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Original Research Article

Clinical profile of ACS patients and their outcome at tertiary centre in north-eastern Uttar Pradesh, India

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ABSTRACT

Background: Coronary artery disease (CAD) is a major cause of death in India. This study determined the characteristics, treatment and outcomes of acute coronary syndrome (ACS) at tertiary centre in north eastern Uttar Pradesh in India.
Methods: We carried out observational study with 60-days follow-up of 80 ACS patients. Data are collected on different variables including Blood pressure, pulserate, BNP, TROP I, CKMB, patient's demography, risk factors, laboratory values at admission and repeated as and when required.
Results: T In our study most common presentation was chest pain, majority of patients presented after 12 hour of onset of symptoms, elevation of TROP I was higher in STEMI than NSTEMI, most common complication in NSTEMI was recurrent angina and in STEMI patients was heart failure, total 15 patients expired during study 11 during hospitalization and 4 patients within 60days of follow up, thrombolysed patients has less chances of regional wall motion abnormality.
Conclusions: In our study elevation of TROP I was more in STEMI and there was less chances of RWMA in thrombolysed patients.

Keywords: ACS, CAD, TROP I

INTRODUCTION

Acute coronary syndrome (ACS) is a significant contributor to mortality and morbidity attributed to cardiovascular diseases (CVD). It is predicted that more than half the worldwide cardiovascular disease risk burden will be borne by the Indian subcontinent in the next decade, to a recent epidemiological study.[1] The syndrome encompassing unstable angina and both ST segment elevation and non-ST segment elevation myocardial infarction(MI). It is a common cause of emergency hospital admission. Coronary heart disease incidence is increasing in the developing countries and Despite great progress in pharmacotherapy and interventional treatment ACS remains the major cause of mortality and morbidity.[2]

The Global Burden of Diseases (GBD) study reported the estimated mortality from CAD in India at 1.6 million in the year 2000. It has been predicted that by the year 2020 there will be an increase by almost 75% in the global CVD burden. Reddy reported that mortality from CVD was projected to decline in developed countries from 1970 to 2015 while it was projected to almost double in the developing countries.[3] It has been demonstrated that if attention is focused on evidence-based treatments

diagnostic evaluation and processes of inpatient care, desired positive outcome can be achieved.

The traditional methods for risk stratification such as history, physical examination, and ECG and various laboratory parameters are undoubtedly important, but they are inadequate in the majority of cases. In recent years the importance of biomarkers such as Troponin, CKMB and BNP have been increased. They are useful for diagnosis, decision making, and prognosis, and their use in daily clinical practice is now widespread. BNP has prognostic value across the full spectrum of acute coronary syndrome patients.

CKMB was used traditionally for diagnosis of myocardial infarction. Now CKMB has been replaced by troponin assays in the work up of patients with acute chest pain. CKMB may be useful if the initial troponin determination is normal or if a hospitalized patient has a suspected re infarction. In our study patients were treated according to ACC/AHA guidelines for pharmacotherapy.

METHODS

This was an observational study with 60-day follow-up, conducted at B.R.D. Medical College Gorakhpur. The patients admitted in emergency of Nehru hospital, BRD Medical college, Gorakhpur, for Chest pressure or pain, at rest or on exertion, radiating to jaw or neck upto occiput or shoulder or arm pain with shortness of breath and nausea and vomiting will be included. Data collected on different variables including Blood pressure, pulse rate, BNP, TROP I, CKMB, patient's demography, risk factors, laboratory values (CBC, S. Creatinine, RBS, Lipid profile, SGPT) at admission and repeated as and when required. Baseline ECG was obtained at admission and repeated at 12-24 hours and every 24 hours thereafter.

A 2D Echocardiogram will be performed within initial 48-72 hours for analysis of LVEF and wall motion abnormalities. Data was collected – during hospitalisation and 30-days and 60 days after discharge by telephonic and OPD follow-up.

The aim of the current study was to ascertain the characteristics of ACS patients, to provide information on the risk factors and treatment outcome. Patients are selected according to inclusion and exclusion criteria. All men and women of more than 18 years without unrelated disease and who given written consent to participate in study were enrolled in the study.

The results are represented as STEMI, NSTEMI, and UA. All the numerical data are written as mean ± standard deviations. All the categorical data are written as frequency and percentages. The results are shown in tables and graphs. Unpaired t-test and fisher exact test were used in this study.

RESULTS

Our study included 80 patients after meeting the inclusion criteria. Out of these 47 were males (58%) and 33 were females (42%). Male: Female ratio was 1.44:1. The mean age was 59.07±10.88. Out of 80 patients, 27 (33.8%) had diabetes, 31 (38.8%) had hypertension, 12 (15%) had diabetes and hypertension both. out of 80 patients 16 (20%) were smokers, 12 (15%) were alcoholic, 5% were both alcoholic and smoker, out of 80 patients admitted as ACS, 4 (5%) had unstable angina, 15 (18.2%) had NSTEMI and 61 (76%) had STEMI. Prevalence of ACS was maximum between 55 to 64 years age group in both male and female.

The chief complain of patients were either chest pain or sudden onset dyspnoea, while some had both chest pain and dyspnoea. 55.1% of patients were admitted with chest pain, 5% had sudden onset dyspnoea and 37.5% had both chest pain and dyspnoea, while some patients (2.5%) presented with abdominal symptoms as abdominal discomfort nausea vomiting etc. (Table no.1).

Table 1: Symptoms at time of presentation.

Symptoms	Female	Male
	No. (%)	No. (%)
Chestpain	15 (18.8%)	29 (36.3%)
Dyspnoea	2 (2.5%)	2 (2.5%)
Chestpain with Dysnoea	14 (17.5%)	16 (20.0%)
Abdominal symptoms	2 (2.5%)	0 (0.0%)

The most common presenting symptomps was chest pain present in 55% of patient Chest pain with dyspnoea in 37% patients, dyspnoea in 5% of patient. Majority of patient 36 (45%) presented >12 hour after onset of symptoms. Only 12 (15%) presented within 6 hours while 32 (40%) of patients presented between 6-12 hour.

Elevation of Trop I was higher in STEMI than NSTEMI. For STEMI it was 7.5±3.5 MEAN ±SD and For NSTEMI it was 5.4±3.9 MEAN ± SD, Elevation of CKMB was more for STEMI (mean ± SD) 45±17.58 than NSTEMI 32.58±14.17 (Table no.2). Most of the patients (53.8%) presented in killip class I.41.3% STEMI and 12.5% NSTEMI presented in class I. 11.3% STEMI and 2.5% NSTEMI in class II. 4% of each STEMI and NSTEMI presented in class III and 18.8% STEMI and 2.5% NSTEMI in class IV. Mortality of patients presented in kllip class II, III, IV was higher than killip class. Table indicates that Elevation of Trop I is higher in STEMI than NSTEMI.

For STEMI it was 7.5±3.5 MEAN ±SD and For NSTEMI it was 5.4±3.9 MEAN ± SD. Trop I value for STEMI vs NSTEMI is statistically significant with $p<0.05$. Elevation of CKMB was more for STEMI (mean ± SD) 45±17.58 than NSTEMI 32.58±14.17 ($P < 0.01$).

Table 2: Distribution of Bio Markers in NSTEMI and STEMI.

Biomarker	NSTEMI	STEMI	Level of significant (P-value)
	Mean±S.D.	Mean±S.D.	
TROP I	5.424±3.917	7.532±3.500	0.0285
BNP	1161±1614	901±1186	0.8235
CKMB	32.58±14.17	45.58±17.64	0<0.01

Most common complication in NSTEMI was recurrent angina. 11 (57.1%) patients of NSTEMI felt recurrent angina. Among STEMI most common complication was heart failure in our study. 30 (49.1%) of STEMI patients underwent heart failure during hospitalisation. Cardiogenic shock in 20.1% of NSTEMI 21.3% of NSTEMI and arhythmia in 12.5% of total patients (Table no 3). 9 (11.3%) patients were thrombolysed (all are thrombolysed by streptokinase). Among thrombolysed patients 7 (77.7%) has no RWMA while 2 (23.3%) of thrombolysed patients has RWMA on 2D echocardiography. Out of 71 non thrombolysed patients 62 (87.4%) patients have RWMA while 9 (12.6%) has no RWMA (Figure 1).

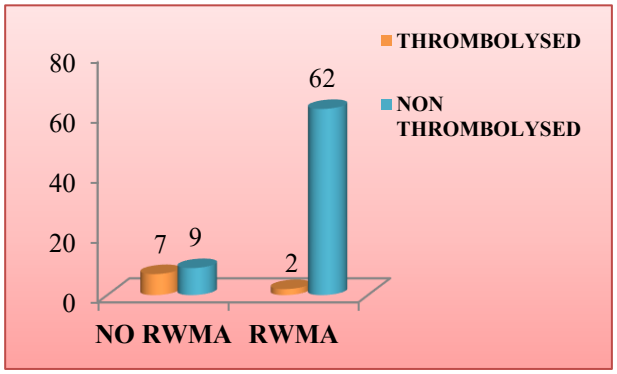


Figure 1: Echocardiography in Thrombolysed vs Non Thrombolysed Patients

TTE (Trans Thoracic 2DEchocardiography) of all patients was performed within 48 to 72 hours of admission. EF of 34(42.5%), (30% STEMI, 10%NSTEMI and 2.5% of UA) patients was >50%. EF of 28.8% of patients was between 41-49%, EF of 18.7% of patients was between 36-40%, EF of 10% of patients was below 35% (Figure 2).

Total 15 patients were expired during entire study period,11 patients expired during hospitalization and 4 patients were expired within 60 days of follow up. Hospital outcome was poor in patients in which elevation of Trop I value was higher. Hospital stay of STEMI was more than NSTEMI. Hospital stay of 50 (62.5%) patients was 3-5days hospital stay of 20 (25%) patients was 1-3 days, 10 (12.5%) patients stayed for >5days.

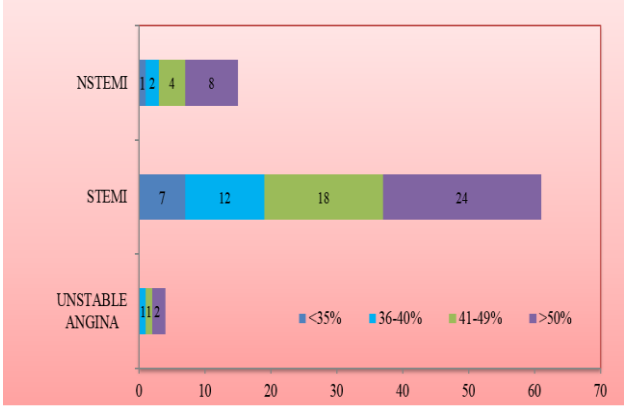


Figure 2: Echocardiography in Thrombolysed vs Non Thrombolysed Patients

Within 30 days of discharge reinfarction occurred in 2 patients of STEMI and 1 patient of NSTEMI, Ischemic stroke occurred in 1 patient of STEMI, Cardiac arrest occured in 2 patients of STEMI. At follow up of 60 days reinfarction occurred in 3 patients of STEMI and 1 patient of NSTEMI, 2 patients of STEMI underwent ischemic stroke, Cardiac arrest occurred in 3 patients of STEMI and 1 patients of NSTEMI. This table shows that most common complication in NSTEMI was recurrent angina. 11 (57.1%) patients of NSTEMI felt recurrent angina. In STEMI most common complication was heart failure in our study 30 (49.1%) of STEMI patients underwent heart failure during hospitalisation. cardiogenic shock in 20.1% of NSTEMI 21.3% of NSTEMI and arhythmia in 12.5% of total patients.

Table 3: Complications in patients of acs during hospitalisation.

Complications	Total	NSTEMI (n=19) %	STEMI n=61 %
Recurrentangina	29	11(57.1%)	20(32.7%)
Cardiogenic shock	17	4(20.1%)	13(21.3%)
Arrhythmia	10	2(10.5%)	8(13.1%)
Heart failure	37	7(36.8%)	30(49.1%)

DISCUSSION

In the present study, the mean age of presentation was 59.07±10.8 years (range 35 to 85 years). Which is comparable to data from the CREATE Registry (4) (mean age 57±12.1 years). The maximum number of patients (about 42%) was in the age group of 55 to 64 years.

Hypertension, a conventional risk factor is implicated in CAD. In our study, 31% of patients were hypertensive. The prevalence of hypertension is comparable to that in CREATE Registry (4) (37.7%), and higher than reported in south Asian cohort of INTERHEART study (17.8%). In our study the prevalence of diabetes was 27%, nearly the same as reported in the CREATE Registry (4) (30.4%) and higher than the reported prevalence (10.5%)

in a similarly aged population from South Asian countries in the INTERHEART study.

The chief complain of patients were either chest pain or sudden onset dyspnoea, while some had both chest pain and dyspnoea.55.1% of patients were admitted with chest pain, 5% had sudden onset dyspnoea and 37.5% had both chest pain and dyspnoea, some patients 2.5% presented with abdominal symptoms as abdominal discomfort nausea vomiting etc.

cTn is specific for myocardial damage, a single cTn above the decision limit, along with clinical evidence, is indicative of myocardial injury as also evident from the works of Mockel et al, Panteghini et al, Antman et al; Melanson et al, Morrow et al,).[5,6] This was true regarding our study, where mean Trop I level was significantly higher in patients with acute STEMI compared with NSTEMI ($p<0.05$) and similarly there was significant difference of mean CKMB between STEMI & NSTEMI ($p < 0.001$).

Out of total 80 patients, 9 (11.3%) were thrombolysed (all are thrombolysed by streptokinase). Among thrombolysed,7 (77.7%)patients have no RWMA while 2 (23.3%) patients have RWMA on 2D echocardiography. Out of 71 non thrombolysed patients, 62 (87.4%) patients have RWMA, while 9 (12.6%) has no RWMA. There is a significant difference in echocardiographic findings of thrombolysed vs non thrombolysed patients. (P<.001). The single most important factor for not thrombolysing is delayed presentation. Other factors are low socioeconomy, poor general conditions, cardiogenic shock at presentation. Most of the patients were thrombolysed within 60 to 90 minutes of presentation.[7]

2D echocardiographic findings revealed moderate mitral regurgitation (MR) in 5.6% of NSTEMI and 6% of STEMI patients. Severe MR was found in 11.1% of STEMI and 3.6% of NSTEMI patients. EF of 34 (42.5%) patients was >50%, EF of 28.8% of patients was between 41-49%, EF of 18.7% of patients was between 36-40%, EF of 10% of patients was below 35%. In our study 53.8% (41.3% STEMI and 12.5% NSTEMI) patients presented in kilip class I,15% (11.3% STEMI & 3.8% NSTEMI) in killip class II, 10% (5% of each STEMI&NSTEMI) in class III, 21.3% (18.8% STEMI and 2.5% NSTEMI) in class IV.

In hospital outcome NSTEMI was better than STEMI. In hospital mortality was 13.8% (2.5% NSTEMI and 11.3% STEMI). In a Swiss registry (8), in-hospital mortality varied between 2.4% and 11.8% (depending on the subgroup considered). The Euro Heart Survey (9) In-hospital mortality was 7% for STEMI and 2.8% for NSTE-ACS (total 9.8%).[9]

Rao et al, investigated the relationship of isolated troponin elevation with 24 hours and 30 day clinical events across the spectrum of low-to high-risk presentations with chest pain. In the present study, mean Trop I in expired patient was (MEAN ± SD) 7.67±3.88. Mean Trop I in improved & discharged patients was 8.43±2.52 (MEAN±SD). There was a significant relationship between mean Trop I of expired patients than mean Trop I of improved and discharged patients ($P< 0.01$).[10]

Among discharged patients, 52 patients came in follow up in OPD visit while Follow up of 13 patients was telephone based. Mortality within 30 days of discharge was 3% while mortality after 60 days of follow up was 6%. In a Swiss Registry (8) death rates between discharge and 6 months were 4.8% (STEMI), 6.2% (NSTEMI). This data is very close to above studies.

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