

Equine Protozoal Myeloencephalitis (EPM)

Equine Protozoal Myeloencephalitis, or EPM, is one of the most common neurological diseases affecting the horse. Most horses exposed to the causative organism, *Sarcocystis neurona*, will clear any infection with their own immune system. However, in horses with a compromised immune system, the organism can spread to the central nervous system causing very serious and debilitating disease. EPM can have a variety of presentations often making diagnosis difficult. The most common signs include incoordination and loss of muscle mass affecting only one side of the body. It may also affect both sides of the body but one side is usually worse than the other.

The opossum is considered the definitive host of *Sarcocystis neurona*. It sheds an infective form of the parasite in its feces. A variety of intermediate hosts become infected with the organism by eating the feces of the opossum. Common intermediate hosts of *S. neurona* include cats, skunks and raccoons among others. When the intermediate host is infected with the organism, it can spread to their liver, lungs and muscle tissues without ever affecting their nervous system. When the intermediate host is, in turn, eaten by an opossum, the organism changes to an infective form that is once again shed in the feces and the life cycle continues. Horses become infected with *Sarcocystis neurona* by ingesting the opossum feces. *S. neurona* travels to the central nervous system and replicates causing damage to nerve cells leading to the clinical signs observed. Horses are considered "dead end" or aberrant hosts for *S. neurona*, in that they do not pass on the organism and the cycle stops with them.

Clinical signs in horses with EPM are often varied but again the most common are incoordination and muscle loss that tends to be distributed to one side more than the other. Other signs that the horse may have, which are common to many neurological diseases, are weakness, airway noise, lameness

associated with the hindlimbs, locking of the stifle, back soreness, and decreased or poor performance. Horses demonstrating these symptoms should be evaluated for neurologic disease. Other diseases causing clinical signs similar to EPM include West Nile Virus infections, Herpes Virus infection, Rabies, and malformations of vertebra in the neck among others.

Diagnosis of EPM is typically based on clinical signs. Laboratory tests are available to aid in diagnosis. However, these tests are not 100% accurate. The test involves collecting cerebral spinal fluid which is an invasive procedure that has its own risks. In many areas, including Florida, it is estimated that 50% or more of horses are exposed to *S. neurona*, so simple blood tests are not useful. Positive blood tests only tell us your horse has been exposed to the organism but is not necessarily infected. Positive blood tests do not provide information whether the organism has spread to the central nervous system. Unfortunately, the only definitive diagnosis of EPM is by post-mortem evaluation.

EPM is a treatable disease, but it is important to note that the horse may never return to its normal state depending on the location and severity of the lesions. EPM is typically treated with daily oral medication of ponazuril (Marquis) or nitazoxanide (Navigator) for 28 days or a combination of pyrimethamine and sulfadiazine for 90 days. Treatment should continue for two weeks after clinical signs stop improving. Anti-inflammatories, such as Bute or Banamine, may be indicated to control inflammation. Your veterinarian should assess your horse to decide if anti-inflammatories are needed. Horses with severe clinical signs may not improve and may get worse. In such instances, euthanasia may be the best option. Since horses become infected with the parasite by ingesting the feces of the opossum, keeping hay and grain in an area protected from opossums and rodents will help prevent it from becoming contaminated. It is difficult to keep opossums out of pasturelands. Picking up any dead animals (birds, squirrels, road-kill)

encountered around your farm that opossums feed upon, will help prevent opossums from feeding in your area and spreading the pathogen.

A vaccine against EPM has been licensed for horses but has not yet been shown to be effective and may cause interference when testing your horse for *S. neurona* infection. If your horse begins showing any neurologic signs, please contact your veterinarian for a full physical and neurologic examination. Early detection and treatment will provide the best outcome.

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