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Tracheal collapse, obstructive upper airway disease

Tracheal collapse, collapsing trachea

Affected Animals:

Dogs, especially older small or toy breeds. Dogs affected by congenital tracheal collapse can show symptoms at an earlier age. Commonly affected breeds include the miniature Poodle, Yorkshire terrier, Chihuahua, and Pomeranian.

Overview:

Small breed dogs are particularly susceptible to a condition called tracheal collapse. The tracheal rings, which are made of cartilage, can become weak and fail to keep the trachea open during breathing. When the trachea collapses, air is no longer able to move through the respiratory tract. Depending upon the stage of respiration in which the collapse occurs, air may become trapped within the lungs or blocked from entering them.

A collapse is more likely to occur when the animal is moving air within the airways at a faster rate than normal, or if there is added pressure around the outside of the trachea. Excitement, exercise, obesity, and allergies are factors that may incite tracheal collapse.

Treatment options vary according to the severity of the condition. Some dogs may require stabilization with medications while others may need surgery. Attempts to decrease risk factors, such as placing an obese canine on a diet, can be beneficial in preventing or minimizing the effects of tracheal collapse.

Clinical Signs:

Some dogs with tracheal collapse will have an intermittent, dry "goose honk" cough. Dyspnea, or difficulty breathing, will be noted in most animals with this disease. Retching or gagging can occur in dogs that are trying to clear secretions from their throat. Clinical signs typically worsen when the animal is excited, drinks water quickly, or becomes overheated. In severe cases, the animal may appear cyanotic, having a bluish tinge to the mucous membranes. Some dogs will faint, or experience syncope, due to a lack of oxygen supply to the brain, which occurs when the dog is overexerted or anxious.

Symptoms:

See clinical signs.

Description:

The trachea is the upper airway tube that carries inspired and expired air between the nose and mouth and the airways and lungs. The trachea is formed by separate incomplete cartilaginous rings, which are connected by fibrous connective tissue and muscle. In normal dogs, the trachea remains open or patent at all times. If the tracheal rings become weak for any reason, the normal action of breathing can result in the collapse of the trachea in that area.

If the tracheal rings are abnormal in the neck of the dog, the collapse usually occurs when the animal inhales. Conversely, the trachea tends to collapse during expiration when the abnormal tracheal rings are inside the dog's chest cavity. This distinction is the result of varying pressure gradients created during the different stages of respiration. Once the trachea has collapsed, the airway is obstructed and air is no longer able to move.

Dogs with tracheal collapse may have any of various symptoms depending on the severity of the condition. Some dogs may make an almost musical sound when breathing, and gag or cough to try to reopen the airway. Some may faint if severely affected.

Treatments range from medications to help control excessive coughing to surgical stabilization of the tracheal rings. Some preventive measures may decrease the incidence of tracheal episodes.

Diagnosis:

Several techniques are used to diagnose tracheal collapse. During a physical exam, the veterinarian will assess whether the trachea is sensitive to palpation, which, in cases of collapse, also may induce coughing. Additionally, a thorough oral exam under anesthesia commonly is performed. Both inspiratory and expiratory x-rays are taken of the chest and the cervical trachea, or the part of the trachea within the neck, in order to define the area that is affected. Often, the dog's general health will be screened using blood and urine tests.

Because there are other disorders that obstruct the upper airways, the veterinarian may need to rule out these diseases before making a diagnosis of tracheal collapse. However, more advanced diagnostic procedures such as bronchoscopy, blood gas analysis, and fluoroscopy require referral to a veterinary internist or teaching hospital. Fluoroscopy is a real time x-ray that demonstrates the movement of the trachea as the dog is breathing.

Prognosis:

The prognosis for dogs with tracheal collapse depends on the severity of the disease and their response to treatment.

Transmission or Cause:

The cause of tracheal collapse is believed to involve multiple factors. Genetics, nutrition, abnormal development of the trachea, and chronic airway disease are all possible factors in the evolution of tracheal collapse. Risk factors such as obesity, degeneration of the cartilage comprising the tracheal rings, allergies, and chronic pulmonary disease can exacerbate a collapsing trachea.

Treatment:

Severely affected dogs require hospitalization for cage rest, medication administration, and oxygen supplementation. Once the animal is stable, it can be sent home with drugs that can help alleviate the symptoms of tracheal collapse.

Common treatments include medications that suppress excessive coughing, open up the airways, reduce inflammation, fight off infection, and eliminate overabundant airway secretions. Obese dogs should be placed on an appropriate weight-reduction diet. Until the dog is stable, exercise should be very limited; afterwards, light activity can be resumed.

For those animals that fail to respond to medical treatment, there are surgical techniques

that provide structural support for the trachea. It is possible to construct a prosthesis that wraps around the exterior of the trachea and holds the trachea open when it is sutured in place. Possible complications of this procedure include infection and necrosis (or death) of the trachea, which can lead to serious consequences. Consequently, an experienced veterinary surgeon should perform this highly specialized surgery.

Prevention:

Owners should do their best to prevent risk factors such as obesity, allergens, excessive temperatures or humidity, overexertion, and respiratory infections. A harness, instead of a collar, is recommended for walking dogs susceptible to tracheal collapse so that pressure is not applied to the neck.