

Impact of PCV2 viremia in vaccinated and non-vaccinated pigs

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Objective

Porcine circovirus type 2 (PCV2) vaccines have proven to be very effective in protecting pigs against the negative impact of PCV2 infection. PCV2 viremia was used in initial vaccine efficacy trials because it had been established that non-vaccinated pigs with a high viral load are more likely to develop porcine circovirus associated disease (PCVAD). The objective of this study was to determine if PCV2 viremia is a useful tool to assess vaccine efficacy in field studies.

Materials and methods

The study included 4 different sites in Europe (N. Germany, S. Germany, France, UK) with different types of co-infections. Three of the four sites were positive for PRRS and *Mycoplasma hyopneumoniae*.¹⁻⁴ Piglets were injected with a single dose (1 ml) of Ingelvac CircoFLEX® (Boehringer Ingelheim Vetmedica, Inc., St Joseph, MO)(n=2854) or placebo (n=2748) at 2 to 4 weeks of age. A subset of pigs were periodically bled (490 vaccinates, 475 controls) and tested by qPCR for PCV2 viremia and viral load. Pigs were individually weighed at the start and end of the trial to determine average daily gain (ADG).

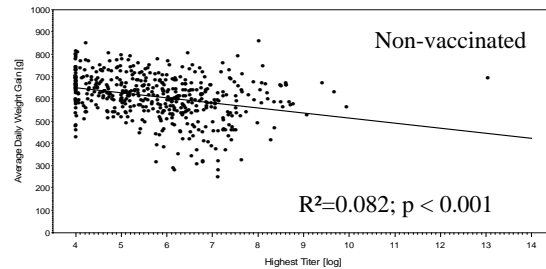
A linear regression model was used to test for correlation between the highest viral load (genomic equivalents/ml serum) found in each individual animal during the trial and its ADG (SAS System, SAS Inst., Cary, NC, v8.2).

Results

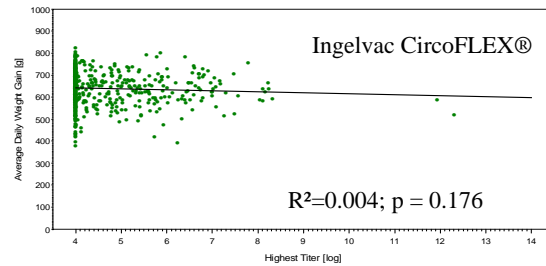
In all 4 study sites the number of viremic animals, duration of viremia and viral load were significantly reduced in vaccinated animals compared to the control group, as reported earlier.¹⁻⁴ A significant, though weak, negative correlation between the highest viral load and ADG was detected in non-vaccinated animals ($p < 0.001$, Figure 1a). In contrast, no correlation was found in the vaccinated pigs ($p = 0.176$, Figure 1b).

Fig. 1: Correlation of viral load and ADG

a) Significant correlation in control group (n=475).



b) No correlation in vaccinated group (n=490).



Highest titer (x-axis) shown as logs of PCV2 genomic equivalents per ml of serum.

Discussion and conclusion

Residual viremia has been found in vaccinated animals in various studies, independent of the PCV2 vaccine used.¹⁻⁶ This study confirmed the findings of Diaz et al⁷ that residual PCV2 viremia does not affect the performance of PCV2 vaccinated pigs, in contrast to the situation in non-vaccinated animals. This is consistent with a trial that showed no relation between the number of viremic pigs and the mortality rate in groups vaccinated with different vaccines.⁶ PCV2 viremia might be a useful parameter when comparing vaccinated and non-vaccinated animals but not when assessing efficacy among vaccinated animals.

References

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