Presentation: Does systemic antibody play a role in the protection of piglets against PEDV?

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Abstract: Many questions remain regarding the role of maternal anti-PEDV antibody in the protection of neonates against PEDV. This experiment focused on the impact of maternal (colostral) antibody on the course of PEDV replication and neonatal health using “passive transfer model”.

**METHODS**

6 PEDV IFA-negative sows were acquired from commercial swine farms at ~110 days of gestation. After farrowing, piglets (n=62; 2-to-3 days of age) were intraperitoneally (IP) administered 1 of 6 levels of concentrated PEDV antibody sufficient to achieve circulating FFN antibody titers of (<1:8, 1:5.3, 1:6.1, 1:8, 1:17.1, and 1:32). 24 h later, piglets were inoculated with PEDV and observed through 14 days. Piglets remained on the dam throughout the study.

Clinical outcomes, sow milk, piglet fecal samples, body weight, and body temperature were collected on daily basis and serum samples were collected from piglets at DPI -1, 0, and 14, or at the time of humane euthanasia. Fecal samples were tested by PEDV rRT-PCR. Piglet serum samples were tested for PEDV IgG and IgA (ELISA) and for PEDV FFN antibody. The effects of treatment on the outcomes measured were analyzed using repeated measures ANOVA.

**RESULTS**

PEDV circulating antibody had no effect on piglet growth and duration or viral concentration of PEDV shedding in feces.

The presence of antibody modified the body temperature response in infected piglets. The treated piglets recovered from hypothermia by DPI 4, whereas negative control piglets recovered on DPI 7.

Negative control pigs had the lowest survival rate (9.1% vs 20-50% in treated groups).

The presence of circulating anti-PEDV antibody suppressed the humoral response of inoculated piglets, i.e., piglets that received passive antibody had significantly lower levels of antibody at 14 DPI as measured by FFN, PEDV IgA ELISA, and PEDV IgG ELISA tests.

**CONCLUSION**

The results suggested that circulating antibody can alter some parameters of PEDV infection in neonates (body temperature response, increased survivability, inhibited the humoral response), but not others (piglets' growth, duration of PEDV fecal shedding). These results have implications for the management of PEDV in commercial herds.