

STUDY OF ACUTE CORONARY SYNDROME AND IT'S OUTCOME IN A TERTIARY CARE HOSPITAL, KRIMS KARWAR

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Received : 25/10/2023
Received in revised form : 28/11/2023
Accepted : 10/12/2023

Keywords:

Acute Coronary Syndrome, STEMI, NSTEMI, Unstable Angina.

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DOI: 10.47009/jamp.2023.5.6.213

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (6); 1043-1046



Abstract

Background: Cardiovascular disease (CVD) is the number one cause of death in India and accounted for approximately 21% of deaths in theyear 2010, with 10% of all deaths occurring due to CAD. A study done in Karnataka supported the well-established fact that the mean age of occurrence of STEMI in Indians is 5–10 years lower than Western population. **Materials and Methods:** This study was a retrospective study of patients admitted at Karwar Institute of medical sciences (KRIMS), Karwar. The material of study consisted of 100 consecutive patients of Acute Coronary Syndrome (ACS) admitted to ICCU of KRIMS hospital from January 2022 to January 2023 collected from MRD after obtaining their permission. History, comorbidities, habits, family history and clinical examination of the patients were noted. First ECG and subsequent serial ECGs were collected and dynamic changes were noted. Cardiac enzyme levels were noted. 2D ECHO reports were collected. Data was collected in MS- excel and descriptive analysis of data was done. **Result:** A total of 100 consecutive patients with Acute Coronary Syndrome were studied. Mean age groups of study participants was 60.5(±10.41) years. Most of the patients were in the age group between 50 years and 70 years. There were 62 male patients and 38 female patients with male to female ratio of 1.6:1. Among 100 patients, 59% had STEMI 27% had NSTEMI and 14% had Unstable Angina. Out of the 59 patients with STEMI, 30(50.84%) patients had Anterior wall MI(AWMI), 21(35.59%) patients had IWMI±PWMI and 8(13.55%) patients had LWMI. Among 59 STEMI patients, 47 patients were thrombolysed. 25 patients developed hypotension, 4 patients had hematuria, 1 patient developed IC bleed after thrombolysis. 36 patients had successful thrombolysis, whereas 11 patients thrombolysis was not successful. Out of the 47 thrombolysed patients 20 patients got referred to higher center for CAG and further intervention, 14 patients refused to go to higher center and were discharged once they were fit to discharge, 4 patients went DAMA and 9 patients died. Mortality was 12% in our study. **Conclusion:** In our study STEMI was the most common presentation among ACS. The mortality in our study is higher compared to both Indian and International studies. PCI and CABG facilities should be made available to the patients in time and at affordable cost to reduce the mortality and morbidity associated with Acute Coronary Syndrome. However study with larger population need to be done.

INTRODUCTION

CAD is a pathologic condition that occurs when there is inadequacy in both blood supply and oxygen to the myocardial tissue. This condition results from luminal plaque formation in the coronary arteries, leading to blood flow hindrance, further leading to arterial occlusion. As per World Health Organisation

(WHO) data, the Coronary Artery Disease (CAD) prevalence continues to rise in India with rapid 'epidemiological transition'. The rising incidence of CAD in young Indians is of particular concern. The incidence of CAD in young population in Western countries is 2–5%, whereas it is 11–16% in Asian Indians.^[1]

Cardiovascular disease (CVD) is the number one cause of death in India and accounted for approximately 21% of deaths in theyear 2010, with 10% of all deaths occurring due to CAD. A study done in Karnataka supported the well-established fact that the mean age of occurrence of STEMI in Indians is 5–10 years lower than Western population.^[2] This is due to numerous risk factors like hypertension, high cholesterol, low HDL cholesterol, diabetes, truncal obesity and many genetic factors.

Patients with acute coronary syndrome (ACS) commonly are classified into two groups to facilitate evaluation and management, namely patients with acute myocardial infarction with ST-segment elevation (STEMI) on their presenting electrocardiogram (ECG) and those with non-ST-segment elevation acute coronary syndrome (NSTEMI-ACS). The latter include patients with non-ST-segment elevation myocardial infarction (NSTEMI), who, by definition, have evidence of myocyte necrosis, and those with unstable angina (UA), who do not have evidence of myocyte necrosis.

MATERIALS AND METHODS

This study was a retrospective study of patients admitted at Karwar Institute of medical sciences (KRIMS), Karwar. The material of study consisted of 100 consecutive patients of Acute Coronary Syndrome (ACS) admitted to ICCU of KRIMS hospital from January 2022 to January 2023 collected from MRD after obtaining their permission.

Diagnosis was based in presence of at least two of the following three criteria:

1. A clinical history of ischemic type chest discomfort.
2. Changes in serially obtained electrocardiographic tracings.
3. With or without a rise and fall of serum cardiac markers.

Exclusion criteria: Nil

History, comorbidities, habits, family history and clinical examination of the patients were noted. First ECG and subsequent serial ECGs were collected and dynamic changes were noted. Blood routine (Hemoglobin percentage, total count, differential count, erythrocyte sedimentation rate). Random blood sugar (Fasting blood sugar/post prandial blood sugar whenever necessary), blood urea, serum creatinine, TFT and Lipid profile reports were noted. 2D ECHO reports were collected.

Limitation of the study: Coronary angiogram and PCI facilities were unavailable in our hospital.

RESULTS

A total of 100 consecutive patients with Acute Coronary Syndrome were studied. Mean age groups of study participants was 60.5 (± 10.41) years. Most of the patients were in the age group between 50 years

and 70 years. There were 62 male patients and 38 female patients with male to female ratio of 1.6:1.

Out of 100 patients 57% patients had Hypertension (28 males, 29 females), 37% patients had diabetes (19 males, 18 females), 18% patients had IHD (14 males, 4 females), 10% patients had Hypothyroidism (2 males, 8 females), 36% patients had dyslipidemia (16 males, 20 females) and 8 male patients had COPD. 34 male patients were Smokers. 30 male patients and 4 female patients were tobacco chewers.

Depending on ECG changes and cardiac enzyme Trop I levels, cases were classified as patients with STEMI, NSTEMI and Unstable Angina. 59 patients (35 males, 24 females) had STEMI, 27 patients (20 males, 7 females) had NSTEMI and 14 patients (8 males, 6 females) had Unstable Angina.

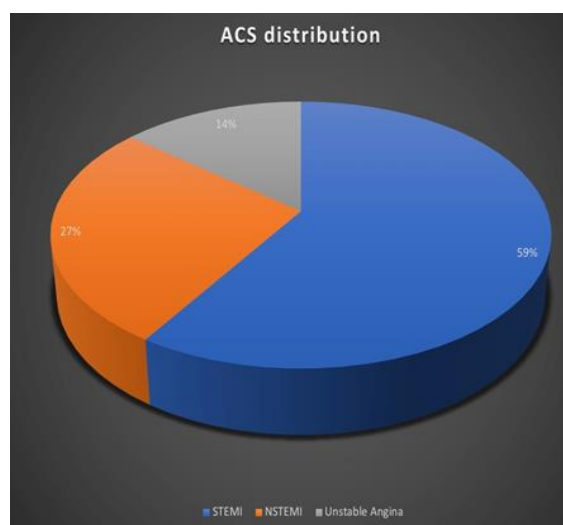


Figure 1: Distribution of patients among types of ACS

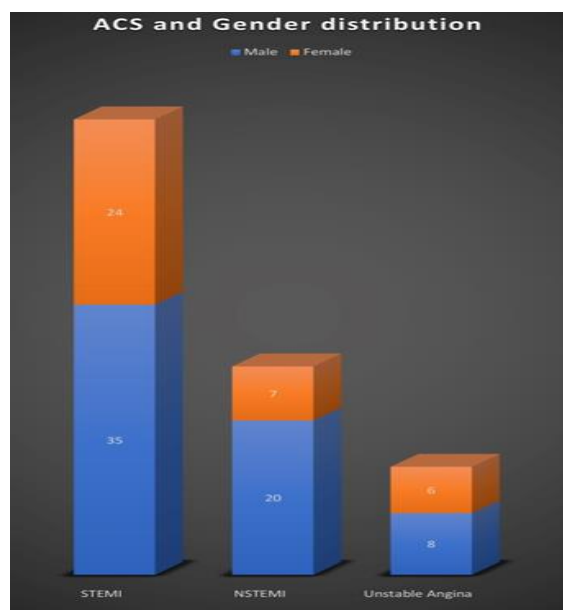


Figure 2: Gender distribution of patients among types of ACS

Out of the 59 patients with STEMI, 30(50.84%) patients had Anterior wall MI(AWMI), 21(35.59%) patients had IWMI±PWMI and 8(13.55%) patients

had LWMI. Among 59 STEMI patients, 47 patients were thrombolysed whereas remaining 12 patients were not thrombolysed as they had relative or absolute contraindications for thrombolysis. Thrombolysis was carried out using streptokinase. 1.5 million IU of streptokinase infusion was given over 60 minutes. 25 patients developed hypotension, 4 patients had hematuria, 1 patient developed IC bleed after thrombolysis. 36 patients had successful thrombolysis, whereas 11 patients thrombolysis was not successful. Out of the 47 thrombolysed patients 20 patients got referred to higher center for CAG and further intervention, 14 patients refused to go to higher center and were discharged once they were fit to discharge, 4 patients went DAMA and 9 patients died.

Out of 100 patients with ACS, 35% patients were discharged, 40% patients were referred, 13% patients went DAMA and 12% patients died.

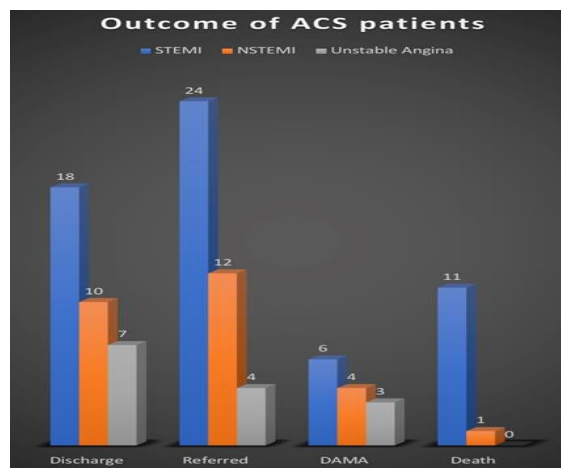


Figure 3: Outcome of ACS patients

Table 1: Baseline characteristics of patients with ACS

Variables	Males	Females	Total
Hypertension	28	29	57%
Diabetes	19	18	37%
Dyslipidemia	16	20	36%
IHD	14	4	18%
Hypothyroidism	2	8	10%
COPD	8	0	8%

DISCUSSION

Cardiovascular diseases are the leading cause of death globally and in India. The mortality and morbidity of the cardiovascular diseases has significant socioeconomic burden on the society. This study is an attempt to study the prevalence and outcome of Acute Coronary Syndrome in tertiary care setup where the facilities for CAG, PCI and CABG are not available. A total of 100 consecutive patients with Acute Coronary Syndrome were studied. Mean age groups of study participants was 60.5(±10.41) years. Most of the patients were in the age group between 50 years and 70 years. The mean age at presentation of ACS cases is comparable with mean age of cases from the CREATE registry data (57.5 years), Kerala ACS data(60.4 years) and HP ACS study data(60.9 years).^[3-5]

There were 62 male patients and 38 female patients with male to female ratio of 1.6:1. CREATE registry, Kerala ACS registry, HP ACS registry and PGIMER ACS registry had male to female ratio of 3.24:1, 3.42:1, 3.56:1 and 2.93:1 respectively.^[3-6] Our study has more females compared to other Indian studies nevertheless there were more male patients in our study too.

In our study 57% patients had hypertension. CREATE registry, Kerala ACS registry, HP ACS registry and PGIMER ACS registry had 37.7%, 48.4%, 43.4% and 53.8% patients hypertension respectively. There were 37% patients had diabetes in our study. CREATE registry, Kerala ACS registry, HP ACS registry and PGIMER ACS registry had

30.4%, 37.6%, 17.7% and 34.9% patients with diabetes respectively. Most of the Indian studies including mentioned above had significant association of hypertension and diabetes with acute coronary syndrome.^[7-10] There were 36% patients with dyslipidemia. Bhattacharya et al., Parmeshwara V. and Majeed et al. have reported hypercholesterolemia to be present in 21.43%, 20.8% and 21% of the patients respectively.^[11-13] There were 34% patients who were smokers in our study. CREATE registry, Kerala ACS registry, HP ACS registry and PGIMER ACS registry had 40.26%, 34.4%, 63.4% and 39.24% smokers in their studies respectively. Coronary vascular diseases have multiple risk factors and in our study hypertension was the most common risk factor followed by diabetes, dyslipidemia and smoking. The causation of these risk factors in development of acute coronary syndrome has been established in various previous studies yet the efforts to reduce them are still unsatisfactory.

Depending on ECG changes and cardiac enzyme Troponin I levels, cases were classified as patients with STEMI, NSTEMI and Unstable Angina. 59 patients (59%) had STEMI, 27 patients (27%) had NSTEMI and 14 patients (14%) had Unstable Angina. CREATE registry, Kerala ACS registry, HP ACS registry and PGIMER ACS registry had 60.6%, 37%, 45.5% and 69.9% presenting with STEMI respectively. CREATE registry, HP ACS registry and PGIMER ACS registry had 39.4%, 54.5% and 30.1% patients presented with NSTEMI/Unstable Angina respectively. In Kerala ACS registry 31% and 32%

patients had NSTEMI and Unstable Angina respectively. Most of the Indian studies had STEMI as the common presentation of ACS however the types of acute coronary syndromes in Indian registry differed from those recorded in developed countries. About 59% of patients in our study had STEMI, whereas in reports from developed countries,^[14-16] had fewer than 40% had STEMI. This suggests that patients admitted to Indian hospitals with acute coronary syndromes are likely to have worse prognoses than those in other countries.

Among 100 patients, 47% patients underwent thrombolysis, all these patients had STEMI. 25 patients developed hypotension, 4 patients had hematuria, 1 patient developed IC bleed after thrombolysis. 36 patients had successful thrombolysis, whereas 11 patients thrombolysis was not successful. Out of the 47 thrombolysed patients 20 patients got referred to higher center for CAG and further intervention, 14 patients refused to go to higher center and were discharged once they were fit to discharge, 4 patients went DAMA and 9 patients died. CREATE registry, Kerala ACS registry, HP ACS registry and PGIMER ACS registry had 36.8%, 24.7%, 32.6% and 52% underwent thrombolysis respectively. More patients in our study were thrombolysed compare to other Indian studies, this may be due to non availability of primary PCI in our institution. The mortality in our study was 12%. Out of 12 patients who succumbed 11 patients had STEMI and 1 patient had NSTEMI. In-hospital mortality rates for STEMI patients in our study was 9% which was higher than Euro Heart Survey ACS (6%), GRACE (7%), and ACTION (4.3%).^[15-18] CREATE registry, Kerala ACS registry, HP ACS registry and PGIMER ACS registry had mortality of 6.7%, 3.9%, 7.6% and 7.6% respectively. The mortality in our study was more compared to above mentioned Indian studies and global studies. This may be due to the non-availability of timely PCI intervention when needed and the nearby institution with PCI facilities was 3 to 4 hours away from our institution.

CONCLUSION

Hypertension was the most common risk factor followed by Diabetes, dyslipidemia and smoking. Patients should be educated to control their comorbidities through life style modifications and medications. They should be encouraged and provided with support to quit smoking. In our study STEMI was the most common presentation among ACS. The mortality in our study is higher compared to both Indian and International studies. PCI and CABG facilities should be made available to the patients in time and at affordable cost to reduce the

mortality and morbidity associated with Acute Coronary Syndrome. However study with larger population need to be done.

REFERENCES

- Murray LJ, Lopez AD. The Global Burden of Disease. A Comprehensive Assessment of Mortality and Disability from Diseases, Injuries and Risk Factors in 1990 and Projected to 2020. Boston: The Harvard School of Public Health; 1996.
- Sharma R, Bhairappa S, Prasad SR, Manjunath CN. Clinical characteristics, angiographic profile and in hospital mortality in acute Coronary syndrome patients in south indian population. *Heart India*. 2014;2(3).
- Xavier D, Pais P, Devereaux PJ, Xie C, Prabhakaran D, Reddy KS, et al. Treatment and outcomes of acute coronary syndromes in India (CREATE): A prospective analysis of registry data. *Lancet* 2008;371:1435-42.
- Mohan PP, Mathew R, Harikrishnan S, et al. Presentation, management, and outcomes of 25 748 acute coronary syndrome admissions in Kerala, India: results from the Kerala ACS Registry. *Eur Heart J*. 2013;34:121e129.
- Negi PC, Merwaha R, Panday D, Chauhan V, Guleri R. Multicenter HP ACS registry. *Indian Heart J*. 2016;68:118e127
- Sharma, Y. P., Santosh Vemuri, K., Bootla, D., Kanabar, K., Pruthvi, C. R., Kaur, N., Prasad Nevali, K., Panda, P., Kasinadhuni, G., Uppal, L., & Mohanty, S. (2021). Epidemiological profile, management and outcomes of patients with acute coronary syndrome: Single centre experience from a tertiary care hospital in North India. *Indian heart journal*, 73(2), 174–179. <https://doi.org/10.1016/j.ihj.2020.11.149>
- Gupta R. Recent trends in coronary heart disease epidemiology in India. *Indian Heart J* 2008;60 2 Suppl B: B4-18.
- Mohan V, Deepa R, Rani SS, Premalatha G; Chennai Urban Population Study (CUPS No.). Prevalence of coronary artery disease and its relationship to lipids in a selected population in South India: The Chennai Urban Population Study (CUPS No 5). *J Am Coll Cardiol* 2001;38:682-7.
- Vaidya CV, Majmudar DK. A study of clinical profile of acute ST elevation myocardial infarction patients from GMERS medical college and hospital, Gandhinagar, Gujarat. *Int J Adv Med* 2014;1:113-6.
- Seetharama N, Mahalingappa R, Ranjith Kumar GK, Veerappa V, Aravindh CL. Clinical profile of acute myocardial infarction patients: A study in a tertiary care centre. *Int J Res Med Sci* 2015;3:412-9.
- Bhattacharya RR. A study of acute myocardial infarction of and industrial population. *J Assoc Physicians India*. 1986;34(1):7.
- Parameshwara V. An epidemiologic profile of ischemic heart disease in clinical practise (5040 cases). *J Assoc Physicians India*. 1986;34(1):26.
- Majeed A, Arora RC, Arora S. Study of coronary risk factors in patients with acute myocardial infarction in Bundelkhand region. *J Assoc Physicians India*. 1998;46(1):76.
- Hasdai D, Behar S, Wallentin L, et al. A prospective survey of the characteristics, treatments and outcomes of patients with acute coronary syndromes in Europe and the Mediterranean basin; the Euro Heart Survey of Acute Coronary Syndromes (Euro Heart Survey ACS). *Eur Heart J* 2002; 23: 1190–201.
- Mandelzweig L, Battler A, Boyko V, et al. The second Euro Heart Survey on acute coronary syndromes: Characteristics, treatment, and outcome of patients with ACS in Europe and the Mediterranean Basin in 2004. *Eur Heart J* 2006; 27: 2285–93.
- Fox KA, Dabbous OH, Goldberg RJ, et al. Prediction of risk of death and myocardial infarction in the six months after presentation with acute coronary syndrome: prospective multinational observational study (GRACE). *BMJ* 2006; 333: 1091.
- Goldberg RJ, Steg PG, Sadiq I, et al. Extent of, and factors associated with, delay to hospital presentation in patients with acute coronary disease (The GRACE registry). *Am J Cardiol*. 2002;89:791e796.
- Roe MT, Messenger JC, Weintraub WS, et al. Treatments, trends, and outcomes of acute myocardial infarction and percutaneous coronary intervention. *J Am Coll Cardiol*. 2010;56:254e263.