Scoping It Out: Research looks at upper respiratory track exams, or scoping, of sale yearlings

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When a veterinarian examines the upper respiratory tract of a Thoroughbred sale yearling, it usually only takes a few minutes, according to Dr. Scott Pierce of Rood and Riddle Equine Hospital in Lexington. But the findings can have repercussions that are much more long-lasting.

What the veterinarian sees and reports may help a buyer decide whether or not to purchase a hose. The results of the exam might show the yearling has less of a chance than other horses his age to eventually be successful on the racetrack.

Fortunately, for sellers of young horses, the majority of airway examinations should not reveal abnormalities that compromise a yearlings athletic potential.

"The bottom line, based on my research, is that 90% of the time there shouldn't be a question when scoping a young horse," Pierce said. "So 90% of the time, it's OK; it's good news. Only one out of every 10 horses I examine will require more scrutiny because there appears to be something that would affect racing performance. And I would have problems recommending the purchase of only six or seven out of every 100 horses I examine."

The other good news about upper respiratory exams is that veterinarians are better able to interpret what they see because of work done by Pierce; his Rood & Riddle partner, Dr. Rolf Embertson; and other scientists. Their studies gathered the results of upper airway exams in yearlings and then looked at how the young animals performed as racehorses.

"I think we know more than we did 10 years ago, and I think, in general, as veterinarians and horse owners, we've become more educated," Pierce said. "Hopefully, as veterinarians and owners, we've also become more lenient in how we interpret the examinations."

Pierce, who has been performing endoscopic airway exams at sales since the mid-1980s, became interested in doing studies on his findings and how they should be interpreted after he looked at a stallion prospect that had been a successful runner even though he had an abnormal throat.

"The horse was a grade I or a grade II winner- I can't recall- and he had earned a lot of money, a million bucks," Pierce said. "I was asked, from someone on the breeding end, 'Please, can you just stick a scope in him and see what he looks like?' He had a real flaccid epiglottis and a very asymmetrical throat, and it was to the point that I said to a couple of young vets who were with me, 'Hey guys, come here and look at this airway and see how imperfect it is, and look at this horse's race record and see how well he did.' That was kind of the catalyst for me to dig and do some research because I was seeing how critical we were, as veterinarians and buyers, or airways."

At that time, many veterinarians were relying on their own observations about various throat abnormalities and how young horses with those problems ended up performing as racehorses. Pierce's goal was to provide objective data- collected through scientific methods- that veterinarians and owners could consult to evaluate their findings.

Pierce's first study, conducted in 2001, was based on information gathered from 816 yearlings. He has since done additional work while expanding the number in the group to more than 2,900. The results of the most recent research Pierce has completed are scheduled to be presented at the American Association of Equine Practitioners' convention later this year in Florida.

Pierce has examined both sale yearlings and yearlings that weren't entered in sales. He also studied changes in the upper respiratory tracts of young horses as they age. In addition, Pierce said, scientists at Michigan State University, led by Dr. John Stick, have conducted research to evaluate if examinations of yearlings' throats could be used to predict future racing performance.

With so much data on so many horses, Pierce is confident that "we know how to 'call' a yearling airway now," meaning veterinarians can say with a higher degree of certainty what effect a yearling throat abnormality will have on a horse's potential to compete. However, he warned: "You have to be careful; you have to be patient; and you have to give them (the yearlings) the benefit of the doubt. Occasionally, you have to go back and look at them again and not be too critical because the horse might be having a bad day and his throat normally isn't that bad. Or maybe he has a rip-roaring pharyngitis and his epiglottis looks thinner than it normally does. Or sometimes the yearling fights the restraint and they twist their necks around (giving their throats an abnormal appearance or making them displace their soft palates). Or maybe they're tired. You have to use common sense."

PIERCE"S POINTS

To understand the results of Pierce's research, you first have to know some basics about equine airway anatomy and the grading systems used by many veterinarians to evaluate it. During an endoscopic exam, veterinarians look at several structures, including the arytenoid cartilages and the epiglottis. The arytenoids open and close the horse's airway. The epiglottis is a thin plate of cartilage in front of the entrance to the larynx that prevents food from entering the larynx and trachea during swallowing.

In pierce's studies, the function of the arytenoids was graded using a scale of I to IV. Grade I arytenoids were synchronous (moved at exactly the same time) and symmetrical. Grad IIa arytenoids were mildly asynchronous or asymmetrical, but they achieved maximal abduction (drew away and opened the airway) easily. Grade IIb arytenoids were asynchronous or asymmetrical and achieved maximal abduction with difficulty. Usually horses with grade IIb arytenoids must be forced to take a deep breath to see maximal abduction, according to Pierce.

Grade IIIa arytenoids were asynchronous or asymmetrical and couldn't maintain full abduction. Grade IIIb arytenoids had limited movement and couldn't fully abduct. Grade IIIc arytenoids were nearly paralyzed. There was no movement in the grade IV arytenoids.

In the grading system for the epiglottis, the structure was described as normal or I to IV abnormal. A normal epiglottis had good thickness, length, and definition, with serrated edges. A grade I epiglottis had good length and texture, but was slightly flaccid and slightly thinner than normal without serrated edges. A grade II epiglottis had adequate length, but it was mildly flaccid, had thinner than normal curled edges, and lacked dorsal vasculature. A grade III epiglottis was moderately flaccid and very thin, and it bent easily. A grade IV epiglottis was severely flaccid, extremely thin, and markedly short, and it bent easily.

Based on Pierce's research, grade III arytenoids of every type had a significant negative effect on yearlings' future racing success, and he would recommend that his clients not buy those yearlings or young horses with grade IV arytenoids. However, grade I and grade IIa arytenoids, Pierce found, "were no problem" because they didn't significantly reduce young horses' athletic potential. The findings were similar to those reported by scientists at Michigan State.

In Pierce's early work and in the Michigan State research, grade IIb arytenoids in yearling didn't significantly reduce their chances of succeeding as runners. But further research

by pierce showed “what appears to be some reduction in earnings in those individuals,” he said. “But there isn’t a consistent statistical significance and it didn’t affect all groups of horses in that (grade IIb) category.”

Pierce will discuss more details of his findings in yearlings with grade IIb arytenoids when he makes his presentation at the AAEP convention in December. Pierce found grade IIb arytenoids in approximately 7% of the sale yearlings he examined. The incidence of grade III airways was only around 2%.

The effect of the condition and function of the epiglottis in a sale yearling on future racing performance is even less clear-cut, according to Pierce’s research.

“I tryly don’t believe that we can predict from looking at a yearling that a horse is going to have trouble (with his epiglottis to the degree it affects performance) as a racehorse except in about 3% of the yearlings, and those are the grade IIIs, the grade IVs, and the horses with short epiglottises, which had decreased earnings, in general, even though their number of starts were the same or more (than normal horses),” Pierce said. “What was nice to see was that the grade IIs, which people who pinhook don’t like to buy, did as well (on the racetrack) as the normals and grade Is even though those (the grade IIs) had pretty flaccid epiglottises.”

According to Pierce, more research needs to be done on the epiglottis, especially in horses that are racing, because sometimes the findings in a resting animal differ greatly from the appearance of structure when the same horse is exercised on a high-speed treadmill.

IMPROVING WITH AGE

In other work, Pierce teamed with Embertson to look at changes in the upper respiratory tracts of horses as they age from weanlings to yearlings. Among the 29% of weanlings in the study with epiglottis grades that were not normal, 68.2% improved by the time they were yearlings while only 3.8% got worse. Among weanlings with grade I or grade IIa arytenoids, 92.2% stayed the same or improved while only 7.8% worsened.

Pierce is finishing up a study that looks at the incidence of abnormalities in nearly 3,000 yearlings in a normal farm populations that isn’t limited to horses headed to the sales.

“No one has published the true incidence of findings in the regular Thoroughbred populations, and that’s my next paper,” Pierce said. “There are more abnormal conditions present that you might think, but it’s not a huge number. Many of these yearlings are scratched from the sales.”

With the information about equine throats that already is available to veterinarians and the general public, Pierce recommended keeping two situations in mind when applying the information to sale horses.

“It’s important to understand there are outliers, or freaks of nature, so to speak,” he said. “they run beyond what you see (bad) on the endoscopies and blow your statistics off the map. In my first study, there was a horse with a grade III throat that was a major stakes winner at 2 that won a lot of money. But would I buy a horse with a grade III airway and pay a lot of money for it because that one horse did well? Lord no, I wouldn’t. But you have to keep in mind that bad is relative. You will see horses that will outrun (the results of) their scopes (throat exams).”

The other situation to be aware of its that veterinarians can and do disagree when grading airways. There can be significant differences of opinion. A horse with grade IIb arytenoid function and grade II epiglottis to one vet might be a horse with grade IIIa arytenoid function and a grade III epiglottis to another vet.

“You need to develop a relationship with a veterinarian, so you’ll know how he calls his airways,” Pierce said. “You want a veterinarian you can trust and who is reputable and consistent. You also want a veterinarian who is experienced, because there is a tendency for someone who is young or inexperienced to be too critical. I was probably that way when I was young, too, and it’s only human nature. Just by being in the horse business, you’ll learn who does a lot of pre-purchase exams for sales and who doesn’t.”