



# EQUINE INFECTIOUS ANEMIA

quine infectious anemia (EIA), commonly called swamp fever, is an infectious viral disease of horses caused by the equine lentivirus. The disease can appear as a fatal acute disease or as a chronic disease, but most horses infected with EIA virus show no clinical signs of disease; i.e., they are inapparently infected and test positive for antibodies to the virus.

Clinical signs of EIA include anemia, intermittent fever, depression, hemorrhages, progressive weakness, loss of weight, and swelling of the legs, brisket, and lower abdomen. In the acute form, animals are extremely sick and may die. Horses that have the chronic form, or that recover from the acute or subacute form to become chronic, usually have intermittent attacks ranging from one week to a month or more between attacks. Some horses die during these recurrent episodes.

Although horses inapparently infected with EIA virus appear normal, they and all other infected horses remain carriers of the virus for life, and their blood will infect susceptible horses. Horses in the acute stages of EIA are thought to be the major source of virus for transmission. All infected horses, however, are potential sources and pose a threat to the health of their progeny and other susceptible horses.

## Transmission

EIA virus is usually transmitted to horses by the transfer of blood from infected horses to susceptible ones by blood-feeding insects or by man. Epidemics of EIA have been traced to the multiple use of hypodermic needles and to the injection of substances contaminated with blood. Experiments have shown that a single horse fly can transmit the

infection from a horse in the acute stage of EIA to a susceptible horse. If horse flies were fed on a horse with acute EIA and then held for a thirty minute period before feeding on a susceptible horse, they could still transmit the infection.

Transmission of EIA virus occurs by other means, but at lower rates; for example, foals can be infected *in utero* or by ingesting milk from an infected mare. Venereal transmission also seems possible since the virus has been isolated from semen of infected stallions, but natural venereal transmission has not been documented.

## Diagnosis

Several methods have been approved for the diagnosis of EIA. These are the horse inoculation test and two serologic tests: the agar gel immunodiffusion test (AGID or Coggins test) and the competitive ELISA (or CELISA) test. The horse inoculation test is rarely performed because of its expense and use of animals. The serologic tests are recognized as reliable indicators of infection, and the federal government is responsible for ensuring the potency and standardization of the test reagents. Most horses infected with the EIA virus will develop antibodies to it by thirty days after infection and will give positive reactions in the serologic tests for the rest of their lives.

One factor that contributes to the appearance of new cases of EIA every year is that only about 10% of all the horses in the United States are tested annually. Samples from horses that were tested in Kentucky in 1990 indicate a test-positive rate of 0.06%. Areas where vector pressures are exceptionally high or persist for longer times, for example the tropics, may have much higher infection rates. In

the United States, the highest percentage of test-positive samples are reported in the Gulf Coast states.

In spite of the extent of infection, there is a strong interest from horse owners and breeders for an EIA control program. Such a program is possible using the serologic tests to diagnose the infection and to control the movement of test-positive horses.

## Recommendations for Control of EIA in Kentucky

- (1) Full compliance with federal and state laws and regulations for the control of EIA.
- (2) Buy only EIA test-negative horses and make the sale contingent on a negative retest.
- (3) Test all horses for EIA, not just those showing suggestive clinical signs or those for which testing is required.
- (4) Strictly isolate positive animals and seriously consider euthanizing horses with acute EIA to prevent exposure of susceptible horses.
- (5) Establish EIA-free herds:
  - (a) eliminate all reactors.
  - (b) retest the entire herd at thirty-day intervals until two complete negative herd tests are completed, then at six-month intervals to ensure that status.
  - (c) maintain as much separation as possible from neighboring herds.
  - (d) add only EIA negative horses to clean herds; if possible, isolate all additions for 45 days and then require another negative test before mixing with the herd.
  - (e) urge local associations and national authorities to require all horses congregating for sales, shows, races, fairs, etc., to have a negative

## Federal Regulations Concerning EIA

Federal regulations concerning interstate movement of horses and EIA are:

“Any reactor to an official test shall be classified as infected with equine infectious anemia, and shall not be moved interstate unless:

- (1) It is officially identified (officially identified by either a lip tattoo or a neck brand) and accompanied by a certificate . . . and
- (2) It is moved interstate, for immediate slaughter . . . or to a diagnostic or research facility . . . or
- (3) The reactor is disclosed on an official test conducted in a state other than the state in which the home farm of the reactor is located . . . and such reactor is moved interstate to its home farm under a certificate issued by a State authority on the premises of its home farm until natural death, slaughter or disposition by euthanasia.”

In addition to these federal regulations, states have instituted control programs of differing intensity for EIA. Current Kentucky regulations are listed below.

## Kentucky Regulations Concerning EIA

- (1) All horses, except unweaned foals and other equidae, entering the State of Kentucky for any purpose other than immediate slaughter must be accompanied by a health certificate that includes a report of a negative AGID test (Coggins test) for equine infectious anemia from a laboratory approved by the USDA within the past twelve (12) months.
- (2) All horses past six (6) months of age and other equidae *offered for public sale* shall be negative to serologic test within past six (6) months. Only horses *offered for sale for slaughter only* shall be exempt from this requirement.
- (3) All horses and other equidae moving within state to fairgrounds, livestock showgrounds, public boarding stables and for trail rides or racing shall be negative for the AGID test (Coggins test) within twelve (12) months and shall be accompanied by certificate of report from a laboratory approved by the USDA.

All horses reacting positively to the Coggins Test within the State will be officially and permanently identified using numbers and letter 61A with a brand on the left neck region. Positive horses will be rebled upon request by State employed veterinarians and samples submitted to the laboratory for reconfirmation. All reactors not slaughtered or euthanized shall be isolated and placed in quarantine. This isolation shall include stabling in a stall that is screened to preclude entry and exit of mosquitoes, stable flies and horse flies during those seasons of the year when such insects are prevalent. These animals must be kept at least two hundred (200) yards from all other horses. Any movement of these horses shall be done only on permission of a representative of the Department of Agriculture. All horses in a herd in which a reactor is found shall be placed in quarantine pending a negative test of all horses.

- (4) No horse in Kentucky shall be sold, offered for sale, traded, given away, or moved for the purpose of change of ownership unless accompanied by evidence of an official negative test for equine infectious anemia within six (6) months of sale or movement except if offered for sale at approved auction markets.

All horses offered for sale at an approved auction market will have a blood sample drawn at the market by the market's veterinarian at the seller's expense. Equines which are accompanied by an original negative certificate of AGID (Coggins) test for equine infectious anemia, dated within the past six (6) months, may be exempt from the testing by the market's veterinarian provided the certificate positively identifies the equine that is being offered for sale.

serologic test prior to admission to prevent mixing negative horses with known infected horses.

(6) Use separate sterilized hypodermic needles and instruments on each horse.

(7) Field data show that the majority of foals (>75%) from infected mares can be raised uninfected. The chances of raising negative foals are increased if the foals are raised in environments to prevent insect transmission and are weaned as early as possible.

The regulations imposed by individual states have been changing at a rapid rate recently. Be aware of your current local regulations as well as those of the states in which you intend to travel.

The control of EIA in Kentucky will require full cooperation of all horse owners to be effective. The guidelines detailed above, if adopted on a large scale, could lead to effective control of this important disease of horses.

*Prepared by C. J. Issel, D.V.M., Ph.D. and co-workers from the Gluck Equine Research Center, University of Kentucky, Lexington, KY 40546 (606) 257-1710 or (606) 257-4434; Dr. David Powell, Equine Veterinarian with the Kentucky Cooperative Extension Service, University of Kentucky, Lexington (606) 257-2756; and R. Ford, from the State Veterinarian's office, Department of Agriculture, 100 Fair Oaks Lane, Suite 252, Frankfort, KY 40601 (502) 564-3956.*