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Cholesterol fractions, symptom burden, and suicide attempts in mood disorders

Jane E. Persons[a], **William H. Coryell**[b], and **Jess G. Fiedorowicz**[a,b,c]

[a]Department of Epidemiology, College of Public Health, The University of Iowa, Iowa City, IA 52242, USA

[b]Department of Psychiatry, Roy J. and Lucille A. Carver College of Medicine, The University of Iowa, USA

[c]Department of Internal Medicine, Roy J. and Lucille A. Carver College of Medicine, The University of Iowa, USA

To the Editors

Low total cholesterol has been associated with suicide (Coryell and Schlesser, 2007) though this has been subject to debate with most research focused on total cholesterol. In a recent review of studies that included cholesterol fractions, Troisi (2009) noted that low levels of low-density lipoprotein cholesterol (LDL-c) have been most consistently (four studies) implicated in suicidal behavior and impulsivity, while low levels of high-density lipoprotein cholesterol (HDL-c) have been more strongly associated with negative mood and depressive symptomatology. Our aim was to determine the relationship between serum HDL-c and LDL-c and course of illness and prior suicide attempts in a well-characterized sample of individuals with mood disorders. We hypothesized individuals with a history of suicide attempts would have lower LDL-c and that depressive symptom burden would be inversely related to HDL-c levels.

Our sample included 35 Caucasian adults with major depression or bipolar disorder who completed a mean (standard deviation (S.D.)) of 26.8 (1.2) and up to 30 years of follow-up in the Collaborative Depression Study. Participants were recruited for a study of vascular function in mood disorders, described in greater detail elsewhere (Fiedorowicz et al., 2012). Long-term course of illness was assessed using the Longitudinal Interval Follow-up Evaluation (Keller et al., 1987), which tracks weekly ratings of clinically significant depressive symptoms, collected previously over twenty-four to thirty years. Participants provided separate written consents for the Collaborative Depression Study and this cross-sectional evaluation through protocols approved by the University of Iowa Institutional Review Board.

Of the 35 study participants, 11 (31.4%) had at least one suicide attempt, as previously defined (Fiedorowicz et al., 2009), during the Collaborative Depression Study follow-up period. We found there to be no significant difference (p=0.24) in mean LDL-c levels between individuals with a history of suicide attempts (129.8 (27.7) mg/dL) and individuals with no documented history of suicide attempt (117.9 (25.5) mg/dL), nor did we detect a significant difference (p=0.52) in mean (S.D.) HDL-c levels between attempters (53.1 (15.0) mg/dL) and non-attempters (56.0 (11.4) mg/dL). Depressive symptom burden was correlated with neither HDL-c (r=0.10, p=0.56) nor LDL-c (r=0.09, p=0.62) levels. Those with

Corresponding author at: 200 Hawkins Drive, W278 GH, Iowa City, IA 52242, USA. Tel.: +1 319 384 9267; fax: +1 319 353 8656.

categorically low HDL-c (*N*=6, <40 mg/dL) had a non-significantly lesser, rather than greater, depressive symptom burden (26% vs. 31% of follow-up weeks, *t*=0.41, d.f.=33, *p*=0.68).

To date, research on cholesterol and suicide has focused primarily on total serum cholesterol; few studies have attempted to characterize the relationship between serum cholesterol fractions and suicide risk. Prior studies have recruited cases shortly after the attempt, wherein low cholesterol could be a consequence of weight loss secondary to depression. Our long-term prospective cohort design rigorously assesses suicide attempts over long-term follow-up and measures cholesterol fractions outside of the acute suicide attempt. However, our small sample increases the risk of type II error, limiting the ability to establish an association between HDL-c and LDL-c serum levels and outcome measures though results were in the opposite direction hypothesized. Large, well-designed studies will be required to clarify what is certainly a complex relationship between serum lipids and clinical variables relevant to mood disorders.

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