

Highly Pathogenic Avian Influenza in Hong Kong, 2001

This is an example of a rapid response to the outbreak of a zoonotic disease. In 2001, the Government of Hong Kong Special Administrative Region of China quickly reacted to an outbreak of highly pathogenic avian influenza in live–bird markets. The swift reaction was due, in part, to the recent discovery that some strains of avian influenza can be zoonotic; in 1997, highly pathogenic avian influenza in live–bird markets spread to humans and caused six deaths.

On May 17, 2001 the Government of Hong Kong Special Administrative Region of China (SAR) reported that highly pathogenic avian influenza type A (H5N1) virus had been detected in three retail live–bird markets. The markets had experienced increased mortality in birds prior to the diagnosis. The three affected live–bird markets were closed and all birds were destroyed. The following day all wholesale and retail markets selling chickens in Hong Kong were closed and the birds were culled. On May 21, 2001, as a precautionary measure, the government began to depopulate approximately 1.2 million live birds in Hong Kong territory. Although there was no indication of contamination, the cull covered 208 farms raising chickens, pigeons, and quail. Importation of live birds from Mainland China was stopped and retail markets for live poultry remained closed for four weeks. This outbreak is estimated to have cost \$3.86 million (U.S. dollars) including compensation to poultry vendors. The source of the outbreak is not known.

What is avian influenza?

Highly pathogenic avian influenza, also known as fowl plague, is one of the most important diseases of poultry in world trade. This disease can affect chickens, turkeys, ducks, geese, partridges, pheasants, quail, and ostriches. In poultry, the symptoms may include depression, inappetence, coughing, nasal and ocular discharge, a swollen face, cyanosis of the comb and wattles, diarrhea, and neurologic signs such as paralysis. In some cases, sudden death can occur with few clinical signs. Chickens and turkeys are abnormal hosts for the influenza viruses, but once the virus has been introduced, influenza can become established in the poultry industry.

Avian influenza viruses can be found worldwide in many species of birds, including waterfowl, shore birds, imported pet birds, and ratites. Most of these viruses do not cause disease in wild birds and are of low pathogenicity for poultry. Only viruses that meet specific virulence requirements in the laboratory are designated highly pathogenic avian influenza. Two surface antigens, hemagglutinin (H) and neuraminidase (N), are used to classify the avian influenza viruses into serotypes. Most of the highly pathogenic isolates in recent outbreaks have been H5 or H7 viruses. H5 viruses of low pathogenicity can also become highly pathogenic after circulating in poultry flocks for a time.

Tracing avian influenza viruses

In the 2001 Hong Kong outbreak, officials acted quickly to prevent the influenza virus from becoming established in the poultry industry. One reason for the swift reaction was the fear that the virus could spread to humans. Before 1997, the medical community did not think avian influenza viruses could cause human disease. However, in 1997 a H5N1 virus in Hong Kong killed six people and caused serious illness in 12 others. During the 1997 outbreak, 1.6 million chickens were slaughtered to stop the spread of the disease. The 2001 virus was also a H5N1 strain; however, it differed from the 1997 H5N1 virus in all of its genes except the hemagglutinin gene and no human cases were reported in this outbreak. The 2001 H5N1 strain resembled an H5N1 virus that was first isolated from geese in China's Guangdong province in 1996. Viruses similar to the Guangdong 96 virus were also isolated from waterfowl in Hong Kong in 1999 and 2000.

China supplies over 70 percent of the 100,000 fresh chickens eaten in Hong Kong every day and is the territory's leading source for geese, ducks, quail, and pheasants. Some scientists call southern China an "epicenter" of influenza viruses because farmers there rarely segregate different types of poultry, creating a perfect breeding ground for new flu strains. Unlike ducks and geese, which are centrally slaughtered in Hong Kong, chickens are sold live in markets and are killed and plucked in front of customers. Government representatives called for a central slaughterhouse for chickens in Hong Kong, but the industry feared that a central slaughterhouse could undermine the livelihood of 20,000 chicken sellers in Hong Kong. After the 1997 outbreak, Hong Kong had established an elaborate system of blood tests, inspections, and quarantine rules to screen birds before they cross the border. However, Hong Kong officials have no authority to monitor or regulate health and environmental conditions on Mainland China farms. In addition, the millions of migratory birds circulating around the river delta are not tested.

Other recent outbreaks

Epizootics of highly pathogenic avian influenza have also been seen in the United States -- a large outbreak occurred in the Pennsylvania area in 1983–84. More recently, outbreaks have occurred in Australia, Pakistan, Mexico, and northern Italy. An outbreak of avian influenza in poultry in the Netherlands in 2003 resulted in numerous cases of conjunctivitis in humans exposed to infected poultry and the death of one veterinarian.

Sources of Information

http://www.aphis.usda.gov/vs/ceah/cei/ai_hongkong0501.htm

<http://www.poultry-health.com/fora/fowlplag.htm>

<http://www.promedmail.org>

