VIRAL PATHOGENS CAUSING ACUTE LOWER RESPIRATORY TRACT INFECTIONS IN CHILDREN UNDER 5 YEARS OLD IN BULGARIA

Ivelina Trifonova¹, Svetla Angelova¹, Irina Georgieva¹, Iren Tzochcheva², Snezhina Lazova², Snezhana Parina², Sirma Mileva², Silvia Voleva¹, Penka Perenovska², Atanas Mangarov³, Neli Korsun¹

¹ National Laboratory "Influenza and ARD", National Centre of Infectious and Parasitic Diseases, Sofia, Bulgaria

² Paediatric clinic, University Hospital Alexandrovska, Medical University, Sofia, Bulgaria

³ Infectious Hospital Prof. Ivan Kirov, Sofia, Bulgaria

Introduction

Influenza A/B viruses, respiratory-syncytial virus (RSV), human metapneumovirus (HMPV), parainfluenza viruses (PIV, type 1/2/3), rhinoviruses (RV), adenoviruses (AdV), bocaviruses (BoV) are involved in the development of acute lower respiratory infections (LRTI) in young children.

This study aimed to determine the viral aetiology of LRTI infections in children younger than 5 years of age during two successive epidemic seasons in Bulgaria.

Methods

- 387 nasopharyngeal swabs of children under the age of 5 were tested. Children were either outpatients, or hospitalized for acute lower respiratory tract infections (LRTI) in different regions of the country.
- During the 2016/2017 season, 230 children were tested, during the 2017/2018 season – 157; 8 (2%) among them were outpatients, and 379 (98%) – hospitalized.
- The age of the patients varied from 30 days to 60 months (average $21,53 \pm 12,54$ months).
- 232 (59,9%) participants were boys, and 155 (40,1%) – girls.
- All study patients express complications like laryngotracheitis, bronchiolitis or pneumonia.
- Viral aetiology was determined by Singleplex Real Time PCR against 11 respiratory viruses.

Results

Of the 387 children examined, 288 (74%) were positive for at least one respiratory virus.

- 57 patients were co-infected with 2 viruses, six were positive for 3 viruses.
- In 45 (11.6%) of patients samples were detected influenza viruses - A(H3N2) (7%), type B (3,4%) and A(H1N1)pdm09 (1,3%)
- During the 2016/2017 season, detection rate of RSV was higher compared to 2017/2018 season (47% vs 15%). RSV subgroup B outnumbered those of the subgroup A in both seasons.

Figure 1: Weekly distribution of respiratory viruses detected in children with LRTI during the 2016/2017 and 2017/2018 seasons

Figure 2: Age distribution of patients with detected respiratory viruses

Figure 3: Proportions of single infections and co-infections

Figure 4: Respiratory viruses detected in patients with different clinical diagnoses

Learning Points

Respiratory viruses, especially RSV, are principal pathogens of LRTI in children younger than 5 years of age. Diagnostic testing for respiratory viruses using molecular methods may lead to the reduced use of antibiotics and may assist in measures to control infection.

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