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Occurrence of canine mammary tumours in and around Namakkal, Tamil Nadu

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Abstract
A study was conducted to find out the occurrence of mammary tumours in dogs. A total of 45 female dogs were diagnosed with mammary tumours out of 171 tumour affected dogs. The annual incidence rate of mammary tumours in dogs recorded as 26.31%. The pure breed dogs showed higher incidences of mammary tumour than the mongrels. Small sized breeds showed high incidence than the large sized breeds. The mean age of dogs affected with mammary tumour was 7.36 years and it ranged from 2 to 16 years. Mammary tumours were found exclusively in female dogs. The mammary tumour occurrences in intact animals are higher than the spayed animals. The whelping history revealed that 60% of the dogs were non-whelped, 6.67% were whelped once and 33.33% were whelped more than once. The occurrences of mammary tumours in dogs were influenced by breed, age, sex and reproductive status.

Keywords: Mammary tumours, dogs, age, breed, reproductive status

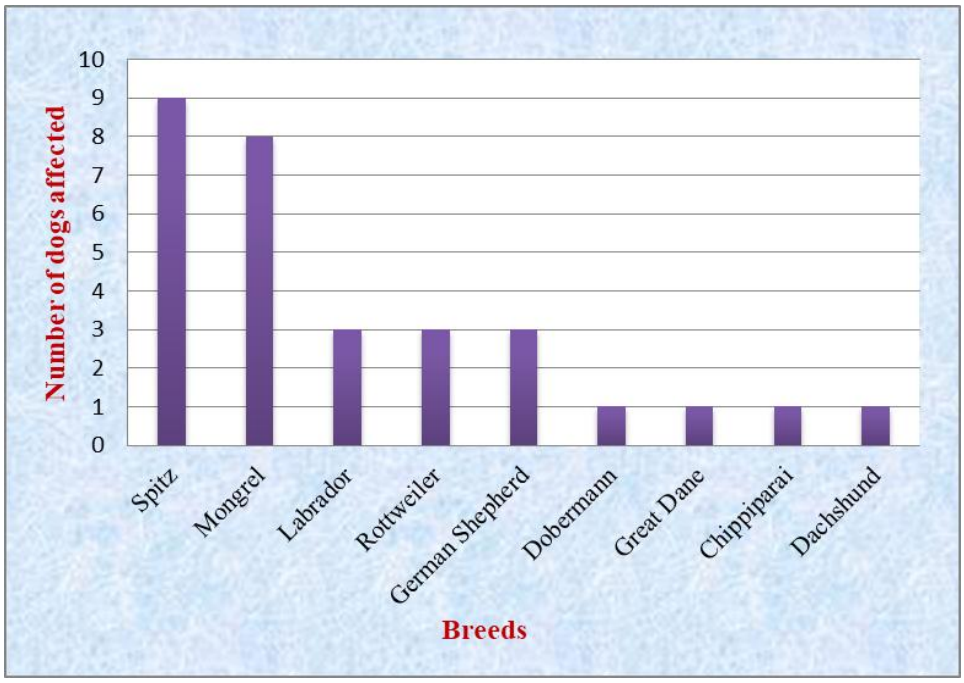
Introduction
Mammary tumour represents the most significant gynaecological disorder in dogs next to cutaneous tumours, among them 50% are malignant. Advanced age, purebred, sex, genetic predisposition, nutritional and hormonal status are considered as risk factors for high incidence of mammary tumours (Sorenmo, 2003) [10]. Neutering in female dogs plays a major role in the development of malignant mammary tumours. Early ovariohysterectomy reduces the incidence of mammary tumours in female dogs. The bitches spayed before first oestrus, after first oestrus and after two or any time of oestrus are associated with risk of 0.5%, 8% and 26% of mammary tumour development in their lifetime (Schneider, 1970) [8]. The mammary tumour of human and canine shares the similar biological behaviour of heterogeneity, genomic proximity, clinical characteristics, tumour progression and epidemiological factors (Rybicka and Krol, 2016) [6]. This report elucidates the influence of intrinsic factors on the occurrence of mammary tumours in dogs.

Materials and Methods
A total of 12,853 dogs were brought to the Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal for the treatment in the year 2020-21. Among 171 tumour affected dogs, 45 female dogs were diagnosed with mammary tumours. Out of 45 mammary tumour affected dogs, 30 dogs were brought for surgery. The mammary tumour masses were removed by surgical excision and tumours were confirmed by pathological features. The animal details like breed, age, sex, reproductive and clinical history, location, size, appearance and consistency of the tumours were recorded. The dogs affected with mammary tumours showed untoward signs like fatigue, lethargy and weight loss. Severity of the signs depends on the extent and location of the metastases. The other signs recorded were oedema, pain often confusing with mastitis, generalised weakness, weight loss, polyurea, polydipsia and poor survival rate.

Results and Discussion

Incidence: The annual incidence rate of mammary tumours in dogs recorded as 26.31% (45/171) of this study is in accordance with Srivastava *et al.* (2009) [11] who recorded 24.32% canine mammary tumours in India and Vascellari *et al.* (2016) [12] recorded 33% canine mammary tumours in Northeastern Italy. Schneider (1970) [8] recorded the annual incidence rate of mammary tumours in 145 out of 1,00,000 dogs. Merlo *et al.* (2008) [1] reported the incidence of mammary tumour in females are 191.8 out of 1,00,000 dogs. Vascellari *et al.* (2016) [12] reported the annual incidence rate of mammary tumours in 250 out of 1,00,000 dogs. The incidence of mammary tumours in different geographical locations varies with the population studied, cases registered by the veterinarians and owners follow up till the diagnostic work-up and surgeries.

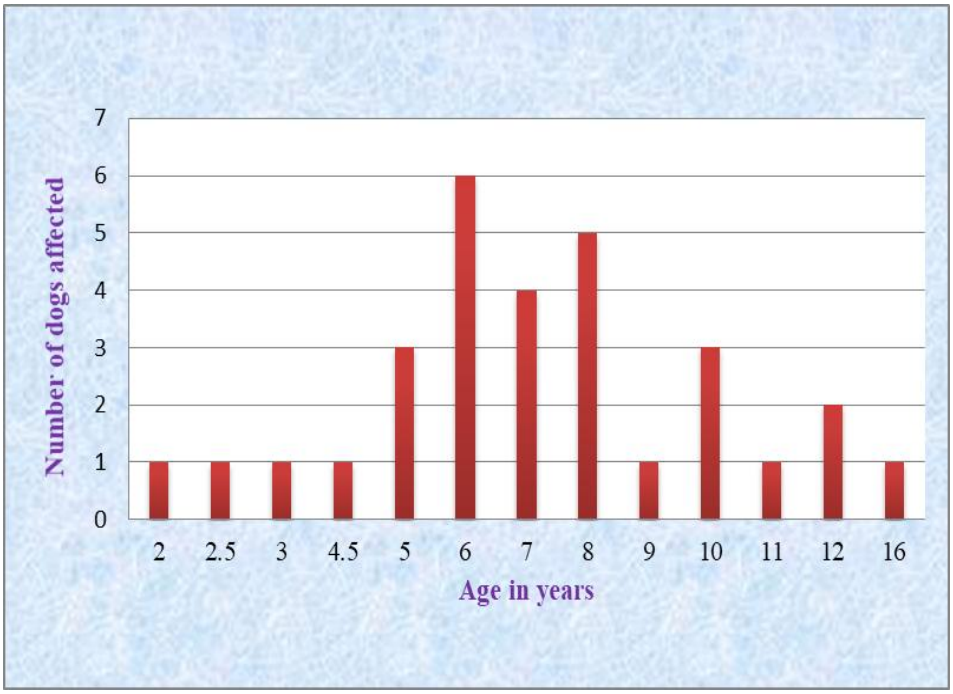
Breed: The breed wise incidences of mammary tumours in dogs are presented in Graph 1. The incidences of mammary tumour in pure breed dogs (N=22) are more than the mongrels (N=8). Small sized breeds showed more incidence than the large sized breeds. The pure breeds (N=22) affected more in this study is consistent with the reports of Schneider (1970) [8], Sorenmo (2003) [10] and Vascellari *et al.* (2016) [12]. The highest incidence noticed in Spitz (N=9) followed by mongrels (N=8) of this study is in accordance with the reports of Srivastava *et al.* (2009) [11] and Prabhakaran (2018) [5]. Schneider (1970) [8] reported the probability of acquiring mammary tumour in pure breeds is higher than the cross breeds. Sorenmo (2003) [10] observed variations of mammary tumour incidence in dogs with breed and geographical locations. Zatloukal *et al.* (2005) [13] reported significantly high risk of mammary tumour development in Poodles, English Cocker Spaniels and Dachshund. Prabhakaran (2018) [5] stated that the prevalence of mammary tumour in dogs depends on the dominant population of breeds presented in the region.



Graph 1: Breed wise incidence of mammary tumours in dogs

Age: The occurrences of mammary tumours in different age group of dogs are presented in Graph 2. The mean age of mammary tumour bearing female dogs was 7.36 years and it ranged from 2 to 16 years. The highest incidence was recorded in the age between 6 and 8 years. Two years is the least age for the mammary tumour occurrence in this study is corroborated with the reports of Moulton *et al.* (1970) [2] and Srivastava *et al.* (2009) [11]. Schneider (1970) [8] and Zatloukal *et al.* (2005) [13] studied median age for the occurrence of canine mammary tumour is 10.5 years. Further, they observed the occurrence of tumour increases after 5 years of age with a peak incidence at 10 years and subsequent reduction after 12 years. Srivastava *et al.* (2009) [11] observed mammary tumour occurrence in dogs is rare below two years and above 12 years of age. Prabhakaran (2018) [5] recorded the average age of dogs affected with mammary tumours is 7.88 years with lowest incidence at two years and highest incidence at 8 years.

Sex: Mammary tumours were found exclusively in female dogs of this study is contrary to the observations of Moulton *et al.* (1970) [2], Saba *et al.* (2007) [7] and Prabhakaran (2018) [5] who noticed mammary tumours in both sexes. Moulton *et al.* (1970) [2] reported the exclusive occurrence of mammary tumour in females and few scattered cases in male dogs. Saba *et al.* (2007) [7] incidentally noticed mammary tumours in seven out of eight male dogs (88%). Prabhakaran (2018) [5] recorded the occurrence of mammary tumours in both sexes and the incidence was greatly higher in female dogs. High incidences of mammary tumours could be due to failure of neutering in both sexes of dogs with elevation of estrogen and testosterone associated endocrine disorders.



Graph 2: Age wise incidence of mammary tumours in dogs

Reproductive status

The mammary tumour occurrences in intact animals are higher (86.67%) than the spayed animals (13.33%). The neutering was done one to two years before the occurrence of mammary tumours. Based on the whelping history, 60% of the dogs were non-whelped, 6.67% were whelped once and 33.33% were whelped more than once. The incidence of mammary tumours observed in intact dogs and spayed dogs of this study is in agreement with Moulton *et al.* (1970) [2], Sontas *et al.* (2009) [9] and Nithya *et al.* (2018) [3]. The whelping status of the bitches in this study is in accordance with Sontas *et al.* (2009) [9] and Nithya *et al.* (2018) [3] and non-whelped conditions are in agreement with Petrov *et al.* (2014) [4]. Sontas *et al.* (2009) [9] observed 76% of mammary tumours in intact animals and 24% in spayed animals. In addition, 38% of the mammary tumour affected animals were whelped at least once in their lifetime. Petrov *et al.* (2014) [4] observed five out of ten dogs presented with mammary tumours are non-whelped. Nithya *et al.* (2018) [3] reported the occurrence of mammary tumours in 79/87 (90%) intact dogs and 8/87 (10%) spayed dogs. Out of 87 animals, 33 animals whelped once and 47 animals were non-whelped.

Conclusion

The mammary tumour occurrence in dogs was influenced by the intrinsic factors like breed, age, sex and reproductive status. Only few reports are available on the occurrence of mammary tumours influenced by these factors, hence, the report is presented.

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Conflict of Interest

Not available

Financial Support

Not available

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