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ANALYSIS OF ASCITES ETIOLOGY IN DOGS, RETROSPECTIVE STUDY (2004-2010)

Abstract.

Ascites is the accumulation of fluid in the abdomen (2, 3, 5, 7, 8). Ascites is usually an indication of a serious systemic disease and has many potential causes (5). The aim of the study was an analysis of ascites etiology in dog. The study was conducted on 121 dogs of both sexes and different breeds, aged 5 month to 12 years, manifesting the signs of ascites. Dogs were divided into 4 groups depending on the disease etiology: group 1- dogs with the signs of ascites connected with cardiac insufficiency, group 2- dogs with the signs of ascites connected with the neoplastic disease, group 3- dogs with the signs of ascites connected with the liver cirrhosis, group 4- dogs with the signs of ascites connected with infection peritonitis. The most common causes of ascites were cardiac insufficiency (n=69; 57%), malignancy (n=35; 29%), cirrhosis (n=13; 11%) and infection peritonitis (n=3; 3%).

Key words: *ascites, dog, etiology*

Introduction.

Inside the abdomen there is a membrane called the peritoneum which has two layers. One layer lines the abdominal wall and the other layer covers the organs inside the abdominal cavity. Normally there should be almost no fluid here (i.e., surrounding the intestines and organs such as the liver and spleen) (3, 8). Ascites refers to the abnormal build up of fluid in the peritoneal cavity. The accumulation of ascitic fluid represents a state of total-body sodium and water excess, but the event that initiates the unbalance is unclear (1). Three theories of ascites formation have been proposed: underfilling, overflow, and peripheral arterial vasodilation (8).

Task, the aim of the article.

The aim of the study was an analysis of ascites etiology in dog.

Material and methods.

The study was conducted on 121 dogs of both sexes and different breeds, aged 5 month to 12 years, manifesting the signs of ascites. Dogs were divided into 4 groups depending on the disease etiology: group 1- dogs with the signs of ascites

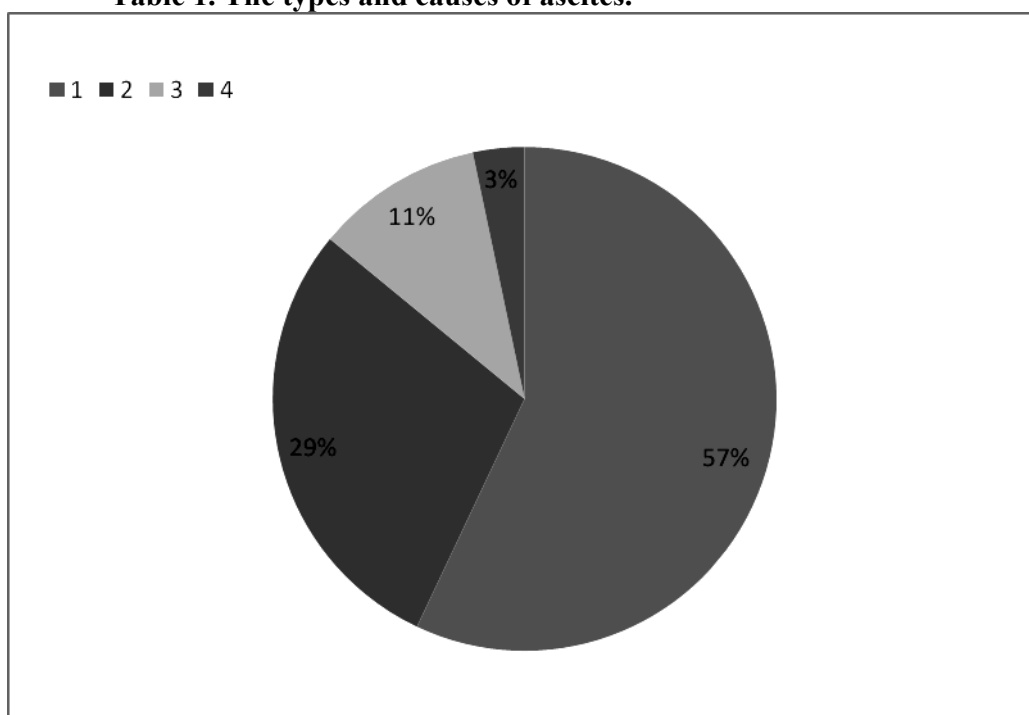
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connected with cardiac insufficiency, group 2- dogs with the signs of ascites connected with the neoplastic disease, group 3- dogs with the signs of ascites connected with the liver cirrhosis, group 4- dogs with the signs of ascites connected with infection peritonitis. The diagnosis of cardiac insufficiency was based on echocardiography examination. The diagnosis of cirrhosis was based on liver biopsy as well as on clinical and biochemical parameters. The criteria used for diagnosing tumors were standard cytological examinations and/or positive histology. The diagnosis of infection peritonitis was based on microbiological examination.

Results of researches.

The most common causes of ascites were cardiac insufficiency (n=69; 57%), malignancy (n=35; 29%), cirrhosis (n=13; 11%) and infection peritonitis (n=3; 3%). The types and causes of ascites are detailed in Table 1.

Table 1. The types and causes of ascites.



Conclusion

The study showed that chronic cardiac insufficiency was the most frequent reason for ascites in dogs. This differs from the results of the studies carried out by other authors in the previous years, in which liver disease was considered to be the most frequent cause of dog's ascites (5). A phenomenon of an increase in the number of animals suffering from cardiac insufficiency can be explained by an increase of popularity of those breeds which are prone to heart diseases and extension of the dog's life expectancy.

A neoplastic disease was the second most frequent cause of ascites. Among domestic animals, a dog is a species in which neoplasms occur the most often. The statistics show that 25% of the dog population suffers from a neoplastic disease, and,

in the animals older than the age of 10, the percentage of diseases increases up to approx. 45% (5). Many years' selection and inbreeding of dogs may be one of the main causes of the above-mentioned fact, as a result of which a number of dangerous mutations occur in the dog's genome.

In 13 % of the dogs covered by the study, ascites was caused by liver parenchyma pathology. However, it is difficult to unambiguously determine the frequency of the occurrence of the dog ascites caused by chronic liver diseases as, in most cases, the dogs are subject to euthanasia before they reach the final stage of a liver disease, in which fluid accumulates in the peritoneal cavity. Septic peritonitis was the least frequent cause of ascites in dogs.

In human medicine, liver cirrhosis is the main cause of the ascites and it occurs in 75% - 80% of patients, neoplastic diseases are the second most frequent cause – 10% of patients, and circulatory system diseases are the third one with only 5% of patients (9). The primary causes of liver diseases that lead to ascites are alcoholism and viral infections of this organ (7). In dogs, incidence of the liver viral diseases has decreased for the recent years, which is associated with widely spread preventive vaccination programmes.

It should be stressed that the ascites caused by chronic cardiac insufficiency is less frequent in people than in dogs, which results from the early detectability of the circulatory system diseases and introduction of new treatment methods. As a result of that, the number of patients in the final stage of cardiac insufficiency when fluid accumulates in body cavities as a result of haemodynamic disturbances, decreases (6).

A statistical analysis of the dogs with ascites caused by chronic cardiac insufficiency proved that DCM (dilatate cardiomiopatie) was the most frequent cause of the latter whereas mitral endocardiosis and endocarditis were considerably less frequent causes. Ascites is a frequent clinical symptom of the right side cardiac insufficiency, which occurs in dogs more rarely than the left side cardiac insufficiency (5). Overload of the right ventricle and right atrium is usually secondary and it is the most often caused by respiratory tract diseases, stosis arteriae pulmonalis or pulmonary hypertension caused by the left side cardiac insufficiency. The author's study did not prove typical right side cardiac insufficiency, yet, the mixed insufficiency with a predominance of the right side insufficiency was found. In 2 dogs with DCM, stosis arteriae pulmonalis was additionally found, and in 1 dog, patent ductus arterio sus Botali. The stosis arteriae pulmonalis constitutes only 5% of the clinical cardiologic cases and the patent ductus arteriosus Botali is a rare genetic defect in dogs (4.7/1000 individuals) (5). The left side cardiac insufficiency caused by mitral endocardiosis is the prevailing cause of cardiac insufficiency in dogs. Endocarditis is a rarely mentioned cause of the cardiac insufficiency in dogs and it has diversified etiology (e.g. bacterial, viral or parasitic etiology and it can also be caused by physical and chemical factors). Constrictive pericarditis is also a rarely discussed disease entity in dogs as its symptoms are similar to those described for stasis cardiac insufficiency.

It was proved, on the basis of the author's research, that a neoplastic disease was the second most frequent cause of ascites in dogs. The information included in

the subject literature indicates that neoplasms in animals are the most often localized in skin and soft tissues and they mainly regard lactiferous gland, haematopoietic system, urinary system, endocrine glands, and digestive system (e.g. oral cavity and pharynx) (1, 7). The author's own observations proved that the predominant types of neoplasms which caused accumulation of fluid in the peritoneal cavity were the neoplasms in the following order: adenocarcinoma, lymphoma, sarcoma, and adenoma. The neoplasms derived mainly from the digestive system, spleen, prostate, and the haematopoietic system. The author's own observations do not coincide with the results of other authors' studies with regard to location of a neoplastic process and type of neoplasms. It is the most likely to result from specificity of the dog population studied i.e. patients with ascites.

The main cause of accumulation of fluid in the peritoneal cavity in dogs with liver parenchyma pathology was liver cirrhosis. According to the subject literature, the main causes of liver cirrhosis in dogs are the following: toxic factors and chronic liver inflammations of various etiology (9). The author's own study did not determine the primary cause of liver cirrhosis.

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Summary

The article describe analysis of ascites etiology of 121 dogs. The diagnosis of was based on echocardiography examination, liver biopsy, standard cytological examinations and microbiological examination.

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