Abstract

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Association of serial measures of cardiac troponin T using a sensitive assay with incident heart failure and cardiovascular mortality in older adults.

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CONTEXT: Older adults comprise the majority of new-onset heart failure (HF) diagnoses, but traditional risk-factor prediction models have limited accuracy in this population to identify those at highest risk for hospitalization or death.

OBJECTIVES: To determine if cardiac troponin T (cTnT) measured by a highly sensitive assay would be detectable in the majority of community-dwelling older adults, and if serial measures were associated with risk of HF hospitalization and cardiovascular death.

DESIGN, SETTING, AND PARTICIPANTS: A longitudinal nationwide cohort study (Cardiovascular Health Study) of 4221 community-dwelling adults aged 65 years or older without prior HF who had cTnT measured using a highly sensitive assay at baseline (1989-1990) and repeated after 2 to 3 years (n = 2918).

MAIN OUTCOME MEASURES: New-onset HF and cardiovascular death were examined through June 2008 with respect to cTnT concentrations, accounting for clinical risk predictors.

RESULTS: Cardiac troponin T was detectable (≥3.00 pg/mL) in 2794 participants (66.2%). During a median follow-up of 11.8 years, 1279 participants experienced new-onset HF and 1103 cardiovascular deaths occurred, with a greater risk of both end points associated with higher cTnT concentrations. Among those participants with the highest cTnT concentrations (>12.94 pg/mL), there was an incidence rate per 100 person-years of 6.4 (95% confidence interval [CI], 5.8-7.2; adjusted hazard ratio [aHR], 2.48; 95% CI, 2.04-3.00) for HF and an incidence rate of 4.8 (95% CI, 4.3-5.4; aHR, 2.91; 95% CI, 2.37-3.58) for cardiovascular death compared with participants with undetectable cTnT levels (incidence rate, 1.6; 95% CI, 1.4-1.8 and 1.1; 95% CI, 0.9-1.2 for HF and cardiovascular death, respectively). Among individuals with initially detectable cTnT, a subsequent increase of more than 50% (n = 393, 22%) was associated with a greater risk for HF (aHR, 1.61; 95% CI, 1.32-1.97) and cardiovascular death (aHR, 1.65; 95% CI, 1.35-2.03) and a decrease of more than 50% (n = 247, 14%) was associated with a lower risk for HF (aHR, 0.73; 95% CI, 0.54-0.97) and cardiovascular death (aHR, 0.71; 95% CI, 0.52-0.97) compared with participants with 50% or less change. Addition of baseline cTnT measurements to clinical risk factors was associated with only modest improvement in discrimination, with change in C statistic of 0.015 for HF and 0.013 for cardiovascular death.

CONCLUSION: In this cohort of older adults without known HF, baseline cTnT levels and changes in cTnT levels measured with a highly sensitive assay were significantly associated with incident HF and cardiovascular death.

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