

ROLE OF MCP-1 CYTOKINE IN DEVELOPMENT OF COMMUNITY-ACQUIRED PNEUMONIA AMONG CHILDREN VACCINATED WITH PNEUMOCOCCAL VACCINE

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ABSTRACT

In recent decades, the discovery of cytokines and their regulatory role in the immune response have determined their research priorities in various pathological processes. This review summarizes data on the role of MCP-1 cytokines in acute lung pathology depending on the disease severity. And also the diagnostic and prognostic significance of the level of cytokines in the urine is shown.

The objective of this study is to identify the role of the MCP-1 cytokine in the development of community-acquired pneumonia among vaccinated children, and to assess their effect on the severity of the disease.

Materials and methods: 85 children aged 2 months to 3 years of varying severity who were hospitalized in Karaganda in 2017-2019 were included to study the level of MCP-1 cytokines in the urine. They were divided into 2 groups: the first one included vaccinated children (n = 45), the second one included children with delayed vaccination (n = 40).

To evaluate laboratory parameters, we examined MCP-1 in urine of all the 85 sick children. MCP-1 in urine was studied by enzyme-linked immunosorbent assay using the human MCP-1 ELISA kit designed for the quantitative determination of human MCP-1 (monocytic chemotactic protein-1) in human biological fluids according to the instructions of BioChemMac CJSC. Reference levels of MCP-1 in urine were considered to be 96 ± 44 pg/ml.

Statistical analysis of the results of the study was performed using the program Statistica 7.0. Quantitative data are presented as mean Me (median). Statistically significant differences were considered to be at $p < 0.05$.

Research and discussion results: The levels of MCP-1 in two groups were different. Statistically significant differences in the level of MCP-1 among children with delayed vaccination were with severe community-acquired pneumonia. Significant differences of this parameter in children from the 1st and 2nd groups ($p < 0.015$). All the vaccinated children had lower MCP-1 rates. The results of the study showed that there was a relationship between the level of the pro-inflammatory MCP-1 cytokine and the severity of community-acquired pneumonia.

Conclusion: The analysis showed a relationship between the level of the pro-inflammatory cytokine MCP-1 and the severity of community-acquired pneumonia among children vaccinated with pneumococcal vaccine. Thus, determining the level of MCP-1 in urine is a modern method of laboratory diagnosis, which allows to identify early prediction of the severity and risk of complications.