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Content

GENETIC PREDISPOSITION OF SUICIDAL BEHAVIOR: VARIANTS IN *GRIN2B*, *GABRG2*, AND *ODC1* GENES IN SUICIDE ATTEMPT AND COMPLETED SUICIDE IN TWO BALKAN POPULATIONS

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Introduction: Suicidal behavior ranges between suicidal ideation and completed suicide. Completed suicide accounts for over 700,000 deaths worldwide, while attempted suicide is 20 times more frequent. Genetic background is an important factor contributing to suicidal behavior, and candidate genes linked to several neurotransmitter systems have been investigated. Alternations in glutamate, γ-aminobutyric acid (GABA) and polyamine systems have been detected in suicidal behavior. Our aim was to differentiate genetic predispositions underlying two different types of suicidal behavior, attempted and completed suicide, in two Balkan populations.

Methods: The study sample included 173 suicide attempters with comorbid psychiatric disorders (major depressive disorder, bipolar affective disorder, or schizophrenia), 216 non-suicidal psychiatric patients and 172 healthy controls from Serbia, and 333 suicide completers and 356 non-suicidal autopsy controls from Slovenia. Variants in the genes *GRIN2B* (rs2268115 and rs220557), *GABRG2* (rs424740), and *ODC1* (rs1049500 and rs2302614) were genotyped by TaqMan assays and analyzed using PLINK.

Results: The CA genotype of rs220557 in the *GRIN2B* gene increases the risk for completed suicide (OR=1.51, p=0.021), and particularly violent suicide (OR=1.49, p=0.037), compared to controls. In the *ODC1* gene, the CA genotype of rs2302614 decreases the risk for completed suicide compared to suicide attempt (OR=0.32, p=0.012). Marginally, the AC haplotype for variants rs1049500-rs2302614 in the *ODC1* gene decreases the risk for completed suicide compared to suicide attempt (OR=0.50, p=0.052).

Conclusion: Specific genetic variants of the glutamate and the polyamine systems are differently distributed among diverse suicidal phenotypes, thus providing further information on the implication of these systems in suicidality.

Key words: suicidal behavior; genetic variant; *GRIN2B*; *GABRG2*; *ODC1*

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