

GASTROCARE – Clinical Study

Chief Investigator: Dr A.K.A. Hill, BSc., D.S.M., PhD., D.P.E., F.R.A.M.
Director of Equine Research, University of Limerick

INTRODUCTION

Since the mid 1980's many research studies have indicated that gastric ulcers are extremely common in horses with up to a 90% incidence reported in racehorses and up to 60%+ in foal population (Hammond et al, 1986), Murray et al (1989), Johnson et al (1994), Vatistas et al (1994), Andrews (2001), Kohnke (2001), Pagan (1997).

Most researchers agree that the cause of gastric ulcers in the horse is the exposure of the squamous mucosa of the stomach to excessive gastric acid when the stomach fails to empty quickly enough to get rid of the acid accumulation. This acid accumulation is probably due to a number of factors including the following most likely causes:-

1. Stabled horses on high grain low roughage diets, which promote acid secretion.
2. Stabled horses may go for several hours on an empty stomach but acid is continuously produced irritating the stomach lining.
3. Hard exercise increases the production of acid to a point where the stomach is well coated in acid.

Gastric ulcers in foals results from an imbalance between the mucosal aggressive factors such as hydrochloric acid, pepsin and bile acids and mucosal protective factors such as mucus and bicarbonate (Andrews 2001). Ulcers detected in squamous mucosa are due to lengthy exposure to the acids while ulcers in the glandular mucosa are due to the disruption of blood flow and decreased mucus and bicarbonate secretion, leading to back diffusion of hydrogen ions and damage to the underlying submucosa (Andrews 2001).

Duodenal ulceration is rarely found in adult horses or young horses but can be found in foals. In foals the clinical signs are often pronounced and often reflect severe gastric lesions or gastroesophageal reflux secondary to delayed gastric emptying. The ulcers may result from inadequate pancreatic bicarbonate secretion and neutralization of gastric acid entering the duodenum.

The clinical signs associated with gastric ulcers in older horses are poor appetite or slowness in finishing a meal; Dullness and lethargy; weight loss; poor body condition, poor coat, low grade colic and poor performance attitude.

In foals the signs of gastric ulceration can include interruption of nursing; tooth grinding; intermittent colic and rolling on back; increased salivation; diarrhoea; pot belly; rough coat.

To confirm the presence of ulcers in horses the only sure way is by endoscopic examination by a veterinary surgeon.

The treatment of gastric ulcers in horses to date has relied on medical therapy and a change in horse management practices. According to King (2000) the premier medical treatment is omeprazole as this inhibits the production of acid in the stomach, even when the horses are maintained in active training. Other treatments used to decrease stomach acidity include the use of cimetidine and ranitidine, however these products tend not to be as effective in the suppression of stomach acid as omeprazole.

However the purpose of this pilot study is to evaluate the effectiveness of a food supplement 'GastroCare' in the treatment and management of ulcers in horses and foals. The supplement contains Glutamine, Dihydroxy, aluminium sodium carbonate, Calcium Carbonate, Dicalcium phosphate and a Pectin-lecithin fibre complex.

Glutamine is classified as a "non-essential amino acid" because it is possible to make Glutamine from many different amino-acids, including glutamic acid, valine and isoleucine. Glutamine is also a precursor for many other amino-acids; An important fuel for the immune system, the brain and in particular the gut mucosal cells and is at the heart of the mechanism controlling acid-base balance.

To treat equine gastric ulcers it is essential to replenish depleted substances that are necessary for proper blood flow to the stomach such as neurotransmitters. Decreased blood flow reduces the production of mucus that coats the stomach lining used to protect against stomach acid. Glutamine is to the fore in this regard.

Dihydroxy-aluminium sodium carbonate, Calcium Carbonate and Dicalcium phosphate are all useful in the prevention of pain caused by gastric acid and duodenal ulcers. They also promote stomach health by buffering excessive gastric acid and giving protection to the gastric mucosa. It has also been suggested (Lambrecht, 1993) that aluminium, containing antacids protects the gastric mucosa by enhancing the local production of prostaglandins which increase blood flow to the region. Dicalcium phosphate also provides a direct source of calcium and phosphorus for bone growth and maintenance.

The Pectin-lecithin fibre complex as discussed by Venner et al (1999) indicates that Pectins prevent the harmful effects of bile acid reflux; Stabilises mucus, and increase the buffer capacity of the stomach contents. Lecithin on the other hand, forms a highly hydrophobic layer and thereby strengthens the acid-repelling protective layer of the mucosal cells.

PILOT STUDY

For the purpose of this pilot study, eight horses in training were selected at random from a racing yard of seventy horses located on the Curragh, Co Kildare, Ireland, which had kindly agreed to co-operate with the project.

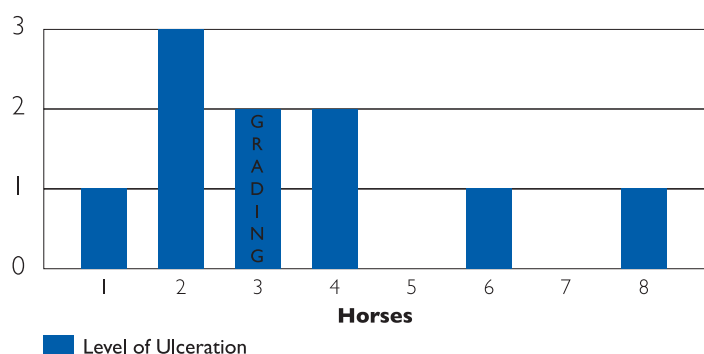
The horses were transported from the racing yard to Glen Abbey Equine Veterinary Hospital, located in Kildare town for gastro-endoscopic examination by a Veterinary Surgeon. All horses in the study had been deprived of feed or fodder since the night before in order to be examined with an empty stomach.

The ulcerations found were graded on a scale of 0 – 3 by the examining Veterinary Surgeon, his assistant, also a Veterinary Surgeon and myself. Full agreement was reached in each case studied. The grading used indicated the following.

- 0 No signs of ulceration detected
- 1 Mild ulceration – small ulcers sparsely located. Little or no inflammation.
- 2 Moderate ulceration – medium size ulcers located on a number of sites in the stomach, showing signs of inflammation.
- 3 Severe ulcerations – large ulcers located, covering a large area of the stomach wall, showing signs of strong inflammation.

The results of the examination were as follows: 80% of horses scoped showed levels of ulceration. This is in line with recent research.

GRADING

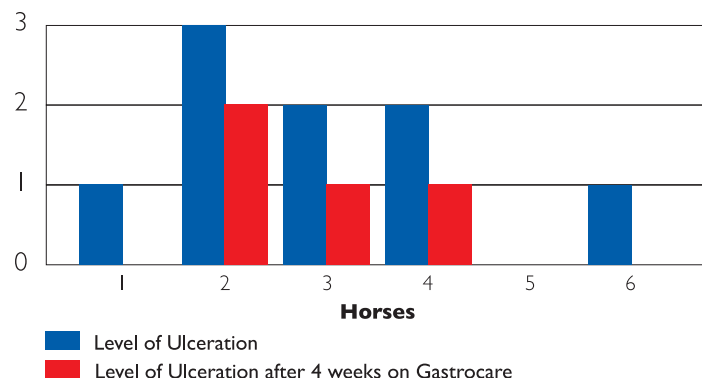


Following the endoscopic examination, all horses returned to the racing yard and 'GastroCare' was added to the daily diet of the six horses that had been identified as having ulcers. Palatability of the product was 100% as no animal showed the slightest hesitation in accepting their food with GastroCare added. All horses in the yard are fed three times per day. 30g of GastroCare was added to each meal.

The horses maintained their normal training and racing programme over the following four weeks while on 'GastroCare'. At the end of this period, the horses were again transported to the Equine Veterinary Hospital for re-examination. However, three horses were lost from the study as they had been unexpectedly sold.

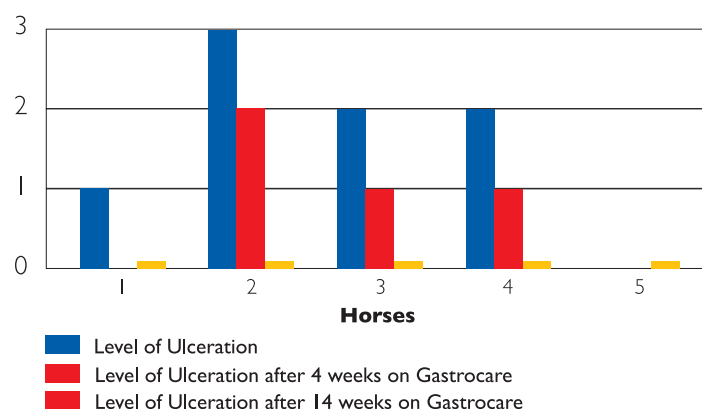
The same procedure as previously was followed for scooping and grading, and the same personnel were involved. The results of the second examination were as follows.

GRADING



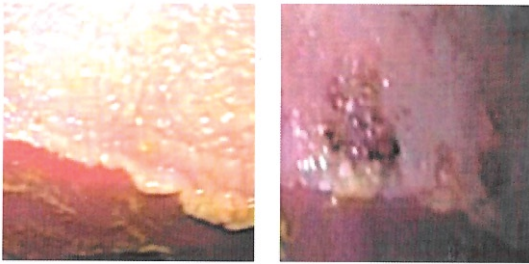
Following this second endoscopic examination, the horses returned to the racing yard and 'GastroCare' was maintained in their daily diet for a further ten weeks. During this time the horses maintained their normal training and racing programme and no other medication was administered to them. At the end of the ten week period, the horses were again transported to Glen Abbey Equine Veterinary Hospital for further endoscopic examination. The same procedure as previously was followed for scoping grading and the same personnel were involved. The results of this third examination were as follows:

GRADING



ANALYSIS

From the gastro-endoscopic examinations it was clear that within the four-week period all horses showed improvement in the levels of ulceration. This was encouraging since these horses were in full training over the four-week period and no other medication was administered to them. It was also noted that in all cases examined, healing was taking place. However, after a further ten weeks on GastroCare all traces of ulceration in all horses tested had disappeared and the stomach wall looked normal and without signs of inflammation. It was also noted that significant healing had taken place.



CONCLUSION

From the results obtained in this study, it is clear that 'GastroCare' has both an initial and long term positive effect in treating ulcerations in performance horses. The initial dosage of 90g per day has given the results obtained. It is likely however that a reduced dosage after an initial period of three weeks on 90g per day, may be enough to maintain gut integrity.

RECOMMENDATIONS

It would be valuable to undertake a longitudinal study, for example over a full racing season to fully assess the long term effects of 'GastroCare' in the treatment of ulcers in performance horses.

REFERENCES

- Andrews, F.M. Gastric Ulcers in Foals and Adult Horses. Government of Alberto publication, 2001.
- Hammond, C.J., Mason, D.K. and Watkins, K.L. (1986) Gastriculceration in mature Thoroughbred horses. *Equine Vet J.* 18, 284-287.
- Johnson, W., Carlson, G.P., Vatisas, N., Snyder, J.R., Lyod, K., and Koobs, J. (1994) Investigation of the number and location of gastric ulcerations in horses in race training submitted to the California racehorse postmortem program. 40th AAEP Convention Proceedings, 123-124.
- King, M., Fire in the belly. Saskatchewan Horse Federation Publication, 2000.
- Kouke, J. Gastric Ulcers in Horses from Health care and problems of horses, 9th Edition. Vetsearch 2000.
- Lambrecht, N., Trautman, M., Korohkiewicz R., Role of eicosanoids nitric acid and afferent neurons in antacid induced protection in the stomach. *Gut* 1993. 34, 329-337.
- Murray, M.J., Grodinsky, C., Anderson, C.W., Radue, P.F. and Schmidt, G.R. (1989) Gastric ulcers in horses: A comparison of endoscopic findings in horses with and without clinical signs. *Equine Vet J. Suppl* 7, 68-72.
- Pagan, J.D., Gastric ulcers in Horses: a widespread but manageable disease. *Equine Athlete*, 1998.
- Vatisas, N.J., Snyder, J.R., Carlson, G., Johnson, B., Arthur, R.M., Thurmond, M., and Lloyd, K.C.K. (1994) Epidemiological study of gastric ulceration in the Thoroughbred race horse: 202 horse 1992-1993. 40th AAEP Convention Proceedings, 125-126.
- Venner, M., Luffs, S., Deegen, E. (1999). Treatment of gastric lesions in horses with pectin-lecithin complex. *Equine Vet. J. Suppl.* 29, 91-96.