Epidemiological Characteristics and Viral Aetiology in Acute Respiratory Tract Infections in Hospitalized Children in Wet and Dry Zones of Sri Lanka

J. A. A. S. Jayaweera[1,2], A. J. Morel[3], A. M. S. B. Abeykoon[2], F. N. N. Pitchai[2], H. S. Kothalawela[2], J. S. M. Peiris[4], F. Noordeen[2*]

[1]Department of Microbiology, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka, Saliyapura, Sri Lanka
[2]Department of Microbiology, Faculty of Medicine, University of Peradeniya, Sri Lanka
[3]Teaching Hospital, Gampola, Sri Lanka
[4]School of Public Health, University of Hong Kong, Hong Kong
** faseeha.noordeen12@gmail.com*

Acute respiratory tract infection (ARTI) is one of the most common illnesses in children. The present study was carried out to identify the epidemiological characteristics including seasonality and viral aetiology associated with childhood ARTIs in Sri Lanka. Nasopharyngeal aspirates (NPA) of hospitalized children (1 month - 5 years; n=861) with ARTI were collected in 2 centers from wet and dry zones from March 2013 to August 2014. Respiratory viral antigen detection by immunofluorescence assay (IFA) was used to identify respiratory syncytial virus (RSV), adenoviruses, parainfluenza viruses 1, 2 and 3, and Influenza A and B. IFA negative 100 NPA samples were tested for human metapneumovirus (hMPV), human bocavirus and corona viruses using polymerase chain reaction. Of the 443 (wet zone) and 418 (dry zone) NPAs, 37.2% and 39.4% respectively were positive for one of the seven different respiratory viruses. Viral co-infection was detected between RSV other tested viruses. Peak viral detection was noted in the wet zone from May-July 2013 and 2014 and in the dry zone from December-January 2014 suggesting a local seasonality for viral ARTI. RSV showed a clear seasonality with a direct correlation of monthly RSV infections with rainy days in the wet zone and an inverse correlation with temperature in wet and dry zones. The case fatality ratio was 2.2% for RSV associated ARTI. The overall disability adjusted life years was 335.9 for ARTI and for RSV associated ARTI it was 241.8. RSV was the commonly detected respiratory virus with an annual seasonality and distribution in rainy seasons in the dry and wet zones. All other tested viruses including influenza A (n=19) and B (n=13) were detected in both zones. Several cases of hMPV (n=24) associated ARTI was also detected during the study duration. Identifying the viral aetiology and seasonality would contribute to employ preventive measures.

Key words: Childhood ARTI, viral burden, seasonality, risk factors