
BACKGROUND: In patients with heart failure, beta-blocker therapy improves left-ventricular function after 3-6 months of treatment, but effects of such treatment on symptoms and exercise performance are inconsistent, and the longer-term effects on death and other serious clinical events remain uncertain. We have investigated these issues in a double-blind, placebo-controlled, randomised trial of the beta-adrenergic blocker carvedilol (which also has alpha 1-blocking properties).

METHODS: 415 patients with chronic stable heart failure were randomly assigned treatment with carvedilol (207) or matching placebo (208). At baseline, 6 months, and 12 months, we measured left-ventricular ejection fraction, left-ventricular dimensions, treadmill exercise duration, 6 min walk distance, New York Heart Association (NYHA) class, and specific activity scale (SAS) score. Double-blind follow-up continued for an average of 19 months, during which all deaths, hospital admissions, and episodes of worsening heart failure were documented.

FINDINGS: After 12 months, left-ventricular ejection fraction had increased by 5.3% (2p < 0.0001) and end-diastolic and end-systolic dimensions had decreased by 1.7 mm (2p = 0.06) and 3.2 mm (2p = 0.001), respectively, in the carvedilol group compared with the placebo group. During the same period that were no clear changes in treadmill exercise duration, 6 min walk distance, NYHA class, or SAS score. After 19 months, the frequency of episodes of worsening heart failure was similar in the carvedilol and placebo groups (82 vs 75; relative risk 1.12 [95% CI 0.82-1.53]) but the rate of death or hospital admission was lower in the carvedilol group than in the placebo group (104 vs 131; relative risk 0.74 [0.57-0.95]).

INTERPRETATION: The beneficial effects of carvedilol on left-ventricular function and size were maintained for at least a year after the start of treatment, but carvedilol had no effect on exercise performance, symptoms, or episodes of worsening heart failure. There was an overall reduction in events resulting in death or hospital admission, and a year of treatment with carvedilol resulted in the avoidance of one such serious event among every 12-13 (SE 5) of these patients with chronic stable heart failure.