



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; 11(12): 1176-1178
© 2022 TPI
www.thepharmajournal.com
Received: 01-10-2022
Accepted: 06-11-2022

DR Bhanderi

M.V. Sc. Scholar, Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Navsari, Gujarat, India

SK Jhala

Assistant Professor, Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Navsari, Gujarat, India

DN Suthar

Assistant Professor, Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Navsari, Gujarat, India

VS Dabas

Professor and Head, Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Navsari, Gujarat, India

AB Bhatt

M.V. Sc. Scholar, Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Navsari, Gujarat, India

KD Patel

M.V. Sc. Scholar, Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Navsari, Gujarat, India

Corresponding Author:

DR Bhanderi

M.V. Sc. Scholar, Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Navsari, Gujarat, India

An epidemiological study of canine neoplasms

DR Bhanderi, SK Jhala, DN Suthar, VS Dabas, AB Bhatt and KD Patel

Abstract

The retrospective information of last three years (June, 2019 to May, 2022) was retrieved by scrutinizing data bank of Veterinary Clinical Complex, Navsari. During this period 2420 surgical cases of canine were registered at hospital. Out of 2420 cases, 244 cases (10.08%) had various neoplastic condition and amongst them cutaneous tumors was found to be highest (33.66%) followed by mammary gland tumors (26.64%), canine transmissible venereal tumors (24.19%), warts (6.56%), oral tumors (4.92%), osteosarcomas (2.87%), prostate tumors (0.81%) and kidney tumor (0.40%). The highest occurrence of neoplasms were found in the dogs aged below 5 years (39.34%) followed by those aged between 5 to 10 years (37.71%) and above 10 years (22.95%). Breed wise highest incidence was seen in dogs and Labrador retriever as compare to other breeds. Out of 244 dogs diagnosed with tumors 90 were males (36.88%) and 154 were females (63.11%).

Keywords: Dogs, neoplasms, epidemiology

1. Introduction

With the increased use of vaccines and antibiotics in domestic and pet animals, death due to infectious diseases has decreased dramatically in the last two decades and cancer has now emerged as leading cause of pet animal deaths (Withrow, 2001) ^[1]. The causative agent of tumours in dog is multifactorial which includes the participation of sex hormones, genetic, oncogenic viruses, immunological factors, environmental factor and environmental carcinogens (Kashyap *et al.*, 2013) ^[2]. As compared to humans, canines neoplasms has been observed more frequent and are one of the major cause of mortality in canines. Malignant tumours are potentially life-threatening whereas benign tumours grow slowly without invading or destroying the neighbouring tissue, and do not spread to other parts of the body and are not usually life threatening (Simon *et al.*, 2009) ^[3]. Due to improvement of diagnostic tests in the veterinary community, dogs receive more accurate diagnoses than available before, which in-turn leads to more effective therapy. In addition, owners are fond in accessing the health status of companion animals. On improving the ability to track canine cancer, several aspects of canine neoplasm such as predisposition of particular type of canine neoplasm to breed, age and sex can be discovered. Therefore, the aim of this study was to conduct a retrospective study on the profile of dogs affected by various neoplasms.

2. Materials and Methods

The present study was carried out on canine patients having different neoplastic conditions, which were presented at Veterinary Clinical Complex, Navsari during last three years (June, 2019 to May, 2022) and referred to the Department of Veterinary Surgery and Radiology for further detail investigation as well as management. To know the epidemiological status of various tumors, the particulars regarding breeds (Labrador Retriever/German Shepherd/Dobermann Pinscher/others), age (below 5 years/ between 5-10 years/above 10 years) and sex (male/female) pertaining to each case were collected and analysed.

3. Results and Discussion

Out of total registered cases of canine at hospital, 2420 cases were referred to the Department of Veterinary Surgery and Radiology for surgical treatment, which included 244 cases (10.08%) of various neoplastic conditions.

3.1 Age-wise incidence

The study revealed that there were smaller cases of tumors in dogs aged above 10 years (22.95%). An increase in incidence was seen in dogs of 5 to 10 years of age group (37.71%).

Still higher frequency of tumors was observed in dogs aged below 5 years (39.34%) (Table.1). These findings drew adequate support from the observation of Senthil *et al.* (2020) [4] who noticed highest occurrence rate of neoplasms in the age group of 5 to 10 years (53.80%), followed by above 10 years (23.30%) and below 5 years (23.10%); whereas, Arya *et al.* (2018) [5] observed highest frequency in the age group of 9-12 years followed by 6-9 years, 12-15 years, 3-6 years and 0-3 years. Similarly higher incidence of neoplasm in the age group of 7 to 9 years was noticed by many authors like Chandravathi *et al.* (2014) [6], Dileep Kumar *et al.* (2014) [7] and Devarathnam *et al.* (2021) [8].

Table 1: Age-wise distribution of canine neoplasms

	Age groups		
	Below 5 years	5 to 10 years	Above 10 years
No. of animals	96	92	56
Percentage (%)	39.34%	37.71%	22.95%

3.2 Breed-wise incidence

Retrospectively, maximum cases of canine neoplasms were noticed in dogs (29.50%), followed by Labrador Retriever (25%), Pomeranian (14.75%), German Shepherd (11.88%),

Dobermann Pinscher (4.50%), Pug (4.09%), Lhasa Apso and Spitz (1.63% each), Boxer (1.22%), Rottweiler, Saint Bernard and Shih Tzu (0.81% each), American Bully, Beagle, Cocker Spaniel, Dachshund, French Bulldog, French Mastiff, Golden Retriever and Pit Bull (0.40% each). (Table.2)

Similarly, Senthil *et al.* (2020) [4] reported higher incidence in breed as compare to others. On the contrary, Dileep kumar *et al.* (2014) [7] and Devarathnam *et al.* (2021) [8] reported highest cases of neoplasms in Spitz with 40% and 61.11% incidence rate, respectively, while Rekha (2007) [9], Reddy *et al.* (2009) [10] and Vala (2016) [11] recorded highest incidence in German Shepherd breed. Arya *et al.* (2018) [5] reported that amongst the breed affected with neoplasms Pomeranian breed represented 35.48%, followed by German Shepherd (25.80%), Labrador Retriever (19.35%), Golden Retriever (6.45%), Cross breed (6.45%), Dalmatian (3.23%) and (3.23%). The variation in the incidence of neoplasms in various breeds of dogs reported by different authors might be due to the fact that particular breeds might have been more popular than the other breeds in the areas under study and the number of cases recorded in a breed might correspond to its population in the area.

Table 2: Breed-wise distribution of canine neoplasms

Breed	No. of animals	Percentage (%)
Non - Descripts	72	29.50%
Labrador Retriever	61	25%
Pomeranian	36	14.75%
German Shepherd	29	11.88%
Dobermann Pinscher	11	4.50%
Pug	10	4.09%
Lhasa Apso	04	1.63%
Spitz	04	1.63%
Boxer	03	1.22%
Rottweiler	02	0.81%
Saint Bernard	02	0.81%
Shih Tzu	02	0.81%
American Bully	01	0.40%
Beagle	01	0.40%
Cocker Spaniel	01	0.40%
Dachshund	01	0.40%
French Bulldog	01	0.40%
French Mastiff	01	0.40%
Golden Retriever	01	0.40%
Pit Bull	01	0.40%

3.3 Sex-wise incidence

Out of 244 cases, 154 (63.12%) cases of neoplasm were recorded only in females and 90 (36.88%) cases were recorded in male dogs (Table.3). McSparran (2009) [12], Chandravathi *et al.* (2014) [6], Arya *et al.* (2018) [5], Kumar *et al.* (2020) [13] and Senthil *et al.* (2020) [4] have also made similar observations that incidence of neoplasm were higher in females than males. On the contrary, Luong *et al.* (2006) [14], Rao and Rao (2009) [15] and Sostaric-Zuckermann *et al.* (2013) [16] noticed higher incidence of neoplasms in males as compared to females.

Table 3: Sex-wise distribution of canine neoplasms

	Male	Female
No. of animals	90	154
Percentage (%)	36.88%	63.11%

3.4 Type-wise incidence

A retrospective incidence of neoplastic disorders revealed highest incidence were of cutaneous tumors (33.66%) followed by mammary gland tumors (26.64%), canine transmissible venereal tumors (24.19%), warts (6.56%), oral tumors (4.92%), osteosarcomas (2.87%), prostate tumors (0.81%) and kidney tumor (0.40%) (Table.4).

Sostaric-Zuckermann *et al.* (2013) [16] recorded highest incidence of tumors of skin and subcutis (45.73%) followed by mammary gland (21.75%) and genitalia (7.97%). Similarly, Sharma *et al.* (2019) [17] also found higher prevalence of skin and soft tissue neoplasms (56.52%) followed by tumors of mammary gland (26.08%), genitalia (8.70%), bone (4.35%) and lymphoid organ (4.35%). Ganesh *et al.* (1999) [18] reported that mammary gland tumor and canine transmissible venereal tumor were the predominant neoplastic condition in canines. Nair *et al.* (2007) [19] noted

highest occurrence of mammary gland tumors (41.66%) followed by skin tumor (31.25%), vaginal tumor (14.50%), testicular tumor (6.20%), uterine tumor (2.08%), bone tumor (2.08%) and liver tumor (2.08%); whereas, Merlo *et al.* (2008) [20] also reported highest prevalence of mammary gland neoplasm (70%) among all neoplastic conditions.

Table 4: Type-wise distribution of canine neoplasms

Type of Neoplasm	No. of animals	Percentage
Cutaneous tumor	82	33.61%
Mammary gland tumor	65	26.64%
Canine Transmissible Venereal Tumor	59	24.19%
Wart	16	6.56%
Oral tumor	12	4.92%
Osteosarcoma	07	2.87%
Prostate tumor	02	0.81%
Kidney tumor	01	0.40%

4. Conclusions

In this study the overall prevalence of canine tumors was 10.08%. Prevalence of tumors was higher in females (63.11%) and age group of below 5 years. Highest prevalence of tumors was observed in dogs followed by Labrador retriever, Pomeranian, German Shepherd etc. Cutaneous tumors has highest prevalence followed by mammary gland tumor, canine transmissible venereal tumor, wart, oral tumor, osteosarcoma, prostate tumor and kidney tumor.

5. References

- Withrow SJ. Small animal clinical oncology. Edn 1, WB Saunders, Philadelphia. 2001;1:305-318.
- Kashyap DK, Tiwari SK, Dewangan G, Giri DK. Prevalence of skin and subcutaneous tissue neoplasm in canines. Indian Veterinary Journal. 2013;90(8):90-92.
- Simon D, Schoenrock D, Nolte I, Baumgartner W, Barron R, Mischke R. Cytologic examination of fine-needle aspirates from mammary gland tumors in the dog: diagnostic accuracy with comparison to histopathology and association with postoperative outcome. Veterinary clinical pathology. 2009;38(4):521-528.
- Senthil NR, Chakravarthi R, Vairamuthu S. Retrospective studies on tumor conditions in dogs over a period of four years (2014-2018). The Pharma Innovation Journal. 2020;9(4):224-227.
- Arya SD, Kumar K, Kumar D, Kumar S, Tiwary R, Sinha M, *et al.* Incidence of Commonly Occurring Neoplasms amongst Canines in Patna. International Journal of Current Microbiology and Applied Sciences. 2018;7(1):2817-2823.
- Chandravathi T, Anjaneyulu Y, Kumar A, Samatha V. Incidence of canine neoplasms in and around Hyderabad, Andhra Pradesh. International Journal of Food, Agriculture and Veterinary Science. 2014;4(3):218-220.
- Dileepkumar KM, Maiti SK, Kumar N, Zama MMS. Occurrence of canine mammary tumours. Indian Journal of Canine Practice. 2014;6(2):179-183.
- Devarathnam J, Suresh Kumar RV, Bharathi S, Anand Kumar A. Epidemiological studies of canine mammary gland tumors. The Pharma Innovation Journal. 2021;10(7):13-17.
- Rekha MT. Pathology of Canine Mammary Tumours and Usefulness of AgNOR in Differentiating Benign and Malignant Canine Mammary Tumours. M.V. Sc Thesis, Anand Agricultural University, Anand, Gujarat, India; c2007.
- Reddy GM, Kumar P, Kumar R, Pawaiya RVS, Ravindran R. Histopathological classification and incidence of canine mammary tumours. Indian Journal of Veterinary Pathology. 2009;33(2):152-155.
- Vala AK. Studies on management of canine mammary tumours with dendritic cell therapy. M.V.Sc Thesis, Anand Agricultural University, Anand, Gujarat, India; c2016.
- McSporran KD. Histologic grade predicts recurrence for marginally excised canine subcutaneous soft tissue sarcomas. Veterinary Pathology. 2009;46(5):928-933.
- Kumar S, Patil RD, Verma S, Kumar A, Singh G, Dhial K, *et al.* Prevalence of different types of neoplasms among dogs of Himachal Pradesh, India: A preliminary study. Indian Journal of Veterinary Pathology. 2020;44(2):119-122.
- Luong RH, Baer KE, Craft DM, Ettinger SN, Scase TJ, Bergman PJ. Prognostic significance of intratumoral micro vessel density in canine soft-tissue sarcomas. Veterinary Pathology. 2006;43(5):622-631.
- Rao TB, Rao UVNM. An epidemiological study of canine tumours. Indian Veterinary Journal. 2009;86(4):414-415.
- Sostaric-Zuckermann IC, Severin M, Hohsteter B, Artukovic A, Beck A, Gudan Kurilj R, *et al.* Incidence and types of canine tumours in Croatia. Veterinarski Arhiv. 2013;83(1):1-45.
- Sharma S, Rahman S, Nashiruddullah N, Sood S. Prevalence of spontaneously occurring animals neoplasms in Jammu. Journal of Entomology and Zoology Studies. 2019;7(6):442-445.
- Ganesh TN, Dharmaceelan S, Ayyappan S, Balasubramanian NN, Pattabiraman SR. Incidence of surgical conditions in dogs and cats: a retrospective study. Indian veterinary Journal. 1999;76(2):156-157.
- Nair BC, Saikumar G, Sharma R, Paliwal OP. A study on spontaneous canine neoplasms in Bareilly, UP. Indian Journal of Veterinary Pathology. 2007;31(2):166-168.
- Merlo DF, Rossi L, Pellegrino C, Ceppi M, Cardellino U, Capurro C, *et al.* Cancer incidence in pet dogs: Findings of the Animal Tumor Registry of Genoa, Italy. Journal of Veterinary Internal Medicine. 2008;22(4):976-984.