Characterization of a novel tick transmitted *Ehrlichia* sp. infection in horses

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Although no true *Ehrlichia* species is known to infect and cause overt clinical disease in horses, previous studies from our laboratory indicate that horses within the range of *Amblyomma americanum* can test positive for antibodies to an *Ehrlichia* spp. by IFA or ELISA. To determine the potential for these ticks to transmit an *Ehrlichia* spp. to horses, wild-caught *A. americanum* were placed on the naïve animals. Ticks were allowed to feed to repletion, and blood was drawn at weekly intervals for PCR and IFA testing. Additionally, *Ehrlichia*-negative *A. americanum* were placed onto the horses after the initial infestation in an attempt to xenodiagnosis and draw the circulating pathogen into a naïve tick vector. Post-feeding, the ticks were removed, DNA was extracted, and PCR was performed on the lab-reared ticks using nested primers targeting the 16S rRNA gene. Serologically, all horses tested antibody positive by day 23 post infestation and remained antibody positive until the end of the study period (Day 56). No *Ehrlichia* spp. was ever detected by PCR of whole blood. Of the 60 ticks tested thus far, four tested PCR positive. All positive ticks were from one single horse on day 21. Initial sequencing of positive samples most closely match with *Ehrlichia chaffeensis* sequences in GenBank. Further sequencing is needed to better characterize the amplified DNA. These data show that horses exposed to *A. americanum* ticks can develop antibodies to an *Ehrlichia* spp. While no clinical manifestations have currently been demonstrated, preliminary results suggest that there is potential for horses to become transiently infected with *Ehrlichia chaffeensis* and infect other ticks.

Research Grant: National Center for Veterinary Parasitology
Student Support: KSU CVM Office of Research