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P152 Prediction of Death or Heart Failure-related Hospitalizations by Cardio-ankle Vascular Index (CAVI) and $CAVI_0$

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ABSTRACT

Background: Arterial stiffness as measured by carotid-femoral pulse wave velocity (PWV) has been shown to predict cardiovascular events [1]. However, PWV is blood pressure (BP) dependent [2,3] leading to the development of cardio-ankle vascular index (CAVI) as a more blood pressure-independent index [4] that also shows predictive ability in Asian populations [5]. Recently, CAVI was further refined into $CAVI_0$ [6], removing residual acute blood pressure dependence [7]. The present study aims to assess risk prediction by CAVI and $CAVI_0$ in a US population.

Methods: We enrolled 156 subjects (94.8% male; 47.7% African-American) with and without heart failure. Subjects underwent arterial stiffness assessments (VaSera 1500 N, Fukuda Denshi Co., Tokyo, Japan). Left (L-CAVI) and right (R-CAVI) measurements were obtained from the device, $CAVI_0$'s were converted from CAVI's taking into account CAVI's scale coefficients [8,9]. We prospectively followed participants for a mean of 2.56 years for the composite endpoint of death or heart failure related hospital admission.

Results: L-CAVI and R-CAVI did not differ significantly (9.80 ± 2.11 vs 9.66 ± 1.92, $p = 0.146$); neither did L-$CAVI_0$ and R-$CAVI_0$ (16.51 ± 5.85 vs 16.15 ± 5.34, $p = 0.178$). In unadjusted Cox regression, R-CAVI, L-CAVI, and R-$CAVI_0$ but not L-$CAVI_0$ predicted outcome (Table 1). After adjustment for age, sex, race, and systolic BP, only right-sided CAVIs and $CAVI_0$s were predictive.

Discussion: We observed possible body-side differences in prediction using CAVI and $CAVI_0$. A previous study cross-sectionally reported more pronounced body side differences in heart-to-ankle PWV related to cardiovascular disease [10]; we are unaware of published prospective studies observing this. In conclusion, both R-CAVI and R-$CAVI_0$ predicted heart-failure related end-points.

Table | Cox regression results

	n	Standardized HR [95% CI]	*p*
Unadjusted			
L-CAVI	155	1.33 [1.01–1.76]	**0.042**
R-CAVI	156	1.52 [1.10–2.11]	**0.011**
L-$CAVI_0$	155	1.28 [0.97–1.68]	0.078
R-$CAVI_0$	156	1.39 [1.04–1.87]	**0.027**
Adjusted for age, sex, race, and systolic BP			
L-CAVI	154	1.35 [0.99–1.83]	0.06
R-CAVI	155	1.55 [1.08–2.21]	**0.016**
L-$CAVI_0$	154	1.30 [0.95–1.77]	0.10
R-$CAVI_0$	155	1.39 [1.0′–1.9′]	**0.044**

s-HR, standardized hazard ratio; CI, confidence interval.

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