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The common genetic variants of *toll-like receptor* and susceptibility to adenoid hypertrophy: a hospital-based cohort study

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Background/aim: Adenoid hypertrophy (AH) is one of the most frequent pediatric disorders. The aim of this study was to investigate the effects of *TLR2-R753Q*, *TLR4-T399I*, and *TLR4-D299G* polymorphisms in children with AH.

Materials and methods: The variants of the *TLR* gene were determined by restriction fragment length polymorphism (PCR-RFLP) analysis in 60 patients with AH and in 50 healthy children. Data were analyzed with SNPStats and multifactor dimensionality reduction (MDR) software.

Results: We found that the presence of the G allele, the AG+GG and AG genotypes at *TLR4-D299G*, and the GGT haplotype were associated with AH in children (P = 0.013, P = 0.02, P = 0.038, and P = 0.001, respectively). On the contrary, no association was found between *TLR2-R753Q* and predisposition to AH. The CT genotype at *TLR4-T399I* showed a sex-specific association with AH, occurring only in boys with allergies (P = 0.0048). In addition, MDR analysis indicated a strong synergy between *TLR* gene markers contributing to AH. Allergic children with the diplotypes that included minor alleles of *TLR4-D299G* or *TLR4-T399I* had about a 4-fold increased risk for AH.

Conclusion: Common genetic variants of the gene encoding the TLR4 protein may have differential effects on AH and the presence of sex-specific allergy.