VETS 90122 INTRODUCTION TO THE VETERINARY PROFESSION

CASE STUDY: EQUINE NUTRITION AND MANAGEMENT

CASE SCENARIO 1: 'PRINCE GUSTAV'

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PRESENTATION AND HISTORY

You are working in a busy equine practice that supports a number of Thoroughbred racing stables. After completing your routine work at one of the larger stables, the trainer asks you to take a look at one of their younger horses, ‘Prince Gustav’. He has not raced yet, but had shown promise in pre-training and then had not been performing well since he had arrived in the yard. He has had a poor appetite and is not putting on condition, but otherwise they cannot identify any cause for the poor performance. The trainer asks whether you can administer an injection of a tonic to improve his appetite (he suggests Jurocyl injection, which contains arsenic; see Jurocyl | Scone Equine Group). You suggest that you should examine him before deciding on the most appropriate treatment.

Prince Gustav (stable name ‘Gus’) is a 3-year-old gelding, who has been in the yard for 1 month. He is stabled in one of the main barns, which houses 20 horses, each in individual loose boxes. You ask a stable hand to get Gus out of his box so that you can examine him.

CLINICAL EXAMINATION

Walking up to the box you notice that Gus has been walking around in his box and has worn a bit of a path in the bedding. The manure is a little bit loose. He appears bright and alert as he is lead out, although he has a noticeably dull hair coat.

Question 1. Refer to the supplementary material on body condition scoring of horses. What body condition score is Gus?

You conduct a clinical examination of Gus, which shows no abnormalities other than a thin body condition. The yard has some weigh scales, so you get him weighed, and his weight is 480kg. On the way back from the weigh scales, you ask the stable hand what Gus is being fed. He reports that Gus is 'fed the same as most of the other horses' – half a bucket of Strapper mix (a concentrate feed containing predominantly rolled oats) twice daily, plus two biscuits (flakes) of hay. A fair amount of the concentrate feed is left uneaten.

You ask the stable hand to show you in the feed preparation area exactly how much is being fed. There are some weigh scales, so you weigh out the amounts in order to evaluate the diet accurately. The concentrate feed is bought in bulk, so there is no specific nutrient analysis provided.

DIETARY EVALUATION

Gus is receiving a total of 7.7 kg of grain-based concentrate feed, which is mainly crushed oats, with some flaked maize (corn) and also some broad beans (tick beans; for protein) and some linseed. You estimate that it is approximately 80% oats and maize (see photograph).

The amount of hay that is given is also weighed, and this comes to 4.4 kg of hay per day. They hay looks reasonable quality and is not mouldy or too dusty.

Question 2. Assuming that the moisture content of hay and grain-based concentrates is 10%, what is the total dry matter intake that this horse is receiving per day, as a % of body weight? Is this adequate? (refer to pre-reading information on equine nutrition).

Question 3. What is the total dry matter intake of forage (hay) that this horse is receiving per day, as a % of body weight? Is this adequate?

Question 4. What is the total amount of grain-based concentrates that this horse is receiving per day, as a % of body weight?

Question 5. Overall, what are the potential problems with this diet? What might be the consequences for the intestinal health of the horse?

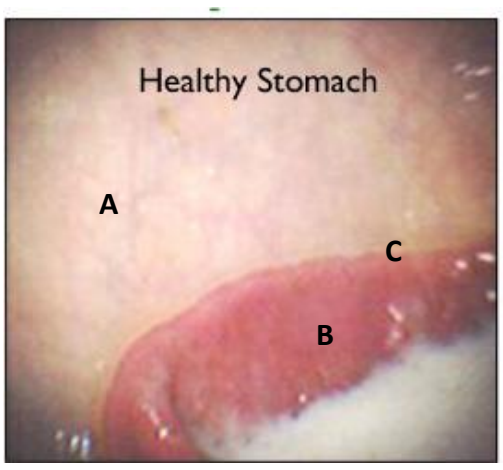
NEXT STEPS

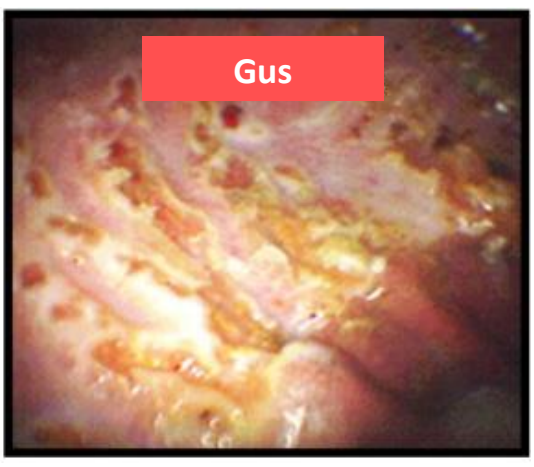
You tell the trainer that you would like to take some blood samples to rule out any infections (blood cell counts) and also look for markers of inflammation or low protein levels (blood biochemistry). Also you suggest endoscoping this horse to examine for gastric ulceration. You explain that gastric ulceration is a common cause of poor condition and performance in horses in training, and the trainer agrees, as he has had horses with this condition before. You take the blood samples to submit to the lab, and arrange for the horse to be brought to the clinic the next day for endoscopy

FURTHER CLINICAL ASSESSMENT

The next day Gus comes in for his endoscopy (see photograph below). He is left with some hay overnight but is not fed in the morning. The blood samples that were submitted did not show any abnormalities (albumin at the low end of normal range and white cell count at the high end of normal range). The flexible fire optic endoscope is inserted via the nose and passed down into the stomach.

Observe the pictures of Gus's stomach (on the right) compared with a normal healthy stomach (left).





Question 6. What is the nature of the mucosa in the areas labelled A and B, and what is the line between them (C) called?

Question 7. How would you describe these lesions, and what is the diagnosis here?

Question 8. How are gastric ulcers caused, and what might be some contributing factors in this case?

FURTHER ACTIONS

You show the trainer the images of the gastric ulcers, and he agrees that this is most likely the cause of his poor performance, poor appetite and dull coat. You explain that the arsenic tonic is unlikely to improve things in this case, and that the ulcers should be treated in the first instance. You advise the horse should be treated with a proton pump inhibitor drug (Gastroguard paste; GASTROGARD® | boehringer-ingelheim.ca) for 14 days and then spelled in a paddock (on grass) for 3-4 months. He will then be brought back into work. However, his diet will need to be modified when he comes back into work. The trainer asks how the diet should be modified.

Question 9. What changes would you recommend to the diet for this horse in the future when he returns to work?

Think about:

- Amount of forage; type of forage
- Amount of concentrates fed
- Frequency of feeding
- How quickly concentrates are introduced into the diet
- Type of concentrate feeds
- Any other additions

RESULTS

The trainer takes your advice, and after 4 months at grass the ulcers are completely healed.

When Prince Gustav returns to training, he is put into a small outside yard (with a shelter shed) along with a friend, rather than being on his own in a stable in the main barn. The trainer consults a feed company nutritionist, who discusses the case with you and formulates a diet that is properly balanced. Gus is provided with at least 5kg hay per day (in a double hay net), and his concentrate feed is mixed with a scoop of lucerne (alfalfa) chaff. He is gradually introduced onto a supplementary feed that contains 3 kg grain plus some sugar beet pulp as a good quality fibre and protein source; plus ½ cup of canola oil to provide additional energy.

After several months in training, the horse has been able to put on muscle and maintain condition (BCS 3), and his coat is looking healthy. The trainer and stable staff are very pleased with his progress.

You advise the trainer that tonics containing arsenic should only be considered with a great deal of caution, because although they might have transient effects on appetite and coat condition, they often do not address an underlying serious issue, such as gastric ulcers. Arsenic can also be very toxic at high levels. Furthermore, arsenic is a prohibited substance under the Australian Rules of Racing (above a

certain urine threshold, allowing for trace amounts in feed and groundwater etc). Therefore sufficient clear days must be allowed following treatment, in order for this threshold to be avoided.

DISCUSSION

Gastric ulcers can occur in any age and breed of horse; and training, exercise, stress, stabling and diet are just some of the risk factors. Clinical signs vary but may include reduced appetite, loss of condition, dull hair coat, dull demeanour, impaired performance and sometimes low-grade colic. Gastroscopy is the only accurate diagnostic test.

The prevalence of gastric ulcers is extremely high. In some surveys, nearly 90% of racehorses in training were found to have some gastric ulcers present; with similar levels in endurance horses and around 60% of other performance horses such as eventers. Even with pleasure horses kept in a stabled environment, around 50% have evidence of ulcers.

Diet plays a crucial role because horses are naturally grazing animals, relying on grass (or other forages) to help to buffer the stomach acids and also to stimulate saliva, also containing buffers. With prolonged time between meals when animals are stabled, protection of the gastric mucosa from acid damage is reduced. And the addition of large amounts of grain may lead to organic acid production in the non-glandular part of the stomach (not protected by mucus) which facilitates and exacerbates damage caused by HCl.

Forage consumption produces more saliva than concentrates/grains because forages require more chewing and stimulate the salivary glands. Horses out at pasture have a very low incidence of stomach ulcers and removing affected horses from a training environment and turning them out onto pasture very quickly brings about the healing of ulcers.

Tonics containing arsenic have been used on horses for centuries, but there is little indication for them in modern veterinary medicine. Anecdotally they may have transient effects on appetite and coat condition, but often there could be an underlying condition that requires specific treatment. Arsenic can be very toxic at high levels, causing diarrhoea, weakness and depression. It is a prohibited substance under the Australian Rules of Racing because it could be used to ‘stop’ horses from performing at their best. There have been many cases, even occurring recently, where horses have exceeded the urinary threshold for arsenic (presumably due to the use of tonics) and trainers have been penalised.

FURTHER READING:

Feeding the ulcer-prone horse (Kristen Janicki).
Feeding the Ulcer-Prone Horse – The Horse

Administration of arsenic in racehorses (Racing SA industry notice)
IMPORTANT INDUSTRY NOTICE - ARSENIC | Racing SA