Endothelial Dysfunction In Us Outpatient Clinics As A Potential Indicator Of Residual Risk: Data From 7,105 Patient Registry

Author Block: Ahmed Gul, Yasamin Naghavi, Ruoyu Zhuang, Univ of Houston, Houston, TX; Albert Yen, Endothelix, Houston, TX; Hirofumi Tanaka, Univ of Texas Austin, Austin, TX; Stanley Kleis, Univ of Houston, Houston, TX; Ralph Metcalfe, Univ of Houston, HOUSTON, TX; Morteza Naghavi, SHAPE, Palo Alto, CA

Abstract:
Background: Previous studies have linked peripheral microvascular dysfunction measured by arterial tonometry to high residual risk in on-statin patients. Digital Thermal Flowmetry (DTF) of microvascular function is a new and simplified technique based on fingertip temperature measurements that has been correlated with the burden of atherosclerosis and its risk factors. Here, we report analyses of DTF data from two large US registries: Registry-I (2011-2016) 6,084 cases and Registry-II (2017-2018) 1,021 cases across 49 U.S. outpatient clinics. Methods: DTF tests were performed using a VENDYS device during a 5-minute arm-cuff reactive hyperemia. Fingertip temperature falls during cuff occlusion and rebounds after release. Adjusted maximum temperature rebound was reported as Vascular Reactivity Index (VRI). Results: VRI distributions were similar in both registries, with Mean±SD 1.58±0.53 in Registry-I and 1.52±0.43 in Registry-II. In the combined dataset, only 18% had optimal VRI (≥2.0), and 82% were either poor (<1.0) or intermediate (1.0-2.0). Women had slightly higher VRI than men (1.62±0.56 vs. 1.54±0.47, p<0.001). VRI was inversely but mildly correlated with age (r=-0.19, p<0.001). Suboptimal VRI was found in 72% of patients <50 years, 82% of 50-70 years, and 86% of ≥70 years. Blood pressure was not correlated with VRI. Conclusions: In this largest registry of peripheral microvascular function measurements, suboptimal scores were highly frequent among on-treatment patients possibly suggesting a significant residual risk. Prospective studies are warranted to validate microvascular function measurement as an indicator of residual risk resulting from non-LDL lipids, inflammation, and other untreated risk factors.