



Post-Flood Neurologic Disorders in Horses

The Educated Horseman: Management Series



Increased stress placed on horses from devastating floods across Louisiana has resulted in an increased number of neurologic cases treated by the LSU School of Veterinary Medicine. General neurologic symptoms in horses include loss of appetite; depression; fever; weakness or paralysis of the hind limbs; muscle fasciculation or muzzle twitching; impaired vision; ataxia (incoordination); head pressing; aimless wandering; convulsions; inability to swallow; circling; hyper-excitability; and coma. Pinpointing the exact cause of neurologic symptoms can be difficult. The symptoms can be very similar no matter what the cause or disease. Excluding trauma to the central nervous system, the most common cause of neurological symptoms in horses is Equine Protozoal Myeloencephalitis (EPM). However, several other conditions can cause neurologic dysfunctions. These include: parasites, infectious diseases, and ingestion of toxic substances.

Parasites

Flooding may cause horses to be exposed to pastures contaminated with parasites or being relocated to pastures not previously intended for horses. If horses begin sharing grazing areas with displaced wildlife, neurological disorders may increase from parasites in those pastures and lowered immune system caused by stress.

- **Equine Protozoal Myeloencephalitis (EPM)** is caused by the protozoal parasite *Sarcocystis neurona*. The parasite enters a horse that eats feed or drinks water contaminated with opossum feces. Once ingested, the parasite migrates through the horse's intestines, through the bloodstream and across the blood/brain barrier where it begins to attack the central nervous system. From 60% to 70% of all treated horses will return to normal activity level.
- **Verminous Myelitis** is caused by the parasite *Halicephalobus gingivalis*. This parasite likely enters the horse's bloodstream through the mucus membranes of the mouth where it then migrates to the brain, causing central nervous system inflammation, which will cause neurological symptoms to occur more frequently on one side of the body. Recovery and treatment is varied and often unsuccessful.

Infectious diseases

Stressed horses have a decreased immune system, making them more susceptible to viral infection.

- **Mosquito-borne Encephalitis** occurs when flooding creates a perfect environment for the mosquito population to increase. Although no specific treatment is available for any of the mosquito-borne neurological disorders, vaccination has been proven to prevent 99% of all infections. Veterinarians recommend if you live in an area with a high mosquito population, vaccinate for these viruses twice a year.
 - ▶ West Nile Virus (WNV) is spread by mosquitos. It causes infection of the brain and spinal cord and their protective coverings. Although the majority of horses infected with WNV will not show any symptoms, this disease has no specific treatment. WNV has a 30% fatality rate, even with supportive care.
 - ▶ Eastern & Western Equine Encephalomyelitis (EEE & WEE) are viruses spread by mosquitos that cause infection and inflammation of the brain and spinal cord. No specific treatment exists, and death will occur in 90% of horses within two to three days after the onset of neurological symptoms.
- **Rabies** is a virus spread by the bite from another infected animal. In horses, the virus can be present for two to nine days prior to any neurological symptoms appearing. No treatment is available for this fatal virus. Exposure to displaced wildlife may increase the chance of horses contracting this virus.



Neuro horse photo by Dr. Rebecca McConnico

- **Equine Herpesvirus-1 (EHV-1)** is a respiratory virus, spread by infected horses. Although horses are commonly vaccinated for some forms of herpesvirus, EHV-1 has no specific vaccine and can cause abortions and neurological dysfunction. Neurological symptoms are caused by injury to the blood vessels of the blood/brain barrier. Although no specific treatment is available for EHV-1, supportive care may aid in recovering mildly affected horses; however, reports of full recovery are varied. Evacuating horses to emergency shelters with improper biosecurity techniques in place also can increase the chances of exposure to a number of viral infections.

Ingestion of toxic substances.

Natural disasters cause a number of issues when it comes to ingestion of toxic substances. Reduced availability of quality forage will force horses to consume toxic plants. It is important that horses do not ingest moldy, rotten or contaminated feed. Barns, pasture, water and hay sources should also be checked for mold and dead animals.

- **Botulism** is caused by the toxins created by the bacterium, *Clostridium botulinum*. Typically, horses come in contact with the bacterium through feed or water contaminated with rodent droppings or small animal carcasses. This is especially common in processed hay pellets or cubes. Botulism causes various neurological symptoms and can be extremely difficult to diagnose. Treatment options do exist, but must be given early to ensure full recovery.
- **Equine Leukoencephalomalacia**, also called Moldy Corn Poisoning, is a neurological condition caused by feeding moldy corn over the course of several weeks. The fungus causing the mold produces toxins and can cause severe neurological dysfunctions. No

effective treatment options other than prevention are available for this fatal disorder.

- **Hepatic encephalopathy** is a neurological disorder caused by severe liver damage; symptoms will not be evident until 60% to 80% of liver function is lost. Liver damage in horses is typically caused by ingestion of some type of toxic plant. During natural disasters and relocation, quality forages may be scarce, causing horses to resort to eating less-than-palatable plants. Treatment options are available; however, full recovery is unlikely.

Natural disasters are stressful for horses and owners in many ways. It is important to ensure that proper health, management and biosecurity measures are taken to protect horses during the recovery period. Although exposure to all disasters cannot be prevented, horse owners must have a plan to address vaccinations, parasite control, quality feed availability and safe living spaces to increase overall survival rate and minimize loss. If you suspect your horse may be suffering with neurological symptoms of any kind, contact your local veterinarian immediately.

References:

- Henneke, C., Jespersen, A., Jacobsen, S., Nielsen, M.K., McEvoy, F., and H.E. Jensen. 2014. The distribution pattern of *Halickephalobus gingivalis* in a horse is suggestive of a haematogenous spread of the nematode. *Acta Veterinaria Scandinavica* 56:56.
- Johnson, A.L., McAdams, S.C., and R.H. Whitlock. 2010. Type-A botulism in horses in the US: a review of the past 10 years (1998-2008). *J. Vet Diagn Invest* 22(2): 165-173.
- The Merck Manual. Disorders of the Spinal Column and Cord in Horses. http://www.merckvetmanual.com/pethealth/horse_disorders_and_diseases/brain_spinal_cord_and_nerve_disorders_of_horses/disorders_of_the_spinal_column_and_cord_in_horses.html. Accessed 10/14/2016.

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