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## Cytological evaluation of extra-genital cutaneous form of transmissible venereal tumour in a prepubertal dog

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### Abstract

A seven-month-old non-descript female dog was presented with multiple nodular lesions disseminated over the body. The nodules has increased in size according to owner for the past one month. Physical examination of the dog was done and a fine needle aspiration was done to rule out tumour. Cytologic preparations of the lesions revealed a uniform population of discrete round to oval cells with coarse chromatin, and lightly basophilic cytoplasm that contained multiple distinct vacuoles. Frequent mitotic figures and occasional lymphocytes were also observed. Which was suggestive of cutaneous transmissible venereal tumour (TVT). This is an unusual form of TVT and unique without mucosal involvement. Despite the atypical clinical presentation, response to chemotherapy with vincristine was excellent, leading to regression.

**Keywords:** Transmissible venereal tumour, dog, nodule, cytology

### Introduction

Cutaneous masses or nodules can occur in dogs due to a multitude of underlying causes such as infectious conditions, granulomatous and non-granulomatous (Santoro 2008) <sup>[10]</sup>, cancer, parasites, allergic conditions or cysts, and many more (Scott 2001) <sup>[11]</sup>. The underlying causes can lead to abnormally rapid cell division or accumulation of inflammatory cells resulting in swelling of the surrounding tissues or fluid development in cysts or abscesses. The treatment plan and the prognosis depend on identification of the underlying cause. As the presenting case being a young animal, it is extremely important to determine the precise cause of nodular lesions which could help in effective treatment plan.

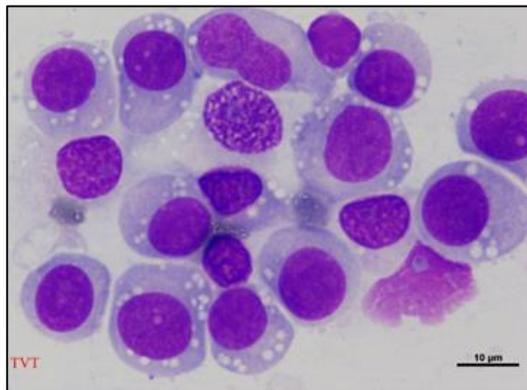
### Materials and Methods

#### Case history and observations

A non - descript female dog, approximately 7 months of age, weighing about 6.2 kg body weight, was presented to Eden pets care, a private pet clinic in Chennai with a history of several cutaneous nodular lesions over the body. The lesions were noticed first before a month and the nodules have increased in size and number over the period of time. At the time of presentation, lesions were observed over the cervical, back, flank and ventral abdominal regions ranging from 0.5 to 1.5 cm in diameter. Most lesions were firm, nodular, and subcutaneous, while one nodule was mildly ulcerated. According to the owner, the dog was mostly outdoor and was in contact with stray dogs. The animal was apparently healthy on presentation. The nodules were sub-cutaneous and was hard to palpate. No pain was evinced on palpation of the nodules. No other clinical signs of concern were observed during the clinical examination. Samples of the cutaneous nodules were collected by fine needle aspiration for cytological examination to rule out hyperplasia and or tumour.

### Results

Cytological evaluation of the fine needle aspirate showed numerous discrete round cells with coarse chromatin and fine cytoplasmic vacuoles and mitotic figures (Fig.1) which is suggestive of cutaneous form of TVT.



**Fig 1:** Cytological evaluation of cutaneous nodules showing cell changes

Several treatments including surgery, radiotherapy, immunotherapy, biotherapy and chemotherapy (Martins 2005)<sup>[6]</sup> are available for treatment of TVT depending on the severity of the lesions. Vincristine sulfate (VCR) is efficiently used as a mono-chemotherapeutic drug (Sreekumar 2015)<sup>[12]</sup> for CTVT worldwide. In this study, upon confirmation of TVT, the dog was treated with vincristine (0.025–0.050 mg/kg, *i.v.*) once weekly for three weeks. The nodules regressed completely after three weeks of treatment.

### Discussion

TVT is a contagious tumour of dogs that spreads mostly by coitus or by social behaviours such as licking, scratching, biting or sniffing tumour affected areas (Martins 2005)<sup>[6]</sup>. TVT is not by infectious agent but due to allogenic transfer of tumour cells (Strakova 2015)<sup>[13]</sup>. The primary manifestation of TVT is the genital system, while extragenital forms of the tumour were also reported in oro-nasal cavity (Amber 1986)<sup>[2]</sup>, CNS (Pinczowski 2015)<sup>[8]</sup>, eyes (Rodrigues 2001)<sup>[9]</sup> and several other metastatic forms also has been described (Faccini 2015)<sup>[4]</sup>. The presented case, with cutaneous nodules is a extragenital form of TVT, which is highly atypical (young dog, no mucosal involvement which was confirmed on the next visit) and a similar form was reported by Marcos, 2006<sup>[5]</sup>. The reasons for the occurrence of TVT in the young dog could be attributed to the social related modes of transmission. It may be possible that neoplastic cells could be inoculated through skin during cohabitation (Marcos 2006)<sup>[5]</sup>, enabling transposition of the tissue to a healthy animal by contact between skin and damaged mucosa (Martins 2005)<sup>[6]</sup>. The severity of the lesions could be related to the severe immunosuppression and young age of animal (Pe'rez 1998)<sup>[7]</sup>. Although the case was atypical in presentation, the cytological findings were identical to those described for genital form of TVT (Ayyapan 1994, Amaral 2007)<sup>[3, 11]</sup>. Though several modes of treatment were available, treatment with vincristine sulphate, a natural alkaloid has proved to be a successful chemotherapeutic agent in this cutaneous form of TVT.

The findings of this case have provided us with a better insight in approaching small animal clinical patients that are being presented with cutaneous nodular lesions without any genital involvement. Identification of the lesions by cytological examination has provided a rapid and easy method in early identification with better treatment outcomes.

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