First Assessment of Weeks-to-Negative Processing Fluids in Breeding Herds after a Senecavirus A Outbreak

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Background

Senecavirus A (SVA) outbreaks have been reported in various countries, causing economic losses in the swine industry due to reduced productivity and trade restrictions. A study was designed to estimate the average number of weeks processing fluids (PF) remain SVA-positive after an SVA outbreak.

Methods and Results

The study involved collecting PF from 10 farrow-to-wean herds that had experienced an SVA outbreak. These fluids were collected weekly and tested for SVA using real-time reverse transcription-polymerase chair reaction (RT-rtPCR) assays.

The analysis of PF RT-rtPCR results revealed varying time intervals to achieve negative PF across different herds (Figure 1). The number of SVA-positive weeks post-outbreak ranged from 1 to 21, with an average of 11.8 (95% CI– 8.1, 15.5) weeks across all ten sow farm The study also identified potential factors influencing time to negative PF intervals, including herd size, biosecurity measures, and virus-shedding patterns. Additionally, fluctuations in SVA RNA levels in PF over time were observed, indicating dynamic viral shedding within breeding herds post-outbreak.

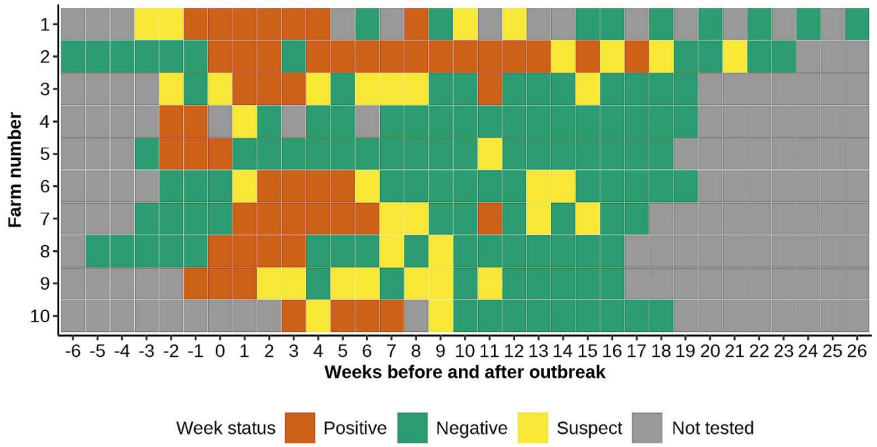

Figure 1. Weekly PF SVA status in 10 sow farms before and after outbreak detection. Red = At least one PF sample had an RT-rtPCR Ct value below 36. Yellow = At least one PF sample had an RT-rtPCR Ct from 36 to 40. Green = All tested samples were negative. Grey = No samples were tested. The suspect results were considered positive in this study, but they are shown here to visualize the variation in results over time.

Discussion

The findings highlight the importance of monitoring processing fluids in breeding herds following an SVA outbreak to assess the duration of viral shedding and the effectiveness of control measures. The variation in time intervals to negative PF among herds underscores the complexity of SVA dynamics and the need for tailored management strategies. Factors such as herd size and biosecurity practices may influence the persistence of SVA in processing fluids, emphasizing the role of proactive biosecurity measures in containing SVA outbreaks.

Conclusions

Understanding the kinetics of SVA shedding in breeding herds is crucial for developing effective control and prevention strategies. The identification of prolonged weeks-to-negative PF intervals in some herds suggests the potential for continued viral circulation, highlighting the need for sustained surveillance and control efforts. Early detection of SVA-positive processing fluids can facilitate timely intervention to minimize the spread of the virus and mitigate economic losses in the swine industry.

The full paper is available at https://porcinehealthmanagement.biomedcentral.com/articles/10.1186/s40813-023-00353-7