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Three-year change in high-sensitivity cardiac troponin T and total mortality in older adults - The ActiFE Study.

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Background: High sensitivity cardiac troponin-T (hs-cTnT) levels in asymptomatic older adults have been associated with adverse outcomes such as total mortality. In this context little is known about the implications of changes over time in this population.

Purpose: We aimed to investigate the three-year change of hs-cTnT and its association with subsequent total mortality in a cohort of community dwelling older adults.

Methods: We measured hs-cTnT at baseline (BL) and at three-year follow-up (FU) in participants at the Activity and Function in the Elderly (ActiFE) Study. Having those with BL und FU hs-cTnT <5 ng/L (undetectable) as the reference group (Group 1, n=156) five categories were built among those with an increment of hs-cTnT overtime: For those with undetectable BL: FU 5 to <14 ng/L (Group 2, n=295), FU =14 ng/L (Group 3, n=24). Among those with BL levels between 5 to <14 ng/L: FU 5 to <14 ng/L (Group 4, n=101), FU =14 ng/L (Group 5, n=96). Group 6 included those with BL and FU >14 ng/L (n=74). Using Cox proportional hazards models we evaluated the association between the identified groups and total mortality adjusting for age, sex, education, history of cardiovascular disease (CVD), chronic kidney disease (CKD), number of medications, CRP, and NT-proBNP measured at FU.

Results: Among 746 participants (median age at FU 75.9 years, 58.9% male) we observed a total of 98 deaths (median FU 4.8 years) with a mortality rate of 28.6 [95% CI 23.5, 34.9] per 1000 person-years. Those with undetectable hs-cTnT levels at both time point (Group 1, reference group) had the lowest mortality rate (5.2 [95% CI 2.0, 13.9] per 1000 person-years) and were noted to be most likely younger, women, with BMI =18.5 but <30 kg/m2, and had less comorbidities. The highest mortality rates were observed in i) those who went from undetectable levels at BL to FU levels =14 ng/L (Group 3: 95.4 [95% CI 49.6, 183.4] per 1000 person-years), and in ii) those with hs-cTnT levels >14 ng/L at both time points (Group 6: 100.4 [95% CI 69.8, 144.5] per 1000 person-years). These both groups showed the highest median hs-cTnT at FU (16.7 and 30.1 ng/L respectively), and the highest incidence proportion from BL to FU of CVD and CKD. Highest FU median levels of CRP were measured in Group 3, of NT-proBNP in Group 6. In the multivariable analysis we observed a significant increased hazard for total mortality with a hazard ratio of 5.62 [95% CI 1.57, 20.14] for those in Group 3 and 3.87 [95% CI 1.17, 12.80] for those in Group 6, when compared to the reference group.

Conclusion: Evaluating trajectories of hs-cTnT even in asymptomatic older adults could help to identify those subjects with a high risk to die even after adjustment for other covariates including NT-proBNP. Further research is needed in order to identify pathophysiological mechanisms behind these changes in older adults, and the possible effect of preventive measures in the identified risk groups.
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