Nasal Disease in Dogs

Nasal disease in dogs presents in a variety of ways. Symptoms can include:

- Mucoid (snotty) nasal discharge
- Sneezing
- Difficulty breathing through the nose
- Nose bleeds (epistaxis)
- Deformity of the nose, noticeable changes to the shape of the face
- Excessive tearing

Canine nasal disease can be caused by a variety of diseases.

- Inflammatory disease
  - Lymphoplasmacytic rhinitis (LP rhinitis) – This is the most common type of inflammatory disease in dogs’ noses. Most commonly this type of nasal disease is seen in middle age to older dogs but can be seen in younger dogs as well. Nobody knows why some dogs get this type of inflammatory disease and others do not. On advanced imaging (such as CT or MRI scan), usually this type of nasal disease does not cause destruction of the turbinates (scrolls of tiny bone within the nose). Sometimes thickening of the tissue can be seen on CT or MRI and during rhinoscopy. Other chances such as redness may be seen on rhinoscopy. To definitely diagnose this disease, biopsies of nasal tissue must be submitted for histopathology (examination under the microscope by a pathologist). There are two different approaches to the treatment of lymphoplasmacytic rhinitis, using steroids or using non-steroidal medications. Some patients with LP rhinitis will be able to come completely off of medication while others will need to be on life-long medication.

  - Sometimes, nonsteroidal anti-inflammatory medications (such as Piroxicam, Deramaxx, Rimadyl, Metacam, or Previcox) are used similar to when a dog is treated for arthritis. Side effects of these medications include gastrointestinal upset (vomiting, diarrhea, decreased appetite) and gastrointestinal ulceration. These types of medication can also hurt the liver and/or kidneys so they are not used if your dog has any pre-existing kidney or liver disease. Because of these concerns, blood work is periodically checked to make sure there are not changes in the liver and kidney values.

  - Steroids, such as prednisone or prednisolone, can also be used to decrease inflammation in the nose. For these medications, we start with high doses of the medication for a short period to try to knock down the inflammation. If your dog shows signs of improvement with the medication, we then slowly decrease the
dose of this medication as much as your dog tolerates. The exact taper is dependent on how your dog is doing, but as long as your dog’s symptoms remain improved, we usually decrease the dose by 25% every 2-3 weeks. Some dogs are able to be completely weaned off of the steroids. Some dogs require long-term low levels of steroids. If this is the case, we try to keep the dose of the medication as low as possible to hold back your dog’s symptoms. Steroids can have several side effects. At higher doses, they will cause your dogs to urinate and drink excessively. It is very important to keep plenty of water available at all times. High dose will likely make your dog feel hungry but you do not need to feed him or her more food than normal. Large breed dogs can sometimes develop hind end weakness while on steroids. If you notice hind end weakness, it is important to tell your veterinarian so that we can try to taper the medication faster. Rarely, steroids can cause ulceration in the gastrointestinal tract, which may lead to vomiting, diarrhea, decreased appetite, blood in the stool, or black tar-like stool. If you notice any of these symptoms it is important to notify your veterinarian. Steroids cannot be stopped abruptly as a life-threatening reaction (addisonian crisis) may result. Therefore, the dose of these medications should not be changed except under the supervision of a veterinarian.

- **Allergic rhinitis** – Allergic rhinitis can occur in dogs, but, unlike in humans, it does not occur very commonly. This disease can look similar to lymphoplasmacytic rhinitis on CT/MRI and rhinoscopy and is definitely diagnosed via biopsies with histopathology (evaluation under the microscope by a pathologist). Underneath the microscope, different types of inflammatory cells are seen with allergic rhinitis vs. lymphoplasmacytic rhinitis. When allergic rhinitis occurs, we recommend attempts to control the environment in a similar manner as is prescribed with humans with allergies (air purifiers, avoid regions that seem to trigger allergy). Depending on the patient, specific medications can be used.

- **Infectious disease**
  - **Fungal infections** – Dogs can get fungal infections in their noses. The main types of fungal infections that they get in their noses are Aspergillus and Pencillium (less common). Fungal infections tend to be very aggressive and may invade into the nasal or sinus cavity. Therefore destruction of bones may be seen on CT or MRI. On rhinoscopy, fungal plaques may be seen. Blood aspergillosis serology can be performed; this test can be used to help diagnosis this disease without having to do more invasive tests. The best treatment for nasal fungal infections in dogs is soaking the nose with anti-fungal solution. This procedure takes about an hour and requires general anesthesia. While one procedure may cure the fungal infection, some dogs need multiple soak procedures to completely clear the infection.
  - **Bacterial infections** – Primary bacterial infection (infections that are the main cause of the nasal problems) are very rare in dogs. Often, though, bacteria will take advantage of diseased nasal tissue and secondary bacterial infections will occur concurrently with any of the other causes of nasal disease. Because of these secondary bacterial infections,
dogs often show improvement of their symptoms when placed on antibiotics, but the symptoms usually worsen again after some time or when the antibiotics are stopped since the underlying main problem has not been addressed. Since there is normal bacteria within any animal's nose, to diagnose a bacterial infection deep tissue samples of the nasal tissue must be cultured.

- **Mycoplasma infections** – Mycoplasma are a special type of bacteria. These organisms can infect anywhere in the respiratory system including the nose. To diagnose a mycoplasma infection, a special type of culture has to be performed. Unfortunately, mycoplasma are very hard to grow in culture so a negative culture does not rule out mycoplasma infections. Only certain types of antibiotics will kill mycoplasma infections. These antibiotics include: azithromycin (Zithromax), doxycycline, and enrofloxacin (Baytril).

- **Tooth root abscess** – An infection at the root of a tooth can lead to the formation of an abscess. If this occurs, the abscess will sometimes drain through the nose rather than through the mouth or skin. Sometimes we can detect tooth root abscesses on physical examination. Specific dental radiograph or CT or MRI can be used to diagnose a tooth root abscess. Dental surgery and antibiotics are often required to deal with these infections.

- **Cancer (neoplasia)**

  - Various types of cancer can invade the nose. The most common type of cancer in the dog is adenocarcinoma, but other types of cancer including soft tissue sarcoma and lymphoma can occur as well. Cancers may cause problems with one or both nostrils. There may be deformation of the face. You usually can see changes on MRI or CT when your pet has cancer. Ultimately, a sample of the mass via biopsy and histopathology (looking at the wedge of tissue under the microscope) or aspirate and cytology (looking at cells on a slide) is needed to determine what type of cancer is present. The treatment for cancer depends on what type of cancer is present. Often, the best option includes radiation therapy. Chemotherapy can be used with lymphoma. Nonsteroidal anti-inflammatory medications (such as Piroxicam, Deramaxx, Rimadyl, Metacam, or Previcox) can help to decrease the inflammation around the cancer and slow the growth of some cancers. The median survival time (time at which 50% of the patients have died and 50% of the patients are still alive) for nasal carcinoma without treatment is 95 days. The prognosis for nasal carcinoma dogs without nose bleeds is 88 days versus 224 days for dogs who do not have nose bleeds. The median survival time for nasal tumors is 8-19.7 months when treated with radiation therapy or 11-19.7 months if CT is used to help plan the radiation treatment.

- **Foreign bodies**

  - Foreign material can be sniffed up the nose leading to inflammation and irritation around the foreign material. The foreign material can sometimes be seen on rhinoscopy. Sometimes the foreign material can be removed from the nose with grasping instruments.
or a nasal flush. During a nasal flush, fluid is flushed into the nose to cleanse it out while the patient is under general anesthesia. Sometimes, imaging such as CT or MRI is required to see evidence of foreign material.

**Diagnostic tests**

As discussed above, a variety of tests are used to diagnose the underlying cause of nasal disease. A full work-up for nasal disease involves:

- MRI or CT scan – these high quality imaging modalities give better detail of the nose than radiographs do.
- Rhinoscopy – placing a scope within the nose to look at the mucosa (outer most layer of tissue)
- Biopsies of the nasal tissue for histopathology (having a pathologist look at the tissue under the microscope) and cultures

These procedures require general anesthesia. Prior to undergoing anesthesia, we often perform the following tests:

- Baseline blood work – to make sure that there is no systemic disease to be concerned about, especially prior to anesthesia. Systemic diseases may alter the anesthesia medications that are used.
  - Complete blood count – evaluates red blood cells, white blood cells, and platelets
  - Chemistry – evaluates liver values, kidney values, proteins, electrolytes
  - Urinalysis – evaluates liver and kidney function
- Blood pressure – if a patient has high blood pressure we do not want to take nasal biopsies as it will be more difficult to get the bleeding to stop
- Coagulation panel – the coagulation factors help the blood to clot. Therefore, we just to make sure that the blood is able to clot normally prior to taking any nasal biopsies
- Chest radiographs – we may recommend chest radiographs to check for spread of disease to the lung and to make sure there are no other problems with the lungs that could increase the risk of anesthesia
- EKG (also called ECG) – this test helps to evaluate for heart arrhythmias. It is required prior to MRI evaluation.