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Occurrence of mammary tumour in dogs

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ABSTRACT

Aim: The study was carried out to investigate occurrence of mammary tumour in dogs regarding sex, age, breed, tumour location and spaying status.

Materials and Methods: The study was carried out in thirty six dogs with the history of spontaneous mammary tumours during the period from Aug 2017 to March 2019. The information regarding sex, age, breed, tumour location and spaying status were documented. Tumour samples (biopsy/surgically excised) were collected and processed for histological examination.

Results: Most affected breed was Spitz (41.66%), followed by German Shepherd (22.22%), Non Descript (22.22%), Pomeranian (05.55%), Labrador (05.55%) and Golden retriever (02.77%) female dogs. Non-spayed 25 (69.447%) dogs were more affected than spayed dogs 11 (30.55%). Out of 36 cases, 13 cases (36.11%) had multiple growths and 23 cases (63.88%) had solitary growths whereas malignancy was observed 72.22% by histopathological examination.

Conclusion: Occurrence of the canine mammary tumours was concluded irrespective to the age, sex, breed and location of tumour. Though, it was respective to the spaying status of the female dogs.

Keywords: Canine mammary tumours, incidences, malignancy.

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Introduction

Canine mammary glands are frequent locations for the development of tumour and stands second most common neoplasm. Occurrence of mammary tumours is not uncommon in female dogs and is considered to be major threat to the female dogs as well as women (Klopfleisch et al, 2010). Occurrence of these tumors may be observed up to 52% of all tumors in the female dogs and therefore represents one of the most important types of neoplasia in the dogs (Moe, 2001; Rutteman et al, 2001 and Von Bomhard, 2001). Out of these, 60% are observed benign and 40% malignant (Brearley, 1989).

In veterinary practices, mammary tumors represent most frequently diagnosed neoplasm in intact female dogs and 50% of these are malignant (Moe, 2001). The incidence of canine mammary tumors found approximately 0.05% of females that were spayed before their first heat cycle. This figure increased to 8% or 26% when the animals were spayed after their first or second heat, respectively. However, if the animals were spayed later, the risk of developing malignant tumors (MN) was the same as for an intact bitch (Schneider et al 1969). Mammary tumors can vary in size from a few millimeters to over a few centimeters, and at least 50% of the cases present multiple masses mainly located at the caudal glands (Wey et al, 2000). As in humans, canine mammary cancer is a heterogeneous group of diseases linked to morphology and biological behavior. Histologically, mammary tumors are classified as malignant epithelial tumors, special types of epithelial tumors (Squamous cell carcinoma, Adenosquamous carcinoma, Mucinous carcinoma, Lipid-rich (secretory) carcinoma, Spindle cell carcinomas and inflammatory carcinoma), malignant mesenchymal tumors, carcinosarcoma and benign tumors (BN) (Goldschmidt et al, 2011). The aim of this study was to describe mammary tumors in female dogs according age, breed, sex and their relationship with tumor occurrence.

Materials and methods

The study was carried out in thirty six (36) dogs presented at Surgery Clinics, CVAS, Navania, Udaipur and Govt. Policlinic, Udaipur with the history of spontaneous mammary tumours (Fig.1 &2) during the period from Aug 2017 to March 2019. The information regarding sex, age, breed, tumour location and spaying status were documented. Tumour samples (biopsy/ surgically excised) were collected and processed for histological examination. Tissue samples were fixed in 10% neutral buffered formalin and processed in routine manner by paraffin embedding technique. Sections of the tissue were cut and stained by haematoxylin and eosin (H&E) for histological examination. Histopathology of the resected tumour mass was performed as per Luna (1972). For the analysis of tumors, it was used the classification mentioned by Misdorp et al (1999).

Result and Discussion

Canine mammary glands viz: cranial thoracic, caudal thoracic, cranial abdominal, caudal abdominal and inguinal. Clinical signs associated with a more aggressive tumour include rapid growth, poor definition from the surrounding tissues, ulceration, inflammation, bruising and fixation to the skin or underlying tissue. The present study showed occurrence of canine mammary tumour in female dogs 36 (100%), merely. Dhami et al (2010) also advocated higher incidence of canine mammary tumours in females (95.24%). Contrary, Mulligan (1975), Brody et al (1985) and Benjamin et al (1999) reported occurrence of mammary tumour also in male dogs. Affected male dogs usually have a hormonal imbalance (Moulton, 1999). Rutteman et al. (2000) also reported mammary gland tumours in male dogs but the incidences were 1% or less.

In present study, age wise incidence of canine mammary tumours revealed that age of affected animals was ranged from 3 years to 12 years. Age group of 10- 12 years (44.44%) showed highest incidence followed by 7-9 years (41.66%), 4-6 years (08.33%), 0-3 years (05.55%). The incidences of mammary tumour are increased from the age of 5 years up to peak at the age of 10- 12 years and decrease, subsequently according to Dorn et al (1968), Moulton et al (1970), Mulligan (1975) and Cohen et al (1974). In present study, the incidences of mammary tumours were less below six years of age. Dileepkumar et al. (2014) also corroborated with these findings which advocated mammary tumours below six years of age. Average age for mammary gland neoplasia (10 to 11 years) was reported by Slatter (2003). However, Egenvall et al (2005) reported the incidence of canine mammary tumour that was 111 per 10,000 female dogs between 3 and 10 years of age. In present study, occurrence of mammary tumour was 63.88% in 9 to 12 years age. However, Dhami et al (2010) advocated the highest incidence of canine mammary tumour in age of 8 to 12 years (49.21 %).

In present study, maximum cases were recorded in the Spitz (41.66%), followed by German Shepherd (22.22%), Non Descript (22.22%), Pomeranian (05.55%), Labrador (05.55%) and golden retriever (02.77%). Contrary to these findings, Moe (2001) reported highest incidence of mammary tumours in Boxers, Cocker Spaniels, English Springer Spaniels and Dachshunds. Mammary tumour may occur in dogs irrespective of their breed (Henson, 2001). Similarly, Khimta (2007) also reported higher incidence of canine mammary tumours in Spitz (34.08 %) and German Shepherd (23.70%). Findings of Karma et al (2007) viz; prevalence of mammary tumour in Spitz (55.55%) followed by German Shepherd (22.22%) and Mongrel (14.07%) also corroborated with the results of present study. However, Capik et al (2008) reported relatively higher risks of occurrence of neoplastic diseases in Boxers, Dachshunds, Schnauzers and Poodles in descending order. Occurrence of canine mammary tumours in German Shepherd as (9%) and Labrador (9%) was observed by Stratmann et al (2008). Dhami et al (2010) observed maximum cases of canine mammary tumours in German Shepherd (36.50 %), followed by Pomeranian (31.75 %), Doberman (12.70 %) and Mongrel (11.11 %).

Out of 36 cases, 13 cases (36.11%) had multiple growths and 23 cases (63.88%) had solitary growths while ulcerated and inflamed were 25.00% (09/36) and 75.00% (27/36) were not infected or ulcerated. Manikandan (2007) also advocated higher incidence of inflamed tumours. Reoccurrence was recorded in 7 (19.14%) cases which found in the agreement with Stratmann et al. (2008).

In the present study, mammary tumour affection of single gland was recorded in 21/36 (58.33%). Out of which, incidence of inguinal

mammary gland alone were observed highest 10/36 (27.77%). There was 7/36 (19.44 %) affection for caudal abdominal gland alone, 4/36 (11.11 %) cranial abdominal gland alone. Reason for increased occurrence of mammary tumours in caudal abdomen and inguinal mammary glands might be probably because of the greater volume of mammary tissue in these glands (Moulton, 1999 and Rutteman et al, 2000). Manikandan (2007) and Khimta (2007) were also reported mammary tumours in caudal abdomen and inguinal mammary glands.

In present study, the incidence of canine mammary tumours was found more with non-spayed dogs 25 (69.447%) than spayed dogs 11 (30.55%). Schneider et al (1969) also discussed the spaying status of female dogs which is an important key factor for occurrence of mammary tumours. Occurrence of mammary tumours in non-spayed bitches due to hormonal imbalance consequently and chances of contracting mammary tumors might be increased as reported by Schneider (1970). Histopathological examinations revealed 72.22% malignant and 27.78% benign tumours. Malignant canine mammary tumours found more frequent than benign ones. Similar findings were also reported by Dhami et al (2010). Pang et al (2011) reported that canine mammary carcinoma is the most common cancer among female dogs. Occurrence of the canine mammary tumours was concluded irrespective to the age, sex, breed and location of the tumour. Though, it was been respective to the spaying status of the female dogs.

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