

Skin and Cerebral Vascular Function / Reactivity in Healthy Young Adult African Americans

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ABSTRACT

African Americans (AA) are at an increased risk for cardio and cerebral vascular disease relative to Caucasians (CA) and the underlying impairments manifest as early as the second generation prior to overt signs of risk. The mechanisms of this increased risk are multifactorial; however, evidence suggests that microvascular dysfunction is a primary contributor. This study tested the hypothesis that microvascular function, indexed by the skin vascular conductance (SkVc) response to local heating, is impaired in young otherwise healthy AAs. Furthermore, we hypothesized that AAs have an attenuated cerebral vasodilator response to hypercapnia. To date complete data sets have been collected on 5 AAs and 6 CAs. SkVc was assessed while the skin was clamped at 34 °C and 40 °C and values were normalized to a maximal value obtained during heating at 43 °C for 30 min. Cerebral vasomotor reactivity (CVMR) was assessed by increases in cerebral vascular conductance (CVC) during a rebreathing protocol. SkVc was reduced in the AAs at 34 °C (AA: 10±3 % max vs. CA: 20±8 % max; P=0.01) while there was a trend for CVC to be reduced at 40 °C (AA: 56±18 % max vs. CA: 71±8 % max; P=0.09). CVMR was significantly reduced during hypercapnic rebreathing in the AAs relative to the CAs (AA: 2.7±0.7 % / Torr vs. CA: 4.0±1.1 % / Torr; P=0.01). Despite the small sample size, these data suggest that microvascular function is impaired in young otherwise healthy AAs.