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## "EGUS": Equine Gastric Ulcer Syndrome

How many of you can think back to vague signs in your horse including intermittent colic, poor performance, changes in attitude, poor hair coat or poor body condition? It may be worth looking into EGUS or Equine Gastric Ulcer Syndrome in your horse. EGUS refers to the vast array of clinical signs associated with erosions or ulceration of the horse's stomach and duodenum (the first part of the small intestines). The incidence of ulcers is higher than most people think. Studies have found ulcers in as many as 94% of race horses, 58% of performance horses and 57% of foals.

### **Anatomy & Physiology**

The horse's stomach basically has 2 regions separated by a distinct junction known as the margo plicatus. The lower portion of the stomach, known as the "glandular region" is responsible for the secretion of hydrochloric acid, pepsin and other enzymes that aid in digestion. The top portion closest to the mouth is made of squamous cells, similar to those seen in the esophagus. This squamous portion has limited protection against the digestive properties of the acidic enzymes produced in the stomach. Under certain conditions, the squamous portion of the stomach has increased exposure to the acidic environment and the enzymes begin to erode into the mucosal lining of the stomach.

### ***Predisposing factors***

Any time the squamous portion of the stomach has increased acid exposure, there is a risk for ulceration. The horse is designed to be a continual grazer, which is helpful in several ways. When a horse is allowed to eat small amounts throughout the day, the constant presence of feed material helps protect the stomach lining. Unfortunately many horses are fed just twice daily, leaving the stomach empty and exposed to acid in between feedings. Also, grass and hay are good buffers, lowering the acidic content of the stomach. Grains, on the other hand, increase the acidity of the horse's stomach.

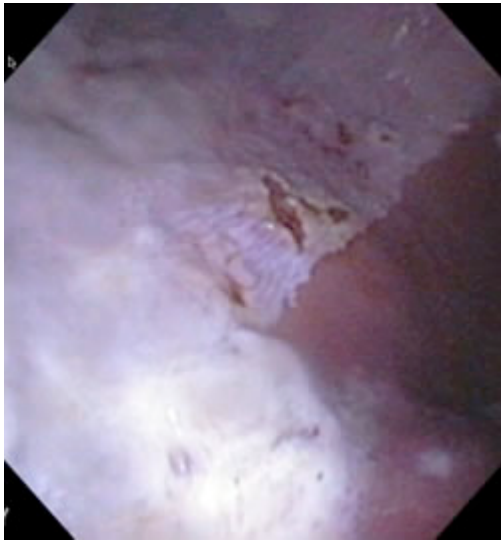
Stressful conditions have also been associated with the formation of gastric ulcers. This can include new environments, stall confinement for lay-up/rehab, competition and even transportation. In one study, horses were trailered for 4 hours to a new site, placed in stalls, fed twice daily and exercised twice daily for 3 days. Then they were trailered 4 hours back to the original site. This scenario is a common one for many horses today, yet it induced ulceration in 7 of the 10 horses.

The administration of non-steroidal anti-inflammatories such as Bute or Banamine has also been linked to the development of ulcerations. NSAIDS cause a decrease in Prostaglandin E, which is responsible for the protection of

the glandular mucosa (stomach lining). For this reason, we try to limit NSAID administration to 2 grams or less daily and for less than 7-10 days in a row if possible.

There may also be a correlation between exercise and ulcers, explaining the high incidence in the performance horse. Preliminary studies have showed an increase in intra-abdominal pressure with exercise. This leads to compression of the stomach, raising the acidic contents up into the unprotected squamous region.

## Diagnosis



Clinical signs such as chronic colic, poor performance, weight loss, changes in attitude and poor hair coat may raise one's index of suspicion for gastric ulceration. However, the only definitive way to diagnose ulcers is to actually visualize the stomach via gastroscopy. However, the horse needs to be held off feed for 12-18 hours prior to the exam so that feed material does not obstruct our view. A gastroscope is passed through the horse's nose, down the esophagus and into the stomach where we can visualize the stomach lining. If ulcers are noted, they can be scored from 0-4 depending on the severity of reddening, thickening, and erosions or ulceration.

## Treatment

There are several options for the treatment of gastric ulcers, all aimed in decreasing or neutralizing the stomach acids. Treatment may be dictated by the location, severity or duration of the lesion or by financial constraints. Proton pump inhibitors work by stopping the secretion of hydrogen ions from the cells in the stomach. Gastrogard (Omeprazole) is the most commonly used proton pump inhibitor and has been shown to decrease acid output within 5-8 hours of receiving the first dose. Gastrogard is a paste formulation that is generally administered daily for 28 days for the successful treatment of ulcers. H<sub>2</sub> antagonists can also be used to treat ulcers by blocking certain receptors and causing a decrease in hydrochloric acid secretion. H<sub>2</sub> antagonists such as Cimetidine or Ranitidine are successful in treating ulcers, but typically have to be given every 6-8 hours, which makes dosing more difficult. Sucralfate has been used successfully in humans to treat and prevent stress-induced ulcers. It has also been used successfully in horses and works by coating the ulcerated mucosal lining and increasing mucous production. Unfortunately, Sucralfate must also be administered every 6-8 hours to be effective. Antacids have been used in

horses, but have fallen out of favor due the very high dosages and frequent administration that are required to be effective.

### **Prevention**

Many of today's horses are in heavy training or competition, travel extensively, stalled for much of the day and fed twice daily. All of these conditions likely play a role in the high prevalence of ulcers today. However, there are steps that you can take to reduce the chance of your horse developing ulcers. If your horse is fed primarily an all-concentrate diet (grains), try adding some grass or hay to function as a buffer. Try to minimize the stress of long trailer rides by breaking up the trip. Allow access to pasture when possible and introduce a noon feeding to minimize the length of time the stomach is empty. Also, consider Ulcergard during times of stress. Ulcergard is a less concentrated form of Gastrogard which is used to prevent (but not treat) ulcers. Giving your horse a daily dose of Ulcergard before and during competitions may give that added protection to prevent the formation of ulcers.

In many cases, these simple management changes may be enough to prevent gastric ulcers in your horse. If not, knowing what the signs are and initiating early treatment are your best defense.

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