

Understanding Equine Viral Arteritis

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Although infrequent in occurrence, this is one virus that could affect the future of your breeding program

The new foals of every crop represent not only the dreams of their breeders, but their economic futures, as well. With the recovering equine economy and a wealth of breeders wise enough to protect from overbreeding, the horse industry is on the brink of its greatest years. As a result, when a disease like equine viral arteritis (EVA) appears, breeders start looking for answers.

EVA is a contagious viral infection which affects horses and can have a particularly devastating effect on broodmares and stallions. Although it occurs rather infrequently, the virus gained a measure of notoriety following a 1984 epidemic in Kentucky which led many to think a new disease had been discovered.

It is worth remembering, EVA has probably afflicted various horse populations throughout the world for a very long time. EVA was not identified as a separate equine disease until 1953 following an extensive outbreak of a respiratory-abortion syndrome on a Standardbred farm in Ohio. Why is EVA so significant if it only occurs on sporadic occasions?

The disease is caused by a similarly named virus called equine arteritis virus (EAV), which is present in horse populations in many countries. In the United States, it is found in a wide range of breeds, more in some than in others. For example, in Arabians and Thoroughbreds it may occur in only one to three percent of the population, whereas it may reach 70 to 80 percent in Standardbreds.

What makes the disease so important is that certain strains of EAV can cause abortion in susceptible mares and a significant percentage of stallions may become carriers. Even more importantly, it appears that persistent infection of stallions with EAV is more widespread among the various breeds than previously thought. This has significant economic implications for the commercial breeding industry, as carrier stallions can transmit EAV very efficiently, either through natural breeding, as is required in the Thoroughbred industry, or through artificial insemination, approved by virtually every other breed. Stallions have been shown to be a unique source of virus for outbreaks of abortion and deaths in neonatal foals on breeding farms.

The signs

Horses infected with EAV which develop the disease, EVA, can show any combination or all of the following signs: fever, swelling of the limbs, anorexia or lack of appetite, depression, swelling of the external genitalia in the male or of the mammary glands in the mare, conjunctivitis, nasal discharge, skin rash (which may be localized around the head or neck, or generalized) and abortion in pregnant mares. Infection in very young foals can cause severe pneumonia and sometimes, death.

With the exception of some very young foals, horses affected with EVA invariably make uneventful, clinical recoveries, even without medical intervention. As a matter of fact, because most cases of infection with EAV never develop clinical signs. EVA often resembles other respiratory infections of the disease and cannot be confirmed on clinical grounds alone without appropriate laboratory testing.

There is still considerable confusion over the timing and circumstances under which EAV can cause abortion in pregnant mares. If abortion does happen, it can occur one to three weeks after the mare

has been exposed to the virus. It does not occur many weeks or months after infection, unlike other abortions caused by viral or bacterial pathogens. To add to the confusion, abortion may occur with or without the appearance of preceding clinical signs in the mare and some pregnant mares severely affected with the disease never abort. In contrast to equine herpesvirus 1, the stage of pregnancy at which exposure to EAV occurs does not appear to be critical to the outcome; fetuses from two to three months to term are susceptible to the abortigenic effects of the virus. There is no evidence that mares can abort more than once due to EAV infection.

How it's spread

Much like a human would contract a respiratory virus infection, like a cold or flu, horses can contract EAV infection from acutely affected horses. In addition, stallions can shed the virus in their semen. The respiratory route is the primary means whereby the virus is spread during outbreaks of EVA at racetracks, horse shows, sales and veterinary clinics. Venereal transmission, in contrast, has frequently been associated with the primary spread of EAV on breeding farms. As a result, every precaution should be taken with EAV positive semen to ensure that outbreaks do not occur.

What can be a carrier?

There is some good news when it comes to the carrier state in that mares, geldings and sexually immature colts do not become persistent carriers of EAV, but a significant percentage of stallions which become infected remain carriers. The virus localizes in certain accessory sex glands in the reproductive tract of the carrier stallion and is released in the secretions of these glands at the time of ejaculation.

Carrier stallions shed EAV constantly in the semen, but not in respiratory secretions or urine; nor has the virus been detected in the blood stream of such animals. While there seems to be no reduction in fertility for these stallions, there doesn't seem to be a time when the virus is not shed. Even when semen is collected and cooled or frozen, the virus remains viable and can cause infection.

Prevention and control

It should be emphasized that EVA is a very manageable disease. Vaccination against the disease is a first line of defense, particularly of colts between the ages of six and nine months in breeds in which EAV is endemic, e.g. the Standardbred. Over a number of years, this would significantly reduce the number of carrier stallions. Secondly, testing of all breeding stallions and identification of carrier animals among those testing sero-positive is critical. Carrier stallions should be managed properly and used only for breeding with mares which are also positive for antibodies as a result of previous natural infection or from vaccination.

All breeding stallions should be vaccinated to prevent the risk establishment of the carrier state. It is also important to note that not all positive stallions are shedders and carriers of EVA. Stallions vaccinated against EVA have never been shown to become carriers of the virus as a result of vaccination.

There is a very real risk of introducing the virus into a susceptible horse population through the use of infected fresh-cooled or frozen semen. It is strongly recommended that mares be vaccinated against EVA at least three weeks before insemination. The reasons for this are twofold: first, vaccinated animals need to be provided with adequate opportunity to mount an immune response to the virus; second, first-time vaccinated animals may shed small amounts of vaccine virus for a short interval after vaccination, during which time they should be isolated from other horses negative for antibodies to the virus.

If vaccinated mares are bred with EAV infective semen, they should be isolated from other sero-negative mares and unvaccinated horses for an additional three-week period to

minimize the risk of the transmitting the virus.

Why not all horses?

With a disease as manageable as EVA, a valid question would be, "Why not vaccinate all horses?" Unfortunately, such a policy would severely affect the number of horses which could be exported from this country to a limited number of other countries. However, the American Association of Equine Practitioners has for a number of years, and more recently the American Horse Council, advocated a more rigorous approach to the control of this disease.

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