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Admission high-sensitivity troponin T and NT-proBNP for outcome prediction in acute heart failure

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Background: High-sensitivity troponin T (hs-TnT) reflects the severity of ongoing myocardial damage and holds independent prognostic significance in chronic heart failure (HF). In acute HF (AHF), its additive prognostic value over natriuretic peptides is unclear.
Methods: Individual data of 1571 AHF patients with admission hs-TnT were collected from 3 cohorts.
Results: Patients were aged 78±10 years, and 51% were men. Median hs-TnT and N-terminal fraction of pro-B-type natriuretic peptide (NT-proBNP) concentrations were 43 ng/L (interquartile interval 26–69) and 5660 (2693–12466), respectively. Patients experiencing in-hospital death (n=187, 13%) had significantly higher hs-TnT and NT-proBNP on admission (both $p<0.001$). The risk of in-hospital death increased by 45% per each doubling of hs-TnT (HR 1.45, 95% confidence interval - CI 1.31–1.59, $p<0.001$), and by 32% per each doubling of NT-proBNP (HR 1.32, 95% CI 1.17–1.50, $p<0.001$). Patients with hs-TnT ≥43 ng/L and NT-proBNP ≥5660 ng/L had a 2.7-fold higher risk of in-hospital death (relative risk - RR 2.7, 95% CI 1.7–4.5). Among the 1262 patients discharged, 1024 deaths occurred over a median 11-month follow-up (4–22). In a model including NT-proBNP, hs-TnT ≥43 ng/L was a strong, independent predictor of all-cause death at 6, 12 and 24 months, and the composite of cardiovascular death or HF hospitalization at 6 and 24 months. hs-TnT ≥43 ng/L also improved risk reclassification.
Conclusions: The risk of in-hospital death is almost 3 folds higher with admission hs-TnT ≥43 ng/L and NT-proBNP ≥5660 ng/L, and hs-TnT ≥43 ng/L holds strong independent prognostic significance for post-discharge outcome.