Diagnostics 101 - The Coggins Test

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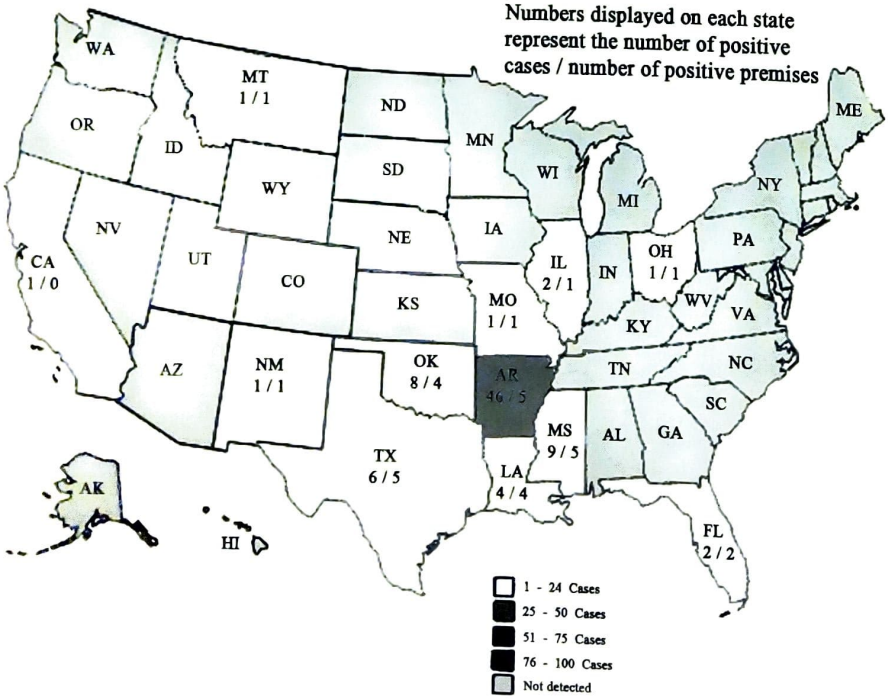
For many horse owners, the term "Coggins Test" brings to mind that yellow or white piece of paper containing information about the horse they own, having been obtained from their veterinarian after blood was drawn and sent off to a lab. When the test result is negative, you can travel with your horse to a local event or a new barn without much worry. That this is a test for a disease for which there **IS NO CURE** and almost always results in the **LOSS OF THE HORSE**, well, let's just say the real story behind the Coggins test is often overlooked.

The clinical symptoms of Equine Infectious Anemia (also called "Swamp Fever") were first described in France in 1843, with the virus responsible for it identified in 1904. This discovery made this the first disease for which a virus was determined to be the cause. Equine Infectious Anemia (EIA) virus is a lentivirus of the family *Retroviridae*, and is a virus that is closely related to another important lentivirus, the human immunodeficiency virus (HIV). All lentiviruses cause persistent infections, and most of them cause disease that is slowly progressive and frequently results in death. EIA is somewhat different in that it causes acute symptoms that are followed by symptoms that occur in episodes, with the disease eventually subsiding in most horses. Unfortunately, these horses become persistently infected, **LIFELONG**, inapparent (meaning that we can't tell that they are infected) carriers of the disease.

EIA is a worldwide disease, transmitted by insect vectors (insects that transfer infective agents from one host to another) and found to be especially prevalent in warmer climates (in the United States, the Gulf Coast has been found to have a higher prevalence of EIA due to it's favorable climate). A reliable test for EIA was developed by Dr. Leroy Coggins in the 1970's and became the basis for the EIA control program put into place by the USDA in 1972. Since then, the prevalence of this disease has dropped from 3.09% in 1972 to less than 0.01% in 2005. Unfortunately, this number reflects only the horses that have been tested, which includes those horses competing, being sold at sales and auctions or those crossing state lines. Some estimates of horse numbers in the U.S. vs. the actual number of Coggins tests being done suggest that approximately 30-35% of the horse population are being tested annually. In reality, the majority of horses in the U.S. are not being tested and the actual prevalence of this disease in the United States is not really known.



Reported numbers of horses and premises testing positive for EIA, 2011.

(82) positive horses on (30) positive premises.

From the USDA APHIS website - "2011 Summary of EIA Cases in the United States"

Blood from an infected horse is the primary source of the EIA virus to healthy horses. Biting insects make up the most common means of "natural transmission," especially insects such as the horse fly, deer fly and, to a lesser extent, the stable fly. Infected horses that have a high load of the virus in their blood and showing clinical symptoms of the disease are much more likely to transmit the disease than are inapparent carriers. As few as one horse fly, six deer flies or fifty-two stable flies can transmit the virus from an infected horse to an unaffected horse. Once a biting fly ingests the blood of an infected horse, the virus can't survive long in the insect but must be transferred to a susceptible horse within a short period of time, as little as 4 hours. When we think about EIA virus transmission, the distance between infected and unaffected horses also plays a part, with a distance of approximately 200 yards being adequate to reduce the transmission by flies. Transmission is also much more likely in areas where the responsible insects are found in large numbers. EIA virus can also be transmitted in one of several other ways:

*at birth or through the colostrum of infected mares
*through the placenta to the fetus of an infected mare (RARE)
*contaminated blood products
*blood contaminated instruments (ex. Needles)

Studies over the past 25 years have been shown that mosquitoes do not transmit EIA.

The clinical symptoms of the EIA include fever, lethargy, poor appetite, weight loss and edema. Blood work would show a low platelet count (thrombocytopenia) and a low red blood cell count (anemia). Thrombocytopenia is one of the earliest signs of EIA and a strong reason to pursue blood work in a horse showing these clinical symptoms, especially if there is no record of a Coggins test having been done. Other symptoms include an enlarged liver, spleen and lymph nodes. There are three recognized stages of EIA:

1) Acute – the signs are often mild and are often overlooked, occurring 5-30 days after exposure. Symptoms include fever, lethargy, poor appetite and a low platelet count.
2) Subacute/Phase of recurrent episodes of the "acute disease" – each episode lasting 3-5 days, showing the same symptoms as the acute stage. The interval between the episodes varies and often the horse appears completely normal between episodes.
3) Chronic – the infected horse suffers frequent and more severe episodes that lead to low red blood cell and platelet counts, weight loss and edema. Unexpected bleeding can occur with the more severely affected horses. Most of these horses will have their disease episodes gradually subside and become inapparent carriers, appearing normal, until their infection is discovered during a routine health check that includes a Coggins test.

A happy healthy horse at an inspection.
Photo courtesy of Franke Photography©

Testing the blood of a horse is how EIA is diagnosed, understanding that once a horse becomes infected with the virus, it will never be able to clear it. Currently there are 4 different tests used to detect the antibodies in the blood that are produced when the virus is present. These tests fall into two general categories, the AGID and ELISA tests. The AGID test is the most widely accepted test and is highly specific for the antibodies produced against the EIA virus. It requires a minimum of 24 hours before a result can be obtained. The ELISA tests can produce a result within one hour. Early diagnosis of EIA can be confusing as even these sensitive tests can produce a negative result for as many as 10-14 days post infection. Many laboratories across the country perform these tests, currently being done both by the carbon copy filled out by hand (that yellow piece of paper we are familiar with) and the digital form done on line that utilizes photos of each horse for identification.

There is no specific treatment for EIA, only supportive care. **THERE IS NO CURE**.

EIA is a reportable disease in the United States, meaning that a positive test must be reported to the appropriate state veterinary authorities immediately. The USDA has a program in place that is designed to decrease the incidence of this disease by identifying and removing infected horses from the general population to decrease the chance of transmission. A horse that is identified as having a positive test is termed a "reactor" and is **immediately placed under quarantine and retested** for confirmation of the positive result. All horses that are living within 200 yards of the positive horse are considered to be "exposed" and are also held under quarantine. These horses are retested at 30- to 60-day intervals and any additional positive horses are then removed. The quarantine is lifted only when all exposed horses are determined to be negative 60 days after the last positive horse has been removed from the premises. Humane euthanasia is the most common way in which positive horses are removed from the population due to expense, stigma of owning a positive horse and the impact of the disease on the horse itself. There are procedures and policies in place to maintain a positive horse but this requires permanent identification of the positive horse, via a brand or lip tattoo, and strict guidelines as to the premises on which the horse will live, requiring the active ongoing involvement of regulatory personnel. There are also facilities located in the United States that are designed specifically to take care of these positive horses for their natural life or until the disease progresses to a point at which they need to be humanely euthanized.

Although specific requirements and procedures for Coggins testing vary between states, the following horses MUST BE tested EIA using an USDA approved test:

- Horses being imported
- Horses attending competitions/exhibitions
- Horses being moved interstate
- Horses changing ownership
- Horses going to auctions/sales

The requirement for testing horses that remain at home is at the discretion of each state, often times not being legally required as part of horse ownership. It is generally recommended that owners check into the specific requirements of each event for which their horse will participate as well as each individual state's requirement where a Coggins test is concerned if the horse is to be moved across state lines. A Coggins test is required, as well as a health certificate, if you are going to move your horse to another state. Getting all of the correct information ahead of time can help avoid delays in transporting your horse and paperwork issues with show and exhibition personnel. Some of this information can be found on the internet (see the link below) but **check with your veterinarian for the most accurate and up-to-date information**.

As a veterinarian, I feel strongly that the only way to control this disease is by encouraging all horse owners to have their horses tested annually. Requiring a negative Coggins test for all horses that are competing or being exhibited seems to be a rather simple way to protect us all. The consequences are just too severe to take that chance with the horses that we love and respect.

A beautiful Friesian competing at a dressage event, with no worries except the dressage test... Photo courtesy of Karen Lietz©

References:

Sellon and Long, "Equine Infectious Disease," Saunder Elsevier 2007, pp213-219.

USDA APHIS, "2011 Summary of Equine Infectious Anemia Cases in the United States," USDA APHIS website.

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