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Transmissible Venereal Tumor (TVT) and its successful treatment in canines

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Abstract
A male dog of 6-year age with history of bleeding, in-appetence, and polydipsia were brought to the VCC, Acharya Narendra Dev University of Agriculture and Technology, Kumar Ganj during the course of a year. Upon clinical inspection, it was observed that the animal has cauliflower-like tumorous growths on the penis. neutrophilia was visible on the blood image when blood profiling was performed. By microscopic examination of an impression smear stained with Leishman's stain, TVT was identified in each case. Vincristine sulphate, chlorpheniramine maleate, multivitamins, and immunity-booster syrup are all included in the treatment regimen. After the initial therapy shot, bleeding ceased, and dog's gross tumor lesions started to diminish within 15 days.

Keywords: TVT, canine, vincristine, neutrophilia, sticker tumor

Introduction
Transmissible Venereal Tumor (TVT), also known as infectious sarcoma, venereal granuloma, transmissible lymphosarcoma, or Sticker tumor, is a benign growth originating from the reticuloendothelial system within the Canidae family. Predominantly, TVT manifests on the external genitalia of sexually mature canines but may occasionally affect other mucosal sites like the oral cavity or nasal passage, albeit less frequently (Sharma *et al*., 2012; Gurel *et al*., 2002) [16, 7]. This tumor is considered the most prevalent neoplasm in dogs, especially in tropical and subtropical regions (Das and Das, 2000; Goldschmidt, 2002) [4, 6]. It poses significant global health concerns since both male and female dogs are equally at risk, and those with weakened immune defenses are prone to more severe disease progression. Host immunity is a major factor influencing tumor development and growth. TVT spreads through direct transfer of living tumoral cells, typically during sexual contact, bypassing MHC barriers within the same species and making young, sexually active animals particularly vulnerable (Mozartian and Groys, 2003; Murgia *et al*., 2006) [11, 12]. Experimental inoculation demonstrates that the tumor can be transmitted by transferring affected cells from one susceptible canine to another. While transmission via cell-free extracts is generally ineffective, the presence of cytoplasm in tumor cells led to speculation about a possible viral cause. Compromised or damaged mucosal surfaces increase the likelihood of tumor cell implantation (Verboten, 1987) [19]. Once implanted, TVT typically begins to grow within two months, with progression ranging from slow and sporadic enlargement over several years to possible malignancy and tissue invasion (Lombard 1968; Moulton 1978) [9, 10]. Due to their immunogenic nature, the host's immune system is crucial in limiting both tumor growth and spread (Cohen, 1973; Cohen, 1985) [1-2]. Reports indicate metastatic rates for TVT range between approximately 5–17% (Richardson 1981; Rogers 1997) [14, 15].

Materials and Methods
The dog ages of 6 years were brought into the clinic with a one-month history of penile bleeding in males. Dog had already received antibiotic, styptic, and multivitamin treatments

from neighborhood veterinarians and para-vets. Rectal temperature, heart rate, and pulse were measured, and all three measures were within the range considered to be normal physiologically for this specific species. On the penis of male dogs, several small nodular lesions were visible (Fig. 1). EDTA vacutainers were used to collect blood samples for hematology. Blood hemoglobin levels were discovered to be within the normal range. In this case, impression smears were created and inspected under a microscope. Multiple cytoplasmic vacuoles that are suggestive of TVT were found in the cytoplasm of the cells upon microscopic analysis of dyed slides (Fig. 2). Treatment for dog comprised strict intravenous administration of the anti-cancer medication vincristine sulphate @ 0.025 mg/kg diluted in 10 ml of normal saline on a weekly basis for five weeks. Immunity boosters and multivitamin syrup are examples of supportive therapy. Avil injection @ 0.2 mg/kg was also administered to check for any medication reactions.

Results and Discussion

After the administration of the first dose of vincristine sulfate, the dog showed a positive clinical response, with the bleeding stopping promptly. However, gastrointestinal side effects such as vomiting were observed following chemotherapy. These symptoms were effectively managed with antiemetic medication. After one week of treatment, a repeat hematological examination revealed hemoglobin levels within the normal range. Over the course of four weeks, the tumor mass gradually regressed and completely disappeared, leading to a full clinical recovery. Owners were advised to keep their dogs away from stray animals to prevent transmission through random mating. Transmissible venereal tumor (TVT) is recognized as a naturally occurring, contagious neoplasm (Das & Das, 2000) [4]. The tumor cells are transmissible through direct contact, particularly during mating or through licking of affected genital regions. Metastasis is relatively uncommon, occurring in less than 5% of cases (Sharma *et al*., 2012) [16]. The primary route of spread involves physical contact with the genital, nasal, or oral mucosa (Cohen, 1985) [2]. In this study, the presence of tumorous growth confined to the genital region supported this recognized mode of transmission. Blood and biochemical profiles of affected dogs remained within normal limits, in line with the findings of Das *et al*. (1991) [3]. Treatment included intravenous administration of vincristine sulfate at a dosage rate of 0.025 mg/kg once weekly for four weeks, along with supportive fluid therapy. Complete regression of the tumor was observed after the fourth dose, though a fifth dose was administered as a precautionary measure. The dogs remained in remission without any recurrence following the full course of therapy. TVT primarily affects the external genitalia of both males and females and is generally considered a benign tumor. Metastatic spread remains rare, observed in only a small percentage of cases (Sharma *et al*., 2012) [16]. Diagnosis was based on clinical symptoms and confirmed through cytological examination of impression smears, consistent with standard diagnostic procedures such as fine needle aspiration or swab cytology (Kroger *et al*., 1991) [8]. Various therapeutic approaches have been used to manage TVT, including surgical excision, radiotherapy, immunotherapy, biotherapy, and chemotherapy (Pignato *et al*., 2011) [13]. In the present study, intravenous administration of vincristine sulfate alone at 0.025 mg/kg resulted in complete remission after four weeks of therapy. According to Tella *et al*. (2004) [17], complete recovery can typically occur within two to eight doses; however, this case demonstrated remission within four. Importantly, no local tissue irritation or extravasation reactions were noted during treatment (Pignato *et al*., 2011) [13].

Fig 1: Tumor mass at base of Penis

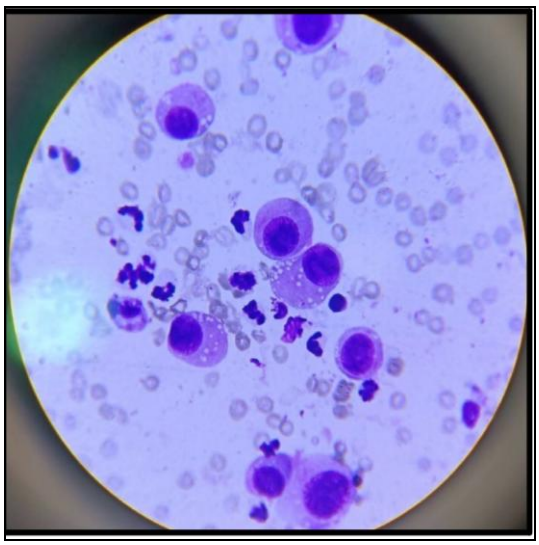

Fig 2: Microscopic picture show cytoplasmic vacuoles and enlarged nucleus

Conflict of Interest

Not available

Financial Support

Not available

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