

Original Research Article

PROSPECTIVE STUDY ON CLINICAL PRESENTATIONS OF ACUTE CORONARY SYNDROME AT A TERTIARY CARE HOSPITAL IN SOUTH INDIA

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ABSTRACT

Background: Acute coronary syndrome encompasses a group of conditions (STEMI, UA/NSTEMI) characterized by decrease in coronary blood flow. It is responsible for more than one third of deaths in the emergency department. This study was conducted in order to assess the clinical profile of patients presenting with acute coronary syndrome.

Material and Methods: A total of 517 patients presenting to the casualty of Kurnool Medical College with ACS between August 2023 to January 2024 were included in this study.

Results: Majority of the study participants were males. Chest pain was the most common complaint and majority of the patients presented in Killip class I. STEMI was the most common diagnosis.

Conclusion: Males, presence of comorbidities, increased age, and dyslipidaemia are the most common risk factors in patients presenting with ACS. Steps should be taken for primary prevention of risk factors and also to seek immediate medical help in acute chest pain.

Keywords: Chest pain, ACS, STEMI, NSTEMI, unstable angina.

INTRODUCTION

Acute chest pain is one of the most common reasons for seeking medical help. Of all the patients presenting with acute chest pain, only 15-20% have actual acute coronary syndrome (ACS).^[1, 2]

Ischemic heart disease clinically presents as either chronic stable angina or as acute coronary syndrome (ACS). The latter, in turn, can be subdivided into, unstable angina (UA), non-ST-segment elevation myocardial infarction (NSTEMI) and ST-segment elevation myocardial infarction (STEMI).^[3] Unstable angina and NSTEMI are closely related conditions: their pathophysiologic origins and clinical presentations are similar, but they differ in severity.

Unstable angina presents as either rest angina (usually lasting >20 minutes) or new-onset (<2 months previously) severe angina, or as a crescendo pattern of occurrence (increasing in intensity, duration, frequency, or any combination of these factors).^[3]

Patients with stable angina describe its pain as poorly localized, deep chest or arm discomfort

which is exacerbated by activity or emotional stress and relieved by rest, nitroglycerin, or both.

However, the pain in unstable angina is frank pain, more severe, occurs at rest, is usually located in the sub sternal region (sometimes the epigastric area), and is radiating to the neck, jaw, left shoulder, and left arm. Some patients may present with symptoms other than chest discomfort; such "anginal equivalent" symptoms include dyspnea (most common), nausea and vomiting, diaphoresis, and unexplained fatigue.^[4] Women and elderly people often have atypical presentations such as syncope.

The 5 most important history-related factors that help identify ischemia due to CAD, ranked in order of importance, are the nature of the anginal symptoms, a history of CAD, male sex, older age, and the number of traditional risk factors present.^[5-6] Traditional cardiac risk factors include hypertension, hypercholesterolemia, cigarette smoking, diabetes, and family history of premature CAD.

The severity of clinical presentation of ACS often correlates with the severity of findings on coronary angiography and angioscopy.^[7, 8]

The therapeutic approach usually is different for UA/NSTEMI and STEMI, due to the differences in the underlying pathophysiological mechanisms. In UA/NSTEMI, the goal of antithrombotic therapy is for revascularization so as to increase blood flow and prevent re-occlusion or recurrent ischemia.^[9-11] on the contrary, in STEMI, the infarct-related artery is usually totally occluded, and immediate pharmacological or catheter-based reperfusion is the initial approach, with the goal of obtaining normal coronary blood flow.^[8] Other therapies, such as anti-ischemic and lipid-lowering therapies, are used in all cases to stabilize plaques over the long term. This study was conducted with an aim to evaluate the clinical presentation and outcomes of patients presenting to the tertiary care hospital with ACS.

MATERIALS AND METHODS

This prospective observational study was conducted in the Department of Emergency medicine at Kurnool Medical College, Kurnool between August 2023 to January 2024. All the patients presenting to the casualty with ACS were included in this study after they gave the consent to participate in the study. A total of 517 patients were included in this study.

Patients with ACS who have been initially treated elsewhere and referred to Kurnool Medical College only for additional management or patients with ACS within 30 days of coronary artery bypass graft (CABG) or PCI or patients not willing to participate in the study were excluded.

A written informed consent was obtained from the patients for agreeing to participate in the study. A detailed history was taken with special importance to dietary habits, alcohol use or tobacco consumption in any form. The period from onset of symptoms to presentation in the hospital, baseline clinical characteristics and history of prior myocardial infarction (MI) or CABG or PCI was determined. General examination was done for all patients. Hypertension was defined as blood pressure $\geq 140/90$ mmHg.

Blood investigations like complete blood picture (CBP), Erythrocyte sedimentation rate (ESR), Random blood sugar (RBS), renal function tests, liver function tests, serum lipid profile, serum electrolytes, serum Calcium levels and cardiac enzyme markers like Troponin-I, CK-MB were done. Other investigations included, chest X-ray, Electrocardiogram (ECG), 2D-Echocardiogram and coronary angiogram, (depending on clinical status and ECG findings).

STEMI, NSTEMI and Unstable angina were defined as per the guideline by ACCF/AHA (The American College of Cardiology Foundation/American Heart Association). Killip classification was determined at the time of admission in emergency department.

Statistical Analysis

Data was recorded on a predesigned proforma and managed using Microsoft Excel 2007 (Microsoft Corp, Redmond, WA). Descriptive statistical data was presented as mean \pm standard deviation or median (interquartile range) for continuous variables, and as percentages for categorical variables.

RESULTS

A total of 517 patients with ACS presented to the Emergency Room, Kurnool Medical College, Kurnool between August 2023 to January 2024 were studied.

Males constituted 68.6% of the cases while females constituted 31.4% of the population. Male to female ratio was 2.2:1. Mean age of the study population was 56.74 ± 11.73 years.

Among the total number of patients, STEMI accounted for approximately 67% (347 cases) of the cases. Percentage of cases of NSTEMI and Unstable angina (UA) combined was 33% (171 cases).

Most common presenting complaint was chest pain and diaphoresis followed by breathlessness and majority of the patients presented in Killip Class I (75%).

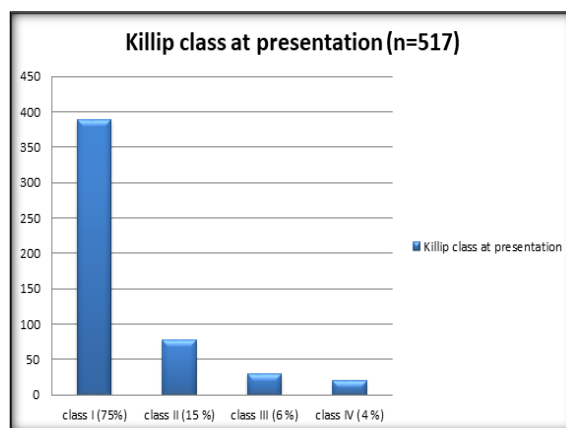


Figure 1: Killip class at the time of presentation to Emergency Department

Average duration from the onset of symptoms to the arrival to hospital in the present study was 9 hours.

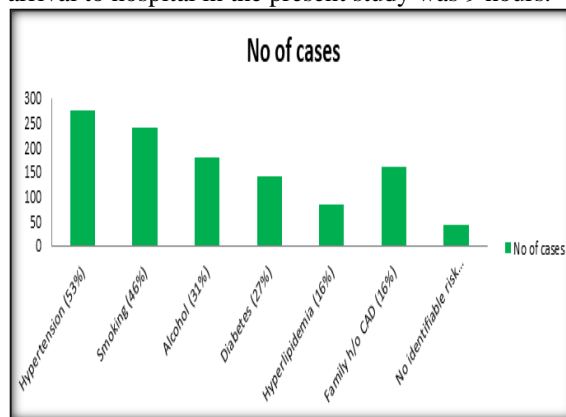


Figure 2: Conventional risk factors

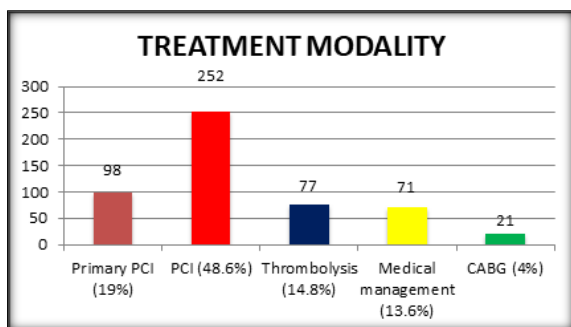


Figure 3: Treatment modalities followed in the ACS patients

Medical management was opted in patients with significant renal dysfunction, patients of extreme ages, contraindication to angiography and in patients who are not willing to undergo coronary angiogram. CABG was advised in 4% (cases) of the cases with triple vessel disease and in those patients with

significant left main coronary artery disease. Among the 21 patients who are advised CABG, 10 underwent the surgery at the study center and 11 cases were operated at different centers. Mean duration of stay in the hospital was 4.86 ± 1.5 days. The mean hospital stay in the STEMI patients is higher compared to that of NSTEMI patients.

Outcomes at 30 days

Short term outcomes of the patients in the patients with ACS were studied at the end of one month period. Out of the total 517 cases, 26 expired during the in hospital stay. The in-hospital mortality in the present study was 5.1% (26 cases). 18 cases were lost follow up so the outcomes were studied in the remaining 473 cases. 19 cases (3.9%) expired during the follow up period. Re-infarction rate is seen in a minority cases (0.8%). Congestive cardiac failure requiring readmission is seen in 2.6% of cases.

Table 1: Distribution of presenting symptoms

Presenting complaint	No of cases	Percentage
Chest pain	492	95%
Diaphoresis/Sweating	362	70%
Breathlessness	223	43%
Palpitations	160	31%
Nausea/Vomiting	124	24%
Dizziness/Syncope	93	18%
Abdominal pain	10	2%

Table 2: Clinical features at the time of presentation

Clinical features on presentation	Mean \pm SD
Heart rate per min	78.6 \pm 19.2
Systolic blood pressure (mmHg)	141.5 \pm 29.1
Diastolic blood pressure (mmHg)	85.4 \pm 15.1

Table 3: Coronary angiogram findings

Angiogram findings	Number of cases
Single vessel disease	260 (50%)
Double vessel disease	145 (28%)
Triple vessel disease	32 (6%)
Not done	81 (16%)

Table 4: In hospital medical therapy

In hospital medical therapy	Percentage of cases
Antiplatelet drugs	98.1%
Beta blockers	57%
Statins	65%
ACE inhibitors	28%
Angiotensin receptor blockers	29.4%
Anticoagulants	80.9%
Nitrates	51%
Calcium channel blockers	22%
Diuretics	13%

Table 5: In hospital complications

In hospital complications	Percentage of cases
Death	5.1%
Acute pulmonary edema	4.1%
Heart block requiring TPI	1.7%
Cerebrovascular accident	1.6%
Ventricular tachycardia	3.1%
Post CPR achieving ROSC	1.1%
Re-infarction	0.9%

DISCUSSION

Indians have one of the highest rates of heart disease in the world. The disease also tends to be more aggressive and manifests at a younger age.^[12] Male preponderance is seen in the present study with male patients constituting 68.6% of the overall cases. Total female cases were 31.4%. However, in our study, the mean age of presentation was 56.74 ± 11.73 years comparable to other studies done in India, that is, CREATE registry (56 ± 13 years).^[13] In present study, nearly 31% of cases have a family history of coronary artery disease. In our study, 53% of the patients were hypertensive. The prevalence of hypertension in South Asian cohort of INTERHEART study (31.1%) is comparatively lower than in our study but near to other Indian studies.^[14]

In present study, STEMI accounted for approximately 67% of the cases and NSTEMI and unstable angina (UA) combined was 33%. By contrast with data from developed countries, we

recorded more cases of STEMI than non-STEMI or unstable angina; longer delays before admission to hospital and between admission and reperfusion therapy; and different practice patterns and outcomes. The types of acute coronary syndromes in our study differed from those recorded in developed countries.^[15]

Single-vessel involvement was most prevalent in all groups of ACS including UA/NSTEMI and STEMI, followed by double-vessel and triple vessel similar to Kumar et al.^[16]

We recorded major differences in practice patterns in our study compared with those from other Indian studies. In patients in our study, rates of primary percutaneous coronary intervention were higher than in other studies from India. In 79.6 %, percutaneous coronary intervention with stenting was done. In hospital thrombolysis was done in 14.8% of the cases.

CABG was advised in 4% of the cases with triple vessel disease and in those patients with significant left main coronary artery disease.

Table 6: Comparison with other studies

N%	Present study	Create registry by Xavier et al ¹³	Kerala registry Mohanan p et al ¹⁷	North eastern India study ¹⁸ Iqbal F et al
Mean age in years	56.7±11.7	57.5±12.1	60.4±12.1	56.5
Males	68.6%	76.4%	77.4%	61.9%
Females	31.4%	23.6%	22.6%	38.1%
STEMI	67%	60.6%	37%	72.4%
NSTEMI/UA	33%	39.4%	63%	27.6%

Table 7: Treatment modalities followed

	Present study	CREATE registry by Xavier et al ¹³	Kerala registry Mohanan et al ¹⁷	GRACE Registry ¹⁹
Primary PCI among STEMI cases	28%	8%	11.9%	40%
Time from onset of symptoms to admission to hospital	9 hours	5 hours	Less than 6 hours	2 hours 20 min

Table 8: Comparison of outcomes at 30 days

	Present study	Xavier et al (CREATE registry) ¹³	Iqbal F et al from Gauhati medical college) ¹⁸
Death	3.9%	6.7%	10.22%
Re-infarction	0.8%	1.9%	5.39%
Cardiac arrest (resuscitated)	1.4%	2.5%	5.39%
Stroke	Nil	0.5%	0.4%
Bleeding requiring transfusion	Nil	0.2%	-

CONCLUSION

Acute coronary syndrome is a life threatening condition associated with high mortality rates if necessary intervention is not taken at the right time. The present study concludes that any patient presenting with acute chest pain which is suggestive of ACS should be evaluated at the earliest and treatment should be initiated as soon as possible during the golden period.

The general public should also be educated regarding the alarming signs and steps to make medical help accessible at the earliest should be done.

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Conflicts of Interest: NIL.

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