

It's Enough to Give Him an Ulcer!

• **Posted by** Stephanie Stephens

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Think ulcers are just for those horsey high-stress jobs? Think again. Foals often have ulcers, too.

Owners are hearing the word ulcer more frequently these days. It's not just because more ulcers are occurring now, it's that we're more aware, says Michael J. Murray, DVM, MS, previously of the Marion duPont Scott Equine Medical Center at Morven Park in Leesburg, Va., and now a technical director for strategic development for Merial Equine Global Enterprise based in Duluth, Ga.

“The recognition of ulcers has certainly grown, and some would suggest that there are more than there used to be,” says Murray. “The truth is, ulcers have always been a problem, but only in recent years—with long-enough endoscopes that allow us to get in and look around—are we making the connection with what we see and what the horse's clinical problems are.”

Jack Snyder, DVM, PhD, Dipl. ACVS, chief of lameness and surgery at the University of California, Davis, undertook ulcer studies at the Atlanta and Sydney Olympics, examining show jumpers, dressage horses, and three-day eventers: “In Atlanta in 1996, we found 70-75% of horses had ulcers; in Sydney in 2000, ulcers were reduced to 60%, and these were much less severe. The awareness of ulcers has dramatically increased in the last four to six years, probably due in no small part to the marketplace efforts of Merial (makers of the FDA-approved ulcer medication GastroGard).”

Is Work the Culprit?

As with any potential medical problem, identifying risk factors first is key, counsels Murray, who places the degree and intensity of training high on the list of ulcer instigators.

Murray points to extensive post-mortem and endoscopic studies that indicate “as you get into less intense activities, there's almost a linear correlation with a drop in ulcers. It's been shown that 80-90% of Thoroughbred racehorses develop ulcers, while between 60-70% of three-day event horses may have them. When we examined horses used in light activities, such as schooling or pleasure, we found some degree of gastric lesions in one-third of them; it was relatively mild in most cases.”

The word “stress” is used frequently when discussing equine ulcers, says Murray, but might be a misnomer, especially if we equate ulcers in humans. “People associate emotional stress with ulcers; in fact, that is not true,” says Murray. “There is an association between emotional stress and an upset stomach, but not ulcers. Severe physical stress can cause ulcers. But, the way the concept of ‘stress’ is applied to horses is not correct. Commonly considered stressors do not cause ulcers directly. Many ‘stressed’ horses that I have examined have had normal stomachs. ‘Stress’ may influence eating behavior, for instance, and indirectly contribute to ulcers.”

Murray cites the following body of work by colleague Alfred F. Merritt, DVM, MS, Appleton Endowed Professor in the Department of Large Animal Clinical Sciences at the University of Florida.

“This (work) showed that when a horse increases from a walk to a trot, and certainly to a gallop, the pressure inside the abdomen increases, compressing the stomach and pushing the acid from the bottom of the stomach to the top, where the acid-sensitive lining is located,” recalls Murray. (See “Horses at Risk for Ulcers,” article #4141 at www.TheHorse.com.)

Ulcers occur not only in the squamous cell-lined portion of the stomach; they are also known to occur in the lower glandular portion as well as in the duodenum (the first part of the small intestine) and the terminal esophagus (the last portion before it empties into the stomach).

Murray explains the differences between the two types of stomach lining. “The top is lined by tissue that’s very much like the human esophagus, very sensitive to acid. The bottom is lined by tissue, which like in our stomach is the location of acid secretion. It has innate, sophisticated defense mechanisms so acid doesn’t easily damage that lining, which would create problems.

“So normally, you’d say, ‘Why would a horse have this very acid-sensitive lining inside its stomach where the acid is produced?’ In a *normal* horse, which is a grazing animal, that acid isn’t going to reach that lining. When we look at a normal horse that’s just been turned out to pasture, his stomach looks just fine, but several factors can cause the acid to come into contact with the sensitive lining, including feeding practices that reduce the amount of time a horse spends eating, and training programs.”

The Acid Test

The issue of what should be normal for a horse, versus what a competition horse in 2003 actually lives with, meet head-to-head. Take that casual horse in pasture with his head down, nose-to-grass. “He’s producing lots of saliva when he eats; saliva could help neutralize acid, providing a very thin layer of protection over the horse’s stomach,” notes Murray.

“By putting pH electrodes in the horse’s stomach to measure acidity, Dr. Merritt and I have found that when horses eat hay and foals nurse, the acidity of the stomach decreases drastically.” The reduction is about 10,000-fold, explains Murray, but within a half-hour of when the horse ceases eating, or a foal nursing, acidity returns.

If a full stomach prevents ulcers, then keeping a racehorse off feed as part of his training protocol “can definitely increase the risk for ulcers,” Murray says. Even changes such as transportation to shows or moving from one barn to another “might also have an impact,” Murray adds, although he admits that factors “perceived as stress” are more difficult to quantify.

“Things that perturb the horse’s normal eating behavior are more influential than the classic stress that we humans think of which leads to feeling crummy with an upset stomach,” explains Murray. “Psychologic stress on the horse could certainly alter his normal eating behavior, and that would potentially increase the amount of time for acid to damage the sensitive lining of the horse’s stomach. Dr. Merritt’s research has shown that acid can damage the tissue in as little as 30 minutes, and I have seen the effects of acid damage on the stomach in just a few hours when using the endoscope.”

Further fostering human/animal similarities, Murray explains that most ulcers in people that aren’t caused by non-steroidal anti-inflammatory drugs (NSAIDs) such as aspirin or ibuprofen are known to be encouraged by *Helicobacter pylori*, which, says Murray, has not been conclusively isolated from a horse yet.

But Murray and David R. Scott, PhD, associate researcher in the Department of Physiology at the University of California in Los Angeles, conducted research utilizing DNA probes that indicate that the horse does harbor that type of bacteria in its stomach. “I think in time, we may be able to elaborate on that story,” predicts Murray.

Sign Language

When should the responsible horse owner suspect ulcers? Frank M. Andrews, DVM, professor and section chief of Large Animal Internal Medicine at the University of Tennessee Veterinary Teaching Hospital, suggests observing appetite for the first signs of ulcers. “If the horse doesn’t eat the bottom out of the bucket, something may be wrong,” he says. “He might eat, then go stand. Or he may exhibit a scruffy hair coat and lose weight. Tell-tale attitude changes might show up as ears pinned back, him trying to bite, or basically going from being a nice horse to being crabby. He could also be generally dull.”

Equine performance diminishes when the horse has ulcers, according to a study by Snyder. His performance evaluations of horses on a treadmill concluded that, “There was no question that their performance was clearly affected.”

In foals, says Snyder, poor appetite and intermittent nursing are visible ulcer red flags. “A normal foal will nurse for a minute or two, drink his fill and sleep, while a sick foal will latch on for 15-20 seconds, then stop, go to the back of the stall, roll on his back and lie there, maybe with his feet in the air,” he says. “He may grind his teeth (bruxism). He may exhibit excessive salivation (ptyalism). Foals may also colic or develop a ‘pot belly.’ ”

Finally, foals might develop diarrhea, which is not a sign of ulcers in adult horses. “Most of the watery absorption occurs in the large intestine in the adult, while it occurs in the small intestine of the newborn,” explains Snyder. “So if inflammation of the stomach and small intestine occur with ulcers, then water won’t be reabsorbed and will remain in the foal’s digestive tract (continuing on to be excreted as diarrhea).”

Foals with ulcers can die, says Murray, “since the stomach can perforate when the ulcer eats all the way through it and acid works its way into the abdominal cavity. Or there can be such severe damage that the stomach is scarred, disfigured, and unable to function properly, so the foal fails to thrive. Adult horses can have some scarring in the stomach from severe ulcers, but because the lining of the foal’s stomach is thinner, it is more susceptible to perforation. Also, scarring can be worse in foals because ulcers can reach deeper layers of the stomach lining and produce more extensive scar tissue. Perforated ulcers in horses over one year old are very rare (but can occur).”

Andrews quotes a Japanese study of 16,701 foals up to six months of age done over three years that was published in the *Journal of the Japanese Veterinary Medical Association* evidencing an average mortality rate of 12.3% due to ulcers. Adult horses' stomachs are thicker, notes Murray, so they rarely perforate. "But if scarring occurs where the stomach empties into the small intestine, it can be devastating," he says. Otherwise, ulcers are not usually fatal, but do have a nasty habit of recurring.

The wisest course is to prevent ulcers before they start, advises Andrews, since treatment can be expensive. "Utilize traditional management modifications such as reducing the training level and offering free-choice hay," says Andrews. "Our work with alfalfa—a dietary antacid, resulting in a higher stomach pH—shows it lowers acidity for five hours after feeding. The stomach is very acidic and hay gives it a base, which neutralizes the acid. Alfalfa also contains calcium, which may decrease acid secretion, as when people take TUMS."

Snyder recommends pasture turnout, if available, and keeping the horse with his regular buddies where the pecking order is already established.

Treat to Beat Ulcers

Is it true that where there are ulcers there could be colic, and vice versa? Andrews says, "Adult horses with ulcers may well have mild to moderate colic episodes that resolve pretty quickly; if colic is severe, the cause is probably not ulcers."

If presented with a colicking foal, Andrews recommends administering Maalox (aluminum hydroxide and magnesium hydroxide) along with Lidocaine through a stomach tube or orally. "We'll pass the stomach tube to make sure there's no reflux, or gastric fluid coming out. If the foal becomes comfortable, that could indicate a gastric ulcer, causing colic."

Murray notes that in his experience, there have been horses in which intestinal surgery was performed because of severe or persistent pain. "Where there were no findings at surgery, endoscopy revealed severe ulcers in the stomach," says Murray. "In cases with chronic colic, the owners are often very frustrated because no solution has been found. And when we diagnosed and healed the ulcers and the colic episodes stopped, they were thrilled."

But, Murray adds, he has diagnosed ulcers in horses with colic, placed the animals on ulcer medication, healed the ulcers, and later the colic returned due to another problem (such as a tumor). “So diagnosing ulcers does not rule out another intestinal problem, and ulcers often occur secondary to other disorders,” he adds. Most veterinarians agree that guesswork is a bad idea. It’s imperative that owners not presume that colic is due to ulcers and that a veterinarian conduct a thorough examination.

FDA Tests, Approves Treatment

If ulcers are diagnosed, the current treatment of choice by most veterinarians is Merial’s GastroGard (omeprazole). “It’s the best drug out there, the only FDA-approved drug, and the most tested in the veterinary industry,” attests Andrews. Its active ingredient is the class of drug called proton pump inhibitors or PPIs, also contained in the human product Prilosec and similar to Nexium.

“There’s crossover physiology of the acid-secreting part of the horse’s stomach that’s identical to ours,” says Murray, who adds that his previous academic work with the drug held great appeal when he considered a career change to its manufacturer. “This drug is effective in blocking acid secretion in both equine and human patients.”

Snyder conducted a study comparing the commercial product to compounded medications containing omeprazole in a suspension. “Bottom line: The horses on GastroGard fared much better overall,” says Snyder. (See “Compounding Study: Know What You’re Getting,” article #3868 at www.TheHorse.com.)

“To save the client money, we will recommend that the horse undergo a gastroscopic examination after two weeks on GastroGard, and if the ulcers are healed, then we either discontinue treatment or recommend—especially in racehorses—to continue treatment with a half-dose during intensive racing and training,” says Andrews. If the horse cannot undergo the second exam, perhaps due to travel or cost constraints, says Andrews, treatment is for the full 28 days. “If they’re going to treat with GastroGard, they must go the full 28 days unless the exam is done.

“Scoping, which costs \$150 to \$200, might ultimately save them money, or the cost of 14 days of treatment, versus administering for the full 28 days,” he continues. “Our studies show that most ulcers heal after 14 days with GastroGard.”

GastroGard costs \$30-\$50 a day.

Other treatment options, according to Andrews, include ranitidine, the human equivalent of Zantac. Daily dosage costs \$15 to \$20 per day, given three times daily for 28 days.

“The horse can still be worked, but no studies have been done to determine if ulcers heal with ranitidine while the horse is in training,” says Andrews. “The studies have only been done with GastroGard, and it definitely heals ulcers in horses that are in race training.”

Andrews will also prescribe antibiotics for horses with chronic or recurring gastric ulcers. “Usually we recommend starting the horse on GastroGard, along with trimethoprim-sulfadiazine and metronidazole tablets orally.”

Owners can employ nutraceuticals such as antacid/acid-neutralizing products. These and other more commonly used supplements such as glucosamine and chondroitin (usually indicated for joints) “probably don’t cause any harm, and may be tried as a supplement along with normal feeding,” suggests Andrews. It is unknown what drug interactions can occur with conventional medications and nutraceuticals.

Since most of our horses don’t get to live that idyllic “grazing all day” existence, our ability to prevent, diagnose, and treat ulcers is good news. Most of us feel pretty confident that yes, our horses actually enjoy their work—we just have to ensure that physical problems don’t get in the way of that enjoyment.

Ulcer awareness is just one more item to add to the ongoing dialogue with our veterinarians, especially when we suspect something is wrong. Horses with ulcers must be recognized as an occupational disorder.

FURTHER READING:

See the Ulcers category under Ailments/Syndromes at www.TheHorse.com.

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