Heart

5.18 Cardiovascular and Metabolic Predictors of Progression to Overt Hypertension in a Population with Basal High-Normal Blood Pressure Levels: The Strong Heart Study

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Introduction High-normal blood pressure (BP) (accordingly to ESC-ESH guidelines) is a condition at high risk of progression to arterial hypertension (HTN), but is still not well established which metabolic and cardiac characteristics could predict future development of overt HTN.

Methods. 369 participants from the Strong Heart Study, free of anti-hypertensive treatment and without prevalent cardiovascular disease or significant valve abnormalities, were analyzed (65% women; 48% diabetics; 59 ± 7 years). All participants underwent echocardiographic, anthropometric and laboratory testing. Incidence of HTN was determined over a 4-years follow-up. The risk of development of HTN was evaluated taking in account the impact of anthropometric and metabolic profile and subsequently, of the echocardiographic in hierarchical regression models.

Results. 4-years follow-up incidence of HTN was 52%. Diabetes (ADA criteria) was a strong predictor of HTN (OR= 2.53 [1.58-4.04]; $p < 0.001$) with baseline levels of systolic BP (OR= 1.07/mmHg [1.01-1.13]; $p = 0.03$) and waist circumference (OR= 1.03/cm [1.01-1.05]; $p = 0.002$), without any significant contribution from echocardiographic indexes ($p > 0.05$). Accordingly, analysis was performed separately in participants with baseline diabetes. Among diabetic participants incidence of HTN was 64% (versus 41% in non diabetics; $p < 0.0001$). The only variable related to incident HTN in diabetics was baseline glomerular filtration rate evaluated by MDRD formula (OR:0.97/mL/min/1.73m² [0.9 8-0.99], $p < 0.02$), while among non diabetic participants, in addition to waist girth, the baseline level of left ventricular mass (OR: 1.05 /g/m².7 [1.0 1-1.10], $p < 0.02$), stroke index (OR: 1.09/l/m1.83 [1.01-1.19], $p = 0.04$) and cardiac index (OR:2. 72/ml/ m².04 [1.09-6.80], $p = 0.03$) were also significant predictors of incident HTN. Furthermore in non diabetics the presence of baseline left ventricular hypertrophy increased significantly the risk of progression to HTN (OR = 2.60 [1.16-5.91]; $p = 0.02$).

Conclusions. 4-year incidence of HTN in this population of adults with high-normal BP is frequent (52%). Major predictor of HTN is diabetes, but also in non diabetics the risk of progression to overt HTN could be stratify evaluating anthropometric and echocardiographic parameters.