

Successful therapeutic management of nasal carcinoma in a dog

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Abstract

A Four and a half years old Great Dane was presented to Department of Veterinary Medicine, Veterinary College, Hebbal, Bengaluru with history of inappetance, swelling at the right mandibular region, epistaxis and ozena or atrophic rhinitis for past one month. The dog didn't respond to symptomatic treatment. Nasal washing was collected and sent for cytology which was suggestive of carcinoma of nasal passage. The dog was treated with chemotherapeutic agent, Inj Doxorubicin. The dog showed drastic clinical cure. This report confirms the effectiveness of chemotherapy alone without radiotherapy in a dog with nasal carcinoma and provides a guideline for providing alternative treatment.

Key words: Dog, Nasal carcinoma, Doxorubicin

Nasal carcinomas in dogs often represent a diagnostic and therapeutic challenge due to their confined location within the nasal cavities (Mortier and Blackwood, 2020). Differentials should include other causes of chronic nasal discharge such as chronic rhinitis (an inflammatory/allergic condition), fungal rhinitis (aspergillosis), and foreign bodies. Most of nasal tumours are carcinomas (adenocarcinomas), although squamous cell carcinomas (SCC), undifferentiated carcinomas and transitional carcinomas are also reported. The sinonasal carcinomas usually originate in the nasal vestibule and sinuses and may invade neighbouring tissues (Katz *et al.*, 2002). Though there is no clear breed predilection, but there are reports of higher occurrence in dolicocephalic breeds such as Golden Retriever, Labrador Retriever and German Shepherd (Yoon *et al.*, 2008). Sones *et al.* (2013) reported that the mean age at which the dogs are diagnosed is 10 years but dogs of all ages can be affected, and nasal tumours have been reported in dogs as young as 1 year old.

The most common presenting sign in dogs with nasal carcinoma include nasal discharge, sneezing, nasal congestion, signs of nasal obstruction, epistaxis, epiphora, dyspnoea and facial deformity (Avner *et al.*, 2008; Mason *et al.*, 2013). Though there is rare distant metastasis, the long term prognosis of these tumours is considered poor as they are diagnosed in advanced stage in a critical location near the eyes and brain. Clinical improvement and survival time depends in part on the host immune system (Mukaratirwa *et al.*, 2001). Diagnosis of nasal carcinomas

includes hematology – serum biochemistry, radiography, cytology, Computed tomography (CT) and Magnetic resonance imaging (MRI). Treatment options include surgery, radiation therapy, chemotherapy, or palliative nonsteroidal anti-inflammatory drugs (Impellizeri *et al.*, 2008).

Case History and Clinical Observations

A Four and half years old male Great Dane weighing around 44 kg was presented to Department of Veterinary Medicine, Veterinary College, Hebbal with the history of swelling at the right mandibular region, dysphagia and epistaxis for the past one month. The dog was dull, inappetent with normal voiding habits. On close clinical examination, unilateral epistaxis (right side) with slightly enlarged right prescapular lymph node was observed. However, examination of the oral cavity revealed normal dentition with no remarkable abnormality. Physiological parameters *viz.* rectal temperature (102 °F), respiration rate (30 breaths/min), heart rate (100 bpm) were in normal limits.

Blood sample was collected for hematology and serum biochemistry to rule out infectious causes. Since, there was no outgrowth inside the nasal planum or oral cavity, nasal washing was collected for cytology. The smear prepared from processed nasal washing was stained with Giemsa for cytology.

Haematological examinations revealed absolute leukocytosis (21,500 cells/c mm) with mild anemia (PCV 33.7%, Hb 9.6 g%) and normal platelet count (4,09,000 cells/ μ L). Serum biochemistry results were within normal

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limits. Blood smear examination revealed no evidence of hemoprotozoa. Cytological examination of nasal washing revealed the presence of malignant epithelial neoplastic cells along with suppuration. Based on the signalment, clinical signs, and cytology, the case was diagnosed as nasal carcinoma.

The owner was informed about the prognosis of the case. For stabilising the patient, symptomatic treatment was started with Tab. Bayrocin 150 mg @ 5 mg/kg BW sid, Tab. Augmentin 375 mg @ 12.5 mg/kg BW bid, Inj. Vit K 2 ml sc and Tab. Ethamsylate 500mg one bid for a week. As there was no much clinical cure, with due consent from the owner chemotherapy was decided with Inj. Doxorubicin @ 30mg/m² with the body surface area of the dog being 1.20 m². The total dose required was 36 mg. Inj. Doxorubicin 18 ml (available as 2mg/ml) was injected into 300 ml normal saline and slowly infused with utmost care followed by 100 ml normal saline alone. Totally three doses of Inj. Doxorubicin was administered at an interval of 3 weeks. The animal showed gradual improvement in its appetite and epistaxis was controlled after the first dose of doxorubicin. The case was followed for 6 months post treatment with no recurrence.

Discussion

This paper reports successful therapeutic management of nasal carcinoma with novel protocol using doxorubicin. The precise and timely diagnosis of nasal tumours is difficult most of the time. Although, nasal carcinomas are recorded in older animals (Sones *et al.*, 2013), the present case was observed in a middle aged dog. Primary clinical manifestation in the present case was epistaxis, dysphagia and swelling at the mandibular region which were also observed by Avner *et al.* (2008) and Mason *et al.* (2013). Hematological investigation revealed mild anemia due to epistaxis. As, histopathology could not be performed in the present case due to non-availability of external mass, cytology of nasal washing was performed for confirmation.

Radiation therapy, though definitive or palliative, is considered current gold standard in the treatment of nasal tumour. But, due to non-availability and risk involved in radiation therapy, chemotherapy can be used with low response rates. Among the chemotherapeutic agents, Doxorubicin is perhaps the most effective and commonly

used in veterinary oncology. Doxorubicin is effective against hematopoietic malignancies (i.e. lymphoma) and solid tumours such as hemangiosarcoma and mammary carcinoma. NSAIDs may improve the quality of life of dogs undergoing radiation therapy yet there is no proven role in tumour control.

This report on nasal carcinoma suggests that, this should be considered in the differential diagnosis of diseases that occur with chronic epistaxis, dysphagia and facial deformity in this species. Though imaging techniques are central to confirm the diagnosis, but simple and rapid cytology from nasal washing along with progression of clinical signs can aid in the diagnosis and prognosis of condition.

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