

A Practical and Easier Measure of Endothelial Function Applicable to the Routine Clinical Setting?

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ABSTRACT

The VENDYS-II is an alternative, fully automated and noninvasive methodology to evaluate endothelial function using temperature change on finger as a surrogate measure of the magnitude of vascular reactivity index (VRI). Due to the simplicity, it could provide a more feasible technique to assess vascular endothelial function in the clinical setting and possibly for home-based measurements similar to blood pressure. A most recent modification to the technique includes the application of cuff occlusion at the base of a finger instead of the upper or lower arm. **PURPOSE:** To assess the validity of the VENDYS-II device compared with the standard flow-mediated dilation (FMD) protocol. **METHODS:** Twenty-one participants (14 males; 36±16 years) varying widely in age, health, ethnic, and socioeconomic status were studied. Occlusion cuff was placed below the antecubital fossa or at the base of the index finger. Temperature monitors were placed on bilateral index fingers to assess change in temperature throughout 5-minute occlusion and recovery phases. FMD was obtained simultaneously using high-resolution ultrasound. **RESULTS:** Mean brachial artery FMD was 7.4±2.6%. Measures of VRI obtained with the upper arm occlusion ($r=0.58$) and finger occlusion ($r=0.51$) were significantly associated with simultaneously obtained brachial artery FMD. VRI values obtained with finger occlusion and brachial occlusion were weakly correlated with each other ($r=0.24$). Moreover, mean VRI values obtained with different occlusion sites were not significantly different (1.6 ± 0.4 vs. 1.6 ± 0.3). **CONCLUSION:** Finger-based VRI may be a promising and novel alternative measure of endothelial function that is more suitable than the standard FMD for the assessment of endothelial function in the routine clinical setting.