CAVI measurements in a North American Normal Population

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Introduction: The Cardio-Ankle Vascular Index (CAVI) represents a promising index of arterial stiffness, however, the measure or its device, the VaSera, have not been extensively tested in North American clinical settings, nor is much known about the pressure independency of the measure and the accuracy of the ankle-brachial index measure when validated by Doppler in North Americans.

Methods: To provide normal baselines, we recruited 20 male and 28 female volunteers free of known cardiovascular or renal disease and no history of smoking. Their CAVIs, Ankle-Brachial Indices (ABIs), and 4-limb blood pressures were measured in 3 positions: supine, 7° Trendelenburg, and 7° Reverse Trendelenburg. In addition, the VaSera ABI function was validated using a standard Doppler ABI measurement technique in both legs in a subset of our cohort (n=24).

Results: Subjects were 33+13 years old, with a BMI of 24+3 kg/m2. Position was found to significantly affect CAVI, indicating that CAVI is sensitive to positional variations (Upper Figure right side) which are pressure dependent (Upper Figure left side). ABI performed well by Bland-Altman analysis (Lower Figure).

Summary: This study represents a first step in bring the VaSera device and its CAVI measurement into clinical practice in a North American (US) normal cohort.