CHAPTER
191

Retrospective study of transmissible venereal tumor in dogs in Paraíba, Northeastern Brazil

https://doi.org/10.56238/alookdevelopv1-191

Erick Platiní Ferreira Souto
Post-doctoral internship in Veterinary Medicine.
Institution: Federal Rural University of Pernambuco.
Address: Rua Dom Manuel de Medeiros, s/n - Dois Irmãos, Recife - PE, 52171-900.

Artefio Martins de Oliveira
Master's Degree in Animal Science, Graduate Program in Animal Science.
Institution: Federal University of Campina Grande.
Address: Avenida Universitária, s/n - Santa Cecilia, Patos - PB, 58708-110.

Dlean da Silva Garcia
Master's student in Animal Science and Health, Graduate Program in Animal Science and Health.
Institution: Federal University of Campina Grande.
Address: Avenida Universitária, s/n - Santa Cecilia, Patos - PB, 58708-110.

Antonio Flávio Medeiros Dantas
PhD in Veterinary Science.
Institution: Federal University of Campina Grande.
Address: Avenida Universitária, s/n - Santa Cecilia, Patos - PB, 58708-110.

ABSTRACT
The epidemiological, clinical, and anatomopathological aspects of the transmissible venereal tumor in dogs in Paraíba, Northeastern Brazil, are described. From January 2003 to December 2016, 35 cases of Venereal Transmissible Tumors in dogs were diagnosed at the Animal Pathology Laboratory of the Federal University of Campina Grande. Of these, 19 (54%) were females and 16 (46%) males, with ages ranging from 1 year to 14 years. The animals were predominantly of no defined breed 28 (80%) and peridomicile 18 (51%). Most of the tumors, 25 (71%), were located in the genital mucosa, distributed by the vulva, vagina, foreskin, and penis. Extragenital localization was observed in 10 (29%) cases, with tumors present in the skin, eye and periocular structures, and nasal cavity. Macroscopically, they were multilobular, exophytic, of varying sizes, red-white masses, sometimes with areas of hemorrhage and ulceration. In the histopathology, round neoplastic cells were visualized, with granular cytoplasm, loosely grouped and assuming arrangements in mantles. Therapeutic protocols were performed in 12 cases with vincristine sulfate, of which 5 (42%) presented total clinical recovery. The striking macroscopic and histopathological features allow an efficient diagnosis of the condition, especially when the tumor is located in the genital mucous membranes. Treatment with vincristine sulfate can promote full clinical recovery.

Keywords: Diseases of dogs, Genital neoplasm, Metastases.

1 INTRODUCTION

Transmissible venereal tumor (TVT) is a neoplasm that develops primarily in the external genitalia of dogs (Nascimento et al. 2016). It is transmitted from one animal to another by implantation of viable neoplastic cells, usually through the microlesions present in the genital mucous membranes due to coitus (Ganguly et al. 2013). Thus, this disease is more common in young, sexually active, free-living dogs in urban areas (Das & 2000). The objective of this study is to describe the main epidemiological, clinical, and anatomopathological aspects of the transmissible venereal tumor in dogs in the mesoregion of Sertão da Paraíba, Northeastern Brazil.

2 MATERIAL AND METHODS

We reviewed the biopsy and necropsy records of dogs performed at the Animal Pathology Laboratory of the Federal University of Campina Grande, from January 2003 to December 2016, in search of cases diagnosed as transmissible venereal tumors. Information regarding epidemiological data (gender, race, age, origin), clinical signs, and anatomopathological findings were obtained from the clinical and necropsy protocols. Photographic records were also recovered. For microscopic description, the histological slides of the cases were reviewed, and new slides were made from tissue fragments archived in paraffin blocks. All sections were routinely processed and stained with hematoxylin and eosin (HE).

3 FINDINGS

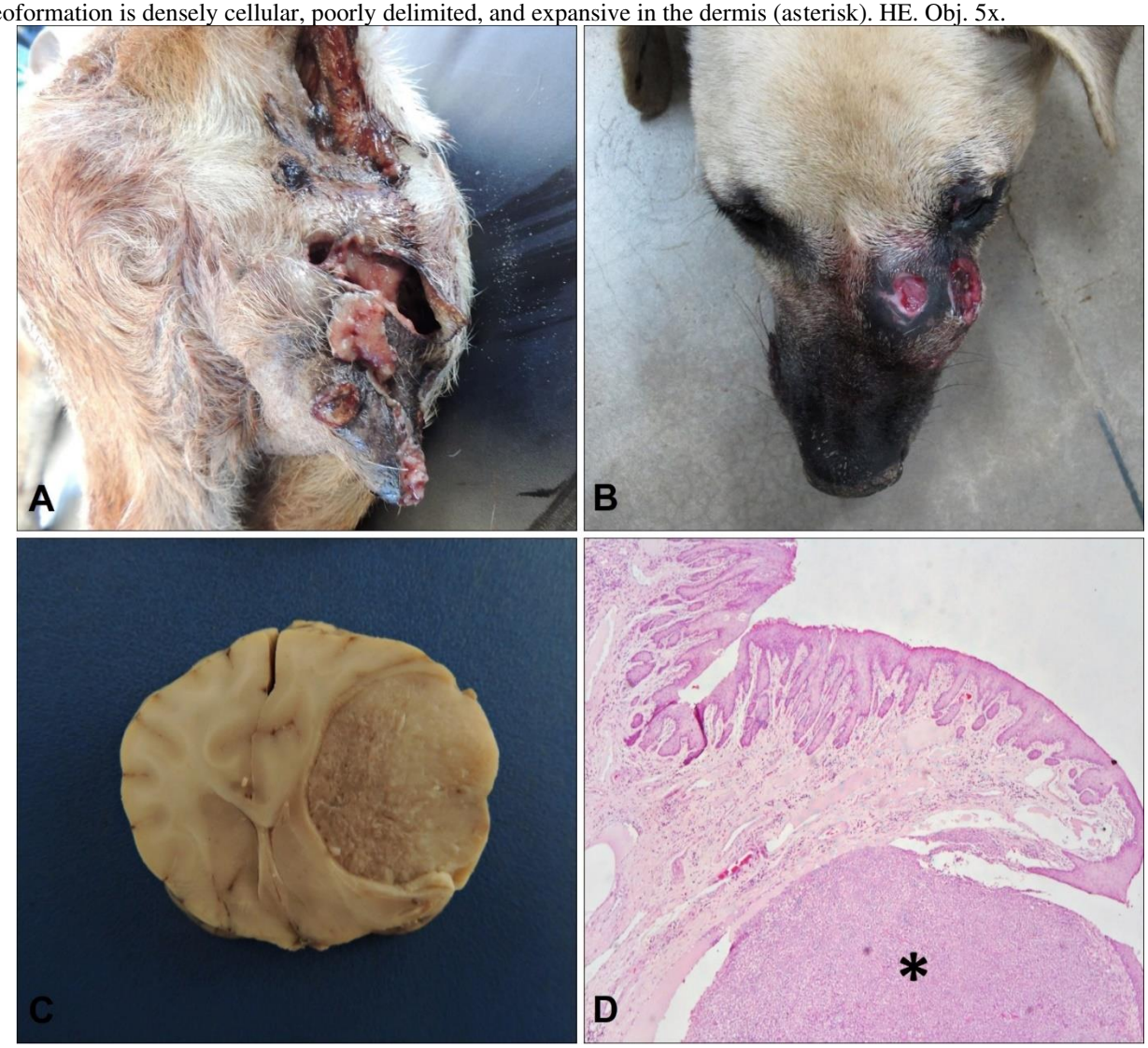
During the study period, 35 cases of transmissible venereal tumors in dogs were diagnosed, 22 (63%) in biopsies and 13 (37%) in necropsies, not necessarily as a cause of death. Of the dogs affected, 19 (54%) were females, and 16 (46%) males. Age ranged from 1 year to 14 years, with a mean of 5 years and six months. As for race, 28 (80%) were of no defined race, 4 (11%) were Poodles, 1 (3%) Pitbull, 1 (3%) was a Dachshund, and 1 (3%) was a Cocker spaniel. Regarding the breeding regime, 18 (51%) dogs were peri domiciled, 9 (26%) wandering, 3 (9%) domiciled, and in 5 (14%) cases, there was no such information. Regarding the municipalities of origin, 21 (60%) were from Patos, 4 (11%) from Campina Grande, 2 (6%) were from Pombal, 2 (6%) Santa Terezinha, and 1 (3%) from Cuité, all belonging to the mesoregion of the Sertão da Paraíba, Northeast of Brazil. In 5 (14%) cases, there was no information regarding the municipality of origin. The primary location of the TVT was variable. Most of the tumors, 25 (71%), were in the genital mucosa, distributed by the vulva (Fig.1A), vagina, foreskin, and penis. Extragenital localization was observed in 10 (29%) cases, with tumors present in the skin (perianal region, scrotal sac, face (Fig. 1B), nasal plane, abdomen, and right pelvic limb); eye and periocular structures (cornea, third eyelid, and periocular mucosa); and nasal cavity.

Macroscopically, in most cases, they were multinodular, exophytic, of varying sizes, red-white masses, and sometimes with multifocal areas of hemorrhage and ulceration. At the cut, consistency ranges from firm to friable and multifocal areas of hemorrhage.

In histopathology, densely cellular, poorly delimited, and expansive neoformations were visualized. The neoplastic cells were loosely grouped, assuming arrangements in mantles and supported by a delicate fibrovascular stroma (Fig. 1D). Neoplastic cells were predominantly round and almost always constant in size; granular cytoplasm, ranging in quantity from moderate to scarce and of evident limits; large core, ranging from round to oval and with coarsely dotted chromatin; and nucleolus that is difficult to see. Usually, a high mitotic index is the objective of highest magnification

(40x). In some cases, there was also secondary bacterial contamination, peritumoral neutrophilic inflammatory infiltrate, and neoplastic emboli in blood and lymphatic vessels. Metastases were found in 11 (31%) cases, 4 (11%) in the brain (Fig. 1C), 4 (11%) in the spleen, 2 (6%) in the liver, and 1 (3%) in the inguinal lymph node. Therapeutic protocols were performed in 12 cases. Of these, 6 (50%) chemotherapy with vincristine sulfate, 2 (17%) surgical procedures, and 1 (8%) case association between the two methods. In 1 (8%) case, no treatment was adopted, opting for euthanasia of the animal. Of the animals treated with vincristine sulfate, 5 (42%) showed full clinical recovery. There was no information on the clinical course of the other cases.

Figure 1. A) Genital TVT. Multinodular and infiltrative mass in the vulvar region. B) Extragenital TVT. The increased volume is covered by skin and with multifocal areas of ulceration on the face. C) Cross-section of the brain. White, compact, well-circumscribed mass in the right telencephalic hemisphere. D) Photomicrograph of the vulvar mucocutaneous region. Neoformation is densely cellular, poorly delimited, and expansive in the dermis (asterisk). HE. Obj. 5x.



4 DISCUSSION

The diagnoses were established based on epidemiological, clinical, and anatomopathological findings. TVT has a worldwide distribution, with a higher prevalence in countries with tropical or subtropical climates. In Brazil, a high incidence of the disease is recognized due to the large number of stray dogs in urban areas and precarious practices of control of the canine population (Costa 2008). In this study, it was possible to observe a slight prevalence of TVTs in. are admittedly more affected since infected male dogs usually maintain sexual contact with numerous females (Ganguly et al. 2013). The disease usually occurs during the period of greatest sexual activity, from 2 to 8 years of age, and only occasionally in older dogs (Ganguly et al. 2013).

The higher frequency of the disease in dogs without defined breeds is related to the profile of the animals attended in the routine of the Veterinary Hospital of UFCG, not being recognized racial predisposition. The TVT occurred predominantly in dogs with access to the street, either this access intermittent and in a reduced perimeter (peri domiciled) or continuous and unrestricted (wandering). Free access to the streets is described as a predisposing factor because it allows the contact of healthy dogs with infected dogs, which function as sources of infection (Das & Das 2000).

TVT is typically transmitted during intercourse, which determines the highest incidence of the tumor in the genital mucous membranes. Transmission can also occur through the normal social behavior of dogs when they lick, smell, scratch, or bite their genitals (self-implantation) or the genitals of other affected dogs (hetero-implantation) (Milo & Snead 2014). In these circumstances, TVT can occur in extragenital locations, even in the absence of a genital tumor. Much less frequently, extragenital TVT can result from the metastatic spread of a primary genital tumor through hematogenous or lymphatic pathways. Metastases occur infrequently but have previously been reported at several anatomical sites (Das & 2000).

Immunosuppression is described as a favoring factor due to the important activity performed by the immune system in tumor rejection and destruction of altered cells (Costa, 2008). It is important to consider that the clinical manifestations presented by the affected dogs are very variable, being directly related to the primary location of the tumor or the presence of metastases. Treatment can be performed with chemotherapy, excisional surgery, radiation therapy, immunotherapy, or even by a combination of these methods (Ganguly et al., 2013). Surgical procedures have been widely used, but they are not efficient because they have high rates of relapse. Chemotherapy has shown better results, with tumor regression in most cases, especially when using vincristine sulfate (Ganguly et al. 2013). Spontaneous regression of the tumor has also been observed, particularly in adult animals and in good health. The prognosis is favorable unless metastases to the central nervous system or other vital organs occur (Das & 2000).

5 CONCLUSION

TVT occasionally occurs in the mesoregion of the Sertão da Paraíba, affecting dogs of both sexes, preferably young and without a defined breed, and with free access to the street. The striking macroscopic and histopathological features allow an efficient diagnosis of the condition, especially when the tumor is located in the genital mucous membranes. However, it can be located primarily in other anatomical sites or even promote metastases, which gives them a poor prognosis. Treatment with vincristine sulfate can promote full clinical recovery.

ACKNOWLEDGMENT

Acknowledgment To the National Council for Scientific and Technological Development (CNPq) for granting the postdoctoral fellowship to EPF Souto (Grant: 151086/2022-2).

REFERENCES

Costa M.T. 2008. Tumor venéreo transmissível. p. 540-555. In: Daleck C.R., De Nardi A.B. & Rodaski S. (Eds.), Oncologia em cães e gatos. São Paulo: Roca.

Das U. & Das A.K. 2000. Review of canine transmissible venereal sarcoma. Vet. Res. Commun., 24, 545-556.

Ganguly B., Das U. & Das A.K. 2013. Canine transmissible venereal tumour: a review. Vet Comp Oncol. 12, 291-309.

Milo J. & Snead E. 2014. A case of ocular canine transmissible venereal tumor. The Canadian Veterinary Journal, 55, 1245–1249.

Nascimento E.F., Santos R.L. & Edwards J.F. 2016. Sistema Reprodutivo Masculino. p.805-828. In: Santos R.L. & Alessi A. C. (Eds.), Patologia Veterinária. Roca, São Paulo.