PROGRESSION OF METABOLIC SYNDROME IN RELATION TO DEPRESSION SYMPTOMS AND HIGH SENSITIVITY C-REACTIVE PROTEIN: THE BOGALUSA HEART STUDY

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Abstract: Metabolic syndrome (MetS) is a major public health concern as it relates to increased risk of cardiovascular disease (CVD) and type 2 diabetes. Studies suggest that one of the mechanistic actions of MetS is via depression involving the hypothalamic-pituitary-adrenal axis. Recent reports show that inflammatory biomarkers such as high-sensitivity C-reactive protein (hs-CRP) have been suggested to play a role in the relationship between depression and MetS. Therefore, the specific aims of this study were to: 1) examine the prospective association between depression and MetS and its components over seven years after controlling for CVD risk factors, and 2) investigate the mediator role of hs-CRP on the association between depression and MetS. Depression symptoms were self-reported and assessed using Center for Epidemiologic Studies-Depression scale. Plasma high sensitivity hs-CRP levels were measured by latex particle-enhanced immunoturbidometric assay. The risk ratio (RR) was estimated with 95% Confidence Interval (CI) of depression and hs-CRP for MetS and its component using proc genmod procedure. The SAS 9.4 version was used to analyze longitudinal data. Of 797 participants in this cohort, 599 participants (419 whites (70%) and 180 blacks (30%)), with a mean age of 36 years of age, were followed over the period of seven years. The remaining participants (198 (24%)) were excluded because they had MetS at baseline. The incidence of Mets was 26% among whites and 30% among blacks. In a multivariate logistic regression model with the genmod procedure, hs-CRP was related to MetS in blacks and the total sample. The RR of hs-CRP for developing MetS was 1.47 with a 95% Confidence Interval (CI), 1.19-1.80 in blacks and 1.17 with a CI 1.05-1.30 in the total sample, adjusted for CVD risk factors. In addition, depression and hs-CRP were related to central obesity in whites (Unadjusted RR 1.30, CI: 1.04-1.62 and RR: 1.28, CI: 1.18-1.38, respectively). After controlling for CVD risk factors, the RR of depression was 1.10 (CI: 0.81-1.49) which was not significant; and the RR of hs-CRP was 1.21 (CI: 1.06-1.38). The complete mediator role of hs-CRP was confirmed for incidence of central obesity with depression symptoms in whites. The CRP was independently associated with Mets in this cohort, and the mediator role of hs-CRP was established for central obesity, a metabolic component of MetS in whites. Further research is needed to explore the mediator role of hs-CRP between depression and MetS and its component.

Keywords: Metabolic syndrome, depression symptom, and high sensitivity C-reactive protein

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