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*Short communication*

# Neoplastic lesions in the nasal cavities of dogs

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## Abstract

This paper aims at evaluating the frequency of nasal cavity tumors in dogs as well as comparing an endoscopic examination with a histopathological evaluation of the collected biopsy specimens. The study was conducted on 68 dogs. During the endoscopic examination, proliferative lesions were recognized in 20 dogs. During the histopathological examination, neoplastic lesions were confirmed in 95% of the dogs in which proliferative lesions were identified in the endoscopic examination. Adenocarcinoma occurred most frequently in the population under study.

**Key words:** nasal cavity tumors, rhinoscopy, histopathological examination, dog

## Introduction

Nasal cavity tumors occur relatively rarely. They constitute 1 to 2.5% of all neoplasms occurring in dogs. They are most often found in middle-aged and older dogs. Mesocephalic and dolichocephalic dog breeds are predisposed to the occurrence of nasal tumors (Malinowski 2006, Sapierzyński 2010). A medical history, clinical examination, radiological examination, endoscopic examination, computed tomography, magnetic resonance imaging, and histopathological examination are helpful in the diagnostics of these tumours (Willard and Radlinsky 1999, Lefebvre et al. 2005). Clinical symptoms associated with nasal cavity tumors are as follows: unilateral or bilateral rhinorrhoea, nose bleeding, sneezing, difficulty with breathing, and nasal area deformation (Knotek et al. 2000).

The aim of the paper was the evaluation of the frequency of nasal cavity tumors that occur in dogs as

well as a comparison of the results of the endoscopic examination with of the histopathological evaluation of the collected biopsy specimens.

## Materials and Methods

The study was carried out on 68 dogs of different breeds, size, sex, and age. The animals were referred to the endoscopy laboratory in order to perform a rhinoscopy. The dogs were qualified for an endoscopic examination based on the following criteria: a complete medical history, full clinical examination, and results of additional examinations. Fasting for 24 hours and excluding water intake six-hours prior to the examination were part of the dietary preparation for rhinoscopy. The rhinoscopy was performed under general anaesthesia. The posterior rhinoscopy was carried out using a fiberoptic, whereas the anterior

rhinoscopy was conducted with the use of a rigid endoscope. The collected biopsy specimens were fixed in a 7% buffered formalin solution and subsequently stained with hematoxylin and eosin.

## Results and Discussion

The endoscopic examination of the nasal cavity showed proliferative lesions in 20 dogs (29.4%) and inflammation in 48 dogs (70.6%). Proliferative lesions were found in 14 dogs of mesocephalic breeds and 6 dogs of dolichocephalic breeds. These lesions were recognized in 17 male dogs (85%) and three female dogs (15%) aged from three years and 11 months to 15 years and two months. The following changes were observed during the endoscopic examination: proliferative lesions occurring both within the nasal cavities and the choanae area – 8 cases, proliferative lesions visible only within the nasal cavities – 5 cases and proliferative lesions visible only within the choanae area – 7 cases. On the basis of the histopathological examination, the following were found: adenocarcinoma – 11 cases, adenoma – 3 cases as well as chondrosarcoma, malignant melanoma, malignant mesenchymal small round cell tumor, keratinising squamous-cell carcinoma, papilloma – one case per each disease. The inflammatory lesions included: chronic lymphoplasmacytic rhinitis – 41 cases, mycotic rhinitis – 5 cases and chronic eosinophilic rhinitis – 3 cases.

This study showed that neoplastic lesions within the nasal cavities most frequently occur in meso- and dolichocephalic breeds of dog (70% of cases). Such a finding has also been confirmed by Lobetti (2009) and Sapieryński and Żmudzka (2009), who observed proliferative nasal cavity lesions in these breeds in 62.9% and 57.1% respectively. On the other hand, Pietra et al. (2010) found a lower percentage of lesions in meso- and dolichocephalic breeds (27.8%). However, this results from the fact that their research group mainly consisted of cross-breed dogs (66.7%).

The study showed that the average age of dogs with nasal cavity neoplastic lesions was  $9.14 \pm 3.24$  years. These lesions were more often observed in male dogs (85%) than in females. Pietra et al. (2010) observed neoplastic lesions in dogs of a similar age, where the lesions occurred with the same frequency in male as well as female dogs. The average age of dogs with neoplastic lesions of nasal cavities was comparable in the studies of Lobetti (2009) and Meler et al. (2008) and amounted to 9 years and 9.5 years, respectively.

In the author's own studies, dogs in which, during the endoscopic examination, proliferative lesions were

found, constituted 29.41%. In turn, Pietra et al. (2010) observed proliferative lesions during an endoscopic examination in 46.3% of dogs, Lobetti (2009) found these lesions to occur in 46.7% of dogs, Meler et al. (2008) in 11.25%, Knotek et al. (2000) in 23.1%, and Willard and Radlinski (1999) in 33% of the dogs studied.

Neoplastic lesions were confirmed in the histopathological examination in 95% of dogs, which had proliferative lesions in the endoscopic examination. Malignant neoplasms were found in 75% of dogs, benign neoplasms were found in 20% of dogs, and inflammatory lesions were found in 5% of dogs. By means of the histopathological examination, Pietra et al. (2010) confirmed neoplastic lesions seen during the endoscopy in 18 dogs (72%). However, they recognized inflammatory lesions in 28% of cases. On the basis of the histopathological examination, Sapieryński and Żmudzka (2009) recognized neoplastic lesions in 15.2% cases. The results of the histopathological examination were in accordance with the endoscopic examination in 62.5% dogs in which, during the rhinoscopy, neoplastic lesions were suspected. However, in two dogs in which, during the endoscopic examination, small changes in the colour of the mucous membrane of nasal cavities were observed, adenocarcinoma was recognized in the histopathological examination. In turn, the studies of Meler et al. (2008) confirmed neoplastic lesions through a histopathological examination in 77.8% dogs.

In the author's own studies, adenocarcinomas were most often observed in the histopathological examination and constituted 57.9% of all cases. In their studies, Pietra et al. (2010) also found adenocarcinomas to occur most frequently, in 61.1% of animals. Apart from adenocarcinomas, they also found chondrosarcoma, lipofibroma, neuroendocrine tumors, mastocytoma, and papilloma. In the studies of Sapieryński and Żmudzka (2009), adenocarcinoma was found in six dogs (85.7%) and an undifferentiated carcinoma was diagnosed in one dog. In their studies, Willard and Radlinsky (1999) observed malignant tumors in most cases, of which adenocarcinomas, squamous carcinomas and undifferentiated carcinomas accounted for 60%. They reported that fibrosarcoma, chondrosarcoma, osteosarcoma, neuroblastoma, neuroendocrine tumors, melanoma, fibroma, and chondroma occurred less frequently. The most commonly recognized neoplasms in the histopathological examination by Lobetti (2009) included the undifferentiated carcinoma and adenocarcinoma and, less frequently, transitional cell carcinoma, chondrosarcoma, fibrosarcoma, neuroendocrine tumor, squamous carcinoma and adenoma.

The endoscopic examination proved to be highly effective in the diagnosis of nasal cavity proliferative lesions. However, this examination should always be accompanied by a histopathological examination of specimens collected from the proliferative lesions. Our studies also showed that the most common neoplasms of the nasal cavities of dogs was adenocarcinoma.

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