

Why do neonatal piglets get diarrhoea?

Introduction

Diarrhoea during the first week of life is a big concern in many Danish pig herds - not least since the suspected introduction of "New Neonatal Diarrhoea Syndrome." The study investigates pathogens and management-factors associated with these problems.

Materials and Methods

A total of 107 herds including 55 Case-herds with diarrhoea during the first week of life and 52 Control-herds without diarrhoea as a herd problem filled in questionnaires related to housing, feeding and management strategies. Within these herds, 67 herds (37 Case-herds and 30 Control-herds) submitted piglets (4 with diarrhoea and 2 without) for detection of rotavirus A, Clostridium difficile, Clostridium perfringens beta2-genes and E.coli virulence genes (LT, STa, STb, EAST-1, AIDA-1, F4, F5, F6, F18, F41). All analyses were carried out by q-PCR. Tests for E.coli virulence genes were carried out on herd level (on pools of E.coli isolates from all 6 piglets). Chi-square tests were used to test significant differences. In the analyses of management factors, generalized linear models that took plausible interactions into account were constructed.

Results

Management-factors associated with diarrhoea were;

- Sow-health* (OR 6 [95% CI 1.4 – 39.4], P=0.01)
- Neglecting drying out of farrowing crates after washing (OR 4 [95% CI 1.3 – 12.3], P=0.01)
- "Manual" heating systems (OR 2 [95% CI 0.9 – 4.3], P=0.1) and
- Liquid sow-feeding (OR 2 [95% CI 0.9 – 4.8], P=0.1).

*: Subjectively assessed by herd vet.

**: "Manual" meaning by straw or wood-heating as opposed to oil-heating or heat-pump.

Diarrhoea was associated with the detection of rotavirus A. 22% of diarrhoeic piglets vs. 5% of non-diarrhoeic piglets were positive (P<0.0001).

Three E.coli virulence factors seemed to be associated with diarrhoea. The combination AIDA-1, EAST-1 and STb was seen in 27% of Case-herds vs. 13% of Control-herds (P=0.2).

Diarrhoea was not associated with the detection of C.difficile or the detection of C.perfringens beta2-genes. 64% of diarrhoeic piglets vs. 61% of non-diarrhoeic piglets. were C. difficile positive. Beta2-genes were detected in 91% of diarrhoeic piglets and 91% of non-diarrhoeic.

Conclusion

According to this study, important pathogens in neonatal diarrhoea in Danish herds are rotavirus A and probably E.coli carrying the virulence-genes AIDA-1, EAST-1 and STb. Neither Clostridium difficile nor clostridial Beta2-genes seem to be associated with neonatal diarrhoea.

Poor sow health, neglecting drying out farrowing crates, unstable heating and liquid feeding were management-factors associated with diarrhoea.