EPIZOOTIOLOGY OF AFRICAN SWINE FEVER IN HAITI

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The introduction of African Swine Fever (ASF) into a disease-free country would be devastating to its swine industry and international trade. The increasing likelihood of this impending threat was exemplified when ASF was diagnosed in the Dominican Republic in July, 1978, with subsequent spread to Haiti in December, 1978.

The United States Agency for International Development (AID) and the U.S.D.A. have assisted the Government of the Dominican Republic in developing and implementing a successful ASF eradication plan. Subsequently, the Dominican Republic became free of ASF in 1980.

ASF in Haiti remained to be an impending threat of its reintroduction to the Dominican Republic and a highly probable source of infection to other neighboring countries. Because of these circumstances, it was necessary to develop a plan for ASF eradication in Haiti similar to that developed for the Dominican Republic.

In response to this need, the Inter-American Institute for Cooperation on Agriculture (IICA) has taken charge of a project to eradicate ASF from the Republic of Haiti and to develop its swine industry. Information on the current ASF epizootiology was needed to define the prevalence and geographic distribution of ASF infected, or previously exposed, pigs. Serologic surveillance was therefore initiated by the Veterinary Services, Animal and Plant Health Inspection Service (APHIS), U.S. Department of Agriculture in collaboration with Southeastern Cooperative Wildlife Disease Study (SCWDS), College of Veterinary Medicine, University of Georgia.

A rotating team of two SCWDS technicians, with the assistance of Haitian counterparts travelled throughout the country and collected blood samples from representative pigs. The majority of the sampled pigs were bled on "Door to door" basis; additional samples were taken from swine in livestock markets and slaughterhouses. Samples were submitted to the Diagnostic Laboratory which was set up for ASF serology.

A total of 1513 swine from 90 locations were sampled. All the serums were tested for antibodies to ASF virus by the immunoelectro-osmophoresis (IEOP) (Pan et al, 1972) and the enzyme-linked immunosorbent assay (ELISA) (Hamdy et al, 1981) tests. Representative samples (n=145) from ELISA positive and negative serums were tested by the indirect immunofluorescence test (IIF) (Botija et al, 1976).

Throughout the field operations, reports of sick pigs were investigated, and where warranted, sick pigs were purchased, necropsied and tissues i.e. liver, spleen, tonsil, lymph nodes and lungs were sampled. Specimens were sent to PIADC for confirmatory diagnosis.

Test results revealed that 323 seropositive samples were encountered in 1513 tested pigs. These seropositive pigs were distributed in 71 out of 90 locations sampled. The overall percentage of infection, or previous exposure, was 22.86%. There was a high correlation (97%) between ELISA and IIF results. The IEOP test was less sensitive, but efficient in detecting a high percentage of the positive serums at the beginning of the survey. Later, it lost its credibity and this observation was explained to having used inadequate antigen. Local conditions, i.e. inavailability of low temperature freezers for antigen storage and frequent power failure that resulted in antigen being subjected to frequent cycles of freezing and thawing were probably the cause of antigen deterioration. These conditions, made the antigen unsuitable for the IEOP, but did not have adverse effect on the suitability of the antigen in the ELISA test. Towards the end of this study, new antigen shipments were received from Plum Island Animal Disease Center (PIADC) and a REVCO freezer (-70^{o}) was furnished by FAO, as a part of its support to the Diagnostic Laboratory; consequently, a correlation of 80% between ELISA and IEOP was restored.

At PIADC, ASF virus was identified in three isolants from Leogane, Aquin and Port-au-Prince; the Aquin isolant was tested for virulence; six U.S. domestic pigs were inoculated with a viral harvest from the 2nd passage in buffy coat cell culture. Inoculated pigs all died after exhibiting characteristic clinical sign and lesions.

Conclusions:

Laboratory data and field investigations conclude that ASF is well established throughout Haiti. The causal viral strain is of relatively high virulence. Disease among pigs, with relatively high mortalities, especially in young pigs, have been encountered during the months of August, September and November, 1981.

Seropositive swine were encountered in all regions of the country with the exception of Jean Rabel, Mole St. Nicolas and Bombardopolis, which are located in the extreme Northwestern region in addition to the island of La Tortue. These later areas are probably free of ASF on account of their remoteness and inaccessibility to traffic and swine movement. Alternatively, the failure to detect ASF seropositive swine in these areas may be due to small sample size in areas of low incidence. It is planned to collect and test additional blood samples from these areas in order to confirm their status with a high limit of confidence.

Selected References:

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