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SHORT COMMUNICATION

Therapeutic management of intranasal transmissible venereal tumor in canines

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ABSTRACT

This case study aimed to diagnose and elucidate the therapeutic management of intranasal transmissible venereal tumor (TVT) in four dogs presented with unilateral epistaxis and respiratory distress for several days. The bleeding was characterized by fresh, uncoagulated blood. Cytological, hematological, serum biochemical and radiographic examinations were conducted. Cytological examination of the nasal swab samples showed a neoplastic population of large round cells exhibiting cytoplasmic vacuolation which is characteristic of transmissible venereal tumor, de-differentiation, increased N/C ratio and multiple prominent neucleoli. The animals received intravenous injections of vincristine sulfate as a drug of choice however complications may arise due to its repetitive/excessive use and like development of toxicity and hepatic insufficiency. Additional supportive treatments, administered in three to five weekly doses, intranasal administration of hemocoagulase; botrophase @ 5-6 drops daily for 3-4 days upto cessation of nasal bleeding and injectable broad-spectrum antibiotics were also administered resulting in complete recovery in all the cases examined.

Keywords: Cytology, epistaxis, intranasal, radiography, vincristine

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Canines with transmissible venereal tumors (TVTs) have a contagious round cell tumor that is spread through sexual contact. Rarely, TVT spreads to the lips, oral mucosa, peritoneum and other organs such as the muscles and mammary glands. TVT can be malignant growth of mesenchymal origin (sarcoma) and may also occur as veneral granuloma[1]. It can also spread through sniffing or licking of the nasal/oral cavities, skin and rectum[3]. Facial edema, swelling in superficial lymph nodes, oro-nasal fistula, epistaxis and other nasal discharges are symptoms of nasal canine TVT[2]. Tumor cells are transmitted when genital mucous membranes come into contact during coitus. Therefore, the external genitalia often serve as the site of TVT lesions[4,17]. When an animal lick or sniff the preputial or vaginal discharges of an infected dog, extragenital lesions can also be observed in the nasal and/or oral cavities[4,5]. Grossly it appears as cauliflower-like ulceration, hemorrhagic, friable mass that bleed easily[7] and also sometimes manifested by bloody discharge. TVT is diagnosed through history, clinical signs, cytology and histopathology[12]. The treatment of choice for this condition is through chemotherapy[12,13] using Vincristin sulphate as a preffered drug of choice for treatment of TVT[19]. This case study describes the diagnosis of intra-nasal TVT in canines and its treatment.

This case study involves four dogs, irrespective of breed, age or sex, that were registered at the Teaching Veterinary Clinical Complex, College of Veterinary Science, DSVCKV, Anjora, Durg, between 1st January 2023 and 31st August 2024. The clinical presentation included unilateral epistaxis, dyspnea and a few days of fresh, uncoagulated blood discharge, accompanied by painful swelling palpated over the right nasal area. Each case underwent comprehensive hematological and biochemical assessments (Table 1). A ventrodorsal radiographic examination of the skull was performed, followed by a cytological evaluation to confirm the presence of intranasal TVT. Nasal swabs were collected for each case, with samples processed and stained using Giemsa stain. Therapeutic intervention included the administration of intravenous vincristine sulfate at a dose of 0.025 mg/kg body weight, given 3 to 5 times weekly, in addition to supportive care (Table 1).

The study included three male dogs and one female dog, aged between 3-10 years. Clinical signs included sneezing, epistaxis and painful swelling palpated over the right nasal region. Hematological parameters were assessed (Table 1). There were mild to moderate anemia, relative leukocytosis and neutrophilia in some cases, along with normal

Table 1. Hematological and biochemical analysis.

Parameters	Case 1 Non descriptive, Male, 4 Year	Case 2 Labrador, Male, 3 Year	Case 3 Non descriptive, Female, 9 Year	Case 4 Non descriptive, Female, 5 Year
Total Leukocytes Count (x10^9/L)	32.5	24.6	22.7	18
Neutrophils (%)	85	60	80	68
Haemoglobin (g/dL)	7.9	12.7	11.2	10.9
BUN (mg/dL)	23.14	26.01	32.15	19.01
Creatinine (mg/dL)	0.88	1.78	2.08	1.06
Albumin (g/dL)	2.08	2.96	2.78	1.93
SGPT (U/L)	38.23	27.23	54	42.08
Number of Vincristicine Cycles	3	3	5	4

platelet counts in all dogs. Blood smears were negative for hemoprotozoan infections. Biochemical analyses for kidney and liver function were within normal reference ranges (Table 1). A ventrodorsal radiographic view of the skull revealed no encapsulated tumor or bony abnormalities (Fig. 3). Cytological examination of nasal swab samples showed increased cellularity, neutrophilia, few large round cells (Fig. 4 & 5) with intracytoplasmic vacuolation, characteristic of TVT (Fig. 6), basophilic irregular cytoplasm and increased nucleo-cytoplasmic ratio with anisocytosis, anisokaryosis and multiple prominent nucleoli indicating de-differentiation (anaplasia) leading to neoplasm (Fig. 4 & 5). The definitive diagnosis of intranasal TVT was confirmed based on

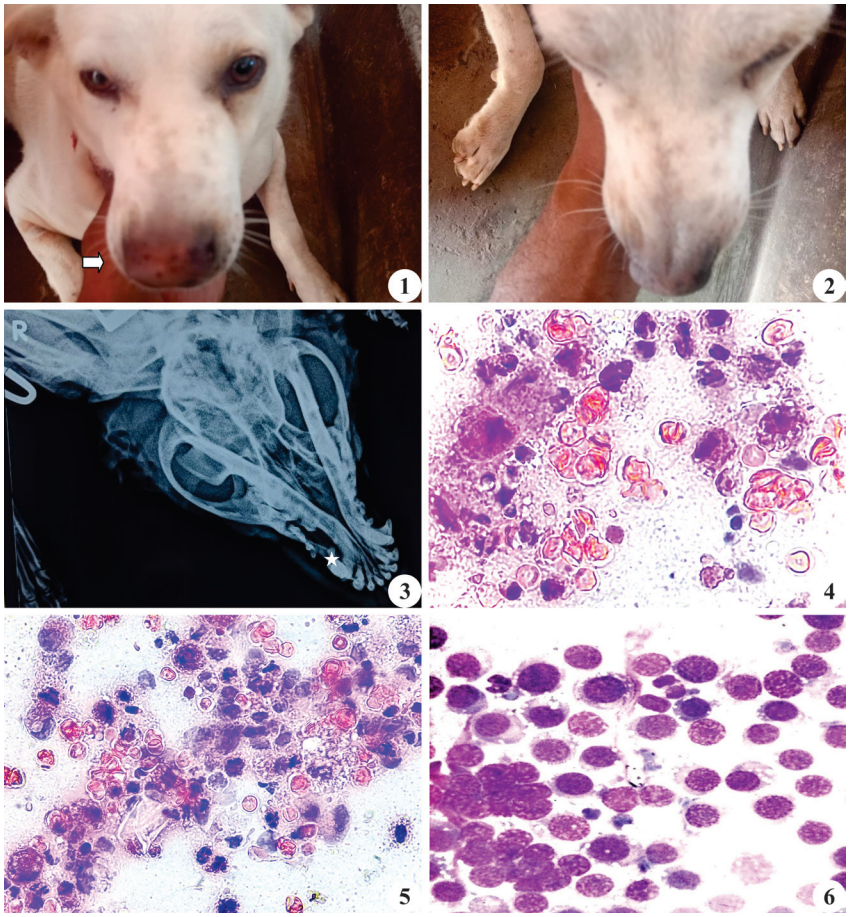

Fig. 1. Swelling of nasal area on right side (arrow); **Fig. 2.** After complete remission of the mass; **Fig. 3.** Confirmation by radiographic examination showing presence of tumorous growth (contor marked with star) on right side of nasal cavity; **Fig. 4.** Cytology revealing numerous large round cells with large neucleus and small cytoplasmic rim with vacuolations (Giemsa 100x); **Fig. 5.** Increased cellularity with neutrophilic infiltration and increased nucleo-cytoplasmic ratio (Giemsa 40x); **Fig. 6.** Presence of intracytoplasmic vacuolation: typical characteristic of TVT (Giemsa 100x).

cytological findings. Each animal received intravenous injections of vincristine sulfate @ 0.025 mg/kg body weight, administered weekly, in addition to supportive care. The treatment regimen consisted of 3 to 5 cycles. Complete remission was achieved in all cases (Fig. 2). At the follow-up, none of the dogs exhibited any adverse effects and all showed an excellent treatment response.

This study is comparable to other studies that have reported that the most common clinical symptoms of primary or secondary oral and nasal TVT are submandibular lymphadenopathy, halitosis, purulent nasal discharge, muscle deformity and the presence of friable cauliflower like lump[2]. There have been reports of secondary involvement at other body locations. The primary extragenital involvement rarely occurs[4]. In contrast to our findings, 19.2% of the dogs were diagnosed with TVT in extragenital locations like: skin, ribs, spleen, liver, nasal cavity, eye orbit, subcutaneous, submandibular, cervical and inguinal lymph nodes[8]. TVT has been found most commonly in vestibule and vagina of female and penile region of male dog and some metastasized in the ovary.

Cytological examination revealed the characteristic intracytoplasmic vacuolation, irregular basophilic cytoplasm, giant tumour cells which were in accordance with the findings of earlier worker[1,7]. TVTs should be distinguished from mast cell tumors, histiocytomas and lymphomas, which are other round cell skin tumors.

Numerous round cells with a noticeable nucleolus and basophilic cytoplasm were seen in the cytology[13]. The tumor's localization is crucial for the diagnosis. Our research indicated that the thickening of the soft tissues in the nostrils causes upper airway blockage and thus affected dogs may exhibit respiratory symptoms. One notable aspect of this dog's past was dyspnea. Oral neoplasms are responsible for blood-tinged saliva, anorexia and difficulty swallowing. Ocular tissue was impacted by the tumorous mass's progressive growth, resulting in conjunctivitis and hyperemia on the same side. According to our description, this benign tumor primarily manifests as a cauliflower-like, friable, hemorrhagic mass[17] although it seems more dispersed in the mouth[18]. In contrast, it was also reported to have an unusual appearance, resembling an ulcerated lesion with profuse granulation tissue. It has been demonstrated that medical treatment using chemotherapeutic drugs such vincristine is successful[16,18]. Vincristine sulfate was injected intravenously once a week at a dose of 0.025 mg/kg body weight to begin treatment. For the treatment of secondary problems, intranasal drops of hemocoagulase; botrophase @ 5-6 drops daily for 3-4 days and injectable broad-spectrum antibiotics were also administered. Every case showed improving signs of overall health and recovered with no problem after three to five weekly cycles of chemotherapy.

CONCLUSION

In canines, intranasal tumors can be cumbersome to diagnose due to the complex structure of the nasal sinus. Advanced imaging methods like CT scans or X ray examinations are frequently needed, coupled with biopsy for histological confirmation. Depending on the tumor's nature and stage as well as the dog's general condition, treatment options may include radiation therapy, surgery and palliative care. Despite the generally bad prognosis for dogs with intranasal tumors, especially when the tumors are malignant, detection and treatment might enhance quality of life and in certain situations, prolong survival. Additionally, palliative care may assist affected dogs retain their comfort and manage their symptoms. Present study concludes that cytological and radiographic examinations can be used to diagnose intranasal TVT and vincristine sulphate chemotherapy assist in the full remission of the neoplasm.

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