Laryngeal Paralysis (LP)

Overview

The larynx (voice box) is a muscular and cartilaginous structure that connects the pharynx (throat) and the trachea (windpipe). This is the area of the vocal cords within the airway that vibrate when air passes by them producing sound. Laryngeal paralysis refers to the failure of the laryngeal cartilages to open during inspiration (breathing in), creating a partial or complete upper airway obstruction. Most commonly this is caused by dysfunction of the nerve that controls the muscles of the larynx. This may be secondary to a disease that affects many nerves of the body (polyneuropathy) or a traumatic event that affects just the region of the throat. Generalized neuromuscular or muscular disease can also result in laryngeal paralysis.

LP is considered a genetic problem in Leonbergers (called Inherited Leonberger Polyneuropathy), and a heritable form of LP is known to occur in breeds such as the Bouvier des Flanders, Siberian Husky, and English Bulldog. LP in the Dalmatian is often part of a larger condition known as “Laryngeal paralysis-polyneuropathy complex”. The problem has also been reported in older, large breed dogs such as the Labrador retriever, Golden Retriever & Saint Bernard. Usually, in the latter breeds, the larynx is normal at birth, but over time, the nerves and muscles that control the laryngeal cartilage loose function. The cause for the condition in these breeds is unknown.

Signs & Symptoms

Except in the event of traumatic injury, most cases of LP are slowly progressive. The first sign would be a vague change in the quality of the bark, often referred to as a “hoarse” sound. These animals may make a lot of noise when they breathe in and can gag or choke when they eat. The signs are usually worse in hot and humid weather, during exercise, and in obese pets. This will progress to noisy breathing sometimes referred to as “roaring”, even at rest; Inspiratory dyspnea (difficulty breathing in); and stridor (loud breathing or coughing). Cyanosis (a blue tinge to the tongue & inner lips) due to a lack of oxygen may also be present. A dog with these symptoms is predisposed to a life-threatening collapse, asphyxiation and death. Aspiration pneumonia can also occur.

Diagnosis

Along with the clinical signs described above, diagnosis of LP is confirmed by direct visualization of the laryngeal muscle function during inspiration. If an animal has laryngeal paralysis, the laryngeal cartilages will not open as wide as they should as the animal inhales. This can be performed under light anesthesia.
Treatment

In the case of an emergency, procedures such as sedation, oxygen administration, and anti-inflammatory agents, or tracheotomy (external opening into the windpipe) may be necessary to stabilize the dog. Permanent correction can only be obtained by surgery. A major contraindication for surgery is swallowing difficulties or regurgitation, as these dogs will develop pneumonia after surgery.

An arytenoid lateralization (“tie back “) is a procedure that uses permanent sutures to hold the laryngeal portion of the airway open. Depending upon the severity of the paralysis, one or both sides of the larynx may be sutured. Usually, only one side is tied back/ sutured, which provides increased airflow with less risk of aspiration. Most dogs are discharged the day after surgery. Pain is controlled with oral medication on an as needed basis & antibiotics may be prescribed if the surgeon feels it is necessary. The feed & water bowls should be elevated about 8-10 inches off of the floor. Canned food should be cut into chunks & kibble should be moistened with warm water before it is fed. Which ever food type that seems to cause less coughing should be of choice. Dusty environments should be avoided & swimming will no longer be permitted. If the dog’s head goes under water, the larynx would not be able to close and drowning could occur. Exercise should be restricted for 1 month to prevent break down of the laryngeal tie-back. A harness should be used instead of a collar, in order to avoid any pressure on the windpipe & larynx. The dog’s weight should be controlled and obesity avoided.

Most pets do well following laryngeal tie-back surgery. Breathing is greatly improved and acute distress should not occur again. The dog will likely not be able to bark again or the bark will be hoarse. During heavy panting, increased respiratory noise may still occur in those who had only one side of the larynx tied back.

Grants & Studies

Grant # 920 D” Genetic Basis of Polyneuropathology in the Leonberger”
University of Minnesota College of Veterinary Medicine – Dr. James R. Mickelson
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GPCA Health Committee

There has been one case reported to the Health Committee data base from 1999 through 2007. As the Great Pyrenees is a large breed dog, and related to several of the breeds reported to have a heritable form of this condition, information regarding this health issue is being provided to the membership.

If you own or have bred a Great Pyrenees affected by this problem, please complete & return a health survey. Go to the GPCA Health Committee website at: www.gpcahealth.org to download a copy of the health survey.

Sources

T. Fossum, DVM, MS, PhD: Texas A & M University College of Veterinary Medicine (2001)
“Laryngeal Paralysis - Paralyzed Voice Box” Leo Watch (2003)
“Laryngeal Paralysis” Canine Health Foundation (2008)