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RESEARCH ARTICLE

GENERALIZED CUTANEOUS AND GENITAL FORM OF TRANSMISSIBLE VENEREAL TUMOR (TVT) IN A MONGREL DOG AND ITS THERAPEUTIC MANAGEMENT

***Saravanan, M., Mohammed Shafiuzama, Ranjithkumar, M., Pushkin Raj, H., Satheshkumar, S., and Saahithya, R.**

Teaching Veterinary Clinical Complex, Veterinary College and Research Institute (TANUVAS)
Orathanadu, Thanjavur – 614 625, Tamil Nadu, India

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ABSTRACT

Canine Transmissible Venereal Tumor (TVT) is a commonly occurring contagious reproductive tumor of dogs affecting both sexes. A two years old intact male mongrel dog was brought to Teaching Veterinary Clinical Complex of Veterinary College and Research Institute, Orathanadu with the history of inappetence, multiple subcutaneous swellings and blood tinted urine with dysuria for the past two weeks. Physical examination multiple hard mass approximately 2-5 cm in diameter was noticed all over the body and also swelling of the prepuce area with 12cmx6cm sized mass was noticed. Penis was not able to retract due to sever inflammatory swelling of the prepuce. FNAC and impression smear was collected in subcutaneous nodules and prepuce mass. Confirmative diagnosis was made based FNAC of nodules and an impression smear of ulcerated lesions revealed cells of transmissible venereal tumor. Chemotherapy was started with Vincristine @ 0.025mg/kg b.wt IV once a week for 4 weeks along with supportive treatment. After the end of the 4th week of Chemotherapy animal was showed uneventful recovery.

INTRODUCTION

Canine transmissible venereal tumor (TVT) is a commonly occurring contagious reproductive tumor of dogs affecting both sexes. TVT is also known as infectious sarcoma, venereal granuloma, transmissible lymphosarcoma or Sticker tumor (Tella *et al*., 2004). It is classified into genital TVT and extra genital TVT, according to the tumor mass locations (Das and Das, 2000). Coitus being the usual mode of transmission, free roaming sexually intact mature dogs of either sex is at highest risk to develop TVT (Gurel *et al*., 2002). Genital TVT is transmitted via natural mating while extra-genital TVT is occurred by contact, sniffing and or licking (Otomo *et al*., 1981). Clinical signs of genital TVT are bloody vaginal or preputial discharge, intermittent or persistent ulcerative skin lesions, poor penile exposure, genital swelling and excessive licking of the genital area and the tumor size can vary from 3 to 12 cm in diameter (Nak *et al*., 2005; Park *et al*., 2006). Extra genital TVT the tumor may be transplanted to adjacent skin and oral, nasal, or conjunctival mucosae and it range in size from a small nodule (5 mm) to a large mass (>10 cm) that is firm, friable nodular structure (Das and Das, 2000). The definitive diagnosis of transmissible venereal tumor (TVT) is mainly based on physical examination and cytological features in exfoliated cells obtained from swab, fine-needle aspiration, impression smear and or by histopathology evaluation (Daleck *et al*., 1987; Michelle Kutzler, 2013). There have been many reports of genital form of TVT and cutaneous form of TVT in dogs, but reports of the both genital and cutaneous metastatic form of TVT are very few. Hence the present case reports a successful therapeutic management of a generalized cutaneous and genital form of transmissible venereal tumor (TVT) in a mongrel dog.

Corresponding author: Dr. M. Saravanan, Ph.D.,
Assistant Professor, Teaching Veterinary Clinical Complex, Veterinary College and Research Institute (TANUVAS) Orathanadu, Thanjavur - 614 625 Tamil Nadu, India.

Case presentation

A two years old intact male mongrel dog was brought to Teaching Veterinary Clinical Complex of Veterinary College and Research Institute, Orathanadu with the history of inappetence, multiple subcutaneous swellings and blood tinted urine with dysuria for the past two weeks. Physical examination multiple non fluctuating nodules more than 80 in numbers which was each approximately 2-5 cm in diameter were noticed. The variable size of the subcutaneous nodules was notices in all over the body mainly on dorsal (Fig 1a) and lateral (Fig 1b) body surface and also in face (Fig 1d), fore head, around the neck, both the thigh region, both the shoulders and fore limbs. A hard swelling of the prepuce area 12cmx6cm sized mass and ulceration was noticed (Fig 1c). Penis was not

able to retract due to sever inflammatory swelling of the prepuce. Vital sign parameters are found to normal. Hematological parameters were studies before and after therapy.

cytoplasm. Chemotherapy was started with Vincristine @ 0.02mg/kg b.wt IV once a week for 4 weeks along with supportive treatment. Clinical recovery was noticed from 2nd dose of Vincristine therapy with reduction in the size of mass.

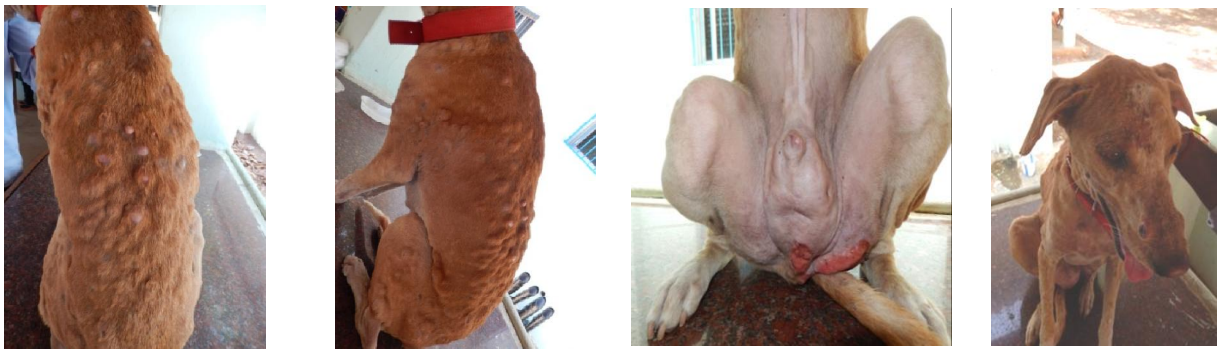

Fig. 1. Before chemotherapy

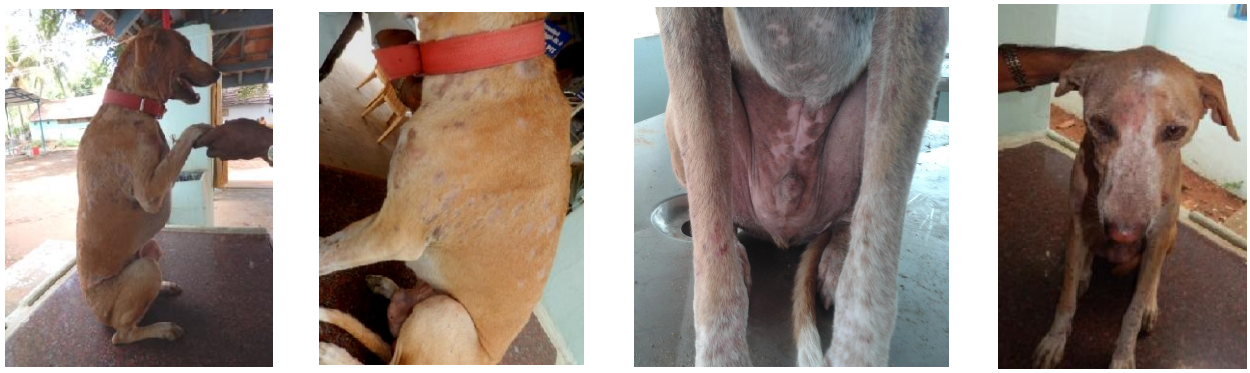

Fig. 2. After chemotherapy

Table 1. Hematological alteration before and after therapy

Parameters	Before treatment on day0	After treatment on 4th week
WBC (x10^3/µl)	14.85	14.52
LYMPHOCYTE	8.0	27.0
MONOCYTE	1.0	2.0
NEUTROPHILS	79.0	66.0
EOSINOPHLS	10.0	3.0
BASOPHILS	2.0	2.0
RBC (x10^6/µl)	6.44	6.5
HB (g/dl)	13.8	13.5
PCT (%)	38.22	39.2
MCV (fl)	59	65
MCH (pg)	21.4	23.5
MCHC (g/dl)	36.0	32.0
PT (x10^3/µl)	174.0	323.0
Interpretation	Microcytosis and Thrombocytopenia	Normal

Hematology parameters revealed normal Hb, hematocrit, total erythrocyte count and total leukocyte count (Table 1). However, microcytosis and thrombocytopenia was noticed and these become normal after 4th week of therapy. For the cytology study FNAC and impression smear was collected in subcutaneous nodules, prepuce mass and ulceration lesion on penile area. The Fine needle aspirate of the subcutaneous mass and impression smear of ulcerated mass after cytological examination confirmed transmissible venereal tumor i.e. anisocytosis with round nuclei, large nucleoli and vacuolated

After the end of the 4th week of Chemotherapy animal was showed uneventful recovery with complete regression (Fig. 2) of the subcutaneous as well as penile tumor mass.

DISCUSSION

TVT is the most prevalent tumor of the genitalia of the either sex of dog, but cutaneous form of TVT is uncommon. The etiology of TVT is not completely known, but it can transmit from affected dogs by coitus and or by natural contact (Gurel

et al., 2002). In the present case the cutaneous mass appears to be due to metastasis and spreading of tumor cells. TVTs are immunogenic tumors and the immune system of the host plays a major role in inhibiting tumor growth and metastasis (Cohen, 1985).

Clinical signs may vary according to the localization of the tumors. Dogs with genital localization have a hemorrhagic discharge. In male dogs lesions are usually localized to cranially on the glans penis, preputial mucosa and or the bulbus glandis. Tumor masses often protrude from the prepuce (Higgins, 1966) and phimosis can be a complication (McEvoy, 1987). The discharge can be confused with urethritis, cystitis, or prostatitis (Rogers, 1997). In cases with extra genital localization of the TVT and diagnosis is usually more difficult because of the TVTs cause a variety of clinical signs depending on the location of the tumor mass *viz.* sneezing, epistaxis, epiphora, halitosis and tooth loss, exophthalmos, skin bumps, facial or oral deformation along with regional lymph node enlargement (Rogers, 1997).

Hematology was indicative of marked microcytosis and thrombocytopenia owing to immunosuppressive nature of the disease, leading to secondary bacterial invasion. The hematological findings were in contrast to Das *et al*. (1991). Ulcar Igor *et al*. (2012) reported cytological evaluation tumors of genital tract in dogs are essential for diagnosis and the cytological features of the genital tumors have typical criteria of TVT. FNAC is widely used in clinics for being a simple, safe, quick, low-cost, minimally invasive and painful method, which helps to preserve cellular morphology (Schlafer and Miller, 2007; Bassani-Silva *et al*., 2003). Moreover, this technique has high accuracy for TVT diagnosis (Meinkoth and Cowell, 2002) and the monitoring of treatment (Batamuzi *et al*., 1993) regarding genital and extra-genital tumors (Amaral *et al*., 2004).

In the present case surgical removal or radiation therapy was not attempted because distribution of tumor mass all over the body and it may not only provide satisfactory response but also causes tumor recurrent. So chemotherapy was initiated with Vincristine sulfate @ 0.025mg/kg bwt IV once a week for 5 weeks. Vincristine sulfate has been widely accepted as an efficient single chemotherapeutic agent for the treatment of TVT (Mello Martins *et al*., 2005). Vincristine sulfate acts by binding to tubulin dimer which is necessary for mitosis of spindle fibers, contributing to cellular division arrested in metaphase stage (Coppoc, 2009). The typical course of Vincristine treatment is four to eight week of intravenous administration at 0.5 to 0.7 mg/m2 body surface area (BSA) (Boscos and Ververidis, 2004) or 0.025 mg/kg body weight (BW) (Das and Das, 2000; Kunakornsawat *et al*., 2009). Animal showed clinical improvement from 2nd week of chemotherapy and complete uneven full recovery was noticed after 5th weeks of Vincristine sulfate chemotherapy.

Conclusion

Vincristine sulfate dose rate of 0.025mg/kg bwt IV once a week for 4 weeks showed complete recovery from generalized cutaneous and genital form of transmissible venereal tumor (TVT) in a mongrel dog.

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