

ABSTRACT

Influenza A and West Nile Viruses in Barbados

Kirk Osmond Douglas

Avian influenza virus (AIV) and West Nile virus (WNV) are two important human pathogens transmitted by migratory birds. Both avian influenza and West Nile have significant impact on human and veterinary health. Using 9 - 11 day old embryonated egg culture (ECE) virus isolation was conducted on cloacal swabs ($n = 168$) from various wild birds in Barbados during July – October 2003 and 2004. Haemagglutination test was used to screen all allantoic fluids for the presence of haemagglutinating agents and reverse transcriptase polymerase chain reaction (RT-PCR) for the presence of influenza A virus and Newcastle disease virus (NDV). Two AI viruses and one NDV were isolated. An influenza virus isolation rate of 5.0 % (2/40) and a NDV isolation rate of 2.5 % (1/40) were observed in migratory waterfowl (Anatidae). This study confirms for the first known evidence of avian influenza and NDV infection in migratory birds present in Barbados and the Caribbean.

The spread of West Nile virus (WNV) to the Caribbean in Guadeloupe, Jamaica, Puerto Rico, Cuba and Dominican Republic heightened awareness regarding its circulation in the region. Dengue virus (DENV), another flavivirus is endemic to the region and the presence of suitable mosquito vectors and climatology could permit further spread within the region. Equine sera ($n = 98$) were screened with an epitope-blocking WNV enzyme linked immunosorbent assay (ELISA) and WNV ELISA-positive sera confirmed by plaque reduction neutralization test (PRNT). A WNV seroprevalence rate of 2% (2/98) was observed in horses. A quantitative risk assessment of WNV entry into Barbados by three modes namely a) migratory birds, b) air-transported vectors and c) marine transported vectors was conducted. Migratory birds were estimated to pose a significant theoretical risk to WNV entry into Barbados.

Keywords: Avian influenza; West Nile; Newcastle Disease virus; Barbados; Caribbean; flavivirus; migratory birds