An 8-year-old 10.1-kg neutered male mixed-breed dog was euthanized after a 1-month history of chronic coughing, upper airway stridor, and fainting episodes 2 or 3 times a day.

Prior to euthanasia, physical examination revealed mucous nasal discharge and a mass that expanded the soft palate and protruded into the right aspect of the nasopharynx. The mass completely blocked the left nasal airway and partially blocked the right nasal airway. The dog was euthanized with an IV overdose of pentobarbital because of its poor prognosis and submitted for necropsy. Gross anatomic changes were restricted to the caudal nasal cavity and pharynx. A longitudinal section of the head revealed a well-demarcated, 2.8-cm-diameter, soft white mass that expanded the soft palate and extended dorsally into the nasopharynx (Figure 1). No other gross changes were observed.

Histopathologic findings

Samples of the mass and multiple organs were collected, placed in neutral-buffered 10% formalin, and routinely processed for histologic examination; sections were stained with H&E stain. The nasopharyngeal mass consisted of closely apposed sheets and cords of neoplastic mast cells supported by a scant fibrovascular stroma and preexisting submucosal collagen bundles (Figure 2). Neoplastic cells infiltrated the deep submucosa and dissected adjacent palatine salivary glands. Neoplastic mast cells were round and had faintly eosinophilic cytoplasm that contained numerous basophilic, Giemsa- and toluidine blue-positive granules (Figure 3). Nuclei were round or oval and had finely stippled chromatin with 1 or 2 nucleoli. Mild to moderate anisocytosis and anisokaryosis were present, and the mitotic count was 20 mitotic figures/2.37 mm². Scattered throughout the mass were moderate numbers of eosinophils and small necrotic foci containing cell debris and neutrophils. The cortex and medullary sinususes of the
retropharyngeal and submandibular lymph nodes were partially obliterated by neoplastic mast cells that were morphologically similar to those within the main mass. No pathological changes were observed in the other examined organs.

**Morphologic Diagnosis and Case Summary**

Morphologic diagnosis: nasopharyngeal mast cell tumor (MCT) with metastasis to the retropharyngeal and submandibular lymph nodes.

Case summary: nasopharyngeal MCT in a dog.

**Comments**

The diagnosis of nasopharyngeal MCT with metastasis to the retropharyngeal and submandibular lymph nodes in the case described in the present report was made based on the characteristic round cell morphology of neoplastic cells and Giemsa- and toluidine blue–positive cytoplasmic granules. The chronic cough and upper airway stridor were likely associated with the presence of the mass. No changes were observed in the brain and heart, and the reported fainting episodes were likely associated with dyspnea and hypoxia resulting from physical obstruction of the upper respiratory tract by the MCT. Mast cell tumors are malignant round cell neoplasms that develop mainly in the dermis and subcutaneous tissues of dogs. In dogs, extracutaneous MCTs are uncommon to rare and have been reported particularly in the mucocutaneous junctions, oral cavity, nasal cavity, tonsil, gastrointestinal tract, liver, and spleen. The clinical behavior of extracutaneous MCTs differs from that of cutaneous MCTs. Oral MCTs account for < 5% of all oral neoplasms of dogs and develop predominantly on the lips and gingiva and rarely on the tongue, palate, pharynx, and larynx. No age, sex, or breed predisposition has been reported for extracutaneous MCTs in dogs. The MCTs affecting the perioral skin, oral mucocutaneous junction, and oral mucosa tend to be highly biologically aggressive with regional metastatic rates varying from 55% to 72%. Dogs with oral MCTs have a median survival time of 9 to 14 months after the diagnosis, which is reportedly shorter than that of dogs with no regional lymph node metastasis (median survival time, 52 months). Nasal and nasopharyngeal MCTs are exceedingly rare and also have an aggressive biological behavior with high rates of metastases to regional lymph nodes, as observed in the case described in the present report. Similarly, visceral MCTs are biologically aggressive and have a high prevalence of regional and distant metastasis at the time of diagnosis, which may often lead to systemic disease and death. A less aggressive tonsillar MCT has been reported, suggesting that there may be variations in the clinical behavior of extracutaneous MCTs. Extracutaneous MCTs also tend to have different drug susceptibilities, compared to those of cutaneous MCTs, which may contribute to the overall poor prognosis for affected dogs as a result of ineffective treatment protocols.

The classic 3– and 2-tier grading schemes for cutaneous MCTs have not been standardized for extracutaneous MCTs. However, for dogs with mucosal MCTs, a mitotic count > 5 mitotic figures/2.37 mm² (equivalent to 10 FN22/40X fields), as observed in the dog of this report, has been associated with a poor prognosis.

The main clinical and gross differential diagnosis for the soft pharyngeal mass in the dog of the present report was lymphoma followed by pharyngeal carcinoma or pharyngeal sarcoma, and diagnostic confirmation of nasopharyngeal MCT was easily achieved after histologic examination of the mass.

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**References**