Carvedilol reduced death and hospitalization in congestive heart failure


Objective
To determine the effectiveness of carvedilol on left ventricular ejection fraction (LVEF), symptoms, and mortality in patients with ischemia-related congestive heart failure (CHF).

Design
Randomized, double-blind, placebo-controlled trial.

Setting
20 hospitals in Australia and New Zealand.

Patients
415 patients (mean age 67 y, 80% men) with chronic stable CHF, with LVEF < 45%, and who were currently in New York Heart Association (NYHA) functional class II or III or previously in class II to IV. Exclusion criteria were current NYHA class IV CHF, heart rate < 50 beats/min, second- or third-degree heart block, blood pressure < 90 mm Hg systolic or > 160/100 mm Hg, treadmill exercise duration of < 2 or > 18 minutes, recent coronary event or procedure, primary myocardial or valvular disease, diabetes, use of β-blockers or β-agonists, or other serious disease.

Intervention
Patients were assigned to carvedilol (n = 207) or placebo (n = 208) titrated from 3.125 mg to a maximum of 25 mg twice daily.

Main outcome measures
Primary outcomes were changes in LVEF and exercise treadmill duration. Secondary outcomes were changes in left ventricular size, 6-minute walking distance, symptoms of CHF, death, hospitalization, and worsening CHF.

Main results
At 12 months, LVEF in the carvedilol group had improved to 5.3% more than that of the placebo group (P < 0.001). After a mean 19-month follow-up, fewer patients in the carvedilol group had the combined event of death or hospitalization (P = 0.02) or hospitalization alone (P = 0.05) (Table). The groups did not differ for mortality alone, individual causes of hospitalization, treadmill exercise duration or 6-minute walking distance, NYHA levels, symptoms of CHF, or worsening CHF.

Conclusion
In patients with ischemia-related CHF, carvedilol improved LVEF, left ventricular size, and combined mortality and hospitalizations but did not improve symptoms or exercise performance.

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Carvedilol vs placebo*

<table>
<thead>
<tr>
<th>Outcome at 19 mo</th>
<th>Carvedilol</th>
<th>Placebo</th>
<th>RRR (95% CI)</th>
<th>ARR</th>
<th>NNT (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death or hospitalization</td>
<td>50%</td>
<td>63%</td>
<td>21% (6 to 34)</td>
<td>14%</td>
<td>8 (4 to 27)</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>48%</td>
<td>58%</td>
<td>18% (1 to 32)</td>
<td>10%</td>
<td>10 (5 to 130)</td>
</tr>
</tbody>
</table>

*Abbreviations defined in Glossary; RRR, ARR, NNT, and CI calculated from data in article.