RESEARCH ABSTRACT

SWINE HEALTH

.Title: Porcine Reproductive and Respiratory Syndrome Virus (PRRSV) and Porcine Respiratory Coronavirus (PRCV) Dual Infections in Nursery Pigs
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Abstract

Conventional weaned pigs were oronasally inoculated with Porcine Reproductive and Respiratory Syndrome virus (PRRSV) and Porcine Respiratory Coronavirus (PRCV) to determine if dual infections with U.S. strains of PRRSV and PRCV potentiate pathologic changes in the lungs compared to single virus infections. Eighty-one pigs were randomly assigned to treatment groups consisting of PRRSV-only, PRCV-only, PRCV followed by PRRSV (PRCV□PRRS), and PRRSV followed by PRCV (PRRS□PRCV), and mock-inoculated negative controls. Two or three pigs per group were necropsied at 2, 4, 6, 8, 10, 14 and 21 days post inoculation (DPI). All pigs inoculated with either or both viruses became infected, as determined by virus shedding, PRRSV viremia and seroconversion. Dual infections resulted in increased clinical disease characterized by greater degrees of lethargy, anorexia and dyspnea. Transient pyrexia and tachypnea were noted in all treatment groups. Mean percent body weight gains of pigs with dual infections were significantly depressed at several DPI compared to those of pigs with single virus infections or controls. Shedding of each virus from nasal and tonsil secretions was detected more frequently and in more pigs, and duration of PRRSV viremia was greatest, with dual infections. Rectal shedding of PRCV was observed only in pigs with PRRS□PRCV for one day. Overall mean lung consolidation and histologic lesion scores of pigs with PRRS□PRCV (and at certain DPI for the latter score) were significantly greater than those of PRCV-only and negative-control pigs, and were measurably, but not significantly, greater than those of PRRSV-only pigs. Although findings from this study indicate that dual infection with PRRSV followed by PRCV induced significantly greater lung lesions, grossly and microscopically, in comparison to single PRCV infection, the effects appeared to be additive rather than synergistic. This was evident by the fact that the sums of overall gross and overall microscopic lung lesion scores resulting from single virus infections were approximately equal to the scores induced by PRRS□PRCV infection. Both dual infections, particularly PRRSV followed by PRCV, resulted in enhanced clinical disease, PRRSV viremia, clinical shedding of each virus and depressed growth performance, in comparison to single virus infections. Thus, concurrent infections with these two viruses (even mild strains like ones in this study) are likely to increase susceptibility of pigs under field conditions to other agents of the Porcine Respiratory Disease Complex or enhance the disease severity of these agents. Furthermore, immunohistochemistry using a pool of monoclonal antibodies was successful at detecting PRCV antigen in the lungs of infected nursery pigs.