Detection of Porcine Circovirus Type 2 and Viral Replication by In Situ Hybridization in Primary Lymphoid Organs From Naturally and Experimentally Infected Pigs

Porcine circovirus type 2 (PCV2) infection is the cause of postweaning multisystemic wasting syndrome (PMWS). It has been speculated whether cell types permissive of replication are found in the primary lymphoid organs and whether infection of these tissues has an important role in the pathogenesis of PMWS. The aim of this study was to determine if primary lymphoid organ cells support viral replication during PCV2 infection. This was done by histopathological examination of thymus and bone marrow from pigs experimentally inoculated with PCV2 (n = 24), mock-infected pigs (n = 12), pigs naturally affected by PMWS (n = 33), and age-matched healthy control animals (n = 29). In situ hybridization (ISH) techniques were used to detect PCV2 nucleic acid irrespective of replicative status (complementary probe, CP) or to detect only the replicative form of the virus (replicative form probe, RFP). PCV2 was not detected in the experimentally PCV2-inoculated pigs or the control animals. Among the PMWS-affected pigs, 19 of 20 (95%) thymuses were positive for PCV2 by CP ISH, and 7 of 19 (37%) of these also supported viral replication. By CP ISH, PCV2 was detected in 16 of 33 (48%) bone marrow samples, and 5 of 16 (31%) of these also supported replication. The 2 ISH probes labeled the same cell types, which were histiocytes in both organs and lymphocytes in thymus. The RFP labeled fewer cells than the CP. Thus, PCV2 nucleic acids and replication were found in bone marrow and thymus of PMWS-affected pigs, but there was no evidence that primary lymphoid organ cells are major supporters of PCV2 replication.