Single nucleotide polymorphisms in the ORM1-like 3 gene associated with childhood asthma in a Chinese population

F.F. Yang¹, Y. Huang², Q.B. Li², J.H. Dai² and Z. Fu²

¹Ministry of Education Key Laboratory of Child Development and Disorders, Children’s Hospital of Chongqing Medical University, Chongqing, China
²Division of Respiratory Medicine, Children’s Hospital of Chongqing Medical University, Chongqing, China

Corresponding author: Y. Huang
E-mail: yinghuangcq@gmail.com

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ABSTRACT. Single nucleotide polymorphism (SNP)-based genome-wide association studies have revealed that polymorphisms of the ORM1-like 3 (ORMDL3) gene are associated with childhood asthma. We investigated genetic associations of SNPs in and around the ORMDL3 gene with childhood asthma in a Chinese population. Genomic DNA was extracted from peripheral venous blood drawn from 152 subjects with childhood asthma and from 190 control subjects. SNP genotyping was performed with the MassARRAY system (Sequenom) by means of matrix-assisted laser desorption/ionization time-of-flight mass spectrometry. Among the six SNPs, only the genotype frequencies of rs7216389 were significantly different between asthmatic children and controls. Asthmatic children had a significantly higher frequency of T alleles [odds ratio (OR) = 1.653, 95% confidence interval (95%CI) = 1.170-2.333] in rs7216389, than controls. The TT genotype of rs7216389 was found to be a significant risk factor for childhood asthma by logistic regression analysis (OR = 1.704, 95%CI = 1.105-
2.628). There was no significant association between the TT genotype of rs7216389 and clinical features of childhood asthma. We conclude that the ORMDL3 gene influences childhood asthma and that the TT genotype of the rs7216389 polymorphism is associated with childhood asthma in the Chinese population.

**Key words:** Childhood asthma; Single nucleotide polymorphisms; ORM1-like 3 (ORMDL3) gene; Genetic association studies; Case-control design; Chinese population