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Coronavirus Outbreaks in Adult Horses

Equine coronavirus, or ECoV, has been on many veterinarians' radars lately: While they've long known the virus is commonly found in foals, it's recently been implicated in several outbreaks among adult horses. So to better understand the disease it causes and how to best diagnose and manage outbreaks, researchers recently completed a study on ECoV in mature horses.

At the 2013 American Association of Equine Practitioners' Convention, held Dec. 7-11 in Nashville, Tenn., Nicola Pusterla, DVM, PhD, Dipl. ACVIM, a professor at the University of California, Davis, School of Veterinary Medicine, presented the results of the study.

Background

"We consider this an emerging pathogen," Pusterla said, noting that disease outbreaks associated with ECoV and adult horses have rarely been described in the scientific literature prior to recent years.

Pusterla said common signs of ECoV infection in adult horses include anorexia, lethargy, and fever; less common signs of disease include diarrhea, colic, and neurologic deficits. Complications include septicemia (bloodstream infection), endotoxemia (endotoxin in the bloodstream), and encephalopathy (a brain condition caused by abnormally high ammonia levels in the blood), all of which are associated with gastrointestinal tract barrier breakdown, he said. Coronavirus has high morbidity rates, but low mortality rates (meaning many horses will develop illness, but few will die as a result), he said, and it's often self-limiting.

Coronavirus is spread feco-orally, Pusterla said, "and likely passed from horse to horse via fecal contamination of the environment from clinically but also asymptomatic shedders (i.e., they show no signs of having a disease, yet they are shedding virus or bacteria)."

At least two recent outbreaks, he added, were associated with a single competition.

Study Results

In their ECoV study, Pusterla and colleagues evaluated the clinical and laboratory results from horses involved in eight recent outbreaks in California, Idaho, Massachusetts, New Jersey, Texas, and Wisconsin. They evaluated horses' clinical signs, disease duration, diagnostic methods, and a variety of other parameters.

Of the 268 horses involved in the eight outbreaks:

- The majority of affected horses were adults;
- Eighty horses developed clinical signs--most commonly anorexia, lethargy, and fever;
- Clinical signs generally resolved without treatment in one to four days, and outbreaks lasted about three weeks;
- Nine horses died or were euthanized due to complications, four horses developed septicemia, four had encephalopathy, and one came down with endotoxemia;
- Horses remained infectious for up to 14 days after clinical signs appeared; and
- Blood work from 13 affected horses showed leukopenia (a reduced white blood cell count).

The team also determined that fecal polymerase chain reaction (or PCR) testing appears to be an effective method by which to diagnose ECoV infection. Pusterla said that, using this method, 89% of sick horses tested positive and 91% of healthy horses tested negative, resulting in a 90% agreement between clinical status and disease detection. He noted that PCR can detect ECoV for three to nine days in sick horses.

Pusterla also noted that ECoV research is continuing: "We are in the process of establishing a serological assay, which would allow us to determine the overall exposure rate to ECoV in various horse populations across the USA."

Take-Home Message

In summary, Pusterla said this generally self-limiting disease has high morbidity and low mortality rates. Horses can remain infectious for up to two weeks; however, the virus can only be detected in feces for up to nine days. Fecal PCR appears to be an effective and accurate diagnostic test.

To protect their horses from contracting the virus, Pusterla recommended owners "apply daily preventive measures by respecting and applying basic biosecurity protocols."