

Cutaneous and Muscle Reactive Hyperemia in Young Adults with Major Depressive Disorder

SHERRI PHAM¹, RAUCHELLE RICHEY¹, SALWA SHOAB¹, JOHN D. AKINS¹, ERIKA F. H. SAUNDERS², R. MATTHEW BROTHERS¹, and JODY L. GREANEY¹

¹Department of Kinesiology; University of Texas at Arlington; Arlington, TX;

²Department of Psychiatry; Penn State College of Medicine; Hershey, PA

Category: Undergraduate

Advisor / Mentor: Greaney, Jody (jody.greaney@uta.edu)

ABSTRACT

The reactive hyperemic vasodilatory response to a brief period of tissue ischemia provides an index of microvascular function and is an independent predictor of cardiovascular morbidity and mortality. As such, reactive hyperemia is a non-invasive technique that is commonly utilized to provide an index of vascular health in various patient groups. Major depressive disorder (MDD), a non-traditional risk factor for cardiovascular disease (CVD), has been associated with blunted reactive hyperemia, though this is not a universal finding. Further, to date, the quantification of the reactive hyperemic response in adults with MDD has been limited to the forearm muscle, assessed as Doppler ultrasound derived blood velocity in the brachial artery following a period of suprasystolic cuff occlusion. **PURPOSE:** Here, we sought to more comprehensively assess microvascular reactive hyperemia in otherwise healthy young adults with MDD. We tested the hypothesis that both muscle and cutaneous vasodilation would be blunted in adults with MDD compared to non-depressed young adults. **METHODS:** Nine healthy adults (HA; age: 22±2 yrs; body mass index: 26.5 ± 1.8 kg/m²) and ten adults with MDD (non-medicated; age: 22±2 yrs; body mass index: 22.6 ± 4.4 kg/m²) participated. Forearm reactive hyperemia was assessed as the increase in blood velocity in the brachial artery following 5-min of suprasystolic cuff occlusion (distal to the olecranon process). In a subset of adults (n=5 HA; n=4 MDD), cutaneous reactive hyperemia was concurrently assessed via laser Doppler flowmetry-derived flux (perfusion units; PU). Peak and total (area-under-the-curve; AUC) reactive hyperemia were quantified for each methodological approach. **RESULTS:** Neither the brachial artery Doppler ultrasound-derived peak (HA: 1020±383 vs. MDD: 950±239 s⁻¹; p=0.65) nor the total blood flow (HA: 284±77 vs. MDD: 233±153 a.u.; p=0.41) reactive hyperemic response was different between groups. Further, there were no group differences in cutaneous reactive hyperemia (peak: 83±37 HA vs. 79±15 PU MDD, p=0.85; AUC: 8764±2273 HA vs. 8935±1439 a.u. MDD; p=0.90). **CONCLUSION:** These preliminary data indicate that neither the muscle nor cutaneous vasodilatory response to a brief period of tissue ischemia is blunted in young adults with MDD, suggesting preserved microvascular function.