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INVESTIGATION OF PCV2-STATUS IN DANISH HERDS - ONE YEAR LONGITUDINAL STUDY

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Introduction

Based on the promising results of using real time PCR for the diagnosis of typical PMWS at the herd level, several diagnosticians now use PCV2 serum profiles to clarify whether a particular herd suffers from PCVD. Typically, the PCV2 copy number is measured in 5-10 blood samples from each of 3-5 different age groups of growing pigs (1). If the appearance of clinical signs of disease coincides with moderate to severe viraemia (>10^{5-6} copies of PCV2/ml serum in a relevant number of samples), the PCVD diagnosis is considered supported.

In 2009, the diagnostic laboratory at the National Veterinary Institute (NVI) of Denmark completed PCV2 profiles from 196 herds, assumed to be sampled because of a suspicion of PCVD. In 28% of the herds, the level of PCV2 in serum was below the detection limit of the assay (<10^3 copies/ml) in all pigs. This was in contrast to the results of studies performed five to six years ago, which showed that the herd prevalence of PCV2 in Denmark was above 90%. Hence, the herd prevalence of PCV2 might have decreased, or the cross-sectional herd profiles might not always reveal the PCV2 infection due to fluctuation in the level of PCV2 circulation over time.

The objective of this study was to clarify, whether the negative PCV2 profiles mean that some herds, at this stage of the PCV2 "epidemic", are able to clear the infection or whether the negative profiles are due to a temporal fluctuation in the PCV2 infection pressure at the herd level.

Materials and methods

Based on diagnostic submissions to NVI, eight finishing herds with a negative PCV2 profile and willingness to participate was selected for further investigations. The PCV2 profiles were repeated, and two herds with a negative profile at this 2nd testing were included in the study.

Herd 1 was a finishing herd buying 1000 PCV2-vaccinated (Ingelvac CircoFLEX®) pigs every 7th week. All pigs were born from sows vaccinated with Ingelvac CircoFLEX®. One batch of pigs (May) was not vaccinated. Herd 2 was a farrow-to-finish herd that do not vaccinate against PCV2.

The included herds were blood sampled every second month during at least one year, i.e. six samplings per year. At each sampling, blood samples were collected from each of 10 pigs at 30, 50 and 100 kg live weight. In herd 1, only 2 age groups of pigs were present at a time, therefore samples were taken from 45 and 100 kg pigs. This herd has been tested 8 times. The level of PCV2 was quantitated by testing serum samples using quantitative real time PCR at NVI (1).

Results

All samples taken in Herd 1, except samples from May, have been negative when tested for PCV2 in PCR. In May, samples from both Young and Old pigs were positive in PCR (table 1). In Herd 2, the first two samplings were negative and the last four were PCV2 positive in PCR.

Table 1: PCV2 virus load in serum samples from different age groups of pigs in herd 1 (PCV2 copies/ml)

	Young pigs (45 kg)	Old pigs (100 kg)
January	neg*	neg
March	neg	neg
May	10^4	10^7
June	neg	neg
August	neg	neg
October	neg	neg
November	neg	neg
January	neg	neg

*Negative: The level of PCV2 in serum was below the detection limit of the assay (<10^3copies/ml)

Discussion

The detection of PCV2 in herd 1 seen in May might be due to the missing PCV2 vaccination of this batch of pigs, but an acute PRRSV-US infection at the same time may also have influenced the PCV2 levels. After the reintroduction of the PCV2 vaccine, the PCV2 level was again below the detectable level in the PCR, although PRRSV continued to circulate in the herd.

The results from herd 2 suggested that the negative profile found in Danish herds may be explained by temporal fluctuation in the PCV2 level and not due to PCV2-free herds. However, as seen in herd 1, PCV2 vaccination of the piglets might prevent fluctuation in the PCV2 level when performed continuously, also during acute PRRSV-US infection.

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References

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