Atypical Presentation of Myocardial Infarctions: More common above 60 years and Females

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Abstract
Atypical symptom was defined as the absence of chest pain before or during admission, and may have included gastrointestinal or respiratory symptoms such as dyspnea, nausea, vomiting, and abdominal discomfort. Patients who present without chest pain are frequently misdiagnosed, and less likely to receive optimal treatment for ACS. Consequently, greater in-hospital morbidity, and mortality are noted. Therefore, understanding the factor associated with atypical presentations may help in the earlier detection and treatments in patients with ACS.

Keywords: Atypical MI, ACS, Atypical Symptoms, Age, Sex, Myocardial Infarction, MI.

Introduction
The clinical manifestations of coronary heart disease vary considerably. Since it was first described by James B. Herrick in 1912, clinically unrecognized myocardial infarction(¹,²) has been extensively researched and debated. Epidemiologic studies have shown that silent, atypical, or unrecognized myocardial infarctions constitute between 20% and 60% of all myocardial infarctions(³-⁸).

Unrecognized myocardial infarction is diagnosed objectively using thallium perfusion imaging, radionuclide angiography, or echocardiography; it is most often diagnosed from typical, unequivocal changes on the electro-cardiogram of a patient with symptoms so atypical that neither patient nor physician recognizes the problem as an infarction. Atypical and silent myocardial infarction has traditionally been grouped together as unrecognized myocardial infarction. Patients with silent myocardial infarction seemingly have no symptoms. Half of all patients with unrecognized myocardial infarction recall no symptoms and have therefore had silent myocardial infarctions; the remainder have had atypical myocardial infarctions(⁹,¹⁰).

Silent myocardial ischemia as an important manifestation in patients with coronary heart disease has been studied in recent decades and clearly affects prognosis unfavorably(¹¹,¹²). Because the prognosis for patients with unrecognized myocardial infarction seems to be as serious as that for patients with recognized myocardial infarction¹³,¹⁴, practicing physicians face considerable diagnostic and therapeutic challenges when dealing with the many patients with this condition. Not only is it difficult to choose methods with which to identify these patients, it is also difficult to make decisions about secondary...
prevention and medical treatment. Detailed knowledge about this disease entity is therefore important and must include a thorough understanding of which patient subgroups are especially vulnerable.

The atypical presentation of Acute Myocardial Infarction may be affected by various factors most common being Age, Gender and presence of risk factors including Diabetes, Hypertension, Hyperlipidemia, Smoking etc.

In our study, we have focused on these factors contributing to the atypical presentation of acute myocardial infarction & association of the presenting symptoms with the infarcted area. Presenting symptoms of acute myocardial infarction differ in elderly patients from young ones. Elderly patients have changes in pain perception and altered ischemic thresholds, but the exact explanation for atypical symptoms is yet unknown.

Symptoms may be described as dyspnea, syncope, epigastric pain, restlessness, weakness, fatigue, acute confusion, shoulder pain and back pain, and may be precipitated by concurrent illness. And in some cases, complications derived from myocardial infarction may be the only presenting sign. Cardiovascular heart disease still represents the leading cause of death in both males and females especially in patients with age group >60 years. Due to atypical symptoms, elderly patients stand at a higher risk thus delaying diagnosis & treatment, resulting in higher mortality rates.

**Materials and Method**

A retrospective data analysis was done on all patients with atypical symptoms who got admitted with a diagnosis of acute myocardial infarction from the emergency department in a period of 365 days i.e. from 1st October 2014 till 31st October 2015.

Data analysis was done with software SPSS 17.0 in which the P-value of ≤0.05 was taken as statistically significant.

In this study we excluded all patients who presented to emergency department with typical symptoms i.e. chest pain, age ≤18 years and those presenting with atypical symptoms having baseline ECG changes and normal cardiac enzymes.

The patients in this study were divided based on the age, gender, site of infarction, presenting symptoms & risk factors.

**Inclusion Criteria:** All patients with atypical symptoms of acute myocardial infarction which were divided based on the following:

- Age
- Gender
- Site of infarction
- Presenting symptoms
- Risk factors.

**Exclusion Criteria:** All patients with the following:

- Typical symptoms i.e. chest pain
- Age <18 years.
- Atypical symptoms having baseline ECG changes and normal cardiac enzymes.

**Results**

According to our data, of all the 638 patients, 150 patients (23.51%) presented with atypical symptoms of acute myocardial infarction and 488 patients (76.48%) had typical symptoms of chest pain.

Out of those 150 patients, 68% (102 patients) were of age group >60 years and 32% (48 patients) were of the age group 18-59 years as shown in Table 1.

<table>
<thead>
<tr>
<th>Age-group</th>
<th>Male</th>
<th>Female</th>
<th>Total Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-59 years</td>
<td>18 (37.5%)</td>
<td>30 (62.5%)</td>
<td>48 (32%)</td>
</tr>
<tr>
<td>≥ 60 years</td>
<td>36 (35.3%)</td>
<td>66 (64.7%)</td>
<td>102 (68%)</td>
</tr>
</tbody>
</table>

**18 – 59 years as shown in Table 1.**
Out of 150 atypically presenting MI patients, 36% were males (55 patients) and 64% were females (95 patients).

Among atypically presenting MI patients, the most common site of infarction was Inferior wall (46.6%) in 70 patients followed by Anterior wall (24%) in 36 patients, Antero-lateral wall (9.3%) in 14 patients, Lateral wall (6.6%) in 10 patients, Infero-lateral wall (5.3%) in 8 patients, Antero-inferior wall (4.0%) in 6 patients and Antero-septal wall (4.0%) in 6 patients respectively, as shown in Table 2.

Among atypical MI patients, (92.6%) patients presented with profuse sweating (139 patients), followed by dyspnea (81.3%) in 122 patients, headache (68.6%) in 103 patients, palpitations (64.6%) in 97 patients, nausea (56.6%) in 85 patients, vertigo (48.6%) in 73 patients, vomiting (42.6%) in 64 patients, epigastric pain (36.6%) in 55 patients, syncope (15.3%) in 23 patients, and generalized weakness (12.6%) in 19 patients respectively as shown in Table 3.

Looking into the risk factors present in atypically presenting MI patients, 37.3% have Diabetes Mellitus (56 patients), 42.6% have Hypertension (64 patients), and 44.6% gave history of Smoking (47 patients).

**Statistical Analysis**

Unpaired t-test was performed to calculate the value of P (Pearson coefficient) to establish any correlations if present.

<table>
<thead>
<tr>
<th>Symptoms of Atypical MI</th>
<th>18-59y</th>
<th>&gt;60y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweating</td>
<td>39</td>
<td>100</td>
</tr>
<tr>
<td>Dyspnea</td>
<td>29</td>
<td>92</td>
</tr>
<tr>
<td>Headache</td>
<td>23</td>
<td>80</td>
</tr>
<tr>
<td>Nausea</td>
<td>23</td>
<td>62</td>
</tr>
<tr>
<td>Epigastric Pain</td>
<td>21</td>
<td>34</td>
</tr>
<tr>
<td>Syncope</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>Weakness</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>Palpitation</td>
<td>26</td>
<td>71</td>
</tr>
<tr>
<td>Vertigo</td>
<td>33</td>
<td>40</td>
</tr>
<tr>
<td>Vomiting</td>
<td>22</td>
<td>42</td>
</tr>
</tbody>
</table>

The two-tailed P value equals 0.0037. By conventional criteria, this difference was considered to be very statistically significant.

Of all the 150 patients presented with the atypical symptoms of myocardial infarction, 68% of them were amongst the elderly age group and 64% were found to be females. Also the most common site affected in atypical myocardial infarction is inferior wall followed by anterior wall. Amongst atypical myocardial infarction patients, mostly presented with profuse sweating followed by dyspnea and headache and out of all the 150 patients, 37.3% were found to be diabetics, 42.6% were found to be hypertensive and 31.3% had history of smoking.
Conclusions
The result of our study suggests that the patients presenting without chest pain represents a substantial segment of myocardial infarction population. Age more than 60 years and female sex have more atypical presentation when compared to younger age group and male sex, respectively. ACS patients with atypical symptoms like sweating, dyspnea, headache are warning symptoms and are often under-diagnosed and under-treated high risk group. Several clinical risk factors could be helpful in prediction of ACS in this group. Health care providers should have more concerns about the presence of ACS in the patients who have these risk factors.

References
10. Cohn PF. Detection and prognosis of the asymptomatic patient with silent myocardial ischemia. Am J Cardiol. 1988;61:4B-6B.