Prevalence of acute coronary syndrome among patients presenting with chest pain in a tertiary care cardiac centre.

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Background and aims: Chest pain is one of the common reasons for hospital visit. Acute coronary syndrome is an important cause of chest pain. We aimed to study the prevalence of acute coronary syndrome among patients presenting with chest pain and its association with common cardiovascular risk factors.

Methods: Observational study conducted at Shahid Gangalal National Heart Centre from 20th January 2022 to 25th March 2022 enrolling 112 participants consecutively. Participants were interviewed focusing history of hypertension, diabetes, smoking and nature of chest pain. The diagnosis of participants whether it was acute coronary syndrome or not were recorded. Prevalence of acute coronary syndrome was calculated. Linear regression analysis was done to see the correlation with tested variables.

Results: Mean age was 53.8±15.23 years. Seventy-five (66.96%) were male. Forty-two (37.5%) were hypertensive, 30 (26.78%) were diabetes and 26 (23.21%) were smoker. Fifty-six (50%) had nonspecific chest pain, 35 (31.25%) had atypical chest pain and 21 (18.75%) had typical chest pain. Among the participants 38 (33.93%) had acute coronary syndrome. Acute coronary syndrome showed positive correlation with age, gender, nature of chest pain, hypertension and smoking.

Conclusion: Acute coronary syndrome was one of the common cause of chest pain among participants. Age, gender, nature of chest pain, hypertension and smoking showed positive correlation with it. Patients with these risk factors need strong suspicion of acute coronary syndrome and further workup for prompt diagnosis and management.

Keywords: Acute coronary syndrome; Chest pain; Risk factors.

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A total of 56 (50%) had nonspecific chest pain, 35 (31.25%) had atypical chest pain and 21 (18.75%) had typical chest pain. The characteristic nature of the chest pain of the participants is shown in figure 1.

Table 1: Baseline characteristics of the participants.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (Years±SD)</td>
<td>53.83±15.23</td>
</tr>
<tr>
<td>Male Gender (Frequency/Percent.)</td>
<td>75 (66.96%)</td>
</tr>
<tr>
<td>HTN (Frequency/Percent.)</td>
<td>42 (37.5%)</td>
</tr>
<tr>
<td>DM (Frequency/Percent.)</td>
<td>30 (26.78%)</td>
</tr>
<tr>
<td>Smoker (Frequency/Percent.)</td>
<td>26 (23.21%)</td>
</tr>
</tbody>
</table>

Among the participants, a total of 38 (33.93%) had acute coronary syndrome. Out of them 17 (15.18%) were STEMI, 12 (10.71%) were NSTEMI and 9 (7.63%) were unstable angina. Thus among the total 38 total cases of ACS, 44.74% were of STEMI 31.59% were of NSTEMI and 23.68% were of unstable angina.

Multiple Linear regression analysis revealed significant correlation of age, gender, nature of chest pain, hypertension and smoking with diagnosis of acute coronary syndrome (R=0.66). The analysis of variables and their P values are shown in table 2.

Table 2: Analysis and P values of correlation of variables with ACS.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unstandardized Coefficients B</th>
<th>Unstandardized Coefficients Std. Error</th>
<th>Standardized coefficient B</th>
<th>t</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.006</td>
<td>.003</td>
<td>.207</td>
<td>2.512</td>
<td>0.014</td>
</tr>
<tr>
<td>Gender</td>
<td>-1.70</td>
<td>.080</td>
<td>-.168</td>
<td>-2.108</td>
<td>0.037</td>
</tr>
<tr>
<td>Nature of pain</td>
<td>-.170</td>
<td>.051</td>
<td>-.276</td>
<td>-3.336</td>
<td>0.001</td>
</tr>
<tr>
<td>HTN</td>
<td>.222</td>
<td>.077</td>
<td>.227</td>
<td>2.888</td>
<td>0.005</td>
</tr>
<tr>
<td>DM</td>
<td>.072</td>
<td>.084</td>
<td>.068</td>
<td>.859</td>
<td>0.392</td>
</tr>
<tr>
<td>Smoking</td>
<td>.231</td>
<td>.092</td>
<td>.206</td>
<td>2.517</td>
<td>0.013</td>
</tr>
</tbody>
</table>

Discussion

In this study mean age of participants was 53.83±15.23 years and about 2/3rd of them were male. In a study by Bjornson and colleagues, the mean age of participants presenting with chest pain in a Norwegian hospital was 61±18 years and 57% were male. In a study by Sharma and colleagues in India, maximum number of the patients presenting with chest pain were in the age group of 36-45 years and 63% of them were male. In the present study 37.5% had hypertension, 26.78% had diabetes and 23.21% were smoker. Gandhi and colleagues found 61.7% hypertensive, 29.79% diabetic and 34.04% smoker among the patients presenting with chest pain in India. Hypertension and diabetes were present in 62.9% and 15% respectively in patient presenting with shortness of breath or chest pain in Tanzania as shown by Pratipati and colleagues. However Mohamed and colleagues reported hypertension in 23.5% and diabetes in 7.4% of participants presented with non-traumatic chest pain in an urban emergency department in Tanzania.
Among the patients presenting with chest pain we found 33.93% cases of acute coronary syndrome. Martinez-Selles and colleagues reported ischemic cause in 15.7% of patients with chest pain.2 Baccouche and colleagues reported ACS as etiology of chest pain in 22.3% of participants.3 However in a study by Belguith and colleagues ACS represented 49.7% of non-traumatic chest pain in a cross sectional multicenter study.1 Our prevalence of ACS in patients with chest pain was in between and comparable to published literature. Several factors like differences in prevalence of risk factors, ethnic, racial and geographical variation, differences in the level of health care providing centres and overall health care awareness in the communities might have contributed in the difference in prevalence of ACS in patients presenting with chest pain. We found age, gender, nature of chest pain, HTN and smoking had positive correlation with the diagnosis of acute coronary syndrome in emergency. Several studies in the past have shown the relation of cardiovascular disease with the above mentioned risk factors in various proportions and most of our findings in the present study was in accordance with the published literatures.4,14,15

This study has several limitations. It was a single centre study with limited sample size and study duration. We included only few common risk factors. A larger sample size with a longer study period would have given a more comprehensive picture. Thus we encourage larger studies including large number of participants and conventional as well as new possible risk factors.

**Conclusion**

Acute coronary syndrome was one of the common cause of chest pain among participants visiting emergency of a tertiary cardiac centre. We found positive correlation of age, gender, nature of chest pain, hypertension and smoking with diagnosis of ACS. Patients with these risk factors need strong suspicion of ACS and prompt work up when they present with chest pain so that they can get proper management on time.

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None

**Conflict of interest**

None

**References**


