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Laryngeal Paralysis

Issue Description

A condition in which the nerves and muscles that move one or both arytenoid cartilages of the larynx cease to function, and instead of opening during vigorous inspiration and closing during swallowing, the arytenoids hang loosely in a somewhat neutral position. This leads to inadequate ventilation during exercise and during thermoregulatory panting as well as incomplete protection of the airway during swallowing. Affected animals thus have reduced tolerance for exercise and heat and an increased risk of aspiration pneumonia.

Causes

In most cases, the cause of laryngeal paralysis is unknown or idiopathic. However, the disorder may arise secondary to hypothyroidism, general neuropathies, generalized neuromuscular diseases, muscular diseases, cancer, or trauma. One or both arytenoid cartilages may be affected (unilateral vs. bilateral). This acquired form occurs predominantly in middle-aged to old large breed or giant breed dogs such as the Labrador Retriever, Golden Retriever, Siberian Husky, Newfoundland, and St. Bernard. Usually these dogs are born with a normal larynx, but over time the nerves and muscles that control the laryngeal cartilages lose function.

There are also genetic causes in some breeds (e.g. Bouvier des Flandres, Dalmatians, Siberian Huskies, and Bulldogs), appearing in dogs between two and six months of age. Affected puppies may have difficulty swallowing and breathing, they may gag frequently, and their bark often sounds abnormal. In Dalmatians it is part of another condition called "laryngeal paralysis-polyneuropathy complex." Affected puppies should not be used for breeding.

Choke collars are not thought to be a significant risk factor for this disorder. However, after LP is diagnosed it is usually recommended to stop using a collar or anything else around the dog's neck and to switch to a harness instead.

Symptoms

Symptoms of laryngeal paralysis include voice change (the dog's bark becomes hoarse-sounding), gagging or coughing (often during or after eating or drinking), exercise intolerance, noisy breathing, difficulty breathing, and in severe cases cyanosis or syncope (fainting).

Secondary problems may also occur, including aspiration or edema in the lungs, though often the problem remains an upper respiratory problem. Affected dogs are vulnerable to heat stroke and heat exhaustion due to their limited ability to cool themselves down by panting, but the disorder itself can be mistaken for heat stroke.

Symptoms may occur at any time, but initially owners may only notice that their dog's bark sounds different, that their dog can't run as much as before, or that the dog has trouble in hot weather in unilateral cases because the unaffected side can compensate for the paralysed side. However most unilateral cases will eventually progress to include both sides of the larynx, a more serious problem with symptoms appearing more often.

Symptoms are usually worse in hot and humid weather, during exercise, during times of stress or excitement, and in obese pets. Acute or late-stage symptoms are usually unmistakable and require immediate emergency treatment.

Diagnosis

This condition is usually diagnosed by direct examination of the larynx under light sedation, which also allows checking for polyps and cancers. Tests, such as chest radiographs, CT-scans, or echocardiography, are sometimes needed to rule out heart or lung disease or other possible causes of the symptoms often seen with LP. Some vets may also recommend running a thyroid profile since LP can be a symptom or complication of hypothyroidism.

It is important to differentiate between LP and heat stroke, as they can be mistaken for each other. It is also important to remember that dogs with LP are very vulnerable to heat stroke, making it possible for a patient to have both problems in an emergency presentation.

Treatment

Mild cases are managed by limiting activity, keeping a healthy body weight, and avoiding exposure to high ambient temperatures. Moderate cases can benefit from the use of mild sedatives.

Severe acute symptoms, such as difficulty breathing, hyperthermia, or aspiration pneumonia, must be stabilized with sedatives and oxygen therapy and may require steroid or antibiotic medications. Sometimes a tracheotomy is required. Once the patient is stabilized, surgical treatment may be beneficial especially when paralysis occurs in both arytenoid cartilages (bilateral paralysis). The surgery (arytenoid lateralization, or a "laryngeal tieback") consists of suturing one of the arytenoid cartilages in a maximally abducted (open) position. This reduces the signs associated with inadequate ventilation (such as exercise intolerance or overheating) but may exacerbate the risk of aspiration and consequent pneumonia. Tying back only one of the arytenoid cartilages instead of both helps reduce the risk of aspiration. Afterwards the dog will still sound hoarse, and will need to be managed in the same way as those with mild cases of LP.

Complications of Surgical Treatment

Besides complications of surgery and anesthesia in general, there may be drainage, swelling, or redness of the incision, gagging or coughing during eating or drinking, or pneumonia due to aspiration of food or drink. Undesirable complications are estimated to occur in only 10-30% of cases. If medical therapy is unsuccessful and surgery cannot be performed due to concurrent disease (such as heart or lung problems) or cost, euthanasia may be necessary if the animal's quality of life is considered unacceptable due to the disease.

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