Mortality Reduction Associated With β-Adrenoceptor Inhibition in Chronic Heart Failure Is Greater in Patients With Diabetes

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Abstract

OBJECTIVE Diabetes increases mortality in patients with chronic heart failure (CHF) and reduced left ventricular ejection fraction. Studies have questioned the safety of β-adrenoceptor blockers (β-blockers) in some patients with diabetes and reduced left ventricular ejection fraction. We examined whether β-blockers and ACE inhibitors (ACEI) are associated with differential effects on mortality in CHF patients with and without diabetes.

RESEARCH DESIGN AND METHODS We conducted a prospective cohort study of 1,797 patients with CHF recruited between 2006 and 2014, with mean follow-up of 4 years. β-Blocker dose was expressed as the equivalent dose of bisoprolol (mg/day) and ACEI dose as the equivalent dose of ramipril (mg/day). Cox regression analysis was used to examine the interaction between diabetes and drug dose on all-cause mortality.
RESULTS Patients with diabetes were prescribed larger doses of β-blocker and ACEI than were patients without diabetes. Increasing β-blocker dose was associated with lower mortality in patients with diabetes (8.9% per mg/day; 95% CI 5–12.6) and without diabetes (3.5% per mg/day; 95% CI 0.7–6.3), although the effect was larger in people with diabetes (interaction $P = 0.027$). Increasing ACEI dose was associated with lower mortality in patients with diabetes (5.9% per mg/day; 95% CI 2.5–9.2) and without diabetes (5.1% per mg/day; 95% CI 2.6–7.6), with similar effect size in these groups (interaction $P = 0.76$).

CONCLUSIONS Increasing β-blocker dose is associated with a greater prognostic advantage in CHF patients with diabetes than without diabetes.

Footnotes

• K.K.W. and M.D. are joint first authors.

• This article contains Supplementary Data online at http://care.diabetesjournals.org/lookup/suppl/doi:10.2337/dc17-1406/-/DC1.

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