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Case Report

Surgical Procedure of a Transmissible Venereal Tumor in Nostril of a Domestic Dog

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ABSTRACT

Introduction: Canine transmissible venereal tumor (CTVT) is a contagious, round-cell neoplasm of mesenchymal origin that primarily affects the mucosal surfaces of the external genitalia in both male and female dogs. This neoplasm is naturally transmissible and sexually spread, particularly among reproductively active stray dogs. The present study investigated the clinical and histological signs, as well as surgical treatment, of CTVY in a 4-year-old mixed-breed dog.
Case report: In 2024, a 4-year-old female mixed-breed dog weighing 18 kg was referred to a veterinary clinic in Mashhad, Iran, due to the presence of a lobulated nasal mass. The dog exhibited blood-tinged saliva and showed no improvement with antibiotic therapy. Following clinical evaluation and radiographic imaging, an incisional biopsy was conducted under general anesthesia to obtain a tissue sample for histopathological examination. After aseptic preparation of the surgical field, the mass, including a 1 cm margin of healthy surrounding soft tissue and bone, was surgically excised. Accordingly, the primary oral transmissible venereal tumor (TVT) was diagnosed. The surgery was done, and after a follow-up period of 150 days post-excisional surgery for a TVT, the patient remained alive and exhibited no visible signs of tumor recurrence or surgical complications.
Conclusion: The present case described a nasal TVT exhibiting slow tumor growth and an absence of metastasis in other regions, in a canine patient that underwent treatment exclusively through complete excisional surgery.

1. Introduction

Canine transmissible venereal tumor (CTVT) is a contagious, round-cell neoplasm of mesenchymal origin that primarily affects the mucosal surfaces of the external genitalia in both male and female dogs[1]. Although sexual transmission is the most common mode of spread, the tumor can be transferred to other anatomical sites through behaviors such as licking, biting, and direct contact with infected animals[1]. The CTVT typically presents as a benign reticuloendothelial tumor, forming cauliflower-shaped, firm to crumbly nodular masses on the genitalia. Transmissible venereal tumor (TVT) occurs with equal frequency in both sexes[2] and is most prevalent among stray or free-roaming dogs that engage in uncontrolled mating[3]. The tumors may be solitary or multiple, nodular or pedunculated, and can vary in size from less than a centimeter to over ten centimeters in diameter[2].

This neoplasm (TVT) is contagious and spread mainly through sexual contact, especially among sexually active stray dogs[4]. It can also be transmitted experimentally. While copulation is the primary way, non-sexual routes such as licking, sniffing, or direct contact with lesions can cause tumor cells to implant in the oral and nasal cavities[5]. Furthermore, contact with open skin lesions may result in eye or skin involvement[6].

Although metastasis is relatively rare, occurring in about 1% of cases, it can affect different regions such as the skin, inguinal lymph nodes, liver, kidneys, spleen, intestines, heart, brain, lungs, and other internal organs[7]. Affected dogs typically display clinical signs such as visible genital masses that may be solitary or multiple, often friable, and located on the prepuce

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or vulva. These masses often produce serosanguineous discharge, have a foul odor, ulcerate, deform, and develop necrotic areas. When metastasis occurs outside the genital area, signs differ depending on the affected organ and may include respiratory distress, abdominal pain, or difficulty swallowing[8].

Diagnosing extragenital CTVT is challenging because of complex anatomical structures. However, confirming whether the tumor is primary or metastatic ultimately requires cytology or histopathology validation[9].

The present study aimed to report the surgical procedure of a transmissible venereal tumor (TVT) in the Nostril of a 4-year-old female mixed-breed dog.

2. Case report

In 2024, a 4-year-old female mixed-breed dog weighing 18 kg was referred to a veterinary clinic in Mashhad, Iran, due to the presence of a lobulated nasal mass (Figure 1). The dog exhibited blood-tinged saliva and showed no improvement with antibiotic (Cefazolin 25 mg/kg) therapy[3]. Other clinical signs, including pulse rate, respiratory rate, and temperature, were evaluated by a veterinarian and were in the normal range. The mass had initially been noticed approximately eight weeks before referral. Following clinical evaluation and radiographic imaging, an incisional biopsy was conducted under general anesthesia using a No. 10 scalpel blade (China) to obtain a tissue sample for histopathological examination. All the procedures in the present study were conducted in accordance with the ethical rules of Shiraz University, Iran.

Figure 1. A 4-year-old mixed-breed dog diagnosed with transmissible venereal tumors

2.1. Histopathological examination

The biopsy was conducted following general anesthesia, which was administered through an intravenous injection of a mixture of midazolam (0.2 mg/kg, Caspian Tamin, Iran) and 10% ketamine hydrochloride (6 mg/kg, Alfasan, Netherlands)[10]. The excised tissue was promptly fixed in 10% neutral buffered formalin (Merck, Germany) and sent to the Pathology laboratory in Mashhad, Iran. There, it was processed, embedded in paraffin blocks, cut into 5 µm sections, and stained with hematoxylin and eosin (H&E) for microscopic examination (Figure 2)[11].

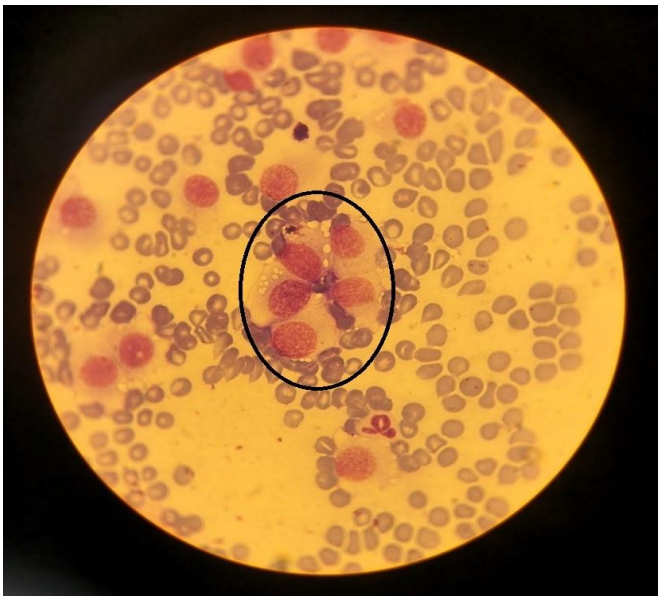

Figure 2. A 4-year-old female mixed-breed dog was diagnosed with transmissible venereal tumors. Transmissible venereal tumor cells are characterized by large, round cells with prominent nucleoli and vacuolated cytoplasm. H&E, 400x.

Figure 3. A 4-year-old female mixed-breed dog diagnosed with transmissible venereal tumors

2.2. Radiographic assessment

Radiographs were taken at the Radiology Department of Aria Veterinary Hospital in Mashhad, Iran, to evaluate the extent and features of the lesion. A radio-opaque mass was visible in the nostrils, along with soft tissue opacity (Figure 3)[12].

2.3. Surgical intervention

To reduce peritumoral edema, prednisone (Nisopred®, Iran; 10 mg tablets, USP-grade) was administered orally at a dosage of 1 mg/kg once daily for seven days before surgery. Xylazine (1 mg/kg IM, Alfasan, Netherlands) was used as premedication. For infection prophylaxis, cefazolin (Cefzolix®, Iran; 1 g/vial, USP-grade) was administered intravenously at 22 mg/kg[2]. Anesthesia was induced using the same combination of midazolam (0.2 mg/kg) and ketamine hydrochloride (6 mg/kg), followed by endotracheal intubation and positioning of the dog in dorsal recumbency[10]. Anesthesia was maintained with inhaled isoflurane (Piramal Critical Care, USA). After aseptic preparation of the surgical field and oral cavity, the mass, including a 1 cm margin of healthy surrounding soft tissue and bone, was surgically excised (Figure 4). At intervals of 30, 60, 90, 120, and 150 days post-surgery, there was no visible indication of tumor recurrence or surgical complications on the operated side.

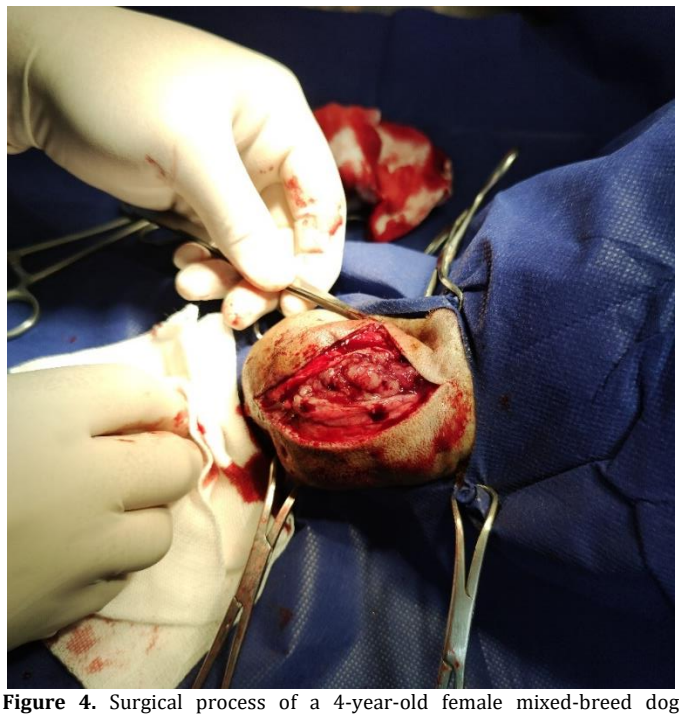

Figure 4. Surgical process of a 4-year-old female mixed-breed dog diagnosed with transmissible venereal tumors

3. Discussion

The CTVT displays notable genetic uniformity among affected individuals; however, it is genetically distinct from the host dogs in which it temporarily resides[13]. The prevalence of CTVT is estimated to be at least one percent in dog populations across at least 13 countries in South and Central America, as well as in a minimum of 11 countries in Africa and eight countries in Asia. In the United States and Australia, CTVT has been documented as endemic, but exclusively within remote indigenous communities[14,15].

Since less invasive methods could not provide a definitive diagnosis, laparotomy and tissue sample collection for histopathological analysis were chosen as the primary diagnostic procedures[13,16]. In the present study, the histopathological examination results confirmed the diagnosis of TVT. Distinguishing TVT from other neoplastic entities, particularly large cell lymphoma, necessitates a comprehensive histopathological assessment.

Consequently, an immunohistochemical analysis, regarded as the most dependable method for identifying specific neoplastic cell types, was conducted and ultimately confirmed the diagnosis of TVT[14].

The TVT is a sexually transmitted neoplasm observed in dogs, which demonstrated a significant sensitivity to chemotherapy, particularly with vincristine sulfate being the preferred therapeutic agent[15]. Nevertheless, surgical intervention may be necessary in certain instances, either as an initial treatment or in combination with chemotherapy. In the present study, a surgical procedure was utilized for the treatment of the case, and the outcome was considered acceptable following a follow-up period of 150 days. Vincristine sulfate monotherapy results in complete remission in 90-100% of cases[16,17]. However, surgical removal might be an option for localized tumors that can be easily excised, especially in situations where chemotherapy is not accessible. Moreover, the administration of adjuvant vincristine therapy (0.025-0.5 mg/kg or 0.5 mg/m^2 administered intravenously weekly for 3-6 weeks) is advised in the postoperative phase to eradicate any residual microscopic disease and to reduce the risk of recurrence[18].

The prognosis for TVT is generally favorable, as most cases respond well to chemotherapy, often leading to complete tumor remission and recovery. However, the outlook becomes cautious in cases where the tumor resists chemotherapy or has metastasized to the central nervous system or ocular areas structures[19].

4. Conclusion

The present case described a canine transmissible venereal tumor located in the nostril of a 4-year-old mixed-breed female dog, which was managed through surgical excision. There were no signs of cutaneous involvement, regional lymph node enlargement, metastasis, or tumor recurrence within 150 days following surgery in the present case. Further studies involving a larger cohort of canines diagnosed with transmissible venereal tumors (TVT) are essential to gain a more comprehensive understanding of the biological behavior associated with this type of tumor.

Declarations

Competing interests

The authors declared no conflict of interest.

Authors' contributions

Hojat Hejazi was responsible for concept development, data curation, investigation, methodology design, supervision, validation, and drafting the original manuscript. Seyed Amin Razavi contributed to data

curation, investigation, methodology, validation, writing, and both review and editing of the manuscript. Faezeh Salari-Kakhk and Mohammad Shayeghi Alumnus participated in the development, validation, review, and editing process of the methodology. All authors reviewed and approved the final edition of the manuscript for publication in this journal.

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Availability of data and materials

The data to support the present study's findings are available upon reasonable request to the corresponding author.

Ethical considerations

The authors have comprehensively reviewed the manuscript to ensure adherence to ethical standards, addressing issues such as plagiarism, research integrity, data falsification or distortion, and redundant publication.

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