

PREVALENCE OF SPLENIC DISEASES IN DOGS: A RETROSPECTIVE STUDY OF 81 CASES

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Abstract. Splenic masses have a higher incidence compared to diffuse splenic enlargement in canine patients and are mostly encountered in older dogs. For the present study we reviewed records of canine patients submitted to the Pathology Department (Faculty of Veterinary Medicine, Cluj-Napoca) between April 2014 and July 2017. Gross inspection and histological analyses were performed. 81 canine patients met the criteria and were included in the present study. Based on the macroscopic findings, 64.20% of the splenic lesions were represented by the presence of one or more nodules. Diffuse splenic enlargement represented 35.80% of the analyzed cases. Splenic nodular masses were histologically diagnosed as malignant and non-malignant. Hemangiosarcoma was the most common finding (59.62%), followed by nodular hyperplasia (28.85%) and hematoma (11.53%). 67.74% of the patients diagnosed with hemangiosarcoma presented metastases in different organs and tissues and 19.35% of them were associated with hemoperitoneum.

Keywords: dog, hemangiosarcoma, spleen, neoplasm

INTRODUCTION

Splenic pathology in canine patients such as diffuse splenomegaly or splenic masses are a common finding in small animal veterinary practice. Splenic nodular lesions are more commonly diagnosed than diffuse splenic enlargement in canine patients (Bettini et. al, 2001). Splenic masses are mostly encountered in older dogs. The most commonly documented splenic neoplasm in dogs is hemangiosarcoma (Kim et al, 2015). The main causes that lead to diffuse splenomegaly are represented by: congestion, inflammation, neoplasia or extramedullary hematopoiesis (Day et. al, 1995). Regarding focal or multifocal splenic lesions, neoplasia (hemangiosarcoma, hemangioma), hematoma, nodular hyperplasia, splenic cysts and splenic abscesses are the usual findings (Christensen et. al, 2009). It is important to perform a differential diagnosis between benign and malignant splenic masses in order to establish an accurate prognosis and a correct therapeutic protocol for canine patients, taking into consideration the fact that splenic malignant tumors such as HAS have a poor prognosis and are often accompanied by metastatic processes (Mallinckrodt et. al. 2011).

MATERIALS AND METHODS

The main purpose of the present study was to perform a retrospective epidemiological study from April 2014 to July 2017, to evaluate the incidence splenic lesions in dogs and also to describe some aspects regarding malignant versus benign pathology. For

this study we reviewed records of canine patients submitted to the Pathology Department, Faculty of Veterinary Medicine Cluj-Napoca, between April 2014 and July 2017. The study material was represented by splenic samples harvested after splenectomy or after a necropsy, from canine patients diagnosed with splenic neoplasia. Gross inspection and histological (H&E stain) analyses were performed. A total number of 81 canine patients met the criteria and were included in our study. The definitive diagnosis was established by histological examination.

RESULTS AND DISCUSSIONS

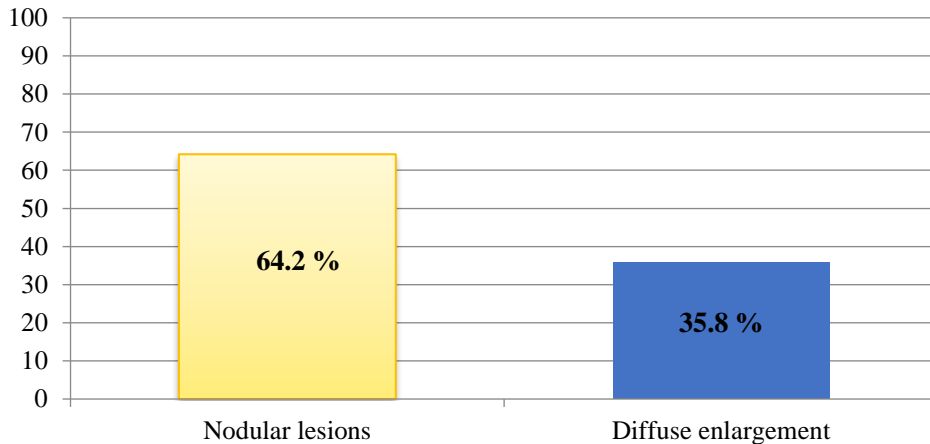


Fig. 1 Distribution of nodular splenic lesions and diffuse splenic enlargement

After the gross inspection was performed, based on the microscopic findings, from a total number of 81 canine patients, 64.2% (n=52) of the splenic lesions identified were represented by one or more splenic nodules. On the other hand, diffuse splenic enlargement represented 35.8% (n=29) of the analyzed cases (Fig.1). We found similarities between our study and a study published by Bettini et. al in 2001 in which they concluded a 49% of diffuse splenomegaly and 51% of splenic nodules.

Regarding age distribution among patients diagnosed with splenic pathology, our results showed that the mean age at the time of the diagnosis for diffuse splenomegaly was 5.5 years (the interval limits being 2 months and 18 years old) whereas for focal or multifocal nodular lesions the mean age at the time of the diagnosis was 10.05 years old (the interval limits being 5 and 18 years old). There are some similarities between our study and another epidemiologic study conducted by Clendaniel et al. in 2014, which pointed out that the mean age of occurrence in case of nodular splenic lesions, especially splenic hemangiosarcoma was 11.5 years, the age limits ranging from 6 to 15 years old. After a histological assessment was performed on all samples diagnosed based on gross examination with diffuse splenomegaly the present study showed that the main causes that lead to splenic enlargement were: splenic congestion (62%), splenic neoplasia (17%) and splenitis (11%). (Fig 2). In case of diffuse splenic neoplasia, the most common diagnosis was represented by splenic lymphoma. Christensen et. al. mention in their study in 2009 that only 3% of splenic lesions found were represented by inflammatory conditions. In veterinary small animal practice cases of splenitis are rarely reported (Ballager et al, 2007).

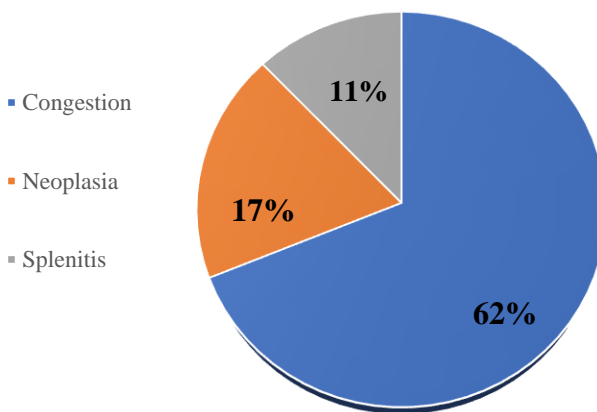


Fig. 2. Graphic distribution of diffuse splenic lesions

Analyzing the splenic nodular pathology contained in this study we observed that the most important splenic lesions encountered was represented by hemangiosarcoma (60%), splenic nodular hyperplasia (29%) and splenic hematoma (11%) (Fig.3). This result was consistent with the study presented by Cleveland et. al in 2016 in which they described an incidence of 73% in case of primary splenic tumors in dogs. On the other hand, Spangler et. al. in a study performed in 1992 mention that hematoma and hemangiosarcoma are indistinguishable in a gross examination, taking that into consideration, in the present study we also performed a histological examination in order to establish a definitive diagnosis.

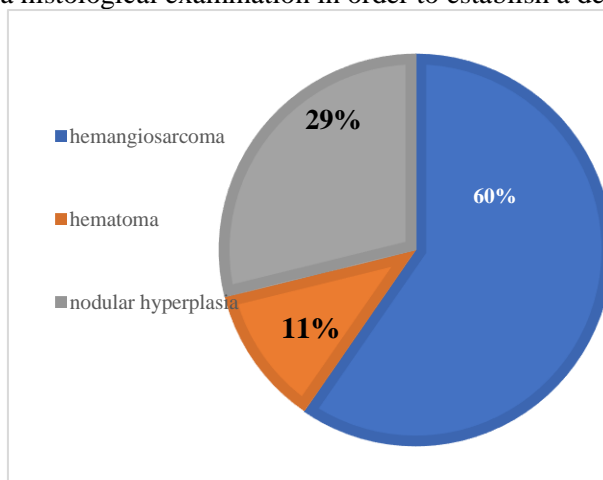


Fig. 3. Graphic distribution of nodular splenic lesions

By far the most common diagnosis encountered in the present epidemiological study regarding splenic pathology in dogs was primary splenic hemangiosarcoma, representing 31 cases out of all 81 cases included in this study (Fig.3). In a research paper published by Pastor J. et all in 2002 it is shown that, in accordance with our results, hemangiosarcoma represents 5% of all neoplastic diseases diagnosed in dog. In case of splenic hemangiosarcoma the most common associated lesions that we can encounter are represented by internal bleeding due to splenic rupture and metastatic processes (Hammond

et al., 2008). Taking that into consideration we evaluated the incidence of this comorbidities in our cases diagnosed with primary splenic hemangiosarcoma and we observed that metastases in different distant organs and tissues were described in 68% off all analyzed cases whereas 19% of above mentioned cases were associated with hemoperitoneum due to splenic rupture. Regarding breed predisposition of hemangiosarcoma, according to the present study, the most affected breed was German Shepherd (29% of all analyzed cases), followed by Mix Breed dogs (19%), German Shorthair Pointer (6%), English Cocker Spaniel (6%) and Rottweiler (6%).

CONCLUSIONS

The present study showed that splenic nodular lesions usually develop in dogs older than 5 years, the average age being 10 years old. Regarding the main splenic pathology encountered during this epidemiological study, malignant neoplasms, especially primary splenic hemangiosarcoma were the most commonly diagnosed canine splenic disorders, representing 5% of all oncologic diseases diagnosed in canine patients. In contrast, primary inflammatory conditions such as splenitis were uncommon. German Shepherd dogs were the most common breed diagnosed with hemangiosarcoma. The research work is consistent with other previous studies published in veterinary scientific literature showing the increased incidence of splenic pathology in dogs and also the importance of early diagnosis in case of splenic malignancies due to the life-threatening comorbidities that can appear mainly in case of splenic hemangiosarcoma.

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