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13.30–13.45
Survival of horses following strangulating large colon volvulus

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Aims: The pattern of, and specific factors associated with long-term survival have not been evaluated in horses with a strangulating large colon volvulus (LCV). The aims of this study were to provide data on the long-term survival of horses with LCV and to identify pre-, intra- and post operative variables associated with survival. Methods: Clinical data and follow-up information were obtained from horses with a strangulating LCV (≥360°) undergoing general anaesthesia at the Philip Leverhulme Equine Hospital between 1 January 2001 and 31 December 2010. Two multivariable Cox proportional hazards models for post operative survival time were developed: Model 1 included all horses and evaluated preoperative variables and Model 2 included horses that survived anaesthesia and evaluated pre-, intra- and post operative variables. Results: The study population comprised of 116 horses. Eighty-nine horses (76.6%) survived anaesthesia. Of these, the percentage that survived until discharge, to one year, and to 2 years was 70.7%, 48.3% and 33.7%, respectively. Median survival time for horses that survived general anaesthesia was 365 days. In Model 1 preoperative increasing packed cell volume (PCV) was significantly associated with reduced post operative survival. In Model 2, abnormal serosal colour intraoperatively, increasing heart rate at 48 h post operatively and colic during post operative hospitalisation. Conclusions: Survival time in horses with a LCV was associated with preoperative PCV, serosal colour, heart rate at 48 h post operatively, and colic during post operative hospitalisation. This study provides evidence based information on the long-term survival of horses with LCV and identifies parameters that may assist in decision-making by clinicians and owners. Acknowledgements: The Horserace Betting Levy Board funds Joanna Suthers’ clinical scholarship in surgery and epidemiology.

13.45–14.00
Preliminary study of equine visual attention using a novel mobile eye tracker

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Aims: To demonstrate the viability of a novel mobile eye tracker device for noninvasive recording of eye movements and the visual scene and to demonstrate the potential for characterising fundamental relationships between eye movement and motor action. Methods: An array of cameras was mounted on a custom designed framework such that synchronised recordings of the scene visible to a horse, and the eye movements made by the horse could be obtained. A tripod-mounted high definition video camera and a 3D optical motion capture system both synchronised to the eye tracker video streams were used to record the motor actions of the horse. All video streams were combined into a montage and proprietary image analysis software used to obtain quantitative measurements. Results: The direction of auditory attention determined by ear movement and visual attention determined by eye movement are mostly independent. Although the ears are frequently moved independently the eyes are usually moved together and in the same direction. Eye movements during normal walking compensate for head movements and stabilise the visual scene. Visual attention directed towards a target moving at constant angular speed is achieved using a synchronised combination of head and eye movement. Conclusions: We have demonstrated a technique to obtain time-synchronised measurements of eye movement, visual scene and motor action in horses. We believe this is the first time a mobile eye tracker has been successfully demonstrated in any species other than humans. Practical significance: The technique has potential wide application in welfare related research as it allows the direction of visual attention to be related to motor actions and dynamic events in the visual scene. Acknowledgements: Development of the eye tracker was funded by the EPSRC, we gratefully acknowledge Kat Daniels and Margie Craib for assistance with organising and providing facilities for experimental work, and Olivia Phelps and Vicky Haile for performing analysis of the eye tracker data.

14.00–14.15
The clinical management of EMS at the Philip Leverhulme Equine Hospital

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Aims: Equine metabolic syndrome (EMS) is a syndrome of obesity, insulin resistance and a predisposition to laminitis. In order to effectively manage EMS it is vital that weight loss is achieved. The aim of this study was to quantify the efficacy of a veterinary prescribed diet and exercise plan carried out by owners in the field on weight loss and hyperinsulinaemia. Methods: Horses presenting for 3 visits to the Metabolic Management Clinic at the hospital were used in the study. Body condition score, weight (kg) and basal insulin and CGIT (first and third visits only) were recorded. Each horse received an individually tailored diet and exercise plan. Results: Nine horses were recruited. Mean time between visits was 58.6 days. In all cases total weight lost was significant (P = 0.0002); mean total percentage bodyweight lost was 7.9% over a mean of 16.7 weeks. On average, 81.7% of total weight lost was between the first and second visits, with the horses losing 4 times as much weight (by %) per day between the first and second visits than between the second and third. There was an average loss of 0.67 condition scores between the first and second visits and an average loss of 0.69 condition scores between the second and third. Overall, an average loss of 1.3 condition scores (P<0.0001) was observed.
14.15–14.30 Prevalence of clinical signs associated with endocrinopathies and laminitis in geriatric horses in the United Kingdom

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**Aims:** To describe the prevalence of clinical signs consistent with endocrinopathies and laminitis in geriatric horses and ponies (aged ≥15 years) in North West England and North Wales.  
**Methods:** From responses to a cross-sectional survey (n = 918/1144), 200 managing EMS cases with a detailed dietary and exercise plan.  
**Study demonstrates that owner compliance can be very good when managing EMS cases with a detailed dietary and exercise plan.**

**Results:**  
From responses to a cross-sectional survey (n = 918/1144), 200 managing EMS cases with a detailed dietary and exercise plan.  
**Introduction:** Atrial fibrillation (AF) is the most important dysrhythmia affecting performance in horses.  
**Methods:** A modified base-apex ECG (Televet100®) was recorded from 47 horses diagnosed with AF. All horses performed a standardised lunging exercise test consisting of 5 min walk, 10 min trot, 4 min canter and 1 min gallop. ECGs were annotated and scored by an experienced observer (T.V.).  
**Results:** Individual average heart rate during walk ranged from 42 to 175 beats/min, during trot from 89 to 207 beats/min, during canter from 141 to 269 beats/min, and during gallop from 181 to 311 beats/min. Individual beat-to-beat maximal heart rate ranged from 224 to 492 beats/min. QRS broadening was present in 87% of the horses: at rest (34%), during exercise (88%), and during cool down (5%). In 34% of the horses broad QRS complexes with R-on-T morphology were present.  
**Conclusions and practical significance:** In exercising AF horses, heart rate can raise high above the normal maximal heart rate and QRS broadening is often found. QRS broadening may originate from ventricular ectopy or from aberrant intra-ventricular conduction, for example due to bundle branch block. In 34% of the AF horses QRS broadening with R-on-T morphology was found, which is a well-known trigger for development of ventricular tachycardia and ventricular fibrillation. QRS broadening and especially R-on-T are considered risk factors that might explain signs of weakness, collapse or sudden death that have been reported in AF horses.

**14.45–15.00**  
**Influence of allele copy number on post exercise muscle enzyme activity in horses with type 1 polysaccharide storage myopathy (PSSM1)**

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**Background:** Type 1 PSSM is an autosomal dominant condition caused by a gain of function mutation (R309H) in skeletal muscle polysaccharide synthase (GYS1).  
**Aims:** To investigate the effect of the R309H mutation on serum creatine kinase (CK) and aspartate aminotransferase (AST) activities in response to submaximal exercise.  
**Methods:** From a herd of adult Belgian and Percheron draught horses, 4 age, breed and sex-matched homozygotes (HH), 4 age, breed and sex-matched heterozygotes (HR) and control horses (RR) were selected. The horses performed 20 min of submaximal exercise (trot and canter work) and blood samples were collected prior to, 4 h and 24 h post exercise for measurement of serum CK and AST activity.  
**Results:**  
Individual average CK (P = 0.29) and AST (P = 0.20) activity was not significantly different between groups. There was no significant difference in post exercise CK activity between the groups at any time point (4 h P = 0.17, 24 h P = 0.13), whilst CK activity was significantly different between genotypes at 4 h (P = 0.04) but not 24 h (P = 0.08) post exercise. Post hoc analysis of CK activity at 4 h revealed a difference between homozygotes and controls (P < 0.05), but there was considerable overlap between the heterozygotes and controls. Significant correlations between pre- and 24 h post exercise CK activity (r² = 0.77, P < 0.01), pre- and
4 h post exercise AST activity ($r^2 = 0.97$, $P<0.0001$) and pre- and 24 h post exercise AST activity ($r^2 = 0.52$, $P<0.0001$) were identified. **Conclusions:** Some individuals with PSSM1 have markedly increased muscle enzyme activities at rest and in response to a submaximal exercise test, particularly those with 2 copies of the R309H mutation. However, there is considerable overlap between responses in heterozygotes and controls. **Practical significance:** PSSM1 cannot be discounted on the basis of minimal increases in post exercise muscle enzyme activity.

15.00–15.15
**Equine atypical myopathy: Description of the outbreak in the Netherlands during autumn 2009 and spring 2010**

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**Aims:** To compare data of a large outbreak of equine atypical myopathy (AM) in the Netherlands, with literature described so far with the aim of increasing knowledge of aetiology, risk factors and possible preventive measures. **Methods:** Detailed information of 44 cases with a very high probability of being affected with AM and 10 AM confirmed cases during the period 9 October 2009 to 7 June 2010 was collected from veterinarians and horse owners of (suspected) AM cases through interviews with veterinarians and horse owners, medical records from veterinarians and standard surveys. **Results:** The mortality rate (74.5%) of this outbreak was lower than described in earlier studies (up to 90%) and new demographic (age, gender, breed) and geographical features have been reported. All affected horses had been on pasture before they developed the first clinical signs of AM. The Dutch Warmblood, the Icelandic Horse and the Friesian were affected with AM more often. Of 35 AM cases it was known that the horses were pastured near maple trees, of which in 15 cases the maples were known to be infected with the fungi *Rhytisma acerinum*. A sudden change in weather occurred in the days before horses started suffering from AM. **Conclusions:** Lower mortality can be explained by the fact that the syndrome is probably better known and recognised by veterinarians than before in the Netherlands. Young and old horses and specific breeds are often kept on pasture and therefore may have increased exposure to the aetiological agent. The weather conditions that were found could have caused more maple tree leaves to fall off trees and get infected with *Rhytisma acerinum*. **Practical significance:** Studying the aetiological, climatological and geographical features of an outbreak may give tools to further anticipate and prevent atypical myopathy in the future.