Acute-Phase Proteins as Diagnostic Markers in Horses With Colic

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Serum amyloid A in serum was the biomarker that best improved the clinical assessment in differentiating infectious colic from surgical colic. Authors’ addresses: University of Copenhagen, Faculty of Health and Medical Sciences, Department of Large Animal Sciences, Medicine and Surgery, Højbakkegård allé 5, DK-2630 Taastrup, Denmark (Pihl, Andersen, Jacobsen); University of Pretoria, Faculty of Veterinary Science, Department of Companion Animal Clinical Studies, Private Bag X04, Onderstepoort, Pretoria, 0110, South Africa (Scheepers, Sanz, Goddard, Page); University of Copenhagen, Faculty of Health and Medical Sciences, Department of Large Animal Sciences, Population Biology, Veterinary Epidemiology, Grønnegaardsvej 8, DK-1870 Frederiksberg C, Denmark (Toft); University of Copenhagen, Faculty of Health and Medical Sciences, Department of Veterinary Clinical and Animal Sciences, Central Laboratory, Grønnegaardsvej 3, DK-1870 Frederiksberg, Denmark (Kjelgaard-Hansen); e-mail: thpi@life.ku.dk. *Corresponding and presenting author.© 2013 AAEP.

1. Introduction
The objective of this study was to investigate the ability of the acute-phase proteins serum amyloid A, haptoglobin, and fibrinogen to differentiate between horses with infectious nonsurgical colic and surgical colic.

2. Materials and Methods
The performance of the acute-phase proteins was evaluated individually and in combination with clinical examination and with traditional biomarkers in blood (white blood cell count, packed cell volume [PCV], total plasma protein [TPP], lactate) and peritoneal fluid (hemolysis, white blood cell count, total protein).

Admission data collected prospectively from 148 horses with severe colic in one hospital were used to construct multivariate logistic models to predict if a horse had an infectious nonsurgical colic. The models were based on 1) clinical evaluation, 2) clinical and blood evaluation, and 3) clinical, blood, and peritoneal fluid evaluation. Each model was independently validated against admission data from 78 horses in another hospital.
3. Results and Discussion

The variables included in the final clinical model were lethargy, temperature increase from 38°C, gastric reflux 5 to 10 L, and normal rectal findings. All variables except gastric reflux 5 to 10 L were positive predictors of infectious colic. Diagnostic specificity and sensitivity was 98% and 57%, respectively. When serum amyloid A concentration in serum was added to the model on the basis of clinical evaluation, the specificity and sensitivity improved to 98% and 64%, respectively. No additional blood or peritoneal fluid variables improved the model significantly. The models had a satisfying integrity and diagnostic performance when validated.