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Studies for the Pathogenesis and Pathogenicity for the Porcine Circovirus Type 2 Korean Isolates in Weaned Pigs

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Introduction

PMWS is characterised by weight loss and dyspnea combined with pathological findings of interstitial pneumonia and generalized enlarged lymph nodes. Typical histological lesions include multifocal granulomatous pneumonia, and lymphocyte depletion and multinucleated giant cell formation in lymph nodes[1,2].

A number of studies have indicated that infection with PCV2 alone is not sufficient to induce clinical PMWS. Several inoculation studies using PCV2 alone have resulted in asymptomatic infection with mild to moderate histopathologic lesions[4]. In contrast, dual infectin with PCV2 and porcine parvovirus(PPV) or porcine reproductive and respiratory syndrome virus(PRRSV) potentiates the replication and distrbution of PCV2 and induces clinical disease in addition to more severe histopathological lesions[1]. Recently, it has been demonstrated by Krakowka et al.[3] that activation of the immune system is a key component of the pathogenesis of PCV2-associated PMWS in gnotobiotic pigs.

The objective of the present study was to investigate the significance of immunostimulator /or immunosuppressor, and dual/or triple infection(PPV, PRRSV) on the development of PMWS in 3-week-old conventional piglets infected with PCV2 immediately after weaning.

Materials and Methods

Virus : The virus inoculum was prepared by a Korean field isolate(01D368) of PCV2, PRRSV(03D026) and PPV(wild type).

Piglets and experimental design : Thirty six, 3-week-old PRRSV- and PCV2-seronegative piglets were randomly divided into six groups, comprising 6 piglets each. Group A: Control, Group B: PCV2, Group C: PCV2+prednisolone (immunosuppressor), Group D: PCV2+Ultracorn (immunostimulator), Group E: PCV2+PRRSV, Group F: PCV2+PPV+PRRSV, respectively.

Clinical signs were recored daily. The piglets were euthanized on PIDs 21 and 42 for each group. Tissue samples were collected at necropsy for PCR, histological examination and immunohistochemistry, respectively.

Results and Discussion

Pigs of dual/or triple infected group had the clincal signs such as growth retardation, rough hair-coat, cough and diarrhea. Grossly, they were observed fail to collapse, consolidation, and rubbery and generalized enlarged lymph nodes. Histologic lesions were interstitial pneumonia, lymphohistiocytic cuffing, peribronchiolar fibroplasia, lymphoid depletion of lymphoid organs and specific PCV2 IC/IB. These lesions were characterized by pigs inoculated with PCV2/PPV/PRRSV.

Reference

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