Respiratory infections

The incidence and clinical course of respiratory viral co-infections in children aged 0-59 months

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Introduction. The clinical data available on coinfection, in terms of both the number of viruses involved and the severity of the condition, are variable, sometimes even contradictory. Although, the effects of viral co-infections have been described and analyzed in the literature, the number of such studies is still limited, especially in Central Eastern Europe, including Poland. The aim of the study was to analyze the incidence and clinical course of respiratory tract infections caused by more than one viral etiological factor among children aged 0-59 months.

Material and methods. Data and specimens were obtained from 114 patients aged 0-59 months with symptoms of the respiratory tract infection: fever > 38C, sore thought or cough lasting shorter than 5 days. Two swabs were taken from patients: one nasal and one pharyngeal swab. Specimens from patients were tested at the National Influenza Center, Warsaw, Poland, by RT-PCR using RV12 ACE Detection Kit (Seegene, Seul, South Korea) for the detection of following respiratory viruses: Influenza A virus, Influenza B virus, Human respiratory syncytial virus A (RSV A), Human respiratory syncytial virus B (RSV B), Human adenovirus, Human metapneumovirus, Human coronavirus 229E/NL63 (hCoV229), Human coronavirus OC43 (hCoVOC43), Human parainfluenza virus 1 (PIV-1), Human parainfluenza virus 2 (PIV-2), Human parainfluenza virus 3 (PIV-3) and Human rhinovirus A/B.

Results. The co-infections were detected in 9 (8%) of patients: 5 (8%) patients from the ambulatory care and 4 (7,6%) hospitalized patients. The incidence of viral co-infections was similar among hospitalized and not hospitalized children with symptoms of respiratory tract infection ($p>0,05$). There were detected 5 cases of co-infection caused by influenza A (H3N2) virus with other respiratory viruses: one patient with influenza B co- infection, two patients with hCoV 229 co-infection, one patient with both hCoV 229 co-infection and parainfluenza 2 (PIV-2) infection and one patient with a simultaneous detection of PIV-1, PIV-2, RSV A, RSV B, adenovirus infection. Ryc.1 presents the picture of the result of PCR diagnosis for a multiple co-infection with five respiratory viruses. The other four co-infections were caused by: adenovirus and hCoVOC43, RSV A and PIV-1, influenza B and RSV B. We did not observe and significant differences in the clinical course of infections caused either by a single or by multiple viral factors.

Conclusions. Viral co-infections among young children with acute respiratory tract infections may occur both in the ambulatory care and hospital settings. The clinical course of co-infections seems not to be more severe compared to infections caused by one pathogen. More studies are needed to define the role of viral co-infections in respiratory disease and how they correlate with clinical severity. Molecular diagnostic methods should be more often conducted to detect the etiology of respiratory tract infections among children.