МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ
КАФЕДРА ІНФЕКЦІЙНИХ ХВОРОБ З ЕПІДЕМІОЛОГІЄЮ
ГО «АСОЦІАЦІЯ ІНФЕКЦІОНІСТІВ СУМЩИНИ»

Інфекційні хвороби в практиці лікаря-інтерніста: сучасні аспекти

Infectious diseases in practice of physician-internist: modern aspects

Матеріали Всеукраїнської науково-практичної конференції, присвяченої 20-річчю кафедри інфекційних хвороб з епідеміологією СумДУ
(Суми, 25–26 травня 2017 року)

Суми
Сумський державний університет
2017

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PARTICULARITY OF THE CELLULAR IMMUNE RESPONSE AT ACUTE RESPIRATORY VIRAL INFECTIONS IN CHILDREN

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ОСОБЛИВОСТІ КЛІТИННОЇ ІМУННОЇ ВІДПОВІДІ ПРИ ГОСТРИХ РЕСПІРАТОРНИХ ВІРУСНИХ ІНФЕКЦІЯХ У ДІТЕЙ

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Резюме. *У роботі досліджено особливості імунної відповіді у дітей із гострими респіраторними вірусними інфекціями. Вставлено активацію противірусного імунного захисту, про що свідчить збільшення відносної кількості натуральних кілерів та В-лімфоцитів. У той же час імуно-регуляторний індекс (CD4+/CD8+) при ГРВІ відносно нижчий ніж у здорових дітей, що вказує на дискоординацію імунної відповіді.*

Topicality Acute respiratory viral infections (ARVI) remain one of the most important causes of the adults and children death in developing countries. Worldwide, ARVI is responsible for 3.5 million deaths each year, and just fewer than two million of these are children under the age of five. The outcome of an acute lower respiratory tract infection depends on the virulence of the organism and the immune response in the body. Therefore the study of the immune response in patients with ARVI has important theoretical and practical value.

The **aim** of our work was to study the cellular immune response particularity in children with acute respiratory viral infections.

Material and methods. Children from four till six years with acute respiratory viral infection were enrolled in the study. A total 28 children with acute respiratory viral infection and 20 healthy children were included. All procedures were taken after the written informed agreement according with national standards. Experiment was approved by Bioethical Commission of Sumy State University. The diagnosis of the ARVI was done of the base of clinical and laboratory date. For determination of the acute respiratory virus infection etiology we collected the nasopharyngeal aspirate from recruited children. PCR and IFT were used for detection of the viruses, classical bacteriological methods were used to determine bacterial and fungal component of the nasal-pharyngeal microflora. Immunological status of the patients was examined by calculation of the lymphocyte subpopulations. It was conducted by determination of the CD3+, CD4+, CD8+, CD16+, CD22+ clusters of differentiation in rosette-forming test with erythrocytes diagnosticums. Normally distributed data were expressed as mean with standard deviation (SD). In order to compare differences between two normally distributed groups, the students t-test was used.

Results. Most patients (85.7%) were admitted on the second day of the illness. Viral nature of the ARVI pathogens was confirmed only in 45.7 % cases. Species composition of respiratory viral infections pathogens consists of rhinoviruses (28.6 %), adenovirus (24.3 %), respiratory syncytial virus (8.6 %), parainfluenza virus types I and III (8.6%), metapneumovirus (4.3%), influenza viruses A and B (22.9 %), coronavirus (4.3 %). Concomitant bacterial and fungal microflora was represented mainly by staphylococci, streptococci, micrococci, Corynebacterium spp. and fungi genus Candida.

In the children with ARVI relative amount of the CD3+ cells (40.14±1.8 %) was similar to health children (43.75±2.6). Relative amount of the CD4+ lymphocytes in both groups did not differ. There were 37.7±1.8% and 43.75±2.6 % CD4+ cells in children with ARVI and healthy children respectively. There was no difference in

relative amount of CD8+ cells (25.25±1.6 % and 21.25±2.2% in accordance) in two groups. We determined the increasing of the relative amount of CD16+ (22.7±1.6 %, t = 3.0011) and CD22+ (25.5±1.6 %, t = 4.6314) cells in the children with ARVI. In group of control relative amount of CD16+ and CD22+ cells was 15.25±1.9 % and 14.25±1.8 % respectively. In children with ARVI CD4+/CD8+ ratio was less then in group of healthy children (1.49 and 2.06).

Conclusion. The immune response at acute respiratory viral infection in children is characterized by activation of the innate (CD 16+ cells) and adaptive humoral (CD 22+ cells) immunity.