|| ISSN(online): 2589-8698 || ISSN(print): 2589-868X ||
International Journal of Medical and Biomedical Studies
Available Online at www.ijmbs.info
NLM (National Library of Medicine ID: 101738825)
Index Copernicus Value 2019: 79.34
Original Research Article
Volume 5, Issue 3; March: 2021; Page No. 17-20

CLINICAL PRESENTATION OF ACUTE MYOCARDIAL INFARCTION IN ELDERLY PATIENTS

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Article Info: Received 15 January 2021; Accepted 25 February 2021
DOI: https://doi.org/10.32553/ijmbs.v5i3.1790
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Conflict of interest: No conflict of interest.

Abstract
Background: The cardiovascular diseases (CVDs) have become the leading cause of mortality worldwide. There is an increasing burden on health care systems associated with MIs in the elderly, differences in clinical picture, and difficulties in dealing with elderly patients with myocardial infraction (MI).
Aim: The aim of study is to evaluate the different clinical presentations, risk factors and complications of elderly patients presenting with acute myocardial infarction.
Methods: This is a retrospective, cross sectional study done over a period of 1 year. A total of 100 elderly patients who were diagnosed as AMI were included in the study. We studied Demographic features, cardiovascular risk factors, varied clinical presentations Electrocardiogram (ECG) findings from the history proformas and documented.
Results: A total of 100 patients diagnosed with MI were studied. Mean age of the study population was 69.41 years and were predominantly male (84%). The most common presenting symptom was chest pain (79%) followed by sweating (7%), followed by shortness of breath (5%), giddiness (4%) vomiting (3%) and palpitations (2%). hypertension was commonly seen in elderly (56%) followed by diabetes (39%), smoking (28%), dyslipidaemias (12%), history of CAD (9%) and obesity (6%). Mortality rate was 26% and maximum (11%) patients belonged to age group >80 years.
Conclusion: We conclude that chest pain is the most common presentation in elderly AMI patients, but other atypical symptoms such as shortness of breath, giddiness, vomiting, without chest pain can also be the common presenting signs. Early and prompt management as appropriate should be provided to avoid morbidity and mortality in elderly.
Keywords: Clinical Profile, Mortality, Myocardial Infarction, Risk Factors.

Introduction

The cardiovascular diseases (CVDs) have become the leading cause of mortality worldwide. The World Health Organization (WHO) has estimated that, with the current burden of CVD, India would lose $237 billion from the loss of productivity and spending on health care over a 10-year period (2005–2015)[1]. An estimated 17.9 million people died from CVDs in 2016, representing 31% of all global deaths. Of these deaths, 85% are due to heart attack and stroke. Out of the 17 million premature deaths (under the age of 70) due to no communicable diseases in 2015, 82% are in low- and middle-income countries, and 37% are caused by CVDs[2].

In India, the epidemiological transition from predominantly infectious disease conditions to non-communicable diseases has occurred over a rather brief period of time. This burgeoning burden of CVDs can be explained by the alarming rise in the prevalence of coronary risk factors like diabetes, hypertension, atherogenic dyslipidaemia, smoking, central obesity and physical inactivity. Most cardiovascular diseases can be prevented by addressing behavioral risk factors such as tobacco use, unhealthy diet and obesity, physical inactivity and harmful use of alcohol using population-wide strategies.

Myocardial infarction (MI) is defined by the demonstration of myocardial cell necrosis due to significant and sustained ischemia. MI is one of the five main manifestations of coronary heart disease, namely stable angina pectoris, unstable angina pectoris, MI, heart failure and sudden death[3].

While the classic symptoms of an AMI are chest pain and shortness of breath, the symptoms can be quite varied. The most common symptoms of a heart attack include pressure or tightness in the chest, pain in the chest, back, jaw, and other areas of the upper body that lasts more than a few minutes or that goes away and comes back, shortness of breath, sweating, nausea and anxiety.

The manifestations of acute myocardial infarction are generally believed to be atypical in the elderly. AMI is associated with significantly higher mortality in the elderly compared with the young, yet the elderly are treated less aggressively than the young. They may be more refractory to medical therapy possibly because of advanced atherosclerotic disease and ventricular dysfunction

particularly diastolic dysfunction. Even, they are more intolerant to therapy with multiple anti ischaemic agents.[4]

There is an increasing burden on health care systems associated with MIs in the elderly, differences in clinical picture, and difficulties in dealing with elderly patients with myocardial infraction (MI). Knowing the differences of clinical profile of elderly AMI patients in our population will help identify aspects which may need further evaluation to formulate strategies to improve outcome in elderly AMI patients. The aim of study was to evaluate the different clinical presentations, risk factors and complications of elderly patients presenting with acute myocardial infarction.

Material and Methods

This was a retrospective, cross-sectional descriptive study was conducted after obtaining ethical clearance from institutional ethical committee. The data was collected from the discharge records of the patients admitted in department. According to inclusion criteria those patients who are above 60 years of age, were diagnosed with ST-Elevation MI (STEMI) or Non-ST-Elevation MI (NSTEMI) in the discharge sheet. The diagnosis was made according to criteria established by ESC/ACC (European Society of Cardiology/American College of Cardiology) through evaluation of myocardial necrosis marker in serial determinations (muscle brain fraction of creatinin phosphokinase or Troponin I) plus one of the following criteria: ischaemic symptoms, electrocardiographic changes indicative of ischemia (ST segment elevation or ST depression and T wave changes), development of pathological Q wave on electrocardiogram (ECG) or left bundle branch block, new or presumed new. ST segment elevation was defined in the presence of ST segment elevation of ≥1 mm in two contiguous limb leads or ≥2 mm in two contiguous chest leads. ST depression and T wave changes were defined as ST depression ≥0.5 mm in two contiguous leads and T wave inversion ≥1 mm in two contiguous leads respectively. Pathological Q wave was defined as any Q wave with deflection amplitude of 25% or more of the subsequent R wave or >0.04 second in width. All those patients who had unstable angina and patients less than 60 years of age were not included in the study.

Demographic features (age, gender), cardiovascular risk factors (tobacco smoking/chewing: current or former, hypertension, history of diabetes, dyslipidaemia), varied clinical presentations reported including chest pain, shortness of breath, palpitation, sweating, dizziness, syncope, nausea, vomiting, abdominal pain and Electrocardiogram (ECG) findings (ST segment elevation or depression, Q wave, sinus rhythm, AV block, ventricular tachycardia) were reviewed from the history proformas and documented.

Statistical Analysis: Recorded data was compiled using Microsoft Excel. Statistical analysis was carried out using SPSS software, and the mean values and frequencies of various risk factors (variables) were studied. Data were presented in percentage and mean and SD.

Results

A total of 100 patients diagnosed with myocardial infarction were studied fulfilling our inclusion and exclusion criteria. Majority of the patients i.e. 89 (89%) had STEMI. The mean age of patients in the study group was 69.41 years with a minimum of 60 years and maximum of 89 years. The patients were predominantly males (84%). (Figure 1)

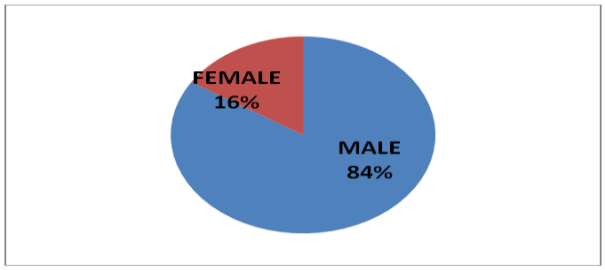

Figure 1: Gender distribution.

Among all the patients regarding the presenting sign, 79 patients (79%) complained of chest pain while 21 patients did not have chest pain at the time of presentation. Other symptoms included sweating (7%), followed by shortness of breath (5%), giddiness (4%) vomiting (3%) and palpitations (2%). (Figure 2)

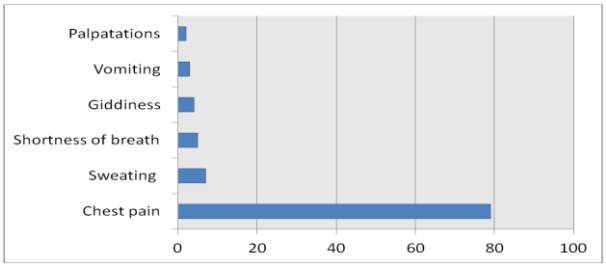

Figure 2: Clinical symptoms at time of presentation

Among the risk factors, hypertension was commonly seen in elderly (56%) followed by diabetes (39%), smoking (28%), dyslipidaemias (12%), history of CAD (9%) and obesity (6%). (Figure 3)

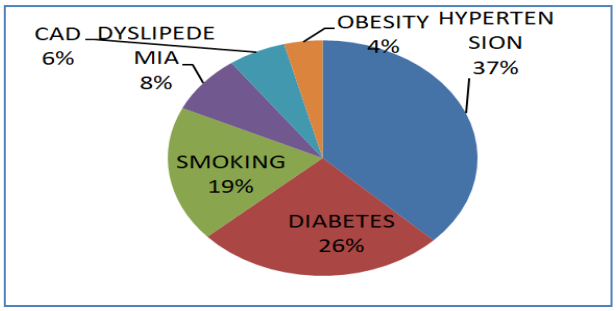

Figure 3: Associated risk factors.

Further on evaluation of enzyme levels, CKMB was elevated more than 2 times the upper limit of normal in

52% of the elderly patients. Troponin T was positive in 59% of patients.

Most of the patients (48%) presented to our emergency department more than twenty-four hours after onset of symptom. Among the study population, 2D ECHO showed LV ejection fraction (LVEF) < 25% in 18% of patients. Among the other drugs used in the treatment of AMI and its complications commonly used drugs were aspirin, NTG, heparin, Beta-blockers, ACE-inhibitors, calcium channel blockers and lipid lowering agents and diuretics. 38% of the patients in the study group were thrombolysis. The main reason for not thrombolysing the patients were delayed presentation to the hospital.

The complications like arrhythmias (21%), CCF (11%), cardiogenic shock (8%), re-infarction (5%), atrial fibrillation (2%) and ventricular tachycardia (2%) were commonly seen in 7 days follow up during hospital stay (Figure 4).

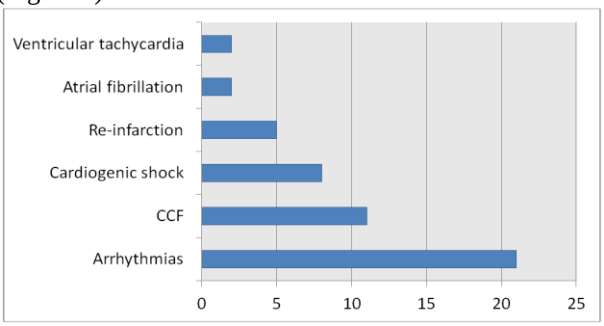

Figure 4: Complications

In the present study, mortality rate was 26% and maximum (11%) patients belonged to age group >80 years. (Figure 5)

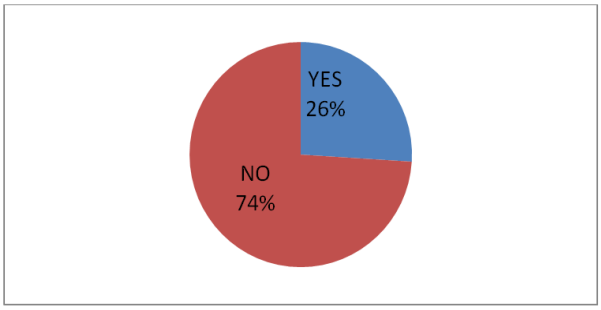

Figure 5: Presence of mortality

Discussion

Cardiovascular disease is a global public health problem and is the most common cause of death globally. The burden of cardiovascular disease is greater in low- and middle income countries as compared to high income countries. Most cardiovascular diseases can be prevented by addressing behavioral risk factors such as tobacco use, unhealthy diet and obesity, physical inactivity and harmful use of alcohol using population-wide strategies. People with cardiovascular disease or who are at high cardiovascular risk (due to the presence of one or more risk factors such as hypertension, diabetes, hyperlipidemia or already established disease) need early detection and management using counseling and medicines, as appropriate[2].

In the present study, the mean age of patients in the study group was 69.41 years. The rate of MI was higher in males (84%) which is consistent with findings in previous studies by Singh PS et at[5], Hafez S et al[6] , El-Menyar A et al[7] and Adhikari G et al[8].

Various authors have previously emphasized the variability in the clinical presentation of acute myocardial infarction (AMI) in the elderly. In the present study more cases among the elderly population had atypical chest pain. 21 patients did not have chest pain at the time of presentation. Other symptoms included sweating, shortness of breath, giddiness, vomiting and palpitations.

Dyspnea in the elderly MI patient may be due to age-related diastolic dysfunction and associated pulmonary disease and Giddiness likely due to acute reduction in cardiac output in the setting of an aging brain and diminished autonomic responsiveness. It's been also noticed that sometimes patients are not able to describe their symptoms accurately or do not remember their complaints and possibly have increased pain threshold.

In Worcester Heart Attack Study, chest pain was reported in less than half of the patients over age 75 years (45.5%) while dyspnea or cough (22%) and other symptoms like dizziness, arm numbness, headache, syncope, sweating, palpitations, nausea, and weakness (32%) were more common[9].

Sandhya S et al in their study reported that 80% patients in their study complained of chest pain while 20% did not have chest pain at the time of presentation. Other presenting symptoms included dyspnoea, symptoms of giddiness, vomiting and sweating and epigastria pain in the absence of chest pain which was in accordance with our study[10]. Adhikari G et al reported the most common presenting symptom was chest pain (86.36%), followed by shortness of breath (42.42%), vomiting (12.87%) and sweating (10.60%)[8].

In the present study, among the risk factors, hypertension was commonly seen in elderly (56%) followed by diabetes (39%), smoking (28%), dyslipidaemias (12%), history of CAD (9%) and obesity (6%). Adhikari G et al reported that tobacco smoking/chewing (62.87%) was the major risk factor contributing to MI. Tobacco consumption was the leading risk factor in both ST elevation (63.86%) and non-ST segment elevation (53.84%) MI group. Hypertension (43.18%) was the second most common risk factor followed by diabetes mellitus (34.09%) and dyslipidemia (21.21%). Alcohol consumption was also present in significant percentage of patients (30.30%).[8]

Sandhya S et al Commonest risk factor found in this study was Diabetes seen in 62.5 % of the patients included in the study. Next common was hypertension (55%), hypercholesterolemia (30%) and smoking (25%)[10]. Bhatia

LC et al demonstrated that there was no difference between the elderly and younger age groups with regard to the presence of hypertension, diabetes mellitus and dyslipidemia.[12]

Further in the present study, complications like arrhythmias (21%), CCF (11%), cardiogenic shock (8%), re-infarction (5%), atrial fibrillation (2%) and ventricular tachycardia (2%) were commonly seen in 7 days follow up during hospital stay. This can be explained as In aged, the adaptations of cardiovascular system to stress is impaired as a consequence of anatomical, functional and metabolic changes in the heart itself and also increase in impedance to ventricular ejection due to anatomical changes in the arterial bed and insufficient vasodilator capacity of the peripheral vessels. This age related changes hamper normal ventricular functions and its adaptive mechanisms to the hemodynamic burden elicited by myocardial necrosis.

During 7 days hospital follow up elderly patients with AMI had more complications like mortality, congestive cardiac failure (CCF), arrhythmias, cardiogenic shock and stroke.

Sandhya S et al reported that among the complications noted during hospital stay, the commonest were acute pulmonary oedema (18%), cardiogenic shock (16%) and arrhythmias (13%). Arrhythmias noted were varying degrees of heart block (8%), atrial fibrillation (3%) and ventricular tachycardia (2%).[10]

Bhatia LC et al reported that elderly were more likely to have complications of cardiac failure and arrhythmias especially atrio-ventricular (AV) blocks. The elderly were also less likely to receive beta-blockers. In-hospital mortality was higher in the elderly. They concluded that the manifestations of AMI are more subtle in the elderly, with different risk factors[11].

Lastly in the present study, mortality rate was 26% and maximum patients belonged to age group >80 years. This showed that with increasing age there is increase in mortality among elderly patients. In similarity Sandhya S et al also reported that age was the most powerful predictor of in-hospital and 30-day mortality in this trial as in their study.

Conclusion

From this retrospective study, we can conclude that chest pain is the most common presentation in elderly AMI patients, but other atypical symptoms such as shortness of breath, giddiness, vomiting, without chest pain can also be the common presenting signs. Age related changes in other organs and deterioration of their adaptive mechanisms to ventricular failure play a crucial role. Hence clinicians need to identify acute myocardial infarction at earliest in elderly and early and prompt management as appropriate should be provided to avoid morbidity and mortality in elderly.

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