Seroprevalence of PCV2 in Canadian Swine Herds

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Introduction

Porcine circovirus type 2 (PCV2) infection is ubiquitous in the swine population and is associated with multiple disease complexes in most major pork producing countries (1). This study was conducted using cross-sectional serological profiling to determine PCV2 infection dynamics in different herd types in the major swine producing provinces in Canada.

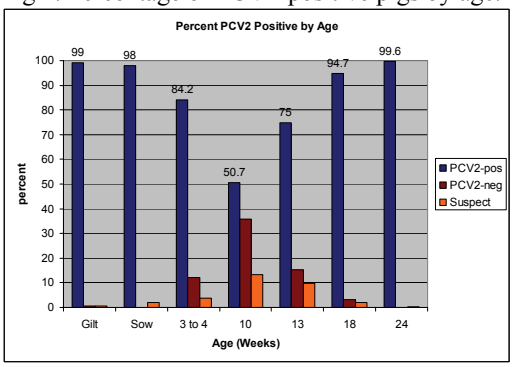
Material and Methods

Sera collected from 50 animals in 40 herds in the 5 major Canadian swine rearing provinces were analyzed for PCV2 antibodies (Abs) using the Iowa State University Elisa test. From each herd, 10 sera came from breeders (5 gilts, 5 sows of varying parities), 5 sera from pigs at weaning/ start of nursery (3-4 weeks old) (SN), 10 sera each from pigs at end of nursery (8-10 weeks) (EN), early finisher (13 weeks) (EN) and mid-finisher (18 weeks) (MF), and 5 sera from pigs in late finishing (22-24 weeks old). In a few herds more samples than the targeted number were tested. Ten herds each were included from Quebec, Ontario and Manitoba, and 5 herds each from Saskatchewan and Alberta. Multi-site systems and farrow-to-finish herds were about equally represented. Questionnaire data on production and herd disease status were collected from each herd. None of the herds had been vaccinated against PCV2; 25 herds were PCVD-active and 15 were PCVD-nonactive.

Results

Overall, 83.2% of pigs in the 40 herds sampled serologically across Canada tested positive for PCV2; 11.8 % tested negative, 5.4% were suspect. Not surprisingly, 100% of herds were seropositive for PCV2. The percent of animals serologically positive was similar in all provinces, ranging from 78.8% in Quebec to 86% in Alberta. Positives by age group were significantly less for EN (8-10 weeks old) and EF pigs (13 weeks old) than pigs in any other age group (Fig 1). This pattern holds true in all provinces. Average SP ratios for pigs from PCVD-active herds were consistently higher than from PCVD-nonactive herds for SN, EN, EF and MF age groups. Of particular interest are the results obtained for 24-week-old pigs (233 positives, 1 suspect), gilts (208 positives, 1 suspect, 1 negative) and sows (200 positives, 4 suspects). PCV2 seroprevalence was not significantly different for 3-site/ multi-site systems versus farrow-to-finish herds.

Fig 1. Percentage of PCV2-positive pigs by age.



Discussion

This study confirms the high level of PCV2 infection in various ages of pigs across Canada. These seroprevalence levels were expected, and are similar to results of surveys done in other countries (1). The significantly lower percentage of positive 8-10 and 13-week-old pigs pinpoints a transition period between decaying passive maternal Abs and active seroconversion to PCV2 infection. Why S/P ratios were higher in PCVD-active herds is unknown, but could be a response to an earlier and/or more significant challenge. Virtually all gilts, sows and 24-week-old pigs were found seropositive or suspect. Since this survey involved mainly commercial herds, it is not known if the results would have been similar in seedstock production herds. However, to our knowledge none of the Canadian herds tested so far, and this includes many seedstock herds, have been seronegative to PCV2. This suggests that most gilts entering commercial herds are already seropositive, which might have a bearing on decisions of possible PCV2 vaccination of gilts and sows. These results must be balanced with reports of rare but significant reproductive failures associated with PCV2 in Canada in past years, which have occurred in startup herds and were thought to be associated with the introduction of a mixture of PCV2 positive and negative animals (2).

References

1. Opriessnig T et al. 2007. JVDI 19 : 591-615.
2. Sanford SE. 2002. Proc 17th IPVS Congr. 171.