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C Chatsworth Kleinpeter,
DVM

Heather Garcia, DVM

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Equine Infectious Encephalitis*

Equine encephalitis: Eastern Equine Encephalitis (EEE), Western Equine Encephalitis (WEE), West Nile Virus (WNV), Venezuelan Equine Encephalitis (VEE), sometimes referred to as sleeping sickness, is a significant health issue for both humans and horses. While the recent introduction of West Nile Virus into the United States has raised public awareness of these diseases, horse owners and veterinarians have long been aware of the risks these diseases pose.

Neurologic diseases are a diagnostic challenge because the symptoms are common to many illnesses.

A Typical Case History begins... an owner notices a horse is depressed at the morning feeding, a temperature of 101, and recalls that the horse seemed quieter than usual the evening before. By noon the horse has lost coordination, in a stupor, and not eating or drinking, with a fever of 104.6. To aid in diagnosis of the problem the veterinarian will need to ask about your horses' medical history and conduct a physical exam. Be sure to have your horses' vaccination records and medical history up to date and ready to show to your vet.

- by noon the horse is uncoordinated, in a stupor, and not eating or drinking, with a fever of 104.6.

Challenges in Diagnosing Encephalitis

- ◆ **Anorexia (loss of appetite)**
 - ◆ **Fever**
 - ◆ **Depression**
 - ◆ **Loss of coordination**
 - ◆ **Muscle tremors - particularly of the lip and eye**
 - ◆ **Pale mucous membranes**
 - ◆ **Weak and wobbly**
 - ◆ **Slow stumbling walk**
- Many of these symptoms are triggered by a variety of illnesses:**
- ◆ Anorexia (loss of appetite), fever, depression and loss of coordination are seen with several diseases.
 - ◆ Muscle tremors, particularly of the lip and eye are not unique to any one neurologic disease.
 - ◆ Pale mucous membranes indicate anemia, which can be caused by a variety of illnesses.

Common Symptoms cont.

- ◆ Internal bleeding can make a horse weak and wobbly, mimicking sleeping sickness.
- ◆ Walking slowly may indicate sleeping sickness, but a lame horse may also be reluctant to move.

Other factors making accurate diagnosis difficult.

- ◆ A horse with a history of vaccination against encephalitic diseases (EEE, WEE and WNV) is less likely of infection, **but** the vaccine may not provide protection if the horse's immune system is not functioning fully.
- ◆ Recent injections and even acupuncture may cause neck pain in horses, causing similar symptoms.
- ◆ Different geographic regions have different diseases and, of course, horses traveling abroad may be exposed to diseases not found in the United States.

It is difficult to make a differential diagnosis.

Providing your vet with an accurate medical history helps.

Illness triggering similar symptoms

- | | | |
|-------------------------------------|--|------------------------------------|
| ◆ Eastern Equine Encephalitis (EEE) | ◆ Venezuelan Equine Encephalitis (VEE) | ◆ Botulism |
| ◆ Western Equine Encephalitis (WEE) | ◆ Equine Protozoal Myelitis (EPM) | ◆ Hepatic Encephalopathy |
| ◆ West Nile Virus (WNV) | ◆ Rabies | ◆ Rhinopneumonitis (Equine Herpes) |
| | | ◆ Verminous Encephalitis |

Your veterinarian must determine which neurological condition is causing the symptoms in order to choose an appropriate treatment.

Determining the cause of the problem— Differential Diagnosis

Equine Encephalitis is found in birds, and is transmitted to both humans and horses by mosquitoes. If horse owners are noticing an unusually high number of mosquito bites, it is likely their horses are bitten as well. The more fresh air the horse has, or more hours in pasture, the more common the disease is. Cases can occur when mosquito numbers are high. This varies with different geographical areas.

Untreated Horses infected with Encephalitis usually die within 3 days.

Keys to an Accurate Diagnosis

- ◆ ***Inclusive medical history.***
- ◆ ***Complete physical examination.***
- ◆ ***Early administration of a comprehensive battery of medical tests.***

The Diagnostic Evaluation

- ◆ Physical examination
- ◆ Complete accurate medical history
- ◆ Blood Workup:
 - ◆ A blood cell count - can indicate infections or parasites
 - ◆ Blood ammonia levels - may indicate liver disease
 - ◆ Serology - identifies antibodies against specific infectious agents
- ◆ Cerebrospinal fluid (CSF) - the most important single diagnostic test to differentiate the cause of the encephalitis, but there is some risk because a short-acting anesthetic is required to collect the sample. Horses with these symptoms already have difficulty with coordination, but in the experience of Dr. Long, if the horse is able to stand it will get up after the anesthetic wears off.
- ◆ Nasal swabs- for infectious Rhinopneumonitis

Dr Long ..."to obtain an accurate diagnosis all of the diagnostic tests should be done when the horse is first found ill."

- ◆ Epidemiologic Evaluation (detection of the source and cause of epidemics of infectious disease.)
 - ◆ Eastern Equine Encephalitis is found in birds, particularly cardinals, and is transmitted to both humans and horses by mosquitoes. If horse owners are noticing an unusually high number of mosquito bites, it is likely their horses are bitten as well. The more fresh air the horse has, or more hours in pasture, the more common the disease is. Cases can occur from March through September and are most common when mosquito numbers are high. This varies with different geographical areas. Horses infected with EEE usually die in 3 days.
 - ◆ West Nile Virus is found in horses 1 to 3 years of age and horses over 10 years. Middle aged horses seem more able to shrug off the disease. Cases occur from July to November.

Protecting Your Horses

- ◆ Vaccinations are highly effective in preventing Encephalitis in horses. The vaccine must be given before the disease hits your geographical area. Statistics from the West Nile outbreak shows that vaccination in the face of an outbreak is of little value. All forms of the vaccine offer good protection, although they work in different ways, and different methods are used to detect the horse's response.
 - ◆ Vaccination requirements differ by geographical region. Ask us to help you establish an effective vaccination program for your horses.
 - ◆ Dr. Long suggests, you vaccinate horses 2 or 3 times/year in the south, and broodmares

Studies have shown that 90% of the cases occur in horses not properly vaccinated.

Symptoms and Diagnosis cont.

one month before foaling to protect the foal. Initial series includes 2 injections 3 to 4 weeks apart.*

- ◆ Foals need more vaccines than they are currently receiving, and no complications of over-vaccinating have been reported. Statistics show that horses under two years of age are more commonly infected, so their vaccination programs are critical.*
- ◆ Fly sheets and insect repellents don't decrease your horse's risk.*
- ◆ Using fans actually increases the risk of West Nile Virus, perhaps by sending the scent of horses out into the open.*
- ◆ Standing water on the farm increases the risk of infection, so clean water buckets and tanks often.*
- ◆ Bringing horses into a solid barn will decrease the risk of EEE.*

***Best Protection -
A Consistent, Comprehensive
Vaccination Program***

*This article is based on excerpts from a seminar presented on May 29, 2008 at the Gluck Equine Research Center Department of Veterinary Science at the University of Kentucky, by Dr. Maureen Long from the University of Florida. **Equine Infectious Encephalitis - Still a Puzzle**