
INVESTIGATION OF A Q FEVER OUTBREAK IN A BREEDING HERD OF WHITE RHINOCEROS (*Ceratotherium simum*)

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Abstract

Coxiella burnetii is a highly infectious and zoonotic bacteria which can affect domestic hoofstock and wildlife worldwide.¹ This report describes the clinical presentation, diagnosis, serosurveillance, and reproductive management of a Q fever outbreak in a captive collection of white rhinoceros (*Ceratotherium simum*). A primiparous white rhinoceros gave birth to a calf overnight after approximately 16 months of gestation. The calf was found dead in the morning. Necrosuppurative placentitis with bacterial inclusions suggestive of coxiellosis was diagnosed histologically, and *C. burnetii* was identified in fetal tissues and placenta via PCR and immunohistochemistry. Another primiparous female from the same herd aborted later that year after approximately 15 months of gestation and coxiellosis was similarly diagnosed in fetal tissues. Occupational and public health safety measures were initiated and a collection-wide serologic survey was performed to detect exposure to *C. burnetii*. Eight additional white rhinoceroses were seropositive for exposure to *C. burnetii*. All exposed animals were serologically monitored until they seroconverted to a negative status. Estimates of exposure time, duration of vaginal shedding, and phase I and phase II antibody dynamics were determined retrospectively and prospectively for the two confirmed cases. Pregnant dams from an adjacent herd were closely monitored for seroconversion during the last third of their gestation. No other confirmed cases have occurred in the collection a year after the initial abortions. Q fever outbreaks could represent an emerging threat to conservation efforts and *ex situ* breeding programs of white rhinoceros.²

Key words: *Ceratotherium simum*, *Coxiella burnetii*, epidemiosurveillance, placentitis, Q fever, white rhinoceros

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