

## The association between acute-to-chronic glycemic ratio and outcome in acute heart failure

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**Introduction:** Elevated blood glucose level on admission worsen outcome in acute heart failure (AHF). The admission blood glucose (ABG)/ the estimated average glucose (eAG) ratio which combines both acute and chronic glucose levels is attracting attention as a newly introduced glycemic index. It may be accepted as indicating the true acute glycemic rise in critically in all patients.

**Purpose:** The aim of this study was to assess the association between acute-to-chronic glycemic ratio and outcome in AHF.

**Methods:** This study assessed consecutive patients with AHF. The ABG/ eAG ratio was determined as ABG divided by eAG. We examined the relationship between ABG/ eAG ratio and all-cause mortality and readmission for heart failure within 30 days.

**Results:** A total of 249 patients with AHF (mean age; 81 years, 50% male and 37% DM) were studied. 31 (12.4%) patients had events within 30 days

[18 (7.2%) died and 13 (5.2%) readmitted for HF]. We divided into three tertiles [T1 (<0.93), T2 (0.93–1.21) and T3 (>1.21)] based on the ABG/ eAG ratio. There was a stepwise worsening of the 30 days outcome [1 patient (0.4%) vs 7 patients (2.8%) vs 23 patients (9.2%),  $p<0.0001$ ]. In multiple variable analysis, ABG/ eAG ratio was an independent predictor of the events ( $p=0.002$ ). A cut-off value of the ABG/ eAG ratio <1.11 had a sensitivity of 94% and specificity of 67% for the increase of events within 30 days. In full model, the ABG/ eAG ratio was independent predictor of 30 days outcome in AHF (odds ratio: 11.7; 95% confidence interval: 3.65–37.5;  $p<0.0001$ ).

**Conclusion:** ABG/ eAG ratio was one of the strong predictors 30 days outcome in AHF. Elevated blood glucose in the acute phase evaluated using the ABG/ eAG ratio can enhance affect outcome and it could be a potential therapeutic target in patients of AHF.