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Influenza B virus: Need for heightened surveillance and epidemiologic case studies

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ABSTRACT

Recent report of increased influenza B virus infection, particularly the clinical profiles and treatment challenges imposed like that of influenza A, underscores the importance of continuing influenza B virus surveillance. This is, especially in resource limited country, early detection of influenza virus, its clinical presentation and complications would be vital in minimizing the public heath burden imposed by this virus.

Keywords: chronic obstructive pulmonary disease, influenza B, severe acute pulmonary infection.

INTRODUCTIONS

Influenza B virus (INFB) has been reported from different parts of the globe. The INFB does but have slower genetic reassortment and undergo slower genetic drift. INFB is not known to have definitive hosts and because of the genomic structure they are less dynamic in host adoptions. As INFB do not undergo antigenic shift, they are less likely to cause pandemics.

IMPORTANCE OF INFB

The INFB viruses differ from influenza A viruses by the lack of protein basic 1 – F2 (PB1-F2) but they also have additional proteins that are not found in influenza A viruses such as the glycoprotein B (NB) as well as other differences in the genome.[1,2] To date two lineages of INFB virus have been reported. Victoria-like and Yamagata-like in human circulation and Seals are the only knows wildlife carrying the virus.[3] In contrast influenza A has well adapted to different hosts and has already caused many pandemics. Recent report has shown increased INFB virus infection and particularly clinical profiles and case management challenges imposed like that of influenza A have been of high public health concern.[5-6] Although INFB has been comparatively less discussed in term of diseases severity and pandemics potential 38% of all the influenza associated pediatric death was attributed to INFB virus during 2010-2011 in Unites States, despite only 26% of all circulating viruses being of this type.[6] Complication and symptoms related to INFB may have mixed symptoms and 30% of all influenza cases in persons with seasonal influenza have been associated with co infections with *Streptococcus pneumoniae*, *Staphylococcus aureus*, and *Haemophilus influenza.*[6-9] An extensive study on tissue samples obtained at autopsy from 45 human cases with fatal INFB virus infection showed concomitant bacterial pneumonia. Most infections were related to *Staphylococcus aureus* and occurred with significantly greater frequency in those aged. Results from the immunohistochemistry showed viral antigens localized to ciliated respiratory epithelium and cells of submucosal glands and ducts. Pathologic evidence of myocardial injury was identified in 69% of patients for whom cardiac tissue samples were available for examination.[8] Although WHO has reported increase in INFB in many part of Asia; comprehensive epidemiological case study of INFB virus infections are inadequate from this region. Thus robust surveillance system capable of early detection and comprehensive epidemiological case study is important in understanding the pathogeneses of INFB. This information would be critical in designing appropriate management and vaccine strategy. Repeated outbreak of avian influenza in poultry population in recent years in Nepal has left the only *self-sufficient* domestic poultry market stumbling. It has also alarmed the public health authorities on potential danger of influenza virus getting into human population.

INFLUENZA SURVEILLANCE AT PATAN ACADEMY OF HEALTH SCIENCES

To establish a system of surveillance, track circulating seasonal and pandemic influenza virus in human and contribute to realize the national objectives of the Influenza Pandemic Preparedness and Response Plan 2006; Influenza Pandemic Preparedness and Response Project (IPPRP) was started in 2009 at Patan Academy of Health Sciences (PAHS). The IPPRP successfully established a functional surveillance together with National Influenza Center (NIC) through weekly epidemiological and virological surveillance from sentinel sites in selected hospitals and districts to understand the pattern of respiratory illness and characterize influenza viruses. A total of 257 respiratory specimens have already been tested from Sep 2011-Aug 2012. Out of these 71 were identified as INFB. Approximately one out of three samples is positive for influenza virus with INFB and only 10% are positive for influenza A. However, with the realization that the severity of the INFB illness cannot be assessed with ILI surveillance alone Severe Acute Respiratory Illness (SARI) investigation has been initiated from Jan 2013. This SARI surveillance set up would be of great help in understanding the clinical implication and the severity of the INFB as diagnosis and regular follow up can be made in the hospital emergency and critical care facility of suspected cases/patients.[9] Further characterization of INFB from this region would help understanding genetic makeup of the circulating INFB strains.[10] This information would be critical in designing appropriate prevention strategy that would contribute to minimizing the public health consequences from INFB infection in future in this region.

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