Short Report

Suspicion vs. reality – Influenza A and B associated acute respiratory tract infection in a group of children in Sri Lanka

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Acute respiratory tract infection (ARTI) is a significant cause of respiratory disease worldwide.[1] A strict definition of ARTI would include all infections of the respiratory tract. However, in practice, acute lower respiratory infection accounts for most of the serious disease burden.[2] ARTI is extremely common in children between the ages of 2 and 24 months, with peak infection occurring between 3 and 6 months of age.[3] ARTI causes about 20% of all deaths in pre- and primary school children worldwide, with 90% of these deaths being due to pneumonia.[2]

ARTI are predominantly caused by viral pathogens commonly respiratory syncytial virus (RSV), influenza virus A and B, parainfluenza virus types 1, 2, 3, adenoviruses and rhinovirus[4]. New viral causes frequently being reported for ARTI in different parts of the world are coronaviruses (NL63, HKU1, SARS CoV), human metapneumovirus (hMPV), some strains of rhinoviruses and human bocavirus (hBoV).[5] Surveillance of respiratory viruses is important to predict seasonal epidemics, to define patient risk groups and to allocate hospital resources to evaluate the disease burden and characteristics of emerging viruses.[6]

ARTI due to a novel influenza A virus (H1N1) caused a worldwide pandemic from 2009 to 2011. Symptoms of this ARTI ranged from classical flu to severe pneumonia; the spectrum of illness was very similar to any other type of influenza A and some influenza B virus infections. In Sri Lanka, there were suspected and laboratory confirmed cases of influenza A during that period with patients presenting with respiratory symptoms of varying clinical severity (Ministry of Healthcare and Nutrition, Sri Lanka). Although testing for influenza A was done by the Medical Research Institute (MRI), Sri Lanka, many cases were not confirmed by laboratory testing, especially from peripheral areas. Thus we tested nasal swabs (NS) sent from the paediatric wards of Teaching Hospitals Peradeniya and Kegalle as well as the Sirimavo Bandaranaike Specialised Children Hospital,Peradeniya. The objective of the

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study was to identify influenza A and B virus antigens using a rapid influenza antigen detection test in clinically suspected flu cases to identify the viral aetiology.

Demographic and clinical details were collected by medical personnel in the wards from June 2010 to December 2010. All patients in the study belonged to the age group ranging from 2 months to 10 years. Nasal swabs were taken by the paediatricians, senior registrars, registrars or medical officers on admission. In this cohort some children were admitted 2-4 days from the onset of illness. However, the majority were admitted within the first 24-36 hours from the onset of respiratory symptoms. None of the children were on antiviral drugs at the time of taking the nasal swabs. NS were immersed in the medium that comes with the individual swabs (QuickVue Influenza A+B chromatographic test, USA) and then transported within an hour on ice, after labelling with sample identification number, for laboratory investigation. Laboratory diagnosis was done at the virology laboratory of the Department of Microbiology, by QuickVue Influenza A+B chromatographic test kit (USA) which allows detection of influenza A / B antigens in nasal swabs (Sensitivity 95%; Specificity 95% QuickVue Influenza A+B chromatographic test, USA). This test intended for professional and laboratory use allows a rapid and qualitative detection of influenza type A and B antigens directly from nasal swabs, nasopharyngeal aspirates, nasal aspirates and nasal wash specimens.

A total of 70 nasal swabs were tested by the laboratory during the study period. Of the 70 patients, 64 had cough and/or cold, 22 had fever and 6 had severe respiratory tract infection of whom 2 were ventilated in the intensive care unit (Table 1).

Table 1: Respiratory clinical profile of patients in the study

Respiratory symptoms	Number of patients
Cough + cold + fever	11
Cough + cold + fever + wheezing	5
Cough or cold (without fever)	48
Severe respiratory tract infection with fever (required ventilation)	6 (2)

One of the pateints who needed ventilation had influenza A virus infection whereas the other patient who needed ventilation was negative for influenza A or B virus infection. One of the 4 patients with severe RTI who did not require ventilation had influenza B virus infection whereas the rest were negative for influenza A or B virus infection. Overall, out of 70 patients, only 5 tested positive for influenza A or B virus antigen (7.14 %; Table 2).

Table 2: Demographic, clinical and viral profiles in patients with evidence of influenza virus infection, as detected by the QuickVue Influenza A+B chromatographic test (USA)

Age		Gender	Clinical details	Viral antigen detected
Years	months			
4	5	Female	Wheezing Sudden drop in O_2 saturation	Influenza A
9	6	Male	Cough	Influenza B
3		Female	Cough Fever	Influenza A
0	4	Male	Cough Fever Respiratory distress	Influenza B
7	0	Female	Cough Fever	Influenza A

Although there was a high level of suspicion in the hospitals we were able to confirm influenza A in a relatively small number of patients (n=3). These findings showed the over suspicion regardinga pathogen because of panic and awareness during an epidemic. One possible reason

for poor influenza antigen detection might be the use of nasal swabs for testing. It has been shown by many that the viral antigen detection rate is higher in nasopharyngeal aspirates than that of nasal swabs or nasal washings.[6] Conversely a majority of the ARTI reported in this study might have be caused by other infective agents which requires further investigation. As more and more new viral pathogens are being reported in recent times as cause/s of ARTI[5], Sri Lanka needs to expand its ongoing influenza surveillance programme which is currently confined to certain parts of the country and establish more comprehensive respiratory viral screening.

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Ethics

Nasal swabs were sent to test for influenza A and B antigens in order to treat children if influenza A and B infections were detected. Swabs were also taken with minimum discomfort after getting the consent from the parent or guardian.

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