Blunted Spontaneous Sympathetic Baroreflex Sensitivity in Young Healthy Black Men

DAMSARA NANDADEVA, BENJAMIN E. YOUNG, JODY L. GREANEY and PAUL J. FADEL

Human Neural Cardiovascular Control Lab; Department of Kinesiology; University of Texas at Arlington; Arlington, TX

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Advisor / Mentor: Fadel, Paul (paul.fadel@uta.edu)

ABSTRACT

The prevalence and severity of hypertension in black individuals are greater than in any other racial/ethnic group in the United States. The arterial baroreflex dynamically regulates blood pressure (BP) on a beat-to-beat basis via alterations in cardiac output and peripheral vascular resistance, and impairments in arterial baroreflex function are well-documented in patients with hypertension. Previous reports suggest that black individuals have a reduced cardiac baroreflex sensitivity compared to their white counterparts. However, the peripheral sympathetic component of the arterial baroreflex has never been examined in young healthy black individuals. **PURPOSE**: We sought to compare spontaneous sympathetic baroreflex sensitivity between young healthy black and white men. **METHODS**: Seven healthy black (age: 20 ± 1 years, BMI: 24.3 ± 1.3 kg/m^2) and seven healthy white (age: 22 ± 1 years, BMI: 27.0 ± 1.2 kg/m^2) men participated in the study. Heart rate (ECG), beat-to-beat BP (finger photoplethysmography) and muscle sympathetic nerve activity (MSNA; peroneal microneurography) were continuously measured during a 20-minute resting period. MSNA was quantified as burst incidence (bursts/100 heartbeats) and averaged over 3-mmHg diastolic BP bins for each individual. The linear relationship between the spontaneous changes in MSNA and diastolic BP was assessed using a weighted linear regression analysis. Sympathetic baroreflex sensitivity was quantified as the slope of MSNA burst incidence to diastolic BP. **RESULTS**: Heart rate, systolic BP, diastolic BP and mean arterial pressure was not different between the 2 groups ($p > 0.05$ for all). MSNA burst incidence was also similar between the two groups (black men, 16 ± 2.2 burst/100 heartbeats vs. white men, 21.4 ± 2.0 bursts/100 heartbeats, $p = 0.10$). The slope of MSNA burst incidence to diastolic BP was significantly lower in black compared to white men (black men, -2.20 ± 0.4 bursts/100 heartbeats/mmHg vs. white men, -3.36 ± 0.3 bursts/100 heartbeats/mmHg, $p = 0.03$). **CONCLUSION**: These preliminary data suggest that young healthy black men have a blunted sympathetic baroreflex sensitivity compared to white men.