

Clinical Predictors of Antisuicidal Response to Ketamine

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Methodological Question Being Addressed: Defining suicide ideation response to a rapid-acting intervention, ketamine. In the attached analysis, we used latent class growth mixture modeling to define three different classes of suicide ideation responders to ketamine. Such an approach can help to refine future analyses of biomarkers of antisuicidal response.

Background: Suicide is one of the leading causes of death in the United States. Despite treatment efforts, the national suicide rate has increased in recent years. Currently, there are no pharmacological treatments for suicidal ideation (SI). For individuals experiencing a suicidal crisis, rapid acting medications may save lives. Recent studies suggest ketamine, a glutamate modulator, elicits rapid antisuicidal responses. We examined trajectories of SI over the 3 days after ketamine administration as well as clinical factors that might predict antisuicidal response to ketamine.

Methods: Data were pooled from three clinical trials of ketamine, including 97 treatment-resistant inpatients with DSM-IV-TR-diagnosed unipolar or bipolar depression. Subjects received one subanesthetic (0.5mg/kg) ketamine infusion over 40 minutes. Change in a composite SI variable was analyzed using a person-centered approach (latent class growth mixture modeling) to generate SI response classes. Predictors of class membership were evaluated using multinomial logistic regressions.

Results: The best fitting growth mixture model comprised three classes, non-responders (29%), moderate responders (44%), and remitters (27%). Individuals who reported SI on admission or had a history of self-injury were more likely to belong to the non-responder class, while a history of sexual abuse was associated with membership in the remitter class (unadjusted $p < .05$). Antidepressant response was related to, but not redundant with, SI response; although SI in the non-responders' class did not improve, they did exhibit some improvement in depressive symptoms.

Conclusion: This study used latent class growth curve modeling to describe three classes of SI response to ketamine, and to identify potential clinical predictors of antisuicidal ketamine response. These trajectories and predictors may both overlap and diverge from antidepressant response to ketamine. These findings could be integrated with other efforts to advance predictive capacity for personalized treatments for SI. Further investigation of predictors of SI response is essential to both improving patient care and better understanding the neurobiology of suicide.