

# RHINITIS AND SINUSITIS

## (INFLAMMATION OF THE NOSE AND SINUSES)

### BASICS

#### OVERVIEW

- Rhinitis—inflammation of the lining of the nose
- Sinusitis—inflammation and irritation of the sinuses
- The nasal cavity communicates directly with the sinuses; thus inflammation of the nose (rhinitis) and inflammation of the sinuses (sinusitis) often occur together (known as “rhinosinusitis”)
- “Upper respiratory tract” (also known as the “upper airways”) includes the nose, nasal passages, throat (pharynx), and windpipe (trachea)
- “Lower respiratory tract” (also known as the “lower airways”) includes the bronchi, bronchioles, and alveoli (the terminal portion of the airways, in which oxygen and carbon dioxide are exchanged)

#### SIGNALMENT/DESCRIPTION of ANIMAL

##### **Species**

- Dogs and cats

##### **Breed Predislection**

- Short-nosed, flat-faced (known as “brachycephalic”) cats are more prone to long-term (chronic) inflammation of the nose (rhinitis), and possibly fungal rhinitis
- Dogs with a long head and nose (known as “dolichocephalic dogs,” such as the collie and Afghan hound) are more prone to *Aspergillus* (a type of fungus) infection and nasal tumors

##### **Mean Age and Range**

- Cats—sudden (acute) viral inflammation of the nose and sinuses (rhinosinusitis) is more common in young kittens (6 to 12 weeks of age) or unvaccinated cats; red masses in the nasal cavity (known as “inflammatory polyps”) are more common in young cats
- Congenital (present at birth) diseases (such as cleft palate) are more common in young animals
- Tumors/cancer and dental disease—are more common in older animals
- Foreign bodies are more common in young dogs

#### SIGNS/OBSERVED CHANGES in the ANIMAL

- Sneezing, discharge from the nose, bleeding in the nose and nasal passages (known as “epistaxis” or a “nosebleed”)
- Discharge—clear initially, then it may contain mucus and/or pus; it may be blood tinged or may contain blood
- Discharge from one nostril suggests the presence of a foreign body, tooth-root abscess, tumor/cancer, or fungal infection; inflammation of the nose for unknown reason (so called “idiopathic inflammatory rhinitis”) also may present with discharge from only one nostril
- Discharge from both nostrils is more common with viral or bacterial inflammation of the nose and sinuses (rhinosinusitis), disease involving the throat (known as “pharyngeal disease”), or congenital (present at birth) abnormalities
- Facial deformity—usually associated with fungal disease or tumors/cancer
- Reverse sneezing is more common in affected dogs than in cats; “reverse sneezing” is a sudden attack or spasm of noisy intake of air (inspiration) to clear accumulated discharge from the back of the nasal passages into the throat, from which it is swallowed; reverse sneezing is a response to irritation at the back of the nasal passages
- Lack of appetite is more common in affected cats than in dogs
- Decreased air flow through the nasal passages suggests tumors/cancer or fungal infection by *Cryptococcus*
- May have abnormalities in the mouth (such as a tooth-root abscess, abnormal opening between the mouth and nose [known as an “oronasal fistula”], or ulcers)
- Increased sensitivity to touching the windpipe or trachea or cough is possible
- Excessive tears or overflow of tears (known as “epiphora”), inflammation of the moist tissues of the eye (known as “conjunctivitis”), and/or Horner’s syndrome (condition in which one pupil is small or constricted, the eyelid droops, and the eyeball is withdrawn into the socket), indicating middle-ear disease, may be present
- Loss of pigment in the skin (known as “depigmentation”) of the nose suggests aspergillosis, a fungal disease
- Abnormalities involving the back of the eye (the retina) may be seen, associated with fungal inflammation of the nose (rhinitis)
- Nervous system signs may be seen and suggest breach of the cribriform plate (bony plate located between the nasal passages and the brain) by fungal disease or tumors/cancer
- Lymph nodes may be enlarged due to infectious or inflammatory disease or to cancer

#### CAUSES

##### **Dogs**

##### **Primary Inciting Causes**

- Fungal disease—*Aspergillus fumigatus* most common; *Penicillium*, *Rhinosporidium*, *Blastomycoses*, *Cryptococcus* are rare causes
- Tooth-root abscess
- Foreign body
- Congenital (present at birth) abnormalities (such as cleft palate)
- Parasitic causes—nasal mites (*Pneumonyssoides caninum*), nasal worm of dogs (*Eucoleus boehmi*)
- Cancer in the nose—adenocarcinoma most common; chondrosarcoma, osteosarcoma, or lymphoma also seen
- Immune-mediated inflammation of the nose (rhinitis)—allergic rhinitis is rare; inflammation of the nose of unknown cause, characterized by the presence of lymphocytes and plasma cells (so called “idiopathic lymphoplasmacytic rhinitis”) is more common; “lymphocytes” are a type of white-blood cell that are formed in lymphatic tissues throughout the body—lymphocytes are involved in the immune process; “plasma cells” are specialized white-blood cells—plasma cells are lymphocytes that have been altered to produce immunoglobulin, an immune protein or antibody necessary for fighting disease
- Other infectious diseases include canine distemper or *Bordetella bronchiseptica* (one cause of kennel cough)
- Local trauma may cause bone deformity and increase the likelihood of developing long-term (chronic) inflammation of the nose (rhinitis)

#### **Secondary Causes**

- Lower airway disease (bronchopneumonia) may cause signs of inflammation of the nose (rhinitis)
- Bleeding from the nose or nasal passages (epistaxis or nose bleed) can be related to high blood pressure (hypertension), decreased number of platelets in the blood (known as “thrombocytopenia”), a disorder that leads to dysfunction of the platelets (known as “thrombocytopathia”), or rarely other blood-clotting disorders (known as “coagulopathies”); “platelets” and “thrombocytes” are names for the normal cell fragments that originate in the bone marrow and travel in the blood as it circulates through the body; platelets act to “plug” tears in the blood vessels and to stop bleeding
- Dogs with vomiting can aspirate into the nasopharynx (the part of the throat that communicates with the nasal cavity)

#### **Cats**

##### **Primary Inciting Causes**

- Viral infections—feline herpesvirus-1 and calicivirus cause 90% of sudden (acute) infections and/or *Chlamydophila* (a type of bacteria) inflammation of the nose and sinuses (rhinosinusitis)
- *Bordetella bronchiseptica* can be a primary disease-causing agent in cats, but number of cases is uncertain
- Feline immunodeficiency virus (FIV) and feline leukemia virus (FeLV) infections or bacterial co-infections are common in long-term (chronic) inflammation of the nose (rhinitis)
- Fungal disease—*Cryptococcus* most common; also consider *Aspergillus* and *Penicillium* (rare in cats)
- Cancer—adenocarcinoma and lymphoma most common
- Inflammatory masses that develop from the middle ear or eustachian tube (known as “nasopharyngeal polyps”) in young cats
- Tooth-root abscess
- Allergic inflammation of the nose (rhinitis) is rare
- Foreign body
- Parasitic infection
- Congenital (present at birth) abnormalities (such as cleft palate)

##### **Secondary Causes**

- Bleeding from the nose or nasal passages (epistaxis or nose bleed) related to a blood-clotting disorder (coagulopathy) or high blood pressure (hypertension) is less common in cats than in dogs
- Cats with vomiting can aspirate into the nasopharynx (the part of the throat that communicates with the nasal cavity)

#### **RISK FACTORS**

- Short-nosed, flat-faced (brachycephalic) cats—inflammation of the nose and sinuses (rhinosinusitis)
- Dogs with a long head and nose (dolichocephalic dogs, such as the collie and Afghan hound)—fungal disease

## **TREATMENT**

#### **HEALTH CARE**

- Depends on the underlying cause
- Humidification to moisten the nasal passages; saline infusion into the nasal passages is helpful, if tolerated by the animal
- Clean discharges from the nostrils and area around the nose

#### **ACTIVITY**

- No change unless in breathing distress

#### **DIET**

- Soft or warmed food to increase appetite

#### **SURGERY**

- Surgery may be necessary to obtain a biopsy or to remove a foreign body or mass

- Decreasing the size of a tumor (known as “surgical debulking”) may improve survival time of the animal, if combined with radiation therapy
- Useful for removal of polyps

## MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

### **Antibiotics**

- Potential bacterial disease-causing agents are isolated more commonly in cats with inflammation of the nose and sinuses (rhinosinusitis) than in healthy cats
- Antibiotic therapy should be based on bacterial culture and sensitivity testing
- May help with secondary bacterial inflammation of the nose (rhinitis) in dogs, however, antibiotics will not resolve the underlying primary problem
- Tetracycline—helpful with *Chlamydomphila* inflammation of the nose (rhinitis); may need long-term doxycycline therapy for 6 to 8 weeks
- Chloramphenicol also is effective against *Chlamydomphila*

### **Antifungal Medications**

- To treat cryptococcosis or aspergillosis

### **Human alpha-interferon**

- Anecdotal at this point

### **L-lysine**

- Decreases feline herpesvirus-1 replication in cell culture and virus shedding; may be useful in long-term (chronic) herpesvirus infection

### **Anti-Inflammatory Agents**

- Nonsteroidal anti-inflammatory drugs (NSAIDs), such as piroxicam (used for treatment of nasal tumors, either as sole agent or in conjunction with chemotherapy)
- Steroids—prednisolone for allergic inflammation of the nose (allergic rhinitis); anti-inflammatory doses for cats with long-term (chronic) inflammation of the nose and sinuses (rhinosinusitis) or lymphoplasmacytic inflammation of the nose (rhinitis) in dogs

### **Antihistamines**

- Efficacy is debated—clemastine or hydroxyzine

### **Anti-Parasitic Medications for Nasal Mites**

- **Ivermectin** administered by mouth, once weekly for 3 to 4 treatments or milbemycin administered by mouth once weekly for 3 weeks

## FOLLOW-UP CARE

### **PATIENT MONITORING**

- Depends on the underlying cause
- Clinical assessment and monitoring for relapse

### **PREVENTIONS AND AVOIDANCE**

- Depend on the underlying cause
- Vaccinations in kittens can lessen severity and duration of feline herpesvirus-1 or calicivirus infection
- Consider removing chronically affected cats from catteries; use lysine to decrease feline herpesvirus-1 shedding

### **POSSIBLE COMPLICATIONS**

- Depend on the underlying cause and extent of disease
- Fungal or tumor invasion into the brain (through the cribriform plate, the bony plate located between the nasal passages and the brain)

### **EXPECTED COURSE AND PROGNOSIS**

- Depend on underlying cause and extent of disease
- Sudden (acute) viral/bacterial inflammation of the nose (rhinitis)—carries good prognosis
- Long-term (chronic) inflammation of the nose (rhinitis) is frustrating to the owners and veterinarians
- Fungal disease—fair to guarded prognosis, depending on invasiveness of the fungal infection
- Cancer—3 to 5 months’ survival time, with no treatment; life expectancy can be extended up to 20 to 23 months with radiation therapy

## KEY POINTS

- Signs of long-term (chronic) inflammation of the nose (rhinitis) in dogs and cats can be controlled, but rarely are eliminated

