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Significant association between SCGB1D4 gene polymorphisms and susceptibility to adenoid hypertrophy in a pediatric population*

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Background/aim: Adenoid hypertrophy (AH) is chronic enlargement of the adenoid tissue. The pathophysiology of the disease is unclear. We analyzed *SCGB1D4* gene polymorphisms in order to determine the effect of the variants or their genetic combinations on AH.

Materials and methods: We genotyped the *SCGB1D4* (*IIS*) gene in 167 participants (95 children with AH and 72 controls) by performing DNA sequencing in blood samples.

Results: We genotyped three single nucleotide polymorphisms (SNPs). In the analysis, we found that in the presence of those SNPs and the minor alleles of individual SNPs four haplotypes were associated with an increased risk of AH. In addition, those SNPs were significantly associated with asthma, allergy, sleep-disordered breathing, AH grade +4, and a high level of IgE. As indicated on multifactor dimensionality reduction analysis, single-locus (rs35328961), two-locus (rs35328961_rs56196602), and three-locus models (rs200327820_rs35328961_rs56196602) had the highest synergistic interaction effect on AH. The three-factor model was also significantly associated with some genotypes of rs35328961 and allergic–asthmatic AH.

Conclusion: SNPs of *SCGB1D4* and their combinations are associated with an increased risk for developing AH. We highlighted the importance of genetic factors on AH and AH-related clinical phenotypes.

Key words: Adenoid hypertrophy, asthma, allergy, SDB, SNP, secretoglobins, *SCGB1D4*, DNA sequence analysis, PCR, MDR, haplotypes, gene