associated with infections in adult horses. Seroprevalence data is needed to better understand the epidemiology of ECoV in adult horses, evaluate diagnostic modalities and develop preventive measures.

Objectives: To investigate the seroprevalence and selective risk factors for ECoV in 5247 healthy adult horses in the USA, using a recently established and validated IgG enzyme-linked immunosorbent assay (ELISA).

Methods: The study population consisted of 5247 healthy horses from 18 states. Serum samples from these horses were tested for IgG to ECoV using an ELISA based on a recombinant protein containing two immunodominant areas of the spike protein of ECoV. Risk factors analysed in this study included geographic region, age, breed, sex and use. Univariate logistic regression of each prevalence factor was performed to determine the odds ratios associated with the various risk factors. Further, a mixed effects logistic regression model was developed to include significant risk factors and the random effects parameter of horses originating from the same farm. Statistical significance was set at P<0.05.

Results: A total of 504/5247 horses (9.6%) horses tested seropositive. Statistically significant risk factors for seropositivity were geographic region (Mid-West), breed (Draught horses) and specific uses of horses (ranch/farm and breeding use).

Conclusions: Almost 10% of the 5247 healthy horses in the USA tested seropositive for ECoV. ECoV has been reported to cause outbreaks of fever, anorexia and lethargy in horses around the world, including Europe, with morbidity ranging from 20-80% and a mortality rate of 11%. Further research is needed to investigate prevalence and risk factors for ECoV in Europe. In the meantime, ECoV should be considered as a potential causative agent in adult horses presented with compatible symptoms.

Ethical animal research: The study complied with the institutional ethical guidelines of the School of Veterinary Medicine, University of California in Davis. Source of funding: The study was supported by the Center for Equine Health, School of Veterinary Medicine, University of California, Davis, with additional contributions from public and private donors. Competing interests: Zoetis USA supplied the equine sera used in this study. Zoetis USA played no role in the analysis and interpretation of data, or in the decision to submit manuscript for publication. None of the authors has any other financial or personal relationships that could inappropriately influence or bias the content of the paper.

GASTROENTEROLOGY

EARLY INDICATORS OF CRITICAL OUTCOMES IN HORSES PRESENTING WITH ABDOMINAL PAIN (COLIC): RETROSPECTIVE STUDY OF OUT-OF-HOURS FIRST-OPINION EMERGENCY CASES FROM TWO PRACTICES OVER A 3-YEAR PERIOD (2011–2013)

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Reasons for performing study: There are limited data on the initial presentation and outcomes of horses with clinical signs of abdominal pain (colic).

Objectives: To identify clinical features that can be used as ‘red flags’ for critical cases of colic.

Study design: Retrospective case series.

Methods: Primary evaluation case records of all horses presenting as out-of-hours emergencies with clinical signs of colic at two equine veterinary practices were reviewed. Anonymised data from 2011 to 2013 were categorised according to whether case outcomes were ‘critical’ or ‘not critical’. A ‘critical’ case was defined as an animal that required hospitalisation for medical or surgical treatment, or was euthanased or died. Univariable logistic regression was used to determine which aspects of signalment, history and presenting clinical signs including biologically plausible interaction terms were associated with a ‘critical’ outcome. Variables showing evidence of association (P<0.05) were further evaluated in a stepwise forward multivariable model to identify clinical presentations associated with critical outcomes.

Results: Data were retrieved from 941 cases that presented with signs of abdominal pain; 23.9% (n = 225/941) cases were categorised as ‘critical’, and 18% of all horses (n = 168/941) that presented with signs of colic were euthanased. Univariable logistic regression identified 15 variables with evidence of association to a critical outcome. The final multivariable model included three variables significantly associated with the likelihood of a case being classified as ‘critical’: increased heart rate (odds ratio (OR) 1.05, 95% confidence interval (CI) 1.03–1.08, P<0.001); abnormal mucous membrane colour (OR 5.40, 95% CI 2.86–10.20, P<0.001; and absence of borborygmi in at least one quadrant (OR 3.06, 95% CI 1.40–6.67, P<0.01).

Conclusions: This study identifies potential ‘red flag’ indicators of critical cases of colic on primary examination as increased heart rate, abnormal oral mucous membrane colour and absence of borborygmi in at least one abdominal quadrant on auscultation.

Ethical animal research: The work was performed in accordance with the Animal Welfare Act and the Animals (Scientific Procedures) Act 1986. Ethical approval for the study was obtained from the University of Nottingham Animal Welfare and Ethics Committee, School of Veterinary Medicine and Science. Animal welfare was maintained throughout the study and owners were made aware of the study. None of the authors has any other financial or personal relationships that could inappropriately influence or bias the content of the paper.

CYTOKINE CONCENTRATIONS OVER TIME IN HORSES WITH ACUTE ABDOMINAL PAIN

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Reasons for performing study: Colic is a leading cause of morbidity and mortality. Factors predictive of disease severity and outcome may help improve outcomes in patients. Inflammatory and anti-inflammatory cytokine concentrations may be predictive of disease severity and mortality in critically ill human patients, but it is unknown if these measurements are useful in horses with colic.

Objectives: To determine cytokine concentrations in horses with colic over time; determine whether those concentrations are predictive of disease severity and outcome.

Study design: Prospective clinical study.

Methods: Blood cytokine concentrations were determined in horses admitted to a referral hospital for colic. Samples were obtained at admission (D0; n = 64), Day 1 (D1; n = 43) and Day 3 (D3; n = 27). Concentrations of interleukin (IL)-17, interferon (IFN)-γ, IL-4 and IL-10 and IFN-α (as control) were measured using bead-based multiplex assay and tumour necrosis factor (TNF-α) using enzyme-linked immunosorbent assay (ELISA). Horses were categorised based on survival, presence of SIRS, need for surgery and development of complications. Cytokine