



Core Strength: Demystifying Your Horse's Fight Against WNV, EEE, and Rabies

By Nicole Taurisano, DVM

In the state of Florida in 2016, the Equine Disease Communication Center (EDCC) reported two cases of equine West Nile encephalitis, two cases of equine rabies, and an impressive 24 cases of Eastern equine encephalitis (EEE). Twenty-two of the EEE cases, and all cases with either West Nile Virus (WNV) or rabies, had not been properly vaccinated. The American Association of Equine Practitioners (AAEP) considers the vaccines for these diseases to be “core” vaccines, which are those given to all horses because the risk of infection is considered high.

Rabies, WNV, and EEE are conditions affecting the central nervous system, and all cause encephalitis, or inflammation of the brain. We have figured out that horses cannot transmit WNV or EEE to one another, and are considered “dead end hosts.” Rather, birds amplify the virus in their blood and transmit it to mosquitos, which then perpetuate transmission to horses, humans, and a variety of other animals. In sharp contrast, rabies is spread directly through the saliva of infected animals, even potentially from horse to human if under the appropriate circumstances.

The most common clinical signs in horses infected with WNV are incoordination, facial twitching, exaggerated responses to stimuli, and weakness progressing to recumbency. That said, signs can be variable, and in last year's reports from the EDCC, a number of less common signs were reported. A horse in Colorado presented with front limb paresis (weakness). One horse in New York was noted to keep its head in a fixed low position, became blind, and developed fever and incoordination (ataxia). In Minnesota, one severely affected horse was unable to stand. All of these clinical presentations are manifestations of diffuse disease of the brain and/or spinal cord. Although we suspect affected horses all develop at some point, a high fever is not always recognized.

Treatment of West Nile encephalitis is supportive and symptomatic rather than anti-viral. Decreasing inflammation can be achieved with dimethyl-sulfoxide (DMSO), steroids, and/or non-steroidal anti-inflammatory agents. In horses that develop prolonged anorexia, it is necessary to provide supplemental nutrition via a feeding tube or intravenous nutrition. Hyperesthetic or seizing horses may require sedation or anti-convulsants. With treatment, the mortality rate for West Nile encephalitis is approximately 30%.

The mortality rate for EEE is unfortunately much higher at 90%. Clinical manifestation of the disease can present similar to that of WNV: incoordination, circling, depression, inappetance and weakness. Supportive treatment as described for WNV can be attempted with EEE cases, however, most become recumbent within 24 hours, hence the nickname “sleeping sickness.” At that point, the prognosis is grave, and most horses develop rapidly progressive neurological signs and death within 48-72 hours.

Rabies is the most deadly of the infectious neurologic diseases we are discussing here, with 100% mortality. One study described clinical signs in the horse to initially include muzzle tremors, throat spasms and paralysis, incoordination, and weakness, much like WNV and EEE. Two forms of rabies exist: most people are more familiar with the “furious” form. This is the “Kujo” form, with aggressive personality changes. However, the “dumb” form is also prevalent in equine cases, in which case a horse will not exhibit vicious personality changes but rather become very quiet. Hypersalivation occurs, along with an inability to swallow. With both forms, death ensues from progressive paralysis.

Fortunately, safe and effective vaccines are available for the above-described diseases. In 1796, it was discovered that milkmaids seemed immune to smallpox. Doctors then figured out that, by inoculating a person with Cowpox, that person would not develop Smallpox if exposed. The word “vaccine” is reminiscent of this historical event, stemming from the Latin word “vacca,” which means cow. We have since refined the art of

vaccinating, rather than taking pieces of infected tissue and transplanting it into a host, like we once did with Cowpox.

Equine veterinarians use inactivated, or killed, vaccines for Rabies and EEE. Because the viruses are killed, repeated doses are required in the form of booster vaccines to keep up your horse's immune response. For WNV, a "chimera" flavivirus vaccine has been engineered with modified live, non-infectious portions of the virus. It stimulates excellent antibody production against WNV. One common concern of horse owners hesitant to vaccinate is that the vaccine may contain other chemicals. The only other compounds in these vaccines are gentamicin, a common antibiotic; havlogen, which boosts antibody production; and thimerosal, an easily-excreted preservative necessary in multi-dose vials.

Readers can stay up to date with the 2017 EDCC reports on WNV, EEE, and rabies by visiting equinediseasecc.org. One word of caution is that these reports are likely an under-representation of how common the diseases are – cases are only recorded here when samples are submitted to confirm a diagnosis. If you suspect one of these diseases, test for it. With proper surveillance and prevention, we are all doing our part in infectious disease control for our horse population.

Contact Brandon Equine Medical Center by phone 813-643-7177 or email info@brandonequine.com with any questions regarding this topic.

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