

Great River Classical Horsemanship Association e-News

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EXTRA ISSUE! HEALTH ALERT!

Potomac Horse Fever in the GRCHA Area

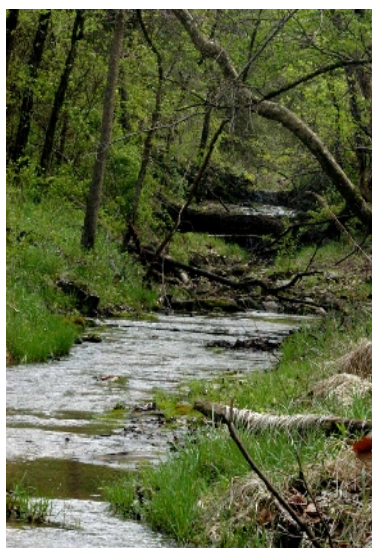
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A Lee County horse treated by Dr. Helling of Keosauqua (1) the second week of August 2008 is believed to have Potomac Horse Fever. This horse was ridden at Shimek with other horses—it was the only one allowed to drink from the streams. Several days later it developed a very serious diarrhea at which time Dr. Helling was called. He has previously treated PHF cases in this area, but no other ones this year. He did not have the horse tested for PHF, but considered it a likely PHF case and initiated PHF treatment. The horse responded well to this treatment and now, a few days later, its diarrhea and fever are under control and it is being introduced to normal feedstuffs slowly.

So---what do we know about PHF and what does this mean for horse owners in this area?

Conditions

Needed. All of us in the GRCHA area are well aware of the impacts of flooding and



PHF Here?

standing water this year on our homes, crops, haying and horseback riding to name a few. Now there is yet another impact---increased likelihood of PHF for our horses! According to Dr. Kenneth Marcella (2), environmental conditions play an important role in PHF. Flooding and standing water provide optimum conditions for the spread of PHF, as was seen following flooding in some areas of the southeast, midwest and northeast in 2005. In addition to Iowa and Illinois, news reports document cases each year in Minnesota, Wisconsin, Ohio and other states— about 43 states total.

Furthermore, PHF is seasonal, usually starting at the end of July and running through September. Dr. Helling concurs with these reports, noting that it is most often seen in this area between July and September.

Symptoms. Not all horses exposed to the PHF organism become ill. For those that do, the symptoms can be mild to life threatening. The *Merck Veterinary Manual* (5) says the incubation period is about 10 to 18 days. However, some articles report the early symptoms occurring in 2 to 4 days. In typical infection in horses, first there is depression and a mild or variable fever that can go undetected. This is followed by a fever ranging from 102-107°F . At this stage, intestinal sounds can be decreased. Within 24-48 hr, a moderate to severe diarrhea, with feces ranging in consistency from that usually seen in

cows to watery, develops in ~60% of affected horses. The onset of diarrhea is often accompanied by mild abdominal discomfort. Some horses develop severe toxemia and dehydration. Laminitis can supervene as a severe complication of PHF in up to 40% of affected horses. The early symptoms contribute to the difficulty in diagnosing this disease because depression and variable high fever can be seen with any number of bacterial and/or viral diseases. Veterinary attention is needed as soon as early symptoms appear. Dr. Helling indicated that UI vets are finding some confirmed PHF cases that do not have the serious diarrhea but go straight into founder.

Diagnosis. Diagnosis of PHF still remains problematic. The disease can be diagnosed by a variety of methods, including bacterial culture, paired immunofluorescence assay (IFA) titers and either peripheral blood mononuclear cell or fecal PCR (polymerase chain reaction) testing (9). Dr. Marcella reports that there still is no correlation between titer and the likelihood of disease, and many of the testing methods cannot differentiate between a vaccine titer and actual clinical disease. These tests take significant time so if PHF is suspected, treatment should begin immediately because toxemia, laminitis and death can occur rapidly. Local veterinarians like Dr. Helling rely on their experience with the disease in recognizing the symptoms and their knowledge of its presence and timing in our area to initiate prompt treatment of suspected cases. According to the Merck site (5), “A recently developed real-time PCR assay allows the detection of *N. risticii* DNA within 2 hr, making this a much more feasible test for routine diagnostic examination.” Both blood and fecal samples should be tested. This new test is not widely known or used.

Mortality rates reported vary from 20 to 25% given in a scientific study in 1998 (13) up to 80% of confirmed PHF cases dying from the PHF or the associated laminitis according to a recent article by Kimberly Brown (7)

Transmission: There is still much unknown about PHF and its transmission.

Potomac horse fever was first described in 1979, then more definitively in 1985 when horses at a racetrack along the Potomac River in Maryland became ill with very high fevers and diarrhea. Many horses in Maryland, Virginia, Kentucky and Ohio soon were affected with an alarmingly high number of fatalities. After several years of research, the cause was found to be a parasite that invades monocytes in the bloodstream so the disease was referred to as Equine monocyte ehrlichiosis. The causative organism is *Neorickettsia risticii*, but the name Potomac Horse Fever (PHF) has stayed in popular usage. This organism is not really a bacterium --- it is grouped in a family of microorganisms called *Rickettsiae* that phylogenetically occupy a position between bacteria and viruses. Rickettsiae are similar to bacteria in that they are killed by antibiotics where viruses are not. At least a bit of good news there!

The method of transmission proved to be difficult to determine. Finally Dr. John Madigan and scientists at the University of California-Davis College of Veterinary Medicine identified the presence of *Neorickettsia risticii* in the secretions of freshwater snails. They went on to establish that these secretions could cause PHF in horses (4). The complicated cycle discovered by Dr. Madigan and his researchers was described by Dr. David Marshall (3) as:

Neorickettsia risticii lives within a fluke ... that lives within an aquatic or water-loving snail. ...During warm months of summer, the flukes initiate their reproductive cycle by releasing their immature flukes from the snails into the surrounding water. These immature flukes [called cercariae] with the *risticii* microorganism living in them can be directly swallowed by a horse drinking the contaminated water. But more commonly, these PHF *risticii* contaminated immature flukes are picked up by aquatic insects such as caddisflies, mayflies, damselflies, or dragonflies which carry the PHF *risticii* to grazing horses. Horses will accidentally eat these insects dead or alive while they graze.

This partially addresses why most cases of PHF have occurred in areas near fresh-water streams

or rivers. (However, some cases have been reported that lack this feature.) Immature or adult forms of any of 13-17 species of aquatic insects including those identified by Dr. Marshall spend part of their lifecycles in water, and then they hatch and fly onto pastures and grasslands. Field veterinarians in California have reported large increases in PHF cases within 7-10 days following excessively large hatches of caddisflies in their practice areas (2). This helps explain why we are now at increased risk of the disease. Flooding and standing water provide habitat for both the fresh-water snails and the insect vectors of PHF. We do not have the statistical data to know if there has been an exceptionally large hatch of insects this year ---but our own anecdotal data is that we have! According to Dr. Marcella, scientists are investigating the question of whether insects carrying *N. risticii* can remain infective in hay and stored feedstuffs.

Dr. Noll from Mt. Pleasant told Judy Duke (12) that here have been some cases in Iowa with stabled horses that were determined to be caused by dead bugs that got into their food and water. The horses were stabled and the lights were left on at night which attracted the contaminated bugs. The bugs died and fell into the horses' food and water. This scenario was also described by Dr. Woodford (11).

Can one horse give it to another? There is still some question about whether it is transmissible from horse to horse. According to merckvetmanual.com (5) "the causative organism is present in the feces of experimentally infected horses, but the biologic significance of this is unknown. Clinically ill horses are not contagious and can be housed with susceptible horses." This and other sources say absolutely that it is not transmissible to other horses; other sources say to be sure to isolate those with PHF as it might be transmissible. (6) Dr. Helling advises that all horses with diarrhea should be isolated from others as a precaution, since there are other, communicable diseases that present with diarrhea and PHF transmission between horses can not be ruled out.

Treatment. Typical treatment of PHF begins with supportive care with pain relief and a fever-reducing agent, such as flunixin (Banamine). **Treatment is most effective when started early!** Since the organism is sensitive to antibiotics, oxytetracycline therapy is used. Merck (5) recommends a 6.6 mg/kg IV daily for up to five days. Response to treatment is often quick (within 12 to 24 hours) and marked. Mild cases may be treated with oral doxycycline. Anti-inflammatory drugs, such as Banamine, help reduce the effects of toxins that get into the bloodstream from the inflamed intestinal tract. Aggressive fluid therapy can counteract the dehydration and correct the electrolyte imbalance created by the diarrhea. Very severe cases may require intensive care, including plasma transfusions. Additional therapy may be needed if the toxins induce founder or laminitis in the horse (10).

Prevention. There are a number of vaccines available for PHF. However, all to-date are based on a single strain of PHF; yet, there are reported to be 14 or more strains of the disease (5). Numerous studies report that the vaccinations do not prevent the disease. However, the vast majority of horses that are vaccinated and still contract PHF develop a much milder form of the disease and usually are spared the more-serious consequences of the condition (13). Vaccinated horses can show mild depression, a less-severe temperature elevation and slightly soft manure for a few days and never develop any other signs.

Horse that have had PHF CAN get it again though they have natural immunity for a while. They, too, should be vaccinated. (6)

Dr. Helling (1) reports that the vaccination costs about \$20 per shot. He has not encountered any noticeable side effects with the vaccine. He believes the vaccine would be desirable for those horses in our area that are trailered and trail ridden a lot. Vaccination in our area prior to the beginning of the PHF season would be best as it is not a long lasting vaccine.

To help reduce accidental ingestion of aquatic

insects, and help prevent PHF, experts recommended:

- Limit horses' access to freshwater streams and ponds, especially during warmer months. So, for now—don't let your horses drink from streams and puddles at Shimek or other trail riding areas!!
- Clean water tanks, water buckets and feed pans frequently.
- Maintain riparian barriers along water sources as they might help keep aquatic insects near their point of origin.
- Until more is known, do not permit horses sick with PHF to be near well horses.
- Turn the lights off in or around the barn at night to prevent attracting insects that may be carrying PHF infection.
- When camping/trail riding, keep hay and feed inside and covered to prevent aquatic insects from getting into it. (11)

Further Information. List of references/websites:

- (1) Dr. William Helling, DVM, Keosauqua Veterinary Clinic, Conversation with Lora Conrad, 8-19-2008
- (2) DVM Newsmagazine, Jan. 15, 2005, <http://veterinarynews.dvm360.com/dvm/article/articleDetail.jsp?id=144082>
- (3) <http://ag.udel.edu/anfs/faculty/documents/PotomacHorseFever-June2006.pdf>
- (4) *AAEP Proceedings*, 1999, <http://www.ivis.org/proceedings/AAEP/1999/45.pdf>
- (5) <http://www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/22204.htm&word=potomac%2Chorse%2Cfever>
- (6) http://www.vermontequinedirectory.com/potomac_horse_fever_update.htm
- (7) <http://www.thehorse.com/viewarticle.aspx?id=12227>
- (8) <http://ag.udel.edu/anfs/faculty/documents/PotomacHorseFever-June2006.pdf>
- (9) (Compendium Equine, July/Aug 2008, http://www.compendiumequine.com/Media/PublicationsArticle/PVE_03_06_308.pdf
- (10) <http://www.cvm.umn.edu/img/assets/9385/Potomac%20Horse%20Fever.pdf>
- (11) *Potomac Horse Fever*, Dr. Christine

Woodford, Fall 2007, Apples 'n Oats, <http://www.applesnoats.com/potomac.pdf>

- (12) Dr. Noll, Mt. Pleasant, IA, in Conversation with Judy Duke, information transmitted via e-mail to L. Conrad.
- (13) <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=104568>

Summary. In summary:

- PHF presents with fever, depression, and loss of appetite followed by diarrhea that can become very serious, leading to electrolyte imbalances, dehydration, laminitis, possibly death, especially if left untreated.
- PHF is caused by a *Rickettsiae* organism that is transmitted through snail secretions of contaminated flukes into water where aquatic insects become infected. The horse can directly ingest the fluke containing the organism or ingest the contaminated aquatic insect.
- Conditions are now conducive to PHF in our area.
- Its the time of year for PHF.
- There is one likely case of PHF in our area now which may have become infected in Shimek.
- Vaccination does not prevent the disease but usually greatly reduces the severity.
- When trail riding, do not let horses drink from open streams/ponds.
- Do not leave your horses under lights at night.
- **If you have a horse that develops fever and diarrhea, call your vet promptly!!! PHF responds well to IV antibiotics administered promptly.**

P.S. Our horses were vaccinated today.

Next regular issue is scheduled for Sept. 1. Our e-news is ...as our logo says.....

For you and your horse.

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