VETERINARIAN EXPLAINS

Equine gastric ulcer syndrome

Just like humans, horses can develop gastric ulcers. These can cause them pain and discomfort, leading to behavioral changes and physical problems.

Anatomy
The anatomy of the horse's stomach is quite different from ours. The horse has a relatively small stomach (8-12 liters). It is not meant to store food (like stomachs of a cow), but is continuously passing food to the gut. A horse's stomach consists of two regions. The lower two-thirds of the surface of the stomach is lined with thick, protective mucus. This layer is covered with a bicarbonate layer which neutralizes the low pH of the stomach acid. These barriers protect the stomach from the destructive influences of the acid. This region is called the glandular part. The upper third is called the non-glandular part and is lined with squamous mucosa. It lacks the protection layers of the glandular part, leaving it more vulnerable to getting damaged by the stomach acid. Gastric ulcers may develop in both regions of the stomach though.

Gastric acid
The wall of the stomach constantly excretes acid. This acid helps to digest food and prevents ingested bacteria from reaching the gut. This differs from humans as we only excrete acid while we eat and digest food. The constant flow of produced stomach acid is neutralized by the saliva the horse produces when it chews its food. More saliva is produced when the horse is eating roughage compared to when it is eating concentrates, as roughage requires more chewing. A horse can produce 40-60 litres of saliva per day. Problems arise when the horse is not able to eat and chew most of the day. Prolonged periods with lack of roughage or fasting will lead to a decrease in the neutralization of the stomach acid.

Causes
Stress or exercise on an empty stomach may lead to acid splashing onto the non-glandular part of the stomach. A diet with a high sugar content may also lead to damage to the protective layers. The sugar is fermented by bacteria in the stomach, breaking them down into short-chain fatty acids which eat away at the stomach's lining. This can also be damaged by the administration of non-steroidal anti-inflammatory medication like banamine and bute, leaving the stomach more vulnerable to developing ulcers. Unlike in humans, bacterial infections do not seem to play a major role in the development of gastric ulcerations in the horse. Gastric acid itself may increase the severity and size of the ulcerations and prevent them from healing. This may lead to a negative spiral and can cause the horse pain and chronic blood loss.

Signs of ulcers
Studies have found that over 60% of sports horses and 90% of racehorses develop gastric ulcers. Most of these horses show some degree of abnormal behavior suggesting physical discomfort around the time of feeding or when they have not eaten for a couple of hours. The symptoms can vary widely from food-aggressive (pawing, kicking, angry behavior towards horses in the adjacent stables) to anxious or restless behavior (pacing, kicking towards the belly, swishing the tail, lip-licking, rotational headshaking, chewing while not eating, etc). The horse may look to the sides of the abdomen, particularly the region behind the shoulders on both sides. When ridden it may be reluctant to perform and show negative behavior when a saddle is applied, and the girth tightened. Over time it may develop a rough hair coat, lose weight, become grumpy, demonstrate a lack of energy and show mild colic episodes. Other symptoms include teeth-grinding, intermitted eating patterns, a decreased water intake, laying down more often and taking a stretched out pose (as if needing to urinate). All symptoms may be quite vague or very obvious.

Gastroscopy
Diagnosis can only be made with complete certainty by performing a gastroscopy. This is performed by bringing an endoscope through the nose and the esophagus into the stomach. To be able to visually inspect the stomach wall and the first part of the duodenum, the stomach needs to be empty, making it essential to have the horse fast before the examination. If a horse has chronic blood loss from a stomach ulcer, bloodwork may show mild anemia (a decrease in red blood cell count). Treatment can be started with omeprazole. This medication decreases the production of stomach acid giving the ulcers the chance to heal. If gastroscopy is not an option, omeprazole can be given to evaluate the effect. Improvement of physical symptoms usually occurs in 3-10 days. Treatment should however be given for a longer period of time, as the ulcers will take time to heal. Medication can be given up to four weeks or even longer (depending on the findings during a check-up gastroscopy). Over time the dosage may be lowered. In addition, sucralfate and various supplements can be administered to form a protective layer on the stomach wall. Most important though, is to change the management around the horse to prevent the ulcers from re-appearing.

Photos by Dr. Ines Kretschmer TKZ Karthaus

Gastroscopy is the only way to diagnose gastric ulcers with certainty.

Chronic blood loss can cause a horse to become anemic.

Trickle feeders
Horses evolved as trickle feeders. They are meant to graze almost continuously while taking only short breaks. Roughage should be provided at all times so the horse will not go an hour without it. Additional to this a low-sugar (low-starch) diet may be fed. Feed the horse roughage before giving concentrates and divide the concentrate over multiple small portions during the day. Adding oils to this will not only add energy to the horses' diet, but also increase mucous production and increase stomach blood flow by increasing protective prostaglandins. Continuous food uptake can also be improved by turning the horse out to pasture. When turned out into a social group, stress decreases. In addition, it is important to provide clean drinking water at all times and to avoid the unnecessary administration of NSAID's. If anti-inflammatory medication is necessary, reduce the dose and switch to a COX-1 sparing or COX-2 selective drug. If your horse has developed gastric ulcers, adjust training and competition schedule to reduce stress to a minimum.

Ulcers and travel
Many of our competition horses travel a lot and stay at competition venues. This may cause stress and decreased water and roughage consumption. Make sure your horse always has access to good quality roughage, also during travel. Bringing hay from home improves uptake and makes for a consistent diet. The same goes for water. Away from home, the water may taste different causing the horse to drink less. Another option is to add flavour to the water at home and to the water at the venue, so the change in taste is less obvious to the horse. Omeprazole can be given orally as a preventative before and during travel and competition. Keep in mind that the horse will not be able to eat during exercise. Exercise also decreases gastric emptying, allowing the pH of the stomach contents to drop. During a long training or competition (like endurance) it is essential to provide opportunities for the horse to eat and drink. Otherwise, this can be offered straight after the exercise so the horse can recover as quickly as possible.

Management is key
Ulcers are frequently diagnosed in sport horses and relapse of ulcers is often observed. Adjusting the overall management of the horse to reduce stress, improve diet and promote continuous uptake of food (and water) can prevent a vicious cycle from occurring. ■

THE VETERINARIANS

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ABOUT SMDC
Sporthorse Medical Diagnostic Centre (SMDC), based in the Netherlands, is a multidisciplinary centre of excellence where all orthopedic diagnostic and treatment modalities can be utilized in combination with experience, extensive knowledge and individual attention. Dr. Bergman, Dr. van Toor, Dr. Cokelaere, Dr. Hoogelander and Dr. van Veggel dedicate their time to optimize sporthorse performance while considering all factors which might influence it. Their caseload contains horses showing lameness but also includes horses with spine related problems, pre-purchases examinations as well as preventative sporthorse care. www.sporthorsemdc.com