CASE REPORT
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CYTOLOGICAL DIAGNOSIS & THERAPEUTIC MANAGEMENT OF OCULAR TRANSMISSIBLE VENEREAL TUMOR: A CASE REPORT

Abhijith S.P.[1], Sachin S.[2] and Sherin B. Sarangom[3]

[1,2]Veterinarian, [3]Veterinary Surgeon District Veterinary Centre, Kannur

Corresponding author: abhijithsp560@gmail.com

Abstract

Canine transmissible venereal tumor (TVT) is a naturally transmissible cauliflower like pedunculate, nodular, multi lobulated reticuloendothelial mass affecting the canine species. This tumour is usually seen in young sexually mature stray dogs with uncontrolled reproductive activity involving external genitalia mostly. A seven-year-old intact male dog was presented with unilateral ocular discharge, conjunctivitis, exophthalmos and ulcerated edges with multiple punctate haemorrhages on the right eye. Impression smear method was adopted to visualize the cellular morphology& the case was diagnosed as Ocular form of transmissible venereal tumour. The present paper reports ocular form of transmissible venereal tumour in a non-descript dog and treatment with vincristine sulfate which resulted in complete resolution of the TVT.

Keywords: Vincristine sulphate, venereal transmissible tumour, sticker tumor

Introduction

Canine transmissible venereal tumor (TVT) is a naturally transmissible cauliflower like pedunculate, nodular, multi lobulated reticuloendothelial mass affecting the canine species. TVT is transmitted horizontally among dogs after coitus mediated by the viable tumor cells possessing transposons (Rogers, 1997). The tumor may also spread through common social behavior such as sniffing, licking, scratching, or biting. As the disease is usually transmitted during coitus, it mainly occurs in young, sexually mature animals (Rogers *et al.,* 1998). Dam-to-pup transmission may also occur through grooming. This viable tumor cells mainly effects the genital region whereas extra-genital cases of TVT has also been discovered and treated. Extra-genital region includes nasal cavity, conjunctiva and eye, skin, buccal and anal mucosa (Barron *et al.,* 1963).

Extragenital involvement is

observed following social behavior, licking or scratching (Albanese *et al.,* 2002). Metastasis is uncommon (5%) and can occur without a primary genital tumor present. When metastasis occurs, it is usually to the regional lymph nodes; however, kidney, spleen, eye, brain, pituitary, skin and subcutis, mesenteric lymph nodes, and peritoneum may also be sites. The incidence of metastatic TVT in dogs has been reported to be 1.5 to 6% (Rogers, 1997). TVT cells are round with large round nuclei that possess coarse chromatin and single, prominent nucleoli. The cells contained prominent cytoplasm with distinct vacuolation. Extra genital form occurs due to licking of the vagina and preputial discharge (Komnenou *et al.,* 2015). Normal canine somatic cells have 78 chromosomes, but these tumorous cells have an abnormal number of chromosomes ranging from 57 to 59 (Thomas *et al.*, 2009).Cytology is the method of choice for diagnosis since it is rapid, simple and presents little invasiveness (Amaral *et al.,* 2007). Chemotherapy is considered the most effective and practical method for TVT treatment, and vincristine sulfate is the drug of choice that is commonly employed (Nak *et al.,* 2005). Diagnosis of TVT is based on the history, clinical signs, cytology and histopathology. The tumor diagnosis is based on a physical examination and a cytological or histological analysis. Several treatments, including surgery, radiotherapy, immunotherapy and chemotherapy, have been applied for TVT (Das *et al.,* 2000).

Case History & Observations

A 7-years-old, 15-kg, intact, mixed breed, male dog was presented with unilateral bulging in right eye, epiphora and ulcerative nodular lesions. Anamnestic data revealed normal body vitals including temperature of 102.5^{o}C and pulse of 80/ minute. No abnormalities were found on the examination of other parts of the body such as external genitalia. The vital parameters were normal. Complete blood count and serum biochemistry values were within normal range. The thoracic radiograph revealed no appreciable pathological lesions.

Upon ophthalmological examination, the right third eyelid was prominent, light pink in colour with diffuse punctate, raised lesions **(Fig.1.)**. A neuro-ophthalmic examination showed the eyes to be normal bilaterally. The right conjunctiva was noticeably more swollen with punctate haemorrhages, scalloped edges, and several lobulated masses evident. Blood-tinged ocular discharge with multiple nodular reddish masses around the eye were seen. The left eye was normal. Tear production, intraocular pressures, and a fundoscopic examination were normal in both eyes.

The cellularity of the impression smear was high. The predominant cells observed were the round cells with pale blue cytoplasm having punctate vacuolation. The nucleus was round with coarse chromatin pattern, prominent nucleolus and were eccentrically placed. Atypical features like anisocytosis, anisokaryosis and high nucleus: cytoplasmic ratio was present. Mild number of degenerated neutrophils and small lymphocytes were also present **(Fig 2)**. All of the above findings with history and clinical signs were suggestive of Canine Transmissible Venereal Tumour.

Treatment & Discussions

Upon cytological confirmation of the case as ocular form of transmissible venereal tumour, Vincristine sulphate monotherapy was advised as the treatment protocol. Chemotherapy was initiated with Vincristine sulphate (Onvinc, Neon Laboratories, Mumbai) at the rate of 0.025mg/kg IV. Along with chemotherapy, Ondansetron (Neomit, Neon Laboratories, Mumbai, Maharashtra) @ 0.5 mg/kg IV and Pantoprazole (Pantop, Aristo Pharmaceuticals, Bengaluru, Karnataka) @ 1 mg/kg IV was repeated once every week. Methyl cobalamin supplements was advised as spinal hyporeflexia is one of the major side effects of Vincristine therapy. Every week Ivermectin was also administered subcutaneously as it induces desirable retention of vincristine inside tumour cells *(*Ferreira Bulhosa, *et al*. 2020). Regression of ocular mass was clinically evident by the third week of treatment. The chemotherapy was continued for 4 more weeks based on the rate of regression of ocular mass. Complete regression of the ocular mass was observed by the 5th week **(Fig 3)**.

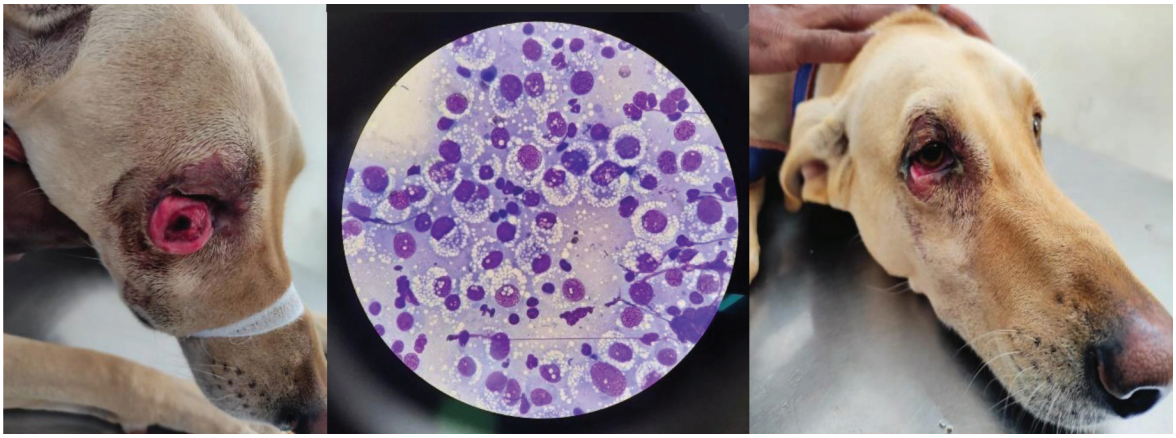

Fig 1.1 Fig 1.2 Fig 1.3

Fig 1.1: Prominent right third eyelid, with diffuse punctate, raised lesions;
Fig 1.2: Round cells with pale blue cytoplasm having punctate vacuolation;
Fig 1.3: Complete regression of the ocular mass was observed by the 5th week

Vincristine is the most commonly used mitotic inhibitor in veterinary medicine. It is employed in the treatment of lymphoreticular neoplasms, carcinomas, and sarcomas in dogs and cats and transmissible venereal tumors (TVT) in dogs. It is a component of several combination protocols and may also be useful as a single agent for treating TVT. It may produce a peripheral neurotoxicity, (neural tissue has a high concentration of tubulin protein), neuromuscular weakness, and constipation secondary to autonomic neuropathy. 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).

Summary

A 7-years-old, 15-kg, intact male dog was presented with unilateral bulging in right eye, epiphora and ulcerative nodular lesions. Impression smear method was adopted to visualize the cellular morphology & the case was diagnosed as Ocular form of canine transmissible venereal tumour. Mostly transmissible venereal tumour cases are presented with clinical signs attributed to reproductive organs and lesions pertaining to nasal region is least made as a differential diagnosis. Chemotherapy with vincristine was adopted. After 5 weeks of therapy the tumour mass was completely reduced.

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