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Respiratory Problems and Poor Performance

To perform at their best, racehorses need a properly functioning respiratory tract to allow oxygen to reach the lungs and fuel their activity. But respiratory issues are among the most common ailments diagnosed in these equine athletes. Fortunately, veterinarians have methods to both evaluate and treat respiratory problems, allowing many racehorses to successfully return to the track.

At the American Association of Equine Practitioners' Focus on Poor Performance meeting, held Sept. 10-12 in Lexington, Kentucky, Gary T. Priest, DVM, reviewed endoscopic techniques for evaluating the upper respiratory tract and treatment options for affected horses. Priest is a surgeon at Harthill & Priest Equine Surgery, in Versailles, Kentucky.

The Dynamic Endoscope

Priest began by describing the clinical use of dynamic endoscopy, which is an endoscopic exam that takes place while the horse is exercising under saddle.

He said there are several different scopes veterinarians can choose from, all of which have their advantages and disadvantages; practitioners have their own preference for which system they use, he said.

A dynamic endoscope system is comprised of several components, including the endoscope, a module that's mounted on the horse or rider, a wireless receiver unit (which works best when the mounted module is within 600 meters of the unit), and a software system.

The scope itself attaches to the horse's bridle once it's inserted into the respiratory tract. The exam is recorded, which allows the veterinarian to carefully evaluate what he or she sees and consult with colleagues in difficult or challenging cases.

The Dynamic Respiratory Exam

Priest said there are several indications for a dynamic over-ground respiratory exam, including respiratory noise during exercise, decreased performance, or an inconclusive standing or treadmill endoscopic exam.

Once a veterinarian decides to carry out a dynamic exam, Priest cautioned that the practitioner should plan to spend at least 30 to 45 minutes, plus travel time to the facility, to complete the evaluation.

First, he said, the veterinarian should review the horse's history and determine whether the presenting complaint is noise during exercise, poor performance, or both.

"Some horses can make a lot of noise (during exercise), but are able to do everything they need to," he said.

"You also really can't tell what the abnormality is based on what noise the horse makes." The horse should undergo a standing respiratory exam before a dynamic exam, but Priest stressed the results of standing and dynamic do not always correlate. In other words, a horse with a normal-looking standing exam might exhibit fairly significant abnormalities on a dynamic exam, and vice versa. Thus, it's important to take both types of exam into account when diagnosing a respiratory condition.

He said the veterinarian should conduct a physical examination to check for other causes of poor performance, such as a heart or musculoskeletal issue. Practitioners can also employ diagnostic ultrasound and radiography to help diagnose potentially problematic conditions, such as arytenoid chondritis and neck fractures, respectively; both conditions can cause poor performance and noise during exercise, Priest said.

During the dynamic exam, the horse should perform his normal activities, especially the ones that cause the noise or diminished performance. So if a racehorse only makes a noise while he's breezing or a dressage mount only has troubles while working in a collected frame, be sure the scope catches whatever goes on in his airways during those activities. Priest stressed that head position can significantly impact respiratory function, so it's important to evaluate this during the exam.

Dynamic Respiratory Exam Findings

Next, Priest shared some of the most common respiratory exam findings in his practice, which is made up of 85% to 90% Thoroughbred racehorses. Other breeds and disciplines included in his practice include American Saddlebreds, Standardbreds, Tennessee Walking Horses, Quarter Horses, Warmbloods, and Paso Finos, along with dressage, hunter/jumper, and polo horses.

From 2008 to 2015, Priest said common ailments (from most to least common) included:

- **Recurrent laryngeal neuropathy** This condition occurs when the muscles that open and close the left side of the larynx as the horse breathes are paralyzed, causing the arytenoid cartilage (which closes over the trachea when a horse swallows) to droop into the left side of the airway. This effectively blocks the air flow into the lungs.
- **Dorsal displacement of the soft palate (or DDSP)** This occurs when the horse's palate becomes displaced on top of the epiglottis and partially obstructs the airway. This condition can also be intermittent, which is known as iDDSP.
- **Dynamic respiratory collapse** A fancy term for a combination of respiratory issues.
- **Axial deviation of the aryepiglottic folds** This problem occurs when folds of tissue on either side of the larynx move in toward the center of the airway, obstructing airflow.
- **Epiglottic entrapment and retroversion** The former is a common condition that occurs when the epiglottis becomes trapped by the nearby aryepiglottic folds of tissue. Retroversion, on the other hand, is a rare condition in which the epiglottis unable to maintain its correct position on the soft palate. Instead, the epiglottis is sucked into the larynx during inspiration.

Other pathologies Less common issues include right arytenoid pathology, fourth branchial arch defect, guttural pouch tympany, and nasopharyngeal collapse. Treatments for Respiratory Ailments

Priest touched on several treatment options veterinarians have for managing respiratory problems.

- **Epiglottic entrapment correction** Priest said veterinarians can correct epiglottic entrapments through the horse's nasal passages with endoscope guidance under standing sedation or general anesthesia. However, Priest said he typically uses general anesthesia to reduce the risk of the horse moving during the procedure and causing a complication. Horses require 21 to 31 days of rest before returning to full training, he said, but noted that complications, such as soft palate tears, re-entrapment, and chronic DDSP, can occur.
- **Tieback surgery** Priest said tieback surgeries are either "really rewarding or really frustrating"—essentially, the procedures tend to go exceptionally well and help improve a horse's performance, or the procedure fails and the trainers and/or owners don't note any improvement. In this procedure, the veterinarian fixes one side of the horse's throat into an open position so it doesn't collapse when horse breathes. He encouraged attendees to use a video endoscope during surgery to ensure they don't puncture the airway. He also stressed that you can't eliminate noise with a tieback procedure, so the surgery is better used for horses with performance problems. Priest also noted that, although it's a common procedure, there are still questions that remain about tieback surgery: Does a horse's age or the degree of respiratory paralysis impact whether a procedure is successful? If a horse has undergone prior airway surgery, can it be redone if it's deemed a failure? Would removing the horse's vocal cord and laryngeal ventricles be a more effective option than a tieback? Those answers still remain unclear.
- **Post-tieback Hobday's procedure** Priest also discussed using a post-tieback surgery Hobday's procedure (in which the laryngeal ventricles and vocal cord are removed to stabilize the area and prevent vibrations from making noise when the horse exercises) to help eliminate exercise noise. "Not all of these look great," he said of the finished product, "but that doesn't matter as long as they're functional." For both tieback and Hobday's procedures, Priest recommended feeding horses off the ground following surgery. He said horses can return to training in 30 to 45 days, depending on the individual. Complications from the procedures can include a failure to maintain retraction and chronic cough and/or aspiration pneumonia. Should either procedure fail, Priest said the veterinarian can try again or perform a partial arytenoidectomy (the removal of all or a portion of the arytenoid cartilage on one side of the throat). The drawback to the latter option, however, is that the recovery time ranges from three to four months, rather than several weeks for a less invasive procedure.

DDSP and iDDSP There are a number of treatment options, both surgical and nonsurgical, for these conditions, Priest said. Trainers can try to correct the problem using tongue ties or various nosebands (such as figure-8s) or bits; he said he prefers dropped and figure-8 nosebands for this purpose. Another option is the so-called Cornell collar, which the horse wears during exercise to help hold his larynx in a position that will not allow DDSP to occur. More invasive options include the myectomy (surgical removal of the muscle that controls throat movement) and a tie-forward procedure (suturing the larynx in a forward position), though Priest noted that veterinarians still aren't sure whether the former is effective. Horses that undergo a myectomy can return to work in three to four days and, while they can occur, complications are rare. Postoperative care for the tie-forward procedure is a bit more intensive. Priest said these horses should keep their heads elevated as much as possible for seven to 10 days, and caretakers should elevate their feed and water, as well. Do not allow the horse to graze for seven to 10 days, but he can go back to walking under tack after about 14 days and into full training after 30 days, Priest said. Complications can include seroma (fluid accumulation), infection, suture failure, and DDSP, he said.