CASE REPORT
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PRIMARY INTRANASAL TRANSMISSIBLE VENEREAL TUMOR WITH OSTEOLYSIS OF MAXILLARY BONE: CYTOLOGICAL FINDINGS AND ITS SUCCESSFUL CHEMOTHERAPEUTIC MANAGEMENT

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ABSTRACT

Primary intranasal transmissible venereal tumor is an uncommon manifestation of venereal tumor in sexually intact dogs. A two-year-old male non-descript dog was presented with a history of abnormal unilateral nasal swelling, sneezing, recurrent epistaxis, and unilateral mucohaemorrhagic nasal discharge for the past three weeks. During clinical examination, numerous friable masses attaching to the gums and infiltrating the nasal septum on the right side were observed. The skull radiograph revealed increased soft tissue density in the nasal cavity with osteolysis of the maxillary bone. Cytological examination of the mass revealed numerous neoplastic round cell populations with low-to-moderate anisocytosis, anisokaryosis, a prominent mitotic figure, and abundant faint basophilic cytoplasm with unique punctate cytoplasmic vacuoles suggestive of nasal form of transmissible venereal tumor (TVT). The dog was treated with vincristine sulphate at a dose rate of 0.025 mg/kg BW intravenously once weekly for a total of five doses, along with other supportive therapies After the second dose of vincristine therapy, the clinical signs continued to improve, and the dog achieved a smooth and uneventful recovery after completing five doses of vincristine therapy

Keywords: Intranasal, transmissible venereal tumor, osteolysis, cytology, vincristine sulphate

INTRODUCTION

A transmissible venereal tumor (TVT) is a communicable histiocytic round cell neoplasm seen in sexually intact dogs. It is highly prevalent among tropical and subtropical canine populations without any report of sex or breed predispositions. The prevalence is reported to vary between

0.3 to 2.4% (Turkar *et al.,* 2018). The tumor cells are mainly inoculated in the mucosal epithelium through the abrasions caused by coitus, sniffing, licking, biting, clawing, etc. The genital form of TVT is the common manifestation in canines but extragenital forms like intranasal TVT are rarely reported. In addition to the intranasal form, the extragenital lesions occur in the oral cavity, rectum, skin, eye, and brain (Papazoglou *et al*., 2001). Grossly, it appears as an irregular, multinodular to cauliflower-like ulcerating lesion affecting unilaterally or bilaterally. Recurrent epistaxis is a frequent clinical sign associated with intranasal TVT (Papazoglou *et al*., 2001). The condition is confirmed through physical examination, fine needle aspiration cytology (FNAC), histopathology, computed tomography (CT), polymerase chain reaction (PCR), etc. The common differentials include other tumours, fungal granuloma (rhinosporidiosis), systemic infections (ehrlichiosis), and wounds. The unique phenotypic characteristics in the cytology of TVT like punctate cytoplasmic vacuoles and mitotic figures in the nuclei are even indicative of malignancy confirmation (Duncan *et al.,* 1979). The reports for metastasis are minimal in intranasal TVT. Regional lymph node affections like submandibular lymph node hypertrophy are observed in some cases. Cryosurgery, chemotherapy, radiotherapy, and immunotherapy are the commonly employed therapeutic options for tumor regression (Nak *et al.,* 2005). The present case briefs the successful management of primarily intranasal tumors with chemotherapy.

CASE HISTORY AND OBSERVATIONS

A two-year-old non-descript male dog was presented to the Referral Veterinary Polyclinic and Teaching Veterinary Clinical Complex, IVRI, Bareilly, Uttar Pradesh, India, with a history of abnormal soft swelling in the right side of the nasal region for the past three weeks. Animal exhibited sneezing, recurrent epistaxis, and unilateral mucohaemorrhagic nasal discharge along with unilateral nasal swelling (Fig: 1a & b). The owner reported that the dog had a history of cohabitation with a TVT-infected dog. On clinical examination, numerous friable masses attaching to the gums as well as infiltrating the right nasal septum were noticed (Fig: 2a). The development of an oronasal fistula in the hard palate was an incidental finding (Fig: 2b). The physiological parameters were within the normal range. Giemsa-stained FNAC of the mass revealed numerous neoplastic round cell populations with unique punctate cytoplasmic vacuoles which were suggestive of TVT (Fig: 4a & b). Osteolysis of the maxillary bone along with increased

soft tissue density in the nasal cavity were remarkable findings from skull radiography (Fig: 3a). The thoracic radiograph evinced the absence of metastasis (Fig: 3b). Leukocytosis with mild anaemia and a slight reduction in haematocrit value was observed in the hemogram (Table 1).

TREATMENT AND DISCUSSION

The dog was treated with vincristine sulphate at a dose rate of 0.025 mg/kg BW intravenously once weekly for a total of five doses, along with other supportive therapies including pantoprazole at 1 mg/kg, ondansetron at 0.5 mg/kg, oral multivitamin syrup, and haematinics. The animal made an uneventful recovery without any signs of recurrence. The genital form of TVT is very common in sexually intact dogs, but the extra-genital form as a primary lesion is a rare incidence. The most common site of the extra-genital form is the nasal cavity because of the vigorous sniffing and licking behaviour (Papazoglou *et al.,* 2001). The major clinical signs associated with this neoplastic condition include recurrent epistaxis, dyspnea, mucoid nasal discharge, and facial tumefaction (Sankar *et al.,* 2016). Osteolytic changes of the maxillary bone, dental arcade, and nasal turbinate bone will cause marked facial distortion in dogs. In the present case the lymphnodes were found to be apparently normal. Metastasis of the tumor is seen as a very rare incidence with occasional involvement of regional or distant lymph nodes (Nielsen *et al.,* 1990). The cytology and histopathological examination of

Table 1: Haematological parameters of the dog on the day of presentation

Parameter	Day 0 values	Reference values*
Hemoglobin (g/dL)	9	11.9 - 18.9
RBCs ($\times 10^6$ / L)	5	4.5 - 6.5
Total leukocyte count (per mm^3)	21,000	4 - 11,000
Lymphocyte (%)	39	20 - 45
Eosinophil (%)	4	1 - 6
Platelet count (lakh/mm^3)	2	2 - 6
PCV (%)	28	35 - 57

*Hematology reference values, The Merck Veterinary Manual - 11th edition (2016)

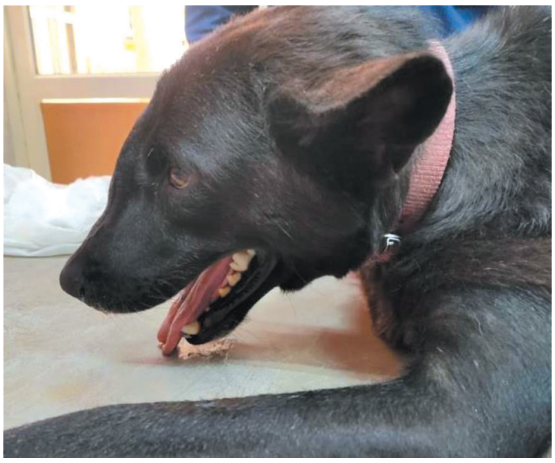

Fig 1: Animal presented with right sided intra nasal tumor mass.

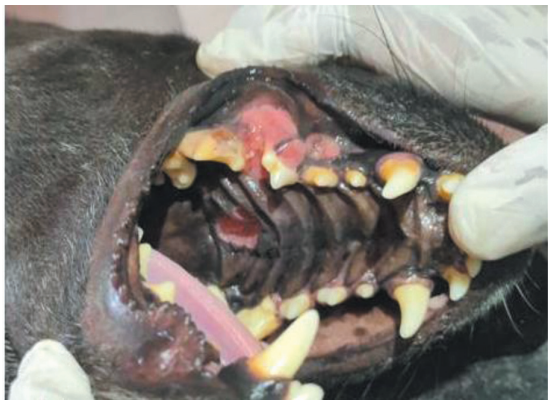

Fig 2: Friable masses attaching the gum with oronasal fistula in the hard palate

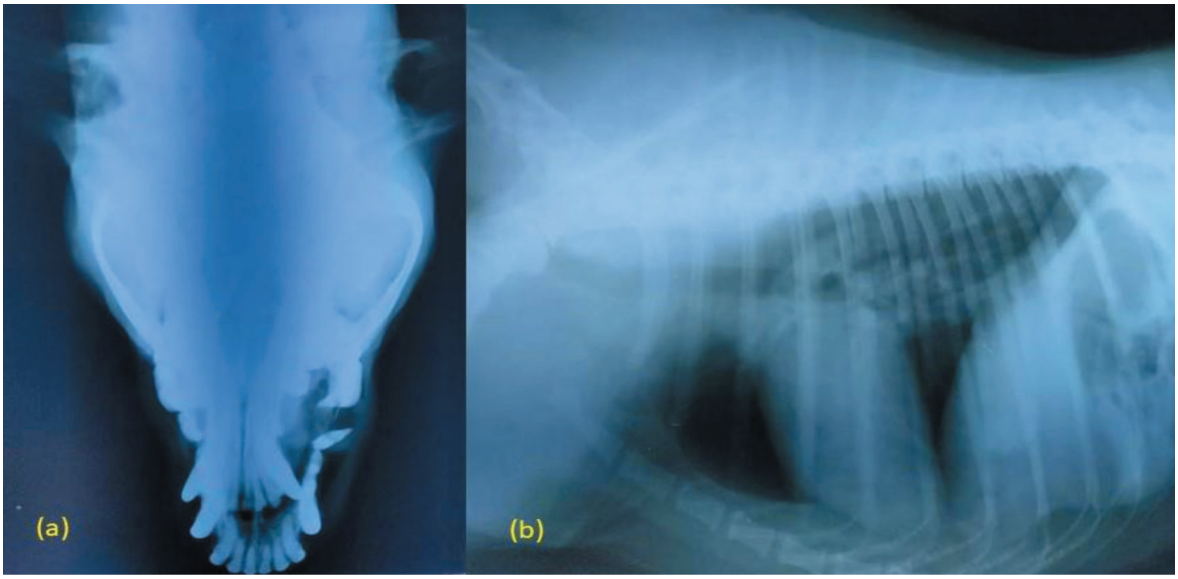

Fig 3: (a) Ventrodorsal view of skull radiography - Osteolysis of maxillary bone along with increased soft tissue density of nasal cavity **(b)** Thoracic radiograph revealing the absence of metastasis.

the tumor mass are highly confirmative for the diagnosis. Round neoplastic cells with a high ratio of nucleoplasm to the cytoplasm, intracytoplasmic vacuoles (foamy cells), prominent nucleoli, mitotic figures, and pale basophilic cytoplasm are the characteristic features of TVT (Papazoglou *et al.,* 2001). Lymphocytoid, plasmacytoid, and mixed forms are the three cytomorphological subtypes of TVT (Setthawongsin *et al.,* 2018). Since LINE *c-myc* gene rearrangement is unique for canine TVT, PCR detection of LINE *c-myc* gene rearrangement can also be considered confirmatory for TVT (Setthawongsin *et al.,* 2018).

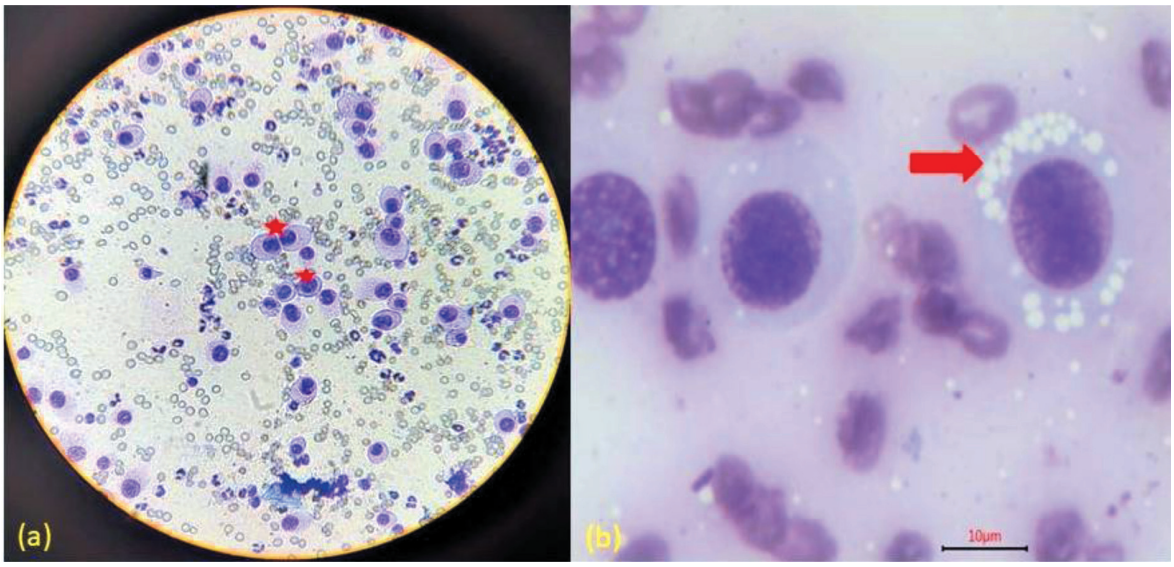

Fig 4: (a) and (b) FNAC revealing neoplastic round cell populations with low-to-moderate anisocytosis, anisokaryosis, prominent mitotic figure (asterisk), and abundant faint basophilic cytoplasm with unique punctate cytoplasmic vacuoles (arrow) (Giemsa staining).

Surgical resection is futile in this case due to a higher recurrence rate (Boscos, 1988). The recurrent epistaxis might have contributed to mild anaemia and a slight reduction in haematocrit values. The development of oronasal fistula in the hard palate and osteolytic changes in the maxillae were suggestive of the locally invasive and destructive nature of intranasal TVT. The damage to turbinate bones was probably contributed by the friable mass occupied within the nasal sinuses. Osteolytic changes in the maxilla also resulted in the morbidity of the premolar tooth in the right dental arcade. The fragile nature of the tumor mass tends to bleed even with minute manipulations. This may get exacerbated during sneezing and result in recurrent epistaxis with mucohaemorrhagic discharge. In case of nasal TVT, the treatment may vary depending on the extent of the tumor and its response to chemotherapy. Surgical excision of the tumor from the nasal cavity might be considered in some specific cases where chemotherapy alone is not sufficient or if the tumor is causing severe obstruction or other complications.

The Giemsa stained FNAC of the intranasal mass revealed numerous neoplastic round cell populations with low-to-moderate anisocytosis, anisokaryosis, a prominent mitotic figure, and abundant faint basophilic cytoplasm

with unique punctate cytoplasmic vacuoles. These vacuolations also help in differentiation from other possible nasal neoplasms like adenocarcinoma, sarcoma, lymphoma, mastocytoma, histiocytoma, plasmacytoma, etc (Cangul, 2001). The cytology results alone can be used for the confirmatory diagnosis of canine TVT. Vincristine monotherapy at the dose rate of 0.5-0.7 mg/m^2 weekly injection for 4 to 6 weeks intravenously is the best therapeutic regimen for the complete remission of TVT. Combination therapy with doxorubicin or cyclophosphamide is also indicated for the treatment (Nak *et al*., 2005).

CONCLUSION

Primary intranasal TVT is a rare form of nasal neoplasm in canines. A cytology examination aids in differentiating the condition from other malignant neoplasms. Timely diagnosis through FNAC and prompt initiation of vincristine chemotherapy offer the most favorable prognosis for intranasal TVT.

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