RESEARCH ABSTRACT

SWINE HEALTH

Title: PRRS Eradication pilot study. I. Performance of diagnostic assays in identifying PRRS virus carrier animals - **NPB #98-239**

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ABSTRACT

It has been recognized for several years that PRRS virus produces a persistent infection in swine and carrier animals may transmit virus for months after they were originally infected. However, PRRS virus infection has not been well characterized with respect to the duration of the carrier state and the proportion of carrier animals within a group over time. Nor do we have adequate information on the ability of current diagnostic assays to identify carriers. Therefore, the objectives of this study were to 1) characterize the proportion of PRRS virus carriers in a population over time and 2) evaluate the ability of diagnostic assays to identify persistently infected animals.

Three week-old pigs (n = 180) were obtained from a herd free of PRRS virus and randomly assigned to one of 2 treatments: inoculation with PRRS virus (n = 90) or uninoculated control (n = 90). Pigs were exposed intranasally to the North American prototype isolate ATCC VR-2332. Serum samples were collected from all pigs for virus isolation (VI) and/or serological evaluation on days –5, 0, 7, 14, 21 PI, and every 14 days thereafter until animals were euthanized. Thirty pigs from each group were euthanised on day 7 PI and 12 animals from each group on days 63, 77, 91, 98, and 105 PI. Blood samples and oropharyngeal scrapings were collected ante mortem and tissue samples (lung, lung lavage, tonsil, tracheobronchial lymph nodes) were collected post mortem. All samples were appropriately processed, coded with random numbers, and stored at -80°C until tested.

The carrier status of individual pigs was determined as follows: 1) virus isolation (VI) was attempted on oropharyngeal scrapings; 2) if oropharyngeal scrapings were VI negative, VI was performed on tissues; and 3) if tissues were VI negative, swine bioassay was conducted using tonsil homogenate. Pigs were considered to be carriers if PRRS virus was detected by either VI or swine bioassay. At day 105 PI, infectious virus was still present in 90% (10/11) of inoculated pigs. No statistically significant difference was seen in the inoculated group between carriers and non-carriers in ELISA S/P values. RT-PCR on oropharyngeal scrapings detected 80.9% of carrier animals, while RT-PCR on tonsil homogenate detected 66.1% of carriers. No false positive RT-PCR reactions were observed in samples collected from control pigs, i.e., diagnostic specificity was 100%.