

The Risk of EIA in Foals

Although it seems counter to logic, acquiring equine infectious anemia (EIA) by being alongside an infected carrier horse may be reasonably rare for a foal. Foals of EIA-positive dams with clinically inapparent infections have an excellent chance of being raised uninfected, even if they have been held together in pasture situations with high populations of mechanical vectors of EIA virus (EIAV). A number of factors contribute to this.

Foals appear to be resistant to infection, but data to support this is not available. In a study early fetuses succumbed to infection with a relatively avirulent strain of EIAV, while fetuses inoculated after 204 days of gestation produced antibodies *in utero* and were born virus- and antibody-positive.

What are the factors that make foals less likely to acquire EIA than adults? The first candidate is passively acquired colostrum antibody. Studies suggest that passively transferred antibodies against EIAV may confer a level of protection against disease but do not protect against infection.

Are foals less attractive to vectors, *i.e.*, do they exude fewer or less attractive chemicals to be perceived by the blood-feeding insects? No studies have been conducted demonstrating a statistical difference in attractiveness between foals and adult equids, but we do not know all the cues that vectors use to find their blood sources.

Once the vector perceives a host, defensive behavior of the host often dictates whether or not the vector will feed to repletion or, conversely, repel or interrupt the vector. Small to medium-sized tabanids are more likely to feed to repletion on the first host than larger tabanid species (*e.g.*, *Tabanus americanus*) provoking defensive behavior in adult horses (twitch, stomp, swish, etc.) that interrupts feeding.

This defensive behavior may be accentuated in foals that literally high-tail it away from active vector pressure, or roll in mud. Such aggressive avoidance of vectors reduces the risk of acquiring EIA in foals.

Managing foals of test-positive dams requires frequent monitoring every 14 days by laboratory tests to compare the reactions of the foal relative to that of the mare. They include official tests for EIA to compare sequential samples from the foal, and to test for evidence of active infection using RT-PCR.

The presence of antibodies before colostrum is suckled indicates active infection. At 48 hours of age, the foal should have the highest titer of passive antibodies and their decay should proceed according to the half-life of the antibodies. At its peak, the foal acquires an antibody level roughly equivalent to that of the mare.

The first hint of active infection could be a higher level of antibody than observed in the mare, a consistent titer through time, or the presence of amplifiable RNA signal indicating virus presence in the foal. The prognosis is excellent if, after 60 days of separation (≥ 200 yards) from test-positive equids, the antibody continues to decay and is accompanied by an absence of amplifiable viral RNA signal.

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