

NOISY BREATHING (STERTOR AND STRIDOR)

BASICS

OVERVIEW

- Unusually loud breathing sounds that result from air passing through abnormal narrowings involving the back of the throat (known as the “nasopharynx”), the throat (known as the “pharynx”), the voice box (known as the “larynx”), or the windpipe (known as the “trachea”) and meeting resistance to airflow because of partial blockage of these regions
- Abnormal breathing sounds can be heard without using a stethoscope
- “Stertor” is noisy breathing when inhaling; it is a low-pitched, snoring sound that usually arises from the vibration of relaxed or flabby tissue or fluid; usually arises from airway blockage in the throat (pharynx)
- “Stridor” is high-pitched, noisy breathing; the higher-pitched sounds result when relatively rigid tissues vibrate with the passage of air; result of partial or complete blockage of the nasal passages or voice box (larynx) or collapse of the upper part of the windpipe (known as “cervical tracheal collapse”)
- “Upper respiratory tract” or “upper airways” includes the nose, nasal passages, throat (pharynx), and windpipe (trachea)

SIGNALMENT/DESCRIPTION of ANIMAL

Species

- Dogs and cats

Breed Predispositions

- Common in short-nosed, flat-faced (known as “brachycephalic”) dogs or cats
- Inherited paralysis of the voice box (known as “laryngeal paralysis”)—identified in Bouviers des Flandres, Siberian huskies, bulldogs, and Dalmatians
- Acquired (condition that develops sometime later in life/after birth) paralysis of the voice box (laryngeal paralysis)—more common in certain giant-breed dogs (such as St. Bernards and Newfoundlands) and large-breed dogs (such as Irish setters, Labrador retrievers, and golden retrievers) than other breeds

Mean Age and Range

- Affected short-nosed, flat-faced (brachycephalic) animals and dogs or cats with inherited paralysis of the voice box (laryngeal paralysis) typically are younger than 1 year of age when breathing problems are detected
- Acquired (condition that develops sometime later in life/after birth) paralysis of the voice box (laryngeal paralysis) typically occurs in older dogs and cats
- Cats—diagnosed less commonly than are dogs; no obvious age pattern

Predominant Sex

- Inherited paralysis of the voice box (laryngeal paralysis) has a 3:1 male-to-female ratio

SIGNS/OBSERVED CHANGES in the ANIMAL

- Change or loss of voice
- Partial blockage of the upper airways produces an increase in airway sounds, before producing an obvious change in breathing pattern
- Unusually loud breathing sounds may have existed for as long as several years
- Breath sounds can be heard from a distance, without the use of a stethoscope
- Nature of the sound—ranges from abnormally loud to obvious fluttering to high-pitched squeaking, depending on the degree of airway narrowing
- May note increased breathing effort; breathing often accompanied by obvious body changes (such as extended head and neck and open-mouth breathing)

CAUSES

- Condition of abnormal breathing passages in short-nosed, flat-faced animals (condition known as “brachycephalic airway syndrome”), characterized by any combination of the following conditions: narrowed nostrils (known as “stenotic nares”); overly long soft palate; turning inside-out of a portion of the voice box or larynx (known as “everted laryngeal sacculles”), such that the space for air to pass through the larynx is decreased; and collapse of the voice box or larynx (known as “laryngeal collapse”), and fluid-build up (known as “edema”) of the voice box or larynx
- Narrowing of the back of the nose and throat (known as “nasopharyngeal stenosis”)
- Paralysis of the voice box or larynx (laryngeal paralysis)—inherited or acquired (condition that develops sometime later in life/after birth)
- Tumors of the voice box or larynx—benign or malignant (cancer)
- Nodular, inflammatory lesions of the voice box or larynx (known as “granulomatous laryngitis”)
- Reduction in the diameter of the lumen of the windpipe (trachea) during breathing (known as “tracheal collapse”)
- Narrowing of the windpipe (trachea; condition known as “tracheal stenosis”)
- Tumors of the windpipe (trachea)
- Foreign bodies in the windpipe (trachea) or other parts of the airway

- Inflammatory masses that develop from the middle ear or eustachian tube (known as “nasopharyngeal polyps”)
- Condition caused by excessive levels of growth hormone, leading to enlargement of bone and soft-tissues in the body (known as “acromegaly”)
- Nervous system and/or muscular dysfunction
- Anesthesia or sedation—if certain anatomy exists (such as a long soft palate) that increases susceptibility to abnormal, loud breathing sounds
- Abnormalities or tumors of the soft palate (the soft portion of the roof of the mouth, located between the hard palate and the throat)
- Excessive lining tissue of the throat (known as “redundant pharyngeal mucosal fold”)
- Tumor in the back of the throat (pharynx)
- Fluid build-up (edema) or inflammation of the palate, throat (pharynx), and voice box (larynx)—secondary to coughing, vomiting or regurgitation, turbulent airflow, upper respiratory infection, and bleeding
- Discharges (such as pus, mucus, and blood) in the airway lumen—suddenly (acutely) after surgery; a normal conscious animal would cough out or swallow them

RISK FACTORS

- High environmental temperature
- Fever
- High metabolic rate—as occurs with increased levels of thyroid hormone (known as “hyperthyroidism”) or a generalized bacterial infection (known as “sepsis”)
- Exercise
- Anxiety or excitement
- Any breathing or heart disease that increases movement of air into and out of the lungs (known as “ventilation”)
- Turbulence caused by the increased airflow may lead to swelling and worsen the airway obstruction
- Eating or drinking

TREATMENT

HEALTH CARE

- Keep patient cool, quiet, and calm—anxiety, exertion, and pain lead to increased movement of air into and out of the lungs (ventilation), potentially worsening the blockage to airflow
- Low levels of oxygen in the blood and tissues (known as “hypoxia”) and decreased movement of air into and out of the lungs (known as “hypoventilation”) occur with prolonged, severe blockage to airflow; supplemental oxygen not always critical for sustaining patients with partial airway collapse
- Closely monitor effects of sedatives; sedatives may relax the upper airway muscles and worsen the blockage to airflow; be prepared for emergency treatment if complete obstruction occurs

ACTIVITY

- Activity determined by underlying cause
- Exercise is a risk factor; therefore, limited exercise may be necessary, as directed by your pet’s veterinarian

SURGERY

- Extreme airway blockage or obstruction—attempt an emergency intubation (that is, passage of an endotracheal tube through the mouth and into the windpipe [trachea] to allow oxygen to reach the lungs); if obstruction prevents intubation, emergency tracheotomy (surgical opening into the windpipe [trachea]) or passage of a tracheal catheter to administer oxygen may be the only available means for sustaining life; a tracheal catheter can sustain oxygenation only briefly while a more permanent solution is sought
- Utilization of small balloon catheters may be useful in dislodging foreign bodies
- Surgery—biopsy to determine type of mass in the airways; surgical treatment (such as surgical removal of mass, correction of airway defects, or removal of foreign bodies)

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.

- Medical approaches—appropriate only if the underlying cause is infection, fluid build-up (edema), inflammation, or bleeding; structural/anatomic abnormalities or nervous system causes are not responsive to symptomatic medical treatment
- Steroids—may be indicated if fluid build-up (edema) or inflammation is thought to be an important contributor to the abnormal, loud breathing sounds

FOLLOW-UP CARE

PATIENT MONITORING

- Breathing rate and effort need to be monitored closely—complete blockage or obstruction could occur when an apparently stable patient is taken home or if continual observation is not feasible

PREVENTIONS AND AVOIDANCE

- Avoid exercise, high ambient temperatures, and extreme excitement

POSSIBLE COMPLICATIONS

- Serious complications may occur without treatment to relieve the airway blockage or obstruction; these include fluid build-up in the airways (airway edema) and/or lungs (known as “pulmonary edema,” which may progress to life-threatening lung injury), and decreased movement of air into and out of the lungs (hypoventilation); may require tracheotomy (surgical opening into the windpipe [trachea]) and/or artificial ventilation (such as use of a mechanical respirator)
- Particular care should be taken when inducing general anesthesia or when using sedatives in any patient with upper airway blockage or obstruction
- The patient can transition from being a noisy breather to having a blocked or obstructed airway in a few minutes or even seconds

EXPECTED COURSE AND PROGNOSIS

- Varies with underlying cause
- Even with surgical treatment, some degree of obstruction may remain for 7 to 10 days due to postoperative swelling

KEY POINTS

- “Stertor” is noisy breathing when inhaling; it is a low-pitched, snoring sound that usually arises from the vibration of relaxed or flabby tissue or fluid; usually arises from airway blockage in the throat (pharynx)
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