RESEARCH ARTICLE

The impact of gender and age in diabetes mellitus in dogs

NIKOLIN DAIJA

Faculty of Veterinary Medicine, Agricultural University of Tirana

Email: ninodaija@hotmail.com

Abstract

In this study we took 2,921 dogs, of whom 1,521 were female and 1,400 were male. These dogs were tested for diabetes mellitus, and 10 of them were positive. 6 of these dogs were female and 4 were male. Dogs in this study were 1- and over 10 years. In our study were diabetic dogs at the age of 5-9 years. Greater susceptibility to diabetes mellitus were female dogs.

Keywords: Dogs, gender, age, female, male

Introduction

Diabetes mellitus (DM) is a common endocrinopathy in dogs, with certain breeds shown to have either an increased or decreased risk of developing the disease [2,3]. The etiology of canine DM is considered multifactorial and may be broadly divided into insulin resistance and insulin deficiency [6,7]. Insulin deficiency diabetes is suggested to be caused either by autoimmune destruction of insulinproducing beta cells, pancreatitis, or secondary to chronic hyperglycemia [4]. Insulin resistance diabetes may occur as a consequence of hormonal disturbances [7,8]. Epidemiologic studies have reported that most affected dogs are. 5 years of age at the onset of DM [1]. Several studies have found female dogs to have an increased risk for DM [1,2] however, in 1 recent large study this association was not confirmed [5].

Materials and methods

The study was focused 5 clinics in the city of Tirana. The dogs presented to the clinics for various purposes, be it vaccination of other routine checks, went through a rapid blood test. During the period 2013 - 2015 as many as 2921 dogs of different breeds were an integral part of the study. All of them were subjected to a rapid test of blood glucose. Those dogs with indicators standing at levels above 120 mg / dl underwent further comprehensive blood tests to determine their case better. The animals with pregnancy problems were excluded from the study because their glucose indicators might be compromised. Those animals with levels at above 120 mg / dl were considered to be positive. Results for each animal testing positive were recorded and questionnaires were completed.

Results and Discussion

In the study a total number of 2921dogs of mixed breeds were examined including Labradors retrievers, mixed, coli, Yorkshire terriers and others. These dogs underwent rapid tests and the following results were obtained. Those dogs testing positive were subjected to further blood glucose tests before and after the meals. The results are shown below:

Table 1: Dogs testing positive

Total	2921	100%
Positive (+)	**10**	**0.33**
Negative (-)	**2911**	**99.66**

Blood glucose analysis showed that 10 individuals or 0.33% of dogs examined in clinics across Tirana district tested positive with diabetes. This figure points to a low frequency of diabetes as well as to the fact that the pathology shows no upward

tendency. In our study no other pathologies were noted. No indication of medication was present which might tend to increase the level of glucose in blood.

Gender

The animals at the focus of the study comprised both males and females. The results from both are depicted in the following table.

Table2: Ratio of males to females in the study

Total	2921	100%
Female	**1521**	**52 %**
Male	**1400**	**48 %**

Dogs with glucose indicators fixed at 120 mg / dl fall under this category.

Table 3: Dogs testing positive

Total	10	100%
Female	**6**	**60%**
Male	**4**	**40%**

The current study has indicated that female dogs have a higher prevalence of disease than male ones. The diabetes incidence in female dogs is often associated with an increase in progesterone of dioestrus and the release of growth hormone by the mammary glands in circulation, leading to insulin resistance. Recommendations for diabetes administration in females is *ovariohysterectomy*, but there is no information available that sterilized dogs were diagnosed with diabetes.

Diabetes mellitus is a multi-factorial disease, and as such it cannot be linked to the hormonal presence in the outbreak disease. The occurrence may be due to other factors such as morbid acute or chronic pancreatiti, autoimmune destruction of pancreatic beta cells and pancreatit abiotrophy, although their relevance is relatively unknown. In our study there is a higher prevalence in female dogs than in males with females at 6 cases (60%) and the males at 4 cases or 40%.

Age

Based on various studies it has been observed that diabetes mellitus is present in older dogs. Yet, it has not been established why diabetes mellitus is far more common in the old dogs, but it is assumed that this is related to hyperadrenocorticism or to other pathologies that occur later in life in dogs. In our study diabetic dogs were aged 5-9 years.

Table 4: Aged of dog testing positive

Total	10	100 %
1 old	**0**	**0%**
1-2 old	**0**	**0%**
2-3 old	**0**	**0%**
3-4 old	**0**	**0%**
4-5 old	**0**	**0%**
5-6 old	**1**	**10%**
6-7 old	**2**	**20 %**
7-8 old	**2**	**20 %**
8-9 old	**3**	**30 %**
9-10 old	**2**	**20%**
over 10 old	**0**	**0%**

In this graph it is clear that the largest number of dogs affected are those between 7-10 years of age with 7 dogs being affected, and dogs aged 5-7 years with 3 dogs. The table and graph indicate that the higher proportion of dogs with diabetes mellitus are those between 5-10 years of age.

Conclusions

This was by all means a partial study that extended for two years intended to gain an insight into the outbreak pattern of the disease in Tirana area. The intent and purpose of the study was not only to provide data on the frequency of the pathology, but also to determine the extent of the impact that age, gender, and the birth have on diabetes. Incidence of the pathology stood at 0.33%. The results of this study show that the prevalence of diabetes in female dogs is much bigger than that in male dogs. It turned out that 60% of diabetic dogs were females and 40% were males. Diabetes affected mostly dogs within the age

range of 5-10 years. This study will carry on beyond this current scope so as to provide more to-the-point indicators in order to get down to the more frequent triggers of this pathology as well as the impacts that age and gender have on this pathology.

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