



# Equine Protozoal Myeloencephalitis

## Understanding This Debilitating Disease

Equine Protozoal Myeloencephalitis (EPM) is a master of disguise. This serious disease can be difficult to diagnose because its signs often mimic other health problems in the horse and signs can range from mild to severe.

More than 50 percent of all horses in the United States may have been exposed to the organism that causes EPM. The causative organism is a protozoal parasite named *Sarcocystis neurona*. The disease is not transmitted from horse to horse. Rather, the protozoa are spread by the definitive host the opossum, which acquires the organism from cats, raccoons, skunks and armadillos and possibly even from harbor seals and sea otters. The infective stage of the organism, the sporocysts, are passed in the opossum's feces. The horse comes into contact with the infective sporocysts while grazing or eating contaminated feed or drinking water.

Once ingested, the sporocysts migrate from the intestinal tract into the bloodstream and cross the blood/brain barrier. There they begin to attack the horse's central nervous system. The onset of the disease may be slow or sudden. If left undiagnosed and untreated, EPM can cause devastating and lasting neurological damage.

## SYMPTOMS

The clinical signs of EPM can be quite varied. Clinical signs are usually asymmetrical (not the same on both sides of the horse). Actual signs may depend on the severity and location of the lesions that develop in the brain, brain stem or spinal cord. Signs may include:

- Ataxia (incoordination), Spasticity (stiff, stilted movements), abnormal gait or lameness
- Incoordination and weakness which worsens when going up or down slopes or when head is elevated
- Muscle atrophy, most noticeable along the topline or in the large muscles of the hindquarters, but can sometimes involve the muscles of the face or front limbs
- Paralysis of muscles of the eyes, face or mouth, evident by drooping eyes, ears or lips
- Difficulty swallowing

- Seizures or collapse
- Abnormal sweating
- Loss of sensation along the face, neck or body
- Head tilt with poor balance; horse may assume a splay-footed stance or lean against stall walls for support

Several factors may influence the progression of the disease, however these four things appear to be important:

1. The extent of the infection (i.e. the number of organisms ingested)
2. How long the horse harbors the parasite prior to treatment.
3. The point(s) in the brain or spinal cord where the organism localizes and damage occurs
4. Stressful events following infection or stressful events while infected

## **HORSES AT RISK**

EPM is considered the number one cause of neurologic problems in horses today. Almost every part of the country has reported cases of EPM. However, the incidence of disease is much lower in the western United States especially in regions with small opossum populations. However, due to the transport of horses and feedstuffs from one part of the country to another, almost all horses are at risk.

Not all horses exposed to the protozoan *Sarcocystis neurona* will develop the disease and show clinical signs of EPM. Some horses seem to mount an effective immune response and are able to combat the disease before it gains a foothold. Other horses, especially those under stress, can succumb rapidly to the debilitating effects of EPM. Still others may harbor the organisms for months or years and then slowly or suddenly develop symptoms.

## **DIAGNOSIS**

Your veterinarian will first conduct a thorough physical examination to assess your horse's general health and identify any suspicious signs. One notable clue is the disease often tends to affect one side or part of the horse more than another.

If your equine practitioner suspects EPM, he or she may order blood and cerebrospinal fluid (CSF) analysis. If A spinal tap, in which a long needle is inserted through the back and into the spinal canal. A positive blood test only means the horse has been exposed to the parasite, not that it has or will develop clinical disease. Currently three laboratories are analyzing blood and spinal fluid for the presence of *S. neurona* antibodies. Prompt, accurate diagnosis is essential and treatment should begin immediately.

## TREATMENT

The sooner treatment begins, the better the horse's chances are for recovery. Sixty to 70 percent of EPM cases aggressively treated show significant or complete reversal of symptoms. Many horses are able to return to normal activity. Here are some things you should know about treating EPM:

- At present, there is one labeled anti-protozoal drug approved by the FDA to treat EPM, consult your veterinarian.
- Anti-inflammatory drugs may be prescribed to alleviate symptoms and prevent reactions to parasite die-off during treatment.
- Supplementation with vitamin E, an antioxidant, is often recommended to aid healing of nervous tissue.
- Average duration of treatment is one month, although depending on which medication is used, can sometimes be longer.
- Treatments can be expensive.
- Although complications are rare, treatments may affect stallion fertility and may pose certain health risks to unborn foals.
- While success rates are high, not all horses respond positively to therapy. Approximately 10-20% of horses may experience a relapse.
- While a horse is being treated, taking intermittent blood samples may be recommended to monitor potential side effects such as anemia, low platelet count and low white blood cell count.
- Some drugs used to treat EPM are antifolate drugs. Therefore, periodic examination for anemia is indicated during treatment.
- Horses undergoing treatment should be closely observed for signs of improvement or decline, especially negative side effects to the drugs, such as acute diarrhea.
- Be sure to report any changes in the horse's condition to your veterinarian.

## METHODS OF PREVENTION

Based on published research, there are several things horse owners can do to protect their horses from infection with EPM. There is currently a vaccine to immunize against *Sarcosystis neurona*, however, the efficacy is unknown at this time. At best, good horse-keeping practices will discourage unwanted visitors such as opossums and other rodents from contaminating hay, grain and bedding.

### Here are a few suggestions:

- Keep feed rooms and containers closed and sealed.
- Use feeders, which minimize spillage and are difficult for wild animals to access.
- Clean up any dropped grain immediately to discourage scavengers.
- Feed heat-treated cereal grains and extruded feeds since these processes seem to kill the infective sporocysts.
- Keep water tanks clean and filled with clean fresh water.

- Maximize your horse's health and fitness through proper nutrition, regular exercise, and routine deworming and vaccinations.
- Schedule regular appointments with your equine veterinarian.

## **ONGOING RESEARCH**

EPM was initially identified in 1964. In recent years, awareness among veterinarians and horse owners has grown considerably. Research at the University of Kentucky, the University of Florida, Ohio State University, the University of California at Davis, University of Missouri, Virginia Tech and University of Maryland and Michigan State University, as well as other institutions, is leading to advancements in EPM diagnosis, treatment, and the life cycle of *S. neurona*.

For more information regarding EPM, contact your veterinarian or the American Association of Equine Practitioners, 4075 Iron Works Parkway, Lexington, KY 40511, (859) 233-0147.