Abstract: P1532

Asymptomatic structural heart disease in individuals without apparent cardiovascular risk factors. An unnoticed potential precursor stage of heart failure. Results from the STAAB cohort study

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Topic(s):
Risk Factors and Prevention – Epidemiology

Citation:

Background & Aim: Prevention of heart failure (HF) relies on early identification and elimination of cardiovascular risk factors. ACC/AHA guidelines define consecutive asymptomatic precursor stages of HF, i.e. stage A (with risk factors for HF), and stage B (asymptomatic cardiac dysfunction). We aimed to identify frequency and characteristics of individuals at risk for HF, i.e. stage A and B, in the general population.

Methods: The prospective Characteristics and Course of Heart Failure Stages A-B and Determinants of Progression (STAAB) cohort study phenotyped a representative sample of 5000 residents (aged 30-79 y) of a medium sized German town, reporting no previous HF diagnosis. Echocardiography was highly quality-controlled. We applied these definitions: HF stage A: =1 risk factor for HF (hypertension, arteriosclerotic disease, diabetes mellitus, obesity, metabolic syndrome), but no structural heart disease (SHD); HF stage B: asymptomatic but SHD [reduced left ventricular (LV) ejection fraction, LV hypertrophy, LV dilation, stenosis or grade 2/3 regurgitation of aortic/mitral valve, grade 2/3 diastolic dysfunction], or prior myocardial infarction; Normal (N): no risk factor and no SHD. We focused on subjects in stage B without apparent cardiovascular risk factors qualifying for A (B-not-A) compared to those with risk factors (BA) and N. The first half of the sample (n=2473) served as derivation set (D), the second half (n=2434) as validation set (V).

Results: We found 42% (D) / 45% (V) of subjects in stage A, and 18% (D) / 17% (V) in stage B. Among stage B subjects, 31% (D) / 29% (V) were B-not-A. Compared to BA, B-not-A subjects were younger [47 vs. 63 y (D) / 50 vs 63 years (V); both p<0.001] and more often female [78% vs 56% (D) / 79% vs 62% (V); both p<0.001], had higher LV ejection fraction [59% vs 56% (D) / 53% vs 48% (V); both p<0.05], lower E/e’ [6.7 vs 9.9 (D) / 6.9 vs. 9.3 (V); both p<0.001], higher LV volume [64 vs 59 mL/m2 (D) / 54 vs 48 mL/m2 (V); both p=0.01], lower hemoglobin [13.3 vs 13.9 g/dL (D, p=0.02) / 13.4 vs 13.8 g/dL (V, p=0.08); both adjusted for sex], and lower QTc interval [423 vs 433 ms (D) / 427 vs 438 ms (V); both p =0.001]. Compared to N, subjects in B-not-A were more often female [78% vs 56% (D) / 79% vs 61% (V); both p<0.001], had larger QTc interval [423 vs 418 ms (D) / 427 vs 420 ms (V); both p<0.05], and more often anemia [11% vs 5% (D, p=0.02) / 9% vs 5% (V, p=0.12)].

Conclusions: We confirmed, by extensive internal validation, the presence of a hitherto undescribed group of individuals with relevant myocardial alterations, but lacking respective risk factors. Since algorithms in primary prevention do not include echocardiography, this subgroup might be missed. Further investigations should 1) externally validate our finding, 2) study the prognostic course of subjects in group B-not-A, and 3) elaborate the material differences between B-not-A and N to identify potential further novel risk factors for HF.
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