Suboptimal guideline-directed medical therapy and prognosis in patients with heart failure and reduced ejection fraction: The SMYRNA Study


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Background: Heart failure and reduced ejection fraction (HFrEF) is associated with an increased risk of morbidity and mortality. Despite strong evidence from the randomized-controlled trials and recommendations of guidelines, the use of guideline-directed medical therapy (GDMT) among patients with HFrEF remains suboptimal in a real-life setting.

Purpose: The Suboptimal guideline-directed Medical therapy and prognosis in patients with Heart failure and reduced ejection fraction (SMYRNA) study aims to determine the prognostic significance of GDMT in patients with HFrEF.

Methods: The SMYRNA study is a prospective, multicenter, and observational study that included outpatients with HFrEF. The study population enrolled at 41 cardiology centers between January 2019 and June 2019. Patients were divided into 3 groups: those treated with ≤1 class of HF medication, 2 classes of HF medications, and 3 classes of HF medications. The primary outcome was a composite of cardiovascular death or hospitalization for heart failure, analyzed as the time to the first event.

Results: The study population consisted of 1,062 patients with HFrEF, predominantly men (69.1%), with a median age of 68 (20–96) years. RAS inhibitors, beta-blockers, and MRAs were prescribed in 76.0%, 89.4%, and 55.1%, of the patients at the time of study enrollment, respectively. The proportions of patients receiving target doses of medications were 24.4% for RAS inhibitors, 11.0% for beta-blockers, and 11.1% for MRAs (Figure 1). The median follow-up was 24 months. The rate of primary composite outcome was 40.4% among patients treated with ≤1 class of HF medication, 32.0% among patients treated with 2 classes of HF medications, and 32.8% among patients treated with 3 classes of HF medications. Patients treated with 2 or 3 classes of HF medications had a decreased risk of cardiovascular death or hospitalization for heart failure compared to those patients receiving ≤1 class of HF medication (HR, 0.65; 95% CI, 0.49 to 0.85; P = 0.002, and HR, 0.61; 95% CI, 0.47 to 0.79; P<0.001, respectively, Figure 2).

Conclusion: The real-life SMYRNA study showed that suboptimal GDMT is strongly associated with an increased risk of cardiovascular death or hospitalization for heart failure in patients with HFrEF.
Figure 1

Figure 2