



The predictive value of NT-proBNP across glomerular filtration rate subsets in heart failure treated patients

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Objective: We aimed to assess the predictive value of high NT-proBNP for all-cause long-term mortality in heart failure (HF) patients for different subsets of renal function defined by the estimated glomerular filtration rate (eGFR).

Material and Methods: HF patients admitted consecutively to our Cardiology Departement from 2011 to 2014 were retrospectively included in the cohort. Patients without contemporary guideline-directed medical therapy, those with in-hospital mortality, or incomplete data were excluded.

All-cause mortality was assessed in June 2020 after a median follow-up of 96 months.

eGFR was calculated using the CKD-EPI formula.

Results: The study sample included 1262 patients with confirmed HF and with a mean age of 72.21 ± 10.47 years. 52.06% were females. The mean EF was $42.79\% \pm 12.14\%$. All-cause long term-mortality was 44.36%.

In multivariable analysis eGFR ($p=0.001$) and NT-proBNP ($p<0.001$) were independent predictors of mortality. The overall predictive value of NT-proBNP for mortality associated an AUC of 0.709, 95%CI 0.679–0.739, $p<0.001$.

The NT-proBNP predictive power decreased with decreasing eGFR: from AUC 0.749 (95%CI 0.672-0.819, $p<0.001$) for $eGFR>90\text{ml}/\text{min}/1.73\text{m}^2$, to AUC 0.685 (95%CI 0.636-0.733, $p<0.001$) for eGFR between 60–90 $\text{ml}/\text{min}/1.73\text{m}^2$, to 0.688 (95%CI 0.621-0.756, $p<0.001$) for eGFR between 45–60 $\text{ml}/\text{min}/1.73\text{m}^2$, to 0.660 (95%CI 0.568 – 0.751, $p=0.001$) for eGFR between 30–45 $\text{ml}/\text{min}/1.73\text{m}^2$.

In patients with $eGFR < 30\text{ml}/\text{min}$, NT-proBNP lost statistical significance for mortality prediction (AUC 0.626, 95%CI 0.455–0.798, $p=0.137$).



Conclusion: In HF patients NT-proBNP and eGFR were independent predictors of mortality. However, at low eGFR (30ml/min/1.73m²), the predictive value of NT-proBNP is lost.