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Decreased beneficial effects of oral heart failure medications in patients with acute decompensated heart failure and hyperglycemia: results from an international observational cohort

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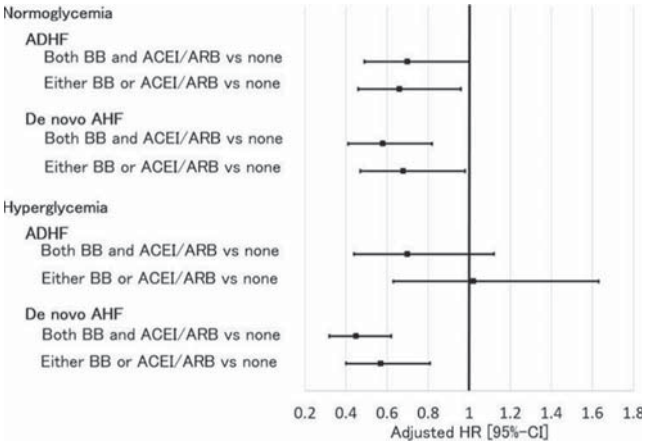
Background: Hyperglycemia is common, regardless of diabetes mellitus (DM), and is associated with increased mortality in patients with acute heart failure (AHF). Current oral heart failure (HF) medications improve the outcome in patients with AHF. However, the relationships between HF medications, admission glucose levels, and prognosis in AHF patients remained unknown.

Purpose: This study sought to investigate the effect of oral HF medications on relationships between hyperglycemia at admission and 1-year all-cause mortality in patients with AHF.

Methods: From the GREAT (Global Research on Acute Conditions Team) registry, 13840 patients presenting with AHF whose admission glucose levels were available were included and followed up for 1-year all-cause mortality. Hyperglycemia was defined as a glucose levels of ≥7 mmol/L for patients without history of DM and ≥10 mmol/L for those with history of DM. Patients with hypoglycemia (defined as a glucose levels of ≤4 mmol/L, n=193, 1.4%) were excluded in this analysis.

Results: There were 6418 (%) patients with hyperglycemia and 7229 (%) patients with normoglycemia. One-year mortality was higher in patients with hyperglycemia than those with normoglycemia (1911 [30%] and 1821 [25%], respectively). Even after adjustment, the risk for 1-year mortality was significantly higher in hyperglycemia (HR 1.14, 95%-CI 1.04–1.26, P=0.008) compared with normoglycemia. Detrimental effects of hyperglycemia on 1-year mortality were more severe in de novo AHF patients than in patients with history of HF (p for interaction 0.004). Oral HF medications (beta blockers and/or angiotensin converting enzyme inhibitors/angiotensin receptor blockers) at discharge were effective in AHF patients with normoglycemia regardless of history of HF. Oral HF medications at discharge are very effective in de novo AHF patients with hyperglycemia and less effective in acute decompensated HF patients with hyperglycemia (Figure).

Conclusions: Hyperglycemia at admission is associated with increased risk for 1-year mortality. Current oral HF medications are effective in most of subgroups, though they were less effective in patients with acute decompensated HF and hyperglycemia. These patients might need more aggressive therapies to improve outcomes.



HF medications and 1-year mortality