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Subjective Response to Alcohol in Young Adults with Bipolar Disorder and Associated Frontolimbic Gray Matter Volume and Alcohol Use

BACKGROUND: Alcohol Use Disorders (AUDs) occur three to five times more often in bipolar disorder compared to the general population. Previously, lower gray matter volume (GMV) in the ventral, rostral, and dorsal prefrontal cortex (PFC) was reported in adolescents with bipolar disorder who subsequently developed alcohol problems. It remains unclear how alterations in regional GMV relates to risk for AUDs. This preliminary study is investigating self-report subjective response to alcohol, alcohol use, and associations with PFC GMV in young adults with bipolar disorder and typically developing youth.

METHODS: To date, 35 young adults (18 with bipolar disorder and 17 healthy comparison participants, 80% female, mean_{age}±stdev= 20.8±1.9 years) completed structural magnetic resonance imaging, measures assessing alcohol sensitivity, and quantity and frequency of recent alcohol use. These included the Self-Rating of the Effects of Alcohol Questionnaire and the Daily Drinking Questionnaire.

RESULTS: Increased sensitivity to alcohol was associated with lower GMV in the ventral PFC (vPFC) in bipolar disorder ($p < 0.005$, ≥ 20 voxels). This relationship was not observed in the healthy comparison group (group x SRE interaction $p < 0.005$). There was no significant difference between the two groups in their sensitivity to alcohol, frequency of drinking days, or total drinks consumed during their heaviest drinking week.

CONCLUSIONS: Preliminary results from this ongoing study suggest variations in vPFC GMV may be associated with altered sensitivity to alcohol. Longitudinal investigations are needed to further examine how variations in GMV, sensitivity to alcohol, and their interactions may then relate to increased risk for AUDs in bipolar disorder.

Keywords: Bipolar Disorder, Alcohol Use Disorder, Young Adulthood, Magnetic Resonance Imaging