Management of Diabetes in Patients with Heart Failure

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In the Framingham study, diabetic males and females had a 2.4–fold and a 5-fold risk of HF, respectively. In the Kaiser Permanente Northwest Program, patients with diabetes were much more likely to develop HF than patients without diabetes, with a risk ratio of 2.5. In a recent cohort study consisted of 1,921,260 individuals from UK, HF is the second most common manifestation of CVD in patients with type 2 diabetes, ranked after peripheral arterial occlusive disease. HF has been called “the frequent, forgotten, and often fatal” complication of diabetes.

For prevention of HF in patients with risk factor alone, the DECLARE trial has provided strong evidence for the role of SGLT2 inhibitors. In the DECLARE trial, 17,160 patients were randomized, including 10,186 without atherosclerotic cardiovascular disease, who were followed for a median of 4.2 years. Dapagliflozin resulted in a lower rate of cardiovascular death or hospitalization for heart failure (4.9% vs. 5.8%; hazard ratio, 0.83; 95% CI, 0.73 to 0.95; P = 0.005), which reflected a lower rate of hospitalization for heart failure (hazard ratio, 0.73; 95% CI, 0.61 to 0.88) A renal event occurred in 4.3% in the dapagliflozin group and in 5.6% in the placebo group (hazard ratio, 0.76; 95% CI, 0.67 to 0.87). This is the first trial that demonstrated that SGLT2 inhibitors can prevent HF. The next question is to explore the role of SGLT2 inhibitors in the treatment of patients with pre-existing HF, regardless of the presence of diabetes.

In the recent published DAPA-HF trial, 4744 patients with New York Heart Association class II, III, or IV heart failure and an ejection fraction of 40% or less were randomized to receive either dapagliflozin (at a dose of 10 mg once daily) or placebo, in addition to recommended therapy. Over a median of 18.2 months, the primary outcome occurred in 386 of 2373 patients (16.3%) in the dapagliflozin group and in 502 of 2371 patients (21.2%) in the placebo group (hazard ratio, 0.74; 95% confidence interval [CI], 0.65 to 0.85; P<0.001). A first worsening heart failure event occurred in 237 patients (10.0%) in the dapagliflozin group and in 326 patients (13.7%) in the placebo group (hazard ratio, 0.70; 95% CI, 0.59 to 0.83). Death from cardiovascular causes occurred in 227 patients (9.6%) in the dapagliflozin group and in 273 patients (11.5%) in the placebo group (hazard ratio, 0.82; 95% CI, 0.69 to 0.98); 276 patients (11.6%) and 329 patients (13.9%), respectively, died from any cause (hazard ratio, 0.83; 95% CI, 0.71 to 0.97). Findings in patients with diabetes were similar to those in patients without diabetes. The frequency of adverse events related to volume depletion, renal dysfunction, and hypoglycemia did not differ between treatment groups.

It is expected that the treatment guidelines for HF will be revised very soon. The mainstay in the treatment of diabetic patients with HFrEF is SGLT2 inhibitor.