



Influence of the concentration of selected cytokines and chemokines on the ventilation efficiency of the lung, regarding large and small airways, in patients with asthma and COVID-19

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Introduction

Scientific reports indicated that in patients with asthma who were undergoing COVID-19, viral infection has milder course, than in individuals with other chronic diseases. It was linked to administered treatment, especially ICS influencing on local inflammation.

Aim

Evaluation of the impact of specific cytokines and chemokines on lung ventilation efficiency ,determined by spirometric parameters ,concerning small and large airways.

Material and methods

A prospective analysis conducted on 26 individuals with asthma and confirmed moderate COVID-19 as a 6-months follow-up. It included blood tests, such as concentration of cytokines – IL-2, IL-4, IL-6, IL-10, TNF- α . INF- γ , IL-17 and chemokines – CCL2/MCP-1, CCL5/RANTES, CXCL8/IL-8, XCL10/IP10 and spirometry parameters, such as: forced expiratory volume in the first second (FEV1), the ratio of forced expiratory flow in the first second to forced vital capacity (FEV1/FVC), the maximal expiratory flow rate at 25%, 50%, and 75% FVC (MEF 25-75) and MEF 25-75 expressed as percent predicted. The cytokines and



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chemokines concentrations were determined by the ELISA method and lung function test by JAEGER MasterScreen.

Results

MEF25, MEF50, MEF75 (expressed as percent predicted) significantly ($p < 0.05$) improved in 3rd and 6th month, simultaneously concentration of RANTES and IP10 was decreasing.

Significant correlation occurred between RANTES concentration and value of MEF25, MEF 50, MEF 75 (expressed as percent predicted) and IP10 and MEF 75 (expressed as percent predicted) in the 6th month of follow up.

Conclusions

Our findings indicate that prolonged respiratory disturbances mainly in the small airways are occurring probably as a result of inflammatory proces mediated especially by RANTES and IP10.