



Nasal Discharge & Epistaxis in a German Shorthaired Pointer

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A 12-year-old, 25.5-kg, spayed female German shorthaired pointer was presented to the emergency service for recurrent unilateral nasal discharge and acute onset of epistaxis.

HISTORY

Lifestyle

The dog was 1 of 3 dogs in the household. She was:

- An indoor/outdoor pet that had not traveled outside the state (Colorado)
- Current on immunizations, but had not received any recently
- Not on routine heartworm prevention.

There was no history of weight loss, change in appetite, excess water consumption, or exposure to vitamin K antagonist rodenticide products. The other 2 dogs were healthy.

Clinical Signs & Diagnostics

The dog had initially been seen at another veterinary hospital 5 months previously. At that time, the primary clinical complaints were a dry hacking cough and serous nasal discharge. Cervical and thoracic radiographs performed at initial presentation revealed no abnormalities.

Previous Treatment

Initial therapy consisted of:

- Prednisone: 10 mg (0.4 mg/kg) PO Q 12 H, tapered over 10 days
- Doxycycline: 150 mg (6 mg/kg) PO Q 12 H for 1 week.

The nasal discharge and cough resolved, but then recurred within 3 to 4 days of discontinuing the medications.

NASAL NOTES

- Epistaxis is a relatively common presenting complaint in veterinary hospitals/emergency centers.
- Diagnostics for dogs with nasal discharge and epistaxis include:
 - » **Laboratory analysis:** CBC, serum biochemistry profile, PT, APTT
 - » **Blood pressure measurement**
 - » **Imaging:** Radiography, ultrasonography, CT
 - » **Rhinocopy:** Biopsy by forceps & nasal hydropulsion
 - » **Histopathology**
- In 1 study, nasal neoplasia was found in 50% to 86% of cases of epistaxis that occurred in combination with another nasal abnormality; in another study, epistaxis occurred in up to 75% of nasal neoplasia cases.
- Treatment options for dogs with nasal carcinoma include:
 - » **Radiation therapy:** Considered the gold standard of care
 - » **Surgical debulking:** Typically combined with radiation therapy
 - » **NSAID therapy:** Piroxicam has shown some efficacy; however, it is considered controversial due to lack of evidence of increased survival
 - » **Nasal hydropulsion:** Used to debulk and collect samples from nasal tumors as well as potentially treat nasal foreign bodies.
- Prognosis for dogs with untreated nasal carcinomas is poor (88–95 days); however, radiation therapy can increase survival to 14 months.

Therapy over the next 5 months included:

- Doxycycline
- Clindamycin
- Acepromazine
- Maropitant.

Additional Diagnostics & Treatment

Two months after onset of clinical signs, the dog was sedated for nasal cavity flushing. A limited examination of the nares and rostral nasal cavity was performed with an otoscope head; no abnormalities were found. Skull radiographs were also performed and revealed increased radiopacity in the left nasal passage (**Figure 1**).

Antibiotics, glucocorticoids, and sedation did not prevent recurrence or progression of nasal discharge and cough. The unilateral nasal discharge continued, became purulent, and then hemorrhagic. At presentation to the referral hospital, the discharge had progressed to mild to moderate epistaxis.

Other Pertinent History

Three years prior to current clinical signs, the dog had a history of recurrent purulent nasal discharge secondary to inhalation of hay seeds into the nasal cavity. Nasal discharge and sneezing resolved after the nasal cavity was flushed with saline.

PHYSICAL EXAMINATION

When presented to our facility, the patient was bright and alert.

- The most relevant abnormalities were isolated to the upper respiratory system and included:
 - » Left-sided epistaxis
 - » Mildly decreased airflow from left nares.
- An oral examination revealed:
 - » Mild dental calculus with no visible evidence of mass lesions or fistulas
 - » Normal soft and hard palate.
- The face appeared symmetrical; the left globe retracted normally without evidence of discomfort.
- No pain was elicited upon palpation of the frontal sinuses and nasal planum.
- The pigment around the nares appeared normal.

DIAGNOSTICS

Laboratory Analysis

A complete blood count (CBC), serum biochemistry profile, prothrombin time (PT), and activated partial thromboplastin time (APTT) were performed by the referring veterinarian at onset of epistaxis, just prior to presentation to our facility, ruling out coagulopathies (ie, vitamin K antagonist rodenticide toxicity), polycythemia, and thrombocytopenia as causes of the epistaxis. See the **Table** (page 70) for pertinent laboratory results.



Figure 1. Skull radiographs performed 2 months prior to development of epistaxis, showing soft tissue density in the left frontal sinus (arrow).

TABLE. PERTINENT LABORATORY RESULTS

Variable	Result	Reference Interval
PT (seconds)	11	9–17
APTT (seconds)	74	59–87
Hematocrit (%)	41	37–55
Total solids (g/dL)	6	5.2–7.8
White blood cells (WBC/mcL)	10,600	6000–17,000
Platelet (platelets/mcL)	338,000	160,000–525,000
Alkaline phosphatase (IU/L)	475	23–212

APTT = activated partial thromboplastin time; PT = prothrombin time; WBC = white blood cell

Systolic, diastolic, and mean arterial blood pressure measured by noninvasive oscillometry were within normal reference ranges, ruling out systemic hypertension as a cause of epistaxis.

Because the patient had not traveled outside of Colorado, serum titers for infectious etiologies were likely to be low yield and were not pursued.

IMAGING

Radiography & Ultrasonography

Thoracic radiographs and abdominal ultrasound were recommended to rule out metastatic neoplasia due to the history of cough, chronic nasal discharge, acute onset of epistaxis, and elevated alkaline phosphatase.

Computed Tomography

The client elected to pursue computed tomography

(CT) of the nasal cavity and sinuses and rhinoscopy. The patient was anesthetized and a CT scan of the nose and frontal sinuses was performed. The scan showed a soft tissue mass in the left nasal passage that extended from the third premolar to the rostral portion of the nasal turbinates and palate (**Figure 2**).

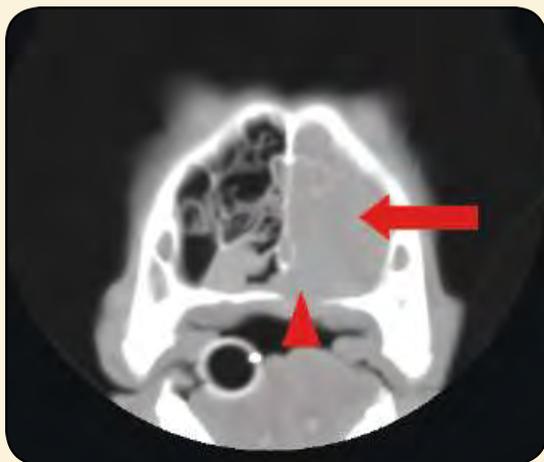


Figure 2. CT scan of patient demonstrating a soft tissue mass density in the left nasal passage (arrow) and destruction of the underlying hard palate (arrowhead); note that no evidence of hard palate destruction was palpable or visible on physical examination.

DIFFERENTIAL DIAGNOSES FOR EPISTAXIS¹

Local Disease

- Dental disease: Oronasal fistula or tooth root abscess
- Inflammation: Eosinophilic or lymphoplasmacytic rhinitis
- Local infection: Bacterial,* fungal, parasitic, viral (cats)
- Nasal foreign body
- Neoplasia: Epithelial, mesenchymal, or round-cell origin
- Trauma

Systemic Disease

- Hypertension: Idiopathic, drug-induced (phenylpropanolamine), neoplasia (pheochromocytoma), hyperadrenocorticism, hyperthyroidism, renal failure
- Hyperlipidemia
- Hyperviscosity syndrome: Neoplastic (multiple myeloma, leukemia), polycythemia, systemic infection (*Ehrlichia* species)
- Thrombocytopathia (congenital and acquired)
- Thrombocytopenia: Decreased production (drugs, immune-mediated, neoplasia), increased consumption or destruction (disseminated intravascular coagulation, neoplasia, immune-mediated), sequestration
- Toxin: Vitamin K antagonist rodenticide

*Bacterial rhinitis is usually secondary to another primary disease process

The cribriform plate appeared to be intact. At this time, a presumptive diagnosis of neoplasia was made, with nasal adenocarcinoma being most likely.

Rhinoscopy & Nasal Hydropulsion

Rhinoscopy was performed with rigid and flexible endoscopes (**Figure 3**). A retroflexed view of the left nasal choana revealed an abnormal yellow-white, friable mass that extended rostrally from the level of the third premolar (**Figure 4**).

Samples of the mass were obtained with biopsy forceps and the rigid scope; then nasal hydropulsion (10 × 60 mL syringes sterile saline) was performed (**Figure 5**). A 4 cm × 1 cm × 1.5 cm mass was hydropulsed from the left nasal passage and retrieved from the oral cavity (**Figure 6**). Hemorrhage following biopsy and hydropulsion was minimal. The histopathologic evaluation revealed that the mass was a nasal carcinoma.

TREATMENT

The dog was discharged with tramadol, 100 mg (3.9 mg/kg) PO Q 8 H, and piroxicam, 7.5 mg (0.56 mg/kg) PO Q 24 H, pending results of the histopathology. Following definitive diagnosis, the clients were given an option for referral for radiation therapy, which they declined. Piroxicam was continued at the same dose. Two months later, the dog is free of clinical signs, and described by her owners to be doing well.

DISCUSSION

Epistaxis is a relatively common presenting complaint in both human and veterinary emergency rooms.² In this case report, the pet owners sought additional diagnostic tests after 5 months of recurrent and progressive nasal discharge and coughing (caused by post-nasal drip related to the nasal neoplasia) and when nasal discharge progressed to stertor and epistaxis.



Figure 3. Patient undergoing rhinoscopy procedure

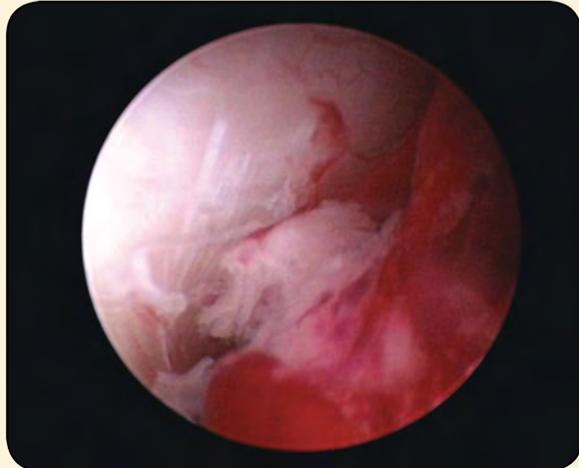


Figure 4. Yellow-white, friable mass lesion in the left nasal cavity; note the degree of epistaxis



Figure 5. Hydropulsion is a new technique that can be used to debulk nasal tumors and obtain tissue samples for histopathology.



Figure 6. Samples of tissue collected with biopsy forceps and hydropulsion

Epistaxis Studies

- In 1 study of epistaxis, 90/132 of dogs had local disease and the remaining 42 had systemic disease.² Nasal neoplasia was found in 50% to 86% of cases of epistaxis that occurred in combination with at least 1 of the following other nasal abnormalities: sneezing, stertor, anatomic deformation of the nose or frontal sinus, decreased airflow, mucopurulent nasal discharge, pain, and epiphora.
- In 2 other studies, epistaxis occurred in up to 75% of cases of nasal neoplasia, and the presence of epistaxis was thought by some to be reflective of a patient's quality of life, as clients' perceived that quality of life diminished once epistaxis occurred.^{3,4}
- In another study in Greece, where infectious causes of epistaxis are more prevalent than in the United States, spontaneous epistaxis in dogs was found to be more likely related to *Ehrlichia* and *Leishmania*.⁵
- In dogs older than 10 years of age (in geographic areas that do not have *Ehrlichia* and *Leishmania*) epistaxis is significantly more likely to be caused by intranasal neoplasia, compared with younger dogs.⁵⁻⁶

Prognosis

The prognosis for dogs with untreated nasal carcinomas is poor.³ The results of several studies^{3,7} show that median survival of:

- Dogs with nasal carcinoma was 95 days if left untreated
- Dogs with nasal adenocarcinoma and epistaxis was 88 days without treatment.

Treatment

Radiation Therapy

Radiation therapy, with or without surgical debulking (removal of as much of the tumor as possible), is considered to be the gold standard of care for dogs with nasal carcinoma. This therapy can increase the median survival of dogs with nasal carcinoma to 14 months.⁸⁻¹⁰

Surgical Debulking

Surgical removal of large masses from the nasal cavity without additional chemotherapy and/or radiation therapy does not provide additional survival benefit because the tumor has often invaded the surrounding bone. While surgery may improve airflow through the nostrils, in some cases, radical removal of a portion or all of the nose needs to be performed to remove the tumor. Aesthetically this may be objectionable to some clients, although the patient's quality of life does not appear to be diminished.

POSTSCRIPT POINTS

Presentation

- Epistaxis secondary to neoplasia is more common in animals greater than 10 years of age.
- Infectious causes of epistaxis should be considered in geographic locations where *Ehrlichia*, *Leishmania*, and fungal diseases are prevalent.
- Clinical signs of nasal discharge secondary to intranasal tumors may temporarily resolve with antibiotic treatment, due to secondary bacterial rhinitis.

Diagnosis

- Physical examination should determine:
 - » The location of the most relevant abnormalities (ie, upper respiratory system)
 - » Whether the face appears symmetrical
 - » If pain is present upon palpation of frontal sinuses and nasal planum
 - » If the pigment around the nares is normal.
- Evaluation of the nasal passage with an otoscope head is limited to the most rostral portion of the nasal cavity.
- Blind biopsy techniques of the nasal cavity using biopsy forceps can be dangerous if the cribriform plate is not intact.
- A CT scan should be performed prior to nasal hydropulsion to ensure that the cribriform plate is intact, preventing adverse neurologic events.

Therapy

- Radiation therapy (with and without surgical debulking) is considered the gold standard of care for dogs with nasal carcinoma.
- COX-2 expression has been documented in 80% of canine nasal carcinomas as well as carcinomas in other parts of the body leading to attempts to treat with piroxicam therapy.
- Nasal hydropulsion can be used for therapy as well as diagnosis.





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NSAID Therapy

Cyclooxygenase-2 (COX-2) expression has been documented in 80% of canine nasal carcinomas.^{11,12} COX-2 expression has also been demonstrated in other carcinomas. In some neoplasms, COX-2 selective inhibition with piroxicam has been shown to have some efficacy for treatment (eg, transitional cell carcinoma).^{13,14} However, piroxicam therapy for nasal carcinoma is considered controversial, as studies have not demonstrated improved survival with the use of piroxicam alone.³ Recent trials have been undertaken to determine whether other COX-2 inhibitors are effective in the treatment of other types of tumors in which COX-2 expression is increased, such as transitional cell carcinoma of the urinary bladder. For this reason, other COX-2 inhibitors may be effective in the treatment of nasal adenocarcinoma, and at minimum, decrease inflammation and provide palliative analgesia for patients with nasal tumors.

Go to todaysveterinarypractice.com to read a step-by-step article by Dr. Mazzaferro on **How to Perform Nasal Hydropulsion**. Locate the article by selecting the Resources tab from the top navigation bar.

Nasal Hydropulsion

Nasal hydropulsion is a minimally-invasive technique recently described to debulk and collect samples from nasal tumors.¹⁵

- Forceful application of varying volumes of sterile saline were successful at debulking tumors in 90.2% of dogs and cats with nasal tumors.¹⁵
- Following successful hydropulsion, clinical signs of stertor and nasal discharge also improved in 1/3 of cases.
- This technique is also potentially useful for the treatment of nasal foreign bodies.
- Ideally, a CT scan should be performed prior to nasal hydropulsion to ensure that the cribriform plate is intact; thus, preventing adverse neurologic sequelae, such as seizures or increased intracranial pressure. ■

APTT = activated partial thromboplastin time;
 CBC = complete blood count;
 COX-2 = cyclooxygenase-2;
 CT = computed tomography;
 PT = prothrombin time

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