

BLOOD PRESSURE AND SALIVARY CORTISOL LEVELS OF AFRICAN AMERICAN ADOLESCENTS

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Purpose: Hypertension is disproportionate in African Americans and develops at an earlier age. Epidemiological studies demonstrate that adult hypertension may have its origin in childhood. Blood pressure and cortisol hyperresponsiveness during physiologic stress has been hypothesized to function as biological markers for hypertension in adults. Genetic susceptibility and stress have also been associated with blood pressure levels. The purpose of this study was to explore the relationship of family history of hypertension to cardiovascular reactivity, blood pressure, and salivary cortisol levels in African American adolescents.

Method: A quasi-experimental repeated measures design was used. Data, including family history of hypertension and resting blood pressure, was obtained from African American adolescents, ages of 14 and 18 years old (N = 107). At week one and week four, systolic and diastolic blood pressures and salivary cortisol levels were measured before and after physiologic stress, induced by the cold pressor test of hand immersion in 4 degree Celsius water, for 60 seconds (Hines Protocol). Cortisols were measured by radioimmunoassay. Subjects were classified according to blood pressure, cortisol, and responsivity to the stress. Multivariate repeated measures analysis and chi-square analyses will determine changes in blood pressure and salivary cortisol.

Findings: One hundred and seven subjects (mean age 15), from one urban high school, completed the study. Seventy-five (70%) participants had positive family history of hypertension. Cardiovascular reactivity was significantly higher in African American adolescents with a family history of hypertension ($p = 0.04$) There was a positive correlation between changes in blood pressure and a family history of hypertension ($p=0.004$). There was no difference in salivary cortisol levels between the groups ($p = 0.78$). Within the entire population (N=107), 44 subjects (41%) had above normal blood pressures, 6 subjects were hypertensive and the average cortisol was 30nmols/L. Only 3 subjects were subjectively markedly overweight. Eighty-nine (83%) had elevated cortisol levels. The mean salivary cortisol level for this population was 28nmols/L (normal is 10-18nmols/L). 33 subjects (31%) had hyperresponsive cortisol levels.

Discussion: The findings supports research associating family history of hypertension and increased cortisol levels to hypertensive changes. Clinically, the incidence of above normal blood pressures and elevated salivary cortisol levels in this population is noteworthy. Blood pressure, cortisol levels, and hyperresponsiveness during physiologic stress may function as risk factors and biological markers for hypertension.

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