THE ANALYSIS OF THE LEVEL OF BRONCHIAL HYPERRESPONSIVENESS IN ASTHMATIC CHILDREN (2 - 18 YEARS) BY DOSIMETRIC, OSCILOMETRIC AND TIDAL BREATHING METHODS TO HISTAMINE AND METHACHOLINE AND ANALYSIS OF POLYMORPHISMS GENES ADAM33 AND STAT6

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Background of the study: The main pathogenic mechanism of bronchial asthma is chronic eosinophil-based inflammation of the bronchial mucosa. Airway hyperresponsiveness (AHR), is known to be a major risk factor for the development of asthma and to be equivalent of asthma severity.

The method used: Main aim of this project, supported by IGA MZ CR No. NR8383-3/2005, is to test if the level of AHR is associated with certain alleles or haplotypes of genes (ADAM 33 and STAT 6) involved in immune system activity in course of allergic illness development and airway hyperresponsiveness. 80 children with bronchial asthma had histamine and methacholine bronchoprovocation tests in a sequence with increasing levels using dosimetric method and MedicAid and DeVilbiss nebulizers. Oscilometric assessment I was followed by baseline spirometry, and with oscillometric assessment II after a decrease in FEV1 more than 20% versus baseline. Examinations of responsible polymorphisms of ADAM 33 and STAT 6 genes were accomplished by sequence analysis in 80 children with asthma bronchiale, their sibs and parents and 50 control healthy children.

Results: Examinations of responsible polymorphisms of ADAM 33 and STAT 6 genes were accomplished by sequence analysis in 80 children with asthma bronchiale, their sibs and parents and 50 control healthy children. In the evaluation of the result it could be demonstrated that changes in resistance R5 and R20 between oscillometric assessments I and II more than 40% are consistent with a decrease in FEV1 more than 20% in both dosimetric method. The statistical evaluation of the association of genes polymorphisms with asthma bronchiale occurrence and airway hyperresponsiveness level in children will be presented by poster.

The conclusions: These results show that resistance R5 over R20, as measured with IOS (impulse oscillometry), significantly correlates with the -gold standard- FEV1. Description of influence of particular sequence changes could contribute to additional insight to the airway hyperresponsiveness genetical background.