LARYNGEAL HEMIPLEGIA

Laryngeal hemiplegia is a disease that affects the upper airway in horses.  It causes a decrease in airflow to the lungs and can cause exercise intolerance. It is also called “roaring” and horses with the disease are called “roarers” because they make a characteristic respiratory noise that sounds like “roaring” when exercised.   The larynx is the structure that connects the nasal passage to the trachea (also known as the windpipe).  It consists of a group of cartilages that allow air to pass into the trachea and protect the airway during swallowing. Laryngeal hemiplegia is caused by paralysis of one or both of these cartilages (called the arytenoid cartilage), due to lack of innervation which causes atrophy to the muscle that moves the arytenoid cartilage. The left arytenoid cartilage is the most common side affected. In a normal horse, the arytenoids allow maximal airflow into the trachea during abduction (the outward movement of the arytenoid cartilages to open the entrance into the trachea).  Horses with laryngeal hemiplegia have paralysis of the arytenoid cartilage, which prevents them from abducting, thereby decreasing airflow into the lungs, because the arytenoid cartilage is hanging in the airway and physically impeding airflow, resulting in respiratory noise and exercise intolerance.

**It :**

* Is usually seen in horses between 3–7 years old
* Presents as exercise intolerance that has gotten worse over weeks to months
* A classic “whistling” or “roaring” noise is heard during exercise (usually while cantering or higher activity)
* The sound of the horse’s whinny may change
* The horse may be gasping for breath after exercise
* Veterinarians may note muscle atrophy (or shrinking) at the throat latch area

**Diagnosis**

Laryngeal hemiplegia is a **graded on a scale of 1–4**, with 4 being complete paralysis of the cartilage. Standing endoscopy can diagnose cases that are grade 3–4 and some cases that are grade 2. High-speed treadmill endoscopy or over ground dynamic respiratory examination may be necessary to diagnose cases that are questionable on standing endoscopy and used to ensure that no other concurrent upper airway problems are contributing to the exercise intolerance or respiratory noise.

 

**Treatment Options**

Recommendations vary depending on the severity/grade, the breed, the age and the use of the horse. There are 4 treatment options, as described below:

* *Prosthetic Laryngoplasty:* **Most common treatment**. The paralyzed cartilage is “tied back” into an open/abducted position through an incision in the throat latch area.
* *Ventriculectomy/Cordectomy:*The ventricle and the vocal cord (located under the arytenoid cartilage) is removed to widen the airway that is performed alone or along with a prosthetic laryngoplasty. This procedure alone can improve performance and decrease respiratory noise in draft breeds or in show horses that do not need to perform at high rates of speed. It is done under anesthesia through an incision under the jaw into the airway (known as a laryngotomy) or by using a laser passed through an endoscope up the nostril. Laryngotomy incisions are left open to heal on their own. Laser techniques are done either under general anesthesia or with your horse awake and standing. No incision is necessary with the laser technique since the endoscope and laser are passed up the nose to the larynx. The standing laser technique is ideal for draft breeds that may have difficulty recovering from general anesthesia.
* *Arytenoidectomy:* The removal of the paralyzed arytenoid cartilage which enlarges the opening to the trachea. Not the first treatment of choice; **reserved for horses that have had a failed tieback** or horses with an infected arytenoid cartilage. Requires general anesthesia, done through a laryngotomy. Increased risk of complications and decreased prognosis for returning to the previous level of competition vs. prosthetic laryngoplasty.
* *Neuromuscular Pedicle Graft:* Surgery that reinnervates the muscles that control abduction of the arytenoid cartilage. A nerve (first cervical nerve) is taken from one of the neck muscles and a branch of that nerve is placed in the muscle that innervates the arytenoid cartilage. Young horses with grade 3 hemiplegia are considered good candidates; grade 3 horses will respond faster to reinnervation than grade 4 horses. Reinnervation takes six to 12 months. Horses that have had a previous tieback sustain damage to the nerve used in this procedure; therefore they are not candidates for this surgery