SNEEZING & NASAL DISCHARGE

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INTRODUCTION
Clinical signs related to the upper respiratory tract, in both dogs and cats, are among the most common presenting complaints encountered in small animal practice and, interestingly, are frequent reasons for referral to specialty practices and veterinary teaching hospitals. The oral and nasal cavities are important portals of entry for foreign body entrapment and infectious agents. In addition to the occurrence of nasal neoplasia and trauma, it is not surprising that upper respiratory tract disease, in both dogs and cats, are common presentations. However, upper respiratory signs can be associated with significantly different underlying causes. Localizing the problem amid a variety of clinical signs in an anatomically complex area can represents significant diagnostic and therapeutic challenges to even the most astute clinician. The presentation addresses upper respiratory disease in the dog, with specific emphasis on clearly defining the presenting clinical sign, localizing the problem, and establishing the diagnosis.

Anatomic Limits. Strictly speaking, the anatomic limits of the upper respiratory tract are not defined. For this presentation, the upper respiratory tract begins at the level of the external nares and ends at the level of the first tracheal ring. In the clinical setting, however, it is practical to establish anatomic limits, or “compartments”, around the various clinical signs attributable to upper respiratory disease. For example, using the above anatomic limits, the upper respiratory tract can be categorized into 3 distinct compartments. EACH compartment is associated with a defining clinical sign (see TABLE 1). Defining the anatomic location is critical in pursuing the underlying problem, establishing a diagnosis, and effectively treating the patient.

TABLE 1: Anatomic Limits of the Upper Respiratory Tract and Defining Clinical Signs.

<table>
<thead>
<tr>
<th>Compartmen t</th>
<th>Anatomic Limits</th>
<th>Defining Sign(s)</th>
<th>Clinical Sign(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Nose, Nasal Cavity, and Paranasal Sinuses</td>
<td>Sneezing and/or Nasal Discharge</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>Nasopharynx, Posterior Nares (Choana), and Soft Palate</td>
<td>Stertor and “Reverse Sneezing”</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Larynx</td>
<td>Stridor</td>
<td></td>
</tr>
</tbody>
</table>

Clinical Signs: The first, and most important, step in establishing a diagnosis of canine upper respiratory disease is to define the presenting sign. Experience has shown that an owner’s ability to accurately describe the patient’s clinical signs, particularly when signs are not present at the time of examination, is usually inconsistent and inaccurate...although it can be most entertaining. The 3 localizing clinical signs characteristically associated with upper respiratory are: sneezing and/or nasal discharge; stertor; and stridor. Each sign, considered
independently, will focus the examination to the appropriate anatomic region of the upper respiratory tract.

**SNEEZING AND/OR NASAL DISCHARGE**

Definition of the clinical signs sneezing and nasal discharge is intuitive. These are also the most common presenting signs in dogs with upper respiratory tract disease. Owners that present a dog for sneezing are likely to be accurate in their description of the problem. However, establishing the presence or absence of a nasal discharge may be more difficult to establish. Volume, character, and frequency of the discharge ultimately determine whether or not the owner will have even observed a discharge. The astute owner will report whether the discharge is unilateral or bilateral. In the patient that presents with a history of sneezing and nasal discharge, instillation of a topical nasal decongestant into each nostril will occasionally provoke sneezing and elicit the nature of any discharge that is present.

**Examination:** Sneezing and/or nasal discharge localize the problem to the nose, nasal cavity, and paranasal sinuses. However, thorough examination of the nose and nasal cavity can be quite difficult, even with the availability of appropriate endoscopy equipment. In addition to careful examination of facial symmetry, the first part of the examination begins in the oral cavity, with emphasis on the maxilla, the hard palate, and the canine teeth. The hard palate is examined for evidence of trauma (penetrating or non-penetrating) and congenital cleft palate (puppies). The medial aspect of the maxillary canine teeth should be carefully probed for evidence of oro-nasal fistulae. Despite normal appearing teeth and gingiva, severe, occult periodontal disease with resulting necrosis of bone does result in a septic communication between the oral and nasal cavity. Paroxysms of sneezing associated with a sanguinous nasal discharge or “spray” is characteristically described by the owner.

If these findings are negative, radiographs of the skull are indicated. Three views, obtained in the anesthetized patient, are indicated: lateral, ventro-dorsal, and occlusal (open mouth) view. Radiographic interpretation of the nasal cavity and sinuses dictates that the clinician has a thorough understanding of the anatomy of the upper respiratory tract. Subsequently, with the patient still anesthetized, a visual examination of the nasal cavity should be attempted. Radiographs are always performed prior to visual examination of the nasal cavity. Manipulation of the tissue may result in intranasal bleeding which will significantly complicate radiographic interpretation. A simple otoscope speculum placed into each nostril allows an adequate exam of the proximal 20% to 25% of the nasal cavity in most dogs. Visual examination of the caudal 75% of the nasal cavity can only be attempted with a small diameter endoscope. Both flexible and rigid scopes are available; each has advantages and disadvantages. Computed tomography and magnetic resonance imaging are important alternative diagnostic tools, however expense and availability are significant limiting factors.

**Differential Diagnoses.** Understanding the most commonly diagnosed causes of sneezing and nasal discharge is especially helpful in patient management. In no particular order, the 4 most common differential diagnoses for sneezing and/or nasal discharge include:
A. **Oro-Nasal Fistulae:** Especially common in middle-aged to older dogs, despite a history of recent dental prophylaxis. Empiric treatment with an orally administered antibiotic typically results in rapid and complete resolution of clinical signs, but only during the time the patient is receiving the antibiotic. Diagnosis is confirmed by probing the gingival sulcus of the upper canine teeth.

B. **Nasal Neoplasia:** Most commonly reported in dogs between 8 and 10 years of age (Range: 1 to 15 years of age). No breed is predisposed, but is uncommon in brachycephalic breeds. Persistent nasal discharge, sneezing, and intermittent epistaxis are common presenting signs. Nasal radiographs may demonstrate lytic bone lesions’ lysis of the vomer strongly supports neoplasia vs. mycotic rhinitis. Exposure to tobacco smoke has been associated with 2.5 time greater risk in long-nosed dogs. There is no or minimal response of the discharge to antibiotics. 80% of nasal tumors are malignant. Adenocarcinoma is most common, followed by squamous cell carcinoma. Sarcomas account for small number of nasal tumors.

C. **Mycotic Rhinitis:** Difficult to distinguish from neoplasia. Persistent and voluminous mucoid nasal discharge, with or without sneezing, and nasal pain are reported. Erosion of external nares is an important physical finding. Discharge is NOT responsive to antimicrobial treatment. Occlusal view radiographs of the nasal cavity may demonstrate evidence of turbinate destruction and/or increased fluid density on the affected side. 40% are 3 years or younger; 80% are 7 years and younger. The diagnosis is uncommon in brachycephalic breeds. Localized *Aspergillus fumigatus* is most commonly reported.

D. **Lymphoplasmacytic Rhinitis:** Poorly described clinical syndrome associated with chronic sneezing and nasal discharge (bilateral or unilateral). Affected dogs are typically young to middle-aged, large breed dogs. Signs are NOT usually responsive to either antibiotics or steroids (topical or systemic). Diagnosis is based on ruling out other causes and nasal biopsy.

**STERTOR**

The second most common clinical sign associated with upper respiratory disease in dogs, stertor refers to intermittent, yet persistent or continuous snorting, also called stertorous breathing. Paroxysms of stertor, typically called “Reverse Sneezing”, characterize rapid, consecutive bursts of inspiration through the nose. Seldom actually seen during examination, “Reverse Sneezing” is likely to be a consequence of the patient’s attempt to displace matter trapped in the nasopharynx and move it into the oropharynx, where it can be subsequently swallowed.

**Examination.** Visualization of the nasopharynx and choana is essential in the patient that presents with chronic or persistent stertor. The examination can only be accomplished in the anesthetized patient. Sedation is NOT sufficient to conduct the exam. A flexible endoscope, having the ability to flex approximately 170° to 180°, is recommended. Examination allows visualization of the nasopharynx and associated mucosa, the choana (posterior nares), and the top of the soft palate.

**Differential Diagnoses.** In my experience, nasopharyngeal foreign bodies are by far the most common finding. Sticks, plant material (grass and juniper...
twigs), peas, cotton balls, and thread are examples. Neoplasia is the second most common finding. In cats, lymphoma (FeLV-related) obstructing the choana is observed. In dogs, neoplasia is uncommon, but sarcomas in young dogs have been diagnosed.

**STRIDOR**

The least commonly encountered of the upper respiratory signs is stridor, or stridulous breathing. Stridor is audible wheezing and is associated with restriction to airflow, usually at the level of the larynx. Therefore, stridor is *the most critical, and potentially life-threatening, upper respiratory sign*. This is especially true when stridor is continuous. The patient that presents with continuous stridor deserves immediate attention. Every effort should be made to discern the cause once the clinical sign is characterized. In obtaining the history, owners generally describe ‘wheezing’ accurately; however, some patients may actually present for severe dyspnea or orthopnea. Careful questioning of the client is indicated to determine whether or not wheezing is associated with the additional effort to breath. The clinician should also make an effort to discern whether or not the owner has observed any change in the ability of the dog to vocalize or bark.

**Examination.** Simply listening to the patient breath in a quiet room is the first step in assessing stridor. A stethoscope is not required to hear wheezing, but should always be used to examine the cervical trachea, the larynx, as well as the lungs. Any restriction to airflow in the larynx or cervical trachea can cause stridor. However, in the majority of cases, the stridor will be significantly louder at the level of the larynx, indicating a restrictive lesion at that level.

If any indication of respiratory distress is reported or is manifest during the examination, the patient should be subjected to a visual examination under general anesthesia. Sedation is NOT sufficient to conduct the exam. Be Prepared! These patients are NOT routine. Emergency resuscitation may be required on induction of anesthesia, including the need to perform a tracheostomy.

On induction...an endotracheal tube is *cautiously* placed. If there are no complications associated with inserting the tube, lateral and dorso-ventral radiographs of the larynx and cervical trachea are obtained once anesthesia is effectively induced and the patient is stable. Metallic objects (e.g., fish hooks) can become buried in the mucosa and not observed during a visual exam.

The endotracheal tube is removed in order to conduct a visual exam. A focal, hands-free light source directed into the oropharynx is strongly recommended. The epiglottis, arytenoid cartilages, glottis and vocal folds are carefully examined using a cotton-tipped applicator. Careful observation of the symmetry and function of the arytenoid cartilages is essential. The Left and Right cartilages normally respond to tactile stimuli when the patient is in a light plane of anesthesia; both sides should move to the medial plane rapidly and at the same time. They may not close, depending on the depth of anesthesia. It should be possible to visualize the cartilage on the inside of the tracheal rings while looking through the glottis.
**Differential Diagnoses.** In large breed, middle-aged and older dogs, laryngeal paralysis is the most common cause of stridor. Associated signs may include exercise intolerance and collapse during exertion. Laryngeal paralysis and stridor may also be observed in young breeds as a congenital disorder (Dalmatian, rottweiler, Bouvier des Flandres, Siberian husky, and bull terrier). Foreign body penetration of the laryngeal tissues can cause serious and life-threatening obstruction due to infection and swelling. Neoplasia may cause obstructive mass lesions involving the larynx, especially squamous cell carcinoma and lymphoma. Granulomatous laryngeal disease and fungal mycetoma have been reported.

The presence of a mass lesion, assuming there is no foreign body detected, warrants biopsy of the lesion. Additional effort to control post-biopsy bleeding is important. The author will use a cotton-tipped applicator saturated with a 1:10,000 dilution of epinephrine held against the biopsy site for 30 to 60 seconds. This is time well spent. Post biopsy administration of systemic dexamethasone has been suggested to control laryngeal swelling, but we have not found this to be either effective or important.

**Additional Reading**