

Two upper respiratory problems that can result in horses being 'gone in the wind'

Barbara Hunter, DVM, MS, DACVS-LA
Registered Specialist in Equine Surgery



Last month's article focused on 'roaring', the most common cause of being 'gone in the wind' that we see in Thoroughbred horses. This month, I will talk about two more upper respiratory problems. Although epiglottic entrapment and arytenoid chondritis are not as common as roaring, both can cause abnormal noise during exercise and exercise intolerance. Thus, they can be included in the group of problems that result in wind issues in Thoroughbreds.

Let's start with epiglottic entrapment. The epiglottis is the triangular cartilaginous structure that sits on the floor of the airway, just in front of the larynx (Figure 1a). Its job is to flip backwards and seal over the airway each time the horse swallows food, thereby preventing aspiration of the food bolus. Like most anatomic structures, there is quite a bit of variation between horses. Researchers have established that the normal length of the Thoroughbred epiglottis is 8.5 – 8.76 cm from base to tip (as measured on radiographs). The epiglottis is normally slightly arched and has plump, scalloped edges. Some horses have what is known as a hypoplastic, flaccid epiglottis (Figure 1b). This type of epiglottis is abnormally short (6.5 – 7.5 cm), and can be thin and flat with edges that curl in. In comparison to a normal epiglottis on upper airway endoscopy, this epiglottis looks short and weak. While any epiglottis can become entrapped, this is the type of epiglottis that is more prone to entrapment.

The entrapment is a result of the thin mucosal tissue underneath the epiglottis slipping up and over the epiglottis. Not only does the entrapment reduce the normal function of the epiglottis, each time the horse breathes out it breathes pressurized air into this film of tissue that billows up and slows outward airflow. As the problem becomes more chronic, this tissue becomes thickened, ulcerated and painful. The clinical signs associated with entrapment in a racehorse include a whistling noise during exercise and decreased performance. In sport horses, the more common clinical sign is coughing, particularly during collection. Treatment is straight forward. The entrapping membrane is cut via a quick and simple procedure (Figure 2) and the horse is placed on a course of anti-inflammatory throat wash combined with systemic anti-inflammatories (eg: bute) and antibiotics (typically Sulpha-T). Prognosis for return to function is good with most horses returning to full function within 3-6 weeks of initial treatment.

Arytenoid chondritis is an infection of the arytenoids (Figure 3) that can affect horses of all ages and disciplines. We even see this problem in broodmares turned out to pasture. Clinical presentation is typically heard as abnormal noise on both inspiration and expiration. Most commonly the problem is trauma induced. Basically the left and right arytenoids slam together during periods of upper airway activity (excessive whinnying, heavy breathing associated with extreme athletic activity) and the trauma associated with this motion results in damage to the mucosal surface of the arytenoids. The bruised, inflamed arytenoid mucosa then becomes

mildly infected with the horse's own natural upper respiratory tract bacteria and this infection prevents healing and encourages more inflammation. Diagnosis is made with upper airway endoscopy. Mild cases tend to be associated with superficial mucosal lesions and often these types of lesions have no outward clinical signs. These are the types of lesions that are seen in yearling Thoroughbreds on endoscopy at Sales and are typically secondary to them calling out excessively in the exciting Sales environment. The lesions are treated with an anti-inflammatory throat wash ± systemic antibiotics depending on severity.

A more severe form of arytenoid chondritis is the formation of granulomas on one or both of the arytenoids (Figure 3). These are literally little balls of granulation tissue that protrude into the airway, obstructing airflow and causing respiratory noise. In severe cases they can become large enough to completely cut off air supply, but this is relatively uncommon. Treatment for these is also relatively straight forward. Most small granulomas respond well to systemic antibiotics and anti-inflammatories combined with an anti-inflammatory throat wash. Larger granulomas should receive the same treatment, but the granulomas may need to be resected in addition to those treatments.

Severe cases of arytenoid chondritis can infect the underlying cartilage as well as the mucosa. This is a less than ideal situation as infected cartilage is quite difficult to resolve with antibiotics. Often these horses require either a protracted course of antibiotics and throat wash, or surgical resection of the affected arytenoid. In some animals, even if the infection of the cartilage gets cleaned up with antibiotics, the infection can cause distortion of the cartilage, which can in turn obstruct the airway and limit athletic performance. As a result, those horses also need surgical resection of the affected arytenoid in order to return to full racing function, but exercise intolerance is typically not seen in less aerobically demanding sports. Given the knowledge that the cost of treating and prognosis associated with infected cartilage versus more superficial chondritis is quite different, I do recommend determining if cartilage is involved in a chondritis if the chondritis does not resolve with a standard 2 week course of medical therapy. Laryngeal ultrasound is a relatively new technique that takes some experience to perform, but cartilage involvement can be fairly easy to determine with ultrasound in the hands of an experienced practitioner (Figure 4a and b).

In summary, epiglottic entrapment and arytenoid chondritis are two additional upper respiratory abnormalities that can cause a horse to present clinically as 'gone in the wind'. Both are easily diagnosed with upper airway endoscopy. Most cases are treatable with good results. Laryngeal ultrasound is recommended for arytenoid chondritis cases that do not respond appropriately to treatment as determination of cartilage involvement can affect prognosis and treatment duration.

Roaring, epiglottic entrapment and arytenoid chondritis are three of the most common upper respiratory tract problems that can cause a horse to be 'gone in the wind'. The article for next month will be the last of our short series on respiratory issues and will take a look at lower airway problems (eg: heaves, inflammatory airway disease) that can cause decreased athletic performance.



Figure 1a: Normal Epiglottis (Garrett et al. 2010)



Figure 1b: Hypoplastic epiglottis

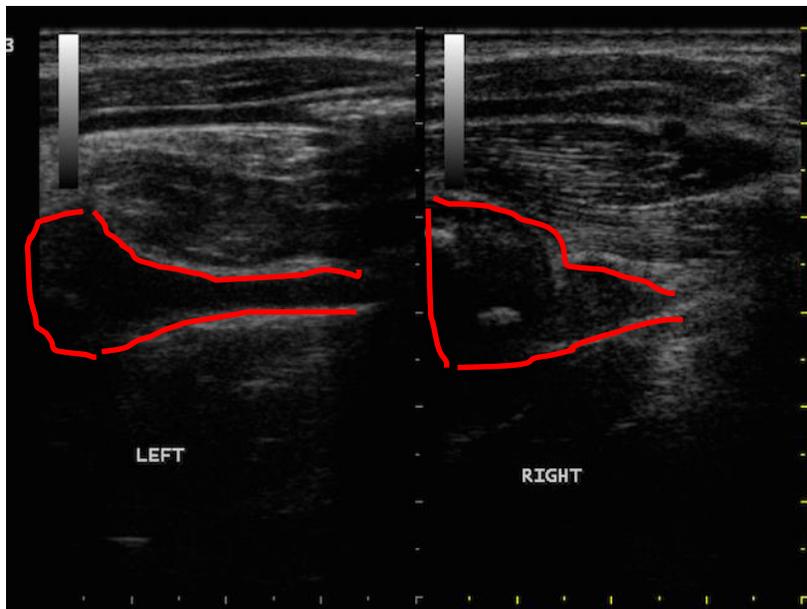


Figure 2: Cutting the membrane that causes an entrapped epiglottis (Lacourt et al. 2011)

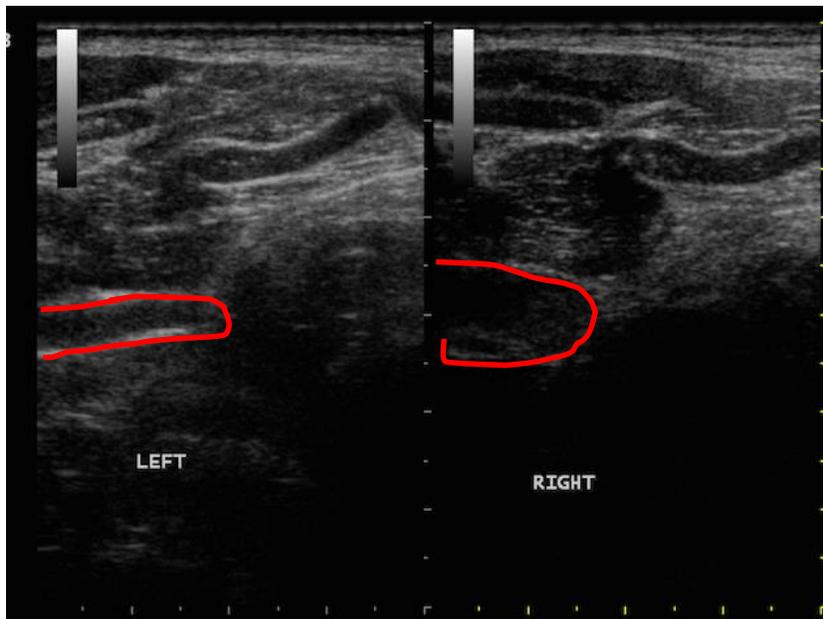


Granuloma

Figure 3: Arytenoid chondritis with large granuloma (photo courtesy of Dr. A. Ritmeester)



4a: Longitudinal view of a horse with a normal left arytenoid and a severely thickened, misshaped right arytenoid with right sided arytenoid chondritis (highlighted in red).



4b: Transverse view of the horse in 4a. Note the severely thickened right arytenoid cartilage in comparison to the normal left (highlighted in red).

References:

Garrett KS, Pierce SW, Embertson RM, Stromberg AJ. Endoscopic evaluation of arytenoid function and epiglottic structure in Thoroughbred yearlings and association with racing performance at two to four years of age: 2,954 cases (1998-2001). *JAVMA* 2010;236:669-673.

Lacourt M, Marcoux M. Treatment of epiglottic entrapment by transnasal axial division in standing sedated horses using a shielded hook bistoury. *Vet Surg* 2011;40:299-304.