

Equine Herpesvirus-1

The neurologic form of this highly contagious infection is considered an emerging disease

Overview

Equine herpesvirus-1 (EHV-1, rhinopneumonitis) is a highly contagious infection that can cause respiratory disease in weanlings and young horses, abortion in pregnant mares, and neurologic disease in adult horses.¹ Herpesvirus is widespread in the equine population. Respiratory disease caused by EHV-1 is most often seen in young horses exposed to the virus via the respiratory route (i.e., inhaling virus particles from infected horses through nasal secretions, saliva, abortion products, etc.).

Over the past few decades, a neurologic form of EHV-1 called equine herpesvirus myeloencephalopathy (EHM) has become more prevalent—likely as a result of more horses traveling from different regions and commingling. The virus damages the blood vessels in the brain and spinal cord, causing tissue damage, necrosis (tissue death), and loss of neurologic function.³ This neurologic form of EHV-1 is most often seen in adult horses. Broodmares and nursing mares seem to be at greater risk for EHM than stallions and geldings. Outbreaks are relatively rare; however, there is evidence that the number of EHM cases reported in the United States has been increasing.^{1,3}

Clinical Signs of EHV-1

Signs of EHM are variable, depending on where exactly in the brain and spinal cord the virus has damaged the blood vessels. Horses with EHM usually have a fever at the onset of the disease, followed a few days later by neurologic signs such as ataxia (incoordination), bladder atony (urine retention dribbling), loss of tail tone, and recumbency (inability to rise). These signs develop rapidly and if not treated can continue to progress. Surprisingly, horses with EHM usually remain bright and will continue to eat and drink.

Sometimes only a single horse can show signs of EHM, whereas other times



Horses with the neurologic form of EHV-1 usually have a fever among other clinical signs.

outbreaks affect 20–50% of a population.^{3,4} Often there is a history of fever and respiratory disease in the herd within the previous two weeks¹; EHV-1-related abortion within the previous week can be another source of the virus. Respiratory signs are rarely noticed in older horses.

Diagnosis

Veterinarians can tentatively diagnose EHV-1 in horses based on historical data (e.g., vaccination history, early clinical signs, where the horse has been) and signs of respiratory disease. Polymerase chain reaction (PCR) testing of blood and nasal secretions while the horse is febrile (feverish), however, is the most effective diagnostic method. This test will identify any viral DNA in the horse's nasal secretion or in his bloodstream. This test also can help veterinarians differentiate between the neuropathogenic mutated strain and the alternate strain.^{1,4}

Diagnosing EHM is not easy, particularly in isolated cases or at the start of an outbreak. Call your veterinarian immediately if any horse shows signs consistent with neurologic disease. Because the neurologic form of EHV-1 can damage various parts

of the brain and/or spinal cord, the exact signs of infected horses can differ. Veterinarians must therefore consider a number of other neurologic diseases including equine protozoal myeloencephalopathy (EPM), cervical vertebral instability, trauma, rabies, botulism, and West Nile virus, among others.¹ Usually, if a horse shows signs consistent with EHM; a recent history of fever, respiratory disease, or abortion in the herd; and if multiple horses are affected in one herd, a veterinarian can make a tentative diagnosis of EHM, assuming other neurologic diseases have been ruled out. A cerebral spinal fluid sample, blood sample, or nasal secretion can be tested for the EHV-1 virus. Its presence in blood and nasal secretions should confirm diagnosis.

Treatment

Current treatment goals for infected horses include:

- Isolating affected/potentially affected horses to stop the spread of this highly contagious, potentially deadly infection;
- Providing supportive care to protect ataxic horses from hurting themselves;
- Meeting nutritional requirements and maintaining hydration;
- Decreasing inflammation in the brain and spinal cord by administering anti-inflammatory drugs (e.g., corticosteroids, non-steroidal anti-inflammatories, dimethylsulfoxide); and
- Expressing the urinary bladder.

Researchers are studying the efficacy of antiviral drugs such as acyclovir and valacyclovir for treating EHV-1. These antivirals can decrease the amount of virus in the bloodstream and might help treat the neurologic form if used during early stages.

Prognosis

The mortality rate for EHM is between 0.5 and 40%. Infected horses that remain standing have a much better chance of

survival than do recumbent (down) horses. If a horse is going to recover, he usually shows improvement within a few days; however, it can take several weeks to one year before neurologic signs resolve completely. Neurologic defects such as ataxia and urinary incontinence might not disappear. Usually, if a horse goes down and stays down for more than 24 hours, his chances of survival are low. These horses are usually euthanized due to complications associated with EHM, including respiratory tract infection, pressure sores, urinary tract infection, dehydration and malnutrition, and gastrointestinal obstruction. That said, a few horses have completely recovered after being recumbent for up to three weeks.¹

Prevention

EHV-1 prevention is difficult because like other herpesviruses, it can lie dormant in a horse's body and resurge at a future time. Latently infected horses therefore serve as a reservoir for the virus, which explains how outbreaks of EHV-1-related disease can occur in closed horse populations.

Horse owners should recognize that currently licensed EHV-1 vaccines are not

labeled for EHM prevention and are primarily indicated to minimize EHV-1-induced abortion in pregnant mares and to minimize disease severity and spread of the respiratory form in foals, weanlings, yearlings, and young show horses that are at high risk for virus exposure.⁵ Vaccination only protects horses for about six months, so vets recommend frequent revaccination of at-risk horses. In the face of an outbreak, vaccinating all nonexposed horses in the herd might minimize disease spread.^{4,5}

EHV-1 can remain infective on inanimate objects (tack, brushes, water buckets, clothing) or horses' hair coats for several days. Thus, standard biosecurity measures play a key role in minimizing EHV-1 spread during an outbreak. These include:

- Instituting good hygiene and disinfecting any area an affected horse has been;
- Not allowing nose-to-nose contact between horses or sharing of equipment;
- Monitoring horses' temperatures daily;
- Isolating affected/suspected horses;
- Dedicating specific people to care for affected horses and instituting barriers such as footbaths, gloves, and gowns;
- Isolating/monitoring in-contact horses

- for 21-28 days after disease resolution;
- Separating resident from visiting horses and show horses from breeding stock;
- Controlling human traffic on the farm and minimizing/eliminating movement on and off the farm.

Not only are these biosecurity measures important during an outbreak, they also help avoid introducing and/or disseminating EHV-1 or other respiratory disease to a closed herd. 🐾

KEY REFERENCES

1. Wilson WD, Pusterla N. Equine herpesvirus-1 myeloencephalopathy. In: Reed SM, Bayly WM, Sellon DC. *Equine Internal Medicine*. 3rd edition. Saunders Elsevier: St. Louis (MO); 2010:615-22.
2. AAEP. Equine herpesvirus. www.aaep.org/pdfs/control_guidelines/Equine%20Herpes%20Virus.pdf
3. USDA. APHIS. Equine Herpesvirus (EHV) myeloencephalopathy. A guide to understanding the neurologic form of EHV infection. www.aphis.usda.gov/vs/nahss/equine/ehv/equine_herpesvirus_brochure_2009.pdf
4. Larson E. Neurologic EHV-1: Top five things you need to know. www.TheHorse.com/18264
5. AAEP. Equine herpesvirus (rhinopneumonitis). www.aaep.org/ehv.htm

Further reading and free horse health e-newsletters: www.TheHorse.com/EHV-1

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