



Equine Protozoal Myeloencephalitis (EPM)

Disease Name: Equine Protozoal Myeloencephalitis (EPM)

Disease Type: EPM is an infection of the central nervous system caused by microscopic protozoan parasites: *Sarcocystis neurona*, or rarely, *Neospora hughesi*

Transmission: The opossum (*Didelphis virginiana* in North America) is the definitive host for *S. neurona*. Sporocysts (a thick walled, sac-like larval stage) are excreted in opossum feces and may be consumed by an intermediate host (e.g. skunks, cats, armadillo). In the horse, which is an incidental-dead end host, the sporocysts are consumed in food or water contaminated by opossum feces. From the intestine the organism can migrate to the central nervous system where it can cause injury and associated clinical symptoms. *S. neurona* sporocysts have been noted to survive in the environment for months.

Frequency and risk factors: Exposure rates can be high (> 50%), but actual disease is uncommon. All horses are considered susceptible but most horses exposed to sarcocystis never show signs of disease. Younger (1-5 years old) and older horses (>13 years), breed (Thoroughbred, Standardbred, and Quarter Horse), and season (spring, summer, fall), transport, surgery, foaling, and stressful exercise have all been identified as risk factors in studies.

Incubation period: Time from ingestion of sporocysts to the onset of disease is unknown.

Carrier status: There is no transmission between horses.

Severity: Neurologic signs can vary from mild to severe.

Clinical signs and symptoms: Clinical signs are variable and can mimic most other neurologic diseases as well as musculoskeletal problems. This occurs because the parasite can affect various sections of the central nervous system (CNS).

Clinical signs reflect affected areas of the spinal cord and brain and can include the following:

- ataxia (incoordination that can affect one or more limbs)
- weakness
- cranial nerve disorders such as problems eating, facial paralysis and abnormal eye movements.
- muscle atrophy
- unusual or atypical lameness
- reduced or absent skin sensation
- alterations in level of consciousness (e.g. lethargy) or behavior

EPM is progressive but can have an acute or insidious onset. The progression can be rapid, or the clinical signs might appear to stabilize only to relapse or worsen later.



Diagnosis:

The diagnosis of EPM is based on: (1) having a veterinarian confirm that the clinical signs consistent with spinal cord or brain dysfunction through careful clinical neurologic examination, (2) exclusion of other potential causes of these signs using appropriate diagnostic testing, and (3) immunodiagnostic (serologic) testing on paired serum and cerebral spinal fluid (CSF) samples to confirm antibody production against *S. neurona* or *N. hughesi*. A positive serum test indicates exposure to the organism but does not confirm EPM *disease*, regardless of the magnitude of the titer. A negative serum test usually indicates that the horse has not been exposed to the organism. Although a positive CSF test is more likely to correlate with an EPM diagnosis than a positive serum test, false positives may occur.

Treatment: Treatment of horses with confirmatory clinical signs includes administration of anti-protozoal drugs such as trimethoprim-sulfa, ponazuril or diclazuril. Consult with your veterinarian for detailed treatment options. The sooner treatment is initiated, the better the horse's chances are for recovery.

Prognosis: Sixty to 70 percent of EPM cases appropriately treated show significant or complete reversal of symptoms. Many horses are able to return to normal activity. Approximately 10 to 20 percent of horses may experience a relapse.

Prevention: Horses with EPM are not contagious to neighboring horses. Disinfection is not necessary for areas or objects in contact with affected horses. Minimizing contact with opossum feces will help prevent EPM. Prophylactic administration of anti-protozoal drugs may also be considered for horses at high risk and should only be prescribed by a licensed veterinarian.

Biosecurity: Restricting access of opossums to horse feeds and water is recommended