



# Rhinitis and Sinusitis

## (Inflammation of the Nose and Sinuses)

### Basics

#### OVERVIEW

- Rhinitis—inflammation of the lining of the nose
- Sinusitis—inflammation 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 PET

##### Species

- Dogs
- Cats

##### Breed Predispositions

- 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) and red masses in the nasal cavity and throat (known as “nasopharyngeal polyps”) are more common in young kittens (6–12 weeks of age)
- Congenital (present at birth) diseases (such as cleft palate) are more common in young pets
- Tumors/cancer and dental disease—are more common in older pets
- Foreign bodies are more common in young dogs

#### SIGNS/OBSERVED CHANGES IN THE PET

- Sneezing, discharge from the nose, bleeding in the nose and nasal passages (known as “epistaxis” or a “nosebleed”)
- Discharge—usually is 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
- 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

## CAUSES

### Dogs

#### **Primary Inciting Causes**

- Fungal disease—*Aspergillus fumigatus* most common; *Penicillium*, *Rhinosporidium*, *Blastomyces*, *Cryptococcus* are rare causes
- Tooth-root abscess
- Foreign body
- Congenital (present at birth) abnormalities (such as cleft palate)
- Parasitic causes—nasal mites (*Pneumonyssoides caninum*), *Capillaria aerophagia*
- Cancer in the nose—adenocarcinoma most common; others include lymphoma, chondrosarcoma, or osteosarcoma
- 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) or vomiting may cause signs of inflammation of the nose (rhinitis)
- Bleeding from the nose or nasal passages (epistaxis or nosebleed) can be related to high blood pressure (hypertension), trauma, 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 *Bordetella bronchiseptica* can be a primary disease-causing agent in cats, but number of cases is uncertain
- Cancer—adenocarcinoma and lymphoma most common
- Fungal disease—*Cryptococcus* most common; *Aspergillus*, *Penicillium* (rare in cats)
- Inflammatory masses that develop from the middle ear or eustachian tube (known as “nasopharyngeal polyps”) in young cats
- Tooth-root abscess
- Foreign body
- Congenital (present at birth) abnormalities (such as cleft palate)

### **Secondary Causes**

- Bleeding from the nose or nasal passages (epistaxis or nosebleed) related to a blood-clotting disorder (coagulopathy) or high blood pressure (hypertension)
- 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 can aid in moistening the nasal passages and mobilizing nasal secretions; saline infusion into the nasal passages is helpful, if tolerated by the pet
- Clean discharges from the nostrils and area around the nose

## **ACTIVITY**

- No change unless in breathing distress

## **DIET**

- Soft or warmed food, if pet has decreased appetite

## **SURGERY**

- Surgery may be necessary to obtain a biopsy or to remove a foreign body or mass
- Useful for removal of polyps and dental-related problems contributing to nasal disease

# **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**

- Antibiotic therapy should be based on bacterial culture and sensitivity testing
- May help with secondary bacterial inflammation of the nose (rhinitis); however, antibiotics will not resolve the underlying primary problem
- *Chlamydophila* inflammation of the nose (rhinitis)—may need long-term doxycycline therapy for 6–8 weeks
- Chloramphenicol also is effective against *Chlamydophila*

## **ANTIFUNGAL MEDICATIONS**

- To treat cryptococcosis or aspergillosis

## **HUMAN ALPHA-INTERFERON**

- Anecdotal at this point

## **L-LYSINE**

- Inhibits feline herpesvirus-1 replication; may be useful

## 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), carprofen, deracoxib
- 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

## ANTIPARASITIC MEDICATIONS FOR NASAL MITES

- Ivermectin administered by mouth, once weekly for 3–4 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 viral respiratory infection

### POSSIBLE COMPLICATIONS

- Depend on the underlying cause and extent of disease
- Fungal extension or tumor invasion into the brain (through the cribriform plate, the bony plate located between the nasal passages and the brain)
- Seizures and other nervous system signs are possible if antifungal medications applied directly into the nose (topical treatment) pass through openings in the cribriform plate

### 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)—guarded for control of signs
- Fungal disease—fair to guarded prognosis, depending on invasiveness of the fungal infection and response to treatment
- Cancer—3–5 months' survival time, with no treatment; life expectancy can be extended up to 9–23 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

# Notes

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