

ACUTE CARDIO RENAL SYNDROME IN ACUTE CORONARY SYNDROME - INCIDENCE, RISK FACTORS, OUTCOME AND THE ROLE OF URINE NGAL AS ITS BIO-MARKER

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Introduction and Aims: Acute cardio renal syndrome 1 (CRS 1) is a leading cause of hospitalization worldwide. We conducted a prospective observational study of incidence, risk factors, outcome and role of Urine Neutrophil Gelatinase associated Lipocalin (NGAL) in predicting CRS 1 in acute coronary syndrome (ACS) patients.

Methods: A cohort of 178 consecutive patients admitted with ACS during the study period (6 months) were included. Patients with active infections and chronic kidney disease (CKD) stage 5 on hemodialysis were excluded. Acute kidney injury (AKI) was defined as per KDIGO classification. Clinical, laboratory and echocardiographic parameters were collected. The risk factors for CRS 1 and its impact on hospital stay and mortality were studied. In a subset of patients urine NGAL levels at admission was measured using ELISA (Biovendor) method. Data was analyzed using SPSS 15.

Results: Among 178 patients with ACS, 104(58.42%) developed CRS 1 of which 41 were-stage 1, 28-stage 2 and 35- stage 3 AKI. RRT was required for 32 patients. The baseline characteristics and significant risk factors ($P < 0.05$) were shown in table 1. On multivariate binary logistic regression analysis, requirement of inotropes {OR 10.06 (2.04-49.64)}, presence of hyponatremia {OR 4.06(1.86-8.81)}, hypoalbuminemia {OR 2.885(1.14-7.265)} and preexisting CKD {OR 5.39(1.479-19.68)} had significant risk of developing CRS 1. The duration of hospital stay ($p = 0.001$) and the mortality ($p = 0.001$) were significantly higher in patients with CRS 1 (Table 2). Urine NGAL was estimated in 54 patients at admission. The median urine NGAL {7.3ng/ml (3.1-17.3)} and NGAL/creatinine ratio {(15.85(6.77, 42.97) ng/ml} were higher with CRS 1. (Table 1) ($p = 0.001$). The area under ROC for urine NGAL and Urine NGAL /creatinine ratio were 0.68 and 0.73 respectively. At a cut off of 4.5ng/ml, the sensitivity and specificity of urine NGAL in predicting CRS 1 was 66.7% respectively.

Conclusions: The incidence of CRS 1 was high in patients with ACS. It was associated with longer hospital stay and significant mortality. Requirement of inotropes, presence of hyponatremia,

hypoalbuminemia at presentation and preexisting CKD increase the risk for CRS 1. Urine NGAL/creatinine ratio and Urine NGAL appears to be helpful in predicting CRS 1 in ACS and needs further studies to confirm the same.