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## A RARE CASE OF TRANSMISSIBLE VENEREAL TUMOUR WITH INTERNAL METASTASIS TO SPLEEN, LIVER AND URINARY BLADDER IN A DOG

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### ABSTRACT

This report focuses on a rare metastatic transmissible venereal tumour (TVT) in a six-year-old, intact, male, non-descript dog presented with bleeding from prepuce orifice. Large hard masses could be palpated in the mid-abdominal region. Ultrasonography revealed multifocal masses in the spleen, liver and trigone of urinary bladder. Impression smears from preputial mass, tissue debris from catheterized bladder and fine needle aspirations of splenic mass revealed cells morphologically similar to TVT - plasmacytoid subtype. These findings were reinforced by histopathology. Treatment was carried out with weekly intravenous administration of vincristine sulphate at 0.6 mg/m<sup>2</sup>. Complete clinical remission and regression of visceral masses was achieved by eight weeks.

**Keywords:** TVT, Metastasis, Vincristine sulphate

### INTRODUCTION

Canine transmissible venereal tumour (TVT) is a naturally occurring reticulo-endothelial tumour of round cells, homotransplanted across major histocompatibility barriers or to other canids and is strictly host specific (Veloso *et al.*, 2018). The most frequent clinical presentation is the genital form and masses commonly appear cauliflower-like, pedunculated, lobular or multi-lobular with surface being hemorrhagic, ulcerated, and friable. The incidence of metastatic TVT in dogs has been reported to be 1.5 to 6% (Rogers *et al.*, 1998). Dissemination of tumour to spleen, kidneys, liver, lungs, mediastinum, lymph nodes, adenohypophysis, brain and eye has been described (Manning and Martin, 1970; Ferreira *et al.*, 2000; Park *et al.*, 2006). The present report describes clinical presentation and diagnosis of a rare metastatic TVT in an intact, male non-descript dog, and its therapeutic outcome.

**CASE HISTORY AND CLINICAL OBSERVATION**

A six-year-old intact, male non-descript dog weighing 17 kilograms was presented with the history of blood oozing from the prepuce. The animal was active, alert and had normal appetite. Physical examination revealed a hemorrhagic pedunculated cauliflower like mass attached to the preputial mucosa (Fig. 1).

The vital parameters were normal. Complete blood count and serum biochemistry values were within normal range. On palpation, a large hard mass



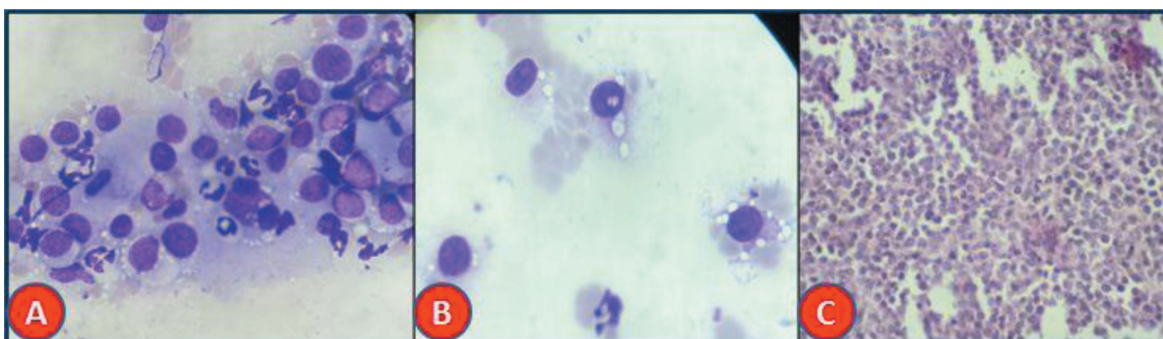
**Fig. 1:** Hemorrhagic pedunculated cauliflower like mass on preputial mucosa

could be appreciated occupying the whole mid-abdominal region. Abdominal ultrasonographic examination revealed severely enlarged spleen with multifocal masses of mixed echogenicity occupying the parenchyma (Fig. 2A). Three focal hypoechoic masses were observed in the caudate lobe of the liver (Fig. 2B). Within the urinary bladder, a few small irregular hyperechoic masses were observed attached to the wall near the trigone (Fig. 2C). The bladder was catheterised and blood mixed urine along with tissue debris and sediments were observed.

Giemsa stained smears from the preputial mass and the ultrasound guided fine needle aspirations of the splenic mass demonstrated round cells with high nucleus:cytoplasm ratio, cytoplasm with numerous punctate vacuoles, eccentric nucleus with coarse chromatin and prominent nucleoli. Anisokaryosis and anisocytosis were also observed (Fig. 3A&B). Histopathological examination



**Fig. 2:** Ultrasonographic appearances of spleen (A), liver (B) and urinary bladder (C)



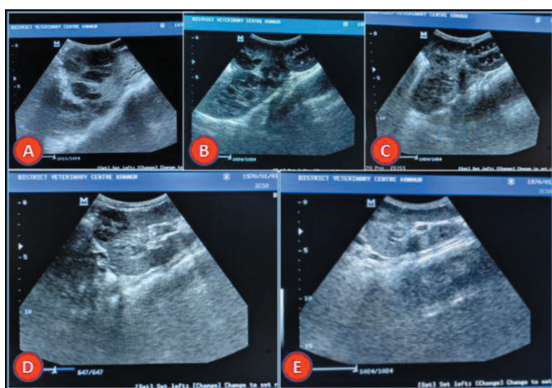
**Fig. 3:** **A.** Impression smear of preputial mass (Giemsa stain, 100X); **B.** FNAC of splenic mass (Giemsa stain, 100X); **C.** Histopathology of bladder mass (H&E stain, 40X)

of tissue debris from catheterized bladder (3mm×1mm×1mm) revealed sheets of round cells with large prominent nucleus with fine chromatin, prominent nucleolus and moderate amount of cytoplasm. Frequent mitotic figures were also observed (Fig. 3C). The findings were highly suggestive of transmissible venereal tumour of plasmacytic type.

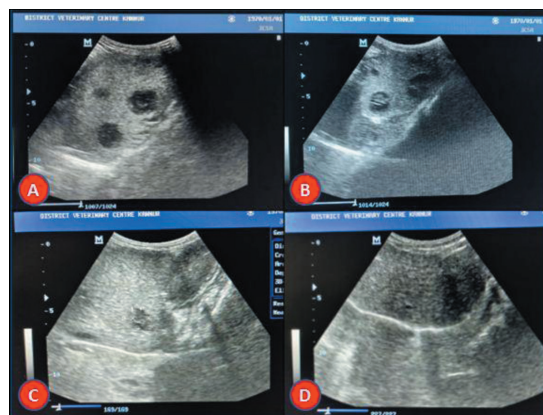
**TREATMENT AND DISCUSSION**

Chemotherapy was initiated with vincristine sulphate at the rate of 0.6 mg/m<sup>2</sup> IV along with ondansetron at the rate of 0.2

mg/kg IV and was repeated once every week. Regression of preputial mass was clinically evident by the second week of treatment. The chemotherapy was continued for six more weeks based on the ultrasonographic assessment of the rate of regression of metastatic mass. Complete regression of the bladder mass was observed by the 4<sup>th</sup> week and the splenic and hepatic masses by the 8<sup>th</sup> week of treatment (Fig. 4,5&6). The splenic size reduced considerably and the hemato-biochemical parameters were within the normal limits during the course of treatment.

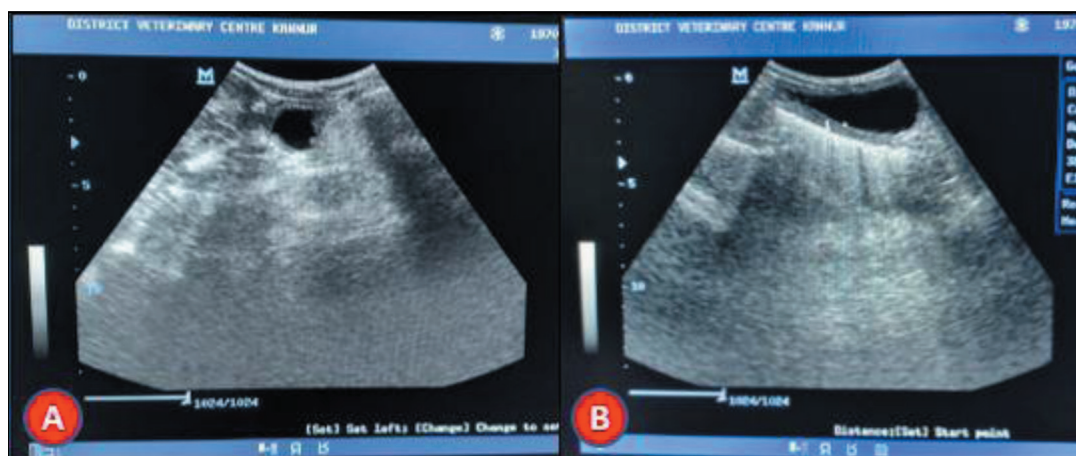


**Fig. 4:** Ultrasonographic appearance of splenic mass on day 1 (A), and its regression by 2<sup>nd</sup> (B), 4<sup>th</sup> (C), 6<sup>th</sup> (D) and 8<sup>th</sup> week (E) post treatment.



**Fig. 5:** Ultrasonographic appearance of hepatic mass on day 1 (A), which gradually regressed by the 2<sup>nd</sup> (B); 4<sup>th</sup> (C) and 8<sup>th</sup> week (D) post treatment





**Fig. 6:** Ultrasonographic appearance of urinary bladder masses on day 1 (A), which gradually regressed by the 4<sup>th</sup> week (B)

Canine TVT is generally transmitted among dogs through the implantation of viable tumour cells on the surface of damaged mucous membranes (Rezae *et al.*, 2016; Veloso *et al.*, 2018). Though TVT is primarily confined to genital areas, but metastasis onto skin, oral and nasal mucosa have been reported (Rogers *et al.*, 1998; Levy *et al.*, 2006; Mylonakis *et al.*, 2008). Dissemination of neoplasia to visceral organs such as spleen and liver as in the present case has been rarely reported (Park *et al.*, 2006). The visceral metastasis into the bladder wall observed in the present case was not previously reported. Although hematogenous or lymphatic route of dissemination of tumour cells have been described in immunocompromised adult dogs (Park *et al.*, 2006), it was surprising to observe diffuse metastatic lesions of a rarely disseminating tumour even in a patient without any concurrent diseases

causing immunosuppression. In the present case, the morphology of cells on cytological evaluation corresponded to the plasmacytic form and a higher chance of malignancy for the plasmacytic forms compared to the lymphocytic and mixed pattern have been demonstrated by doAmaral *et al.* (2007). Chemotherapy using vincristine sulfate at the rate of 0.6 mg/m<sup>2</sup> IV was effective in the management of TVT in the present case. Clinical regression of tumour mass was observed by the subsequent week and hence was continued for six more weeks based on ultrasonographic evidence. The involution of the mass was gradual, although the changes were significantly noticeable at the beginning of the treatment.

## SUMMARY

A rare case of metastatic TVT in a six-year-old, intact, male, non-descript dog; its clinical, ultrasonographic, cytological and

histopathological findings along with the treatment and its outcome was discussed.

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