Association of the RIP2 Gene with Childhood Atopic Asthma

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Background: Receptor-interacting protein (RIP)-2 is a serine/threonine kinase containing a caspase recruitment domain (CARD) that is involved in the Toll-like receptor-signaling pathway. Although associations between endotoxin exposure or respiratory infection and asthma have been recognized, the genetic influences in these conditions are unclear. The aim of our study was to examine whether polymorphisms or haplotypes in RIP2 were associated with childhood atopic asthma in a Japanese population.

Methods: We screened the RIP2 gene for polymorphisms by direct sequencing and characterized the linkage disequilibrium (LD) mapping of the gene. Seven variants were genotyped in childhood atopic asthma (n = 300) and normal controls (n = 637) . We conducted case-control and case-only association studies between the variants and asthma-related phenotypes. Haplotype association analyses were also performed.

Results: A total of 31 variants were identified and none of the alleles or haplotypes of RIP2 were associated with asthma susceptibility. In the case-only study, an association between an RIP2 promoter polymorphism and childhood severe asthma (P=0.0032; odds ratio (OR) 3.37, 95% confidence interval (CI) 1.45—7.87) was observed.

Conclusions: Although polymorphisms in RIP2 are not likely to be associated with the development of asthma, the genetic variants might contribute to asthma severity in the Japanese population.

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