Dopamine Transporter (DAT1/SLC6A3) polymorphism and the association between being born small for gestational age and symptoms of ADHD

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Abstract

Being small for gestational age (SGA) has been established as a risk factor for Attention Deficit Hyperactivity Disorder (ADHD). Likewise, several molecular genetic studies have found a link between DAT1 and ADHD. This study investigated whether SGA moderates the effect of dopamine transporter gene variants on the risk of ADHD. A total of 546 children of European descent were genotyped at age 11 for seven DAT1 SNPs (rs6347, rs11564774, rs40184, rs1042098, rs2702, rs8179029 and rs3863145). The Strengths and Difficulties Questionnaire was used to measure symptoms of ADHD at ages 3.5, 7 and 11. We found significant gene-environment interactions between birth weight and DAT1 SNPs (rs6347, rs40184, rs1042098, rs8179029 and rs3863145) on ADHD symptoms at 3.5 years only. Results suggest that genotypic variation of DAT1 may confer a relative protective effect against ADHD in SGA individuals. This study supports the idea that being born SGA moderates the effect of the DAT1 gene on ADHD symptoms in the preschool years and may help to explain some of the heterogeneity in ADHD outcomes.