INTRODUCTION: The metabolic syndrome (MS) is a combination of interrelated metabolic abnormalities that significantly increase the risk of cardiovascular disease, and type 2 diabetes mellitus (DM2). MS is affecting more and more people globally with time and emerged as serious public health problem. Components of metabolic syndrome individually increase risk of cardiovascular disease; however, whether MS by definition as per AHA's definition leads to greater cardiovascular risk than the sum of its components is not clear and remains a matter of debate. In many studies, it has been hypothesized that the number of MS components may be more useful in predicting cardiovascular disease than MS itself. MS's global prevalence varies from <10% to as much as 84%, which depend upon many factors like region, composition (sex, age), race, and ethnicity of the population studied. In estimation made by IDF, predicts that one-quarter of the world's adult population is suffering from metabolic syndrome. Certain risk factors like sedentary lifestyle, higher socioeconomic status, and high body mass index (BMI) are significantly associated with MS. Certain risk factors like sedentary lifestyle, higher socioeconomic status, and high body mass index (BMI) were significantly associated with MS. Cameron et al. have concluded that differences in genetic background, diet, levels of physical activity, smoking, family history of diabetes, and education all influence the prevalence of the metabolic syndrome and its components. In this study, we studied prevalence and clinical profile of metabolic syndrome in patients of coronary artery disease.

MATERIAL AND METHODS: This case control study was undertaken in 150 patients of ACS with more than 18 years of age admitted in the Department of Medicine of a tertiary care center. The patients were divided in two groups by simple randomization, one group of patients (50 patients) was ACS without MS (NMS) and another group (100 patients) was ACS with MS (MS). All components of MS like waist circumference, blood pressure, triglyceride, low HDL, fasting blood sugar were significantly high (p <0.05) in MS group than ACS alone group (Table 2).

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Statistical analysis was performed by using chi square test and student t test was applied to see the difference in mean values of a quantitative data.

RESULTS: This study was conducted on 150 patients of acute coronary syndrome, out of which 100 patients were included in metabolic syndrome group.

TABLE 1: Demographic and baseline characteristic

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>IHD with MS</th>
<th>IHD without MS</th>
<th>Statistical analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past history</td>
<td>Hypertension</td>
<td>40</td>
<td>11</td>
</tr>
<tr>
<td>DM</td>
<td>67</td>
<td>3</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>CVA</td>
<td>18</td>
<td>5</td>
<td>0.29</td>
</tr>
<tr>
<td>Sedentary lifestyle</td>
<td>60</td>
<td>20</td>
<td>0.32</td>
</tr>
<tr>
<td>Smoking</td>
<td>61</td>
<td>11</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Alcohol intake</td>
<td>4</td>
<td>0</td>
<td>0.37</td>
</tr>
</tbody>
</table>

TABLE 2: Comparison of various components of metabolic syndrome

<table>
<thead>
<tr>
<th>Group (Mean±SD)</th>
<th>IHD with MS</th>
<th>IHD alone</th>
<th>Statistical analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI (Kg/m²)</td>
<td>25.97±2.48</td>
<td>23.9±1.51</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>WC (cm)</td>
<td>88.91±7.05</td>
<td>86.56±5.71</td>
<td>0.04</td>
</tr>
<tr>
<td>SBP (mmHg)</td>
<td>143.28±22.45</td>
<td>123.04±21.52</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>DBP (mmHg)</td>
<td>87.8±11.90</td>
<td>79.24±10.67</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>FBS (mg/dl)</td>
<td>162.13±45.94</td>
<td>97.56±16</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
Here in MS group, average BMI was higher than control group (p value <0.0001), and also had higher systolic and diastolic blood pressure compare to control group (p value for SBP and DBP is <0.0001 and <0.0001 respectively). Patients with metabolic syndrome (85%) had higher mean fasting blood sugar value in compare to control group (6%) with p value <0.0001.

In this study metabolic syndrome group had higher total cholesterol (p value of 0.04), lower HDL value (p value of <0.0001), high TG value (p value <0.0001). ST elevation myocardial infarction was seen in 56% patients with MS and 60% patients in control group.

All five components of MS were present in 10% patients, while presence of 3 and 4 components of MS were seen in 43% and 47% patients respectively.

**DISCUSSION:**

Over the time, many studies have been carried out to detect prevalence and clinical profile of metabolic syndrome in western countries, but data from Indian studies is scarce, and moreover, Asian Indian study outside the India outnumber the study from India.

Prevalence of MS in this study was 48.21%, which is similar to study done by Anand Verma and Ana Jover, where prevalence of MS was 49% and 50.9% respectively. The mean age in this study was 56.19 years (age range= 36-75 years), and highest number of patients was in between 51 to 60 years of age. Similar age distribution was found in study done by Dhakda.

In this study, 60% of patients having metabolic syndrome had sedentary life style as compared to control group (40%). Similar results were found in the studies by Gupta and Shah. Similarly, smoking was a significant risk factor for metabolic syndrome. Similar findings were observed by Nadiri.

Patients, who had past history of DM and hypertension, were at higher risk for MS. In one study, it was demonstrated that presence of MS in diabetic patients had increased risk of cardiovascular events by tenfold.

Individual components of MS may work synergistically to increase risk of cardiovascular disease. So, study of individual component is important. BMI was significantly high in MS group compare to ACS alone group and similar results were found in other studies. Regarding hypertension, in MS group, both mean systolic and diastolic blood pressure were significantly high compare to control group. 72% of patients in metabolic syndrome had hypertension, compare to control group (10%), with a p value of <0.0001. Similar result was found in a study done by Mohammad Ali Sowdagar.

Patients with MS had higher mean fasting blood sugar compare to control group and similar findings have been observed by Nadiri. Metabolic group had higher total cholesterol and triglyceride level and low HDL compare to control group, and similar findings were observed in other studies.

Presence of MS increases risk of cardiovascular disease, but not above and the beyond risk associated with its individual components. So, the number of markers is more important than metabolic syndrome by definition per se. Each component of metabolic syndrome increases risk of cardiovascular disease independently. In our study, all components of metabolic syndrome were present in 10% patients, while 4 components and 3 components were present in 47% and 43% patients respectively.

Our study has some limitations, as it is a single centre study with small sample size. So, it is difficult to generalize result on all Indian population.

From this study we conclude that diabetes mellitus, impaired glucose tolerance, obesity, hypertension, sedentary lifestyle and smoking are risk factors for the metabolic syndrome, and metabolic syndrome significantly increases the risk of coronary artery disease. Modification of lifestyle may prevent development of metabolic syndrome.

**REFERENCES**