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SEROPREVALENCE AND RISK FACTORS FOR INFECTION WITH EQUINE CORONAVIRUS IN HEALTHY HORSES IN THE USA

Introduction

Equine coronavirus (ECoV) is considered an enteric pathogen of foals and has only recently been 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. The objective of this study was to investigate the seroprevalence and selective risk factors for ECoV in 5,247 healthy adult horses in the USA, using a recently established and validated IgG enzyme-linked immunosorbent assay (ELISA).

Materials and methods

The study population consisted of 5,247 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 504/5,247 horses (9.6%) horses tested seropositive. Statistically significant risk factors for seropositivity were geographic region (Mid-West), breed (Draft horses) and specific uses of horses (ranch/farm and breeding use).

Conclusions and practical significance

Almost 10% of the 5247 healthy horses in the USA test 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.