Mortality Abstract 344M1

MORTALITY IN PATIENTS TREATED WITH CAPTOPRIL FOR LEFT VENTRICULAR DYSFUNCTION FOLLOWING MYOCARDIAL INFARCTION

David Wesley, MD

Reference


Study Objective

To determine whether captopril can reduce mortality and morbidity in patients with left ventricular dysfunction after a myocardial infarction.

Subjects Studied

From several US health centers, 2,231 patients 3 to 16 days post-MI with left ventricular ejection fractions of 40 percent or less but without overt symptoms were randomly assigned to either the placebo or the treatment group.

This mortality abstract is based upon the results reported for the captopril group. That group had 1,115 patients, 929 (83%) of whom were male. The mean age was 59.3 years, with 375 <56 years of age, 356 ages 56 to 64 years, and 384 >64 years of age.

Follow-Up

Survivors were followed for an average of 42 months (range 24 to 60). The total mortality experience is summarized in the authors' Figure 1 entitled "Cumulative Mortality from all Causes in the Study Groups." This figure also provides the number of patients at risk at the beginning of each year for both groups.

Expected Mortality

The 1988 U.S. general population life table was used as the basis for the expected deaths in Table A. Since 83% of the patients were men, the expected deaths were derived from male mortality rates. The q' for age 51 (for those less than 56 years old), the q' for age 60 (for those 56 to 64 years of age), and the q' for age 69 (those over 64 years old) were multiplied by the number of individuals in each age category to determine the d' (expected deaths) for the first year. Dividing this by the exposure for the first year results in a weighted q' that corresponds to age 62 (males) in the 1988 table. The q' for each of ages 63, 64 and 65 from the 1988 table were used for the following yearly intervals.

To determine the exposures one must use the number alive at the start of each interval, the interval mortality rates, and then solve for d and w using two simultaneous linear equations with two unknowns.

Results

Collectively, this study and the two accompanying studies in the same issue strongly indicate that ACE inhibitors prolong survival and prevent cardiac events in patients with low ejection fractions. This particular article showed the treatment benefit applies to those patients who recently had an MI. The captopril group had a mortality risk reduction of 19% with a p value of 0.019.

Since ACE inhibitor treatment is likely to become routine for post-MI patients with left ventricular dysfunction, this mortality abstract examines only the results of the captopril group and not the placebo group.

Table A shows that the measures of excess mortality are very high in the first year, drop to a modest level and then rise again in the fourth interval. The derivation of the exposure in person-years allows one to determine aggregate annual means for the last three years of the study data.

Comments

Left ventricular dysfunction (EF <40%) is a strong marker for increased mortality after discharge in patients who have had a myocardial infarction. This increase is especially notable in the first year after discharge.

The mortality ratios for this group of patients treated with captopril seem promising. While the first-year mortality ratio is quite high, the ratios for second through fourth years are modestly elevated. But look at...
the excess death rates. The average EDR for the last three years is 27 deaths per 1,000.

The study also has a relatively short follow-up. This makes the mortality rise in the fourth interval even more ominous. Perhaps captopril treatment has the effect of postponing the inevitable and long term mortality would match that of the untreated group.

### Table A

<table>
<thead>
<tr>
<th>Interval Start-End Years</th>
<th>No. Alive</th>
<th>Exposure Pt-Yrs.</th>
<th>No. of Deaths</th>
<th>Mortality Ratio 100d/d'</th>
<th>Mean Annual Mortality Rates (per 1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t</td>
<td>E</td>
<td>d</td>
<td>q</td>
<td>Obs.</td>
</tr>
<tr>
<td>0-1</td>
<td>1115</td>
<td>1115.0</td>
<td>115</td>
<td>21.49</td>
<td>540%</td>
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<tr>
<td>1-2</td>
<td>1000</td>
<td>994.0</td>
<td>50</td>
<td>21.01</td>
<td>240</td>
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<tr>
<td>2-3</td>
<td>938</td>
<td>792.5</td>
<td>33</td>
<td>18.04</td>
<td>180</td>
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<tr>
<td>3-4</td>
<td>614</td>
<td>464.5</td>
<td>27</td>
<td>11.35</td>
<td>240</td>
</tr>
<tr>
<td>1-4</td>
<td>1000</td>
<td>2251</td>
<td>110</td>
<td>50.40</td>
<td>220</td>
</tr>
</tbody>
</table>

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