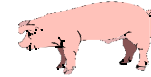


ANIMAL HEALTH FACT SHEET

Animal Health and Food Safety Services



Malaysian outbreak of Nipah Virus in People and Swine



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Disease in people

The outbreak of Nipah disease in Malaysia, which has caused human fatalities, has been attributed to a viral infection in pigs. The outbreak in 1998/99 has been investigated and traced back to earlier incidences which were provisionally diagnosed as Japanese encephalitis (JE).

In 1997, the illness was reported in a number of swine workers, one of whom died. In 1998, more cases of viral encephalitis were reported and two more villages were affected. A special Task Force comprising officers from the medical and veterinary departments was formed. By the end of 1998, ten swine workers had died from the disease after being in a coma for periods ranging from four days to a few weeks. Among the viral encephalitis cases, only about 15% were confirmed as JE, leaving the remaining 85% undetermined.

By mid-December 1998, the disease had spread south of Kuala Lumpur, through movement of infected pigs. Seven of the 20 workers developed the disease and five died in January 1999. By March 1999, the disease had spread to another major pig producing area. The Department of Medical Microbiology, University of Malaya, successfully isolated an unknown virus. The virus was sent to the Arbovirus Research Center, Center for Disease Control (CDC) in Fort Collins, Colorado. There, the Malaysian and United States' scientists worked together to study the characteristics of the virus. On March 18, 1999, the CDC announced that the isolate was of a genus

closely related to the Hendra virus, a paramyxovirus first isolated in Brisbane, Australia, in 1994. On April 10, 1999, the isolate was officially called the Nipah virus, named after the village where the worker from whom the virus was isolated had died.

The disease spread to more farms and, from March 1 to May 10, 1999, a total of 224 suspected cases of viral encephalitis in swine workers occurred with 80 fatalities. To date, 261 persons are suspected of being infected with the Nipah virus and 103 have died. After an incubation period believed to be between one and three weeks, clinical signs in people include: fever and headaches of varying severity, and drowsiness and disorientation, later falling into a coma and requiring artificial respiration.

As a measure to control the spread of the new virus, farmers and their families have been instructed to leave their villages and settle temporarily in schools and community halls outside the affected district. Assistance has been sought from experts in the CDC and Australia to help with the diagnosis and control of Nipah disease.

Disease in swine

The disease in pigs is generally associated with low mortality but high morbidity. Clinical signs in young pigs include mild to severe coughing, with varying reports of mortality and morbidity. The disease is more pronounced in sows and boars, including moderate to severe respiratory distress characterized by difficult breathing, convulsions and death. In boars, disease may be acute with death occurring within several hours. Thick mucopurulent discharge and pneumonia are seen in less severe forms. Piglets, gilts and sows may experience convulsions and other neurological signs.

Necropsy findings in pigs and dogs

There are varying degrees of consolidation of the lungs, primarily the diaphragmatic lobes with prominently thickened interlobular septa. The cut surface showed exudate of varying consistency in the bronchi. Kidneys showed congestion both on the surface and in the cortex. Brain appeared normal except in a case with petechial hemorrhage. Other visceral organs appeared normal. Lesions observed at necropsy of dogs presenting clinical signs similar to those of affected pigs included: severe hemorrhage and congestion of the kidneys, and exudates present in the trachea and bronchi.

Serological evidence of the virus in other animals

Serologically positive dogs, cats, bats, horses and goats were found in the infected areas. To date, serum samples from rats trapped in infected areas have all been negative. Testing will also be conducted on blood from cattle, goats, sheep, squirrels, wild boar, wild birds, poultry and ostriches.

Transmission

Transmission studies in animals are being carried out in Australia. Studies involving in-contact pigs revealed that infection occurs quickly, possibly at first contact. Virus multiplication in the tonsils and respiratory epithelium, together with contaminated cellular debris in the lumen of air passages in the lung, suggests that the virus may at least be transmitted by pharyngeal and bronchial secretions.

Diagnosis

Virus isolation - Tissue samples of lung, liver, kidney, spleen, heart and brain were collected from animals for examination at the CDC.

Serological tests - Two laboratories, namely the Veterinary Research Institute (VRI), Ipoh, and the Task Force Laboratory at the Department of Medical Microbiology, University of Malaya, were selected to carry out serological tests on the veterinary and human sera, respectively.

Control and eradication program

Phase I - With the discovery of the etiology of the disease, a program was developed for immediate eradication by mass culling of pigs. *From February 28 to April 26, 1999, a total of 901,918 pigs were culled in four infected areas.*

Phase II - A surveillance program was developed to detect previously infected farms by testing for the presence of pigs with antibodies to the Nipah virus.

All farms outside the previously designated high risk areas will be screened for detection of Nipah virus antibodies. Farms with two consecutive negative tests performed within an interval of three weeks will be accorded "provisionally free" status. However, farms found to be positive during the first or second tests will be depopulated.

To date, 235 farms have been tested, of which 9 were found to be positive. A total of 11,458 pigs and 23,736 other animals at four of the positive farms has been culled. *In this program, a total of 824 farms with a swine population of 1.6 million will be tested.*

Actions for the future

Investigations will continue in order to ascertain the natural hosts of the Nipah virus and the modes of transmission to domestic animals and humans.

The outbreak has given the Government of Malaysia an opportunity to review the status of the pig industry and the direction for revival of the industry.

For additional information call:

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Or visit these websites at:
www.oie.int/info/a_dsum.htm
www.aphis.usda.gov/vs/ceah/cei