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Title: The impact of gene-gene interaction on the severity of bronchial asthma in Ukrainian children

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Body: Background: Gene-gene interaction in the development of different severity of bronchial asthma (BA) has not been investigated. The aim of the study was to define the genetic differences among children with persistent mild and persistent moderate BA. Methods: Comparative groups included 13 patients (aged 8,58+0,84 year) with persistent mild BA and 14 patients (aged 8,94+0,82 year) with persistent moderate BA. Sex differences among two groups were not observed. There was performed 10 genes polymorphism investigation using PCR with further RFLP. The differences in comparative groups were assessed by the two tailed Fisher test analyses. MDR program was applied for gene-gene interaction evaluation. Results: The frequency of DD genotype in ACE gene was significantly higher among patient with persistent moderate BA (p=0,045). The patient with persistent moderate BA had also significantly increased frequency of GSTM1 gene deletion polymorphism (p=0,0004). We have observed no differences in the frequency of others genes polymorphic variants.

MDR analysis has found synergy closely interaction between MTHFR (C677T) and ACE (I/D) genes and between GSTM1 and eNOS (4a/4b). Conclusion: Gene-gene interaction defined severity of bronchial asthma in children. The further research may help to optimize BA prognosis and treatment.