Clinical diagnosis and therapeutic management of transmissible venereal tumor in a German Shepherd dog: A Case report

Pramod Kumar, Manisha Mehra, Satish, Shivendra Kumar Bhalothia, Tapendra Kumar, Bhanu Prakash, Sasi G, Tipu Sultan and Rajendra Mehra

Abstract

This report describes a case of transmissible venereal tumor in a German shepherd dog and treatment with vincristine sulfate resulted in complete resolution of the TVT.

Keywords: German shepherd dog, transmissible venereal tumor, vincristine sulphate

Introduction

Canine Transmissible Venereal Tumor (CTVT) also known as infectious sarcoma, venereal granuloma, transmissible lymphosarcoma or sticker’s sarcoma, is a benign reticuloendothelial (histiocytic) tumor of the dog that mainly affects the external genitalia and occasionally the internal genitalia (Bloom et al., 1951; Bloom et al., 1981; Goldschmidt and Hendrick, 2002) and rarely at the ocular region (Milo and Snead, 2014) nasal passage (Gurel et al., 2002) and or oral cavity (Raghunath et al., 2015). It is located on the base of the penis or prepuce in males, and on the vagina or labia in females. Infection and transmission occurs mainly through intercourse, being more common in young sexually mature animals. Due to exfoliation on affected region from the sick animal, an atypical neoplastic cell infection occurs on healthy individuals. These may grow slowly over years and become invasive, eventually changing to malignant and metastatic. Upon genitalia examination, males generally have tumors cranially located on the glans, and preputial bulb and mucosa (Johnson, 1994; Nak et al., 2005) with a consequent phimosis. Ulcerated lesions in male external organs taking place with hemorrhagic discharges usually mystified with urethritis, cystitis and prostatitis (Dar et al., 2017) [1,2,3]. The incidence of metastasis is quite low and occurs in 5% or less of the cases (Sharma et al., 2012). The methods used to treat TVT are cryosurgery, radiotherapy, surgical resection and antineoplastic chemotherapy that are the protocol of choice in routine clinical treatment (Purohit, 2009; Dar et al., 2017) [11, 9]. Antineoplastic treatment may combine two or more chemotherapeutic agents (for example, vincristine and cyclophosphamide combined with methotrexate), or it can involve a single agent as vincristine (Purohit, 2009; Dar et al., 2017) [11, 9]. The present paper reports transmissible venereal tumour in a German shepherd dog and treatment with vincristine sulfate resulted in complete resolution of the TVT.

Case history and Observations

Four years old male German shepherd dog with history of bleeding from preputial area after urination since past 15 days was referred to clinics of department of Veterinary Gynaecology and Obstetrics, College of Veterinary and Animal Science, RAJUVAS, Bikaner. There were no visible changes in general body condition, except of preputial bleeding discharge along with sniffing and leaking in the genital area. The dog has normal behavior and normal appetite with routine consumption of water and diuresis. Clinical parameter of dog was normal and recorded as temperature was 102.2 °C, pulse was 78/minute, respiration 18/minute. The preputial orifice was smeared with blood. Physical examination of genitalia revealed, phimosis, ulcerated lesions in male external organs taking place with hemorrhagic discharges usually mystified with urethritis, cystitis and prostatitis (Dar et al., 2015). The incidence of metastasis is quite low and occurs in 5% or less of the cases (Sharma et al., 2012). The methods used to treat TVT are cryosurgery, radiotherapy, surgical resection and antineoplastic chemotherapy that are the protocol of choice in routine clinical treatment (Purohit, 2009; Dar et al., 2017) [11, 9]. Antineoplastic treatment may combine two or more chemotherapeutic agents (for example, vincristine and cyclophosphamide combined with methotrexate), or it can involve a single agent as vincristine (Purohit, 2009; Dar et al., 2017) [11, 9]. The present paper reports transmissible venereal tumour in a German shepherd dog and treatment with vincristine sulfate resulted in complete resolution of the TVT.
Diagnosis was made by cytological examination of localized tissue by Fine needle aspirate cytology (FNAC) as non-aspiration technique. Cytological examination revealed uniform round cells containing light colored cytoplasm with multiple vacuoles and large nucleus and a prominent, central located nucleolus and infiltration of inflammatory cells neutrophils indicated that the mass was infected and ulcerated (Fig.3). These findings were consistent with the diagnosis of TVT.

**Treatment and Discussion**

Vincristine sulphate (Vincristine, Biochem) was administered weekly @ 0.025 mg/kg, B.wt. slow intravenously in normal saline for three weeks along with the supplementation of Liv 52 (liver supplement) and Dexorange (Haematonic) 5ml each BID and the mass regressed gradually after the first dose itself and completely regressed after 3rd dose.

In the present report, the diagnosis was based on clinical signs and was confirmed by cytological examination, carried out through fine needle aspiration. Several treatments including surgery, radiotherapy, immunotherapy, biotherapy and chemotherapy have been reported for TVT (Pigatto et al., 2011 [12]). Chemotherapy has been shown to be the most effective and practical therapy, with vincristine sulphate (IV once weekly) being the most frequently used drug and for complete remission usually required 2 to 8 injections (Das et al., 1989; Bal Krishnan, 1997; Das and Das, 2000; Mello et al., 2005; Nak et al., 2005; Khan et al., 2009; Scarpelli et al., 2010; Varughese et al., 2012; Saibaba et al., 2015; Sreekumar et al., 2015; Shiju et al., 2017) [13, 14, 15, 16, 17, 18, 19, 20, 21, 22]. Mechanism of action of vincristine sulphate is inhibiting mitosis and bonded with tubulin by preventing the formation of mitotic spindles.

TVT cells that lack cytoplasmic vacuoles may be easily confused with other round cell tumors. The morphological appearance and location of the tumor however could help in the diagnosis. Mitotic figures in different stages of mitosis were prominent. This indicates the proliferating nature of the tumor cells. Immunological studies have clearly demonstrated that TVT is antigenic in the dog and an immune response against the tumor plays a major role in determining the course of the disease (Mizuno et al., 1994) [23]. Metastasis of TVT is uncommon, only occurring in puppies and immuno-compromised dogs (Purohit, 2009) [11]. Cytological evaluation is essential for diagnosis the tumors of genital tract in dogs. So, the other round cell tumors, such as histiocytoma, mastocytoma, lymphoma, plasmacytoma and melanoma were excluded (Igor et al., 2012) [24]. Cytostatic agents, such as vincristine, can cause myelosuppression and gastrointestinal effects resulting in leucopenia (Sousa et al., 2000; Silva et al., 2007; Gaspar et al., 2009) [25, 26 and 27] and when white blood cell count is below 4,000 mm³ further administration should be delayed 3 to 4 days and the dose of vincristine can be reduced to 25% of the initial dose (Dar et al., 2017) [9].

**Conclusions**

TVT is the most prevalent neoplasia of the external genitalia of the dog with complaint of hemorrhagic discharge by owners. Diagnosis is based on clinical and cytological findings. TVT can be treated by weekly IV administration of vincristine drug.

**Acknowledgement**

Authors are thankful to the head, department of VGO and head, department of Veterinary Pathology, CVAS, Bikaner for extending necessary facilities and highly acknowledge the effort of student during the management of the case.

**Conflict of interest**

Authors have no conflict of interest with any one about this manuscript.
References


