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Amelanotic melanoma in a dog: A case report

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Abstract

A 10-year-old German shepherd dog was presented with a history of gingival and labial growth of two months. Haematological, biochemical, and physiological parameters were within normal limits. Right lateral thoracic radiography showed no evidence of metastasis. This condition was tentatively diagnosed as oral tumor. Tumor was surgically excised using monopolar electrocautery. The postoperative medications included broad spectrum antibiotic, analgesic, fluid therapy and topical chlorhexidine gluconate gel application at the excision site. A liquid diet was recommended after 3 days. Histopathological evaluation of the excised mass revealed atypical spindle cells of mesenchymal origin with nuclear pleomorphism, scant eosinophilic cytoplasm, low mitotic activity, and occasional melanin-like pigments, consistent with Amelanotic Melanoma.

Keywords: Dog, oral tumor, amelanotic melanoma, electrocautery

Introduction

Oral tumors are neoplastic growths originating from gingiva, buccal and labial mucosa, tongue, tonsillar region, and dental tissues. Male dogs have a relatively higher risk compared to females (Radlinsky *et al.*, 2019) [6]. Oral tumors are more commonly observed in middle-aged to older dogs, with an average onset around 9 years of age. Certain breeds like Standard and Miniature Schnauzers, Doberman Pinschers, Scottish Terriers, Irish and Gordon Setters, and Golden Retrievers are at greater risk (Ramesh *et al.*, 2025) [7]. Canine oral tumors may be influenced by exposure to passive tobacco smoke, flea control products, and various dietary or environmental conditions. Chronic irritation and sustained antigenic stimulation are thought to contribute to malignant transformation (Mikiewicz *et al.*, 2019) [3]. According to Radlinsky *et al.* (2019) [6], oral cavity is the fourth most common site for neoplasia in dogs, accounting for approximately 5% of all malignant tumors. The most common oral malignancies in dogs are melanomas, squamous cell carcinomas, and Fibrosarcomas (Cray *et al.*, 2020) [2]. Oral malignant melanomas develop from transformed melanocytes, which originate from neural crest cells and migrate through both endodermal and ectodermal mucosal layers, ultimately localizing in the oral mucosa (Pazzi *et al.*, 2022) [4]. Oral melanomas in dogs commonly affect the gingiva, lips, and cheeks, with less frequent involvement of the tongue and tonsils. Pigmentation varies widely, and some tumors may be entirely amelanotic. Amelanotic canine oral melanoma is more aggressive than melanotic canine oral melanoma (Perez- Santana *et al.*, 2024) [5].

Materials and Methods

A 10-year-old German shepherd dog was presented to the small animal section of Department of Veterinary Surgery and Radiology, Hebbal, Bengaluru, with a history of growth on gingiva and lips for the past 2 months (Fig. 1). The size of the growth was gradually increasing due to which the animal was showing signs of inappetence, dysphagia and excessive salivation for 1 week. Hematological, physiological and biochemical parameters were within the normal range. Right lateral thoracic radiograph revealed no signs of metastasis (Fig. 2). On the basis of physical examination the condition was tentatively diagnosed as an oral tumor, and surgery was decided upon.

The animal was sedated with Inj. Xylazine @ 1 mg/ kg, IM, Inj. Atropine sulphate 0.04 mg/ kg, IM. Preoperatively Inj. Ceftriaxone @ 25 mg/kg, IV, Inj. Meloxicam @ 0.2 mg/kg, IM, were given. The animal was anesthetized and maintained using intravenous administration of Inj. Thiopentone sodium, given to effect. The tumor mass was excised, and haemostasis was achieved using monopolar electrocautery (Fig. 3). Postoperatively, the owner was advised to withhold food and water for 3 days, during which the animal was maintained on intravenous fluids administered twice daily. Supportive care included Inj. Ceftriaxone @ 25 mg/kg, IV, bid and Inj. Meloxicam @ 0.2 mg/kg, IM, sid for 3 days. After 3 days, a liquid diet was recommended, and the owner was advised to apply chlorhexidine gluconate antiseptic gel to the gums and lips at the site of tumor excision. The excised tumor mass (Fig. 4) was submitted for histopathological examination.



Fig 1: German shepherd dog with gingival tumor



Fig 2: Right lateral thoracic radiograph



Fig 3: Tumor excision using monopolar electrocautery



Fig 4: Excised tumor mass

The lesional tissue showed for the presence of atypical spindle cells of mesenchymal origin characterized by forming laces of poorly differentiated cells showing remarkable nuclear pleomorphism with moderate to scant eosinophilic cytoplasm. These neoplastic cells showed centrally located prominent nucleolus. Mitotic figures were low. Occasionally, these cells possessed minimal amounts of golden brown pigments within cytoplasm resembling melanin. These features are suggestive of Amelanotic Melanoma (Fig. 5).

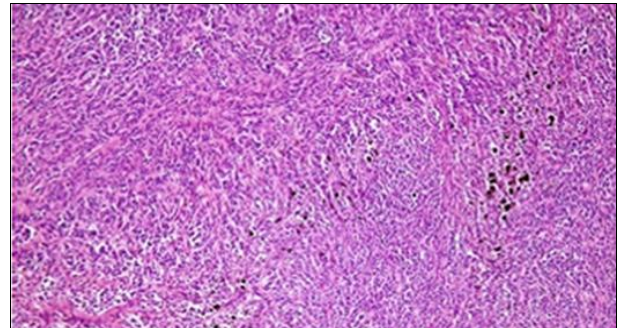


Fig 5: Histopathology suggestive of Amelanotic Melanoma

Results and Discussion

The animal recovered uneventfully. Postoperative follow-up was done for two months, and there were no signs of recurrence.

Oral tumors may arise from various oral structures and spread locally into adjacent bone or cartilage. Metastasis typically occurs via lymphatic or hematogenous routes to regional lymph nodes and lungs (Bergman, 2007) ^[1]. In addition to common sites, metastasis may also involve the brain, heart, and spleen (Ramesh *et al.*, 2025) ^[7]. The WHO TNM staging system which includes assessment of tumor size, nodal involvement, and distant metastasis is considered insufficient for accurately predicting prognosis in oral melanomas. An alternative approach that considers tumor volume instead of diameter, along with tumor location and mitotic index, has demonstrated stronger prognostic value in multiple studies (Perez- Santana *et al.*, 2024) ^[5]. Surgery is the first treatment of choice for most oral tumors as the goal is to achieve local control. However additional treatment modalities including chemotherapy, immunotherapy, and radiation may be required when surgery is not possible or when treatment of microscopic metastatic disease is indicated (Cray *et al.*, 2020) ^[2]. According to Bergman, (2007) ^[1], radiation therapy is used for canine melanoma when surgery is not feasible, margins are incomplete, or regional lymph nodes are involved. Coarse fractionation (6-9 Gy weekly) yields 53-69% complete and 25-30% partial remission rates. However, recurrence and distant metastasis remain frequent outcomes. Carboplatin has efficacy against spontaneously occurring macroscopic malignant melanomas in dogs (Veena *et al.*, 2012) ^[8]. Studies indicates that chemotherapy offers minimal benefit as an adjuvant therapy for canine melanoma (Pazzi *et al.*, 2022) ^[4]. According to Bergman, (2007) ^[1], some immunotherapeutic strategies have shown clinical antitumor activity, but their development is hindered by high costs, time demands, reliance on patient-derived tumor cell lines, and challenges in consistency, reproducibility, and quality control. According to Pazzi *et al.* (2022) ^[4], immunotherapy, electrovaccination combined with gene therapy can increase the lifespan following surgery. However, more carefully designed studies are needed to confirm its benefits, without mixing in other treatments that could affect the results.

Conclusion

The present case highlights the successful surgical management of an oral amelanotic melanoma in a German shepherd dog. Early diagnosis and complete surgical excision played a vital role in the favourable outcome. However, considering the malignant potential of oral melanomas, regular follow-up is essential to monitor for recurrence or metastasis.

Conflict of Interest

Not available

Financial Support

Not available

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