

Higher S₂PLiT-UG scores at index admission are associated with a higher functional disease burden and increased biomarkers of myocardial injury and ventricular overload among patients with acutely decompensated heart failure

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Goals: Outcomes following acutely decompensated heart failure (ADHF) are poor and associated with increased mortality and morbidity. Various risk stratification systems have been developed in the past to predict mortality and rehospitalizations in this population. The S₂PLiT-UG score was recently introduced to stratify ADHF patients in three risk categories in respect to all-cause mortality during 1-year post-discharge period.¹ In this work, we aimed to determine associations of S₂PLiT-UG score with functional disease burden estimated by NYHA class and biomarkers including high sensitivity cardiac troponin I (hs-cTnI), NT-proBNP and C-reactive protein (CRP).

Patients and Methods: A cohort of 106 consecutive ADHF patients enrolled at the Cardiology Department during 2018-2019 were included in the study. S₂PLiT-UG score calculation and laboratory analyses were performed for each patient at index admission.

Results: Fifty-six (52.8%) patients were designated as low, 24 (22.6%) as intermediate, and 26 (24.6%) as high risk according to S₂PLiT-UG score stratification. Patients significantly differed ($p=0.021$) in respect to their NYHA class with mean values of 2.85 ± 0.57 , 3.10 ± 0.61 , and 3.33 ± 0.56 for low, intermediate, and high-risk group, respectively. Troponin values were significantly higher in high risk compared to intermediate and low-risk groups (148.4 ± 72 vs. 68.2 ± 48 vs. 42.2 ± 24 ng/L; $p=0.025$, respectively). Similarly, NT-proBNP levels were highest in the high-risk group (13740 ± 7884 pg/mL) followed by intermediate (7811 ± 5668 pg/mL) and low-risk group (4195 ± 1632 pg/mL), $p=0.002$. Finally, CRP values differed across groups with the high-risk group exhibiting highest CRP value (21.8 ± 14.8 mg/L) compared to intermediate and low-risk group (17.5 ± 15.8 and 12.2 ± 11.3 mg/L, respectively), however, this result was not significant ($p=0.327$). S₂PLiT-UG score positively correlated with NYHA class ($r=0.300$, $p=0.004$), hs-cTnI ($r=0.303$, $p=0.009$), NT-proBNP ($r=0.353$, $p=0.001$) and CRP ($r=0.203$, $p=0.069$).

Conclusion: Among ADHF patients, higher S₂PLiT-UG score values, calculated at index admission, are associated with higher functional disease burden and increased levels of circulating biomarkers reflecting myocardial injury and ventricular overload, but not systemic inflammation.

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LITERATURE

1. Borovac JA, Glavas D, Bozic J, Novak K. Predicting the 1-Year All-Cause Mortality After Hospitalization for an Acute Heart Failure Event: A Real-World Derivation Cohort for the Development of the S₂PLiT-UG Score. *Heart Lung Circ.* 2019 May 3. pii: S1443-9506(19)30351-8. doi: 10.1016/j.hlc.2019.03.021. [Epub ahead of print]. <https://doi.org/10.1016/j.hlc.2019.03.021>