



Down on the Farm

EHV-1: A Deadly Enemy

by **HEATHER SMITH THOMAS**

Recent outbreaks of the neurologic form of Equine Herpesvirus (EHV-1) in several states have prompted the shutdown of several racetracks, veterinary clinics and university hospitals. Horsemen are wondering how to protect their animals. This virus causes several forms of disease, the most common being a respiratory syndrome (often called Equine Viral Rhinopneumonitis or “rhino”) and also an abortion syndrome. The neurologic (sometimes called paralytic) form of this disease is more rare, and more deadly. Outbreaks of this form are not new; they occur sporadically in various parts of the United States. For instance, a number of horses were seriously affected (and some died) during a summer outbreak in Wyoming during 2001. More recently, there was a big outbreak in Ohio a few years ago, and this winter, an outbreak in Florida, which quickly spread to other states, including California—with shipments of racehorses and show horses.

Kevin Hankins, DVM, Fort Dodge Animal Health (Kansas), has been to several meetings around the country where this disease was the main topic of discussion. He recently came back from California where he presented some talks with Dr. Dave Wilson and Dr. John Madigan (both from U. C. Davis). “We gave a talk at Santa Anita racetrack for veterinarians, and one for trainers and owners the next morning. We also gave some presentations at Golden Gate (Fields). They had a recent outbreak at that track,” says Hankins.

“Horse owners need to realize there is no vaccine labelled or manufactured for the prevention of neurological herpes. There are vaccines for the respiratory and abortion forms, but there has been nothing proven effective (in any studies) for the prevention or control of this most deadly form,” he explains.

“The vaccines currently on the market are labelled for the respiratory and abortion forms. Some manufacturers make some vaccines just for the respiratory disease and different vaccines labelled just for pregnant mares, to prevent abortions. On both the respiratory and abortive form of herpes virus, these vaccines can’t prevent the actual disease, however. All that any of them will do is decrease the incidence and decrease the clinical signs,” he says. The horse won’t get as sick, and may not abort, and may not pass the virus as readily to other horses.

“We know that most horses are exposed to EHV-1 as early as 30 days of age. The horse population is like the human population; we all have a form of herpes, and it is sometimes expressed as cold sores, shingles, etc.” Anyone

who had chicken pox as a child can possibly get shingles at any time later in life.

“We were all exposed, at a very young age. The interesting thing is that foals are exposed by 30 days of age. As Dr. Wilson points out, none of the vaccines, including the modified live vaccines, have been shown to be able to override the maternal antibodies (obtained from colostrum). If you give a foal the vaccine while there are still some maternal antibodies circulating in the bloodstream, the vaccine won’t work to promote immunity. Yet these foals can get exposed and somehow the virus gets past those maternal antibodies.” So almost every foal has already come into contact with the virus by the time he’s a month old.

A lot of research has been and is being done on trying to develop better vaccines. “There was work done at Cornell—a study where they looked at five horses. The initial work looked promising when they were looking at the modified live vaccine (which at this point is labeled only for respiratory disease and not for the abortive or neurological disease)—to help in prevention of the neurological disease—but with the small number of horses there was no way to really tell how affective it is,” says Hankins.

“When you look back at the original abortion trials using Pneumabort-K, in the late 1970’s at the University of Kentucky, they used a very virulent strain of EHV-1 which is known to produce not only abortion, but also the neurological disease. In the original abortion studies, those mares not only aborted, but they became paralytic and completely down, about six to eight days after being exposed to the virus. In the vaccinated horses, the study showed that they were protected from the neurological disease and from abortions, but this is not something you’d want to stand firm on, because it wasn’t a neurological study, per sé. So there have been trials in which vaccines have been shown to supposedly reduce the clinical signs or prevent it, but there’s been no neurological study at this time that shows it can actually prevent it,” he says.

“The EHV-1 virus can have a point mutation that seems to produce the neurologic signs. There is also one that doesn’t have the mutation. The virus that has the point mutation seems to cause a more severe disease with a higher degree of viremia. Dr. George Allen at the Gluck Center (University of Kentucky) has gone back and looked at previous virus samples that they kept, and found that point mutation as far back as 35 years ago. In fact, the strain that was used in the abortion challenge in the late

1970s, is what is contained in Pneumabort-K, so that vaccine actually contains a strain of the virus with the mutation in it. There are different strains of the EHV-1 that contain these point mutations," he says.

"Because of the degree of viremia that these cause, the theory in vaccinating is to try to help reduce clinical signs and reduce viral shedding from the infected horse. In that way it can help protect other horses. By reducing viral shedding on any sick horse, you are protecting the others," he says. If you can also decrease the degree of viremia (when the virus is present in the bloodstream—characterized by fever), this helps the sick animal.

"The higher the level of viremia (virus in the blood), the more severe the disease will be. We know that the horses that get the virus with the point mutation are five times more likely to develop neurological disease than if they have the virus that does not contain the point mutation," he explains.

Veterinarians recommend routine vaccinations, just to help keep the immune system strong, even though the respiratory and abortion vaccines can't really project against the neurological disease. "Horse owners should talk with their veterinarians to see which vaccines they recommend. There is some school of thought (but not proven yet) that too-frequent vaccination—like every month—could set up the immune system to be more susceptible to the disease. But we still recommend routine vaccination, according to label directions. People also need to realize that the vaccines developed for the respiratory disease are different than the ones like Prodigy and Pneumabort-K for abortion. The antigenic mass (amount of antigen) that's in the two abortive vaccines is about four to five times as high as that contained in the vaccine for respiratory disease," he says.

"Pneumabort-K also contains different strains of the virus, as well as having a higher level of antigens. Consultation with your veterinarian is a good idea, to know which vaccine is best to use for your situation. Some people like to use the modified live virus vaccine (that can cause replication of the viral strain), feeling that those vaccines might do a better job at decreasing the clinical signs of the disease—because they are more likely to keep the degree of viremia (and viral shedding) lower," says Hankins.

Several researchers (reporting their findings at AAEP (American Association of Equine Practitioners) in 2003) did a study in which they compared the immune response between the abortive vaccines and respiratory vaccines and found the two abortive vaccines performed much better at stimulating the immune system than any of the other vaccines, he says. "But there is no vaccine at this time that is labelled for preventing the neurological disease, and this is what people need to remember," says Hankins.

The only way you can really protect your horses is through proper management, good hygiene and reducing/eliminating exposure. "Until the industry can come up with an effective vaccine, these are the only ways we can protect our horses. But there are a lot of ways we can improve our management and hygiene. For instance, at the track, the grooms all carry a snot rag in their back pocket and are always wiping the noses of the horses. What a perfect way to spread the disease!"

When he was talking to trainers and owners at recent meetings, the question came up about how to quarantine horses for 21 days after they return from a show or event. "Practicality makes some things difficult, but when you bring horses back from a show, make sure you feed them last, groom them last, etc., and do the best you can to not expose other horses—if that horse might be carrying the virus. Consult your vet regarding which vaccine might be most appropriate for horses that are going off the farm," says Hankins.

"The thing about neurological herpes is that it only occurs in a very small percentage of the horses who get sick. More horses today die of colic than die of neurological herpes. Vaccination is not necessary for all horses. Some never leave their farm or pasture and are not in contact with other horses. We have some pasture ornaments here at home that I have not vaccinated for flu or rhino in many years," he says.

A discussion with your vet before vaccinating is always a good idea, to know what you should or don't need to vaccinate for, and which vaccines to use. "Some people don't realize that rhino and herpes are the same thing, for instance," says Hankins. 🐾



A horse showing typical signs of weakness/paralysis caused by the neurological form of the EHV-1 infection

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