

MANAGEMENT OF TVT IN DOGS USING CHEMO AND SUPPORTIVE THERAPY: CLINICAL STUDY

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In this study, eight dogs of different breeds diagnosed with Transmissible Venereal Tumour (TVT) were treated, all of which had a history of vaginal/penile bleeding from their genital areas. Both female and male dogs exhibited small to large cauliflower like growths around the vulva and penis, respectively. Cytological diagnosis was confirmed by identifying cytoplasmic vacuoles in the cells. Treatment involved administering injection Vincristine at a dosage of 0.025 mg/kg body weight once a week until the animals fully recovered. Haematological parameters remained normal both before and after treatment. No adverse effects of chemotherapy or the recurrence of tumour were observed in the treated dogs. Based on these findings, chemotherapy with vincristine and supportive therapy is found to be the effective treatment for TVT.

Keywords: Cytoplasmic vacuoles, Transmissible Venereal Tumour, Vincristine.

Various pathologies with differing etiologies, including congenital, endocrine, autoimmune, infectious, traumatic, and neoplastic disorders, affect the reproductive tract of dogs. One of the most commonly reported contagious conditions is canine transmissible venereal tumour (TVT). Transmissible Venereal Tumour (TVT) is a benign reticuloendothelial tumour that manifests as a contagious, sexually transmitted disease in dogs. It is commonly observed in free-roaming stray dog populations (Hantrakul *et al.*, 2014). According to Cizmeci and Guler (2018), 63% of vaginal tumours in dogs were identified as TVT. Canine TVT is a naturally occurring, contagious round cell tumour transmitted through venereal contact (Abeka, 2019). This condition typically occurs in dogs during periods of heightened sexual activity. Transmission mainly occurs during mating when viable tumour cells enter damaged mucous membranes. Similarly, it can also spread through licking, biting or sniffing of affected areas. The lesions primarily target the mucous membranes of the external genitalia in both, male and female dogs (Fathi *et al.*, 2018). This tumour is usually benign;

however, recurrence and metastasis can occur in other organs such as the skin, lymph nodes, brain, pituitary, tonsils, tongue, eyes, lips, and mammary glands. Clinical signs of TVT include sanguineous discharge from the affected area and irregular, cauliflower-like growths that bleed profusely. Diagnosis can be confirmed through cytology and histopathology by identifying TVT cells with cytoplasmic vacuoles. Treatment options for this tumour include surgery, radiation and immunotherapy, but chemotherapy has gained prominence due to its promising results. Treatment options include chemotherapy (Pooja *et al.*, 2024), surgery (Fathi *et al.*, 2018), radiotherapy and immunotherapy (Abeka, 2019). The present study focused on the treatment of TVT using the chemotherapeutic drug vincristine along with supportive therapy and its outcomes.

Materials and Methods

Eight dogs of different breeds, aged between 2 to 5 years, consisting of 5 females and 3 males, were presented to the Department of veterinary clinical complex with complaints of bleeding from the vagina or penis, respectively during six months period. The duration of bleeding varied

among the animals, ranging from 1 day to 1 month, and all were previously untreated. Vital physiological parameters such as rectal temperature and heart rate were found to be within normal limits. Upon physical and per-vaginal examination, macroscopic cauliflower-like tumour masses were observed in the affected dogs. In females, the lesions were predominantly located in the vulva, vestibule and caudal vaginal regions (Fig 1), while in males, the growths were observed on the glans penis and/or shaft of the penis (Fig 2). Blood samples were collected from all animals in EDTA

vacutainers for the estimation of blood parameters. Impression smears of the lesions were documented both before and after treatment. Microscopic examination of the impression smears revealed the presence of characteristic cytoplasmic vacuoles in the cells (Fig 3), confirming the diagnosis of TVT. Following diagnosis, all dogs were treated with chemotherapeutic drug, injection Vincristine sulphate at a dose of 0.025 mg/kg body weight, along with multivitamin supplementation @ 5ml/10kg body weight. The chemotherapeutic drug was administered strictly intravenously, along with 20-30 ml of normal saline. The treatment regimen was followed on a weekly basis until the animals achieved full recovery.



Results and Discussion

All the treated animals were found to be normal in activity after receiving first dose of anti cancer drug vincristine. The reported side effects like dizziness, vomiting, difficult breathing, itching, hair fall etc were not observed in the treated animals. In five dogs, the treatment was continued for 4 weeks until full recovery (Fig. 4). But for remaining dogs the lesions were subsided after one or two doses itself. The hemoglobin levels were found to be normal before and after however a non significant neutrophilia (Table-1) was observed after treatment. These reports were similar to the findings of Kumar *et al.*, 2018,

and Pooja *et al.*, 2024. In this study no reoccurrence of TVT reported after the treatment which was in accordance with Pooja *et al.*, 2024 and unlike to the reports of Fathi *et al.*, 2018.

Chemotherapy, particularly with vincristine, is considered highly effective in the present study, with a 100% cure rate which is in agreement with Abeka (2019). However, Kumar *et al.*, (2018) documented partial responses even after completing the four-dose vincristine regimen. Given its contagious nature, implementing transmission control measures is essential.



Fig: 4 Gradual remission of a cauliflower-like tumour growth following weekly treatments

Table 1: Hematological comparison (Mean ± SE) of animals before and after treatment

Blood Parameters	Before treatment	After treatment
Haemoglobin (g/dL)	8.6 ± 1.2	8.6 ± 1.5
Neutrophils (%)	69.0 ± 2.2	65 ± 1.7
Lymphocytes (%)	26.0 ± 3.0	25 ± 9.0
Monocytes (%)	4.0 ± 2.3	4.0 ± 2.3
Eosinophils (%)	4.12 ± 2.0	4.0 ± 1.0
Basophils (%)	1.15 ± 1.2	0.0 ± 0.0

*No significant difference ($p > 0.05$) was observed in hematological parameters before and after treatment

Conclusion

It can be concluded that TVT a contagious venereal tumour can be cured with the chemotherapy with vincristine sulphate along with supportive therapy.

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