

## Exploring the Potential Role of Family History of Hypertension on Racial Differences in Sympathetic Vascular Transduction

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### ABSTRACT

The prevalence of hypertension in Non-Hispanic Black (BL) men surpasses all other racial groups. Our laboratory has previously demonstrated exaggerated vasoconstrictor and blood pressure (BP) responses to spontaneous bursts of muscle sympathetic nerve activity (MSNA; sympathetic vascular transduction) in young, healthy BL men compared to their Non-Hispanic White (WH) counterparts. Because a family history of hypertension (FHH) further compounds cardiovascular risk, we wanted to begin to explore the potential impact of a positive (+) FHH on sympathetic vascular transduction. Whether a +FHH influences sympathetic vascular transduction in WH and/or BL men remains unknown. **PURPOSE:** To begin to explore if +FHH influences sympathetic vascular transduction within and between racial groups. **METHODS:** 22 men, nine with a +FHH (4 BL men) and 13 without a FHH (-FHH; 6 BL men) were recruited. Beat-to-beat BP (Finometer), femoral artery blood flow (Doppler ultrasound), and MSNA were measured during a 20-minute quiet rest. The mean BP and leg vascular conductance (LVC; blood flow/mean BP) responses to spontaneous bursts of MSNA were quantified via a signal averaging technique. **RESULTS:** Resting heart rate, BP, and MSNA were not significantly different between groups (all  $p > 0.05$ ). As previously demonstrated by our laboratory, the BL men exhibited an augmented sympathetic vascular transduction compared to the WH men (e.g., peak BP response, WH men:  $\Delta 4.1 \pm 0.3$ , BL men:  $\Delta 5.6 \pm 0.7$  mmHg,  $p = 0.04$ ). When accounting for FHH within the groups, the peak BP (WH +FHH:  $\Delta 4.4 \pm 0.6$  vs. WH -FHH:  $\Delta 3.8 \pm 0.4$  mmHg,  $p = 0.4$ ) and nadir LVC responses (WH +FHH:  $\Delta -0.5 \pm 0.07$  vs. WH -FHH:  $\Delta -0.5 \pm 0.09$  ml  $\text{min}^{-1}$   $\text{mmHg}^{-1}$ ,  $p = 0.7$ ) were not significantly different between WH men +FHH and WH men -FHH. Likewise, the BL men +FHH exhibited similar peak BP (BL +FHH:  $\Delta 6.2 \pm 0.7$  vs. BL -FHH:  $\Delta 5.3 \pm 1.1$  mmHg,  $p = 0.5$ ) and nadir LVC (BL +FHH:  $\Delta -1.1 \pm 0.44$  vs. BL -FHH:  $\Delta -0.6 \pm 0.10$  ml  $\text{min}^{-1}$   $\text{mmHg}^{-1}$ ,  $p = 0.2$ ) responses to bursts of MSNA compared to the BL men -FHH. **CONCLUSION:** These preliminary findings do not support a role for +FHH in augmented sympathetic vascular transduction, therefore suggesting that racial differences in sympathetic vascular transduction are independent of FHH.