

Original Research Article

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## Clinico-Histopathological Studies in Canine Transmissible Venereal Tumour

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Present study included twenty-four dogs affected with Canine Transmissible Venereal Tumour (TVT). affected dogs were divided equally into three groups viz. vincristine therapy (Group I) with 7 day cycle and doxorubicin therapy consisting two groups i.e. Group II with 14 day cycle and group III with 21 day cycle and was aimed at diagnosing transmissible venereal tumour (TVT) initially using most common clinical signs and confirmation made by histopathological examination of biopsy tissue. Diagnosis based on clinical signs in all TVT affected dogs presented in teaching veterinary clinical complex (TVCC), Hisar revealed that continuous bloody discharge, excessive licking of genitalia, tumour growth were consistent in all affected dogs (100%). Histopathology of affected dogs done before treatment revealed that tumour consisted of loose sheets of round polyhedral cells. These cells had large round top pleomorphic nucleus having prominent centrally placed nucleoli along with frequent mitotic figures and a few new blood vessels.

### Introduction

Canine transmissible venereal tumour (TVT) is also called as sticker's tumor, venereal granuloma, canine condyloma, transmissible sarcoma, transmissible lymphosarcoma, histiosarcoma. TVT is a tumor of dog and other canids and it affects mainly the external genitalia. It is transmitted from animal to animal through exfoliation and transplantation of neoplastic cells occurring during sexual contacts, but can also be transmitted by dog bites, sniffs or licks of the tumour-affected

areas (Cohen, 1985 and Johnston, 1991, Amaral *et al.*, 2004). TVT usually affects the external genital organs, but presence of TVT lesion were reported in the skin, nasal mucosa, oral mucosa, eye, liver, lung, spleen, brain, uterus, ovary and mammary glands (Varughese *et al.*, 2012; Milo and Snead, 2014; Komnenou *et al.*, 2015; Rezaei *et al.*, 2016). TVT appears as cauliflower like growth on external genitalia, multiple soft growths on the skin and show bleeding and sero-sanguineous discharge from prepuce orifice with tumour mass arising from base of

penis in male while in the female, granulomatous tissue, haemorrhagic neoplastic nodules was observed in genital canal (Panchbhai *et al.*, 1989, Ayyappan *et al.*, 1994, Cristofori *et al.*, 1985). The growths were pink, friable and bled even on slight manipulation (Ayyappan *et al.*, 1994). Rogers *et al.*, (1998) reported that the mean age of the dogs affected with TVT was 5 years (range 1-11 years).

Decreased chromosome number i.e. 57-64 is found in tumour cells compared to normal chromosome number i.e. 78 in the TVT affected dogs (Rogers *et al.*, 1997). Histopathology of neoplastic cells revealed round, ovoid and loosely arranged cells with large round top pleomorphic nucleus along with centrally placed prominent nucleoli with frequent occurrence of mitotic structures. The cells were separated by thin stroma but the cells were uniform in size. Plasma cells and macrophages along with lymphocytes were admixed with neoplastic cells along with focal areas of necrosis. A typical alveolar arrangement of the tumor cells limited by moderately defined fibrocollagenous strands with mitotic figures. The uniform architectural pattern of tumor cells was suggestive of venereal granuloma (Das *et al.*, 1990, Lal Krishna and Gupta, 1990, Chang *et al.*, 1999, Rodrigues *et al.*, 2001). Diagnosis of TVT is most commonly done by clinical examination and confirmation is made by histopathological examination of biopsy tissue (Moulton, 1978; Richardson, 1981; Daleck *et al.*, 1987).

## Materials and Methods

Twenty four dogs (male and female) with the history of bleeding from penis, prepuce and cauliflower like tumorous growth on base of penis in males and females having history of vaginal bleeding and cauliflower like growth in vagina following mating were examined by backward retraction of prepuce in male dogs

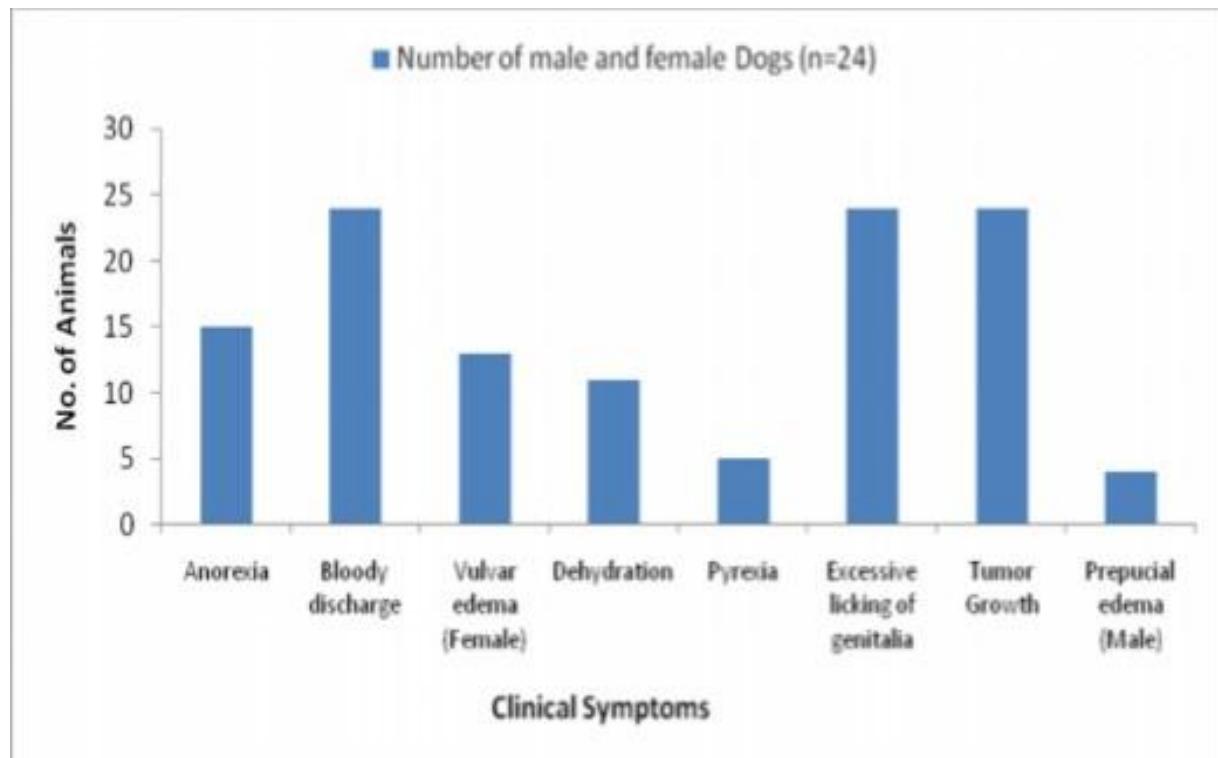
and per vaginum in female dogs and confirmed by the presence of cauliflower like tumour mass on the base of penis and vagina. The tumors were examined for shape, size, location and presence of bleeding associated with them. Histopathological studies of biopsy tissues of tumour were done by fixing tumour biopsy tissue in 10% neutral buffered formalin for 24 hours and then embedded in paraffin wax, sectioned and subsequently five  $\mu\text{m}$ -thick sections were stained with hematoxylin and eosin (H & E) stain (Carleton and Leach, 1947). Slide of histopathology examined under light microscope (Sales Lapa *et al.*, 2012).. Biopsy tissues for histopathology examination were obtained before treatment with chemotherapeutic drugs.

## Results and Discussion

In present study, Cauliflower like tumour growth on external genitalia, bloody discharge and excessive licking of genitalia were the most common clinical signs observed in all the dogs affected with TVT. These observations were also recorded by many other clinicians (Panchbhai *et al.*, 1989). Recorded lower incidence of clinical symptoms viz. Anorexia, vulvular edema and dehydration is due to late reporting of affected dogs from rural areas as these clinical signs are much common during early phase of the disease (Gandotra *et al.*, 1993). Pyrexia observed in TVT affected dogs is associated with secondary bacterial infection of tumour mass consequential upon coital injury (Batataatnuzi and Kristensen, 2008).

Histopathology of tumour biopsy tissue obtained before chemotherapy evidenced loose sheets of round, ovoid and loosely arranged polyhedral cells and tumour cells have large round top pleomorphic nucleus, having prominent centrally placed nucleoli along with frequent mitotic figures and a few new blood vessels (Fig. 1).

**Chart.1** Histogram showing clinical symptoms in TVT affected male and female dog

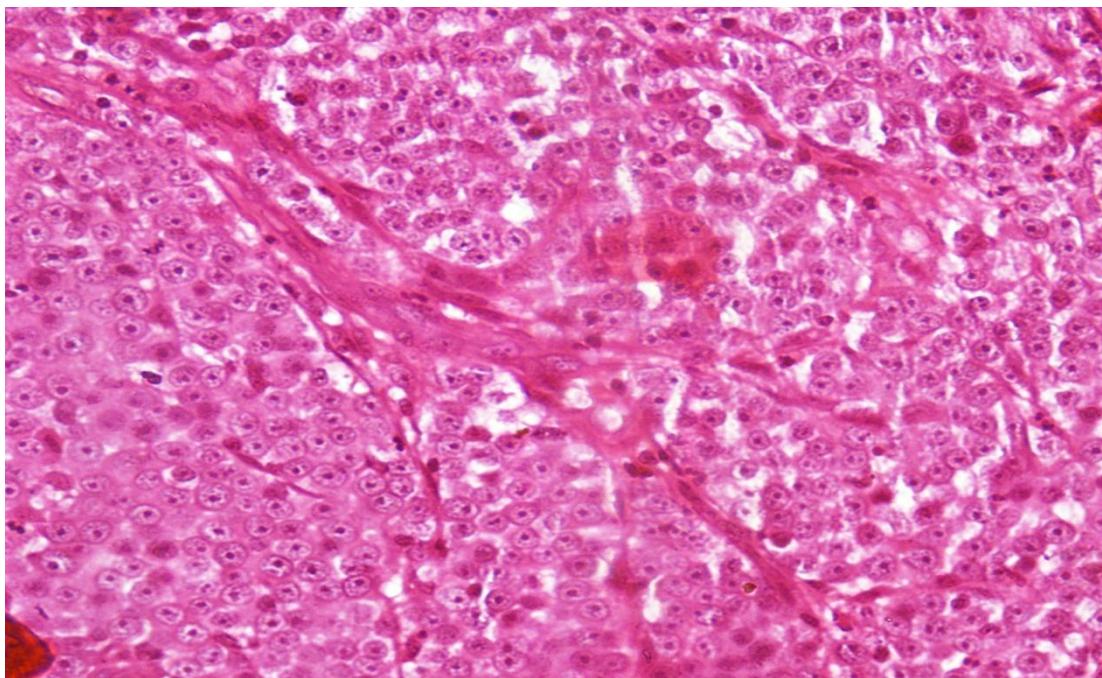


Vaginal bleeding in TVT



Cauliflower shaped growth of tumour protruding outside in TVT affected female dog

**Fig.1** Micro Photograph of TVT tissue showing tumour cells with prominent nuclei and large vacuoles (H&E stain; Magnification 40x)



The histopathological examination which confirmed the diagnosis of TVT, was congruous with a previous study which demonstrated the tumor as confluent sheet or rows of tumor cells separated by little fibrous stroma (Ayyappan *et al.*, 1994). Tumor cells were infiltrated by macrophages, lymphocytes, and plasma cells with schirrrous reaction characterized by intense fibroblastic proliferation and collagen deposition (Das *et al.*, 1990, Lal Krishna and Gupta, 1990, Chang *et al.*, 1999, Rodrigues *et al.*, 2001, Nak *et al.*, 2005).

The presence of large numbers of lymphocytes, plasma cells and activated macrophages in the tumor strongly suggests a role for localized antibody-mediated control of TVT (Mascarenhas *et al.*, 2014). Similar histopathological observations were also recorded in canine TVT in earlier reports (Panchbhai *et al.*, 1990 and Chang and Chihhuan, 1997). Appearance of new blood vessels is suggestive of increased blood

supply to meet nutrient and oxygen requirement of increased mitotic activity of tumour cells (Lal Krishna and Gupta, 1990).

The present findings are suggestive that Cauliflower like tumour growth on external genitalia, bloody discharge and excessive licking of genitalia were the most common clinical signs observed in TVT affected dogs. Histopathology of TVT affected dogs showed neoplastic tumour cells having large round top pleomorphic nucleus having prominent centrally placed nucleoli along with frequent mitotic figures which is most confirmatory diagnosis in canine TVT.

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