

Association between the GRM7 rs3792452 polymorphism and attention deficit hyperactivity disorder in a Korean sample.

Park S, Jung SW, Kim BN, Cho SC, Shin MS, Kim JW, Yoo HJ, Cho DY, Chung US, Son JW, Kim HW.

Behav Brain Funct. 2013 Jan 7;9(1):1. [Epub ahead of print]

BACKGROUND: The purpose of this study was to investigate the association between the ionotropic and glutamate receptors, N-methyl D-aspartate 2A (GRIN2A) and 2B (GRIN2B), and the metabotropic glutamate receptor mGluR7 (GRM7) gene polymorphisms and attention-deficit hyperactivity disorder (ADHD) in Korean population.

METHODS:

We conducted a case--control analysis of 202 ADHD subjects and 159 controls, performed a transmission disequilibrium test (TDT) on 149 trios, and compared scores from the continuous performance test (CPT), the Children's Depression Inventory (CDI), and the State-Trait Anxiety Inventory for Children (STAIC) according to the genotype of the glutamate receptor genes.

RESULTS:

There were no significant differences in the genotype or allele frequencies of the GRIN2A rs8049651, GRIN2B rs2284411, or GRM7 rs37952452 polymorphisms between the ADHD and control groups. For 148 ADHD trios, the TDT analysis also showed no preferential transmission of the GRIN2A rs8049651 or GRIN2B rs2284411 polymorphisms. However, the TDT analysis of the GRM7 rs3792452 polymorphism showed biased transmission of the G allele ($\chi^2 = 4.67$, $p = 0.031$). In the ADHD probands, the subjects with GG genotype in the GRM7 rs37952452 polymorphism had higher mean T-scores for omission errors on the CPT than did those with the GA or AA genotype ($t = 3.38$, $p = 0.001$). In addition, the ADHD subjects who were homozygous for the G allele in the GRM7 rs37952452 polymorphism had higher STAIC-T ($t = 5.52$, $p < 0.001$) and STAIC-S ($t = 2.74$, $p = 0.007$) scores than did those with the GA or AA genotype.

CONCLUSIONS:

These results provide preliminary evidence of an association between the GRM7 rs37952452 polymorphism and selective attention deficit and anxiety found within the Korean ADHD population.