Daniel P. Keenan, DVM
Ron McAlister, DVM
Lynsey D. Makkreel, DVM

Keenan McAlister Equine

EQUINE HERPESVIRUS INFECTIONS

There are four Herpesviruses that are widespread in the horse environment and which are associated with a variety of disease syndromes in horses. They are called Equine Herpes Viruses 1, 2, 3 and 4 (EHV-1, EHV-2, EHV-3 and EHV-4).

What are the signs of infection?

In its most common form, **EHV-1** causes respiratory disease in foals, yearlings and young horses in training. They show variable signs which include elevated temperature, watery nasal discharge, enlarged glands under the jaw and coughing. Some cases may progress to secondary pneumonia. In horses in training, symptoms may be mild but 'epidemic' loss of performance may occur. EHV-1 can cause single or multiple abortions ('viral abortion') in mares during mid to late pregnancy. Infected foals may be prematurely born alive but soon fade and die while others are born dead at full term. Disastrous epidemics (abortion storms) can occur in susceptible pregnant mare populations. The virus can also cause paralysis in horses of all ages and types, often first involving weakness of the hind limbs but then progressing to involve all four limbs and often resulting in death or a requirement for euthanasia.

EHV-2 does not usually cause disease on its own but is believed to cause suppression of the horse's immunity to other viral infections and allow them to cause signs of disease, usually respiratory infection (elevated temperature, watery nasal discharge, enlarged glands under the jaw and coughing).

EHV-3 causes ‘coital exanthema’ which is an infection of the external genital region characterized by numerous small blisters or spots, sometimes called ‘the pox’. The blisters can become infected by bacteria and then heal leaving white skin spots. The infection spreads by sexual contact or by contaminated instruments. It has no direct effect on the fertility of stallions or mares but natural mating must be stopped to allow the disease to take its natural course (usually 10 days to 2 weeks to complete healing) and to prevent further spread of infection.

EHV-4 is a common cause of coughing and loss of performance in racehorses. Usually the respiratory disease is not severe but the disruption to training and performance can be very significant. Rarely, EHV-4 is a cause of isolated abortions in mares.

What is the treatment?

Treatment is usually supportive. Antibiotics are of no use against viruses and specific antiviral agents available for humans have not been very successful in horses. Horses with respiratory disease may benefit from medication to reduce temperature and coughing and antibiotics may be given to help prevent or combat secondary infection with bacteria, all reducing time to recovery. Horses affected by paralysis can be very difficult to manage. Anti-inflammatory drugs may help to ease clinical signs but if the condition progresses, the horse may be unable to stand unassisted.

Abortion cannot be treated, as such, but the mare can be managed and supported. She must be isolated from all other pregnant mares because she, her placenta and her placental fluids are highly infectious to other mares. Viremic "fading" newborn foals cannot be treated but must be isolated and intensively supported.

How does the infection spread?

These herpes viruses spread mainly by inhalation of infectious material, either from nasal discharge or from fluid which may be coughed or sneezed over a wide area. Following abortion, the placenta, its fluids and the dead foal are heavily contaminated with virus and are a potent source of infection by inhalation for other mares.

It is possible for horses to spread the virus even when they are not showing signs of illness (symptomless carriers. These horses are called 'shedders' and are very difficult to detect because they may only spread virus when stressed by transport, illness, competition etc.

Coital exanthema is spread by direct genital contact during mating. The blisters contain fluid which is highly infectious and breeding must stop until all spots have healed.

In a group of horses which have not been previously infected or vaccinated, introduction of the virus usually results in disease of varying severity in all of the animals. Horses that have been previously infected or vaccinated may exhibit reduced or no clinical signs of infection.

How can a diagnosis be made?

Specific blood tests can be used to determine if a respiratory infection is associated with EHV-I or 4 infection. In most cases, two blood samples are taken 10 days to two weeks apart and tested to see if antibodies have been produced (titers). In active infections, the titer will rise significantly in the second sample. This rise is called seroconversion. While the horse is often well on the way to recovery by the time results are available, the information may help with the management of other horses on the same farm..

It is not possible to predict or diagnose an abortion due to EHV-1 or 4 on the basis of a blood test. The mare may have been infected several weeks before the abortion occurred and even when seroconversion is demonstrated, this cannot be differentiated from coincidental respiratory challenge. A specific postmortem examination must be performed on the dead fetus or foal to look for characteristic pathological changes and specific samples must be collected for laboratory examination to detect the virus.

Veterinarian taking a blood sample

Coital exanthema is usually diagnosed and acted upon on the basis of typical clinical signs (residues of pustules on the stallion's penis and on the vulvas of the mares that he has covered). In some cases the infection maybe confirmed by demonstration of EHV-3 antibody seroconversion and by isolation of EHV-3 virus from fluid collected from the blisters.

Control and prevention

Nasal discharge

Ideally, all horses should be vaccinated against Equine Herpes viruses 1 and 4 to reduce the incidence of Herpesvirus diseases and to minimize the shedding of virus into the horse environment. If an outbreak of respiratory disease occurs, affected animals should be isolated until they have fully recovered. Where possible, horses should be kept in groups and these groups kept constant to minimize the risk of disease spread from one group to another.

Pregnant mares should be kept in small fixed groups according to their stages of pregnancy and no young animals or horses out of performance training should be introduced to their groups. Each group should have plenty of paddock space and separate stable accommodation and pregnant mares should never be kept in over-crowded conditions. If an abortion or stillbirth occurs, contact your veterinarian without delay. The aborted fetus and the placental membranes should be hygienely wrapped in two strong plastic bags and transported to a veterinary pathology laboratory. The affected mare and fetus should be immediately isolated from all pregnant mares, including those that she has lived with throughout her pregnancy, until the results of the

postmortem examination are known and EHV-1 infection has been ruled out. The stable used by the mare should be thoroughly steam cleaned and disinfected before being used by another horse. In-contact pregnant mares should not be relocated and should be isolated in their small group.

Vaccination in the face of disease (where an abortion or paralysis case has occurred) is not recommended as horses who are incubating infection may react badly to vaccination.

Herpes Virus Vaccines

Vaccines available against EHV-1 and EHV-4 infection are available and are widely used. They do not completely prevent individual horses from infection but they reduce the risk of infection to other horses and the severity of clinical signs if infection occurs. Vaccinated horses may show no clinical signs of disease but may still show a rise in antibody level after infection. All pregnant mares should be vaccinated and stud farms who board mares for foaling should not accept pregnant mares who have not been fully vaccinated. Individual virus abortions have become unusual and abortion storms are now rarely, if ever, seen in vaccinated mare populations.

The vaccine should be given according to the manufacturer's recommendations. For non-pregnant horses this is a primary course of two injections four to six weeks apart followed by booster vaccinations at six month intervals. Pregnant mares are vaccinated at five, seven and nine months of pregnancy.

Unfortunately, neither natural infection nor vaccination produces long lasting immunity to Equine Herpes Virus infections. This reflects the nature of the virus, but experience suggests that disease incidence is significantly lower in vaccinated horse populations and is now widely recommended.

The benefits of vaccination therefore include:

- reduced risk of infection
- reduced shedding of virus by infected horses so less viruses in the environment
- reduced severity of clinical signs
- less time lost from training
- lower cost of disease treatment

Daniel P. Keenan, DVM Ron McAlister, DVM Lynsey Makkreel, DVM
165 Third Street ♦ Bordentown, New Jersey 08505 ♦ 609-291-0535 ♦ fax 609-291-8899
www.KeenanMcAlister.com ♦ KME@KeenanMcAlister.com