TANGENCE
Number 137, 2025

ISSN: 1710-0305
PISSN: 1189-4563

High-Grade Extragenital Canine Transmissible Venereal Tumor of the Skin in a Pointer Dog. First Report in Iran

Morteza Ezatikakalar[1*], Frakhondeh Fahim Dezhban[2], Sina Sabour Razlighi[3], Farshid Talebian Kiakalaye[4], Ahad Muhammadnejad[5]

[1]Department of Internal Medicine, Faculty of Veterinary Medicine, University of Tehran,Tehran-Iran.
[2]Department of Surgery and Radiology, Faculty of Veterinary Medicine, University of Tehran, Tehran-Iran.
[3]Department of Internal Medicine, Faculty of Veterinary Medicine, University of Garmsar,Garmsar-Iran.
[4]Department of Parazitology, Faculty of Veterinary Medicine, University of Karaj,Karaj-Iran.
[5]Cancer Biology Research Center,Cancer Institute,Tehran University of Medical Sciences,Tehran,Iran.

[*]Correspondence: Morteza Ezatikakalar. DVM

E-mail: sinasaboor65@gmail.com

ABSTRACT

Canine transmissible venereal tumors (TVT) are cauliflower-like, pedunculated, lobulated mass in appearance. TVT may be solitary or multiple and are almost always located on the genitalia. They may be transplanted to adjacent skin and oral, nasal, or conjunctival mucosae. The tumor is transplanted from site to site and dog to dog by direct contact with the mass (1). A pointer dog with a history of preputial bloody discharge, abnormal subcutaneous masses, weight loss and hyporexia was referred to internal medicine section of small animal hospital of University of Tehran. Physical examination revealed non-painful, freely movable, generalized subcutaneous masses and a small nodular lesion (<5mm) in dorsal region of penis. The final diagnosis as TVT was made from cytologic, clinical and histologic findings. The patient was treated with vincristine sulfate intravenously, once a week, for four weeks. The response to chemotherapy with vincristine was excellent leading to regression of the lesions.

KEYWORDS

Dog, Skin, Transmissible venereal tumors.

Introduction

TVT affects the external genitalia and other mucous membranes. It is mainly seen in dogs and bitches in tropical and subtropical countries however due to the increase of exchanges between countries it is become less rare to have animals presented with this condition. This tumor is now more common in Mediterranean countries (2). Hujard, in 1820, first described the canine transmissible venereal tumor (TVT) or Sticker's sarcoma (3). TVT is the most common penile neoplasm in dogs. This tumor is a naturally occurring neoplasm and its transmission occurs by inoculation of intact neoplastic cells in the damaged mucosa or skin (4,5), by sexual contact and possibly by direct contact related to social behavior (6,7). Common Clinical signs include intermittent or persistent serum-sanguineous preputial or vaginal discharge, genital swelling, and excessive licking at the genital area. This round cell tumor rarely metastasizes. It is readily diagnosed via cytology with large spherical oval cells, uniform in size and with a single round hyper-chromatic nucleus. The nucleolus is large, central or eccentric. The cytoplasm is slightly eosinophilic, containing multiple clear vacuoles (4,5,8,9). TVT is usually curable with vincristine (0.5 mg/m2 IV weekly). The number of treatments required varies. Lesions tend to

ISSN: 1710-0305
PISSN: 1189-4563

resolve within 2 weeks of first treatment, but therapy should be continued for 1 to 2 doses beyond complete visible resolution. Lesions that are resistant to chemotherapy may be successfully treated with radiation therapy (10).

The aim of this article is to report the unusual clinical manifestation of TVT (extragenital) in subcutis region of a pointer dog that was treated successfully with vincristine sulfate.

Case Report

A four years of old male pointer, weighing 25 kg was referred to small animal hospital of University of Tehran with chief complaint about the presence of subcutaneous tumor-like lesions, with approximately one month evolution, haematuria, hyporexia and weight loss. The patient was raised outdoor as a guard dog with another female pointer with unclear history of mating. The vaccination and worming protocol were normal. No abnormality was found at physical evaluation except bilateral subcutaneous masses on flank, chest, abdominal area and limbs, and a small nodular lesion (<5mm) in dorsal region of penis with mild bloody discharge. Most of those subcutaneous lesions were partially movable, well circumscribed, and with firm consistency, smooth shape, with size range of 0.5-6 cm of diameter. A healed skin ulcer was found on the surface of one mass.

Smears by the technique of fine needle aspiration (FNA) and biopsy samples were produced, the biopsy specimens within 10% formalin, were sent to pathology lab.

After gross evaluation, histological possessing was done and sections with dimension of 5 microns were produced and stained with H&E.

Cytology study revealed the presence of round shaped cells and few basaloid cells with severe nuclear pleomorphism and Mitotic figures, Anisocytosis and anisokaryosis also were severe, and many neoplastic cells with vacuolated cytoplasm were seen.

In biopsy study high number of malignant cells arranged in solid sheets and cluster shape which in most of them nuclear pleomorphism, and mitotic index were in high grade, with N/C ratio ranged from moderate to severe. minimal focal necrosis and some Microcalcifications were identifiable in these samples. It should be noted that vascular invasion was not seen at all, and all surgical margins were free.

Based on the presence of the basaloid cells in cytology and surgical pathology, for more evaluation and ruling out Basal cell carcinoma (BCC), tumor samples were sent to IHC laboratory. At first, 3 microns sections were produced and after deparaffinization, the samples were exposed to CK, Vimentin (for determine origine of the tumoral cells), P53, and Ki-67 (proliferation) antibodies by the technique of immunoproxidase.

Results of IHC study revealed that CK AE1/AE3 was negative (Fig 1) and Vimentin was scattered (Fig 4), these results ruled out the presence of BCC. on the other hand P53 was over than 30% immunoreactive (Fig 3) and Ki-67 index (proliferation) was over than 60% immunoreactive (Fig 2). The positive results of P53 and Ki-63 were revealed that the malignancy level and invasive potential of tumor were high. Based on these results periodic monitoring for invasion, metastasis and finally recurrence was recommended.

ISSN: 1710-0305
PISSN: 1189-4563

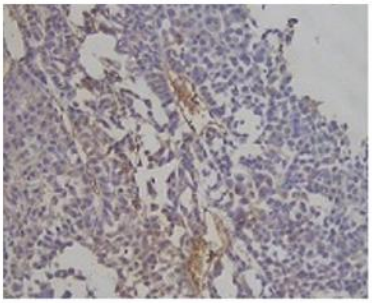

Figure 1 (CK AE1/AE3 staining)

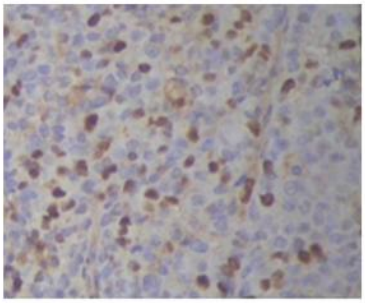

Figure 2 (Ki-67 staining)

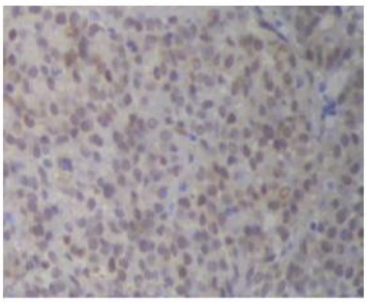

Figure 3 (P 53 staining)

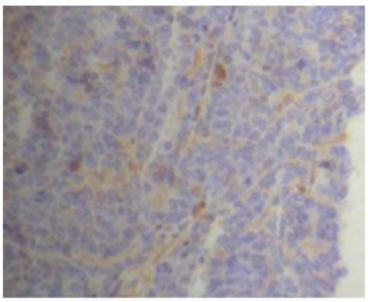

Figure 4 (Vimentin staining)

In diagnostic procedures ultimately ultrasonography revealed, structural capsulated masse, with soft tissue appearance and mild central and peripheral blood supply.

After definitive diagnosis treatment was began with vincristine sulfate intravenously at a dose of 0.5 mg/m² per week. Treatment was continued 2 weeks after complete regression of the all lesions. (for a total of six applications). Through the period of treatment body condition was improved. Reevaluation of the patient after one month showed no signs of recurrence.

Conclusion

TVT is a naturally occurring allograft of exfoliated cells that is seeded into the mucosa of the host during coitus or oronasal contact. The tumor has a chromosome number (3) different from the host (11). Metastases occur in less than 5% of cases at regional lymph nodes, skin, lips, buccal, and nasal mucosa (7,9). Less frequently, it may occur in nasal passages, liver, pancreas, spleen, brain, lung, kidney and eye (12,13,14). The verification of metastasis is rare and occurs mainly when the tumor persists for several months and when animals are immunocompromised or very young. Although it is rare, extra genital canine TVT has been reported (13). Usually the neoplastic mass is located in the external genitalia. However sometimes can arise in unusual areas such as the subcutaneous tissue, perineal and anal regions, conjunctiva, third eyelid, pharynx and nasal and oral cavities, with no genital commitment (3). The translocation of extragenital TVT to alternative anatomical sites in juvenile dogs is possible due to social behavior and cohabitation between the carrier progenitor and the offspring (3). When the ocular TVT is initiated by implant, the new growth comes from the external structures, while in case of metastases, there is initial involvement of the vascular knit such as the iris, ciliary body, or choroid with intraocular development pattern (11).

ISSN: 1710-0305
PISSN: 1189-4563

In the present case, the tumors were located in subcutis with a primary genital lesion, which is a rare condition. In such cases, the extragenital location of tumor has been attributed to the social behavior of the dog (3,6,7). Most extra-genital cases of canine TVT result from either hetero-implantation or auto-implantation (14).

TVT definitive diagnosis is based on history, physical examination and cytological findings (3). Because of its homogenous populations of large, round cells with distinctive centrally located nucleoli, TVT is usually easily diagnosed by cytologic examination of fine-needle aspirates or impression smears or by histopathologic evaluation of biopsies. TVT may be difficult to distinguish from other round cell tumors, particularly lymphosarcomas, when they occur in extragenital locations. Prevalence varies from relatively high in some geographic regions to rare in others (1).

In the present report, the diagnosis was based on clinical signs, cytological, histopathologic examination, and IHC study, which carried out through fine needle aspiration and excisional biopsies. Cytological and histopathological appearance was similar to those previously described as canine TVT.

Although spontaneous regression can occur, TVT are usually progressive and are treated accordingly. Complete surgical excision, radiation therapy, and chemotherapy are effective treatments; however, chemotherapy is considered the treatment of choice. Vincristine sulfate (0.5 mg /m^2, IV, once weekly for 3-6 wk) is reported to be effective, except when the tumor is in the CNS or eye. Usually, total remission can be expected by the sixth treatment. Adriamycin (30 mg /m^2, IV, once every 3 wk) also has been effective for those animals that do not respond to vincristine. The prognosis for total remission with chemotherapy or radiation therapy is good, unless there is metastatic involvement of organs other than skin. Complete surgical excision often cannot be achieved because of the anatomic location of many of these tumors. Recurrence is likely in such cases unless adjunct radiation or chemotherapy is used (1). In this report, intravenous administration of vincristine sulphate at 0.5mg/m^2 body surface was very effective. Its regression was clinically evident within the second week of treatment. In case of chemotherapy failure, radiotherapy provides excellent results, alternatively, doxorubicin chemotherapy may be applied (9).

Vincristine is much less myelosuppressive (mild leukopenia) at usual doses than is vinblastine, but may cause more peripheral neurotoxic effects. Neuropathic clinical signs may include proprioceptive deficits, spinal hyporeflexia, or paralytic ileus with resulting constipation. Additionally, in small animals, vincristine may cause impaired platelet aggregation, increased liver enzymes, inappropriate ADH secretion, jaw pain, alopecia, stomatitis, or seizures. Extravasation injuries associated with perivascular injection of vincristine can range from irritation to necrosis and tissue sloughing (15).

This paper reports an unusual site of TVT location with small genital lesions, and mentions it should be considered as a differential diagnosis for subcutaneous masses of dogs.

Conflict Of Interest

Authors declare no conflicts of interest.

Acknowledgment

We thank Panah Pet Clinic for supporting this article.

References

[1] Cynthia M. Kahn, Line S. The merck veterinary manual.9th ed. NJ, USA: Whitehouse station 2006; 108-150

ISSN: 1710-0305
PISSN: 1189-4563

[2] Simpson G, England G, Harvey M, et al. BSAVA manual of small animal reproduction and neonatology. 1st ed. Cheltenham, UK: British small animal veterinary association 1998; 76-77.
[3] Duarte Mateus Varela Y, Fernandes de Queiroz G, Dantas Filgueira K, et al. Transmissible extragenital venereal tumor in impuberal canine. Braz J Vet Pathol 2013; 6(3), 123 – 127.
[4] Yang TJ. Metastatic transmissible venereal sarcoma in a dog. Journal of the American Veterinary Medical Association, Chicago 1987; 190(5): 555-6.
[5] Kroger D, Grey RM, Boyd JW. An unusual presentation of canine transmissible venereal tumor. Canine Practice 1991; 16(6):17-21.
[6] Bright RM, Gorman NT, Probst CW, et al. Transmissible venereal tumor of the soft palate in a dog. Journal of the American Veterinary Medical Association 1993; 183(8): 893-895.
[7] Rogers KS, Walker MA, Dillon HB. Transmissible venereal tumor: a retrospective study of 29 cases. Journal of the American Animal Hospital Association 1998; 34(6): 463-470.
[8] Santos FGA, Vasconcelos AC, Nunes JES, et al. The canine transmissible venereal tumore general aspects and molecular approach (review article). Bioscience Journal 2005; 21(3): 41-53.
[9] Brown NO, Calvert C, Macewen EG. Chemotherapeutic management of transmissible venereal tumors in 30 dogs. Journal of the American Veterinary Medical Association 1980; 176(10): 983-986.
[10] Ettinger SJ, Feldman EC. Textbook of Veterinary Internal Medicine volume 1. 7th ed. Philadelphia, USA: Elsevier Saunders 2010; 2210.
[11] Schaer M. Clinical Medicine of the Dog and Cat. 2nd ed. Philadelphia, USA: Elsevier Saunder 2010; 100-101.
[12] Miller WW, Alberta RA, Boosinger TR. A case-report - ocular metastasis of a transmissible venereal tumor. Canine Practice 1990; 15(3): 19-21.
[13] Nayak NC, Samaddar J. Extragenital transmissible venereal tumor in a bitch. Indian Veterinary Journal 1988. 65(6): 537-537.
[14] Rodrigues GN, Alessi AC, Laus JL. Intraocular transmissible venereal tumor in a dog. Ciência Rural 2001; 31(1): 141-143.
[15] Plumb DC. Plumb's veterinary drug handbook. 6th ed. NJ, USA: Wiley-Blackwell 2008; 927-929.