SHORT COMMUNICATION

Clinico-Epidemiological Study of Canine Mammary Gland Tumours

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Abstract

The present study was conducted to determine the clinico-epidemiological surveillance of canine mammary gland tumours (CMT) during the period 2019-2022 at Veterinary Clinical Complex of the College , Junagadh (India). Total 10712 canine cases were registered during the study period. Among them, 2816 (26.28%) cases were suffered with different surgical ailments. In which, 63 cases (2.24 %) were diagnosed as mammary gland tumours. The overall incidence of canine mammary gland tumours was 0.58 % during the study period. Age-wise incidence of CMT was highest in 5 to 8 years old bitches (26 cases, 41.26%), followed by 9 to 12 years (23 cases, 36.50%), less than 4 years (10 cases, 15.87%) and more than 13 years (4 cases, 6.34%). Breed wise distribution showed a higher incidence in German Shepherd (26/63, 41.26%) followed by Labrador Retriever (16/63, 25.39%), Spitz (15/63, 23.80%), Non-descript breed (5/63, 7.93%) and Lhasa Apso (1/63, 1.58%). Clinical observations and diagnosis of affected cases revealed involvement of 89 mammary glands in 63 affected cases. Based on observations, highest frequency was observed in inguinal glands (37/89, 41.57 %) followed by caudal abdominal (25/89, 28.08 %), cranial abdominal (16/89, 17.98 %), caudal thoracic (8/89, 8.98 %) and cranial thoracic (3/89, 3.37 %) glands. This study revealed higher incidence of canine mammary gland tumours in 5 to 8 years of age group and in German Shephard breed. Moreover, inguinal glands were found to be more affected.

Key words: Age, Breed, Canine, Epidemiology, Mammary gland tumours.

Ind J Vet Sci and Biotech (2023): 10.48165/ijvsbt.19.1.23

Introduction

Cancer is a group of diseases characterized by uncontrolled cell growth and spread. Cancer has gained considerable relevance in animals recently owing to affection and awareness among people towards animal suffering and pain (Maiti *et al*., 2014). Mammary gland tumours in dogs are the second most prevalent category of canine neoplasms after skin tumours. They can develop anywhere along the mammary chain in dogs, mostly in females (Salas *et al.* 2015). The present study was aimed to assess retrospectively the incidence of mammary gland tumours in canine as influenced by major clinico-epidemiological factors.

Materials and Methods

The present study was carried out on canine patients presented at the Veterinary Clinical Complex, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Junagadh (Gujarat, India) with history and clinical signs suggestive of mammary gland tumours during the period of three years (April, 2019 to March, 2022). The data regarding the incidence of mammary tumours (age-wise, sex-wise, breed-wise and site of occurrence of tumors) in dogs were recorded and analysed.

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How to cite this article: Rokad, H.A., Bhatt, R.H., Talekar, S.H., Vadalia, J.V., Padaliya, N.R., & Dodia, V.D. (2023). Clinico-Epidemiological Study of Canine Mammary Gland Tumours. Ind J Vet Sci and Biotech. 19(1), 103-105.

Source of support: Nil

Conflict of interest: None

Submitted: 14/10/2022 **Accepted:** 25/12/2022 **Published:** 10/01/2023

Results and Discussion

A total of 10712 canine patients were registered at the Veterinary Clinical Complex of the College , Junagadh during the study period of three years. Out of them, 2816 (26.28 %) cases were suffered from different surgical ailments. In which, 63 (2.24 %) cases were diagnosed as canine mammary gland tumours (CMT). In order to optimise treatment procedures,

retrospective clinico-epidemiological studies of canine mammary tumours are helpful in identifying risk variables linked to neoplasia and prognosticating criteria.

Age-wise Incidence

During the study, the highest incidence of canine mammary gland tumours (CMT) was observed in the age group of 5-8 years (41.26%), followed by 9-12 years (36.50%), less than 4 years (15.87%) and more than 13 years (6.34%). It could be due to incidental hormonal status (estrogen/progesterone) which is postulated to be responsible for mammary tumors development. Accumulation of genetic damage over time diminishes the immune function and the long lag time between malignant transformation of a single cell and the emergence of a clinically detectable neoplasm may be the possible explanation for increased mammary gland tumours incidence in later third of an animal's life span (Sharma, 2007).

The results of age-related incidence of canine mammary tumours (Table. 1) are in consistent with earlier studies (Cassali *et al*, 2011; Devarathnam *et al*., 2021). The lowest incidence was observed in age group of 13-15 years which agreed with study of Zatloukal *et al.* (2005) and Gupta *et al.* (2012) who reported increased incidence of mammary gland tumors after the 5 years of age with a peak at the age of 10-12 years followed by subsequent decrease.

Sex-wise Incidence

Out of 63 cases diagnosed as canine mammary tumours, all were females (100%). Incidence of mammary tumours in male was not observed during the study. In the present study, mammary gland tumours were observed only in female dogs during last three years. Similar results were reported by Devarathnam *et al.* (2021), Valdivia *et al.* (2021). Sex wise distribution shows incidence of CMTs in female dogs which may be due to hormonal interactions (determined by detection of estrogen and progesterone receptors in neoplastic tissues) and effects of different growth stimulation which indicated by gastrin releasing peptide receptors expression markers (Arya *et al.,* 2018).

Breed-wise Incidence

The details of breed wise incidence of canine mammary tumours are presented in Table 2. Breed-wise distribution showed highest occurrences of neoplasms in German Shepherd (41.26%) followed by Labrador Retriever (25.39%), Spitz (23.80%), Non-descript breed (7.93%) and Lhasa Apso (1.58%). Similarly, Dhami *et al.* (2010) and Yadav (2021) observed maximum cases of canine mammary tumours in German Shepherd followed by Pomeranian, Doberman and Mongrel, whereas in other breeds the incidence was much less (1.59 to 3.17 %). Atwal (2017) also reported majority of canine mammary tumour cases in German Shepherd breed. Pet owners have distinct choices for particular breeds based on popularity of breed in particular region may be the possible reason for the diversity in breed predisposition to canine cancers (Arya *et al.,* 2018).

Site of Occurrence

Among 63 affected cases, 89 mammary glands were involved which were analysed during the study. In the present study, involvement of inguinal mammary gland was seen in 41.57% followed by caudal abdominal glands (28.08 %), cranial abdominal glands (17.98 %), caudal thoracic glands (17.98 %) and cranial thoracic glands (17.98 %)(Table 3). These results are in consistent with the earlier reports on location of mammary gland involved by Cassali *et al.* (2011) and Devarathnam *et al.* (2021). Maximum involvement of the caudal glands might be due to the fact that they have maximum glandular tissue and they maintain their secretary activity longer than other pairs (Fidler and Brodey, 1967).

Table 1: Age-wise distribution of canine mammary gland tumours (n=63)

Age group	No. of cases	Percentage
≤4 years	10	15.87%
5-8 years	26	41.26%
9-12 years	23	36.50%
13 years	4	6.34%

Table 2: Breed wise distribution of canine mammary gland tumours (n=63).

Breed	No. of animals	Percentage
German Shepherd	26	41.26%
Labrador Retriever	16	25.39%
Spitz	15	23.80%
Non-Descript	5	7.93%
Lhasa Apso	1	1.58%

Table 3: Site of tumour occurrence

Affected pairs of mammary glands	Total affected glands (n=89)	Percentage
Cranial thoracic	3	3.37%
Caudal thoracic	8	8.98%
Cranial abdomen	16	17.98%
Caudal abdomen	25	28.08
Inguinal	37	41.57%

Conclusions

The study concluded that the dogs between 5 to 8 years of age group were mostly affected with canine mammary tumours. Among breeds, German Shephard was found more affected in Junagadh region. The inguinal mammary glands were affected highest out of all affected clinical cases during the study period.

Acknowledgement

Authors are grateful to the authorities of Kamdhenu University and the Dean, College of Veterinary Science & A.H.,

Veterinary Clinical Complex, KU, Junagadh for the support and facilities provided.

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