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• Handbook for Zoonotic Diseases of Companion Animals
• Emerging and Exotic Diseases of Animals Book
• Avian Influenza Resources
• Wall Charts and Handouts
Equine Infectious Anemia

Swamp Fever, Mountain Fever, Slow Fever, Equine Malarial Fever, Coggins Disease

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Importance

Equine infectious anemia (EIA) is a retroviral infection of horses that results in acute symptoms in some animals, and chronic fevers, anemia, edema, and cachexia in others. All infected horses, including those that are asymptomatic, become carriers and are infectious for life. Infected animals must either be destroyed or remain permanently isolated from other horses to prevent transmission.

Etiology

Equine infectious anemia is caused by equine infectious anemia virus (EIAV), a lentivirus (family Retroviridae) related to the human immunodeficiency virus. EIAV becomes incorporated into leukocyte DNA in both symptomatic and asymptomatic animals. This virus displays significant antigenic drift.

Species affected

Equine infectious anemia virus affects members of the Equidae.

Geographic distribution

Equine infectious anemia has been found worldwide. This virus exists in the United States.

Transmission

Equine infectious anemia is transmitted mechanically on the mouthparts of biting flies in the genus Stomoxys (horse flies and deer flies). Transmission is more common in the summer and in humid, swampy regions. EIA can also be spread on contaminated needles or surgical instruments, and passed from a mare to her foal in utero.

In infected horses, EIAV persists in the white blood cells for life. Horses with inapparent infections are less likely to transmit the disease than horses with chronic symptoms; after visiting an asymptomatic carrier, only one out of every 6 million flies is likely to become a vector.

Incubation period

The incubation period is usually one to three weeks, but may be as long as three months.

Clinical signs

The clinical signs of acute EIA are often nonspecific. In some acute cases, the only symptom noted is a fever which, in mild cases, can last less than 24 hours. Other clinical signs can include weakness, severe anemia, jaundice, tachypnea, petechiae on the mucus membranes, and blood–stained feces. Occasionally, death occurs during the acute infection. After the initial bout, most horses become asymptomatic carriers. Some develop recurring symptoms that vary from mild illness and failure to thrive to fever, depression, petechial hemorrhages on the mucus membranes, weight loss, anemia, dependent edema, and sometimes death. Inapparent infections may become symptomatic during concurrent illnesses, severe stress, or hard work.

Post mortem lesions

In acutely infected animals, the spleen and its associated lymph nodes are enlarged. In chronic infections, there may be emaciation, splenomegaly, pale mucous membranes, and enlarged abdominal lymph nodes. Edema is common, particularly in the limbs and along the ventral abdominal wall. Intravascular clotting and emboli are frequently seen in advanced cases. Some animals may have proliferative glomerulonephritis. Reticuloendothelial cell proliferation in multiple organs is common.

Morbidity and Mortality

Morbidity varies with the geographic region. Morbidity is difficult to predict, as virus transmission depends on the number of flies, their habits, the number of times a fly bites the same or other horses, the density of the horse population, the amount of virus
in the blood of the infected horse, and the quantity of blood transferred. Infection rates as high as 70% have been seen on farms where the disease has been endemic for many years. The mortality rate can be as high as 80% during the acute stage of experimental infections, if the dose of virus is high. However, deaths are uncommon in most natural infections.

No vaccine or treatment is available.

**Diagnosis**

**Clinical**

Equine infectious anemia should be suspected in individual horses with weight loss and intermittent fever. It should also be considered when several horses experience fever, anemia, edema, progressive weakness, or weight loss, particularly when new animals have been introduced into the herd or a member of the herd has died.

**Differential diagnosis**

The differential diagnosis includes other febrile illnesses, including anthrax, influenza, and equine encephalitis.

**Laboratory tests**

Equine infectious anemia is confirmed by serology. The agar gel immunodiffusion (Coggins) test is the “gold standard” used for confirmation of the disease. Enzyme–linked immunosorbent (ELISA) assays are also available. Positive results on ELISA are confirmed with the Coggins test, as false positives are sometimes seen. Antibodies may not be detected early in the disease.

Negative serologic tests are necessary for interstate movement of horses. State regulations vary, but many states require periodic tests, a single mandatory test, or tests before participation in organized activities.

Virus isolation is not usually required for a diagnosis, but it is occasionally done. The virus can be isolated by inoculating blood from a suspected carrier onto leukocyte cultures. Virus identity is confirmed by ELISA or immunofluorescence tests.

If the status of a horse cannot be determined by other methods, blood may be inoculated into a susceptible horse. Antibody status and clinical signs in the test animal should be monitored for at least 45 days.

**Samples to collect**

Serum should be collected for serology. Occasionally, unclotted blood may be collected for virus isolation or inoculation into a test animal.

**Recommended actions if equine infectious anemia is suspected**

**Notification of authorities**

Equine infectious anemia is a reportable disease in many states. Each state should be checked for specific regulations. Federal: Area Veterinarians in Charge (AVICS) http://www.aphis.usda.gov/vs/area_offices.htm


**Quarantine and Disinfection**

Infected horses must be permanently isolated from other horses or euthanized. A reactor is usually marked with a brand, freeze-marking, or a lip tattoo, and cannot be transported between states (except to its home farm, a slaughterhouse, or a diagnostic or research facility, under quarantine conditions). Foals born to infected mares should be isolated from other horses until maternal antibody disappears and the foal is determined to be free of infection.

Enveloped viruses such as EIAV can be destroyed by most common disinfectants.

**Public health**

There is no evidence that equine infectious anemia is a threat to humans.

**For More Information**

World Organization for Animal Health (OIE)
http://www.oie.int

OIE Manual of Standards
http://www.oie.int/eng/normes/mmanual/a_summry.htm

OIE International Animal Health Code
http://www.oie.int/eng/normes/mcode/A_summry.htm

Animal Health Australia. The National Animal Health Information System (NAHIS)

Equine Infectious Anemia. American Association for Horsemanship Safety.
http://tarlton.law.utexas.edu/dawson/eia/eia.htm

**References**


