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Clinical Presentation of Patients Admitted With Acute Myocardial Infarction in Tertiary Care Hospital

Dr. Manoj Sharadrao Chitale[1], Dr. Sachin Mahadu Gondake[2*]

[1]M.D. Medicine Professor Department of Medicine, SMBT Institute of Medical Sciences and Research Centre, Dhamangoan, Nashik, India
[2]MD Medicine Assistant Professor Department of Medicine, SMBT Institute of Medical Sciences and Research Centre, Dhamangoan, Nashik, India

***Corresponding author:** Dr. Sachin Mahadu Gondake
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Abstract **Original Research Article**

Background: Coronary Artery Disease (CAD) is considered as 'modern epidemic. Acute myocardial infarction (AMI), an important manifestation of coronary heart disease with multifactorial aetiology. Occurrence of AMI cases are increasing in rural India. ***Aim:*** to study clinical presentation of patients admitted with acute myocardial infarction. ***Material & Methods:*** Hospital based cross-sectional study was carried out in teaching hospital in rural India. Hundred patients admitted with AMI were included using universal sampling method. ***Results:*** Male to female ratio was 2.57: 1. Mean age of onset of first time AMI was 59.21 years. Most common trigger factor was emotional upset (22%). In diurnal variation of occurrence of AMI cases, 2 peaks were observed in morning and evening. Obesity was most common risk factor. Most common location was anterior wall AMI (45%) followed by inferior wall infarct (36%). Incidence of pericarditis was 16% while congestive heart failure was found in 33% cases. ***Conclusion:*** Male gender, age, presence of trigger factors, stressful lifestyle and diurnal physiological variations were common precipitating factors. Early identification of symptoms, utilization of electrocardiogram (ECG) and serum markers and prompt treatment can reduce morbidity and mortality in AMI cases.

Keywords: CVD, CAD, Stroke, Non-communicable diseases, Shock.

INTRODUCTION

Coronary Artery Disease (CAD) is considered as 'modern epidemic [1]. Recent epidemiological studies predicted that in next decade more than half the worldwide cardiovascular disease risk burden will be borne by Indian sub-continent [2]. In India, there has been an increasing trend in the incidence of CAD because of changes in the behaviour pattern and lifestyle, so CAD accounts for nearly 15 percent of all deaths [3].

Acute myocardial infarction (AMI) which is an important manifestation of coronary heart disease (CHD) has a multifactorial aetiology. Modifiable risk factors are hypertension, smoking, unhealthy diet, sedentary lifestyle and diabetes mellitus. While advancing age, inherited (genetic) predisposition and gender are non-modifiable risk factors. Other risk factors are inflammation and blood clotting disorders. Trigger factors and diurnal physiological variations are also precipitating factors for AMI [4, 5]. Early identification of symptoms, utilization of electrocardiogram (ECG) and serum markers and prompt treatment can reduce morbidity and mortality in AMI cases.

Occurrence of AMI cases are increasing in rural India [6]. Out of many studies, very few studies published information about clinical profile of AMI patients in rural India. So this study was carried out to get details of clinical presentation of patients admitted with AMI in hospital.

MATERIALS & METHODS

A hospital based observational, descriptive, cross-sectional study was carried out in tertiary care hospital attached to medical college situated in rural Maharashtra. Aim was to study clinical presentation of patients admitted with acute myocardial infarction in tertiary care hospital. Institutional Ethical Committee (IEC) permission was taken before data collection. Study duration was of two years from January 1993 to November 1994. Inclusion criteria were patients who willing to give consent and admitted in medicine ward or intensive care unit with acute myocardial infarction (AMI) within 24 hours of onset of symptoms. Exclusion criteria were patients who were having previous history or evidence of AMI, other coexistent medical diseases (other than diabetes or diseases which were included as risk factors) were excluded. Hundred patients were included using universal sampling method in mentioned

time period. Confidentiality of patient identity was maintained.

After taking valid informed consent, information about socio-demographic profile, precipitating factors, time of onset disease risk factors, clinical presentation, duration of symptoms prior to admission and known history of diabetes, in addition to analysis of ECG and cardiac enzymes profile, was extracted from the patient's case records or was collected from patient or relatives. Thorough general and systemic clinical examination was conducted. The diagnosis of AMI was established in the presence of any two of three criteria. Criteria were 1) Typical signs & symptoms suggestive of ischemic heart disease (IHD). 2) E.C.G changes suggestive of acute myocardial infarction. 3) Serum markers SGOT & CPK-MB. Standard definitions were fixed before start of study and used till completion of study. The important risk factors studied were: gender, smoking, medical history of diabetes (fasting blood glucose ≥ 126 mg/dL or random blood glucose≥ 200 mg/dL), hypertension (≥ 140/90 mmHg or on antihypertensive. Standard Operating Protocols were followed for any measurement and interpretation [6, 7]. Details of complications like pericarditis, congestive heart failure, atrial & ventricular fibrillations, cardiogenic shock, conductive disturbances and others were noted down.

Data was entered in Microsoft Excel and analysed in IBM SPSS software. Descriptive statistics like frequency, proportion, mean and standard deviation were used. Tables and graphs used at appropriate places to summarize the results.

RESULTS

An observational cross-sectional study was carried out in hundred acute myocardial infarction patients admitted in tertiary care hospital. Information regarding socio-demographic profile and clinical presentation of coronary artery heart disease (CHD) was collected. Figure no. 1 clearly depicts highest number of cases of either gender were from age group of 51 to 60 years. The onset of first time AMI was at average of 59.21 years. Male dominance was noted with male to female ratio was 2.57: 1. Socio-economic classification was done by using modified B. G. Prasad classification. All three classes had almost same representation. Majority of our patients (38%) were from upper socioeconomic class followed by class II & class III with 33% & 29% cases respectively.

Table no.1 shows characteristics of patients with AMI. Fifty two percent cases had some trigger factors. Most common was emotional upset (22%) followed by heavy work (15%) and other factors (15%) like smoking, consumption of heavy meal, exposure to cold etc. In diurnal variation of occurrence of AMI cases, 2 peaks were observed i.e. morning (6 AM to 12 PM) (30%) and 6 PM to 12 AM (29%). Decreasing order of frequency of risk factors start from obesity (54%), risk diet, raised total cholesterol level, smoking type A personality, family history of IHD to diabetes (22%). The commonest presenting symptom in our study was chest pain and breathlessness (80%). Out of 22 patients with diabetes, 14 had typical presentation where 8 had atypical presentation with 4 having silent AMI. In 4% of our patients E.C.G findings were inconclusive while rise of enzymes considered together was conclusive in all patients.

Locations of myocardial infarcts shown in table no. 2. Most common location was anterior wall AMI (45%) followed by inferior wall infarct (36%). Six cases of global (combined) infarcts were reported. Table no. 3 highlights clinical characteristics of AMI patients. The incidence of pericarditis was 16% while congestive heart failure (CHF) was found in 33% cases. Cardiogenic shock was present in 21% cases. First degree heart block was noted in 9% cases. Maximum cases (14%) had right bundle branch block (RBBB). None had isolated left anterior hemiblock (LAH), while 7 had a combination of RBBB+ LAH. Atrial fibrillations and ventricular ectopics found in 11% & 30% cases. Four percent cases developed vent tachycardia.

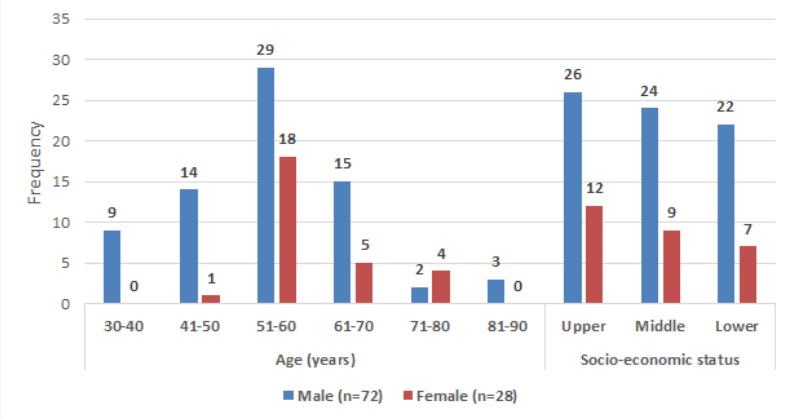

Fig-1: Baseline characteristics of study subjects (n=100)

Table-1: Characteristics of patients with acute myocardial infarction (n=100)

Factors		Frequency (%)
Trigger factors	Emotional upset	22
	Work load	15
	Other	15
	Absent	48
Diurnal variation	6 AM - 12 PM	55
	12 PM - 6 PM	3
	6 PM - 12 AM	29
	12 AM - 6 AM	13

Table-2: Locations of myocardial infarct (n=100)

Site	Frequency (%)
Inferior	30
Anteroseptal	23
Transanterior	13
Subendocardial	8
High lateral	1
Indeterminate	4
Inferolateral	2
Inferior+ True posterior	3
High lateral+ Anteroseptal	7
Inferior+ High lateral	2
True posterior+Inferior+High lateral	1
Global (combined)	6
Total	100

Table-3: Clinical characteristics in acute myocardial infarction patients (n=100)

Clinical Characteristics		Frequency
Pericarditis		16
CHF		33
Cardiogenic shock		21
Conductance disturbances	First Degree block	9
	Second Degree block	8
	Third Degree block	5
	RBBB	14
	LBBB	6
	RBBB+LAH	7
Atrial fibrillations		11
Ventricular ectopics		30
CHF- Congestive Heart Failure; R/L BBB- Right/ Left Bundle Branch Block; LAH- Left Anterior Hemiblock		

DISCUSSION

Information related to clinical presentation of patients admitted with AMI was collected in this study. Our study reported, 73% cases were above 50 years of age which was higher than findings reported by Zodpey *et al*. [8] (65%) and Abduelkarem *et al*. [9] (57%). Occurrence of Coronary Heart Disease (CHD) was much less common in premenopausal women than in men with same age. Abduelkarem *et al*. [9] reported similar findings. Present study noted male: female ratio of 2.57:1. Male gender is known risk factor for CHD [10]. Studies done by Bahall *et al*. [11] and Rajni *et al*. [12] noted M: F ratio of 1.22: 1 and 16:1, respectively. Study done in Tripoli [9]. Showed, more than 75% patients were male (M: F ratio 3.1:1). Unhealthy diet and sedentary lifestyle are indirect causes of higher occurrence of AMI in higher class [6, 13]. In present study, maximum number of cases was from higher class. Rajni *et al.* [12] reported higher cases in lower class.

The clinical presentation of study done by Yadav *et al*. [14] showed that chest pain as predominant symptom (94%) followed by sweating (78%) breathlessness (67%). Our study reported similar trend. Symptoms like abdominal pain giddiness, syncope were observed in higher age group as observed in yang XL *et al.* [15] study. Smoking, physical inactivity and HTN were common risk factors noted by other researchers [12, 16]. In a study done by Akram *et al*. [17], major risk factor was tobacco use (76.9%), followed by low

HDL (52.8%), diabetes (30.8%), hypertension (18.5%), family history of IHD (15.4%) and hypertriglyceridemia (7.7%).

Incidence of inferior Vs. anterior wall infarct was 36% Vs. 45%, which correlated well with previous studies. Study done by Abduelkarem *et al*. [9] reported 32.6% cases of inferior & 62.5% cases of anterior wall infarcts. Yadav *et al*. [14] reported 54% & 41% cases of anterior and inferior wall infarct, respectively. The most common anatomical location of the MI in study done by Akram *et al*. [17] was the anterior wall and 92.3% of the cases were MIs with ST segment elevation.

A higher incidence of cardiogenic shock (21%) may be because of greater time taken for arrival and lack of prompt pre hospital phase of treatment. Atrioventricular and intraventricular block can be the result of ischemic injury and can occur at any level [18]. None of the 11 cases of atrial fibrillations (AF) developed any thromboembolic complications. All of them had fine A.F with fast ventricular response. Out of 30 cases of ventricular ectopics, 15 cases required treatment for same (i.e. they were significant). Study done by Yadav *et al.* [14] reported, 40% cases developed complication in form of arrhythmia (60%), cardiac failure (35%), CVA (2.5%) and mechanical complication in (2.5%). In study done by Akram *et al*. [17], the hospital course was complicated by the development of CHF (4.6%), cardiogenic shock (4.6%), angina post-MI (3.1%), and re-infarction (3.1%). Other researcher also reported similar trend [19].

Present study had certain limitation like time constraint due to which long term follow up was not possible. Male gender, age, presence of trigger factors, stressful lifestyle and diurnal physiological variations were common precipitating factors present in AMI patients. Anterior wall infarct was commonest. ECG and serum markers proved their role in management of AMI cases. Common complications were arrhythmia, CHF, cardiogenic shock and pericarditis. Primordial and primary prevention can reduce effect of risk factors. Secondary prevention in the form of early diagnosis and prompt treatment can reduce complications, hospital stay and mortality in AMI cases.

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