Association of high-sensitivity Troponin T and I blood levels with outcome of coronary artery disease – results from the INTERCATH cohort

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Background: High-sensitivity Troponin T and I (hsTnT/I) concentration is independently associated with coronary artery disease (CAD) severity and cardiovascular outcome. Here we explored whether hsTnT/I blood levels add predictive information irrespective of CAD severity and further confounders in unselected stable patients with angiographically characterized CAD.

Methods: Between 2015 and 2020, 3,012 patients undergoing coronary angiography were included in the observational Hamburg INTERCATH study. In 2,209 consecutive patients Troponin levels were quantified for hsTnT (Roche Diagnostics Elecsys) and hsTnI (Abbott Diagnostics ARCHITECT STAT). Patients presenting with acute coronary syndromes and heart transplant recipients were excluded, leaving 1,841 patients for analyses. CAD severity was graded according to the Gensini score. Major adverse cardiac events (MACE) as a composite of cardiovascular death, stroke, myocardial infarction, and coronary revascularization were defined as endpoint. Kaplan-Meier analyses stratified by hsTnT/I quartiles were performed. Multivariable Cox models were computed for the association of hsTnT/I with MACE adjusting for age, gender, arterial hypertension, hyperlipoproteinemia, smoking, diabetes mellitus, body-mass index, eGFR and Gensini Score.

Results: Mean age was 68.5±10.9 years (27.9% female). 81.1% were diagnosed with CAD by coronary angiography. Gensini score was 21.0±30.2. Median follow-up time was 4.42 years. hsTnT quartiles differentiated MACE across all categories (Figure 1A). For hsTnI, cardiovascular risk was differentiated between the lowest and highest quartiles as well as the 1st and 2nd quartile particularly beyond 24 months of follow-up (Figure 1B). However, MACE after 3 years was not associated with hsTnT after adjustment for classical cardiovascular risk factors and CAD severity (Figure 1C), whereas the hazard of MACE was increased in the 3rd and 4th hsTnI quartiles compared to the 1st quartile (HR 1.3, IQR 1.1–1.6 for both categories; Figure 1D).

Conclusion: Increasing hsTn concentration was related to intermediate term cardiovascular outcome in unselected stable patients. Only hsTnI concentration remained as independent predictor after testing for most possible confounders, including CAD severity. This data underpins the role of hsTnI in outcome prediction.

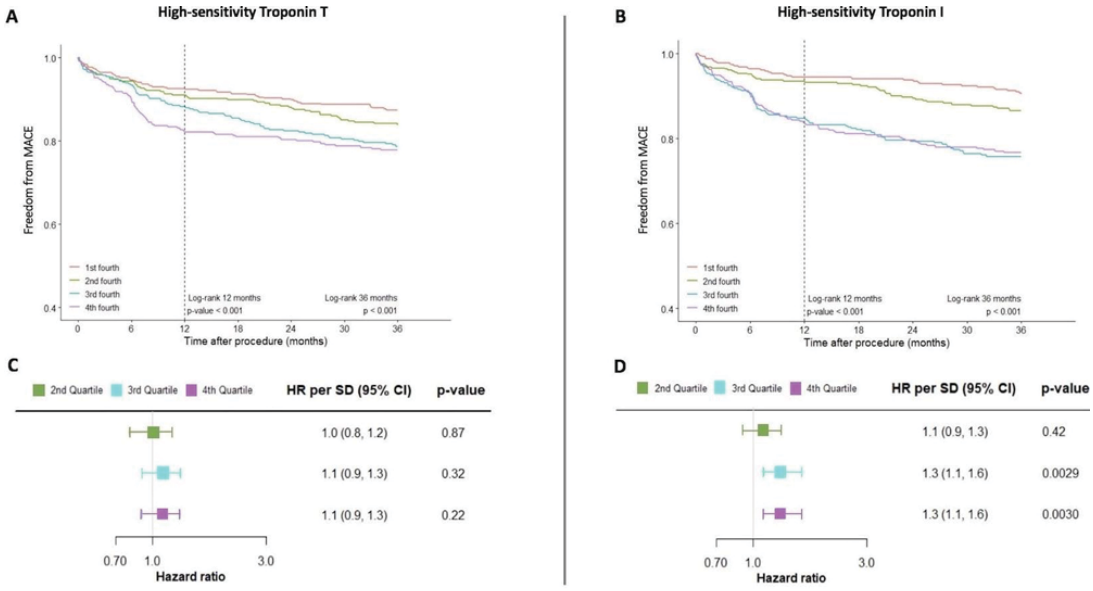

Figure 1 Kaplan-Meier survival curves for freedom of MACE according to quartiles of hsTnT (A) and hsTnI (B). Three-year HR for MACE according to quartiles of hsTnT (C) and hsTnI (D) adjusted for CV risk factors and CAD severity. Reference = first quartile of hsTnT and hsTnI, respectively.