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Cytological diagnosis of canine transmissible venereal tumor in an intact male domestic dog

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ABSTRACT: Canine transmissible venereal tumors (CTVT) are one of the few naturally occurring transmissible cancers in mammals and pose a significant challenge to canine populations worldwide. Transmitted through coitus, this contagious round-cell neoplasm affects the external genitalia of dogs, highlighting the importance of early diagnosis to prevent tumor progression and limit transmission. Cytological evaluation provides a rapid, reliable, and minimally invasive diagnostic approach that enables the definitive identification of CTVT based on its cellular morphology. A two-year-old intact male domestic dog presented with chronic preputial discharge and genital discomfort. Physical examination revealed a reddish, cauliflower-like mass at the base of the penis. Cytological analysis of the preputial exudate revealed numerous round lymphoblast-like cells with a high nuclear-to-cytoplasmic ratio, prominent nucleoli, and frequent mitotic figures, consistent with CTVT. No therapeutic interventions were performed. This case reinforces the value of cytological examination as a diagnostic tool for genital tumors in dogs, facilitating prompt clinical decision-making and supporting disease management in endemic regions.

Keywords:
canine transmissible venereal tumor, cytology, genital tumor

■ INTRODUCTION

Canine transmissible venereal tumor (CTVT), also known as Sticker's sarcoma, is a naturally occurring, contagious neoplasm that affects domestic dogs. CTVT spreads through direct transplantation of viable tumor cells during coitus or through licking, sniffing, or mucosal contact (Strakova & Murchison 2015). It is one of three naturally occurring transmissible cancers in animals, originating from a single ancestral dog over 11,000 years ago (Faro & de Oliveira 2023). The disease has a global distribution but is prevalent in tropical regions, especially among free-roaming dogs (Pimentel *et al.* 2021; Laissaoui *et al.* 2024). CTVT presents as friable, cauliflower-like masses on the external genitalia with hemorrhagic discharge (Saputra *et al*. 2025). Extragenital manifestations occur in the skin, nasal cavity, and oral mucosa, complicating the diagnosis (Komnenou *et al.* 2015; Parker *et al.* 2021).

Diagnosis relies on cytology, a rapid and cost-effective method for identifying characteristic round cells with prominent nucleoli (Pashkevych *et al.* 2018). Histopathology and immunohistochemistry confirm the diagnosis when cytological findings are inconclusive. Histopathology with immunohistochemistry serves as the gold standard for diagnosing CTVT, evaluating tissue architecture, and detecting markers such as vimentin positivity (Franco Molina *et al.* 2022; Abouelnasr *et al.* 2024). This report describes the clinical and cytological diagnosis of CTVT in a domestic dog in Indonesia. Although therapeutic intervention was not performed, this case highlights the diagnostic importance of cytology and provides an overview of treatment strategies for veterinarians in endemic regions.

■ CASE

Signalment and History: A two-year-old male dog (15 kg) was presented to the Veterinary Clinical Laboratory, Faculty of Veterinary Medicine, Universitas Syiah Kuala, Indonesia, in February 2024. The owner reported a purulent preputial discharge for over a month. The dog vocalized and showed pain when its genital area was touched.

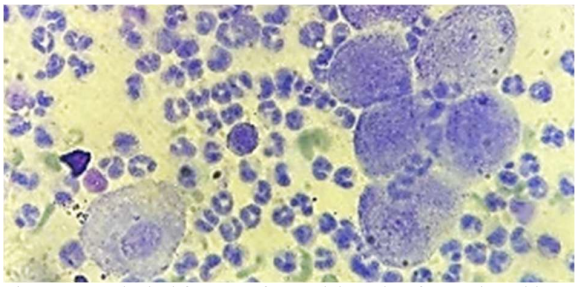

Figure 1. Cytological features of preputial exudate from a dog with canine transmissible venereal tumor (CTVT), stained with Wright–Giemsa and examined at ×400 magnification.

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Clinical Examination: The dog's vital parameters were normal: temperature, 38.9°C; respiratory rate, 29 breaths/min; and pulse rate, 139 beats/min. The mucous membranes were pink, the capillary refill time was two seconds, and the skin turgor was normal. Examination revealed a reddish, friable, cauliflower-like mass (5 × 4 cm) at the base of the penis, with purulent preputial discharge.

Laboratory Test: Cytological evaluation was performed on a direct smear of the preputial exudate, as the lesion produced sufficient discharge for sampling. The smear was stained using Wright–Giemsa stain for detailed assessment of cellular morphology. Microscopic examination revealed numerous polymorphonuclear leukocytes and lymphoblast-like tumor cells with a high nuclear-to-cytoplasmic ratio, distinct cell borders, prominent nucleoli, and mitotic figures (Figure 1).

Diagnosis: These findings were consistent with canine transmissible venereal tumors (CTVT). **Treatment**: No therapeutic interventions were performed in this case.

■ RESULTS AND DISCUSSION

The clinical and cytological findings in this case were consistent with canine transmissible venereal tumors (CTVT), a contagious neoplasm that commonly affects free-roaming, sexually active dogs in tropical regions. The cauliflower-like penile mass with purulent discharge observed in this dog is characteristic of CTVT, while cytology confirmed the diagnosis by demonstrating round lymphoblast-like cells with a high nuclear-to-cytoplasmic ratio, distinct nucleoli, and frequent mitotic figures. Cytological examination is a practical and reliable diagnostic method, especially in field and clinical settings where histopathology may not be readily available (Saputra *et al*. 2025). However, differential diagnoses should also be considered, including other round-cell neoplasms such as lymphoma, plasmacytoma, mast cell tumors, and histiocytoma, which can present with overlapping cytological features. The presence of vacuolated cytoplasm, characteristic cellular borders, and the clinical distribution of the mass support CTVT as the most likely diagnosis in this case.

Although treatment was not performed in this case, published studies consistently indicate vincristine sulfate as the first-line therapy, achieving high remission rates in most affected dogs (Franco Molina *et al.* 2022). However, resistant cases and rare metastatic forms have been reported, emphasizing the importance of early recognition and close monitoring (Faro & de Oliveira 2023; Bendas *et al.* 2022). Alternative approaches, including combination therapy with surgery and chemotherapy (Saputra *et al*. 2025), or radiotherapy, should be considered in cases of vincristine resistance or tumor recurrence (Abouelnasr *et al.* 2024).

■ CONCLUSION

In conclusion, this case demonstrates that cytological examination is a valuable, rapid, and minimally invasive diagnostic tool for the definitive identification of canine transmissible venereal tumor, supporting early clinical decision-making and contributing to effective disease control in canine populations, particularly in endemic settings.

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