SWINE INFLUENZA ACTIVE SURVEILLANCE IN THE UNITED STATES

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Introduction

Influenza virus has become an important pathogen worldwide. In swine, influenza causes a mild respiratory disease and is considered to have little impact on production or health of the pigs. However, swine do play an important role in the ecology of the disease since humans can become infected with influenza viruses originating from swine (1). Presently, the epidemiology of the virus in swine farms is not well understood (2). Therefore, an active surveillance program can provide information on the epidemiology, ecology and evolution of influenza A viruses in swine.

Materials and methods

Thirty-two conveniently selected commercial pig farms in the United States were chosen to participate in this study. Farms were located in swine dense areas in Illinois, Indiana, Iowa and Minnesota. Thirty nasal swabs were collected from growing pigs every month for 12 consecutive months. Swabs were tested for influenza A viral RNA using a RRT-PCR targeting the matrix gene (3). During collection, the age of the pigs, group clinical signs and history of influenza vaccination were recorded. Association between farm characteristics and presence of influenza virus was performed by chi square statistic. A group of pigs was defined as the 30 pigs that were sampled in a given month.

Results

A total of 11,460 nasal swabs have been collected since Jun 2009 to January 2011. From the total number of swabs collected, 9,002 have been tested. Out of those swabs tested, 380 (4.22%) were influenza A virus RRT-PCR positive. Twenty nine percent of all positive swabs were from pigs between 13 and 15 weeks of age. Influenza was detected in pigs as young as five weeks of age. The average number of positive swabs in positive groups was 6.4 with a minimum of 1 and a maximum of 29. Twenty-six (81%) out of the 32 participating farms have had at least one influenza positive group. Since the beginning of this project, at least one positive swab has been identified in the participating farms every month with the exception of November 2009. Since June 2009, a total of 301 groups of pigs have been monitored. Fifty-nine (19%) have had at least one positive swab. Seventeen (28%) out of those 59 positive groups had clinical signs on the day of the sampling. Additionally, from the 59 positive groups, 32 (54%) groups had a history of influenza vaccination at the sow source farm. No statistical difference was seen when influenza vaccination history and age were compared between influenza positive and negative groups. However, there were statistical differences (P<0.01) between farm types (nursery,
wean-to-finish, finishing, farrowto-finish and gilt developer unit) among positive and negative groups. Thirteen groups of pigs have been confirmed infected with the 2009 pandemic H1N1 strain, eight groups with H3 subtype and twenty-one with H1 subtype viruses. Subtyping is still being conducted on the remaining positive groups.

Discussion

According to the preliminary results of our study, influenza A virus is present in pigs regardless of the farm type, age, month of the year and vaccination status. In our study, even though detection rate is low, the virus is being detected in populations in which there are no clinical signs at the moment of the sampling highlighting the importance of an active surveillance system.

References