

Potomac Horse Fever, PHF

Equine ehrlichial colitis, equine monocytic ehrlichiosis

Overview:

Potomac Horse Fever, or PHP, primarily affects horses living near a river such as the Potomac, which runs through parts of Virginia and Maryland. This disease is caused by a rickettsial parasite called *Ehrlichia risticii*, which is transmitted by an unknown arthropod vector in areas along rivers throughout North America. Clinical signs of infection are most commonly seen during the summer months.

Gastrointestinal problems such as diarrhea will accompany a PHF infection. Frequently, horses will develop laminitis several days after the diarrhea starts. Treatment is essential for correcting and preventing severe dehydration, which can cause death. Severely affected animals often are euthanized due to the poor quality of their lives.

Vaccinations can help reduce the severity of the clinical signs, but usually will not prevent the disease in an outbreak. With appropriate veterinary care, however, most horses can be treated successfully.

Clinical Signs:

Clinical signs of PHF are similar to those of salmonellosis in equines. Horses often will develop a fever a few days after infection that passes and may not be detected. Approximately two weeks after infection, the horse will again develop a fever that may be accompanied by clinical signs of colic; diarrhea that can be mild to severe; depression; and anorexia, or an absent appetite. Other symptoms include leukopenia, or a low white blood cell count; congested mucous membranes; hypercoagulability, or conjoining of platelets in the blood stream; and laminitis.

Description:

Potomac Horse Fever is caused by a rickettsial parasite called *Ehrlichia risticii*, which is transmitted to horses by an unknown arthropod vector found most frequently in areas near rivers. The Potomac River Valley location in Maryland and Virginia has been associated with outbreaks of the disease, but evidence indicates that horses from other states and Canada have been exposed to the organism.

The organism and its mode of infection are not very well understood at this time. The disease causes similar clinical signs as horses infected with the *Salmonella* bacteria. Horses typically develop a fever less than a week after infection with *E. risticii*; owners usually do not observe this fever. Approximately two weeks after the infection, however, many horses will show significant clinical signs and will be noticeably ill.

Because many cases of PHF go undiagnosed, affected horses have died from complications such as severe dehydration. Euthanasia has been selected for horses that develop severe laminitis following PHF.

Diagnosis:

A definitive diagnosis may be difficult to achieve in some cases. It is sometimes necessary to treat a horse for PHF based on a veterinarian's suspicion of the animal's clinical signs and history of living in or traveling to endemic areas. Bloodwork often will show a monocytosis, or a rise in a type of white

blood cell called monocytes, and a lymphopenia, or decreased numbers of a type of white blood cells called lymphocytes.

A specific diagnosis is made by drawing blood samples and submitting them to a diagnostic laboratory to run serologic tests such as an indirect fluorescent antibody test or an enzyme-linked immunosorbent assay, abbreviated as ELISA, to determine if the horse's immune system has made antibodies against the organism. These tests are not always conclusive, however, since many horses living in commonly affected regions may have high titers, or levels, of antibodies without being infected. Also, vaccinated horses can become infected and not have a high titer or any titer at all.

Rarely, the organism can be seen in monocytes.

Prognosis:

Horses that are treated successively and recover from the infection have a good prognosis for recovery. The prognosis is poor for horses infected with PHF that develop laminitis, which occurs three to five days after the onset of diarrhea and may so reduce the quality of a horse's life that euthanasia is elected. The prognosis also is very poor for untreated horses, which often die due to dehydration.

Transmission or Cause:

The cause of PHF is an organism called *Ehrlichia risticii*, a parasite that infects the white blood cells, as well as the epithelial or tissue cells of the small intestine and colon. The exact route of infection is not known at this time, but it is suspected that PHF is transmitted by the bite from an arthropod such as a tick; other possible vectors are being investigated at this time. A horse can not infect another horse directly.

Transmission is most common in horses living near the Potomac River in the states of Maryland and Virginia. However, evidence of PHF has been confirmed serologically in many other states and Canada, although the disease has not been documented outside of North America. Horses living near a river are at a higher risk of disease than animals living in drier regions. Most cases of PHF occur seasonally in the summer and autumn months.

Treatment:

Horses are usually hospitalized. Treatment is focused on replacing the fluid and electrolyte losses from the diarrhea through intravenous fluid therapy, and on eliminating the organism *Ehrlichia risticii* through an appropriate antibiotic. Occasionally, a horse that has recovered from PHF may relapse; fortunately, antibiotics are usually successful at treating relapse infections.

Prevention:

Vaccination against PHF will help decrease the severity of the disease, but it does not always prevent the horse from becoming infected, especially during an outbreak. Horses living in endemic areas should be vaccinated before the summer and again three weeks later. Vaccinations should then be repeated on a yearly basis.