Speed: A Necessity for EHV-1 Diagnosis
With Stephen Reed, DVM, DACVIM

Equine Herpesvirus Type 1 (EHV-1) Neurologic Disease
The increased awareness and outbreaks of EHV-1, and in particular of neuropathogenic strains possessing a mutation with a high association with neurologic disease, have heightened the attention of most everyone in the horse industry. Early detection along with testing provides the necessary information to develop an appropriate plan of action. , In a recent interview, Dr. Stephen Reed discussed risk factors, prevalence and the role of early detection in limiting the spread of the disease.

Risk Factors
The EHV-1 neurologic form tends to be more problematic in older horses (those in their teens), those with no natural immunity and those chronically exposed. We also have seen an increase in horses that have been vaccinated against EHV-1 too frequently. That is to say, we have seen an increased risk in horses that have been vaccinated every 60 days for the last 10 years. Though increased risk due to frequent vaccination is not yet proven, it is certainly cause for concern.

One of the possibilities for attributing age as a risk factor in contracting EHV-1 neurologic disease is that the older horse's immune system or its natural defense mechanisms cause a greater immune response that produces greater damage. Perhaps, as the animal ages, the body creates memory cells that fight off infection, but after chronic exposure, antibody-antigen complexes form, and along with an increased viral load, allow the disease to attack the central nervous system.

It is important to remember that:
- EHV-1 can be present as a latent infection. Once exposed, horses have the potential to be infected for life.
- Due to the potential for a high level of viral load and the virus's ability to spread very efficiently, the disease can easily become epidemic.[1]

Increased Prevalence
In the last 3–5, years we have seen a considerable increase in incidence of neurologic disease associated with EHV-1 infections. The neuropathogenic strain of EHV-1 creates a greater level of viremia that lasts longer and is much more overwhelming to the horse's defenses. The mutant (neuropathogenic) strain of EHV-1 replicates to very high levels— tenfold higher than the wild type strain—in the upper respiratory tract, blood leukocytes, and vascular endothelium of the infected horse.[1] The high viral load leads to a rapid progression of the disease, which has devastating consequences.

Early Detection and Testing is Essential
Early detection is essential in limiting the spread of an infectious disease. If you have one or more animals with fever, cough or nasal discharge, you need to identify the cause. Careful observation, segregating animals that are showing signs of disease and testing to rule out EHV-1 are critical. PCR testing of nasal swabs and/or whole blood samples can provide quick results to confirm the diagnosis. Also useful is the determination of the white blood cell count. Isolation of the virus by cell culture can be used to confirm the presence of the virus but is very slow and doesn't always yield usable results. It is important to know as early as possible if you are dealing with EHV-1; testing is a valuable tool in early detection.

Herpes Vaccination

Routine vaccination—the recommendation for vaccination prior to transport or showing is not less than 1 week prior to movement and no longer than 3 months.

Vaccination in the Event of an Outbreak

The problem arises when there is a threat of an outbreak or a confirmed outbreak. There is a lot of controversy surrounding vaccination in such cases and, for that matter, which vaccine to use. There is a benefit for vaccination if there is an outbreak AND you can determine that the animal has not yet been exposed. Vaccination of horses that may or have been exposed may not be beneficial and carries a potential for causing harm. This is something that is not yet fully understood. As far as which vaccine to use, Dr. Reed believes that we need to wait until we have more scientific evidence to support a killed versus modified-live vaccine before we can speculate.

Prevention and Biosecurity Measures are Critical

A biosecurity plan is critical to limit the spread of an infectious disease. Early recognition and a quick response plan are essential. Early recognition is critical in determining what you are dealing with, i.e., is this influenza or something more? Twice daily temperature checks are also very important. When dealing with EHV-1 neurologic form, the fever often precedes the clinical signs by 1–2 weeks. It is very important to monitor any horse that has been exposed or is showing signs of an infectious disease and to have a plan ready, if necessary.

A Plan for a Confirmed EHV-1 Outbreak

- Restrict the movement of all potentially exposed horses.
- Quarantine those individual horses in the immediate area of exposure.
- Periodically test individual animals that have tested positive for EHV-1 within the quarantine area, whether symptomatic or not, until disease is confirmed or eliminated based upon a negative PCR test and absence of clinical signs for the disease.
- Maintain quarantine measures until there is no further evidence of new, developing cases.

After an EHV-1 Outbreak

The standard for clearing a horse free of EHV-1 active infection is that the horse has been 21 days without clinical signs including fever AND to have each horse tested with nasal swabs PCR and buffy coat PCR to confirm the absence of virus. It is imperative to maintain the quarantine for the full time to prevent healthy-appearing but infected horses from spreading the infection. Restricting movement of horses is difficult, but in the face of an infectious disease outbreak, necessary.

Dr. Stephen Reed is a graduate of the Ohio State University and has board certification in large animal internal medicine. His research has focused on equine neurological diseases and he is on staff at Rood & Riddle Equine Hospital.

Reference
1. Allen, George. Demystifying Neurologic Herpes. *Equine Disease Quarterly.* 2007;16(2).

IDEXX
LABORATORIES