

## THE MANAGEMENT OF CANINE TRANSMISSIBLE VENEREAL TUMOR (TVT) IN AN INDIGENOUS FEMALE DOG: A CASE STUDY

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**ABSTRACT:** Canine transmissible venereal tumor (CTVT) which is also known as transmissible venereal tumor (TVT), canine transmissible venereal sarcoma (CTVS), sticker tumor and infectious sarcoma, is a highly contagious neoplasm, usually transmitted through coitus especially in dogs and other canines. The etiology appears to be cell transplant from affected to unaffected dogs, CTVT originates from a somatic cell lineage whose genome persists in dogs for more than 5,000 years and has undergone a process of introgression from coyotes to pre-contact dogs, characterized as a contagious tumor with worldwide spreading, especially in tropical and subtropical countries. In male dogs the tumor is usually on the foreskin of the penis, while in female dog it affects the vulva. Cytology is largely employed for diagnosis. The tumor is many times self-limiting and vincristine sulfate is currently considered the most effective therapy. The study evaluates the

management process of TVT of a 2-year-old indigenous female dog weighing 20 kg which was presented with symptoms of canine transmissible venereal tumor to the Veterinary clinic of the college of Agriculture Akure.

**Keywords:** *Canine transmissible venereal tumor, Tumor, Coitus, Cytology.*

## INTRODUCTION

Canine transmissible venereal tumor (CTVT) is also known as transmissible venereal tumor (TVT), is a histiocytic tumor of the external genitalia of canines generally, and is transmitted from animal to animal during mating (Choi *et al.*, 2008). The tumor is naturally transmitted through coitus which allow transmission of cancer cells from the affected dogs genitalia, it could also be transmitted through licking or biting of affected areas. and can be experimentally induced by transplanting living tumor cells. The tumor karyotype is aneuploid but has characteristic marker chromosomes in all tumors (Vonholdt and Ostrander, 2006). Nevertheless, spontaneous regression of the tumor can occur, due to a response from the immune system, and it undergoes a predictable cycle which has an initial growth phase of four to six months known as P phase, a stable phase, and a regression phase R phase (Liao *et al.*, 2003).

CTVT metastases have been reported in the mammary gland (Hasler and Weber, 2000), spinal column (Arias *et al.*, 2016), brain (Silva-Hidalgo *et al.*, 2020), lymph nodes, skin, and eyes (Peixoto *et al.*, 2016; Souza *et al.*, 2020). Mixed-breed dogs are more affected than pure-breed dogs (Silva *et al.*, 2007; Huppeset *al.*, 2014; Hoqueet *al.*, 1995), but this is probably associated to roaming common in mixed breed dogs. The tumor appears on the skin of the external genitalia as well as the mucous membranes associated with sexual contact. (Marcos *et al.*, 2008).

The transmission of tumor cell tumor occurs preferentially in the mucosa of genital organs: in the prepuce and penis of males, and in the vulva of female dogs (Ibrahim *et al.*, 2025), without consensus on sexual predisposition (Strakova and Murchison, 2014). There are lower proportions of cases transmitted by orogenital contact. These may be associated with the habit of contact between the oral and nasal mucosa of healthy dogs with the genitalia of dogs that present the neoplasm (Peixoto *et al.*, 2016). In dogs, CTVT genital lesions may increase in volume, causing externalization of the lesion, sero-sanguinolent secretion, deformity of the vulvar

wall, difficulty in penile exposure and friable lesions in the penile bulb (Huppaset *et al.*, 2014). The extragenital lesions occur both concurrently with the genital form and independently (Peixoto *et al.*, 2016), more frequently in the oral and nasal cavities (Ibrahim *et al.*, 2025; Peixoto *et al.*, 2016).

Grossly, the tumor is pink to red, poorly circumscribed, multinodular, raised to pedunculated, soft, friable, ulcerated, and hemorrhagic, with frequent necrosis and superficial bacterial infection. Visible clinical changes, anamnesis and cytological tests were effective in diagnosis of CTVT in the genital form (Huppaset *et al.*, 2014; Fonseca *et al.*, 2017). Cytology is largely employed for diagnosis.

The differential diagnosis by cytology should consider other round cell neoplasms, mast cell tumor, histiocytoma, lymphoma and plasmacytoma (Araujo *et al.*, 2012). The Polymerase Chain Reaction (PCR) technique is a complementary method of diagnosis, increasing its accuracy, especially in extragenital and more undifferentiated manifestations of CTVT (Setthawongsinet *et al.*, 2016; Lima *et al.*, 2016). Regarding the immunohistochemical exam, there is intense cytoplasmic immuno-reactivity for vimentin in tumor cells, both in genital and extra-genital forms, but this occurs for most mesenchymal tumors (Ibrahim *et al.*, 2025).

CTVT is distributed worldwide and most commonly found in tropical and subtropical regions (Teller *et al.*, 2004), such as Colombia, Tanzania and Brazil (Peixoto *et al.*, 2016). CTVT accounts for 54% of reproductive disease cases within the indigenous dog breed in Nigeria (Ibrahim *et al.*, 2025)

Vincristine is commonly used in the treatment of CTVT, it regresses the host immune system and activate immune response against the tumor other agent include vinblastine and doxorubin (Ettinger *et al.*, 1995), Radiotherapy have also shown promising effect, Surgical attempt to remove the tumor maybe difficult due to its location (Mukaratirwa and Gruys, 2003).

### **Case Presentation**

Appearance of swollen reddish lesions (cauliflower) in the vulva of a 2-year-old Female Nigeria indigenous breed of dog was reported to the Veterinary clinic of College Agriculture Akure, which was noticed over a month ago after mating. The

dog's medical history reveals vaccination with anti-rabies and DHLPP (distemper, hepatitis, leptospirosis, parvovirus, parainfluenza) vaccines.



Plate 1: Showing TVT lesions in an indigenous female dog

### **Clinical Examination**

Inflamed and smelling vulva, pain upon palpation temperature of 39<sup>0</sup>C pulse rate 140bpm respiratory rate 25cycles/minute. Physical examination revealed a cauliflower-like growth measuring 4.2 cm<sup>2</sup> on top of the vulva.

### **Management**

Chemotherapy was initiated with vincristine sulfate (0.025 mg/kg, IV, once a week, for 2 weeks), Amoxicillin (22mg/kg IM once daily for 2 weeks), Dexamethasone (40µg/kg once a week for 2 weeks) Vitamin (10mg/ml 1-5 days). Treatment lasted for two weeks and notable regression was noticed after a week. Cleansing with hydrogen peroxide was done daily. The client was advised to screen both female and male dog before crossing

### **Discussion**

Federal college of Agriculture, Akure (formerly school of Agriculture) is a federal government owned tertiary institution located in Akure, the capital city of Ondo state in south Western Nigeria. (). The institution was established in 1957 with the

Veterinary clinic inaugurated in 2017. The Veterinary clinic as experienced an increasing flow of disease cases within Akure environment.

CTVT are common cases especially in indigenous dogs presented to Vet clinic with symptoms such as swollen vulva in female and enlarged prepuce in male which is similar to works of Hasler and Weber 2000, also reported CTVT affecting the penis in male dogs and vulva in female dogs.

This kind of tumor developed only in the dog, probably because during coitus there is extensive abrasive abrasions and bleeding of the penile mucosa and vagina, making transplantations of the tumor easy (Mukaratirwa and Gruys, 2003). The temperature of the dog in this study was high which could be indicative of underlying bacterial infection, this is also in agreement with works of Ibrahim *et al.*, 2025.

Chemotherapy has been shown to be the most effective and practical therapy, with vincristine sulfate being the most frequently used drug (Ibrahim *et al.*, 2025)

Other chemotherapeutic agents indicated for TVT treatment include cyclophosphamide (5 mg/kg, PO, for 10 days as a single drug therapy or given in association with prednisolone, 3 mg/kg, for 5 days); also, weekly vinblastine (0.1 mg/kg, IV during 4 to 6 weeks), methotrexate (0.1 mg/kg, PO, every other day) or a combination of the 3 drugs. However, there is no apparent advantage in the combination of chemotherapy over using vincristine alone (Yang *et al.*, 1991).

Resistant cases can be treated with doxorubicin, 30 mg/m<sup>2</sup>, IV, with 3 applications every 21 days (Richardson, 1981; Souza *et al.*, 1998). When total disappearance of the tumor cannot be achieved by chemotherapy, electro-cauterization or cryo-cauterization can be useful (Rogers, 1997). After therapy, small remnant lesions can disappear spontaneously after 1 or 2 weeks (Gonzalez *et al.*, 2000).

## **Conclusions**

This study evaluated the effective management of CTVT in a 2-year-old Nigeria indigenous dog presented to the Veterinary clinic of Federal College of Agriculture Akure, the successful regression noticed after a two-week treatment course using vincristine sulphate, is indicative of a potential short duration of treatment, thus

preventing prolong use of therapy thereby combating drug resistance and decreasing the continues use of medication in animals.

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