

# Clinical profile of acute coronary syndromes in CCU of IIMS and R Medical college and hospital Jalna district

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## Abstract

**Objective:** To study clinical characteristics, mortality rate and possible risk factors on high mortality among patients with ACS and different management strategies. **Material and Methods:** 110 successive cases presenting with ACS admitted in CCU of IIMS and R Medical College and Hospital during October 2013 to September 2014 were included in the study. Cases were grouped into STEMI and NSTEMI/UA for the purpose of analysis. **Results:** Among 110 cases treated for ACS, 66 (60%) were males and 44 (40%) were females. 31 patients (28%) had STEMI and 79 patients (72%) had NSTEMI/UA. Out of 31 STEMI patients 6 patients (19.35%) died. Only 1 patient out of 79 NSTEMI/UA (1.26%) died. Higher mortality was found in females. Out of 110 cases treated for ACS, 7 patients (6.36%) died. Hypertension was the most common risk factor whereas Diabetes Mellitus, Dyslipidemia, Smoking, Old age, Female sex were other significant common risk factors. **Conclusion:** The mortality rates in ACS particularly STEMI are very high. Patients with Hypertension, Diabetes Mellitus, Dyslipidemia, Females, patients having history of Smoking had higher mortality rates and are high risk groups.

**Keywords:** Clinical profile ACS- IIMS and R.

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## INTRODUCTION

Amongst various cardiac diseases, Coronary Artery Disease (CAD) is the most important and major cause of premature mortality and preventive morbidity in the world. Acute coronary syndromes (ACS) which encompass Unstable Angina (UA), Non-ST segment Elevation Myocardial Infarction (NSTEMI) and ST segment Elevation Myocardial Infarction (STEMI) are the commonest causes of mortality in patients with CAD. With the availability of huge armamentarium of invasive and noninvasive therapeutic strategies, the mortality related to ACS has been significantly reduced in the developed countries over the past few years. However the

mortality still remains to be very high amongst Indians. As the prevalence of CAD and the incidence of ACS are very high among Indians, India has the highest burden of ACS in the world and it is reaching Epidemic Proportions in the country. It is observed that CAD occurs 5-10 years earlier in the Indians than in other populations around the world which affects the productive workforce of the country aged 35-60 years and thereby causing great national financial loss. The rising incidence of ACS in Indians is probably related to the changes in the lifestyle, the westernization of food habits, the increased prevalence of Diabetes Mellitus, dyslipidemia and probably genetic factors. CREATE Registry having the largest data from Indian patients with ACS has shown that the pattern ACS among Indians is much different from western population. Different studies done in India also show that the patterns are very different in different parts of country depending upon differences in lifestyle, financial constraints, availability of treatment facilities and also in Urban, semi Urban and Rural areas. Our Medical College and Hospital is situated in Rural area which provides treatment facilities to patients mostly coming from Rural area. In this background we have planned to carry out a study to determine the clinical spectrum, age and gender specific differences, different treatment

strategies and mortality rates of ACS patients receiving treatment in our hospital from August 2013 to September 2014.

## MATERIALS AND METHODS

The ACS patients diagnosed on the basis of symptomatology, ECG findings, Lab investigations and admitted in the coronary care units (CCU) of IIMS and R Medical College and Hospital, from August 2013 to September 2014 constituted material for this study. Patients with proven non-cardiac chest pain and those discharged before completion of treatment for any reasons were excluded from the study. The cases were grouped into two viz those presented with STEMI and those presented with NSTEMI/UA for the purpose of analysis. Patients with chest pain with Elevation of ST-segment in electrocardiographic leads/presumed new onset left bundle branch block in ECG were categorised as STEMI. Cases of angina at rest without ST-segment Elevation but having troponin T levels more than 0.1 nanograms per ml were categorised as NSTEMI and those having Trop T levels less than 0.1 nanogram per ml were classified as UA. The baseline clinical characteristics analysed in each group were Age, Gender, Hypertension (BP>140/90 and/or those already taking treatment for hypertension), Diabetes Mellitus (fasting blood glucose> 126mg and/or post prandial blood glucose>200mg and those who were on treatment for Diabetes Mellitus), dyslipidemia (cholesterol>190mg and/or triglycerides>200mg), Smoking status, Duration of chest pain before hospitalization, time of occurrence of the ACS, clinical course in the hospital, the mean duration of hospital stay and complications related to the ACS and their treatment. In cases with STEMI, the extent of myocardium involved, the associated complications and conduction abnormalities, thrombolytic therapy given or not, post infarction angina, reinfarction, pericarditis and arrhythmias were analysed. The causes of death and

the risk factors for high mortality in patients with ACS were also analysed. The clinical parameters and outcomes in the elderly patients (age>65 years) with STEMI were compared with those of the younger patients. A comparison of clinical parameters between males and females and between STEMI and NSTEMI/UA was also done.

## RESULTS

110 patients of ACS were admitted in the coronary care unit during the study period starting from August 2013 to September 2014 and their data was analysed. Mean age of presentation of the patients was 57.6 years. 66 (60%) were males and 44 (40%) were females. 7 patients died during the in-hospital treatment giving overall mortality rate of ACS patients in this hospitals to be 6.36%. A comparison of clinical characteristics of patients with ACS is shown in table no.1

**Table 1:** Clinical parameters of patients with NSTEMI/UA and STEMI

| Sr. No. | Parameter          | NSTEMI/UA   | STEMI       |
|---------|--------------------|-------------|-------------|
| 1       | Number of patients | 79 (72%)    | 31 (28%)    |
| 2       | Males              | 48 (60.75%) | 18 (58.06%) |
| 3       | Females            | 31 (39.24%) | 13 (41.93%) |
| 4       | Hypertension       | 57 (72.15%) | 24 (77.41%) |
| 5       | Diabetes Mellitus  | 34 (43.03%) | 21 (67.74%) |
| 6       | Dyslipidemia       | 20 (25.31%) | 13 (41.93%) |
| 7       | Mortality          | 1 (1.26%)   | 6 (19.25%)  |

### Patients with STEMI

It was observed that out of 31 patients 19 (61.29%) patients presented with typical retrosternal chest pain, 7 (22.56%) patients with left sided chest pain and only 5 (16.12%) patients presented with pain. Mean age of cases, sex distribution of cases, mean duration of symptoms before admission, known major cardiovascular risk factors and treatments received in the hospital are depicted in table no. 2.

**Table 2:** Baseline characteristics among STEMI patient

| Sr. No. | Parameter                                  | Total n (%) 31 (100%) | Males n (%) 18 (58%) | Females n (%) 13 (42%) |
|---------|--|-----------------------|----------------------|------------------------|
| 1       | Mean age                                   | 58 (R=25-82)          | 55 (R=25-80)         | 65 (32-82)             |
| 2       | Mean duration of symptoms before admission | 5.2 hrs (R=1-36 hrs)  | 1.5 Hrs (R=1-28hrs)  | 8 hrs (R=2-36hrs)      |
| 3       | Smoking history                            | 13 (41.93%)           | 13 (72.22%)          | -                      |
| 4       | Hypertension                               | 24 (77.41%)           | 14 (77.77%)          | 10 (76.92%)            |
| 5       | Diabetes Mellitus                          | 21 (67.74 %)          | 12 (66.66 %)         | 9 (69.123%)            |
| 6       | Dyslipidemia                               | 13 (41.93%)           | 8 (44.44%)           | 5 (38.46%)             |
| 7       | Thrombolysis                               | 22 (70.96%)           | 15 (83.33%)          | 7 (53.84%)             |
| 8       | Other therapy                              | 26 (83.87%)           | 17 (94.44%)          | 11 (84.61%)            |
| 9       | Mortality                                  | 6 (19.35%)            | 3 (16.66%)           | 3 (23.07%)             |

Among the patients with STEMI 14 (45.16%) had Anterior Wall Infarction, 10 (32.25%) had Inferior Wall Infarction, 6 (19.35%) had Lateral Wall Infarction and only 1 (3.22%) had true Posterior Wall Infarction. 11 out

of 31 STEMI cases (35.48%) could not be thrombolysed because of various reasons. The mean duration of hospital stay in patients with STEMI was  $6 \pm 2$  days. In hospital complications noticed in STEMI patients were Post-

myocardial infarction angina, Reinfarction, Extension of infarction. Commonest arrhythmia observed was VPCs, Accelerated Idioventricular Rhythm (AIVR), Ventricular Tachycardia, Atrial Fibrillation and very rarely Ventricular Fibrillation. Amongst STEMI group 2 patients (6.45%) died in our hospital, 2 died after being referred in super speciality hospital and 2 died within 30 days after discharge from our hospital. Mortality rate was higher in patients with Anterior Wall Infarction when compared to Inferior Wall Infarction. Females with STEMI had higher mortality rates as compared to males. The mortality rate increased steadily with advancing age and it was found to be lowest in those below 50 years of age. Mortality rate was relatively low in patients who received thrombolytic therapy than those who did not receive it. Ventricular pump failure, Ventricular

Tachycardia were the commonest causes of death in STEMI.

#### Patients with NSTEMI/UA

In this group 45 (56.96%) out of 79 patients classically presented with central retrosternal pain, 31 (39.24%) with left sided chest pain and only 3 (3.79%) presented with jaw pain. Of the 79 patients of this group 46 patients (58.22%) had raised levels of Trop T (>0.1 nanogram per ml.) and hence they were categorised as NSTEMI cases where as remaining were grouped as unstable angina cases. The mean duration of hospital stay in patients with NSTEMI/UA group was  $4.9 \pm 2.1$  days. Sex distribution, mean age of cases, mean duration of symptoms before admission, known major cardiovascular risk factors and treatments received in the hospital are depicted in table no. 3

**Table 3:** Baseline characteristics among NSTEMI/UA patients

| Sr. No. | Parameter                                  | Total n (%) 79 (100%)  | Males n (%) 48 (60.75%) | Females n (%) 31 (39.25%) |
|---------|--|------------------------|-------------------------|---------------------------|
| 1       | Mean age                                   | 57 (R=30-80)           | 55.5 (R=30-78)          | 62 (R=35-80)              |
| 2       | Mean duration of symptoms before admission | 6.1 hrs (R=1.2-36 hrs) | 5 hrs (R=1.2-30hrs)     | 8.6 hrs (R=2.1-36hrs)     |
| 3       | Smoking history                            | 42 (53.16%)            | 42 (87.5%)              | -                         |
| 4       | Hypertension                               | 57 (72.15%)            | 29 (60.14%)             | 28 (90.52%)               |
| 5       | Diabetes Mellitus                          | 34 (43.03%)            | 18 (37.5%)              | 16 (51.61%)               |
| 6       | Dyslipidemia                               | 20 (25.31%)            | 11 (22.91%)             | 9 (29.03%)                |
| 7       | LMWH/heparin                               | 56 (70.88%)            | 37 (77.08%)             | 19 (61.29%)               |
| 8       | Mortality                                  | 1 (1.26%)              | 0                       | 1 (3.22%)                 |

In hospital complications noticed in patients with NSTEMI/UA were left ventricular failure, mitral regurgitation and upper gastro-intestinal bleeding. Commonest arrhythmia observed was VPC. Other less common arrhythmias noticed were accelerated idioventricular rhythm (AIVR), ventricular tachycardia, atrial fibrillation and rarely ventricular fibrillation in few patients. Amongst the patients with NSTEMI/UA females had higher mortality rate.

## DISCUSSION

Out of 110 cases studied which qualified inclusion criteria, 31 (28%) had STEMI and 89 (72%) had NSTEMI/UA. Mean age of presentation of STEMI cases was 58 years and that of NSTEMI/UA was 57 years. Higher mean age of presentation was observed among females in both categories i.e. 65 years and 62 years respectively. About 70.96% of STEMI cases received thrombolytic therapy. Maximum number of STEMI cases 14 (out of 31) 46.6% occurred between 10 am to 04 pm in this study. 2 out 31 STEMI cases died in hospital during treatment, 2 died in super speciality referral hospital after having been referred and 2 died within one month after being discharged from this hospital. Ventricular failure was the commonest cause of death. Patients with anterior

wall infarction, females, cases not receiving thrombolysis, patients having Diabetes Mellitus and age more than 65 years had higher mortality rates. Higher proportion of STEMI cases in comparison to NSTEMI/UA cases had Hypertension (77.41% vs. 72.15%), Diabetes Mellitus (67.14% vs. 43.03%) and Dyslipidemia (41.93% vs. 25.31%). Percentage of females in STEMI was more than in NSTEMI/UA (41.93% vs. 39.24%). Only one patient of NSTEMI/UA group (1.26%) died during hospital treatment and females had higher mortality risk. This study showed higher proportion of NSTEMI/UA (72%) with ACS whereas in CREATE study proportion of STEMI cases was more in patients with ACS. The mean age of presentation of ACS cases (57.6 yrs) is comparable with mean age of cases from the CREATE registry. We observed an overall mortality rate of ACS cases admitted and treated in this hospital to be 6.36% (7 out of 110) which is slightly higher than the mortality observed in CREATE registry. The mean age at presentation of patients with STEMI was 58 years in this study which is comparable to the observation in CREATE registry and other study from South India. But there was a marked difference in the mean age of presentation among the female patients (65 yrs.). Male preponderance was observed in patients with STEMI at all age groups and the sex relation observed in both the younger and older age

groups were comparable to the sex ratios observed in other series reported from North India. Circadian incidence of myocardial infarction with an early morning peaking of events were observed in Western studies and in a recent study reported from Singapore. Surprisingly 46.6% of STEMI cases (14 out of 31) occurred between 10 am to 04 pm. In CREATE registry and other studies significantly higher number of females with STEMI had risk factors like Hypertension, Diabetes Mellitus and Dyslipidemia. However in this study the proportion of females with STEMI and of males with STEMI were almost comparable and did not vary significantly. Higher proportional STEMI cases in our study received thrombolytic therapy (70.96% vs. 58.5%) when compared to those from CREATE registry. The mortality rates increased steadily with advancing age and advanced haemodynamic class. Female patients with STEMI had higher mortality rates than males with STEMI as observed in other studies. The higher age at presentation of female patients and associated co-morbidities might have contributed to the increased mortality rate in females. Cases with anterior wall STEMI had higher mortality rates than cases with inferior wall STEMI in our study which were comparable to the observation in most of the studies including CREATE registry. Presence of Diabetes Mellitus, hypertension, dyslipidemia in patients with STEMI are significant predictors for high mortality as observed by others. The proportion of NSTEMI/UA among ACS cases in our study was higher than that observed in CREATE registry (72% vs. 39.4%) but mean age of cases at presentation was comparable. Prevalence of Diabetes Mellitus and Hypertension was higher among STEMI cases in our study whereas prevalence was more in NSTEMI/UA cases in CREATE registry. Higher proportion of NSTEMI/UA cases in our study received LMWH and medical therapy when compared to those from CREATE registry. The mortality rates observed in patients with NSTEMI/UA was comparable to the observations made in other studies. The females had higher mortality risk among NSTEMI/UA cases and risk factors like hypertension, Diabetes Mellitus, Dyslipidemia were present in higher proportion in females than males in our study.

## CONCLUSION

The mortality rate of ACS particularly that of STEMI still remains very high. The peak incidence of STEMI occurs between 10 am to 02 pm as observed in this study. Female patients with ACS have higher incidence of NSTEMI/UA than STEMI. Among the patient with STEMI, females and elderly individuals have significantly higher mortality rates. Therefore in patients

with STEMI, females, elderly individuals and those with risk factors like Diabetes Mellitus, hypertension, dyslipidemia should be meticulously managed to reduce the mortality rates. Female patients with NSTEMI/UA have also higher mortality risk particularly when associated with risk factors like Diabetes Mellitus, Hypertension and Dyslipidemia as compared to males and should be managed carefully to reduce the mortality rate.

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