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Cytokines and cellular expression of 2009 influenza A virus (H1N1) infection

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Background: In April 2009, a swine origin influenza A (H1N1) virus (S-OIV) was identified in Mexico. The virus has since spread throughout the world and caused an influenza pandemic. Children and young adults appear to those most affected and also those who appear to maintain transmission. Cytokines are important mediators aimed to trigger immune mechanisms responsible for counteracting the microorganisms invade the host.

Methods: Totally 61 patients was enrolled with mean age of 10.1±4.2 years. 20 patients with S-OIV pulmonary complication and 41 patients without S-OIV pulmonary complication were studied. The concentrations of IL-1β, IL-6, IL-8, IL-10, IFN-g and TNF-a were measured using cytokine cytometric bead assay kits. Stained lymphocytes were analyzed by flow cytometry (Becton Dickinson Immunocytometry Systems).

Results: Among the patients who presented with the S-OIV infection, there were no differences in the age, gender, illness day on admission, white blood cell count between patients with pneumonia and those without pneumonia. Level of CRP was higher in patient with pulmonary complications. Among measured cytokines in the children with the S-OIV infection, the serum levels of TNF-α, IL-1β and IL-6 in patients with pneumonia were significantly higher than those in patients without pneumonia. Immunophenotypes expression of CD3+, CD8+, and CD16+CD56+ on PBMCs was lower in patients with pneumonia.

Conclusion: Peripheral blood mononuclear cells from S-OIV infected patients reveal variability in immune responses of human macrophages in response to S-OIV infections. Acute phase response of cytokines during the 2009 S-OIV infection might have contributed to the pathogenesis of the disease.

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Epidemiological analysis of the pandemic influenza A (H1N1) virus in Bhutan

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Background: Bhutan is an extremely rugged and mountainous country covering approximately 38,394 square kilometers ; the altitude ranges from 75m to over 7000m 1. The Ministry of Health in Bhutan had 3 sites for sentinel influenza surveillance when the World Health Organization declared a health emergency on 29 April 2009. The MOH increased the surveillance sites to 11 by May 2010 and established influenza PCR capability by April 2010.

The first two cases of influenza 2009 pH1N1 cases were reported on 20 July 2009 from samples collected on 16 and 18 June 2009 from Thimphu, the capital. Prior to the pandemic PHL had three influenza surveillance sites, this increased to 11 by the spring of 2010.

Methods: A suspect case was defined as a person with fever (≥380C) and cough or sore throat. Nasal and throat swabs were collected from those available within 72 hours of meeting the case definition after obtaining clinical and epidemiological data. The nasal swab was used for rapid testing (QuickVue) and the throat swab was put in viral transport media tube. Samples were tested by Polymerase chain reaction (PCR) and viral isolation methods at Department of Virology USAMC-AFRIMS, Bangkok, Thailand

Results: During the pandemic period (11 June 2009 to 8 August 2010) 2264 samples were collected: 20.7% (467) samples were positive for pH1N1, 1.2% (27) for A/H1, 1.9% (44) for A/H3, and 6.9% (157) for influenza B. The first cases in 2009 occurred in Paro and Thimphu, with subsequent movement to Punakha. The mean age of those with pH1N1 was 19.5 years, trending to be younger than those with A/H1 (23.1 years), significantly older than those with A/H3 (16.9 years) and B (15.4 years).

The first institutional outbreak of pH1N1 was in two schools from the eastern district of Trashigang in May 2010. In a span of two months, 20 outbreaks were reported in schools and institutes across the country. Out of 20 outbreaks, 16 were confirmed as pH1N1 and one as influenza B.

Conclusion: The capability established during the pandemic has made Bhutan more prepared for epidemics in the future.

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Prevalence of acute respiratory infections caused by RSV and Adeno viruses in Kenya in 2007-2009

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Background: Respiratory viruses play a major role in morbidity and mortality in children worldwide. In Kenya, information on the prevalence of viruses associated with childhood acute respiratory infection (ARI) is patchy, with little information on the spatial-temporal distribution of these viruses.

Objective: To determine the prevalence of RSV and Adenovirus circulating in Kenya associated with ARI between Mar 2007 and Feb 2009.

Methods: The study is part of sentinel surveillance for influenza like illness in five geographical regions in Kenya. Nasopharyngeal swabs were collected from subjects [3]2 months of age with fever [3]38°C, and cough or sore throat, if presenting to the hospital within 72 hours of onset of illness. Samples were snap frozen before transportation to the NIC and stored at -70°C. Multiplex rt-PCR was