



Results of cluster analysis in predicting remodeling of the bronchi in children with bronchial asthma

Elena Koloskova, Galyna Bilyk, Tatyana Bilous

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Abstract

Introduction: In recent years accumulated results of the study of the atopic markers, airway hyperresponsiveness and the character and activity of the local inflammatory process of the airways of asthma in childhood.

Aims: Select high-risk groups on forming the bronchi remodeling to improve the management of asthma in children.

Materials and methods: We examined 117 school-age children with bronchial asthma, whose average age was 11,5±0,29 years, duration of the disease was on average 5,4±0,33 years, the boys were 65.25%.

Results: It was revealed 3 cluster groups of children with asthma. 1st cluster that determines moderate risk of bronchial remodeling have formed boys with early onset asthma, low index of bronchoconstriction (3.1%), high levels of interferon- γ (71,7 pg/ml) and interleukin-6 (4.27 pg/ml) in the supernatant of sputum. In the 2nd cluster, which is associated with a high risk of remodeling, have entered girls with severe asthma and later its debut, genotypes *GSTM1*, *GSTT1*, high index of bronchoconstriction (47.7%), eosinophilia in sputum (20.0%), high concentration of VEGF (400.0 pg/ml) and interleukin-13 (90.0 pg/ml) in the supernatant of sputum. 3rd cluster with low probability of irreversible changes of airways have formed children of high level of nitrogen oxide metabolites (63.9 mkmol/L) and proteolytic activity of lysis of azokol (0.24 ml/h) in exhaled air, elevated concentration of MMP-9 (6.9 pg/ml) and TNF- α (1,0 m/ml) in the supernatant of sputum.

Conclusions: In spite of the detected cluster groups of school-age children with asthma it is recommended to determine the risk of airway remodeling and further tactics of the basic anti-inflammatory treatment.

Asthma - management Biomarkers Children

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Nov 2016	13
Dec 2016	15
Jan 2017	25
Feb 2017	15
Mar 2017	14
Apr 2017	11
May 2017	13
Jun 2017	5
Jul 2017	16
Aug 2017	3

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