devise strategies to minimize the chance of colic developing in this population of horses.

CLINICAL STUDIES ORAL PRESENTATIONS PART 1

54 | Peritoneal lactate concentration in Shetland ponies with non-strangulating intestinal lesions

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Background: Peritoneal fluid lactate concentration is negatively correlated with survival and positively correlated with the presence of a strangulating lesion (Dunkel et al. 2013) and is commonly used as an indicator for the need for surgical intervention. It has been the authors' clinical impression that Shetland ponies present with higher peritoneal lactate concentrations, even in the absence of a strangulating intestinal lesion.
Objectives: To determine peritoneal lactate concentrations in Shetland ponies with non-strangulating gastrointestinal lesions. A further objective was to evaluate association of peritoneal lactate concentration with other clinical parameters.
Study design: A retrospective cross-sectional study.
Methods: Case records of Shetland ponies admitted to a single UK referral hospital between 2009 and 2022, for evaluation of colic signs, were retrieved. The data were assessed for normality using the Shapiro–Wilk test and descriptive statistics were generated. Univariable analyses were performed using *T*-tests for association of age, weight, sex and blood lactate concentration with peritoneal lactate concentration.
Results: Fifty-four Shetland ponies were admitted for investigation of colic signs during the study period. Thirty cases were excluded as they did not meet the inclusion criteria (disease not of gastrointestinal origin, peritoneal sample not obtained, or lactate values not reported). Twenty-four cases with non-strangulating intestinal lesions either confirmed at surgery or presumed non-strangulating due to resolution of clinical signs without surgical intervention, where a peritoneal lactate concentration was obtained, were included in the study. The median [IQR] peritoneal lactate was 7.3 mmol/L [5.2 mmol/L]. Age, weight and blood lactate concentration were significantly associated with peritoneal lactate concentration ($t = 3.48$, $p = 0.0016$; $t = 11.4$, $p < 0.001$; $t = 2.57$, $p = 0.004$ respectively).
Main limitations: Small sample size. Lack of availability of data due to retrospective nature of study; for example, to assess the association of peritoneal lactate with body condition scores.
Conclusions: In a Shetland pony that has no other signs consistent with a strangulating intestinal lesion such as a high heart rate, serosanguinous abdominal fluid or the presence of distended small intestine on ultrasound scan, it is worth considering that a non-strangulating lesion may be present despite a high peritoneal lactate concentration. Further research with a larger sample size is warranted.

References:
Dunkel, B. et al. (2013) Blood lactate concentrations in ponies and miniature horses with gastrointestinal disease. *Equine Vet J.* **45**, 666–670.

55 | Serum DGGR lipase activity in equids with gastrointestinal disease

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Background: Equine pancreatitis has been reported as a rare cause of colic in horses. It has usually been based on post-mortem findings, since, until recently, there has been no reliable ante-mortem test. The 1,2-o-dilauryl-rac-glycero-3-glutarate-(6′-methylresorufin) ester (DGGR) lipase assay is specific for pancreatic lipase, and was developed for humans and validated in dogs, cats and rats as specific for diagnosing pancreatitis. Recently this assay has been validated for horses (Johnson et al. 2019).
Objectives: The aims of this study were to assess the serum DGGR lipase concentration in a group of equids presenting to a UK equine hospital with gastrointestinal disease.
Study design: Prospective, descriptive.
Methods: Any horse or donkey presenting to Bell Equine Veterinary Clinic with signs of gastrointestinal disease (i.e. colic, colitis or peritonitis) between October 2021 and January 2024 was eligible for inclusion in the study if serum was being obtained for another (clinical) reason. Serum was processed within 12 h of blood collection and submitted to the laboratory for analysis. The concentration of DDGR lipase was categorized into 4 groups as described by Johnson et al. 2019: normal 1–20 U/L, mild 21–49 U/L, moderate 50–199 U/L or marked >200 U/L.
Results: 163 equids were included. These included 33 sports horses/crosses, 30 ponies/crosses, 28 Cobs/crosses, 20 Warmbloods/crosses, 18 Thoroughbreds/crosses, 14 Shetland ponies or miniature horses, 10 heavy horses/crosses, 3 donkeys and 7 others. There were 65 females, 96 geldings and 2 entire males. The median age was 13 years (IQR 9). There were 84 medical colics, 44 surgical colics/presumed surgical colics (euthanised without surgery), 17 colitis cases, 13 peritonitis cases and 5 others (gastrointestinal signs in conjunction with other body system signs). 111 animals were discharged home, 43 were euthanised and 9 died. The median lipase concentration of the whole group was 18 U/L (IQR 13). There were 97 samples classified in the normal range, 45 mild, 12 moderate and 9 severe. The median value of the 9 severe cases was 2616 U/L (IQR 2187; range 286–3484 U/L), and they included 2 sports horses, 2 ponies, 1 Cob, 1 Thoroughbred, 1 donkey, 1 Shetland pony and 1 heavy

horse.; 6 geldings and 3 mares. The median age was 12 years (IQR 3). 4 cases were classified as medical colics and were discharged home; 2 were euthanised without surgery; 1 was treated surgically for an entrapment of the small intestine in the epiploic foramen and was discharged home; 1 Shetland pony died of a grain overload; the donkey was admitted for dystocia and post-partum recumbency and subsequently died. 7/9 animals in group 4 had distended loops of small intestine identified by transabdominal ultrasonography and/or rectal palpation; 4 of these had gastric reflux (spontaneous reflux in 2).

Main limitations: Small number of cases. Lack of histopathological data. Lack of follow-up data.

Conclusions: This preliminary study suggests that some equids with gastrointestinal diseases have an associated pancreatitis. These results confirm the results of a previous study by Johnson et al. (2019). The role of pancreatitis as a primary or secondary condition in these cases requires further evaluation.

Ethical animal research: Ethical approval number CVS-2022-005.

Funding information: CVS Flexible Research Award.

Conflict of interest statement: None.

Reference:

Johnson, J.P., Stack, J.D., McGivney, C.L., Garrett, M.P. and O'Brien, P.J. (2019) DGGR-lipase for effective diagnosis of pancreatitis in horses. *Comp. Clin. Path*. **281**, 625–1636.

56 | Is routine haematological and plasma biochemical screening justified in horses presenting with colic?

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Background: Colic is the commonest emergency condition encountered in equine practice and many cases are referred to equine hospitals. Whilst the majority respond to medical treatment, around 10% require surgical intervention or euthanasia, however distinguishing these groups is not always straightforward. Certain haematological and plasma biochemical parameters are known to be valuable in determining whether a horse presenting for colic is best treated medically or surgically, including haematocrit, serum amyloid A and lactate concentration (Long et al., 2023). Frequently, horses admitted to hospitals for colic will have a "full panel" of blood biochemical parameters run, yet the value of many of these tests is unknown.

Objectives: The aims were to describe abnormalities in the blood panels of horses admitted to a referral hospital for further investigation of colic. The ability of a full and partial panel of bloods to aid in the distinction between surgical and medical colic cases was examined. The addition of a full and partial panel of bloods over what is considered a "minimum database" was also evaluated in its ability to predict survival to discharge.

Study design: Retrospective descriptive.

Methods: The clinical records of horses admitted to a referral equine hospital in the Southeast of the United Kingdom for colic between 2018 and 2022 were examined. Any horse that had a full or partial panel of bloods run on admission was included in the study. In each case, the age, sex, surgical lesion type (if applicable) and survival to discharge (binary) were recorded, alongside the continuous values for individual blood parameters of each test in the full or partial panel. Rossdale's clinical pathology reference ranges for adult non-thoroughbred horses were used to determine normal ranges for each parameter (https://www.rossdales.com/laboratories/tests-and-diseases). Chi-squared tests were employed to assess for differences between normal and abnormal results. Binary logistic regression was used to assess for the significance of any correlation between haematocrit and survival.

Results: In total there were 247 cases from 2018 to 2022 presenting with colic that had a full profile or inflammatory profile of bloods run on admission. 179 cases were treated medically and 68 were either surgical cases, euthanised, or died before discharge. Overall, the most common abnormal blood parameters were haematocrit (41.0% of cases), white cell count (40.5%), lymphocyte number (40.0%), aspartate aminotransferase (39.1%), and serum amyloid A (34.5%). Assessing the full panel of bloods, including haematocrit, total solids, and lactate which were all considered part of a minimum database, 62/68 surgical cases (91.18%) had one or more abnormal blood parameters, whereas 143/179 medical cases (79.89%) had one or more abnormal blood parameters. In 9.72% of cases the minimum database of bloods and the remaining panel of bloods were both normal. In 48.58% the minimum database and remaining panel of bloods both had one or more parameters outside of the reference ranges. In the remaining 41.70% there was a discrepancy between the minimum database and the blood panel in terms of normal and abnormal results. 45/247 horses died before discharge. 8.89% of these had a normal panel of bloods and 51.11% had a normal minimum database. Of the 202 surviving horses, 18.81% had a normal panel of bloods and 42.57% had a normal minimum database. A significant difference was found between medical and surgical cases and the normality of their blood panel (Chi-squared, $p < 0.05$). A similar analysis found no significant difference between medical and surgical cases and the normality of a minimum database of bloods; no significant difference in the normality of a minimum database of blood results and the normality of a panel of bloods for the same horse; and no significant difference between the normality of a blood panel, or of a minimum database of blood results, in horses that did and did not survive to discharge from the hospital. There was a significant association between changes in PCV and survival to discharge ($p < 0.05$).

Conclusions: Consistent with previous research, a significant correlation was found between haematocrit and survival to discharge. This suggests that our dataset is powerful enough to conclude that although a panel of bloods can help to indicate whether a case is to be treated medically or surgically, it is of no use in informing survival to discharge.