Assessment of vertical transmission by detection of PCV2 immediately after farrowing in Spain

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INTRODUCTION

Blood sampling just after farrowing has been commonly used to assess virus vertical transmission.
Several sample types such as pre-suckle piglet serum, colostrum, and placental umbilical cord serum (PUCS) have been described to determine sow herd PCV2 stability[1,2,3,4].
The objective of this study was to assess PCV2 qPCR information from such serum samples in several commercial farms in Spain.

MATERIALS AND METHODS

Overall 590 individual serum samples were collected from different sow herds all over Spain. These sources had suboptimal growing parameters in the downstream flows such as, increased mortality, culls rate and low feed efficiency. All of these farms were PRRSv positive and had implemented piglet vaccination for PCV2 before the study.
In all herds, two placental umbilical cords sample (PUCS) from each placenta were milked out into a single blood tube to create two samples per placenta.
The sampling protocol was uniformly distributed according to sow parity. Three groups were defined: 1 – 2 parities, 3 – 4 parities and 5 or more parties.
Individual qPCV2 PCR was run for each sample using Qiagen GmbH (Hilden, Germany) extraction and amplification commercial kit combined with in-house primers.
The prevalence was calculated using the PUCS sample as the experimental unit. The blood viral load (qPCR) was evaluated among positive samples expressed in exponential value but transformed to Log10 for comparison purposes.
The ANOVA was run to analyze the effect of the parities on prevalence and viral load.
Data has been analyzed using SPSS v. 15.0 (SPSS Inc., Chicago, IL, USA) statistical software.

RESULTS

The virus was detected in 296 from a total of 590 samples. This means that the prevalence of PCV2 per pig was 50,2 % among all the farms.
Regarding the blood viral load, the results showed that the mean of the virus amount was 0.63 ± 0.36 ($x10^8$) equal to 5.95 ± 0.06 in a LOG10 base.
The qPCR distribution by sow parities are summarized in the figure 1.
The viral load in the 3 – 4 parities group is significantly higher compared to 5 or more farrows.

Figure 1: PCV2 Viral load distribution by farrow.

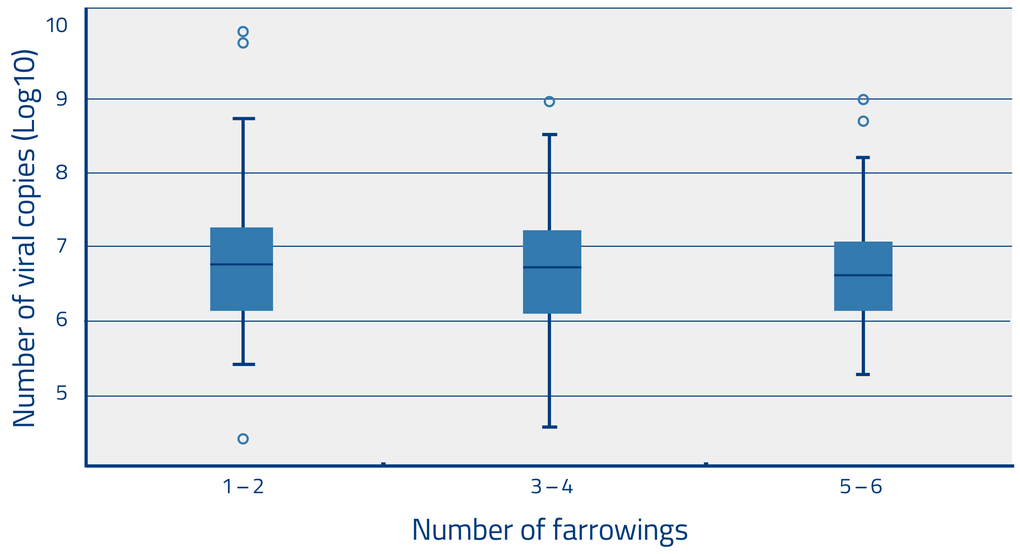

Table 1: Prevalence in PUCS by sow parities groups.

Parities	1 – 2 (n = 202)	3 – 4 (n = 186)	5 – + (n = 203)	p-value
Prevalence (%)	48.51ab	43.55a	57.64b	P = 0.018

Statistical significance value, a,b: p<0.05.

The prevalence was significantly higher in sows with 5 or more parities.

DISCUSSION AND CONCLUSION

This case report demonstrates that for PCV2 vertical transmission takes place in Spanish sow herds.
PUCS is a good specimen to detect vertical transmission which is a consequence of PCV2 instability of the breeding herd. This has been repeatedly shown in previous studies in other countries[1,2,3,4,5]. The infection chain concept and the whole herd approach, including both vaccination of piglets and sows with PCV2 vaccines, should be considered to control PCV2 in Spanish swine farms.

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