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Cardiovascular and psychiatric characteristics associated with oxidative stress markers among adolescents with bipolar disorder.

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ABSTRACT

Introduction: In the field of bipolar disorder (BD) research there is an absence of validated biomarkers and limited understanding of the biology underlying excessive and premature cardiovascular disease (CVD). Oxidative stress is a potential biomarker in both BD and CVD.

Objective: To examine psychiatric and cardiovascular characteristics associated with peripheral oxidative stress markers among adolescents with BD, who are at high risk for CVD.

Methods: Participants were 30 adolescents, 13–19 years old with BD and without CVD. Ultrasonography was used to evaluate vascular function and structure. Traditional CVD risk factors were also measured. Psychiatric assessments were conducted via semi-structured interview. Serum levels of oxidative stress (lipid hydroperoxides (LPH) and protein carbonylation (PC)) were assayed.

Results: Compared to published data on adults with BD, adolescents had significantly lower levels of LPH and PC ($t_{52}(11.34)$, $p < 0.0001$; $t_{58}(29.68)$, $p < 0.0001$, respectively). Thicker mean and maximum carotid intima media thickness was associated with greater levels of LPH ($r = .455$, $p = .015$; $r = .620$, $p < 0.0001$, respectively). LPH was associated with diastolic blood pressure ($r = -.488$, $p = 0.008$) and pulse pressure ($r = .543$, $p = 0.003$). Mood symptoms and medication were not significantly associated with oxidative stress.

Conclusion: Adolescents with BD have lower levels of oxidative stress compared to adults with BD, supporting prevailing illness staging theories for BD. Oxidative stress is robustly associated with a proxy measure of atherosclerosis and may explain in part the increased risk of CVD in BD.