Association of Serotonin Receptors with Attention Deficit Hyperactivity Disorder: A Systematic Review and Meta-analysis


Abstract

Attention deficit hyperactivity disorder (ADHD) is one of the most common mental disorders in childhood, with a high heritability about 60% to 90%. Serotonin is a monoamine neurotransmitter. Numerous studies have reported the association between the serotonin receptor family (5-HTR) gene polymorphisms and ADHD, but the results are still controversial. In this study, we conducted a meta-analysis of the association between 5-HTR1B, 5-HTR2A, and 5-HTR2C genetic variants and ADHD. The results showed that the 861G allele of 5-HTR1B SNP rs6296 could significantly increase the risk of ADHD (OR=1.09, 95% CI: 1.01-1.18); the 5-HTR2C gene rs518147 (OR=1.69, 95% CI: 1.38-2.07) and rs3813929 (OR = 1.57, 95% CI: 1.25-1.97) were all associated with the risk of ADHD. In addition, we also carried on a case-control study to explore the relevance between potential candidate genes 5-HTR1A, 5-HTR1E, 5-HTR3A and ADHD. The results indicated that 5-HTR1A rs6295 genotype (CC+CG vs. GG OR=2.00, 95% CI: 1.23-3.27) and allele (OR=1.77, 95% CI: 1.16-2.72) models were statistically significantly different between case group and control group. This study is the first comprehensive exploration and summary of the association between serotonin receptor family genetic variations and ADHD, and it also provides more evidence for the etiology of ADHD.