DISC1 in adult ADHD patients: An association study in two European samples.

Jacobsen KK, Halmøy A, Sánchez-Mora C, Ramos-Quiroga JA, Cormand B, Haavik J, Johansson S.

Department of Biomedicine, University of Bergen, Bergen, Norway; K. G. Jebsen Centre for Research on Neuropsychiatric Disorders, University of Bergen, Bergen, Norway; Center for Medical Genetics and Molecular Medicine, Haukeland University Hospital, Bergen, Norway. kja098@biomed.uib.no.

Am J Med Genet B Neuropsychiatr Genet. 2013 Feb 6. doi: 10.1002/ajmg.b.32136. [Epub ahead of print]

The DISC1 gene was named after its discovery in a Scottish pedigree with schizophrenia (SCZ) patients. However, subsequent studies have shown association of DISC1 variants with a range of different neurocognitive phenotypes and psychiatric disorders, including bipolar disorder (BPD), and major depression. Attention-deficit/hyperactivity disorder (ADHD) shares some symptoms with BPD and ADHD patients often suffer from comorbid affective disorders. We wanted to examine the role of DISC1 in ADHD, and with comorbid symptoms of mood disorders. Eleven single nucleotide polymorphisms (SNPs) previously implicated in SCZ and BPD, and a DISC1 duplication involving exon 1, were genotyped in 561 adult ADHD cases and 713 controls of Norwegian ancestry. The intronic SNP rs1538979 was associated with ADHD in the Norwegian sample [odds ratio (OR): 1.33, 95% confidence interval (CI) 1.03-1.73, P = 0.03] and replicated in a Spanish adult ADHD sample of 694 cases and 735 controls, using the tagging SNP rs11122330 (meta-analysis: P = 0.008, OR 1.25, 95% CI 1.06-1.47). In the Norwegian ADHD sample we also observed an association between the Phe607-variant of rs6675281 and a positive score on the Mood Disorder Questionnaire (MDQ; OR = 1.44, 95% CI 1.08-1.93, P = 0.01). To our knowledge, this is the first study to show an association between DISC1 variants and ADHD. Our study suggests that further studies are warranted to resolve if DISC1 variation is involved in several common neurodevelopmental disorders including ADHD.