THE DETECTION OF *M. HYOPNEUMONIAE*, *P. MULTOCIDA*, *S. SUIS*, *H. PARASUIS* AND *A. PLEUROPNEUMONIAE* IN PIGLETS AT WEANING IN 5 FARROW-TO-FINISH FARMS

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SUMMARY

A survey was carried out to assess the contamination of piglets by *Mycoplasma hyopneumoniae*, *Pateurella multocida*, *Actinobacillus pleuropneumoniae*, *Streptococcus suis* and *Haemophilus parasuis* in 5 farrow-to-finish pig farms. At weaning, in each farm, a sample of 60 piglets belonging to one batch was randomly selected and submitted to nasal, tonsillar and oro-pharyngeal swabs. All samples were analysed with PCR to detect the pathogens. The study indicates that Hps, Pm and Ssuis are commonly found in the upper respiratory tract of young piglets. Contamination by Mhp and App seems to be less detected at this stage of rearing according to the methods used.

Keywords: pneumotropic pathogens, pigs, weaning, contamination

INTRODUCTION

Pathogens associated with lung lesions of pigs are numerous and diverse. Among bacteria, *Mycoplasma hyopneumoniae (Mhp)*, *Pasteurella multocida (Pm)*, *Actinobacillus pleuro-pneumoniae (App)*, *Streptococcus suis* (Ssuis) and *Haemophilus parasuis* (Hps) are the pathogens the most frequently involved in respiratory disorders (Thacker et al., 2001). Numerous studies were carried out to describe pig contamination during post-weaning and/or fattening periods. Nevertheless, the respiratory flora of pigs and its evolution at these growing stages depends on the flora acquired in the early phase of the piglet's life. To the best of our knowledge, few data related to the acquisition process of these pathogens during the lactation phase are published. Therefore, the aim of the present survey was to assess the contamination of piglets by Mhp, Pm, App, Ssuis and Hps at weaning in 5 farrow-to-finish French pig farms differently affected by respiratory disorders.

MATERIALS AND METHODS

Study design

The farms were ranked on a scale (from 1 to 5) according to their score on clinical criteria at the post weaning and fattening stages as well as on the lesions at slaughter. A description of the respiratory status of the farms is given Table 1. At weaning, in the five farms, a sample of 60 piglets belonging to one batch was randomly selected. Each piglet was submitted to nasal (VWR

International, Fontenay-Sous-Bois, France), tonsillar (VWR International, Fontenay-Sous-Bois, France) and oro-pharyngeal swabs (Orifice Medical AB, Ystad, Sweden). After sampling, swabs were placed in peptone water and shipped to the laboratory.

Table 1. Description of lung lesions observed at the slaughterhouse on a sample of pigs (5 farrow-to-finish pig farms, France, 2004–2005)

Farm	**Sample size**	**Pneumonia**	**Pleuritis**	**Rhinitis**
		Mean score (/28 points) (SD)	**Percentage of lung lesions** (%)	**Mean score** (/18 points) (SD)
1	50	0.2 (0.6)	4	2.9 (2.8)
2	36	3.5 (3.8)	11.1	4.1 (2.9)
3	55	1.8 (2.0)	1.8	6.3 (3.0)
4	40	11.8 (6.9)	27.5	6.3 (3.4)
5	47	10.7 (5.7)	42.5	5.3 (3.4)

Laboratory analyses

All samples were analysed in our laboratory with PCR tests aiming at the detection of Mhp, App, Hps and Ssuis (Savoye et *al.*, 2000; Verdin et *al.*, 2000; Oliveira *et al.*, 2001; Marois et *al.*, 2004). For Pm, the PCR test used was specially designed and performed by our laboratory team. A pig was considered as carrier as soon as one swab tested PCR positive.

RESULTS

Weaning age varied from 21 to 28 days (Table 2). Hps and Pm were identified in all farms with frequency rates ranging from 35 to 100% for Hps and 8.3 to 100% for Pm. Ssuis was detected in 4 farms with a frequency of 1.7%, 60% and 65% (2 farms), respectively. Mhp was detected in only one pig. App was identified in one herd at a low frequency (6.7%) (Table 2).

Table 2. Contamination of piglet by Hps, Pm, Ssuis, Mhp and App at weaning (5 farms, France, 2004–2005)

Farm	**Mean weaning age** (days)	**Frequency of PCR-Positive piglets** (%)				
		Hps	**Pm**	**Ssuis**	**Mhp**	**App**
1	20	95	55	1.7	0	0
2	29	81.7	8.33	65	1.7	0
3	20	85	63.3	0	0	6.7
4	27	35	41.7	60	0	0
5	28	100	100	65	0	0

DISCUSSION AND CONCLUSION

From this small-scale survey, it appears that most of the pneumotropic pathogens, especially Hps, Pm and Ssuis can early colonise the upper respiratory tract of piglets, suggesting an early contamination and a probable seeder role of the sows. The study also indicates that whatever the severity of expression of respiratory disorders in pigs at the later stages in the herds, Hps, Pm and Ssuis were commonly found in the young piglets. Hps is described as one of the earliest agent colonising the respiratory mucosa of piglets after birth (Rapp-Gabrielson, 1999). Even if Mhp was detected at 4 weeks of age, detection rate of this pathogen was rather low according to the sampling procedure and the laboratory methods used. App was rarely identified at this stage of life. Dealing with these results, the respiratory flora of pigs of 3 to 4 weeks of age seems to be diverse, Hps, Pm and Ssuis belonging to the common bacterial flora of the upper respiratory tract. The suckling period appears to be a decisive step in the acquisition of respiratory pathogens. Beside a qualitative detection of the infectious agents, a quantitative approach should be relevant in order to better describe the contamination load to which the piglets are exposed. Furthermore, the results of the present study suggest considering both the dynamics of the major specific-pathogens involved as well as the management and husbandry conditions prevailing on the farms along the rearing period, when looking for the risk factors of respiratory disease complex in pigs.

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