Gender Differences in Prognostic Value of Exercise Capacity, Heart Rate Reserve, and Heart Rate Recovery for Predicting All-Cause Mortality

Moderated Poster Contributions
Hall C
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Abstract Category: 20. Prevention: Clinical
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Background: Exercise capacity (EC), chronotropic incompetence, measured by the % heart rate (HR) reserve achieved (%HR-reserve), and abnormal HR-recovery are known predictors of all-cause mortality (ACM). We examined the effects of these variables for predicting ACM in men and women undergoing exercise myocardial perfusion SPECT (MPS).

Methods: 11,218 pts with no valvular disease and not on β-blockers underwent exercise MPS. EC was poor with ≤ 7 METS. For %HR-reserve = (peak HR - rest HR) x 100/(220-age-rest HR), <80% defined as low. HR-recovery = peak HR - recovery HR at 2 min; ≤ 22 considered abnormal. Cox analysis was performed.

Results: Total 445 deaths; follow-up = 3.2 ± 2.2 yrs. Poor EC was present in 38.0% (26% F, 60% M), low %HR-reserve in 27.3% (25% F, 31% M), and abnormal HR-recovery in 20.5% (22% F, 19% M). Adjusting for age, prior CAD, BMI, HTN, smoking, DM, and MPS, all 3 exercise variables significantly predicted ACM. With 0, 1, 2, or 3 abnormalities, annualized ACM for women was 0.2%, 0.9%, 2.0%, 4.5%, and 0.6%, 1.2%, 2.7%, 5.5%, for men. Women with no exercise abnormalities served as controls. Hazard ratios for ACM were 1.00, 2.77, 4.57, 9.24 for women and 2.35, 3.22, 5.18, 8.77 for men with 0, 1, 2, 3 abnormal exercise variables (Fig).

Conclusion: EC, %HR-reserve, and HR-recovery are independent and incremental predictors of ACM in both men and women undergoing exercise MPS. Although men had higher ACM, the incremental effect of additional abnormal exercise variables on ACM was far more pronounced in women.

Effect of Exercise Abnormalities for Men and Women

<table>
<thead>
<tr>
<th>Exercise capacity, Heart rate recovery, Heart rate reserve</th>
<th>All Normal</th>
<th>1 Abnormal</th>
<th>2 Abnormal</th>
<th>3 Abnormal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>1.00</td>
<td>2.35</td>
<td>3.22</td>
<td>4.57</td>
</tr>
<tr>
<td>Men</td>
<td>2.77</td>
<td>5.18</td>
<td>8.77</td>
<td>9.24</td>
</tr>
</tbody>
</table>

All P-values ≤ 0.03