Dissecting genetic cross-talk between ADHD and other neurodevelopmental disorders: Evidence from behavioural, pharmacological and brain imaging investigations


Abstract

Several epidemiological and genetic studies have provided evidence of an overlap between neurodevelopmental disorders. However, the details of the etiological pathways remain to be elucidated. In this study, we garnered the findings of previous GWAS, conducted with schizophrenia and bipolar disorder. We conducted an exploratory study to examine the association between these SNPs and quantitative clinical/behavioural/cognitive/structural brain parameters, as well as response to treatment with a fixed dose of methylphenidate, in a relatively large sample of children with ADHD. Family-based association tests were conducted with nine tag SNPs with 602 nuclear families. In addition, structural magnetic resonance imaging (sMRI) was conducted in a subset of children with ADHD (n = 76). Of the 9 tag SNPs examined, rs1602565 showed a significant association with ADHD, several dimensional measures and response to treatment. An association was also observed between rs1006737 (CACNA1C) and performance IQ. In addition, significant reductions in cortical thickness measurements were observed with the risk allele in rs1006737. These results provide preliminary evidence for putative shared genetic vulnerability between childhood ADHD and other neurodevelopmental disorders.