

## Case Report

### AN OUTBREAK OF HIGHLY PATHOGENIC AVIAN INFLUENZA (HPAI) IN A MIXED FARM BY THE INTRODUCTION OF A WATER FOWL

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#### INTRODUCTION

Avian influenza (AI) is caused by a range of influenza type A viruses of high and low pathogenicity (Fauci, 2005). H5N1 Highly Pathogenic Avian Influenza (HPAI) viruses are currently the most significant influenza A virus. It is associated with up to 100% mortality in affected flocks. Transmission is by contacts, aerosols and fomites (Jordan and Patton, 1999; Webster *et al*, 2006). The transmission and spread of AI in Nigeria has been primarily associated with wild and feral birds (Ducatez *et al*, 2006) while secondary spread possibly caused by human related activities sustain the virus in the environment (Salzberg *et al*, 2007). Poultry farming in some parts of the country is largely rural and subsistence providing food and additional income for the family. The farms are most often mixed, with multiple species of animals at different ages kept together. The introduction of new birds to an existing stock is a common practice but is often followed by devastating consequences as described in this particular case. This presents a serious challenge to the control of the disease. An outbreak of the HPAI (H5N1) was reported in a mixed poultry farm in Kano State in December 2006. This happened after the introduction into the farm, a goose bought from a live bird market. The goose died shortly after with signs of avian influenza. Afterward, other birds in the farm became sick and started to die. Carcasses sent to National Veterinary Research Institute, Vom were found positive for HPAI virus by isolation and identification. Affected flock was culled and bio security measures taken to curtail the spread of the disease. HPAI is becoming endemic in spite of on-going effort to contain it due to unwholesome farm practices that favour reservoir of infection in feral birds, ducks, geese etc wherever they are traded and raised.

**KEY WORDS:** HPAI, Mixed farming, Waterfowl

#### CASE HISTORY

In Rijiyar zaki village of Ungogo Local Government Area of Kano state, a goose was bought from Sharada market also in Kano on the 3<sup>rd</sup> December 2006. The bird died two weeks later with clinical signs suspicious of AI. A week later, an outbreak was reported in the rest of the flock with the death of 18 chickens, 7 turkeys and 3 geese. The total flock size was 364, comprising 350 chickens with average age of 25 weeks, 8 turkeys and 6 geese. The chickens were vaccinated against Newcastle disease.

#### Clinical Signs and Gross Lesions

Physically the birds showed ruffled feathers and on closer observation, the faces were swollen and there was cyanosis of the comb and wattles. There were also nasal and ocular discharges. The legs showed red discoloration and were swollen. Nervous signs (torticollis and in coordination) were observed and sudden death described. Three chicken carcasses were collected and transported in ice packs to the National Veterinary Research Institute Vom, Plateau State for laboratory investigation. Necropsy findings included, bluish combs, wattles and hemorrhagic skin. There was congestion of the entire length of the trachea.

Liver and spleen were friable and the kidneys were slightly hemorrhagic. Intestine showed a high degree of enteritis at different portions and petechial hemorrhages on the proventriculus.

### Virology

Rapid antigen detection from fecal material in the intestinal lumen by immunochromatography (WHO, 2005), using Antigen rapid test kit, showed a positive reaction for Influenza A virus. Virus isolation was carried out by egg inoculation as described in the WHO manual of animal influenza diagnosis (2002). Haemagglutinating agent in allantoic fluid of eggs was harvested aseptically. The Chorio-allantoic membrane of the eggs were harvested and processed for Agar gel Immunodiffusion test, using Influenza type A group antigen. The allantoic fluid was inhibited by H5 monospecific antisera in alpha haemagglutination inhibition (âHI) test (Kendal *et al.*, 1982).

### DISCUSSION

The case being reported involved a goose, which was probably incubating the virus at the time it was introduced to the farm, and subsequently shed the virus into the environment. This brings to fore the inherent risk mixed species farming practice poses in the interspecies propagation and re-assortment of AIV. This case shows the need for exclusive bio security in farms especially movement control. Pathogens would be spread from farm to farm if bio security precautions were not taken. An even greater risk comes from live bird markets and the dealers who pick up birds from backyard flocks or culls from some commercial flocks without adequate flock history and precautions.

The persistence of avian influenza virus in the environment is aided by the existence of a wide variety of reservoir host that support the multiplication of the virus without showing clinical signs while shedding the virus, contaminating farm premises. The nature of the poultry industry especially, movement of birds, eggs, feed; service crews, visitors, and farm workers, makes it vulnerable to the spread of

diseases from farm to farm and from one area to the other. The poor husbandry practices in some farms where continuous stocking of mixed species; multi-age birds, poor bio security standard, unrestricted movement of people, materials and birds (Adene *et al.*, 2006) results in the transmission and spread of AI. When an outbreak of HPAI initially occurs, immediate response includes stamping out and decontamination of the premises. This becomes even more successful when it is combined with movement controls, enhanced bio security and proper surveillance. Surveillance and monitoring are important strategy for the prevention and control of HPAI. Attention must be focused on the role of feral birds, waterfowls, ducks and geese that are not as susceptible as chickens in the transmission of HPAI virus. All individuals or groups who directly or indirectly deal with poultry have the potential to spread disease by their actions or inactions and should therefore be constantly reminded of the importance of bio security in the global effort to control avian influenza.

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