Ultrasound diagnosis of panophthalmitis in a pony

A two year old pony gelding presented with an acute onset of exophthalmus, blepharospasm, photophobia and corneal oedema, following an episode of ocular trauma. On admission the pony had obvious signs of anterior uveitis with a large corneal defect (Figure 1). Due to the extensive corneal oedema and hypopyon it was impossible to visualise the posterior segment. Ultrasound examination was undertaken following sedation. This demonstrated large amounts of homogenous fluid within the posterior segment of the eye (Figure 2). The lens capsule was subluxated as shown in figure 3. Due to the extremely poor prognosis for return of vision, or obtaining a pain-free non visual eye, enucleation was undertaken. The horse has recovered uneventfully. Examination of the eye confirmed that the lens was subluxated and highly degenerate. The anterior and posterior chambers were filled with exudate containing degenerate neutrophils. The retina was highly disrupted and infiltrated by inflammatory cells.

This case clearly demonstrates the usefulness of diagnostic ultrasound in the evaluation of ocular disorders in the horse. Examination of the posterior segment is often difficult in animals with anterior uveitis and was clearly essential in this case in order to advise the owner of the prognosis for this case. Ocular ultrasound can be undertaken using non-specialised equipment; a 7.5Mhz Linear probe placed over the eyelid provides excellent visualisation of the globe and adjacent structures as shown in this case. Clinicians within the medicine service are happy to offer advice on undertaking this procedure in the field and to offer assistance in interpreting images.

Figure 1: Photograph of pony on admission showing severe anterior uveitis and exophthalmus.

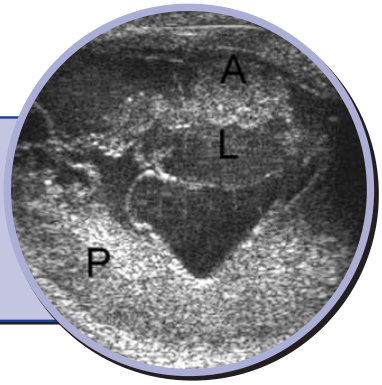

Figure 2: Ultrasound image of the posterior segment showing exudate present in the posterior chamber of the eye (P), subluxation of the lens (L) and fibrin present in the anterior chamber (A).

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THE ROYAL VETERINARY COLLEGE
UNIVERSITY OF LONDON

The Sefton Equine Referral Hospital

ERH newsletter may2005

Unique t othe RVC...

A horse was recently presented to the Royal Veterinary College for evaluation of unilateral exophthalmus. It was a 7 year old Thoroughbred cross mare that had suffered from left sided exophthalmus for the last six months, which had become significantly more apparent over the last three months. Clinical examination including full ophthalmological examination was unremarkable apart from marked exophthalmus. Ocular ultrasonography revealed non-specific diffuse changes within the region of the optic nerve in the left eye compared to the right. Endoscopy of the respiratory tract was unremarkable. A computed tomography scan under general anaesthesia was performed, revealing a large mass of homogenous soft tissue density. The mass appeared to originate in the region of the left sphenopalatine sinus, was approximately 8cm in length and 6cm in depth, and had eroded through the bony orbit to cause the exophthalmos (figure 1) and through the cribriform plate (figure 2). Further investigation, including exploratory surgery and biopsy of the mass, with possible surgical de-bulking and radiotherapy were considered.

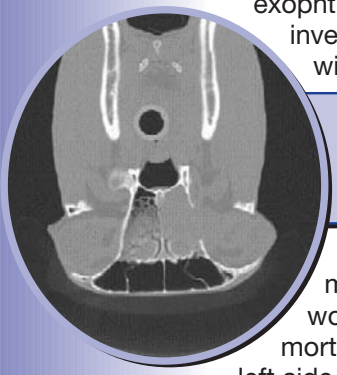

Figure 1 – Computer tomography scan image showing a sagittal section through the skull at the level of the orbits with the horse in dorsal recumbency

However, in view of the location and the extensive nature of the mass, it was extremely unlikely that complete removal of the mass would be achievable and the horse was euthanased. Gross post mortem examination revealed softening of the cribriform plate on the left side, with a 1cm diameter hole at its most rostral point. The dorsocaudal part of the caudal maxillary sinus and the contiguous sphenopalatine sinus were occupied by a relatively well demarcated, irregularly shaped, soft tissue mass. The mass was expanding the sphenopalatine sinus and was adherent to the sinusal walls, particularly laterally. It was infiltrating and thickening the ethmoidal conchae, infiltrating into and replacing the cribriform plate and extended into the most medial aspect of the left orbital wall. The histological appearance of the mass, with positive immunostaining for neuron-specific enolase (NSE), synaptophysin and chromogranin A, was most consistent with a diagnosis of neuroendocrine carcinoma.

The Royal Veterinary College is the only veterinary establishment in the UK to have a CT scanner. Without the benefit of this state of the art diagnostic imaging technique an ante mortem diagnosis would not have been made in this case. Although neoplasia was strongly suspected, the CT scans allowed a more accurate prognosis to be given and an informed decision to be made regarding the horse's future. The RVC welcomes all referrals requiring similar diagnostic imaging.

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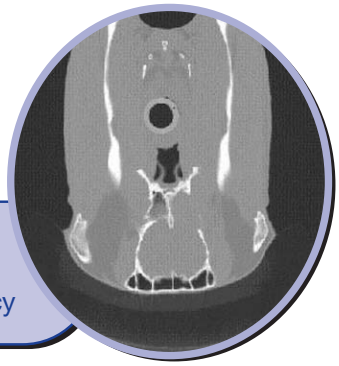

Figure 2 – Computer tomography scan image showing a sagittal section through the skull caudal to the orbits with the horse in dorsal recumbency

Clinical Work In the ERH - Nicola Menzies-Gow

Nicola Menzies-Gow has recently been appointed as a Lecturer in Equine Medicine at The Royal Veterinary College following her successful completion of a PhD in laminitis. She is the project coordinator for the BEVA evidence based medicine practice-based study looking at the factors that are associated with a return to soundness within eight weeks of the diagnosis of acute pasture-associated laminitis.

Evidence-based medicine (EBM) is defined as the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. One of the most attractive facets of the EBM approach is its focus on the identification of evidence that directly address problems encountered in clinical patients. Identification of such evidence requires robust studies based on data collected by veterinarians in private practice that address focussed questions on common and important diseases to be conducted. These will provide data that will inform current practice by establishing evidence on commonly used treatment strategies and their association with optimal clinical outcomes.

Laminitis is an ideal disease to be the focus of EBM as the pathogenesis of acute laminitis has yet to be fully elucidated, meaning that the equine veterinary community remains divided in its views concerning the treatment of the disease, regardless of the underlying cause. The vascular theory of laminitis suggests that vasodilator therapy is important, whilst based on the toxic metabolic theory the logical therapeutic approach is to institute cryotherapy to cause vasoconstriction. Furthermore, while it is agreed that limitation of structural damage to the laminae in the early stages of laminitis is an important therapeutic goal, whether this should be achieved by support of the frog alone, or via sole and frog support is unclear. More importantly, despite the fact that this is an extremely common and life-threatening condition, there is not one large-scale clinical trial to provide evidence on the most effective therapeutic approach.

In order to achieve this goal, approximately 1000 cases will be recruited from practice over the two-year period from 1st April 2005 to 31st May 2007. The veterinary interventions that are instituted within the first seven days after treatment will be examined. Details of on-going treatment and the outcome of return to soundness at eight weeks will be determined via a telephone and fax questionnaire. A nested case-control design will be used to create homogenous sub-groups within the study population to examine the effects of three specific interventions. In order to participate in the study, practitioners need to complete a registration form that can be found on the study's information CD that was recently posted to all BEVA members, downloaded from the BEVA website (www.beva.org.uk) or requested from the BEVA office (01223 836970). An information pack including a weigh tape will be sent out following receipt of the registration form and then suitable cases of acute pasture-associated laminitis can be submitted once identified. Further information regarding the study can be obtained from the study's information CD; the BEVA website under the heading of EBM; or from Nicola Menzies-Gow **(nmenziesgow@rvc.ac.uk).**

Critical Care of Adult Horses – Kevin Corley

When most people think of Kevin Corley, they think of foals. This is perhaps understandable given Kevin's high international profile on this subject. However, Kevin has many other strings to his bow. One of these, and a major interest of Kevins, is the care of critically-ill adult horses. As one of our students put it, we aim for a standard of care for the sickest horses which goes beyond "just sticking the horse on Isolec, and hoping".

So what is it that we do "beyond Isolec"? The first thing is to carefully balance fluid therapy to the horse's needs and pay special attention to the volume and type of fluids. We use colloids, such as pentastarch and plasma, in some of the sicker cases. Electrolyte derangements are extremely common in critically ill horses. Low potassium, which can cause ileus and heart arrythmias, and low magnesium are particularly common. Supplementing magnesium has been shown to be protective in animal models of endotoxaemia, whereas supplementing calcium has been shown to be harmful. Kevin is very well known for his expertise in fluid therapy, and has written the fluid therapy chapter in three major textbooks, including Smith: Large Animal Internal Medicine.

In some horses, fluid therapy is not enough to maintain the circulation. We use dobutamine, to increase cardiac output, and occasionally noradrenaline, to support blood pressure. Getting the balance of these treatments right is extremely important, and infusing them in the wrong circumstances, or at too high a rate, can cause more harm than good. Support of the cardiovascular system is Kevin's main research interest.

It is not just the circulation that needs support in critically-ill horses. Recent work in horses with colitis and colon torsions has shown that the number of horses with changes to the coagulation system is far greater than we used to appreciate. We have been using dalteparin, a low molecular weight heparin, in a number of critically-ill horses, and our clinical impression is that it is extremely useful. Many other treatments are aimed at preventing or reducing the many negative effects of endotoxaemia, and we most commonly use flunixin and Polymixin B. Kevin and his resident, Gayle Hallowell, recently contributed a chapter on treatment of endotoxaemia to the new edition of the 'Equine Acute Abdomen', due out later this year.

Nutrition is often neglected, but extremely important in critically ill horses. We have seen a number of adult, sick horses with high triglycerides, which causes dullness, depression and inappetence. Treatment with an infusion of amino acids and glucose can rapidly sort out this hyperlipidaemia, and restore a horse to the path to recovery. The main nutrient for enterocytes is glutamine. We give oral glutamine in selected horses after colic surgery with the aim of speeding up recovery.

Critical care involves aggressive support in the first 24 hours, which is then scaled down rapidly as the horse gets better. It often ends up with the horse leaving the hospital earlier than it would have without this care, and similar or lower bills and greater chances of survival. We have treated animals with a wide variety of conditions, including strangulating intestinal lesions, severe diarrhoea, fractured ribs and pneumothorax, hyperlipaemia, acute neurological disease, uterine artery rupture, severe pneumonia and acute renal failure.

The whole team at the Royal Veterinary College contributes to the care of the horses, and has pulled off some notable successes. One such success was a 19 year-old horse which had a ruptured ileum, and gross contamination of the peritoneal space with gut contents, due to a strangulating lipoma. After expert surgery by Dr. Ehud Eliashar and his team, the critical care team took over and treated him with peritoneal lavages, fluid therapy, dobutamine, dalteparin, plasma, pentastarch and glutamine. Today, 3 years after his treatment at the RVC, he is still enjoying a full life with his owner.