Vicious VIRUS

Herpesvirus has recently seen an upswing in cases around the country.

By Andrea Caudill

IT CAN TAKE MERE DAYS TO BRING A HORSE DOWN, IS SPREAD through the air and, once acquired, can't be stopped by drugs. A mutant and hyper-virulent strain of equine herpesvirus is shuttering and quarantining racetracks around the country.

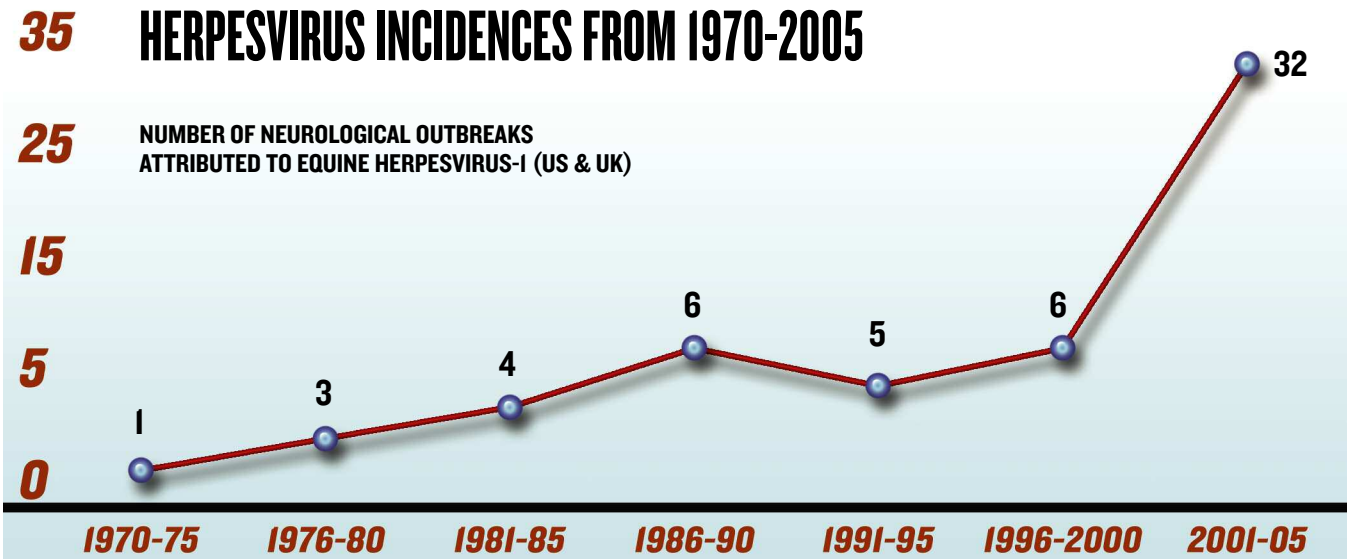
The virus is part of the herpesvirus family, which infects a number of animals. Herpes in humans causes, among other things, cold sores and chicken pox.

There are several types of equine herpesvirus (EHV), a common airborne virus (see Horse Health, page 8). The most prevalent is EHV-1, which has two subtypes. These subsets include the common one that can cause severe respiratory illness (known as rhinopneumonitis, or "rhino") and abortion. The second subtype, a neurological form of the disease, is a rare mutant strain currently making news.

"It's a virus that has been around for quite a long time, but it's only recently emerged as one that's causing disease at a much higher rate," said George Allen, Ph.D., professor of veterinary science and head of the herpesvirus laboratory at the University of Kentucky's Gluck Equine Research Center. "It's a mutant virus; it's identical to the common strain of EHV-1, except for one base pair difference in the gene that encodes the viral replicase enzyme."

Horses infected with EHV-1 do not necessarily show clinical signs. Some, termed latent carriers, can carry the virus and shed it at subclinical levels, appearing healthy but still infecting other horses. During times of stress (such as at the track), the latent virus can reactivate, spread to other horses and cause an outbreak. Approximately three-quarters of the equine population is thought to be a carrier of the common non-neurological form of EHV.

A much smaller portion of the population carries the mutant strain. Allen and his collaborator, Dr. Craig Carter, an epidemiologist at the Livestock Disease Diagnostic Lab at the University of Kentucky, are addressing the question of exactly how large the mutant-virus-carrying horse population is.



WITH INCREASING REGULARITY

Equine herpesvirus neurological disease has been popping up in the news more regularly every year since 2003. Last year, there were six cases reported. Prior to 2003, there were only a few outbreaks per year.

The virus made mainstream news in 2003, when the University of Findlay in Findlay, Ohio, suffered a major outbreak in the horses stabled at the school.

Approximately 90 percent of the horses – all vaccinated – became infected and approximately 40 developed neurological disease, with 12 of the horses requiring euthanasia after displaying severe neurological signs. Also that year, horses in Oregon, Prairie Meadows in Iowa, Penn National Racecourse in Pennsylvania and Turfway Park in Kentucky were diagnosed with the disease.

The following year, neurological outbreaks due to EHV-1 were reported in Maryland and a harness track in Michigan.

Last year, herpesvirus was reported in New York, Pennsylvania, Maryland, Michigan and Kentucky, including quarantines at tracks Pimlico in Maryland and Churchill Downs in Kentucky.

In the past few months, Turfway Park, Pimlico, Penn National and Laurel Park in Maryland have all seen cases of the disease, causing race cancellations and quarantine measures to be put in place.

There have been similar outbreaks in Europe, especially the United Kingdom.

"We're just really getting started on the research, so we don't really have any data to throw out yet," Carter said. "All we can say is it's a fairly rare form of the virus."

He continued, saying there is much more that needs to be learned about the disease, and that research is ongoing. Herpes, he said, is difficult to deal with, and researchers are hoping to find a better understanding of how and why the virus reactivates and what animals are most susceptible to being struck by the neurological form.

Spreading the Disease

INFECTED HORSES SPREAD THE VIRUS THROUGH RESPIRATORY secretions, which includes droplets that travel through sneezes or coughs, or direct nose-to-nose touching by two horses. It can also include indirect transmission via handlers, buckets, bits, lip chains or other shared items.

Once it has invaded the body, the virus makes its way to the blood stream to travel throughout the body. The mutated virus enters the blood at levels five times higher than the normal strain, Allen explained, inundating the white blood cells that defend the horse's system. The virus is then carried into the horse's central nervous system (i.e. the spinal cord) and brain. Unlike other neurological diseases, such as rabies, EHV-1 is not transmittable to humans or other animals.

Once a horse is infected, neurological symptoms can appear within six to 12 days. The progression of the disease to its most severe state is rapid and can happen within 24 to 72 hours. Initial signs include a high fever (over 102° F), nasal discharge, depression and anorexia (loss of appetite). Neurological symptoms first attack the hindquarters and include toe dragging, a floppy tail, incontinence and weakness and incoordination of the hind legs, soon rendering the horse unable to stand. Once down for more than 24 hours, horses are rarely able to recover and are usually euthanized.

What to Watch

THE EARLIEST SYMPTOMS ARE USUALLY AN INCREASE IN TEMperature and slight nasal discharge. The fever is not constant, so if the horse is depressed and has discharge but a normal temperature, take the temperature every six hours to monitor for a resurgence in temperature. Nasal discharge goes from thin and clear to thick and milky. If a horse develops symptoms, a veterinarian can collect a nose swab and blood sample to be tested in a lab.

The only way to prevent the disease is by not letting the horse become exposed – which might be impossible for competing racehorses. To lessen the risk at farms, all horses arriving should be quarantined for at least three weeks to make sure they show no symptoms of ill health.

There is also a vaccine available to prevent the respiratory- and abortion-related forms of the disease. Lazy E Ranch's practicing veterinarian Joe K. Noble, D.V.M., M.S., oversees horses ranging from yearlings prepping for sales to breeding stock. He recommends that horses headed to the track or sales be vaccinated in a series of two or three shots, depending on the manufacturer's directions, approximately three to four weeks apart, with the last booster coming two weeks before the horse goes to the track or sale. A pregnant mare should get vaccinated every 60 days, regardless of where she is in the gestation cycle.

Vaccinations should be done before an outbreak, but some veterinarians, including Noble, also vaccinate when an outbreak occurs. It is done, he said, in the hope that even a small percentage of the horses would be able to boost their immune systems enough to avoid being infected.

Because this is a virus, there isn't a medicine to cure it. Treatment is directed toward relief of symptoms. This includes an aggressive treatment with strong anti-inflammatories to lessen swelling and pain.

If an outbreak occurs, exposed horses should be immediately quarantined for at least 21 days following the onset of the last case. All precautions should be taken to prevent the spread of the disease. Handlers need to become hyper-aware, making sure to wear coveralls that are removed before leaving a quarantine barn, and cleaning boots and common equipment. This includes the handler's hands and clothes, buckets, bridles, etc. Allen recommends using a phenolic-compound, such as One Stroke Environ, available at equine supply stores.

There is a live-modified vaccine that might be helpful with the neurological strain once the horse is infected. Allen explained, saying that in one trial using a small number of horses, the live-modified vaccine was more effective than an inactivated killed vaccine in protecting the horse from the fever and the respiratory disease that follows infection by the neurological strain. The study did not provide evidence for vaccine prevention of neurological manifestations.

"The utility of this vaccine is more of one that will minimize the spread of the virus from one horse to another," Allen said. "(It will) not necessarily prevent the neurological disease itself. It might limit the size of the outbreak by curtailing the spread of the virus among the different horses."