Study of Clinical Profile of Patients of Acute Coronary Syndrome Presenting in Emergency Medicine Department

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Abstract:

Introduction: Acute coronary syndrome (ACS) is most common cause of mortality in patients with coronary artery disease. Cardiovascular risk factors for ACS are on the rise in people of Indian origin, and ACS is now the leading cause of death.

Aims and Objectives: To study clinical profile, risk factors and complications of patients of acute coronary syndrome (ACS) presenting in Emergency Medicine Department.

Material and Methods: An observational study spanning 1 year (1st January 2023 to 31st December 2023) was conducted in Emergency Medicine Department (EMD) of SKN Medical College & General Hospital, Pune. Data sourced from hospital records with approval.

Result: The study analyzed 158 ACS patients. Most of them were males (72%). Most patients were from age group of 40-60 years (45%). STEMI was commonest presentation (68%). Chest pain/discomfort was most common presenting symptom seen in 82% followed by sweating in 61%. Among the risk factors studied, hypertension was commonest (39%) followed by smoking in 30%. Tachyarrhythmias were seen in 11% while cardiogenic shock was seen in 9%.

Conclusion: ACS is more common in males with STEMI being commonest presentation and chest pain/discomfort being commonest presenting symptom. Complications can be seen during treatment in EMD and are tachyarrhythmias, cardiogenic shock, and bradyarrhythmias.

Keywords: Acute coronary syndrome, ST-elevation myocardial infarction, Non-ST elevation myocardial infarction, Unstable angina, Emergency Medicine Department.

Introduction

Coronary artery disease (CAD) is the leading cause of mortality and morbidity in the world [1] and acute coronary syndrome (ACS) is the most common cause of mortality in patients with CAD. Cardiovascular diseases have become one of the major health problem reaching epidemic proportions. Previous studies have reported that there is a rising incidence of ACS in the young. The currently available evidence, young patients represent 0.4-19% of all ACS cases, depending on the cut-off age used [2-5].

Acute coronary syndrome (ACS) is a constellation of clinical features that results from coronary artery occlusion, which is commonly due to the formation of a thrombus on a ruptured atherosclerotic plaque [6]. The spectrum of ACS includes ST-segment elevation myocardial infarction (STEMI), non-STEMI (NSTEMI), and unstable angina (UA) [7]. Hypertension, diabetes mellitus, dyslipidemia, obesity, smoking, and a sedentary lifestyle are modifiable risk factors that predispose to ACS. Non-modifiable risk factors include genetic factors, age, gender, race, family history of ischemic heart disease (IHD) and a lower socioeconomic status [8]. Depending on the profile of ACS presentation, percutaneous coronary intervention (PCI) and thrombolytic therapy (fibrinolysis) are the two currently available therapeutic interventions capable of restoring coronary perfusion [9].

Cardiovascular risk factors for ACS are on the rise in people of Indian origin, and ACS is now the leading cause of death [10-14]. The present study was undertaken to study the clinical profile, risk factors and complications of ACS in patients presenting to Emergency Medicine Department (EMD).

Method

Research Design: This observational study was conducted in SKNMC & GH, Pune from 1 January

2023 to 31 December 2023 for duration of 1 year. All the patients of ACS coming to our hospital's emergency medicine department during the research period were considered. The necessary data was taken from the medical facility's records after obtaining necessary approvals. ACS was defined as STEMI, NSTEMI, or UA as per established clinical, ECG, and enzymatic definitions for the same. Standard history was taken and data was recorded in case paper. Hypertension was defined as a blood pressure (BP) of >140/90mm Hg. Diabetes mellitus (DM)was defined as a fasting blood sugar (FBS) level of >126mg/dL or postprandial blood sugar (PPBS) level of >200mg/dL or HbA1C > 6.5%. Dyslipidemia was defined as fasting low-density lipoprotein (LDL) levels of >100 mg/ dL or high-density lipoprotein (HDL) levels of < 40 mg/dL or triglyceride (TG) > 150 mg/dL. Patients of STEMI were thrombolysed in EMD ICU as per protocol and then shifted to Cardiac ICU. Prompt medical treatment was started in all cases. Any complications developed during EMD stay was documented.

Inclusion and Exclusion criteria

Inclusion

- Patients of ACS presenting to the emergency medicine department from January 2023 to December 2023.

Exclusion

- Patients of ACS not presented in EMD.
- Patients who developed ACS during hospital stay.
- Patients presented with ACS beyond the study period.

Statistical analysis: The study was conducted using SPSS 27 and MS Excel.

Result

- A total of 158 patients were enrolled in this study. A number of parameters were observed, including age, gender, risk factors, presenting symptoms, diagnosis and complications in EMD.
- In our study out of 158 patients, 113 (72%) were males and 45 (28%) were females.
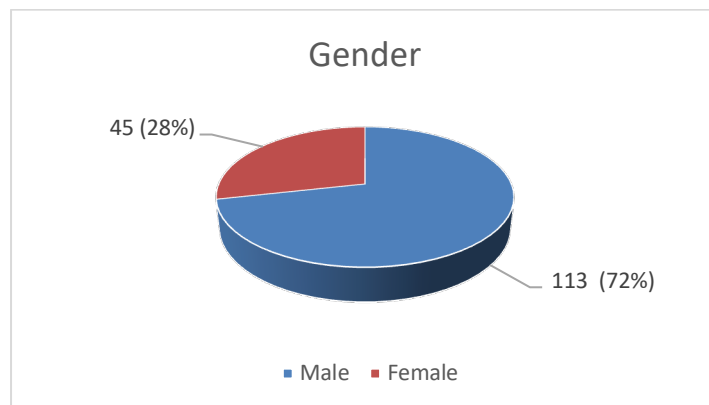

According to age group, patients were classified in three age groups - <40 years, 40-60 years, >60 years. 71 (45%) patients were from 40-60 years age group. 67 (42%) were from >60 years age group while 20 (13%) were from <40 years age group
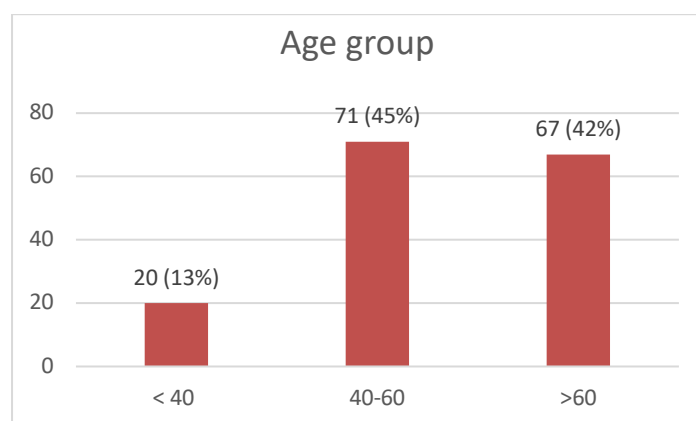
Patients were classified according to type of ACS and STEMI was most common diagnosis, seen in 107 (68%) patients. NSTEMI was seen in 27 (17%) patients and UA was seen in 24 (15%) patients.
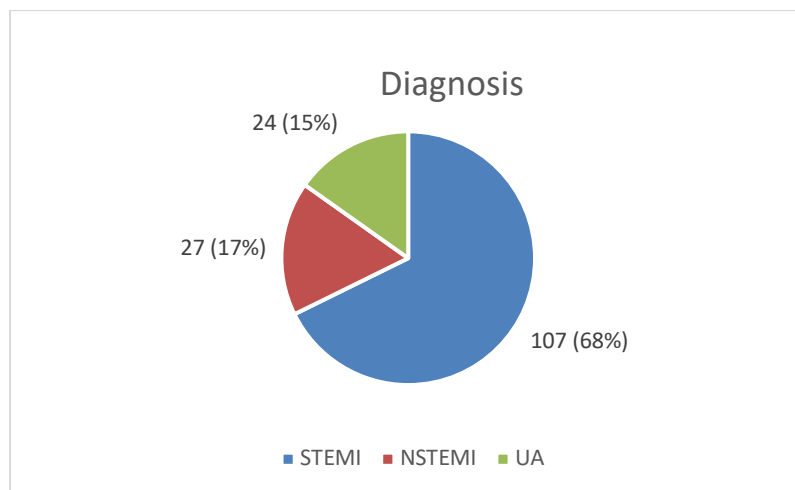
Most common presenting symptom was chest pain/discomfort seen in 129 (82%) patients followed by sweating seen in 97 (61%) patients. Breathlessness, epigastric pain, and vomiting were seen in 24 (15%), 17 (11%), and 8 (5%) patients respectively.
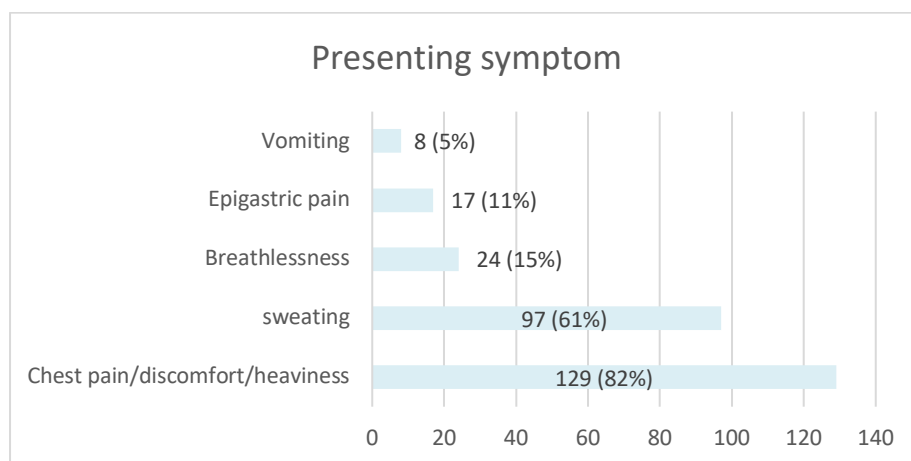
Hypertension was most common risk factor present in 62 (39%) patients. Smoking was present in 97 (61%) patients. DM, dyslipidemia, and family history of IHD were the other risk factorspresent in 40 (25%), 25 (16%), and 8 (5%) patients respectively.
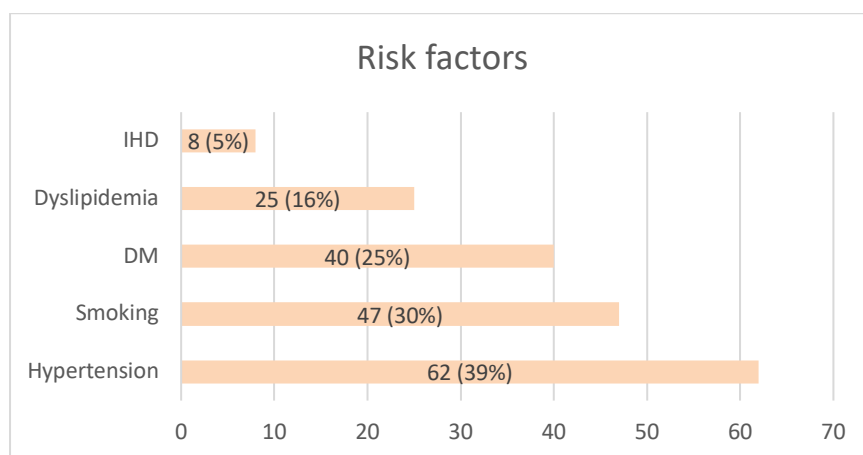
In our study, we also noted complications arising in ACS patients during EMD stay. Most common complication seen was tachyarrhythmia in 17 (11%) patients. Other complications were bradyarrhythmia and cardiogenic shock seen in 10 (6%) and 14 (9%) patients respectively. 4 (2.5%) patients died in EMD during treatment.
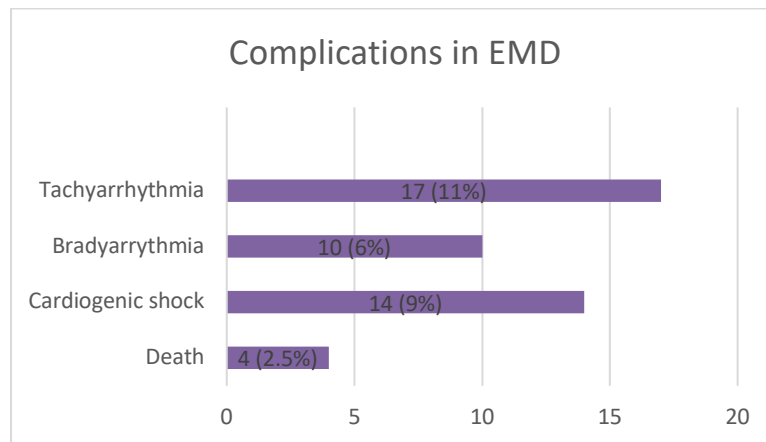
Discussion

In our study, males (72%) outnumbered females (28%). Similar result was found in study by Naveen Kumar et al in which 83% patients were males and 17% were females [15]. Among ACS patients of all age group, 13% were from < 40 years of age in our study. A study by VK Kadam had similar prevalence with 11% patients from < 40 years age group [16]. In another study by Kesavan et al 9.1% of ACS patients were from <40 years age group [17]. Hence, we can conclude that the percentage of young ACS patients presenting to EMD is increasing in newer studies indicating transition from middle age to young population.

STEMI patients were 68% in our study while NSTEMI and UA were 17% and 15% respectively. A study by VK Kadam had 63% STEMI, 15% NSTEMI and 22 % UA patients [16]. Both the study had STEMI in majority of patients. This was similar to the CREATE registry, which is the largest registry of patients with ACS in India [18]. However, ACCEPT registry and GRACE registry enrolling patients mainly in the western hemisphere found NSTEMI/UA as predominant presentation of the ACS with STEMI coming in second [19,20] Hence, we can conclude that in India, STEMI is main presentation.

Chest pain/discomfort was seen as predominant presenting symptom in 82% patients followed by sweating in 61%. Similar findings were noted in a study by P. Yadav et al with 94% patients having chest pain as predominant symptom followed by sweating in 78% [21]. Other less common symptoms were epigastric pain and vomiting seen in patients with inferior wall myocardial infarction and diabetics.

Hypertension was most common risk factor associated with ACS in our study found in 39%

patients followed by smoking in 30%. In a study by VK Kadam, hypertension and smoking were found in 49% and 48% patients respectively [16]. Another study by P. Yadav found hypertension and smoking (tobacco) in 33% and 65% patients respectively [21]. This underlines hypertension and smoking as prominent risk factors for ACS. Other risk factors studied were DM, dyslipidemia, and family history of IHD which were seen in 25%, 16% and 5% patients respectively. Same risk factors were seen in 16%, 14% and 12% patients respectively in a study by P.Yadav highlighting importance of these risk factors [21].

Tachyarrhythmia was most complications arising during EMD stay in our study seen in 11%. Accelerated idioventricular rhythm (AIVR) was most common tachyarrhythmia and was seen during thrombolysis of STEMI. Cardiogenic shock was seen in 9% patients. Bradyarrhythmias were noted in 6% patients. All of these were noted in inferior wall myocardial infarction (IWMI). 2.5 % patients died in EMD during treatment in our study. These patients were presented late and had complications on presentation. In a study by VK Kadam, tachyarrhythmias were found in 48% patients followed by bradyarrhythmias and cardiogenic shock in 30% and 17% patients respectively [16]. In a study by P. Yadav, arrhythmias were seen in 60% while cardiogenic shock was seen in 35% patients [21]. This difference between our study and other studies is due to the fact that we studied complications during the stay of patient in EMD only while in other studies complications during entire hospital stay. This is one of the limitation of our study, other being no medium and long term follow up.

Conclusion

Despite limitations described above, we can draw some conclusions about the clinical profile in ACS. The number of patients presented in < 40 years of age were though small but not insignificant. Majority of patients were male. STEMI is commonest presentation of ACS. Chest pain/discomfort is commonest presenting symptom however patients can present with other symptoms and in the absence of chest pain. These are mostly IWMI and patients with DM. Hypertension contribute as major risk factor followed by smoking. Patients can develop complications during treatment in EMD including mortality.

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