Impact of co-infection with PRRSV on duration of PCV2 viremia in field conditions

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Introduction

Porcine reproductive and respiratory syndrome virus (PRRS) and porcine circovirus type 2 (PCV2) infections cause serious economic losses to the global swine industry (1, 2). It has been reported that PRRSV enhance and prolong PCV2 replication and shedding in co-infected pigs what may result in enhanced respiratory disease and severity of associated lesions (2, 3).
The objective of this study was to determine if co-infection with PRRSV and management practices influence the duration of PCV2 viremia in field conditions.

Materials and Methods

The study was carried out in 22 polish farms with different size of sow herds (80-1100) and production systems. Serum samples were collected cross-sectionally in 2 week intervals from several age groups of swine. Samples were tested with ELISA for the presence of antibodies specific to PRRSV (IDEXX) and PCV2 (Ingenasa). Real-time (RT-)PCR was used for detection of PRRSV (Tetracore) and PCV2 (Opressnig et al. 2003) viral genetic material.

Results

Seventeen examined farms were infected with PRRSV (table 1). Infection with PCV2 was confirmed in all farms by PCR/serology or serology only (No. 9, 12, 14, 16). In 11 PRRSV-positive farms co-infections with both pathogens were detected in the same age groups (No 1-8 and 19-21).
In herds 1-8 where health status was described as poor and co-infection with PRRSV was identified, PCV2 viremia lasted from 6 to 16 weeks. On the other hand, in farms 9-13 with similar poor health/biosecurity status but no PRRSV/PCV2 co-infection PCV2 viremia was not detected or lasted up to 6 weeks.
In 3 herds with satisfactory health/biosecurity status viremia lasted 6 weeks or longer. Two of those herds (No 20 and 21) were co-infected with PRRSV. In the other herds with similar conditions PCV2 viremia was either not detected (No 14) or short.

Conclusions and Discussion

In herds with poor biosecurity and the presence of PRRSV co-infections, vaccination against PCV2 did not reduce the duration of PCV2 viremia. PCV2 viremia was previously identified as a factor affecting growth pigs even in herds with subclinical PCV2 infections (1). Therefore prolonged viremia may affect farm productivity. The results of this study clearly show that proper management practices are very important in reducing the impact of PCV2 on the health status of the herd, even in herds where PCV2 immunoprophylaxis is already implemented.

Table 1. Summary results.

Farm no.	Duration of PRRSV viremia (weeks)	Duration of PRRSV/PCV2 co-infection (weeks)	Duration of PCV2 viremia (weeks)	PCV2 vaccination	Health/biosecurity status
1	2	2	14	+	very poor
2	8	6	6	+	very poor
3	9	9	13	+	poor
4	10	10	10	+	poor
5	7	3	9	-	poor
6	8	8	14	+	poor
7	8	8	16	+	poor
8	2	2	13	-	poor
9	8	nd	nd	+	very poor
10	nd*	nd	6	+	poor
11	nd	nd	6	+	very poor
12	11	nd	nd	+	poor
13	nd	nd	from 20**	+	poor
14	12	nd	nd	+	satisfactory
15	6	nd	1***	+	satisfactory
16	15	nd	nd	+	satisfactory
17	nd	nd	7	+	satisfactory
18	nd	nd	nd	+	satisfactory
19	8	2	2	-	satisfactory
20	12	6	6	-	satisfactory
21	12	12	12	-	satisfactory
22	9	nd	from 23**	-	satisfactory

*not detected, ** last sampling, ***one age group positive in PCR

Acknowledgements

The study was funded by PoRRSCon (FP7 245141), and the grant from Polish Ministry of Science and Higher Education No. 808/N-COST/2010/0.

References

1. Fraile L et al. 2012. Vet Microbiol. 28, 161:229-34.
2. Sinha A et al. 2011. Vet Microbiol. 152: 235-246.
3. Stadejek T. et al. 2011. Vet Rec. 169(17):441.