Introduction: Glycemic variability (GV) is known to be a poor prognostic marker in various diseases including cardiovascular disease.

Purpose: We investigated the association of GV with all-cause mortality in patients with acute heart failure (HF).

Methods: The Korean Acute Heart Failure registry enrolled patients hospitalized for acute HF from 2011 to 2014. Among survivors of the index hospitalization, we analyzed those who had ≥3 blood glucose measurements before discharge. Patients were divided into two groups based on their coefficient of variation (%CV) as an indicator of GV. We investigated all-cause mortality at 6 month and 1 year after discharge.

Results: The study analyzed 2,617 patients (median age 72 years, 53% male). During the median follow-up period of 11 months, 583 (22%) patients died. Compared to alive patients, patients who died had a significantly higher diabetes prevalence (46% vs. 41%, P=0.035) and higher %CV (31.0% vs. 27.5%, P<0.001). Kaplan-Meier curve analysis revealed that a high GV (%CV >21%) was associated with lower cumulative survival to all-cause death compared with a low GV (%CV ≤21%) (log-rank P<0.001). Multivariate Cox proportional analysis showed that a high GV was associated with an increased risk of 6-month mortality (hazard ratio [HR] 2.02, 95% CI 1.58–2.59, P<0.001) and one-year mortality (HR 1.57, 95% CI 1.29–1.91, P<0.001). The risk of high GV for one-year mortality was significant in non-diabetic patients (HR 1.98, 95% CI 1.55–2.53, P<0.001), but not in diabetic patients (HR 1.24, 95% CI 0.91–1.69, P=0.178; P-for-interaction=0.030).

Conclusion: A high GV (%CV >21%) before discharge was associated with all-cause mortality within 1 year, especially in non-diabetic acute HF patients.