Disease Outbreak is a Real Concern to Horse Industry

Horse owners are warned that EVA can quickly spread within an equine population.

By Les Sellnow

For years Equine Viral Arteritis (EVA) was the disease that belonged to someone else as far as Quarter Horse owners were concerned, namely Standardbreds and Thoroughbreds, with some Warmbloods thrown in.

Turns out that EVA was something of a sleeping giant and awakened with a vengeance within the Quarter Horse industry this past summer. The genesis of the outbreak was traced to one popular stallion in New Mexico, and the story of how the disease spread reveals its insidious nature and the way in which it can explode within an equine population.

The stallion to which the outbreak was traced is Dash Ta Fame, owned by MJ Farms in Veguita, N. M., about an hour south of Santa Fe. However, owner Janis Murray, DVM, is quick to say, "It didn't literally start here. We had to get it from somewhere."

In retrospect, she thinks EVA arrived at MJ Farms with an infected mare that was sent there to be bred.

The virus was transported via shipped cooled semen from Dash Ta Fame and then spread from horse to horse via the respiratory route at farms where it surfaced. Before the outbreak had run its course, EVA cases were confirmed in six states, and, based on circumstantial evidence, were suspected in three more.

The hardest hit were Utah and New Mexico. In Utah, nearly 25 farms were placed under quarantine, according to Earl Rogers, DVM, Utah State Veterinarian. As of this writing, the quarantine has been lifted on all of them. In New Mexico, according to David Fly, DVM, New Mexico State Veterinarian, eight farms were placed under quarantine and 15 others placed themselves in a quarantine status, on the advice of attending veterinarians.

The only facility still under quarantine, as of early December, was MJ Farms, and (Fly said) he expected that to be lifted soon. When a farm was quarantined, the movement of horses either onto the premises or off them, basically, was prohibited.

We'll trace just how the disease surfaced and was transmitted, but first a description of the malady and the role it has played within the equine population in recent years.

EVA is transmitted via the respiratory tract through contact among infected horses or venereally by carrier stallions that shed the virus in their semen. A vaccination can protect mares and stallions from the virus.

How the disease is transmitted

Our prime source is Peter Timoney, MVB, Ph.D., FRCVS, one of the world's leading EVA researchers. Timoney is at Gluck Equine Research Center at the University of Kentucky in Lexington. He has spoken to professional groups around the world concerning EVA and other infectious diseases. He and colleague David Powell, Ph.D., were heavily involved with the recent outbreak and much of the testing for the disease was carried out at Gluck Center.

The virus responsible for EVA is equine arteritis virus (EAV). Thus, the switch of letters in the acronym. EVA can, and does, cause abortion in pregnant mares and is capable of establishing a carrier state in a significant percentage of infected stallions. During outbreaks, including the one last summer, the abortion rate often tops 50 percent of infected mares.

Creating serious problems in curtailing the disease is the fact that the virus lives in the stallion's reproductive tract and can be transmitted via breeding

SUSAN MORRISON

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non-vaccinated mares by live cover and through the shipment of semen. It also can survive freezing, so is capable of surviving in frozen semen as well as cooled.

Timoney is quick to point out that EVA is not a new disease. It likely has existed within the equine population for a very long time. It was first identified as an etiologically separate disease of horses in 1953, following an outbreak at a Standardbred farm in Ohio.

In 1984, there was a major outbreak on Thoroughbred farms in Kentucky and, in 1993, the disease struck with a vengeance at Arlington Race Track in Chicago, again involving Thoroughbreds. A massive vaccination program at Arlington stopped the disease in its tracks.

Since that time there have been no major outbreaks, though the disease has surfaced in various locales and among varying breeds through the years. At one point, some Warmbloods were stricken, with the origin of that particular problem being traced to a European stallion that transmitted EVA to mares in the United States through shipped semen.

As the disease took a hiatus in the late '90s and early 2000s, horse owners across the industry became more lax concerning vaccination programs and the laboratory manufacturing the vaccine — Fort Dodge — cut back on production. Last summer's outbreak was exacerbated by the fact that only 400 to 500 doses of vaccine were available in this country, according to Timoney. Since then Fort Dodge has cranked up production to meet the demand for thousands of doses in the Quarter Horse world alone.

At the moment, there appears to be plenty of vaccine available.

Problems in diagnosing EVA

As indicated earlier, there are two primary routes through which the disease is transmitted — via the respiratory tract through contact with infected horses and venereally by carrier stallions that shed the virus in their semen. Another, though lesser, route can involve an aborted fetus that other horses might sniff in a group setting and inhale the virus which has passed across the placenta from an infected mare to her foal. Still another route, this an indirect one, can involve transmission through the use of contaminated tack or equipment shared among horses or through contact of hands and clothing by individuals working with infected animals.

Spread of the disease by the respiratory route is the primary means of transmission during an outbreak of EVA at racetracks, horse shows, sales and veterinary clinics, according to Timoney.

Venereal transmission has been primarily responsible for outbreaks at breeding farms.

Cases of EVA, Timoney tells us, can present with a combination of all of the following clinical signs: fever, swelling (particularly of the limbs), loss of appetite, depression, swelling of the male external sex organs and 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.

One of the problems involved in diagnosing EVA without doing a laboratory test is that it mimics other respiratory diseases and, in some cases, outward symptoms are all but nonexistent. Carrier stallions might show no outward signs of harboring the virus, but will still shed it in their semen.

When EVA strikes young foals, a deadly case of pneumonia may accompany it and can cause the foal's death.

The only sure way to determine if one is dealing with EVA is to have a veterinarian draw blood and send the sample to one of 18 USDA-approved testing centers in the United States. Gluck Center is one of the approved testing centers.

There is still some confusion over just when in gestation and under what circumstances EVA can cause abortion in pregnant mares, says Timoney. He puts it this way:

"Abortion, if it is to occur, will supervene late in the acute phase or early in the convalescent phases of the infection — within one to three weeks following exposure to the virus. It does not occur many weeks or months after infection with EAV, unlike abortion caused by other virus or bacterial pathogens. Furthermore, abortion may occur with or without preceding clinical signs of EVA in the mare, and some pregnant mares severely affected with the disease may or may not even abort. In contrast to equine herpesvirus 1 infection, 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."

Here is where the disease becomes insidious. A mare might be bred with infected semen and contract EVA as a result. Because of the very early stage in pregnancy, she might not abort. However, if she is turned into a pasture with other pregnant mares that are at risk, she could spread the disease throughout the band via the respiratory route and cause widespread abortion among those that were in a stage of pregnancy that would put them at risk.

Posing a major danger element in the spread of EVA, Timoney believes, is the widespread use of transported semen and embryo transfer. Some farms that specialize in embryo transfer have as many as 500 or more mares on the site as recipients. In many cases, Timoney explains, they are confined in what amounts to a feedlot setting with a high number of mares in close proximity. If there should be an outbreak of EVA, he says, it can quickly spread through the entire population via the respiratory route. The problem becomes compounded even more when one realizes that each of the recipient mares ultimately will be sent off to another location and, if infected, can spread the disease to a new, susceptible population.

In the case of Dash Ta Fame, semen was shipped to 18 states as well as to farms in New Mexico. Fortunately, EVA cropped up in only nine of them. It was the infected semen that started the problem (70 percent of the confirmed cases were traced directly to transported semen), but then the virus spread via the respiratory route.

Suggestions for preventing and controlling the disease

While there is very little good news to report concerning EVA, there are a couple of bright spots. One is that vaccinating with Arvac, the vaccine produced by Fort Dodge Laboratories, can prevent the disease. The other bright spot involves the fact that mares and geldings are not persistent carriers as infected stallions are wont to be.

Geldings, mares and sexually immature colts do

not become permanently infected with the virus after exposure. Though they might become infected, these horses will eliminate the virus once they develop antibodies against it and will remain immune to future exposure.

"Mares do not become carriers of the virus," Timoney said. "A mare will experience the infection; she will shed the virus for a limited period of time by various routes, primarily by the respiratory route, the virus will circulate in her bloodsteam for up to two and one-half weeks, and then she'll develop a very solid and a very long lasting immunity as a result of that infection. The virus will be eliminated from her system and she will become a serologically positive, protected mare, but not one that represents any risk whatsoever in terms of shedding the virus at that point and acting as a source of infection of any susceptible in-contact horses."

The modified live virus vaccine has proven to be effective in preventing EVA, but there are a couple of drawbacks. One is that, because it is a modified live virus, horses receiving the vaccine are capable of shedding small amounts of the vaccine virus for short periods of time. In addition, any horse receiving the vaccine will test positive for the EVA virus in the future.

This can have some breeding implications if a stallion owner plans to ship either cooled or frozen semen to countries that insist that the shipping stallion test negative for EVA antibodies.

There is yet another issue with the vaccine. Fort Dodge does not recommend it for pregnant mares. Though pregnant mare usage is not on the vaccine's label, Timoney said there is no evidence of adverse effects of abortion in pregnant mares that have been vaccinated. If pregnant mares are in an at-risk category during an outbreak, Timoney says there are two choices – do nothing or vaccinate. He believes vaccination is preferable.

The preferred approach, of course, is to vaccinate mares before they are bred. Timoney explains:

"It is strongly recommended that such (open, seronegative) mares be vaccinated against EVA at least three weeks beforehand. 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 it is advisable that they temporarily be isolated from other seronegative horses.

"Furthermore, after breeding first-time vaccinated mares with EAV-infected semen, the mares should be isolated from seronegative or unvaccinated horses for an additional three-week period to minimize the risk of spread of this infection and the potential of outbreaks of abortion and death in neonatal foals."

Timoney strongly recommends that all stallions and all colts between six and nine months of age be vaccinated. "This," he said, "would minimize, if not eliminate, the risk of them becoming carriers at a later date. Implementation of such a vaccination strategy would, over a period of years, lead to a reduction in the reservoir of carrier stallions."

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The combination of vaccination and good management, Timoney believes, makes EVA a "very manageable disease to control."

Listening to Janis Murray describe what happened when EVA struck underlines just how deadly EVA is and the heartache and frustration that can accompany it.

She first realized something was amiss when pregnancy checks on June 4, she said, revealed more mares than normal being open. Being a veterinarian, she tried to approach the problem in an analytical way, but the thought that someone was doing something to cause the mares to abort also crossed her mind.

Her analytical self suspected that it might be something like the Mare Reproductive Loss Syndrome that struck Kentucky Thoroughbred farms a couple of years ago, with the eastern tent caterpillar being implicated. She called David Powell at Gluck Center on June 16 and described what had occurred. He told her that he suspected EVA. She drew blood from horses on June 19 and sent it to Gluck for analysis. The answer was swift in coming: EVA.

Semen shipments were halted.

"By the time we realized what was going on," she said, "the damage had been done. We lost half of our foal crop."

MJ Farms launched a massive vaccination program, including pregnant mares. "We took Dr. Timoney's advice and vaccinated everything," Murray said. She has high praise for both Timoney and Powell and the help they offered during the crisis, saying they even stopped by the farm to check the MJ horses when they were in the area for a meeting.

The breeding career of Dash Ta Fame is far from over. He can still be bred to mares, but because he likely will always be a "shedder," he will be bred only to vaccinated mares. Matters also are complicated by such things as consent forms that must be signed by mare owners and making certain that varying rules and regulations from individual states are met, particularly for shipped semen.

Outbreak causes reverberations

To say that the past summer's outbreak created a furor is an understatement and reverberations are still being felt. Some cutting horse stallion owners, for example, declined to bring their horses to the National Cutting Horse Association Futurity's Stallion Alley in December for fear of exposing them to EVA.

Based on a random spot-check of cutting horse breeding farms, most, maybe all, of them are following Timoney's advice that all stallions be vaccinated. From there it gets a bit more complicated. Susie Reed of Polo Ranch in Oklahoma said they are in a quandary as to what other steps to take at this time. One of the problems involves finding the necessary space to isolate open mares that could be vaccinated from pregnant mares that perhaps should not be vaccinated.

Shane Plummer of Buffalo Ranch in Utah said they followed Timoney's advice and vaccinated every horse on the place. The portion of Buffalo Ranch that houses embryo transfer recipient mares was under quarantine for 21 days after a recipient mare that had been taken to a reproduction facility in South Jordan, Utah, became infected and passed the disease on to some of the other recipients. The initial EVA case at Buffalo Ranch also was traced to Dash Ta Fame.

There were some abortions in the recipient herd, Plummer said, but it isn't known for certain which ones resulted from EVA.

At this time, he said, Buffalo Ranch has weathered the EVA storm and all of its horses are protected, including the show string, either through vaccination or, in the case of some of the recipient mares, from immunity that has developed in recipients that had EVA. Any horses arriving at the ranch, Plummer said, should have been vaccinated or have tested negative for EVA shortly before arriving. If they have not, he said, the horses will go into quarantine for three weeks until their EVA status can be definitely determined. Buffalo Ranch is large enough, he said, to provide adequate quarantine areas. Any semen shipped to Buffalo Ranch must come from either a vaccinated stallion or a stallion that has tested negative for EVA a short time before being collected..

One thing is certain; the Quarter Horse world has received a jolting wakeup call and is responding in positive fashion.

Steve Adams, breeding manager at EE Ranches in Whitesboro, Texas, sums up what appears to be the prevalent approach. It is about the same as that employed at Buffalo Ranch. First and foremost, he said, all EE stallions have been vaccinated. Second, no semen will be accepted from a stallion unless it has been vaccinated or has tested negative to EVA very recently. Third, there will be additional vigilance involving arriving mares. Any mare that is a suspect due to a nasal discharge or questionable loss of foal status will be placed in quarantine.

That type of management protocol, as Timoney says, will make the disease "manageable," even though it won't go away.

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