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# Demographic and angiographic profile in young acute coronary syndrome in Tertiary care hospital in Telangana

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**ABSTRACT :**
Acute coronary syndrome has not only increased in incidence but more number of young adults are being diagnosed. Hence we did retrospective study of young adults below 46 yrs of age admitted in our medical college diagnosed and treated as ACS is consists of comprehensive data of demographic factors, risk factors & clinical features management of young acute coronary syndrome.

**METHODS:**
108 patients who presented with chest pain and other suspected symptoms of ACS were subjected to investigations. Patients with positive investigation report like cardiac markers, ECHO findings underwent coronary angiography. The patients who were dignosed as ACS on finding were included in the study. This is retrospective cross sectional study of patients with acute coronarysyndrome of less than 46 years age group at RVM Institute of medical sciences and research center during March 2020 to March 2021.

**RESULTS**:
Mean age found to be 38 and least age was 27years. STEMI, NSTEMI and Unstable angina were found to be 48.1%, 18.5% and 33.3% respectively. Most patients were in age group of 40-45 years. 79% of males presented with STEMI whereas only 21.2% of females presented with STEMI. This difference was statistically significant. Prevelence of diabetes, hypertension was similar among both groups but smoking was more prevalent among who presented as STEMI. STEMI patients had moderate to severe LV dysfunction and less than 50% of ejection fraction. Cardiac markers were raised more among STEMI. The difference was statistically significant.

**CONCLUSION:** Present study had similar number of STEMI and NSTEMI/UA. The prevelance was more above age of 40 years. Males were more at risk of STEMI. Risk factors were similarly present among both groups except smoking which was more common among STEMI. Investigations showed STEMI is associated with increased cardiac markers, reduced ejection fraction and moderate to severe LV dysfunction. The severity in terms of vessels involved is more among STEMI. Management was also different according to coronary artery findings. NSTEMI/UA was managed more medically whereas STEMI showing increased vessel involvement was managed with PTCA more commonly.

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**Keywords: ACS, STEMI NSTEMI, Unstable angina**

Cardiovascular disease is considered as the primary burden of disease worldwide leading to death[01]. Risk is increasing in developing and transitional countries.

In India, coronary artery disease prevalence has witnessed a rapid spike from1 to 6% in urban population and 4 to 6% in rural population. Cardiovascular diseases leading to the highest incidence of morbidity among young adults in the recent past.

Eventhough Acute coronary syndrome(ACS) was considered as disease of the old age in the present scenario due to increase in risk factors, sedentary lifestyle, increased stress the disease has become common in young population. In this study we wanted to study the demographic details and risk factors of ACS in young adults i.e in age below 46 years.

It is well known that cardiovascular disease has modifiable and non modifiable risk factors. Non modifiable risk factor includes age, family history of cardiovascular disease. Modifiable risk factors include diabetes mellitus, hypertension, hyperlipidemia and addictions including smoking and alcohol are leading to the main cause of morbidity. Tobacco consumption, being one of the leading causes in the mortality rate of India[02]. Plaque erosion, the dysfunction of coronary micro vascular, spontaneous dissection ofcoronary artery, and coronary spasm being the unique syndromes are related in the use of drugs and are more observant in the 15-35yr age group. Diabetes mellitus is accounting for around 20% risk of developing ACS[03]. Hypertension being considered as separate risk factor.

ACS is primarily presented as IHD and these include ST elevated MI(STEMI), non ST elevated myocardial infarction(NSTEMI) or Unstable angina(UA).

STEMI was defined as an elevation of ST segment in two contiguous leads with more than 1mm elevation. NSTEMI is defined as with ST segment depression or either flat T waves and T wave inversions with cardiac enzymes elevated. Unstable angina compromises clinical features of ACS without any ECGchanges or non elevated enzymes.[05]

Depending on the severity, vessel involved, amount of block involved treatment varies in MI. Coronary angioplasty and thrombolysis is the mainstay treatmentof choice in myocardial infarction. Medical management includes Nitrates, anti-platelets, beta blockers and anticoagulants . Aspirin, clopidogrel, beta blockers and statins are used in secondary prevention and are gold standard management.[04]

Studies comparing ST elevation MI and NSTEMI are few. In this study we want to compare STEMI vs NSTEMI/UA to know difference in terms of demographical factors, risk factors and management.

**Objectives:**

To compare the difference in demographic factors, risk factors and management of young ACS patients according to the presentation(STEMI vs NSTEMI/UA).

**STUDY TYPE:** Retrospective cross sectional study including patients presented from March 2020 to March 2021.

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**DATA SOURCE:** In hospital collection of data from the Medical record department of general medicine and cardiology in RVM Institute of medical sciences and research centre, Laxmakkapally, Mulugu, Telangana. Data consisting of demographics, clinical presentation, medical history, addictions, investigations, treatment process during period of hospital stay.

**INCLUSION CRITERIA:**

- ☐ All consecutive young Acute coronary syndrome patients from March 2020 to March 2021 between the age less than 46yrs.
- ☐ COVID Rapid antigen test- Negative.

**EXCLUSION CRITERIA:** Patients with myocarditis, cardiomyopathy and pulmonary embolism.

**STATISTICAL METHOD:**

Values are expressed as Mean±SD, frequency, percentages, Bar and line graphs are used for data representation. Chi square test and Fischer's exact test was used to find the association between demographic variables and study parameters. In all analysis,$P < 0.05$ was considered to be significant. Odds ratio with confidence interval was used when necessary. All statistical analyses were performed using SPSS statistical software, version 20.

**Results and discussion**

**Table 1: Demographic profile of patients**

| | ***STEMI n(%)*** | ***NSTEMI/UA n(%)*** | ***P value*** |
|---|---|---|---|
| *Total* | 52(100.0%) | 56(100.0%) | |
| *AGE in years* | | | |
| *<30* | 6(11.5%) | 5(8.9%) | .208 |
| *30-35* | 12(23.1%) | 10(17.9%) | |
| *35-40* | 9(17.3%) | 20(35.7%) | |
| *40-45* | 25(48.1%) | 21(37.5%) | |
| *MALE* | 41(78.8%) | 27(48.2%) | .001 |
| *FEMALE* | 11(21.2%) | 29(51.8%) | |
| ***Risk factors*** | | | |
| *Diabetes* | 6(11.5%) | 7(12.5%) | 1.000 |
| *Hypetension* | 9(17.3% | 10(17.9%) | 1.000 |
| *Alcohol* | 19(36.5%) | 13(23.2%) | .145 |
| *Smoking* | 9(17.3%) | 3(5.4%) | .048 |

In the present study out of 108 young ACS patients, 52 presented with ST elevation and 56 with NTEMI or UA. Most patients were in age group of 40-45 years. 79% of males

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presented with STEMI whereas only 21.2% of females presented with STEMI. This difference was statistically significant. Among second group 20 were NSTEMI and 36 people had unstable angina.

Study done in South India showed similar results. STEMI was more commonly seen in men compared to women and the difference was significant. ACS was found more commonly with increasing age.[06]

According to study done in North eastern India : Of the 704 ACS patients, 72.4% presented with STEMI and 27.6% presented with NSTEMI/UA showing results similar to our study.[07]

Study by Güntekin et al showed prevelance of STEMI was more among men.

Prevelence of diabetes, hypertension was similar among both groups but smoking was more prevalent among who presented as STEMI which was statistically significant compared to NSTEMI/UA.[08]

Study done in South India showed higher prevelance of risk factors in NSTEMI patients. This difference might be due to large number of patients in the study.[06]

In a study done by Mihajlović et al risk factors were slightly higher among STEMI like our study and difference was not statistically significant.[09]

Study by Güntekin et al smoking was more prevalent in STEMI and was statistically significant. However prevelance of other risk factors was less 9 in our study.[08]

**Table 2: Investigation results in both the groups**

| **ECHO** | **STEMI** | **NSTEMI/UA** | **P value** |
|---|---|---|---|
| Normal | 18(34.6%) | 42(75.0%) | .000* |
| Mild LV dysfunction | 29(55.8%) | 11(19.6%) | |
| Moderate LV dysfunction | 3(5.8%) | 3(5.4%) | |
| Severe LV dysfunction | 2(3.8%) | 0(0.0%) | |
| **EF(%)** | | | |
| *<40* | *9(17.3%)* | *0(0.0%)* | .000* |
| 40-50 | 28(53.8%) | 3(5.4%) | |
| 50-60 | 11(21.2%) | 27(48.2%) | |
| >60 | 4(7.7%) | 26(46.4%) | |
| CKMB | 41(78.8%) | 29(51.8%) | .003 |
| TROP I | 41(78.8%) | 34(60.7%) | .041 |

STEMI patients had moderate to severe LV dysfunction and less than 50% of ejection fraction. Cardiac markers were raised more among STEMI. The difference was statistically significant. Elevated cardiac markers was more frequently seen in STEMI patients.

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The results are similar to the study done in South India Ejection fraction is better in NSTEMI/UA than STEMI patients. [06]

Study done by Mihajlović et al showed that biomarkers were higher among STEMI patients like our study.[08]

Study done Saudi showed similar results of ECHO findings.

**Table 3: Angiographic conclusion in both subgroups**

| CONCLUSION | STEMI | NSTEMI/UA | P value |
|---|---|---|---|
| NORMAL CORONARIES | 6(11.5%) | 16(28.6%) | .317 |
| SINGLE VESSEL DISEASE | 17(32.7%) | 10(17.9%) | |
| DOUBLE VESSEL DISEASE | 6(11.5%) | 7(12.5%) | |
| TRIPLE VESSEL DISEASE | 1(1.9%) | 1(1.8%) | |
| LMCA | 1(1.9%) | 1(1.8%) | |
| MYOCARDIAL BRIDGING | 7(13.5%) | 12(21.4%) | |
| SLOW FLOW | 10(19.2%) | 7(12.5%) | |
| RECANALISED | 2(3.8%) | 2(3.6%) | |
| PATENT STENT | 2(3.8%) | 0(0.0%) | |

Among the STEMI patients vessels were commonly involved and in NSTEMI most coronaries were normal or showed myocardial bridging.

**Table 5: Management in both groups.**

| Management | STEMI | NSTEMI/UA | P value |
|---|---|---|---|
| MEDICAL MANAGEMENT | 20(38.5%) | 48(85.7%) | 0.000* |
| PTCA | 30(57.7%) | 6(10.7%) | |
| CABG | 2(3.8%) | 2(3.6%) | |

*Fischer's Exact test is used.

Depending on coronary artery findings management was done. Most NSTEMI were treated by medical management and STEMI by PTCA.

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