Reproduction of postweaning multisystemic wasting syndrome (PMWS) in immunostimulated and non-immunostimulated 3-week-old piglets experimentally infected with porcine circovirus type 2 (PCV2) - DTU Orbit (30/12/2018)

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Postweaning multisystemic wasting syndrome (PMWS) in swine is causally associated with the newly recognised pathogen, porcine circovirus type 2 (PCV2). In this study, 3-week-old SPF PCV2-seronegative piglets were inoculated intranasally with PCV2. The effect of immunostimulation on the induction of PMWS was investigated by immunisation with keyhole limpet hemocyanin (KLH) emulsified in incomplete Freund’s adjuvant. The study was terminated 5 weeks after inoculation. While disease was not observed in the age-matched controls, two out of five non-immunised PCV2-infected piglets died on postinoculation day (PID) 21, and one was euthanized on PID 25 in moribund condition. These animals had appeared lethargic with persistent fever from PID 12 onwards. The euthanized pig appeared smaller than littermates and suffered from jaundice. At postmortem examination, gastric ulceration, icterus, and liver and thymus atrophy were observed. Furthermore, histological lesions of degenerating hepatocytes and hepatitis in combination with lymphoid depletion and syncytial cells in lymph nodes were consistent with the diagnosis of PMWS. One out of five immunostimulated PCV2-infected piglets was euthanized on PID 22 with convulsions after a period with wasting. This pig was lethargic from PID 14 onwards with persistent fever from PID 8 and transient dyspnoea. No differences in clinical signs, gross pathologic or histological findings were observed for the remaining non-immunostimulated and immunostimulated PCV2-infected piglets. All 10 PCV2-inoculated piglets seroconverted to PCV2 within 14 days after inoculation. By virus isolation, quantitative polymerase chain reaction (Q-PCR), and immunostaining of cryostat sections, it was demonstrated that lymphoid tissue contained abundant PCV2 antigen. Viral DNA load in serum samples was assessed by Q-PCR. All four PMWS-affected piglets had high levels of PCV2 DNA in serum, suggesting that there was a correlation between high levels of viral DNA in serum and the development of PMWS. In conclusion, infection with PCV2 caused PMWS in SPF piglets, however, the immunostimulation did not seem to play a critical role.

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