

Sympathetically-Mediated Cutaneous Vasoconstriction Is Similar Between Non-Hispanic Black and White Individuals

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ABSTRACT

Cardiovascular disease (CVD) prevalence is highest in non-Hispanic Black (BL) individuals compared to any other race. The mechanisms responsible remain incompletely understood and can be impacted by several environmental, psychosocial, and socioeconomic factors. A major contributing factor to elevated CVD risk/prevalence in the BL population is altered vascular function, which could be attributed to an exaggerated vasoconstrictor response to efferent sympathetic activity (i.e., sympathetic vascular transduction). Previous data from our group demonstrates heightened sympathetic vascular transduction in the peripheral vasculature of BL males. However, whether sympathetically-mediated vasoconstriction is exaggerated in the cutaneous circulation of BL individuals remains unknown. **PURPOSE:** This study tested the hypothesis that BL individuals exhibit exaggerated vasoconstriction to intra-dermal infusions of the α -adrenoreceptor agonist norepinephrine (NE) relative to White (WH) individuals. **METHODS:** In this study, young, healthy college-aged BL (n=13; 6 females) and WH (n=10; 4 females) individuals participated. Participants were instrumented with an intradermal microdialysis membrane in the dorsal forearm. Red blood cell flux was continuously assessed via laser Doppler flowmetry before (baseline) and during incrementally stronger infusions of NE (10^{-8} M - 10^{-2} M; 6 min/dose). Data were analyzed as a relative (i.e., percent) reduction in cutaneous vascular conductance (CVC: flux/MAP) compared to the pre-infusion baseline. **RESULTS:** NE caused a dose-dependent reduction in CVC in both groups ($P < 0.001$). There was no difference between the BL and WH individuals ($P = 0.37$) nor was there a race x dose interaction ($P = 0.84$). Similarly, when the data were separated by sex there was no difference between BL and WH males ($P = 0.56$) or females ($P = 0.26$). **CONCLUSION:** Vasoconstrictor responsiveness to α -adrenoreceptor activation was similar between BL and WH individuals. These data suggest that the cutaneous circulation may exhibit divergent sympathetically-mediated vasoconstrictor responsiveness relative to other peripheral vascular beds in BL individuals.