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## Determinants of aortic root dilatation over time in hypertensive treated patients: the Campania Salute Network

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**Background:** We demonstrated that aortic root (AR) dilatation assessed by standardized difference between observed and predicted values is present at baseline in about 30% of treated hypertensive patients and predicts cardiovascular (CV) events independently of left ventricular (LV) hypertrophy (LVH).

**Purpose:** We investigate whether a CV phenotype exists predicting AR dilatation during follow-up of treated hypertensive patients.

**Methods:** 5301 hypertensive treated patients (age  $53 \pm 11$  years, 42% women) without prevalent CV disease and with normal ejection fraction ( $\geq 50\%$ ) were studied. AR dimension was measured in the parasternal long-axis view at the level of sinus of Valsalva in end-diastole, using the leading-edge to leading-edge method at first and last available echocardiograms. The z-score of AR dimension (AOz) was generated based on the difference between observed AR and predicted AR dimension, divided by sex-specific observed SD.

**Results:** Initial AOz exhibited a normal distribution and was correlated positively with age, male sex, systolic and diastolic blood pressure (BP), BMI, fasting glucose, and glomerular filtration rate (GFR, by EPI-CKD) and negatively with pulse pressure (PP) and cholesterol (all 0.0375th percentile of the AOz distribution). Similar to baseline, initial SVi and BMI remained the most potent covariates of the final AOz (both  $p < 0.0001$ ), independently of significant effect of male sex, high diastolic BP, BMI, SVi, low PP, and low HDL-cholesterol. Variance inflation factor was  $< 2$  in both regression models. Figure shows initial SVi in relation with AR at follow up.

**Conclusions:** We demonstrate that both volume (SVi) and pressure loads (diastolic BP) influence AR enlargement over time, AR dilatation is predictable in male obese patients with diastolic hypertension and other metabolic disturbances.

