SEX DIFFERENCES IN ACUTE MYOCARDIAL INFARCTION IN BIRJAND, EASTERN IRAN

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Abstract

INTRODUCTION: Epidemiological evidence shows that the incidence of acute myocardial infarction (AMI), cardiovascular disease risk factors, and mortality due to AMI in women are different from those in men. The objective of this study was to compare baseline characteristics, risk factors, medical care and mortality of AMI in women and men.

METHODS: In this descriptive-analytical study, we examined data from medical charts and administrative records of patients hospitalized with AMI from 1994 to 2003 in Birjand hospitals. Two trained nurses completed the questionnaires under the supervision of a cardiologist. Data were analyzed with SPSS.

RESULTS: Of 918 patients, 71.9% were male and 28.1% were female. The women and men had mean ages of 65.62±10.56 years and 58.98±12.11 years, respectively. The prevalence of hypertension was 50% in women and 24.6% in men (P<0.001). The prevalence of diabetes mellitus was 17% in women and 9.8% in men (P<0.006). The prevalence of smoking was 13.7% in women and 36.3% in men (P<0.001). In-hospital mortality was higher in women but not significant (10.4% in women, 8.6% in men, P=0.42). Fasting blood sugar, cholesterol and diastolic blood pressure were significantly higher in women.

CONCLUSIONS: Mean age and the prevalence of diabetes and hypertension were higher in women with AMI. We recommend that interventional programs be designed to reduce the risk factors of AMI through education, especially for women.

Keywords: Acute myocardial infarction, women, medical care, risk factors.


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Results
From 1994 to 2003, 918 patients were hospitalized with definite AMI in Birjand. 77.9% of the subjects were men with a mean age of 58.4±12.1 years; 28.1% were women with a mean age of 65.6±10.6 years (P<0.001). The prevalence of cardiac risk factors in men and women was compared (Table 1).

Table 2 represents mean levels of fasting blood sugar (FBS), serum lipids and blood pressure in men and women. Comparisons revealed a statistically significant difference in blood sugar, cholesterol and diastolic blood pressure between the two groups.

Acute medical care of patients is represented in Figure 1; only was the frequency of thrombolytic therapy significantly lower in women (3.8% in women, 14.2% in men, P<0.001).

In-hospital mortality in women was higher than in men (10.4% in women, 8.7% in men, P=0.42).

Discussion
In our study, 28.1% of patients hospitalized with definite AMI were women; women on average were older than men. The results of other studies are in agreement with our findings.4-6 The lower prevalence of AMI in women may be due to the protective effect of estrogen.13

Many studies have shown the prevalence of hypertension and diabetes mellitus to be significantly higher in men; the prevalence of smoking in men has also been reported as being three-time that in women.11-14 In our study, in-hospital mortality in women was higher than in men, but not significantly. In the majority of reports, in-hospital mortality of women was higher than that of men.7,8 However, other studies, for example one in Yazd (2000-2001) found no difference between in-hospital mortality rates from AMI in men and women.9-11

Patient mortality is greatly influenced by medical care. In a recent publication from the Neufeld Cardiac Research Institute,7 Gotllieb et al. noted women were less likely to be treated with aspirin, beta-blockers, captopril and thrombolytic drugs. In our study, however, medical management was similar for men and women, except for treatment with thrombolytic drugs. Thrombolytic drugs were used significantly less in women than men. Several earlier studies have noted that women were less likely to receive thrombolytic drugs due to older age, comorbid conditions and late arrival.15-17

Sex differences in management, risk factors and outcome after AMI in Birjand is similar to other parts of the world.

Despite the low prevalence of AMI in women, in-hospital mortality in women was higher, which may be due to older age, more comorbidities (especially DM and HTN), low awareness, late arrival and less frequent use of thrombolytic drugs in women.

We conclude by emphasizing the need for educating the public on healthy lifestyle and treatment-seeking for AMI, especially in women.

### TABLE 1. Frequency distribution of risk factors in men and women with definite AMI.

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Women</th>
<th>Men</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>129 (50%)</td>
<td>161 (24.4%)</td>
<td>0.001*</td>
</tr>
<tr>
<td>Diabetes</td>
<td>44 (17%)</td>
<td>65 (9.8%)</td>
<td>0.002*</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>49 (19%)</td>
<td>128 (19.4%)</td>
<td>0.88</td>
</tr>
<tr>
<td>Cigarette smoking</td>
<td>35 (17.6%)</td>
<td>240 (36.4%)</td>
<td>0.001*</td>
</tr>
<tr>
<td>Positive family history</td>
<td>11 (4.3%)</td>
<td>28 (4.2%)</td>
<td>0.99</td>
</tr>
</tbody>
</table>

Total: men=660, Women=258
*Statistically significant

### TABLE 2. Comparison of mean levels of FBS, serum lipids and blood pressure in women and men.

<table>
<thead>
<tr>
<th>Object</th>
<th>Women</th>
<th>Men</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>FBS (mg/dl)</td>
<td>138.4±75.4</td>
<td>122.2±52.6</td>
<td>0.001*</td>
</tr>
<tr>
<td>Cholesterol (mg/dl)</td>
<td>214.7±61.7</td>
<td>199.6±49.5</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Triglyceride (mg/dl)</td>
<td>138.8±69.8</td>
<td>138.4±103.7</td>
<td>0.95</td>
</tr>
<tr>
<td>Systolic blood pressure</td>
<td>125.3±25.9</td>
<td>121.5±26.1</td>
<td>0.07</td>
</tr>
<tr>
<td>Diastolic blood pressure</td>
<td>87.6±15.5</td>
<td>75.6±16.3</td>
<td>0.01*</td>
</tr>
</tbody>
</table>
References
We thank all physicians and nurses who work in the cardiology wards of Birjand hospitals. We are grateful to Miss Assiabani and Talebi for data collection.

References