Zinc transporter-3 [SLC30A3 (rs11126936)] polymorphism is associated with major depressive disorder in Asian subjects

ABSTRACT

Major depressive disorder (MDD) compromises the individual's capacity for self-care and productivity. Single nucleotide polymorphisms (SNP) of a number of genes have been associated with MDD. The zinc transporter-3 protein, encoded by the ZnT3 (SLC30A3) gene, maintains zinc-glutamate homeostasis at the glutamatergic synapse, a disruption of which increases risk of MDD. We hypothesise that variation in SLC30A3 (rs11126936) SNP increases risk of MDD. We recruited 300 MDD cases and 300 controls, matched in the ratio of 1:1 by age, gender and ethnicity. PCR-restriction fragment length polymorphism analysis was used in DNA genotyping, validated by sequencing 10% of samples. Deviation from the Hardy-Weinberg equilibrium was tested using the chi-square test. Conditional logistic regression was used to estimate adjusted odds ratios, controlling for age, gender, ethnicity, occupation and family monthly income. Genotypes G/G and G/T showed two times greater odds of developing MDD compared to variant genotype T/T (OR=1.983, 95% CI=1.031-3.815; p=0.040 and OR=2.232, 95% CI=1.100-4.533; p=0.026 respectively). Carriers of genotypes G/G and G/T of the SNP rs11126936 in SLC30A3 are associated with increased risk of MDD.

Keyword: Depression; Genetics; Mood disorders; Biological markers; Zinc transporter (ZnT3) gene; SLC30A3 (rs11126936) SNP