MYCOPLASMA HYOPNEUMONIAE INFECTION DYNAMICS IN A FARM IN VACCINATED AND NON-VACCINATED PIGS

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Introduction

The objective of the present work was to study the *Mycoplasma hyopneumoniae* (*M. hyopneumoniae*) infection dynamics by nested PCR (nPCR) and serology in pigs of a farm affected by enzootic pneumonia, where two different vaccination protocols were used.

Materials and Methods

A 240-sow, farrow-to-finish herd with continuous flow production system was selected to perform this study. A total of 545 pigs from 71 different sows were included in this study. At 1 weeks of age, piglets were ear-tagged and randomly assigned to one of the following treatments: 1) two doses of vaccine (MYPRAVAC SUIS®, Laboratorios Hipra S.A, AMER, Spain) at 1 and 3 weeks of age (n=183), 2) one dose of vaccine at 6 weeks of age (n=178) and 3) no vaccination as a control group (n=184). In order to avoid deviations due to management or facility conditions, animals with different treatments were mixed in the same pens. Nasal swabs and blood samples were taken at 1, 3, 6, 9, 12, 15, 18, 22, and 25 weeks of age. DNA extraction from nasal swabs and nPCR were performed using previously described conditions and primers (1). Blood samples were centrifuged and obtained sera were tested by a monoclonal blocking ELISA (Laboratorios HIPRA, Girona, Spain) to detect *M. hyopneumoniae* antibodies.

Chi-Square analyses were performed to compare *M. hyopneumoniae* detection and seroconversion among the different treatments. Statistical analyses were performed with SAS system for windows version 8.0. Statistical significance was set at $p < 0.05$

Results

M. hyopneumoniae was detected in low proportions in farrowing and nursery pigs of all three treatment groups (Fig. 1). Once in the finishing units, *M. hyopneumoniae* detection tended to increase in all three treatments groups until slaughter. Globally, *M. hyopneumoniae* infection dynamics of all three treatment groups were similar. Statistical significant differences between treatments were observed at 6 (one dose vs control) and 25 (two doses vs control) weeks of age.

M. hyopneumoniae antibody detection profile of vaccinated pigs (one and two doses) was clearly different from non-vaccinated pigs (Fig. 2). Statistically significant differences between treatments were observed at 6 (two doses versus one dose and control), 9 (two doses versus control) and from 12 to 22 (both vaccinated groups versus control) weeks of age.

Discussion

The present study describes the pattern of infection dynamics of *M. hyopneumoniae* in a population of pigs with different vaccination protocols in a farrow-to-finish operation with continuous flow. As expected, vaccination did not prevent from *M. hyopneumoniae* infection. However, the use of the vaccine changed the timing of *M. hyopneumoniae* seroconversion, being this earlier for both vaccination treated pigs (one and two doses) than control animals.

These differences between groups in regards seroconversion were not observed when *M. hyopneumoniae* was detected at nasal cavity level, since the increase in the percentage of colonized pigs was observed in both vaccinated and non-vaccinated groups. However a significant decrease in nasal colonization by *M. hyopneumoniae* was observed at the time of slaughter.
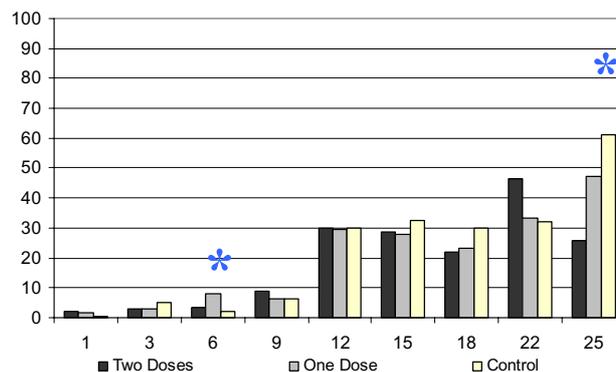

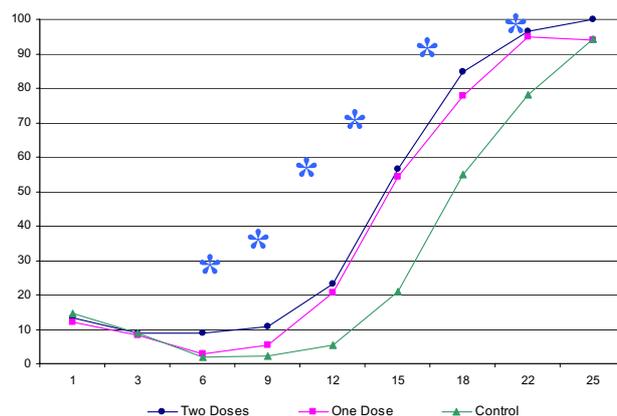**Figure 1** Percentage of *M. hyopneumoniae* nPCR positive pigs (nasal swabs) by treatment throughout time. * $p < 0.05$

Figure 2 Percentage of *M. hyopneumoniae* seropositive pigs by treatment throughout time. * $p < 0.05$

References

1. Sibila et al., (2004). Vet. Rec. 55 (2), 57-59