

Epidemiology of Canine Mammary Gland Tumours in Gujarat

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Abstract

Last three years' (2006-2009) retrospective information was retrieved by scrutinizing the data bank of the College Hospital. During this period 8337 canine cases were registered. Amongst them 2070 cases were referred to Department of Surgery for further surgical treatment. Out of 2070 canine cases, 158 cases (7.63 %) had various neoplastic condition and amongst them 63 cases (39.87 %) were of mammary gland tumours. The overall incidence of canine mammary gland tumours was 0.75 per cent of the total canine cases. The highest occurrence of canine mammary tumour cases was found in the dogs aged 8 to 12 years (49.21 %) followed by those aged 4 to 8 years (33.33 %). It was least (4.76 %) in younger dogs less than 4 years and intermediate (12.70 %) in older dogs above 12 years of age. Breed-wise higher occurrence was found in German Shepherd and Pomeranian as compared to other breeds.

Key words: Canine, Mammary tumour, Epidemiology, Age and Breed effect.

Introduction

Cancer is a major cause of mortality in canines. As compared to human, in canines neoplasms are more frequent. During the last several years canine mammary tumours have raised great interest in human and veterinary surgery. Amongst many neoplasms that are known to affect the dog, canine mammary tumours are most frequently encountered. These are mixed type of tumours which could be either benign or malignant. Incidence of mammary gland tumour in canine is as high as 50 per cent of all neoplasms when compared with breast cancer (27 %) in human beings. Mammary gland tumours can occur anywhere along the mammary chain in canine, mainly in females, and are the second most common group of neoplasms in dogs, following skin tumours (Moulton, 1999). The present study was aimed to know retrospectively the incidence of mammary gland tumours in canine as influenced by major epidemiological factors in Gujarat.

Materials and Methods

The present study was carried out on canine patients having mammary tumour, which were presented at the Teaching Veterinary Clinical Services Complex (Zaveri Clinics) of the College at Anand (Gujarat) during the last 3 years (2006-09) and referred

to the Department of Veterinary Surgery and Radiology for further investigation as well as surgical management. To know the epidemiological status of mammary gland tumours, the particulars regarding breed (German Shepherd/Labrador / Spitz / Doberman / Mongrel/others), age (young 0-4 years / middle age 4-8 years/geriatric 8-12 years / above 12 years), sex (male/female) and reproductive status (intact/ neutered), pertaining to each case were collected and analyzed.

Results and Discussion

A total of 8337 canine patient were registered at the College Hospital, Anand during the period of last three years (2006-2009). Out of them, 2070 (24.83 %) cases were referred to the Department of Surgery for surgical treatment, which included 158 cases of various neoplastic conditions.

Overall Incidence

The incidence of canine mammary gland tumours was 0.75 per cent (63/8337) of the total canine cases. The neoplastic conditions contributed 7.63 per cent of the surgical cases (158/2070) and the incidence of canine mammary tumours was 39.87 per cent (63/158) among the neoplastic conditions managed. There was no much variation in the year-wise incidence, yet the number of surgical cases was higher with lower occurrence of neoplastic conditions and

Table-1. Year-wise incidence of canine mammary tumours recorded during last three years (2006-2009)

Sr. No.	Year	Incidence of Canine Mammary Tumour							
		Total		Surgical cases		Canine neoplasms		Canine mammary tumours	
		Cases	Per cent	No.	Percent ^a	No.	Percent ^b	No.	Percent ^c
1.	2006-07	2537	30.43	623	24.56	44	7.06	18	40.91
2.	2007-08	2766	33.18	682	34.66	46	6.74	16	34.78
3.	2008-09	3034	36.39	765	25.21	68	8.88	29	42.63
Total	8337	100	2070	24.83	158	7.63	63	39.87	

a Based on total canine cases registered. b Based on surgical cases attended c Based on canine neoplasms.

Table 2: Age-wise incidence of canine mammary tumours during 2006-2009

Year	Age groups (years)								Total	
	0 - 4		4 - 8		8 - 12		Above 12		No.	%
	No.	%	No.	%	No.	%	No.	%		
2006-07	2	11.11	5	27.78	9	50.00	2	11.11	18	100
2007-08	1	6.25	3	18.75	10	62.50	2	12.50	16	100
2008-09	0	0.00	13	44.83	12	41.38	4	13.79	29	100
Total	3	4.76	21	33.33	31	49.21	8	12.70	63	100

mammary tumours during the year 2007-08 as compared to preceding and succeeding years (Table 1).

The incidence of canine mammary tumours recorded through retrospective data analysis in the present study is similar to many of the earlier reports (Rekha, 2007; Dhaygude, 2006; Priya et al., 2006; Adak, 2005). However, Simon et al. (1996) and Brodey et al. (1983) reported more than 30 per cent incidence of canine mammary tumour, while others (Godase, 2001; Boldizar et al., 1992; Mukhopadhyay and Som, 1990; Else and Hannant, 1979; Priester, 1979) reported lower incidence. The variation in the incidence of canine mammary gland tumours observed between present study and past reports could be due to popularity of particular breed in certain locality, apart from their age and breeding soundness, and methodology of data analysis adopted, i.e. of the total, surgical or neoplastic cases, etc.

Age-Wise Incidence

The study revealed that there were fewer (4.76 %) cases of mammary tumours in dogs aged below 4 years. A sharp increase in incidence was seen in dogs of 4 to 8 years of age group (33.33 %). Still higher frequency of mammary tumours was observed in bitches aged 8 to 12 years (49.21 %), which then declined in patients above 12 years (12.70 %). The year-wise data revealed high incidence of canine mammary tumour in age group of 8 to 12 years as compared to the other age groups during 2007-08, whereas no case was recorded in young age group of 0-4 years during the year 2008-09. The incidence was almost similar for all three years of retrospective analysis in older animals above 12 years of age (Table 2).

These findings drew adequate support from the

observations of Priya et al. (2006), Dhaygude (2006), Mahopatra et al. (2005), Adak (2005), Godase (2001), Simon et al. (1996), Bostedt and Tammer (1995), Thilakarajan (1991), Boldizar et al. (1992) and Else and Hannant (1979), who all noticed mammary gland tumours in bitches aged between 4 to 16 years with a mean age of 9 years. In this study, an increase in the incidence of mammary tumours was observed after 6 years of age, so called onset of "cancer age" as pointed out by Moulton et al. (1970). Mulligan (1975), in a study of 120 cases of mammary cancer, observed nearly 90.00 per cent incidence in the dogs aged between 8 and 15 years. Similarly, the lower occurrence of mammary tumours observed in dogs below 4 years and above 12 years of age in the present study is also in accordance with the previous reports of Bostedt and Tammer (1995), Mulligan (1975) and Moulton et al. (1970).

Breed-Wise Incidence

Retrospectively, maximum cases of canine mammary tumours were noticed in German Shepherd (36.50 %), followed by Pomeranian (31.75 %), Doberman (12.70 %) and Mongrel (11.11 %), whereas in other breeds the incidence was much less (1.59 to 3.17 %). These findings reflected the breed popularity in the area under study (Table 3).

Rekha (2007), Dhaygude (2006), Priya et al. (2006) and Majumdar and Som (1997) also reported majority of canine mammary tumour cases in German Shepherd breed. Adak (2005), however, reported the highest incidence of canine mammary tumours in Pomeranian breed followed by Doberman, Mongrel, Alsatian, Dachshund and Cocker-Spaniel. Godase (2001) and Karayannopoulou et al. (1990) observed

Table 3: Breed and age wise incidence of canine mammary tumours recorded during 2006-2009

Year	Age groups (years)								Total	
	0 - 4		4 - 8		8 - 12		Above 12		No.	%
	No.	%	No.	%	No.	%	No.	%		
German Shepherd	2	8.69	8	34.79	11	47.83	2	8.69	23 (36.50%)	100
Pomeranian	0	0.00	5	25.00	12	60.00	3	15.00	20 (31.75%)	100
Mongrel	0	0.00	3	42.86	2	28.57	2	28.57	7 (11.11%)	100
Doberman	0	0.00	4	50.00	3	37.50	1	12.50	8 (12.70%)	100
Labrador	0	0.00	1	100	0	0.00	0	0.00	1 (1.59%)	100
Cocker Spanial	0	0.00	0	0.00	1	100	0	0.00	1 (1.59%)	100
Great Dane	1	100	0	0.00	0	0.00	0	0.00	1 (1.59%)	100
Spitz	0	0.00	0	0.00	2	100	0	0.00	2 (3.17%)	100
Total	3	4.76	21	33.33	31	49.21	8	12.70	63 (100%)	100

a. Figures in parentheses indicate breed-wise per cent frequency of mammary tumour among the total affected cases.

high incidence of canine mammary tumours in purebreds.

The breed and age relationship for the occurrence of canine mammary tumour is presented in Table 3. The data in the table clearly show the high incidence of mammary tumour in animals of 4 to 12 years of age in all the four breeds, viz. German Shepherd, Pomeranian, Mongrel and Doberman, but no such trend was observed in the other breeds probably because of very less population and thereby lower incidence of mammary tumours in them.

Sex- and Reproductive Status-Wise Incidence

Out of 63 cases, 60 cases of mammary tumours were recorded only in females, and 3 cases were seen in male dogs. Further, majority of the affected bitches were intact in all the breeds, and the affected neutered bitches were reported to be spayed after 4 years of age. Rekha (2007), Priya et al. (2006), Thilakarajan (1991) and Brodey et al. (1983) have also made similar observations regarding the influence of sex and reproductive status in canines. The high incidence of mammary tumours observed in females, that too intact, as compared to male dogs can be attributed to endocrinological and functional differences in the either sexes. Sorenmo et al. (2000) reported that ovariectomy has a sparing effect on tumour formation especially when performed prior to the first oestrous cycle.

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