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ORIGINAL ARTICLE

Association of *Ugrp2* gene polymorphisms with adenoid hypertrophy in the pediatric population☆

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Abstract
Introduction: Adenoid hypertrophy is a condition that presents itself as the chronic enlargement of adenoid tissues; it is frequently observed in the pediatric population. The *Ugrp2* gene, a member of the secretoglobin superfamily, encodes a low-molecular weight protein that functions in the differentiation of upper airway epithelial cells. However, little is known about the association of *Ugrp2* genetic variations with adenoid hypertrophy.
Objective: The aim of this study is to investigate the association of single nucleotide polymorphisms in the *Ugrp2* gene with adenoid hypertrophy and its related phenotypes.
Methods: A total of 219 children, comprising 114 patients suffering from adenoid hypertrophy and 105 healthy patients without adenoid hypertrophy, were enrolled in this study. Genotypes of the *Ugrp2* gene were determined by DNA sequencing.
Results: We identified four single nucleotide polymorphisms (*IVS1-189G>A*, *IVS1-89T>G*, *c.201delC*, and *IVS2-15G>A*) in the *Ugrp2* gene. Our genotype analysis showed that the *Ugrp2* (*IVS1-89T>G*) TG and (*c.201delC*) CdelC genotypes and their minor alleles were associated with a considerable increase in the risk of adenoid hypertrophy compared with the controls ($p = 0.012$, $p = 0.009$, $p = 0.013$, and $p = 0.037$, respectively). Furthermore, *Ugrp2* (*GTdelCG*, *GTdelCA*) haplotypes were significantly associated with adenoid hypertrophy (four single nucleotide polymorphisms ordered from 5′ to 3′; $p = 0.0001$). Polymorfism–Polymorfism interaction analysis indicated a strong interaction between combined genotypes of the *Ugrp2* gene contributing to adenoid hypertrophy, as well as an increased chance of its diagnosis ($p < 0.0001$). In

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