

# CANINE TRANSMISSIBLE VENEREAL TUMOURS (CTVT): A STUDY ON OCCURRENCE AND DISTRIBUTION PATTERN

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The objective of the study was to record the occurrence of Canine Transmissible Venereal Tumours (CTVT) and their sex, breed and age- wise distribution. A total of 158 cases of canine Venereal cell sarcoma, malignant tumor of external genitalia were found to be in highest occurrence as a single type (38.82%) out of 407 dogs presented at clinics/polyclinics during the period from February 2003 to November 2007, were recorded and confirmed histopathologically. The Non Descript/ Cross Breed being the most susceptible (43.04%) followed by Spitz (24.68%). Affecting both males and females but males are in more than double the number of females exhibiting the tumor = 109 (68.99%), where as females are only = 49 (31.01%). Majority of the tumour cases were recorded in the age group of 2 to 4 years (39.24%). Histologically malignant types in 100% cases were recorded.

**Keywords:** Canine Transmissible Venereal Tumours (CTVT), distribution, occurrence

## Introduction

In recent years, due to better health care of companion animals, their life span has increased making them sufficiently aged to develop tumours. The incidence of CTVT, skin and mammary tumours has been the highest amongst different types of tumours affecting various organ systems in canines, as reported by Runnels *et al.* (1965), Jones and Hunt (1983), Jubb *et al.* (1991) and records the frequency of the occurrence of different histopathologically confirmed cases of CTVT, canine skin and other organs tumours and their type, age, breed and sex-wise distribution pattern, Buergelt (1997).

Various types of tumour occasionally occur in the vagina and vulva. Among them are vaginal fibromas, fibropapillomas, fibroleiomyomas, leiomyomas, lymphosarcomas, histiosarcomas, and squamous cell carcinomas. The most important in dog is canine transmissible venereal tumours (Hickman, and Walker, 1980). Fibroma in vagina with pyometra in aged bitches have been reported by Thilagar *et al.* (1991) and Balasubramaniam *et al.* (1993). Das *et al.* (1989), Pandey *et al.* (1989), Gandotra *et al.* (1993) and Ayyappan *et al.* (1994) have recorded metastasis of transmissible venereal tumour in dogs. Singh and Singh (1991) have reported that canine transmissible venereal sarcomas are the most commonly occurring neoplasms of dogs in India. Tiwari (2002) reviewed the neoplasms in canine of Chattisgarh state over a period of 13 years (1988–2001), recording 236 cases of neoplasm as 20.70%, out of which the maximum number was transmissible venereal tumour (55)

23.30%, followed with squamous cell carcinoma (35) 14.83%, mixed mammary tumour (25) 10.59%, and adeno carcinoma (22) 9.32%, and the rarest were mast cell tumour (4) 1.69%. They also reviewed 296 cases of CTV sarcoma in either sexes for incidences of metastasis and found only seven cases with cutaneous metastasis that too only in male dogs. Kelawala *et al.* (1993) reviewed the incidence of various neoplasms in canine by a clinical survey of 5977 dogs brought to Gujrat veterinary college Anand during 1987 – 1991 i.e. in 5 years that revealed 51 cases of various types of neoplasms, which was only 0.85%. Females affected were 52.94% and males were 47.06%. The venereal granuloma was most common 19.60% followed with fibro sarcoma 17.64%, squamous cell carcinoma 15.68%, fibroma 15.68% and papilloma 11.6%, rest were rare. Singh *et al.* (1998) reviewed neoplasms of 60 clinical cases of canine for last 8 years at HPKV Palampur, that revealed 67% were genital tumours, 8% were mammary gland tumours, and remaining 25% were confined to the bone, skin, and perianal areas. Guvenc *et al.* (2002) have reported Mitosis and apoptosis in canine histiocytoma and transmissible venereal tumours in dogs. Amber *et al.* (1985) have reported viral like particles associated with naturally occurring transmissible venereal tumours in two dogs.

## Material and Method

The present study was made during the period from February 2003 to November 2007; 407 dogs presented with the history of tumourous / hyperplastic growths in skin and

other organs at various private dog clinics in Kanpur, Agra and Lucknow, and Government Polyclinics at Lucknow and Mathura were examined. The details regarding age, sex, and breed of reporting individual cases were recorded. The data pertaining to reporting season, sex and age were collected and analyzed statistically to study the influence of these parameters on the occurrence of neoplasms. The tumours were surgically removed and their types were confirmed histopathologically and analyzed for their distribution.

### Results and Discussion

Histopathological examination (HE stain) of various cases of CTVT revealed tumour cells comprising uniform round or polyhedral cells arranged densely in sheets or cords, large spherical (round) or oval hyper chromatic nuclei with numerous mitotic figures and ample eosinophilic cytoplasm with indistinct boundaries was suggestive of venereal granuloma.

CTVT is also known as Venereal Sarcoma or Contagious Venereal Tumor or Infectious Lymphosarcoma or Venereal Granuloma. The CTVT a malignant tumor of external genitalia was found in highest number of occurrence as a single type = 158 (38.82%) affecting both males and females. Transmissible venereal tumor (TVT) in the canines commonly affects the vagina and/ or

vulva of the female (Fig.2,4 and 5) and penis and/ or prepuce of the male (Fig.1,3 and 6) it is in accordance to Brown *et al.* (1980). High incidence (28.65%) of the disease was observed in and around Ludhiana – Punjab, in canines as reported by Gandotra *et al.* (1991). Gandotra *et al.* (1993) have reported that of the 216 dogs affected with TVT, 57.9% were presented in the spring and summer season followed by 42.1% during autumn and winter season. There was no significant difference in the number of cases between seasons. Although higher number of cases was presented in the spring and summer seasons, it appears that season had little influence on the predisposition of TVT in canines, contrary to the observations of Brown *et al.* (1980).

Higher incidence of canine transmissible venereal tumours have been recorded in Crossbred/ Nondescript breed =68 (43.04%) (Fig.1,2 and7) followed by Spitz =39 (24.68%) (Fig.5 and6), German shepherd =21 (13.29%), Labrador =15 (9.49%) (Fig.3), Doberman =13 (8.23%) (Fig.4) and Great Dane =2 (1.27%) (Fig.8). Spitz and C.B./ N.D. breeds of dogs, both males and females were observed to be affected more often compared to other breeds. This is possibly because Spitz and mixed breeds are intensively bred and breeding bitches are mated with much used stud dogs, this has been reported by Gandotra *et al.* (1993) also.

### Breed wise occurrence of CTVT

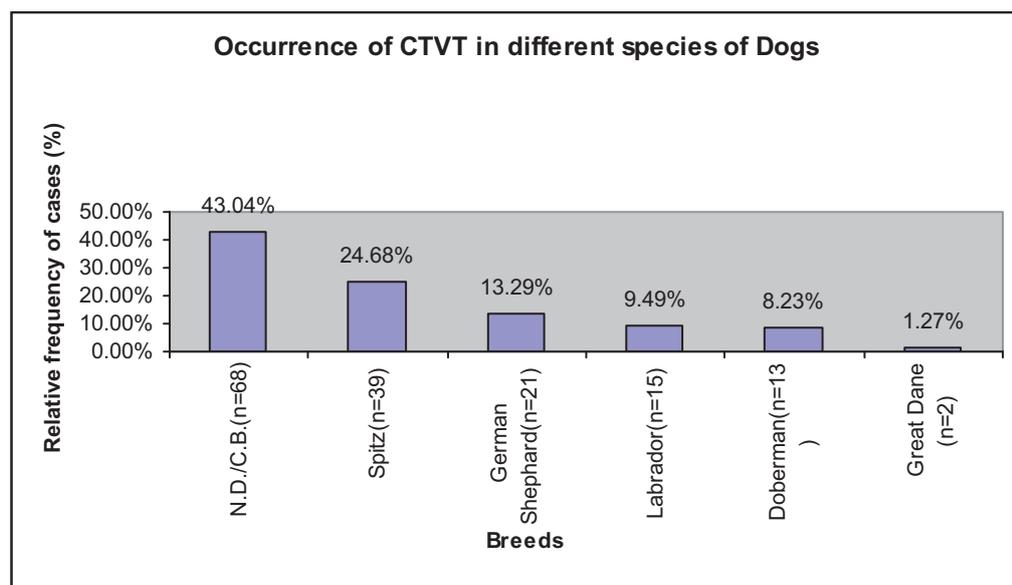


Fig. 9

The incidence of CTVS was more common in animals of 2-4years =62 (39.24%) followed by 4-6 years =48 (30.38), 6-8 years =27 (17.09%) and 8-10 years =16 (10.13%); where as the lowest incidence was in the age group of 10-12 years =5 only (3.16%). No case was recorded in the age group of 0-2 years and above 12 years (Fig. 10). This is in accordance to following statements, 'The occurrence in age group of 2-5 years are common and the disease is transmitted through mating and only after puberty' by Pandey *et al.* (1989), 'Most of the

dogs were affected between the age group of 1-5 years' by Gandotra *et al.* (1993). There appears to be little agreement on the age at which most dogs are likely to be affected. However, most of the workers Brodey and Roszel (1967); Brown *et al.* (1980) were agreed that TVT is likely to be contacted when a dog is sexually matured (i.e. 3 – 4.5 years) and this fact has been found in the present study also. Others have also observed higher incidence in the age group of 10-12 years (Thacher and Bradley, 1983; Kydd and Brunie, 1986).

### Age wise Occurrence of CTVT

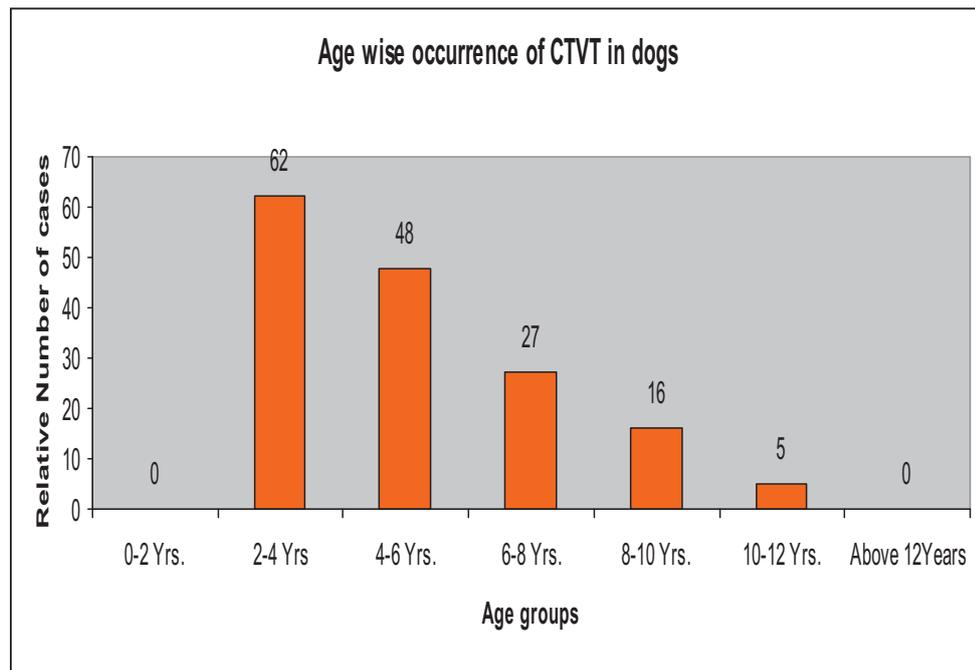


Fig. 10

The occurrence of neoplasm was more in males = 109 (68.99%) in male animals, more than the double the numbers of females = 49 (31.01%)

(Fig.11). which indicates that venereal cell sarcoma is predominantly a male tumor and transplanted to female genitalia during coitus.

### Sex wise Distribution of CTVT

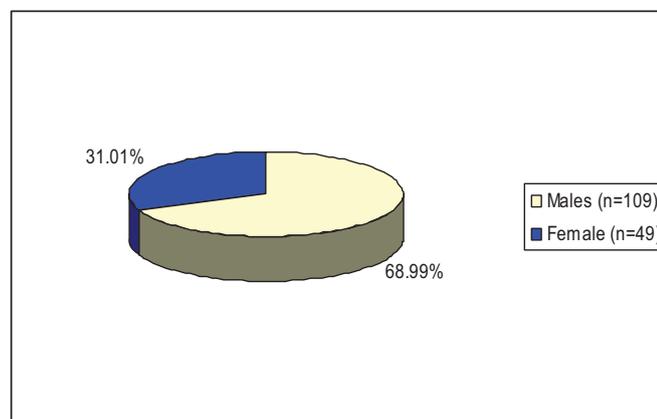


Fig. 11



**Fig.1 TVT on root of penis in C.B. Dog**



**Fig.2 TVT on vulvar lip in C.B. Bitch**



**Fig. 3 TVT on penis of Lab. Dog**



**Fig.4 TVT Vagina in Dob. Bitch**



**Fig. 5 TVT on vulva in Spitz Bitch**



**Fig. 6 TVT on penis of Spitz Dog**



**Fig.7 Extragenital metastasis of CTVT in Non Descript Dog**



**Fig.8 Extragenital form of canine transmissible venereal tumour in Grate Dane Bitch**

In some of dogs metastatic lesions were noticed at the postero-lateral aspect of thigh and in the inguinal region (Fig.7 and 8). Several other authors have also confirmed such type of findings viz. Bloom (1954) reported confinement of this tumour to genitalia but spread to adjoining structures may occur by direct extension and metastasis and Ayyappan *et al.* (1995) also reported that most extra genital cases of CTVS are as a result of either heterotransplantation or autotransplantation. The study showed postoperative recurrence in different breeds of dogs and the percentage of recurrence was higher in male dogs.

### Conclusion

A total of 158 cases of canine Venereal cell sarcoma, malignant tumor of external genitalia were found to be in highest occurrence as a single type (38.82%) out of 407 dogs were recorded and confirmed histopathologically. The Non Descript/ Cross Breed being the most susceptible (43.04%) followed by Spitz (24.68%), this is possibly because Spitz and mixed breeds are intensively bred and breeding bitches are mated with much used stud dogs. Affecting both males and females but males are in more than double the number of females exhibiting the tumor = 109 (68.99%), where as females are only = 49 (31.01%), which indicates that venereal cell sarcoma is predominantly a male tumor and transplanted to female genitalia during coitus. Majority of the tumour cases were recorded in the age group of 2 to 4 years (39.24%), as TVT is likely to be contacted when a dog is sexually matured.

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