

## ARTICLE

# A Case Report on Canine Transmissible Venereal Tumor

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### ABSTRACT

A male Japanese spitz (3 years) was brought at Himalayan Animal Rescue Trust (HART), Pokhara with a complaint of swollen gums and loss of appetite. A lobulated tumorous mass was seen at the gingival region on physical examination. Diagnosis and treatment of condition detected in the dog was the major objective. Impression smear of tumor cell was prepared and was observed under oil immersion microscope (100x). Microscopic examination shows the presence of vacuolations within the cytoplasm and the condition was diagnosed to be CTVT. Chemotherapy was performed using the most effective cytostatic agents I.e. Vincristine sulphate (once a week, I/v). The chemotherapy was repeated for 3 doses till the tumor gets completely regressed. The condition was resolved after third session of chemotherapy. Myelosuppression and gastrointestinal effects like vomiting are the major complications of using vincristine.

## 1. Introduction

**T**VT is a tumorous condition transmitted horizontally among dogs after coitus mediated by the viable tumor cells possessing transposons<sup>[1]</sup>. TVT can also be called as Sticker tumor or sarcoma, transmissible lymphosarcoma, venereal granuloma, infectious granuloma, canine condyloma and contagious lymphosarcoma<sup>[2]</sup>. Novinsky in 1876 initially described canine TVT and demonstrated that the tumor could be transferred from one host to another via tumoral cells<sup>[3]</sup>. This viable tumor cells mainly effects the genital region whereas extra-genital cases of TVT has also been discovered and treated. Extra-genital region includes nasal cavity, conjunctiva

and eye, skin, buccal and anal mucosa<sup>[4-6]</sup>. This might also lead to the condition known as phimosis. TVT cells are round with large round nuclei that possess coarse chromatin and single, prominent nucleoli. It also consists of prominent cytoplasm with distinct vacuolation<sup>[7]</sup>. The tumor growth occurs 15 to 60 days after implantation of tumor cells. Normal canine cells possess 78 chromosomes whereas CTVT cells consists of 57-59 chromosomes<sup>[8]</sup>. Some cases reports spontaneous regression of tumor mass and recovered dogs were found to acquire humoral and cellular immunity against CTVT<sup>[9]</sup>. Metastasis was found to be seen in less than 5-17% of cases and was more common in male (15.6%) than in female dogs (1.8%)<sup>[10]</sup>. The rapidity of metastases depends on health and immune sta-

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tus of the affected dog.

## 2. Case Report and History

A 3 years old male Japanese spitz weighing 20 kg was brought to HART, Pokhara. The owner noticed the signs like loss of appetite, difficult feeding and loss of body condition. The owner explained that the dog was habituated to wander around the village with other street dogs. There was no cases of loss of consciousness. The owner visited us to determine and treat the underlying cause. The dog was properly vaccinated.

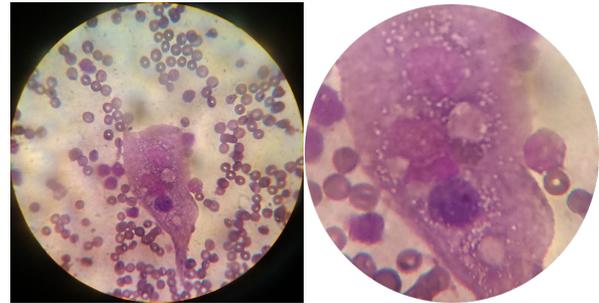
On physical examination, the nodular, lobulated mass was seen at the gingival region. Grossly, the mass was pink to red, multinodular, raised to pedunculated, soft and hemorrhagic. Temperature, pulse and respiration were found to be 103.8°F, 85 times per min and 22times per min respectively.



**Figure 1.** tumorous mass in gingiva

## 3. Materials and Methods of Diagnosis

The condition was tentatively diagnosed to be CTVT based on the expertise of the doctor. The condition could be differentially diagnosed with gingivitis. CTVT are mainly diagnosed by histopathological examination of biopsy, impression smear of the tumor or by using fine needle aspiration cytology (FNAC). So, the impression smear was sent to the regional laboratory located within Pokhara. The smear was then fixed with alcohol and was stained using Giemsa stain. The stained smear was observed using oil immersion microscope (100x). After staining, the confirmatory structure was visible i.e. highly vacuolated cytoplasm.



**Figure 2.** The impression smear was prepared and shows the presence of cytoplasmic vacuolations after microscopic observation

## 4. Discussion

TVT is mostly benign in nature which is found to be transmitted directly from dog to dog, across major histocompatibility complex (MHC) barriers and also through damaged mucosal surfaces mediated by the viable tumor cells during mating<sup>[11]</sup>. TVT possess unique characteristic of occurring naturally and transmitted as an allograft which acts more or less like a parasite that grows autonomously from the original host. CTVT cells can avoid its detection from immunological cells by inhibiting MHC-II activity or down-regulating MHC-I activity due to the secretion of inhibitory cytokines i.e. IL-6 and TGF-1<sup>[12]</sup>.

Treatment of TVT mainly includes surgical techniques, radiotherapy and chemotherapy. Surgical method of treatment was being used since last century with lower efficacy. Small, localized TVTs were treated extensively using surgical method inspite of its higher chances of reoccurrence<sup>7</sup>. The use of electro-cautery in surgery proves to have higher success rate. Vincristine Sulfate is obtained as the salt of an alkaloid from a common flowering herb, the periwinkle plant (*Vinca rosea* Linn)<sup>[13]</sup>. The exact mode of action of vincristine sulfate is still under investigation. But some researches have showed that it inhibits microtubule formation in the mitotic spindle resulting arrest of mitotic division of cells at metaphase stage. Administration of vincristine alters spermatogenesis either temporarily or permanently<sup>[14]</sup>. Extravasation of anti-neoplastic agents like vincristine shows symptoms ranging from local pain, inflammation and ulceration vinblastine, vinorelbine<sup>[15,16]</sup>.

## 5. Treatment

Chemotherapy was found to be the most effective method of treatment among all other. Complete regression of tumor takes 2 to 8 injections in most of the cases and have good prognosis with chemotherapy.

Among various cytostatic agents, vincristine sulphate

was found to have higher success rate. So, vincristine sulphate (C-VINLON™ @1mg/ml) was administered at the rate of 0.025mg/kg body weight intravenously (Cephalic vein) once a week. Vincristine was given with fluid (i.e. normal saline at the rate of 2drops/second) to reduce the burning sensation in veins. Chemotherapy was performed for three sessions and the condition was resolved.

The prognosis of CTVT of extra-genital region was excellent after the treatment with vincristine.



**Figure 3.** The size of tumorous mass was reduced after third session of chemotherapy

## 6. Conclusion

CTVT is the unique type of tumor of benign nature mostly seen in genital regions. Vincristine was found to be effective even in the case of venereal tumor of extra-genital region. Animal must be prevented from having intercourse with random dog to prevent transmission of CTVT. The rate of fluid administration along with chemotherapeutic agent must be maintained at an optimum rate to prevent burning sensation caused by the drug. Regular administration of chemotherapeutic agent must be done weekly till the resolution of the condition.

## Conflict of Interest

We have no conflicts of interest to disclose.

## Ethical Statement

Handling of the dog during the treatment was performed under the ethical guidelines of HART, Pokhara.

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