

Laryngeal Diseases

(Diseases of the Voice Box or Larynx)

Basics

OVERVIEW

- The respiratory tract consists of the “upper respiratory tract” (the nose, nasal passages, throat, and windpipe [trachea]) and the “lower respiratory tract” (the bronchi, bronchioles, and alveoli [the terminal portion of the airways, in which oxygen and carbon dioxide are exchanged])
- The voice box or larynx serves as a passage for airflow from the external environment to the lungs; it protects the lower airways from aspiration during swallowing and regurgitation; and it allows vocalization (such as barking or meowing)
- Laryngeal diseases refer to any conditions that alter normal structure and/or function of the voice box or larynx
- Laryngeal diseases in dogs and cats include paralysis of the voice box or larynx (known as “laryngeal paralysis”), sudden (acute) inflammation of the larynx (known as “acute laryngitis”), blockage and inflammation of the larynx (known as “obstructive laryngitis”), and collapse of the larynx (known as “laryngeal collapse”) which occurs in short-nosed, flat-faced (known as “brachycephalic”) breeds, foreign body, cancer, and trauma
- Laryngeal diseases are more common in dogs than in cats



GENETICS

- Paralysis of the voice box or larynx in young dogs (known as “juvenile laryngeal paralysis”)—inherited disorder in Bouvier des Flandres as a dominant trait
- Paralysis of the voice box or larynx (laryngeal paralysis) as part of a condition involving multiple nerves throughout the body (known as “laryngeal paralysis–polyneuropathy complex”)—X-linked inheritance is suggested in the Leonberger dog
- No other laryngeal disorder has been shown to be inherited in the dog or cat, but familial (runs in certain families or lines of animals) and breed increased likelihood of having certain laryngeal disorders as compared to other lines or breeds have been reported

SIGNALMENT/DESCRIPTION OF PET

Species

- Dogs
- Cats

Breed Predispositions

- Familial (runs in certain families or lines of animals) paralysis of the voice box or larynx as part of a condition

involving multiple nerves throughout the body (laryngeal paralysis–polyneuropathy complex”)–Dalmatians, Rottweilers, Leonbergers, and the Pyrenean Mountain dog (Great Pyrenees)

- Congenital (present at birth) paralysis of the larynx (known as “congenital laryngeal paralysis”)–Bouvier des Flandres, Siberian huskies and husky crosses, white German shepherd dogs, and probably bull terriers
- Acquired (condition that develops sometime later in life/after birth) paralysis of the voice box or larynx in dogs of unknown cause (so-called “idiopathic acquired laryngeal paralysis”)–most often affects large-breed dogs (especially Labrador retrievers and golden retrievers)
- Brachycephalic airway syndrome (airway problems seen in short-nosed, flat-faced [brachycephalic] breeds)–French bulldogs, English bulldogs, and other brachycephalic breeds
- Benign tumor of red muscle involving the larynx (known as “laryngeal rhabdomyoma”)–golden retrievers
- Upper airway obstruction due to collapse or narrow opening occurs in Norwich terriers

Mean Age and Range

- Congenital (present at birth) and familial paralysis of the voice box or larynx (laryngeal paralysis)—onset of signs usually seen in the first months of life (between 2 and 8 months of age); signs are seen later in life in the Leonberger (1–9 years of age) and the white German shepherd dog (2 years of age)
- Acquired (condition that develops sometime later in life/after birth) paralysis of the voice box or larynx—onset of signs possible at any age; more frequent in older dogs
- Paralysis of the voice box or larynx of unknown cause (so-called “idiopathic laryngeal paralysis”)—common in older large-breed dogs
- Cancer—middle-aged to old dogs

SIGNS/OBSERVED CHANGES IN THE PET

- Panting, fast rate of respirations (known as “polypnea”)
- Reduced activity, exercise intolerance
- Reduced heat tolerance
- Noisy breathing
- Change in character of the bark or meow
- Occasional coughing
- Bluish discoloration of the skin and moist tissues (mucous membranes) of the body caused by inadequate oxygen levels in the red blood cells (condition known as “cyanosis”)
- Fever
- Severely affected pets—difficult breathing (known as “dyspnea”) during inspiration; collapse; fainting (known as “syncope”); even sudden death
- Other signs if laryngeal disease in combination with nervous system or muscle disorders—regurgitation (return of food or other contents from the esophagus or stomach back up through the mouth), weakness, abnormal movements when walking; reduced spinal reflexes; paralysis or partial paralysis (known as “paresis”)
- High-pitched sound on inspiration (known as “stridor”) in dogs
- Cats—breathing is less noisy in cats with laryngeal disease, as compared to dogs
- If pet has aspiration pneumonia (inflammation of the lungs, caused by accidentally inhaling food, vomit, or liquids)—fever; short, sharp sounds (known as “crackles”) may be detected in small areas (localized) or in larger areas of the lungs; sounds are heard upon listening to the chest with a stethoscope
- There may be no signs in Norwich terriers with upper airway obstruction
- In Leonberger dogs, high-stepping gait in hind limbs, with reduced nerve reflexes

CAUSES

Laryngeal Paralysis

- Congenital—present at birth

- Acquired (condition that develops sometime later in life/after birth)—(1) polyneuropathy; most often of unknown cause (so-called “idiopathic”); also familial; immune-mediated (2) vagal nerve abnormality (the vagus nerve supplies nerve fibers to the voice box [larynx], throat [pharynx], windpipe [trachea] and other organs) called myasthenia gravis; (3) abnormalities of multiple muscles (known as “polymyopathy”); idiopathic; immune-mediated or infectious (such as toxoplasmosis, neosporosis); (4) lower neck or upper chest trauma or cancer, for example, thyroid cancer—surgical removal of the thyroid may produce trauma to one or both recurrent nerves

Sudden (Acute) Inflammation of the Larynx (Acute Laryngitis)

- Cause often unknown
- Virus—canine parainfluenza virus; feline herpesvirus-1
- Bacteria—*Bordetella bronchiseptica*
- Gastroesophageal reflux (backward or reverse flow of stomach or intestinal contents into the esophagus)

Idiopathic Chronic Obstructive Laryngitis

- Inflammatory conditions (such as granulomatous, lymphoplasmacytic)

Cancer

- Primary cancer of the voice box (larynx) or spread of cancer into the tissues of the voice box (metastatic cancer)
- Dogs—a variety of cancers reported, including rhabdomyoma, rhabdomyosarcoma, adenocarcinoma, and squamous cell carcinoma, lipoma, plasmacytoma
- Cats—lymphoma and squamous cell carcinoma

Trauma

- Penetrating wounds (such as bite wounds) or blunt trauma to the neck
- Injury secondary to ingested foreign materials—bones; sticks; needles; pins
- Laryngeal collapse secondary to brachycephalic airway syndrome (airway problems seen in short-nosed, flat-faced [brachycephalic] breeds)

Laryngeal Collapse

- Brachycephalic dog
- Malformation, collapse in Norwich terriers

RISK FACTORS

- Breed-related risk factors (see “Breed Predispositions”)
- Risk factors for developing severe or life-threatening clinical signs in pets with paralysis of the voice box or larynx (laryngeal paralysis)—obesity; hot and/or humid conditions (especially in a closed environment, like a car), and the presence of lower airway or lung disease

Treatment

HEALTH CARE

- Outpatient—for stable pets, while awaiting surgery
- Emergency—characterized by marked breathing distress; oxygen therapy combined with sedation or anesthesia and steroids (prednisolone succinate administered intravenously [IV], followed by prednisolone administered by mouth); active body cooling measures with intravenous fluids; blowing fan, cold water on paws
- Chemotherapy and/or radiation therapy for pets with cancer of the larynx

ACTIVITY

- Severely restrict activity for pets with paralysis of the voice box or larynx (laryngeal paralysis), especially in warm temperatures and humid conditions
- Avoid warm, poorly ventilated environments and stress or excitement, as these further compromise normal cooling mechanisms and proper air exchange
- Avoid use of collars or choke chains to minimize pressure on the voice box (larynx) or windpipe (trachea)

DIET

- Loss of weight is recommended for overweight pets with paralysis of the larynx (laryngeal paralysis)

SURGERY

- Paralysis—surgical management is the treatment of choice; variety of procedures reported but correction on one-side only is preferred; benefit of procedure depends on the surgeon's experience and expertise
- Trauma— temporary surgical opening into the windpipe (temporary tracheostomy) may be life-saving and curative
- Cancer—surgical tumor removal may be curative in some pets, for rhabdomyoma, rhabdomyosarcoma or squamous-cell carcinoma; surgical opening into the windpipe (tracheostomy) may improve quality of life, if surgical removal of the tumor is not possible
- In an emergency, a temporary surgical opening into the windpipe (trachea; procedure known as a “temporary tracheostomy”) may prove life-saving in the pet that is not responding appropriately to the emergency medical approach

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

- Acquired (condition that develops sometime later in life/after birth) paralysis of the voice box or larynx in dogs, when surgery is declined—may benefit from steroids (prednisolone)
- Lymphoma (cats)—potentially responsive to chemotherapy; lymphoma is a type of cancer that develops from lymphoid tissue, including lymphocytes, a type of white blood cell formed in lymphatic tissues throughout the body

Follow-Up Care

PATIENT MONITORING

- Immediate post-surgical period—the veterinarian will monitor body temperature and keep in normal range
- Monitor for aspiration pneumonia (short- and long-term)
- Improvement in activity and exercise/heat tolerance, reduced stridor noise—should be noted by owners after effective surgery

PREVENTIONS AND AVOIDANCE

- Affected dogs of breeds in which hereditary transmission of paralysis of the voice box or larynx has been documented, should not be used for breeding purposes
- Avoid warm, poorly ventilated environments and stress or excitement, as these further compromise normal cooling mechanisms and proper air exchange.
- Avoid use of collars or choke chains to minimize pressure on the voice box (larynx) or windpipe (trachea)
- Avoid weight gain

POSSIBLE COMPLICATIONS

- Paralysis of the voice box or larynx—recurrence of clinical signs is uncommon following surgical correction; aspiration pneumonia (inflammation of the lungs, caused by accidentally inhaling food, vomit, or liquids) is possible
- Tumor—recurrence of clinical signs if unable to remove tumor completely or with tumor regrowth; aspiration pneumonia following surgery
- Death

EXPECTED COURSE AND PROGNOSIS

- Paralysis of the voice box or larynx of unknown cause (idiopathic laryngeal paralysis)—long-term prognosis good with successful surgery; guarded-to-poor prognosis if surgery is declined
- Paralysis of the larynx associated with abnormal function of the esophagus (the tube running from the throat to

the stomach) is poor

- Tumor—guarded-to-good prognosis for pets with successful surgical removal of a benign tumor; poor prognosis for pets with carcinoma, even with radiation therapy; variable prognosis for cats with lymphoma; lymphoma is a type of cancer that develops from lymphoid tissue, including lymphocytes, a type of white blood cell formed in lymphatic tissues throughout the body

Key Points

PARALYSIS

- Potential complications of heat exhaustion and impaired oxygenation, if surgery is not pursued
- Improved quality of life with successful surgery
- Potential genetic basis of paralysis of the voice box or larynx in certain dog breeds; affected dogs from these breeds should not be used for breeding purposes
- Increased risk for aspiration pneumonia after surgery
- Surgery, chemotherapy, and/or radiation therapy may be effective in cancer of the voice box or larynx