





Frequency of PCV-2 viremia in nursery piglets from a Spanish swine integration system in 2020 and 2022 considering PRRSV infection status

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Key points:

- The detection frequency of porcine circovirus 2 (PCV-2) and porcine reproductive and respiratory syndrome virus (PRRSV) increased from 3-4 weeks of age to the end of the nursery period, and from 2020 to 2022.
- The ELISA S/P ratio tended to be lower when PCV-2 viremia was detected at more than one sampling time-point in a farm, compared to farms in which viremia was not detected or detected in only one sampling time-point.

Introduction

Porcine circovirus 2 (PCV-2) poses a significant economic threat to the swine industry. Despite PCV-2 vaccines effectiveness, coinfections, particularly with PRRSV, can exacerbate disease severity. This cross-sectional study assessed PCV-2 antibody levels in weaned piglets and measured PCV-2 and PRRSV viremia from a Spanish swine integration system in 2020 and 2022.



Figure 1. Scheme of the study design. PCV-2: porcine circovirus 2; PRRSV: porcine reproductive and respiratory syndrome virus; woa: weeks of age.

Materials and methods

The study design is described in *Figure 1*. PCV-2 antibody levels were measured at weaning by means of a commercial ELISA. Infection status evolution of PCV-2 and PRRSV was monitored by qPCR/RT-qPCR at weaning, 6 and 9 weeks. A farm was considered PCV-2 and/or PRRSV positive when at least one pool was positive in 48 farms at 2020 and in 28 of them at 2022. Farms were grouped considering their PCV-2 virological status in both years (*Figure 2*).

Scenario	Farms	Characteristics
POS20 / POS22	n=4	PCV-2 qPCR positive farms in both years
POS20 / NEG22	n=1	PCV-2 qPCR positive farm in 2020 but negative in 2022
NEG20 / POS22	n=8	PCV-2 qPCR negative farms in 2020 but positive in 2022
NEG20 / NEG22	n=15	PCV-2 qPCR negative farms in both years

Figure 2. Classification of the 28 farms tested both years into four different epidemiological scenarios, considering the PCV-2 virological results.

Results and discussion

The frequency of PCV-2 detection increased from 3-4 weeks of age to the end of the nursery period in both years, 2020 (2.1 to 10.4%) and 2022 (7.1 to 39.3%). Co-infections with PCV-2 and PRRSV were detected in a significant proportion of PRRSV positive farms (15% in 2020 and 60% in 2022); such increase was likely associated to the emergence of highly virulent PRRSV strains across Spain, mainly in the geographic area of sampling (Northeastern Spain).

PCV-2 ELISA S/P ratios at weaning were lower in PCV-2 qPCR positive farms at different sampling time-points compared to PCV-2 qPCR negative ones. Such result might be linked to a reduced infectious pressure over time due to continuous piglet vaccination, resulting in an overall decline in herd immunity and potentially facilitating early infections. Farms that transitioned from being PCV-2 negative in 2020 to positive in 2022 exhibited a significant increase in PRRSV detection and a decrease in PCV-2 antibody levels, which was not observed in other scenarios.

These findings highlight the need for continuous monitoring and to adapt measures to ensure effective PCV-2 vaccination practices, particularly in the context of early PCV-2 and PRRSV co-infections.

This article is available at: https://doi.org/10.1186/s40813-024-00354-0



