37.70%, 23/61). Behera *et al.* (2017), Padhi *et al.* (2022) and Prajapati *et al.* (2022) also reported a higher incidence of ascites in female dogs, which is supporting to the present study findings. The exact cause of ascites is not known, but it may be due to presinusoidal portal hypertension during post-whelping (James *et al.*, 2008). However, the findings of Saravanan *et al.* (2014), Zoia *et al.* (2017), Dixit *et al.* (2018) and Singh *et al.* (2019) were contrary, as they documented a higher incidence of ascites in male dogs, while Kumar *et al.* (2022) reported equal incidence in both male and female dogs.

The breed-wise incidence of ascites was found higher in Labrador Retriever (37.70%) followed by German Shepherd (22.95%), non-descript (13.11%) and others (Table 2). The results of the present study aligned with Behera *et al.* (2017), Pradeep *et al.* (2017), Kumar *et al.* (2022) and Padhi *et al.* (2022), who also reported that dogs of Labrador retriever were the most affected breed with ascites. However, the contradictory findings were reported by Vijayakumar *et al.* (2013), Saravanan *et al.* (2014) and Singh *et al.* (2019), with a higher incidence of ascites in Spitz, while Dixit *et al.* (2018) and Prajapati *et al.* (2022) recorded higher incidence of ascites in non-descript dogs, and Zoia *et al.* (2017) reported higher incidence in German Shepherd. This variation in incidence of ascites among different breeds in various reports may be primarily attributed to their higher population around the respective area of study.

Table 2: Breed wise incidence of ascites in dogs

Name of the breed	Number of dogs affected	Percentage
Labrador Retriever	23	37.70
German Shepherd	14	22.95
Non-Descript	8	13.11
Saint Bernard	4	6.56
Pomeranian	4	6.56
Rottweiler	3	4.92
Golden Retriever	2	3.28
Dalmatian	1	1.64
Pug	1	1.64
Shih Tzu	1	1.64
Total	**61**	**100**

$\chi^2 = 12.25$, $p= 0.0005$

The present study recorded varying incidence of ascites during different months of the year. The highest incidence was observed in May (11.48%) followed by June, September and November (9.84% each) as shown in Table 3. However, the variation in the incidence between months was found statistically non-significant. Behera *et al.* (2017) documented higher incidence in the month of April, while Singh *et al.* (2019) reported higher incidence in December month.

Table 3: Month wise incidence of ascites in dogs

Month	Number of dogs affected	Percentage
April	4	6.56
May	7	11.48
June	6	9.84
July	5	8.20
August	5	8.20
September	6	9.84
October	5	8.20
November	6	9.84
December	4	6.56
January	5	8.20
February	3	4.92
March	5	8.20
	61	**100**

$\chi^2 = 1.626$, $p= 0.202$

The findings of the current study in general indicated that the overall incidence of ascites in dogs in and around Junagadh is 3.98%. Dogs of age between 1 to 5 years are more prone to ascites, and so also the female dogs and Labrador Retriever and German Shepherd over others.

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