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Infection dynamics of *Lawsonia intracellularis* in sows and suckling pigs: Preliminary results

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Introduction

In many herds *Lawsonia intracellularis (LI)* infection is controlled successfully by antibiotic treatment. In some LI positive herds, however treatment is not needed. This might be due to differences in infection dynamics before weaning. The objective of this study was to monitor the development of *LI*-specific antibo-dies in sows and suckling piglets in herds with and without proliferative enteropathy after weaning.

Materials and methods

In the diseased herds, pigs not treated with antibiotics after weaning developed prolifera-tive enteropathy 3-6 weeks after weaning. The typical signs were unthrifty pigs and diarrhoea. Proliferative enteropathy was revealed by necropsy and detection of *LI* by IFA. The non-diseased herds, (without proliferative entero-pathy), were herds where non-medicated pigs after weaning did not develop clinical signs of proliferative enteropathy. In each herd, 40-50 sows in mid gestation were tested. In each herd another 8-26 sows (in a farrowing batch) were bled after farrowing and again before weaning. In each herd complete litters from 8-12 sows were ear tagged and bled two weeks after farrowing and again just before weaning (4-5 weeks old). Mixing of litters was not done. The blood samples were tested for antibodies against *LI* in an ELISA (1). Two non-diseased herds and 3 diseased herds with proliferative enteropathy were included in the study. A total of 288 sows and 510 piglets were tested. In one herd (C) a cross-sectional serological profile of suckling and weaned piglets was done 12 months after the initial testing

Table 1 Description of herds included in the study

Herd	Diseased /non-diseased	Number of sows	Gestation stalls	Drysows/ lactatingsows/ piglets tested
A	non-diseased	550	Loose	45 / 11 / 93
B	non-diseased	750	Loose	40/ 12/ 122
C	diseased	500	Loose	45 / 11/ 113
D	diseased	350	Crates	46 / 25/ 107
E	diseased	340	Crates	40/ 8 / 75

Results

The majority of the sows tested in mid gestation were seropositive (65-96%) for *LI*. For the sows in the farrowing section there was an increase in the sero-prevalence from farrowing to weaning in 3 herds, while the numbers were constant or weakly declining in two herds. In the tested piglets of four herds (A, B, D, E) the sero-prevalence declined from two weeks after farrowing until weaning. This decline indicates a decrease of maternal antibodies during lactation as well as no active infection. In herd C an increase in the number of sero-positive piglets indicates an active infection. The results are shown in Table 2.

The cross-sectional profile in herd C showed that the majority of the tested piglets sero-converted at the age of 10-12 weeks

Table 2 Percent sows positive for *Lawsonia intracellularis* antibodies in mid gestation, after farrowing, before weaning and seropositive suckling piglets in 5 herds

Herd	Sows			Piglets	
	Mid gestation	After farrowing	Before weaning	2 weeks old	At weaning
A	69 %	36 %	91 %	18 %	11 %
B	65 %	58 %	50 %	46 %	25 %
C	96 %	73 %	73 %	64 %	88 %
D	76 %	52 %	68 %	30 %	26 %
E	90 %	25 %	50 %	59 %	12 %

Discussion

The results in herd A, B, D, and E indicate that the majority of the piglets were not infected by *LI* in the farrowing section. This is consistent with other Danish studies (2). The apparent active infection in suckling piglets in herd C as documented by the increase in number of sero-positive animals has not earlier been reported in Denmark. The cross-sectional profile from herd C indicates that pre-weaning infection with Lawsonia is not constant in this herd.

The preliminary results of the present study indicate that the infection dynamics of *Lawsonia intracellularis* in sows and suckling piglets are similar in diseased and non-diseased herds

References

1. Boesen, H.T. et al. 2005. Vet Microbiol. 109:105-112
2. Stege, H.S. et al. 2004. Vet. Microbiol. 104:197-206.