Association of nt-proBNP and left ventricular ejection fraction and their utility as predictors of in-hospital mortality among heart failure patients admitted in a tertiary hospital in Davao City

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Introduction: N-terminal brain natriuretic peptide (NT-proBNP) levels have been shown to be reliable in diagnosing heart failure. Studies have postulated higher NT-proBNP levels with lower left ventricular ejection fraction and higher in-hospital mortality, necessitating more aggressive interventions and management. This study describes the association between NT-proBNP and ejection fraction and their utility as predictors of in-hospital mortality.

Methods: We evaluated the medical records of patients admitted for heart failure between January 2021 and January 2023 in a tertiary hospital. Pearson-r was used to determine the association between NT-proBNP and ejection fraction. In-hospital mortality was assessed using logistic regression analysis and odds ratio for dichotomous variables.

Results: Of the 147 medical records reviewed, 53.74% were female, the mean age was 64.9 ± 13.5 years with ages ranging from 24 to 90 years, average NT-proBNP levels were 5791.3 pg/mL ± 3779.1, and average left ventricular ejection fraction was 49.9% ± 15.1. No age (p = .315) and sex (p = .626) distribution difference was observed. Patients with a higher NT-proBNP quartile had significantly higher systolic (p = 0.023) and diastolic blood pressure (p = 0.015), worse NYHA functional class (p = 0.000), higher creatinine levels (p = 0.000), and prevalence of diabetes mellitus (p = 0.014). There was a significant difference between the levels of ejection fraction across NT-proBNP quartiles (p < 0.03), mortality rates were higher across NT-proBNP quartiles, and NT-proBNP levels and ejection fraction were not predictors of mortality, but a worse NYHA functional class II and III predicted mortality.

Conclusion: High levels of NT-proBNP are linked to lower left ventricular ejection fraction and higher in-hospital mortality rates. In light of this study’s findings, we recommend NT-proBNP as part of the assessment for prediction of in-hospital mortality in heart failure patients.

Figure 2. In-hospital mortality rates by NT-proBNP quartile in the entire population (A), and percentage of mortality per NT-proBNP quartile (B).