

Highlights of recent clinically relevant papers

Ketamine doses for castration

This prospective, randomised, blinded study by Hulda Harðardóttir and colleagues in the UK and Iceland compared two doses of ketamine (2.2 mg/kg and 5 mg/kg i.v.) for induction of anaesthesia in 77 Icelandic horses undergoing field castration.

Prior to induction, horses were sedated with xylazine (0.7 mg/kg), butorphanol (25 µg/kg) and acepromazine (50 µg/kg) i.v. and sedation quality was assessed 5 minutes later. Horses were randomly allocated one of the two ketamine doses and induced with i.v. ketamine and diazepam (30 µg/kg). Induction quality, surgical conditions and recovery were assessed using subjective and objective measures.

Horses that received the higher dose of ketamine became relaxed more rapidly after induction, and surgical conditions were better; however, recovery quality was subjectively worse. Five horses that received the lower dose of ketamine required additional ketamine doses during anaesthesia compared to only two that received the higher dose.

The authors concluded that a ketamine dose of 5 mg/kg i.v. may result in better surgical conditions but adversely affects recovery quality for field surgery.

Outcome of puncture wounds of the hoof

This retrospective study by Stefano Schiavo and colleagues in the UK described low-field magnetic resonance imaging (MRI) findings and long-term outcome for a group of 11 horses with solar foot penetration, deep digital flexor tendon injury and absence of concurrent sepsis in all adjacent synovial structures (distal interphalangeal joint, navicular bursa and digital flexor tendon sheath).

In three horses, the deep digital flexor tendon injury was only visible in the T2 fast spin echo sequence and contrast radiography improved diagnostic certainty. The most commonly affected area was between the distal border of the distal sesamoid bone and the facies flexoria of the distal phalanx (6/11, 55%). Six horses (60%) had an excellent outcome and returned to full athletic function (5 showjumping; 1 general purpose). Five horses (40%) were sound but had not yet resumed full work at the time of follow-up.

The findings of this study indicate that the prognosis for return to soundness can be good for horses with solar penetration, deep digital flexor injury and absence of synovial sepsis.

Equine coronavirus

In this study, Emily Schaefer and colleagues in the USA investigated the clinical, haematological, molecular and serological features of adult horses experimentally infected with equine coronavirus (ECoV).

Eight healthy adult horses were included in this study. Four horses were intragastrically infected with faecal material containing 10⁹ genome equivalents of ECoV and four horses were exposed daily to the faeces from the experimentally

infected horses. Monitoring included physical examinations, as well as daily nasal swab, whole-blood and faecal collection for molecular detection of ECoV. Blood was collected every other day for haematological analysis and weekly for serological analysis.

All eight horses shed ECoV in faeces. Six of the eight horses (75%) exhibited mild, clinical disease with soft, formed manure; one horse exhibited transient pyrexia. All horses maintained total white cell counts within normal limits, but three horses developed transient lymphopenia. No statistically significant differences were observed in quantity of faecal shedding of ECoV between the two groups.

Experimental infection of adult horses with ECoV was associated with mild and self-limiting clinical signs, transient lymphopenia and faecal shedding of ECoV, which mimics natural infection. No differences between experimentally infected horses and horses exposed to ECoV-containing faeces were identified. Results of this study support a faecal-oral route of transmission.

Umbilical cord blood sampling in neonatal foals

This clinical technique article by Sunita Jeawon and colleagues in Ireland and the UK describes in detail the procedure for collecting paired blood samples from the umbilical artery and vein in newborn foals to enable stall-side blood gas analysis.

Thirty-five Thoroughbred foals >320 days' gestation from mares at one stud farm were sampled. Paired umbilical arterial and venous whole-blood samples were obtained in 30 foals, umbilical artery samples alone obtained in three foals, and umbilical vein samples alone obtained in two foals. There were no adverse events or clinical outcomes associated with the sampling protocol described. The authors found that umbilical cord blood collection for blood gas analysis was a practical clinical technique that potentially could be used as a stall-side method for assessing the in utero oxygenation and acid-base status of newborn foals.

Impact of table position in anaesthetised horses

This study by Anna Binetti and colleagues in Belgium and Switzerland describes the impact of the Trendelenburg (head down; HD) and reverse Trendelenburg (head up; HU) position on respiratory and cardiovascular function in anaesthetised horses.

Six adult horses were anaesthetised twice in dorsal recumbency. They were either placed in the Trendelenburg position (HD) followed by reverse Trendelenburg position (HU) or in reverse order. Every position was maintained for 90 minutes. The order of positions was randomly assigned at initial anaesthesia. Extensive cardiorespiratory monitoring was performed. Statistical analysis consisted of a mixed model with horses as random effect and time, position, section of anaesthesia and interaction between those as fixed effects.

When HU was applied during the first section of anaesthesia, partial pressure of arterial oxygen (PaO₂), oxygen saturation (SaO₂) and oxygen content (CaO₂) were significantly higher, while venous admixture, mean arterial,

right atrial and mean pulmonary arterial pressure were lower than in HD. After changing from HU to HD, PaO₂ and SaO₂ remained higher and venous admixture lower compared to the inverse order. Independent of the order, in the HD position venous admixture increased while PaO₂, SaO₂, CaO₂, venous PO₂, venous prevalence of bone marrow lesions in the distal condyles of saturation and venous oxygen content decreased over time. No significant differences were found for cardiac output, oxygen delivery, oxygen consumption and dobutamine requirement between the two positions.

The authors concluded that gas exchange is better preserved in HU compared to HD, especially if applied from the start of the anaesthesia.

Spermatic cord stump infection

In this retrospective study, Elaine Claffey and colleagues in the USA reported the surgical management and the short- and long-term follow-up of post-castration spermatic cord infection in 23 client-owned horses.

Medical records of horses that had been surgically treated for spermatic cord stump infection after castration were reviewed. Time from castration to presentation, diagnostic procedures, surgical complications, bacterial culture and ancillary testing, and survival to discharge were collected. Long-term follow-up was obtained by owner survey when possible. Descriptive statistics were used to report results.

Horses were aged 2–14 years (mean 4.1 years) and presented a median 33 days after castration (range 12–3561 days). Five of 23 horses required revision surgery; two because of haemorrhage and three for persistent infection. All horses survived to discharge. Long-term follow-up was available for 16 horses at a mean time of 27.4 months post-surgery (range 6–135 months). Complete resolution of clinical signs and return to previous use was documented in 14/16 horses; one horse had persistent purulent drainage and the second horse was retired because he did not return to adequate performance.

Post-castration infection of the spermatic cord had a favourable prognosis for short- and long-term survival in this population, although complications included post-operative haemorrhage and persistent infection.

Bone marrow lesions of the distal condyles

In this study, Cécile De Guio and colleagues in France evaluated the prevalence of bone marrow lesions in the distal condyles of the third metacarpal bone, described the anatomic distribution and correlated lesions with the presence of lameness and the level and type of activity.

All sports and pleasure horses undergoing standing low-field magnetic resonance imaging of the front fetlock region over an 8-year period were included and divided into three lameness groups according to the results of diagnostic analgesia. Bone marrow lesions were analysed and graded. Grades were compared between anatomical locations and between lameness groups. A total of 166 horses were sampled. The prevalence of bone marrow lesions was 76.5% (127/166). The most commonly affected locations were the dorsal aspects of the medial condyle

(31%, 39/127) and of the sagittal ridge (28%, 36/127). There was no significant difference between both forelimbs (lame and non-lame limb) of the same horse. Lesion severity was neither significantly associated with the lameness group nor with the type or level of activity. The third metacarpal bone is high in this population and the clinical significance is not always clear. Further studies are required to elucidate the clinical significance of this finding in sports and pleasure horses.

Dynamic testing for PPID in donkeys

This prospective study by S. Mejia-Pereira and colleagues in Spain and the USA aimed to evaluate dynamic testing for pituitary pars intermedia dysfunction (PPID) in donkeys.

Six donkeys with clinical signs consistent with PPID and a basal adrenocorticotrophic hormone (ACTH) concentration >50 pg/mL were included in the study. A dexamethasone suppression test (DST), thyrotropin-releasing hormone (TRH) stimulation test and combined DST-TRH challenge were performed in all animals during the summer months with a 1-week washout period between tests.

The TRH stimulation test identified all six donkeys as having PPID, whereas the DST and the DST-TRH identified 3/6 and 4/6 donkeys respectively. Agreement between the DST and the DST-TRH tests was poor.

The authors recommend the TRH stimulation test as a dynamic test for the diagnosis of PPID in donkeys.

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