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Genetic polymorphisms, impulsivity and suicide attempts: looking for a comprehensive model of relapse in alcohol dependence

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Background: The serotonin system is considered to contribute to both predisposition and course of addictions. A major, suggested link between low serotonin activity and alcohol drinking is impulsivity, which can be manifested by suicidal behavior. The objective of our study was to build a comprehensive model of mutual relationships between *HTR2A* T102C (rs6313) polymorphism, suicidality, impulsivity and relapse in alcohol dependence.

Material and methods: A sample of 254 alcohol dependent subjects were recruited in alcohol treatment centers and prospectively assessed at baseline and follow-up after 12 months. Information about demographics, psychopathological symptoms, history of suicide attempts and alcohol problems was obtained. The stop-signal task was performed and blood samples for genetic analysis were collected. Relapse was defined as any drinking during the follow up period.

Results: The statistical analysis revealed a significant association between CC genotype in *HTR2A* T102C polymorphism and relapse. Other factors that turned out to be significantly associated with relapse were history of impulsive suicide attempt and baseline depressive symptoms, with genetic factor being the strongest predictor of relapse in multivariate model (OR=2.125). In addition we observed a significant association between CC genotype and behavioral impulsivity as well as history of suicide attempts. We also found a significant association between stop reaction time and lifetime history of suicide attempts.

Conclusions: Our results provide a consistent perspective of importance of 5-HT2A receptor associated with impulsivity, suicidality and relapse. Based on these findings we propose a more comprehensive model of mutual relationships between relapse, impulsivity, suicidality and *HTR2A* polymorphism.

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