Women responded to an early invasive strategy as well as men in the acute coronary syndrome


**Question**
In patients with the acute coronary syndrome (ACS), do sex differences exist in the response to an early invasive strategy compared with a conservative strategy?

**Design**
Sex-based subgroup analysis of a randomized (allocation concealed*), blinded (outcome assessors),† controlled trial with 6-month follow-up (Treat Angina with Aggrastat and Determine Cost of Therapy with an Invasive or Conservative Strategy—Thrombolysis in Myocardial Infarction 18 [TACTICS-TIMI 18])‡.

**Setting**
169 centers in 9 countries in North America and Europe.

**Patients**
2220 patients (757 women, mean age 64 y; 1463 men, mean age 61 y) who had an episode of unstable angina in the previous 24 hours; were candidates for coronary revascularization; and had ≥1 of ST-segment depression, transient ST-segment elevation, or T-wave inversion in ≥2 leads; increased cardiac biomarker levels; or history of coronary disease. All patients were included in the analysis.

**Outcome Group Invasive Conservative Odds ratio (95% CI) § RRR (CI) NNT (CI)

<table>
<thead>
<tr>
<th>Composite endpoint</th>
<th>Women</th>
<th>17.0%</th>
<th>19.6%</th>
<th>0.72 (0.47 to 1.11)</th>
<th>24% (-8.7 to 48)</th>
<th>Not significant</th>
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<tbody>
<tr>
<td>Men</td>
<td>15.3%</td>
<td>19.4%</td>
<td>0.64 (0.47 to 0.88)</td>
<td>31% (9.9 to 48)</td>
<td>17</td>
<td>(11 to 53)</td>
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</table>

†Composite endpoint = death, myocardial infarction, and rehospitalization. Abbreviations defined in Glossary; RRR, NNT, and CI calculated from data in article.

**Commentary**
The study by Glaser and colleagues provides some support that an early invasive strategy in ACS without ST elevation has similar efficacy in men and women. This is a subgroup analysis comparing men and women in the TACTICS-TIMI 18 study. Apparent benefit existed in both groups without evidence of a sex interaction. This finding is at odds with other subgroup analyses from the FRISC II and RITA 3 trials, both of which compared an early invasive strategy with a conservative strategy in ACS (1, 2). In FRISC II (n = 749 women), the rates of death or MI after 1 year were 15.8% for the noninvasive group and 9.6% for the invasive group in men and 10.5% and 12.4% in women, respectively. In RITA 3 (n = 682 women), the results were 10.1% and 7.0% in men and 5.1% and 8.6% in women. A true sex-based interaction may exist with respect to early invasive procedures, but these and previous analyses have not established this beyond reasonable doubt because of the limitations of subgroup analyses.

The meta-analysis of glycoprotein IIb/IIIa agents in ACS has also raised the issue of a possible sex interaction (3). We know that women are older and generally sicker than men in clinical trials. They have different coronary anatomy, and it is possible that they respond differently to invasive procedures. Methodologic differences may also exist in the outcome definitions between the TACTICS, FRISC, and RITA trials. TACTICS relies more heavily on elevation of CKMB or troponin, whereas the others use more conventional definitions including electrocardiographic changes and elevation of biomarkers to define MI. The true result cannot be inferred from available data, although the consistency of FRISC II and RITA 3 results raises concerns that women somehow react poorly to early coronary intervention in ACS. The OASIS group is planning a study of 1600 women randomized to invasive or conservative management in ACS to determine if a benefit exists from an invasive approach. This and other randomized trials are needed to find out if women benefit from early revascularization in ACS.

**References**

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