Abstract: P111

NT-proBNP and heart failure severity in patients with advanced kidney disease

Authors:
LE Stoichitoiu1, C Delcea1, CA Buzea1, A Tocitu1, S Angheluta1, GA Dan1, 1Colentina University Hospital - Bucharest - Romania,

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Introduction: NT-proBNP values vary inversely with glomerular filtration rate (GFR) in patients with as well as without heart failure (HF). There are few data regarding the prognostic and diagnostic cut-off point of NT-proBNP in patients with HF and concomitant advanced kidney disease.

Purpose: The purpose of this study was to assess the relation between NT-proBNP and the severity of heart failure in people with advanced kidney disease and to determine cut-off levels for acute decompensated HF (ADHF).

Methods: 1058 patients with HF admitted to our clinic from January 2011 to December 2014 were retrospectively screened. We selected patients with GFR < 30ml/min/1.73m² calculated with CKD-EPI. Acute coronary syndromes, neoplasms, acute pulmonary embolisms and systemic infections were exclusion criteria.

Results: Our sample consisted of 63 patients with a median GFR of 23.09 ml/min/1.73m². The mean age was 76.5±9.5 years. 53.97% were women. 26.5% had NYHA class IV. 68.33% presented with ADHF.

Age, gender, obesity, diabetes mellitus, ischemic heart disease and atrial fibrillation were not associated with significant elevations.

ROC curve analysis proved NT-proBNP to be a good predictor of ADHF (AUC=0.803 (95%CI 0.677-0.896), p<0.001), reduced ejection fraction (AUC=0.742 (95% CI 0.592-0.860), p=0.001) and dyspnea at rest (AUC = 0.767, (95% CI = 0.621 – 0.878), p=0.004). Cut-off values for NT-proBNP levels obtained through Youden index associated criterion were >4141 pg/ml for ADHF (67.5% sensibility, 83.33%specificity), >6141 pg/ml for reduced ejection fraction (60%sensibility, 88.46%specificity) and >6578pg/ml (75%sensibility, 85.71%specificity) for dyspnea at rest.

When considering those cut-off points patients were 1.93 times more likely to have ADHF (95%CI 2.24 – 22.27, p=0.0003), 3.1 more likely to have reduced ejection fraction (95%CI 1.62-5.92, p=0.001) and 7.07 times more likely to have dyspnea at rest (95%CI 2.24-22.27, p=0.0003).

Conclusions: In patients with advanced kidney disease (GFR<30ml/min/1.73m²), NT-proBNP correlates with the presence of ADHF, reduced ejection fraction and dyspnea at rest. The cut-off points for diagnosis and outcome are much higher in patients with HF associated with severe kidney disease compared to patients with normal renal function.