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Mammary gland tumor VS birth-control

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Abstract

Breast tumors are very common in small animals. There is no known cause directly related to this disease but there are some risk factors associated with the breast tumors in animals. Although no clear and consensual they are referred endocrine, genetic, diet and lifestyle factors. Focusing on the endocrine risk factor, a small study was carried out to collect data from owners of female dogs and cats who have suffered from this condition. The main objective of this work was to find out if there is any association between birth control pill administration and the occurrence of malignant / benign breast tumors in identified clinical cases. Surveys were performed in which animal data were collected, the age of the animal, when the disease was diagnosed, if the animal was taking the contraceptive pill, if the diagnosed tumor was of benign or malignant origin, if the owner was informed of the contraindications of this medicine.

Older animals have a greater predisposition to mammary tumors in dog and cats (older than 7 years). And generally the owners who administer pills for reproductive control in these animals have no concept of contraindications. It is therefore important that veterinary teams (veterinarian and veterinary nurse) reinforce information actions for animal owners.

Key Words: canine, feline, mammary tumors, bith-control pill.

Introduction

Mammary tumors represent the first group of tumors in the dog and they are the third most frequent tumor in the cat. Half of the mammary tumors are malignant, with the possibility of local recurrence and distant metástases. This tumors are hormone dependente: 50% to 60% of malignant and almost all benign tumors have receptors against estrogens and progestogens. Its frequency does not seem to be influenced by the number of pregnancies, although the irregularity of the estrous cycle, pseudogenestation and the administration of progestogens at prolonged and high doses can favor the development of this type of neoplasms (MISDORP, 2002). The major mechanism by which progesterone and its synthetic derivatives induce the development of mammary tumors includes overproduction of growth hormone (GH) within the mammary gland itself. GH has a direct stimulating effect on breast tissue growth but also indirectly through insulin-linked growth factor (IGF-I), the latter playing a crucial role in cell proliferation and neoplasic transformation. Mammary tumors affect almost exclusively females and the average age of presentation is 8-10 years in the dog. Pure and small races are especially predisposing to their occurrence. Among the pre-disposing races cited in the literature are: Poodle, Yorkshire, Teckel, Boston Terrier, Fox Terrier, Samoyedo, Pointer, Golden Retriever, Setter and Cocker Spaniel. (ALBERTUS, 2011)

Material and Methods

Between april and june, 2019 on-line surveys (n = 46) were performed on pet owners, female dogs (n=22) and cats (n=24) with known diagnosis of mammary tumors.

The survey is divided into two parts, the first for cat owners and the other for female-dog owners. The survey included questions as, the age of the animal

when tumor was diagnosed, if was being administered some birth-control pill and the active ingredient of the drug administered. Owners were also asked if the diagnosed tumor was malignant or benign and if they were informed of the contraindications of the medicine.

Data were analyzed with JMP 9 (SAS Institute, 2010), using contingency tables and Chi-square test (χ2). The the Odds ratio-OR values also are calculated. Differences were found to be significant at $p<0.05$ level. For the elaboration of the graphics we resorted to the native web softwear of Google Drive (Google Sheets) and Microsoft Excel 2010.

Discussion and Results

The results of the surveys are summarized in the following figure (Figure 1).

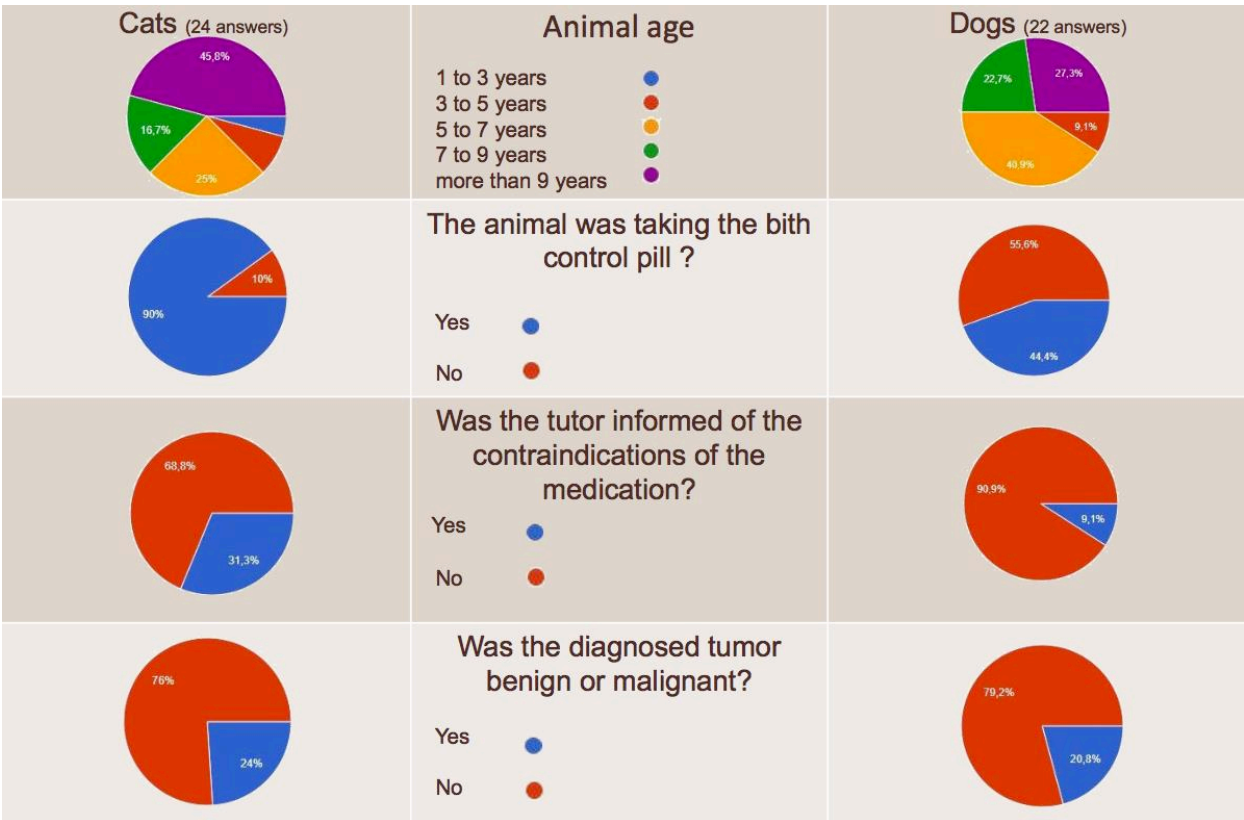

Figure 1 - Results of the survey

Older animals seem to have a greater predisposition to this condition. The most representative groups were: in female cats 45,8% have more than 9 years; and in female dog's animals between 5 and 7 years (40,9 %). In most of the reported cases the tumors were diagnosed as malignant (79,2% dogs and 76% cats). Most of the owners surveyed report that they used pill for reproductive control of their animal (55,6% in dogs and 90% in cats). These owners are not properly informed about the contraindications of the drug or the enormous advantages of having an ovariohysterectomy instead (90,9% in dogs and 68,8% in cats).

For both species, the occurrence of malignant or benign tumors did not vary with age and with the duration of treatment ($p>0,05$). In the analysis of the total results (dog + cat) results suggest a relationship between the administration of pill and the occurrence of malignant tumors ($p <0,05$). In this case, administration of the pill seems to favor the occurrence of malignant tumors five times more than benign (OR = 5,24). However, this relationship is not found ($p>0,05$) when considering the analysis of each species individually. Thus further studies should be developed to confirm this and other associations and the risk factors.

However, and based on current knowledge, it is important that veterinary surgeons and veterinary nurses at veterinary care centres reinforce information actions for animal owners in order to decrease the occurrence of mammary tumors associated with the administration of birth control pills.

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