

# Canine Ocular Transmissible Venereal Tumour - A Report of Four Cases

Rugmini K.S.<sup>1\*</sup>, Subapriya.S.<sup>2</sup>, Pushkin Raj H.<sup>3</sup>, Ganne Venkata Sudhakar Rao<sup>1</sup>, Ramesh S.<sup>2</sup>

*Ind J Vet Sci and Biotech* (2025): 10.48165/ijvsbt.21.1.29

Canine Transmissible Venereal tumour (TVT) or Sticker's sarcoma is a sexually transmitted neoplasm which is endemic in tropical and subtropical countries. The tumor is transmitted between dogs through direct skin contact, licking and bite injuries (Kabuusu *et al.*, 2010). External genitalia are the frequent location for TVT. It can also occur in areas such as the oral cavity, nasal cavity, skin, sclera, and anterior chamber of the eye. Tumor cell inoculation is also possible in extragenital primary sites, such as the nasal and oral cavities, rectum, skin, and ocular membranes (conjunctiva), via licking or sniffing of the vaginal and/or the preputial discharge. TVT is further characterized by a unique feature wherein the mutated tumor cell itself acts as the causative agent and propagates within the implanted host (Ganguly *et al.*, 2016). The present report describes the extraocular and intraocular manifestations of TVT in dogs and its response to treatment.

## CASE HISTORY AND OBSERVATIONS

Two intact male and two intact female dogs which were presented to Ophthalmology Unit- Small Animal Surgery-Out Patient Unit of Madras Veterinary College, Chennai (India) with history of unilateral ocular lesions were taken up for the study. Apart from the ocular growths, primary genital lesions were not demonstrable in any of the four dogs. TVT was diagnosed in ocular lesions by microscopic examination of impression smears and FNAC samples. The particulars of dogs diagnosed with ocular TVT is presented in Table 1. Post-diagnosis, the dogs were provided with Vincristine therapy at 0.025 mg/kg at weekly once interval. Haemato-biochemical investigation was also performed in all the four dogs at 0, 7, 14 and 21 days of treatment. The response to treatment was then monitored at weekly intervals.

**Case 1:** A seven year old non-descript intact male dog was presented with the history of mass on the right eye, purulent ocular discharge and blepharospasms for 21 days. Clinical examination parameters like temperature, pulse rate and respiratory rate were within the normal range. Ophthalmological examination revealed absence of menace, dazzle and Pupillary Light Reflex (PLR) on the right eye. There was mild superficial uptake of fluorescein dye on the right eye. Episcleral and conjunctival congestion were

<sup>1</sup>Department of Veterinary Pathology, Madras Veterinary College, TANUVAS, Chennai-600007, India

<sup>2</sup>Centralized Clinical Laboratory, Madras Veterinary College, TANUVAS, Chennai-600007, India

<sup>3</sup>Department of Veterinary Surgery and Radiology, Madras Veterinary College, TANUVAS, Chennai-600007, India

**Corresponding Author:** Rugmini K.S., MVSc. Scholar, Department of Veterinary Pathology, Madras Veterinary College, TANUVAS, Chennai-600007, India. e-mail: rugminivetmed@gmail.com

**How to cite this article:** Rugmini, K. S., Subapriya, S., Raj, P. H., Rao, G. V. S., & Ramesh, S. (2025). Canine Ocular Transmissible Venereal Tumour: A Report of Four Cases. *Ind J Vet Sci and Biotech*. 21(1), 133-136.

**Source of support:** Nil

**Conflict of interest:** None

**Submitted** 21/09/2024 **Accepted** 29/11/2024 **Published** 10/01/2025

predominant on the right eye. Episcleral mass measuring 0.5 cm in length was characterized by an ulcerated oval shaped projection on the right eye leading to displacement of globe from the orbit (Fig.1a). Impression smear was obtained from the episcleral mass.

**Case 2:** A six-year-old non-descript intact male dog was presented with history of buphthalmos, ocular discharge and blepharospasm of left eye for seven days. Clinical examination parameters were within the normal range. Ophthalmological examination revealed absence of menace, dazzle and pupillary light reflex on the left eye. Episcleral and conjunctival congestion were predominant on the left eye. Episcleral mass was characterized by an ulcerated projection on the episcleral region and extending as a yellow mass inside the uvea of the left eye (Fig.2a). The clarity of the intrauveal structures were compromised. Fine needle aspiration cytology sample was obtained after sedation.

**Case 3:** A six-year-old Spitz intact female dog was presented with a history of intraocular mass on the right eye for 30 days. Clinical examination parameters were within the normal range. Ophthalmological examination revealed absence of menace, dazzle and PLR on the right eye. There was mild superficial uptake of fluorescein dye on the right eye. The right eye was buphthalmic with intraocular mass completely occluding the internal structures (Fig. 3a). Fine needle aspiration cytology was obtained after sedation.

**Table 1:** Particulars of dogs diagnosed with ocular TVT

Case No:	Clinical history	Age (years)	Sex	Breed	Localization of lesion	Diagnostic technique	Chronicity (days)
1	Episcleral mass	7	Male	Non-descript	Right episcleral region	Impression smear	21
2	Buphthalmos and ocular discharge	6	Male	Non-descript	Left episcleral region and intrauveal	FNAC	7
3	Buphthalmos	6	Female	Spitz	Right Intraocular	FNAC	30
4	Lower eyelid mass	5	Female	Non-descript	Right Lower eyelid	Impression smear	14



**Fig. 1a:** Canine- Episcleral region (OD) – Appearance of the mass in first week



**Fig. 1b:** Canine- Episcleral region (OD) – Appearance of the mass in third week



**Fig. 1c:** Canine- Episcleral region (OD) – Appearance of the mass in fourth week



**Fig. 2a:** Canine- Episcleral and intrauveal region (OS) – Appearance of the mass in first week



**Fig.2b:** Canine-Left Episcleral and intrauveal region (OS)– Appearance of the mass in second week



**Fig.2c:** Canine-Left Episcleral and intrauveal region (OS)– Appearance of the mass in fourth week



**Fig. 3a:** Canine- Intraocular mass (OD) – Appearance of the mass in first week



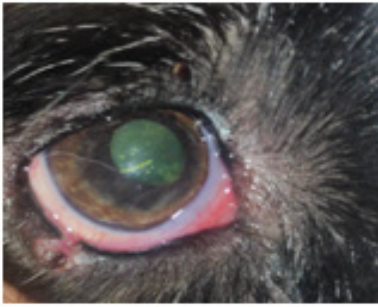
**Fig. 3b:** Canine-Intraocular mass (OD) – Appearance of the mass in third week

**Case 4:** A five-year-old non-descript intact female dog was presented with history of mass on lower eyelid of right eye for 14 days (Fig. 4a). Clinical examination parameters were within the normal range. Ophthalmological examination

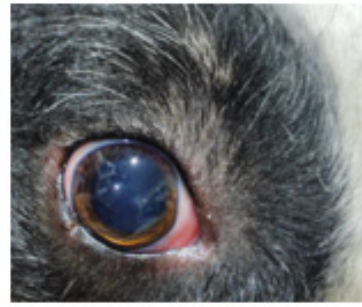
parameters were normal. Impression smear was obtained from the lower eyelid mass.

Cytological examination of Leishman-Giemsa stained impression smears and fine needle aspiration cytology





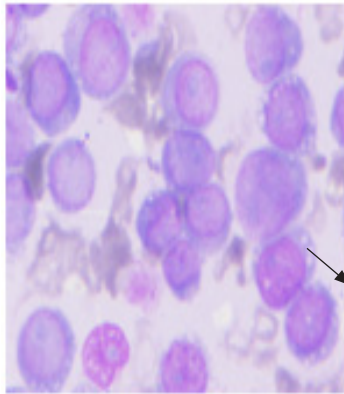
**Fig.4a:** Canine- lower eyelid(OD) – Appearance of the mass in first week



**Fig.4b:** Canine- lower eyelid(OD) – Appearance of the mass in second week



**Fig. 5a:** Canine- Cytology- LG stain – Round cells with eccentric nuclei and prominent nucleoli x 1000



**Fig. 5b:** Canine- Cytology- LG stain – Punctate vacuoles in cytoplasm x 1000



**Fig. 5c:** Canine- Cytology- LG stain – Mitotic figure x 1000

of the ocular masses yielded sheet of discrete round cells with eccentric nuclei and predominant nucleoli (Fig. 5a). Cytoplasm appeared basophilic with few to many punctate cytoplasmic vacuoles (Fig. 5b). Mitotic figures (Fig. 5c) were also observed in few fields in addition to mild to moderate anisocytosis and anisokaryosis. Based on the cytological features observed as above, TVT was diagnosed in the four dogs presented with ocular lesions.

## TREATMENT AND DISCUSSION

Vincristine sulphate at the dose rate of 0.025 mg/kg was provided to the dogs after haemato-biochemical evaluation. With regard to case 1, complete remission of tumor was observed within four weeks (Fig.1b-c). In case 2, complete remission of the tumor was observed within five weeks (Fig. 2b-c). In case 3, the dog succumbed to death post-four weeks of chemotherapy (Fig.3b). In case 4, complete remission was observed within four weeks (Fig. 4b).

TVT is an endemic neoplasia common in population of dogs of developing countries. Two intact male and two intact female dogs were represented in the study. With regard to breed, three were non-descript and one was Spitz. Equal proportions of male and female dogs were presented with the mean age of six years in our study. Earlier, Komnenou *et*

*al.* (2015) observed that female dogs were more susceptible than male dogs due to active mating behaviour of males and in areas where birth control measures are not properly followed. However, the sample size (n=4) in our study is small to decide the influence of breed, sex and age on the occurrence of TVT in dogs.

In all of the cases presented in this study, TVT has been attributed as a sole ocular manifestation without any genital involvement. Ferreira *et al.* (2000) reported that ocular manifestation is a metastatic lesion or primary extragenital lesion and Das and Das (2000) stated that in the absence of primary genital tumor, extragenital TVT can be primary due to dog's social behaviour like licking, sniffing and bite wounds or it may be metastatic of the genital lesion had completely regressed before presentation.

Unilateral ocular lesions were confined to the right eye (OD-oculus dextrus) in the episcleral, intraocular and lower eyelid region and to the episcleral and intrauveal region in the left eye (OS-oculus sinister). Bilateral involvement was absent in all of the four cases. Sritrakoon *et al.* (2020) studied intraocular transmissible venereal tumour from 21 dogs and observed that 38% of the dogs with unilateral intraocular TVT eventually had bilateral TVT within two years. All these cases ocular TVT was present as an unilateral lesion. Monitoring of the dogs is essential for understanding the spread of lesion

into respective eye. They also reported that in two of the presented cases TVT was manifested as ocular manifestation without genital involvement.

Ferreira *et al.* (2000) reported that intraocular TVT occurred mostly at the anterior or posterior uvea as they are highly vascularized which favours more metastatic cells to enter inside the eye. Ocular TVT has also been reported in the third eyelid gland, bulbar conjunctiva, upper eyelid, lower eyelid and orbit (Milo and Snead, 2014). do Amaral *et al.* (2020) reported primary ocular transmissible venereal tumor on the right orbital area. Cohen (1973) reported that immunosuppressed dogs have a higher degree of metastases. Vermooten *et al.* (1987) also stated that TVT is commonly seen in dogs living under adverse conditions which can result in poor health. Papazoglou *et al.* (2001) stated that metastases of TVT seldom occurs in less than 5% of the cases and widespread metastases can happen due to reduced immunity of the host. However, in our study, since the dogs diagnosed with ocular TVT were in good health at the time of presentation with normal haemato-biochemistry values, immunosuppression and adverse health conditions cannot be associated with the occurrence of TVT.

All the dogs presented in this study were client owned, but occasional outdoor activity was observed. This occasional outdoor behaviour might have attributed to tumor transmission in the infected dogs. In all the cases presented, cytology was used for definitive diagnosis of TVT. EserÖzgencil *et al.* (2020) favoured cytology over histopathology for diagnosis since cytology is sensitive, inexpensive and minimally invasive. The differentials in cytological diagnosis of TVT include other round cell tumours such as histiocytoma, plasma cell tumor and lymphoma.

With regard to treatment, all dogs were provided with Vincristine at 0.025 mg/kg which is the most common protocol for treatment (Nak *et al.*, 2005). Complete remission of the tumor was observed in three cases, except for one case (Case 3) wherein the dog died owing to increased creatinine values post-chemotherapeutic intervention with Vincristine. Hence, early diagnosis of TVT in dogs by cytological examination and appropriate treatment with Vincristine shall help in saving the lives of TVT infected dogs in most of the cases.

## ACKNOWLEDGEMENT

Authors thank the Dean of the Madras Veterinary College and University TANUVAS authorities for clinical facilities provided.

## REFERENCES

- Cohen, D. (1973). The biological behaviour of the transmissible venereal tumour in immunosuppressed dogs. *European Journal of Cancer*, 9, 253-258.
- Das, U., & Das, A.K. (2000). Review of canine transmissible venereal sarcoma. *Veterinary Research Communications*, 24(8), 545-556.
- do Amaral, A.V.C., Mucha, F., Oliveira, I.B., de Carvalho, C.F., Ataíde, W.F., & Saturnino, K.C. (2020). Primary ocular transmissible venereal tumor in a prepubescent female dog. *Acta Scientiae Veterinariae*, 48(1), 1-7.
- EserÖzgencil, F., Dirilenoğlu, F., Seyrekİntaş, D., Gökçe, A. P., ÇirayAkbaş, G., Pilli, M., Gültekin, Ç., Çetinkaya, M.A., & Mocan, G. (2020). Ocular transmissible venereal tumor in two dogs: Clinical and cyto-histopathological evaluation. *Kafkas Üniversitesi Veteriner Fakültesi Dergisi*, 26(4), 567-572.
- Ferreira, A.J.A., Jaggy, A., Varejão, A.P., Ferreira, M.L.P., Correia, J.M.J., Mulas, J.M., Almeida, O., Oliveira, P., & Prada, J. (2000). Brain and ocular metastases from a transmissible venereal tumour in a dog. *Journal of Small Animal Practice*, 41(4), 165-168.
- Ganguly, B., Das, U., & Das, A.K. (2016). Canine transmissible venereal tumour: A review. *Veterinary and Comparative Oncology*, 14(1), 1-12.
- Kabuusu, R.M., Stroup, D.F., & Fernandez, C. (2010). Risk factors and characteristics of canine transmissible venereal tumours in Grenada, West Indies. *Veterinary and Comparative Oncology*, 8(1), 50-55.
- Komnenou, A.T., Thomas, A.L.N., Kyriazis, A.P., Poutahidis, T., & Papazoglou, L.G. (2015). Ocular manifestations of canine transmissible venereal tumour: A retrospective study of 25 cases in Greece. *Veterinary Record*, 176(20), 523.
- Milo, J., & Snead, E. (2014). A case of ocular canine transmissible venereal tumor. *Canadian Veterinary Journal*, 55(1), 1245-1249.
- Nak, D., Nak, Y., Cangul, I.T., & Tuna, B. (2005). A clinico-pathological study on the effect of vincristine on transmissible venereal tumour in dogs. *Journal of Veterinary Medicine Series A: Physiology Pathology Clinical Medicine*, 52(7), 366-370.
- Papazoglou, L.G., Koutinas, A.F., Plevraki, A.G., & Tontis, D. (2001). Primary intranasal transmissible venereal tumour in the dog: A retrospective study of six spontaneous cases. *Journal of Veterinary Medicine Series A*, 48(7), 391-400.
- Sritrakoon, N., Maneesaay, P., Kasorndorkbua, C., Srisampan, S., Wongsali, C., Kunakornsawat, S., & Thayanapanuphat, A. (2020). Intraocular transmissible venereal tumors in dogs: A retrospective review of 21 cases. *Songklanakarin Journal of Science and Technology*, 42(3), 608-614.
- Vermooten, M.I. (1987). Canine transmissible venereal tumor (TVT): A review. *Journal of the South African Veterinary Association*, 58, 147-150.

