Mid Atlantic Regional Chapter
of the
American College of Sports Medicine

Annual Scientific Meeting, November 1st – 2nd, 2019
Conference Proceedings
International Journal of Exercise Science, Volume 9, Issue 8

Vascular and Autonomic Correlates of Cerebral Pulsatility in Young Women

Alaina C. Glasgow, Jacob P. DeBlois, Allison Keller, Kevin S. Heffernan. Syracuse University, Syracuse, NY

Cerebral pulsatility is associated with increased stress on the microvascular of the brain resulting in cerebral damage. Age-related increases in arterial stiffness dampen the buffer-effect of large artery elasticity, augmenting cerebral pulsatility in older women. In addition to large artery stiffness, autonomic nervous system function may affect cerebral pulsatility by altering vascular tone. However, correlates of cerebral pulsatility in young women have not been thoroughly explored. **PURPOSE**: To determine the relationship between aortic stiffness and autonomic function with cerebral pulsatility index (PI) in young women. **METHODS**: Eighty-two women (21±4 years) underwent resting cerebral hemodynamic assessment. Cerebral PI was assessed using transcranial Doppler of the middle cerebral artery. Aortic stiffness was measured via carotid-femoral pulse wave velocity (PWV) using applanation tonometry. Autonomic function was assessed via heart rate variability (HRV). Log transformations were performed to remove heteroscedasticity of the autonomic measures [low frequency (LF), high frequency (HF)]. lnLF was used as a measure for sympathetic activity, while lnHF was used as a measure of parasympathetic activity. Pearson-moment correlations (two-tailed) were used to analyze the relationships between PWV and HRV with PI. **RESULTS**: PI was not significantly correlated with PWV (r=-0.029, p=0.822) or lnHF (r=0.251, p=0.057). There was a significant, though weak, positive association between lnLF and PI (r=0.393, p=0.002). **CONCLUSION**: Sympathetic activity is a more prominent correlate of cerebral pulsatility than large artery stiffness in young women. Sympathetic tone may increase vasoconstriction of the cerebral vasculature resulting in augmentation of cerebral pulsatility. Additional research using other measures of sympathetic activity are needed to corroborate these findings.

Supported by NIH Grant 1R03MD011306-01A1