

# Transmissible venereal tumor in the palpebral conjunctiva of a dog: case report

## Tumor venéreo transmissível na conjuntiva palpebral de um cão: relato de caso

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### Abstract

The transmissible venereal tumor (TVT) is a contagious neoplasm that occurs in sexually mature dogs, usually transmitted by coitus. This tumor normally affects the genital mucosa and is rarely found in any other part of the body. A case of transmissible venereal tumor in the palpebral conjunctiva of a 3-year old, crossbreed, male dog with a history of an abnormal mass in the right eye was presented. Ophthalmic examination revealed a mass originated from the lower eyelid conjunctiva of the right eye. No other ocular abnormalities were detected. Cytological examination was carried out and the diagnosis was TVT. The dog was treated with lyophilized vincristine sulphate intravenously, once a week, for four weeks. Despite the atypical clinical presentation, the response to chemotherapy with vincristine was excellent leading to complete regression of the neoplasm and no relapse after a year.

**Key words:** Dog, eye, conjunctiva, TVT

### Resumo

O tumor venéreo transmissível (TVT) é uma neoplasia contagiosa que ocorre em cães sexualmente maduros, sendo geralmente transmitido pelo coito. A neoplasia normalmente afeta a mucosa genital e é raramente encontrada em outras partes do corpo. Apresentamos um caso de tumor venéreo transmissível na conjuntiva palpebral de um cão macho, sem raça definida, com três anos de idade e histórico de presença de uma massa na conjuntiva palpebral inferior do olho direito. Não foram detectadas outras alterações oculares. O diagnóstico citológico da massa foi TVT. O cão foi tratado com sulfato de vincristina por via intravenosa, uma vez por semana, durante quatro semanas. Embora a apresentação do caso seja atípica, a resposta à quimioterapia foi excelente, levando a regressão completa da neoplasia, sem recorrência após um ano.

**Palavras-chave:** Cão, olho, conjuntiva. TVT

### Introduction

Hujard, in 1820, first described the canine transmissible venereal tumor (TVT) or Sticker's sarcoma. With unusual properties and

unconventional clinical development, TVT is a naturally occurring neoplasm in dogs exclusively contaminated primarily by sexual contact and possibly by direct contact related to their social

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behavior (BRIGHT et al., 1983; ROGERS; WALKER; DILLON, 1998). Metastases of the disease are unusual, occurring in approximately 1.5 to 6 per cent of the infected dogs (BROWN; CALVERT; MACEWEN, 1980; ROGERS; WALKER; DILLON, 1998) at regional lymph nodes, skin, lips, buccal and nasal mucosa (YANG, 1987; KROGER; GREY; BOYD, 1991; MOZOS et al., 1996; ROGERS; WALKER; DILLON, 1998). Metastases occur less frequently at nasal passages, liver, pancreas, spleen, brain, lungs, kidney and eye (AMBER; ADEYANJU, 1986; NAYAK; SAMADDAR, 1988; MILLER; ALBERT; BOOSINGER, 1990; MOZOS et al., 1996; BOSCOS et al., 1998; PEREIRA et al., 2000; RODRIGUES; ALESSI; LAUS, 2001).

Transmission occurs by inoculation of intact neoplastic cells in the damaged mucosa or skin (YANG, 1987; KROGER; GREY; BOYD, 1991). The eye has been reported as a site for the extra-genital occurrence of TVT with no additional lesions presented (NAYAK; SAMADDAR, 1988; MOZOS et al., 1996).

Clinical signs exhibited by affected dogs are intermittent or persistent serum-sanguineous preputial or vaginal discharge, genital swelling, and excessive licking at the genital area. Unpleasant odor or appearance of visible neoplastic masses may also be present (ROGERS; WALKER; DILLON, 1998; SANTOS et al., 2005). In the case of extra-genital or metastatic occurrence, clinical signs are related to the affected organ (NAYAK; SAMADDAR, 1988; MOZOS et al., 1996); when affecting the eye, the symptoms range from chemosis to episcleritis, severe uveitis, corneal edema and glaucoma (PEREIRA et al., 2000).

Diagnosis is based on anamnesis and gross

and histological evaluation of the tumor. Qualitative differences between genital and extra genital tumors are not observed. Microscopic confirmation is often performed by cytological impression and fine needle aspiration. When stained by giemsa, it reveals large spherical, polyhedral or oval cells, uniform in size and with a single round hyper-chromatic nucleus. The nucleolus is large, prominent, central or eccentric with moderate number of mitotic figures. The cytoplasm is slightly eosinophilic, containing multiple clear vacuoles, often arranged in chain (YANG, 1987; BROWN; CALVERT; MACEWEN, 1980; KROGER; GREY; BOYD, 1991; SANTOS et al., 2005).

With a few exceptions, TVT remains endemic in the world, obviously because of the uncontrolled population of stray dogs and the inadequacies of exerting effective treatments.

The purpose of this paper is to describe an unusual clinical case of a dog with primary TVT in the palpebral conjunctiva, without genital infection, that was treated successfully with vincristine sulphate.

## Case Report

A three-year-old, mixed breed, male dog was referred to the Ophthalmology Section of the Veterinary Hospital of the Federal University of Rio Grande do Sul with a complain of a red mass in the right eye. The patient had suffered from chronic epiphora and ocular discharge for 3 months. The dog was well nourished and in good physical condition. Ophthalmic examination revealed a 1cm diameter reddish mass, located at the right conjunctiva of the lower eyelid (Figure 1).



**Figure 1.** Gross appearance of the right eye at presentation. A mass originated in the lower eyelid conjunctiva.

The eye presented epiphora. Schirmer's tear test<sup>1</sup> value was increased (31 mm OD) and Fluorescein<sup>2</sup> stain was unremarkable. No other ocular abnormalities were detected. The left eye was normal. Sampling for cytological examination of the mass was conducted using fine needle aspiration. Results of a complete blood count and serum biochemical profile were within the laboratory reference range.

Clinical evaluation of the animal showed no abnormalities and tumors were not found anywhere else.

Cytological examination revealed uniform round cells containing light colored cytoplasm with multiple vacuoles and large nucleus and a prominent, central located nucleolus. These

findings were consistent with the diagnosis of TVT. The dog was treated weekly receiving lyophilized vincristine sulphate<sup>3</sup> at a dose of 0.025mg/kg intravenously for four weeks. The dog was kept in a separate kennel throughout the treatment period.

Clinical and laboratory analysis (i.e. CBC) were performed weekly with no major changes being observed.

Significant remission of the lesion was noticed before the second vincristine injection (Figure 2A). Complete remission of the TVT was observed three weeks after initial treatment. (Figure 2B). Periodic evaluations every 3 months were carried out and there were no signs of recurrence after one year.



**Figure 2A.** Gross appearance of the right eye after 7 days of treatment. **Figure 2B.** Conjunctiva of the right eye after 21 days of treatment.

## Discussion

TVT is a canine, sexually transmitted, neoplasm that can be transmitted by licking and contact with several mucous membranes (MILLER; ALBERT; BOOSINGER, 1990; MOZOS et al., 1996). Sticker's tumors are more commonly found in sexually mature dogs aged between 2 and 5 years old (MILLER; ALBERT; BOOSINGER, 1990). In this case, the animal was within the risk group.

Normally, TVT is confined to the mucous membranes of the external genitalia of both male and female dogs. Metastases occur in less than 5% of cases at regional lymph nodes, skin, lips, buccal, and nasal mucosa (BROWN; CALVERT; MACEWEN, 1980; ROGERS; WALKER; DILLON, 1998). Less frequently, it may occur in nasal passages, liver, pancreas, spleen, brain, lung, kidney and eye (AMBER; ADEYANJU, 1986; NAYAK; SAMADDAR, 1988; MILLER; ALBERT; BOOSINGER, 1990; MOZOS et al., 1996; BOSCO et al., 1998; PEREIRA et al., 2000; RODRIGUES; ALESSI; LAUS, 2001). Although it is rare, extra genital canine TVT has been reported (NAYAK; SAMADDAR, 1988, MARCOS et al., 2006). The involvement of the ocular surface by TVT is uncommon.

In the present case, the tumor was located in the palpebral conjunctiva without primary genital

lesions which, to the author's knowledge, have not been reported. In such cases, the absence of primary genital tumor has been attributed to the social behavior of the dog (BRIGHT et al., 1983; ROGERS; WALKER; DILLON, 1998). Most extra-genital cases of canine TVT result from either hetero-implantation or auto-implantation (RODRIGUES; ALESSI; LAUS, 2001). In addition, clinical signs vary according to the location of the tumor. Dogs with genital location have serosanguineous preputial or vaginal discharge, genital swelling and excessive licking at the genital area. Unpleasant odor or appearance of visible neoplastic masses may also be present (ROGERS; WALKER; DILLON, 1998; SANTOS et al., 2005). In cases of ocular occurrence, chemosis, severe uveitis and glaucoma have been reported (PEREIRA et al., 2000). In the case reported here, the only sign was epiphora and the mass itself.

Definitive diagnosis is based on physical examination and cytological findings, which are obtained through swabs, fine needle aspirations or imprints of the tumor (BROWN; CALVERT; MACEWEN, 1980; KROGER; GREY; BOYD, 1991). In the present report, the diagnosis was based on clinical signs and was confirmed by cytological examination, carried out through fine needle aspiration. Cytological appearance was similar to the one previously described as canine TVT.

Differential diagnosis of TVT includes cutaneous lymphoma, cutaneous histiocytoma and mast cell tumors (PEREIRA et al., 2000; SANTOS et al., 2005). Metastases were not found in any place.

Several treatments including surgery, radiotherapy, immunotherapy, biotherapy, and chemotherapy have been reported for TVT (BROWN; CALVERT; MACEWEN, 1980; CALVERT; LEIFER; MACEWEN, 1982). Normally, the intravenous administration of vincristine at the dose of 0.6 mg/m<sup>2</sup> to 0.8mg/m<sup>2</sup> of body surface, once a week, for 2-6 weeks, is the treatment of choice regardless of the neoplasm size, extent, and duration of the disease (CALVERT; LEIFER; MACEWEN, 1982; ROGERS; WALKER; DILLON, 1998; TELLA; AJALA; TAIWO, 2004). In the present report, the four-week regimen of intravenous administration of vincristine sulphate at 0.025mg/kg body weight, alone, was very effective for complete remission of the tumor. Its regression was clinically evident within the first week of treatment. A complete remission usually takes 2 to 8 injections (CALVERT; LEIFER; MACEWEN, 1982; TELLA; AJALA; TAIWO, 2004), and, in the present case, occurred in 21 days, being followed by another week of treatment. No recurrence has been observed after a year.

In case of failure, radiotherapy provides excellent results; alternatively, doxorubicin chemotherapy may be applied (BROWN; CALVERT; MACEWEN, 1980). Side effects following administration of vincristine such as myelosuppression, gastrointestinal effects, and paresis, due to peripheral neuropathy, have been correlated with and may occur in 5 to 7% of the patients (CALVERT; LEIFER; MACEWEN, 1982; TELLA; AJALA; TAIWO, 2004). The occurrence of local tissue reactions caused by extravasation of the drug during IV administration is a common complication (CALVERT; LEIFER; MACEWEN, 1982; TELLA; AJALA; TAIWO, 2004).

A complete white blood cell count is recommended prior to each vincristine administration and when it is below 4.000 mm<sup>3</sup>, further administration should be delayed for a few days. The dose might also be reduced to 25% of the initial dose (CALVERT; LEIFER; MACEWEN, 1982). In the present case, however, such complications were not observed and the reduction of the dose or delay in the treatment was not necessary as it was demonstrated by the weekly blood count.

This paper reports an unusual site of TVT location without genital lesions and it should be considered as a differential diagnosis for diseases occurring at the ocular surface of dogs. It also emphasizes the importance and success of early treatment.

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