

RISK FACTORS FOR PORCINE CIRCOVIRUS DISEASE (PCVD) IN MALAYSIA

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Introduction

PCVD caused by Porcine Circovirus Type 2 (PCV2) has been diagnosed in pig farms in Malaysia based on a combination of clinical syndrome, serology, gross and histopathological lesions as well as detection of PCV2 viral antigen by PCR methods (1). The objective of this survey was to identify the risk factors associated with PCVD in pig farms in Malaysia where the disease is diagnosed.

Materials and Methods

A total of 40 commercial pig farms in Malaysia of which 37 were previously identified as having clinical PCVD and 3 farms where the disease was not detected clinically were selected for this survey. A standardized survey form based on Madec 20-point recommendations and additional factors were used to interview the producers with the assistance of field veterinarians. The survey covered 1. herd characteristics, 2. vaccination programs for breeders and porker, 3. clinical and gross pathology scoring of sick animals, 4. mortality rates before and during PCVD episodes in the farm. and 5. aspects of farm management such as: stocking density, animals handling, limitation of fostering in pre-weaning stage, source of breeders, disinfection and condition of farm facilities available for different stage of production namely pre-wean, post-weaning, grower-to-finisher, and breeder stage. A scoring system from 1 (poor) to 5 (very good) was used by field veterinarians to record their findings in the survey form. On completion, the data were compiled using Microsoft Excel worksheet to calculate the mean scores. A mean score ≤ 3 were considered to be below average. Samples of organs from 2-3 pigs per farm which included lymph nodes (mesenteric, inguinal, bronchial, sub-mandibular), lung, liver, kidney, tonsils, spleen, feces and pooled organs were collected and screened for PCV2 by the qualitative conventional PCR method described (1).

Results and Discussion

The farms surveyed had a mean sow inventory of 711 ± 730 with a minimum of 70 and a maximum of 3500 sows. The sow/boar ratio amongst farms was 32 ± 17 with 90% of the farms practicing artificial insemination. The frequency of vaccination for classical swine fever, Aujeszky's disease, atrophic rhinitis, mycoplasma and parvovirus in breeder animals were 100, 98, 58, 25 and 18% respectively. The frequency of vaccination for classical swine fever, Aujeszky's disease, mycoplasma and PRRS in weaner-grower pigs were 100, 43, 55 and 3% respectively.

The records from producers showed that with the advent of PCVD in their farms there were 10.7% and 95.6% increase in pre-weaning and post-weaning mortality respectively compared pre-PCVD. Clinical PCVD affects primarily post-weaned pigs with primary clinical signs observed such as wasting, diarrhoea, lymph nodes enlargement, paleness, jaundice and respiratory distress. The gross pathology observed in PCVD affected animals were primarily enlargement and inflammation at inguinal,

mesenteric and bronchial lymph nodes, lungs lesion, and anasarca or serous atrophy of fat. PCV2 were demonstrated in various tissues using PCR method in all of the 37 farms where PCVD were observed (Table 1).

Table 1: Demonstration of PCV2 positives in organs with PCR method in PCVD positive farms

Organ tested	% of PCV2 positive samples
Lymph nodes – inguinal	55.6%
Lymph nodes – mesenteric	44.2%
Lymph nodes – bronchial	42.5%
Lymph nodes – sub-mandibular	62.5%
Lung	43.5%
Liver	41.5%
Kidney	36.0%
Tonsil	36.1%
Spleen	40.4%
Feces	61.0%
Pooled organs	75.0%

In these farms where PCVD and PCV2 were demonstrated, areas that were found with mean score less than or equal to 3 are a) pig-to-pig contact, b) farm hygiene and husbandry practices, c) stocking density, and d) animals nutrition (Table 2). The survey findings are in agreement with the findings that stress factors, overcrowding, mixing of pigs can potentially cause an increase of PCVD incidence in pigs (2,3).

Table 2: Scoring of Management Practices of weaned pigs in farms with PCVD

Management Practice	Mean score
Mixing of pigs 5- Never; 3- Once; 2- Twice; 1- >3 times	2.5 ± 0.9
Increase space at feeder 5- >7cm/pig; 3- >5cm/pig; 1- <3cm/pig	2.9 ± 0.7
Small pens and solid partitions 5- small-closed pens, 3- averaged size pens- open/semi-open partition 1-large-open partition	3.0 ± 0.9
Empty, clean and disinfect, sticking to all-in-all-out every batch 5- Rest for 7 days; 3- Rest 3 days; 1- Rest <2 days	3.1 ± 0.7
Lower stocking density 5- >0.33 m ² /pig; 3- 0.28 to 0.30 m ² /pig; 1- <0.20 m ² /pig	3.1 ± 0.8
Nutrition – mycotoxin control 5- Always, 3- Sometimes, 1- Never	3.7 ± 0.8

References

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