

Clinical and epidemiological features of acute respiratory viral infections in children

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Objective. To assess clinical and epidemiological features of acute respiratory viral infections depending on the viral pathogen in children.

Methods. We retrospectively analyzed 41 patients with symptoms of acute respiratory infection from birth to 18 years. Among the observed patients, there were prevailed children aged 1–5 years ($n = 20$ children, 48.8%), 13 infants (31.7%) of the first year of life, and 8 children (19.5%) over 5 years of age. Most patients were observed with a primary diagnosis of acute nasopharyngitis — 31.7% ($n = 13$), acute bronchitis — 29.3% ($n = 12$), tracheobronchitis — 19.5% ($n = 8$), obstructive bronchitis — 19.5% ($n = 8$). Complicated forms of respiratory infection in the form of catarrhal otitis media, sinusitis were noticed in 3 children — 7.3%, pneumonia — in 1 child (2.4%). All patients underwent swab smear by polymerase chain reaction (PCR) to isolate viral pathogens of respiratory infections.

Results. In half of the cases ($n = 20$, 48.8%), the viral etiology was not established.

Rhinoviruses ($n = 9$; 21.9%) and respiratory syncytial viruses (RSV) ($n = 8$; 19.5%) were the most common pathogens detected. Metapneumoviruses ($n = 4$; 9.8%), adenoviruses ($n = 2$; 4.9%) and parainfluenza virus ($n = 1$; 2.4%) were significantly less common. Bocavirus and coronavirus were not detected.

Mixed infection was detected in 3 patients of the first 5 years of life (7.3%), the association was always rhinovirus in combination with MS virus or adenovirus, or parainfluenza virus. The disease was characterized by a more severe course, manifested by bronchitis, in 1 child of the first year of life — with bronchial obstruction, in 1 of the patients-complicated by acute catarrhal otitis. Metapneumovirus infection was detected in all cases in the winter period, causing damage to the lower parts of the lungs with the development of acute bronchitis, obstructive bronchitis or pneumonia.

The main pathogens of obstructive bronchitis ($n = 5$; 12.2%) and tracheobronchitis ($n = 3$; 7.3%) were of unknown etiology. Acute bronchitis was most often caused by a RSV infection ($n = 3$; 7.3%), metapneumovirus ($n = 2$; 4.9%) and rhinovirus ($n = 2$; 4.9%). In two cases acute bronchitis proceeded as a mixed infection: the association of RSV infection or rhinovirus and rhinovirus with adenovirus infection.

Winter seasonality of respiratory infections was prevailed ($n = 19$; 46.3%), children were less ill in spring ($n = 11$; 26.8%), and rarely in summer and autumn ($n = 6$; 14.6%, $n = 5$; 12.2%, respectively). In winter, viral pathogens were detected more often in patients — in 68.4% of cases ($n = 13$), including RSV virus ($n = 6$; 46.1%), rhinovirus ($n = 4$; 30.8%), metapneumovirus ($n = 3$; 23.1%) and mixed infection ($n = 1$; 7.7%). The spring-summer morbidity rate distinguished the group of children of the first year of life ($n = 9$; 69.2%).

There was no correlation between the type of pathogen and the age of the patients. Children over 5 years old were mostly ill with acute nasopharyngitis and tracheobronchitis ($n = 6$; 75%), whereas in patients of the first 5 years of life, acute respiratory infection often occurred in the form of lower respiratory tract lesions ($n = 20$; 60.1%). We had three infants aged 1–2 months in our study. The main disease was acute nasopharyngitis of undetected etiology ($n = 2$; 4.9%) and in one case caused by RSV infection ($n = 1$; 7.7%). One child had a symptom of acute bronchitis, the other — of obstructive bronchitis.

Conclusion. Among the established viral pathogens, rhinovirus was most often detected in children with symptoms of acute respiratory infection. The most severe course was associated with mixed infection, as well as metapneumovirus infection, mainly in children of the first 5 years of life and was accompanied by damage to the lower respiratory tract, including the addition of a bacterial infection.