

## A Study on Management and outcome of Acute Myocardial Infarction

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### Abstract

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**Introduction:** Heart disease is the leading cause of hospitalization and death in elderly patients. The elderly with acute myocardial infarction (AMI) have been reported to present with more atypical symptoms such as acute confusion, syncope, atypical chest pain, vomiting and weakness. The role of conventional cardiovascular risk factors in older persons is incompletely understood because only fragmentary and inadequate data are available in most instances. **Methodology:** Data of 50 pts of elderly pts and 50 pts of younger patients who fulfilling the inclusion and exclusion criteria were collected. Their clinical profile including History, risk factors, past illness detailed physical examination, investigation findings and the complications these patients developed in the hospital were recorded in the pretested proforma and the results were analysed and the differences were compared. **Results:** 64% of elderly patients had complications but in younger patients only 32% had one or the other complications. 6% V/s 10% patients among elderly patients having LVF, 12% V/s 10% cardiogenic shock in elderly, 20% V/s 8% patients had arrhythmias in elderly group compared to younger patients. 68% of younger patients had no complications. **Conclusion:** The incidence of major complications like, cardiogenic shock, arrhythmias were significantly higher in elderly AMI patients (12%, 20%) compared to (10%, 8%) respectively in younger patients.

**Keywords:** Management; Outcome; Acute Myocardial Infarction.

### Introduction

Cardiovascular disease is a major health problem reaching epidemic proportions. Despite a significant reduction in the overall age adjusted mortality rates due to cardiovascular diseases in the last 2-3 decades, acute myocardial infarction continues to be the leading cause of mortality especially in people older than 65 years.

Previous studies have reported that there is a rising incidence of acute myocardial infarction in the young. Although acute MI is an uncommon entity in the young, it constitutes an important problem for such patients and their treating physicians because of its devastating effect on their more active lifestyle. Hence it is important to identify and control cardiovascular risk factors at an early age to prevent cases of early MI.

Heart disease is the leading cause of hospitalization

and death in elderly patients [1]. The elderly with acute myocardial infarction (AMI) have been reported to present with more atypical symptoms such as acute confusion, syncope, atypical chest pain [2,3], vomiting and weakness. The role of conventional cardiovascular risk factors in older persons is incompletely understood because only fragmentary and inadequate data are available in most instances. Elderly also have a higher rate of complications and higher mortality. Managing acute MI in the elderly is challenging as they are more refractory to medical therapy probably because of diastolic dysfunction, advanced atherosclerotic disease and intolerance to therapy with multiple anti ischemic agents. AMI is associated with significantly higher mortality in the elderly compared with the young [2,3], Yet the elderly are treated less aggressively than the young 3. Thrombolytic therapy has the greatest effect in elderly even though there is an increased risk of hemorrhagic

stroke.

Benefits of Aspirin, Angiotensin converting enzyme (ACE) inhibitors and Beta-blockers in AMI have been substantiated in numerous trials, but their usage in elderly AMI patients may be lower than in younger patients. 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 such patients.

Acute Myocardial ischemia or infarction occurs when the myocardial oxygen supply is inadequate compared to the myocardial oxygen demand. Myocardial ischemia usually occurs in the setting of coronary atherosclerosis. Acute coronary syndrome patients with new evidence of ST segment elevation on the presenting electrocardiogram are labeled as having ST elevation MI and those without ST segment elevation but with evidence of myocardial necrosis are diagnosed to have non ST elevation MI. The patients without any evidence of myocardial necrosis are said to have unstable angina. Unstable angina / Non ST elevation MI is caused by a reduction in oxygen supply and/or by an increase in myocardial oxygen demand superimposed on an atherosclerotic plaque with varying degrees of obstruction. ST elevation MI usually occurs when coronary blood flow decreases abruptly after thrombotic occlusion of a coronary artery previously affected by atherosclerosis [5].

Elderly patients with acute myocardial infarction have significantly higher morbidity and mortality than younger patients with MI [3,6,7]. Previous studies have found that old age was associated with a higher prevalence of comorbid conditions, atypical presentation, non diagnostic ECG, complications and mortality [8,9].

The independent association of age with mortality likely reflected the influence of many factors. Old age is associated with significant cardiovascular structural and physiologic changes that might predispose patients to adverse outcomes, including abnormalities of left ventricular diastolic function, increase in systemic vascular resistance and altered neurohumoral and autonomic influences [1].

Studies have shown that proportion of women among elderly MI patients was greater compared to young MI patients [3,8,10,11]. The possible reason could be loss of estrogen and its cardiovascular effects in the elderly females [10]. The poor prognosis for women with coronary heart disease after an acute myocardial infarction has been attributed to advanced age or concomitant medical illnesses [11].

Since the classic description of angina pectoris by Heber den in 1768, chest pain has been recognized as the most common clinical manifestation of an acute coronary syndrome.

The ischemic chest pain is usually described as a heavy chest pressure, squeezing or burning sensation or difficulty in breathing. Some investigators have found that up to 30% of patients with ACS may not experience any symptom, and many experience no pain whatsoever. These patients often complain of shortness of breath, extreme fatigue, nausea or fainting. While some epidemiological studies identified women and advanced age in men as factors associated with unrecognized AMI [3,12]. Other reports identified diabetes mellitus.

A study reported that the absence of chest pain at presentation was among the most significant risk factors predicting lower use of thrombolytic therapy among a subset of AMI patients.

Lack of chest pain during AMI has been linked to higher mortality rates. The excess mortality rates seen in patients with painless AMI can be at least partly explained by higher rates of congestive heart failure at presentation, possibly in conjunction with a longer delay between time of onset of ischemia to hospital arrival [13] and poor symptom recognition by both patient and physician.

A study comparing the clinical presentation of acute myocardial infarction in patients aged more than 60 years with that of young patients showed that although chest pain was the most common presentation in both age groups it was less frequent in elderly (66.3% vs. 89.3%). Atypical presentations [15] were seen more commonly in the elderly with shortness of breath being the most common presentation (20.8% vs. 5.4% p <0.001).

Similarly, another study showed that while the majority of elderly patients with acute myocardial infarction had typical substernal chest pain (62%), 38% of elderly patients as compared to 4% of younger persons had either atypical pain that would be difficult to characterize as related to MI or no pain at all. Dyspnea was reported more frequently by the elderly when compared to younger MI patients (58% Vs 48%).

## Methodology

Data of 50 pts of elderly pts and 50 pts of younger patients who fulfilling the inclusion and exclusion criteria were collected. Their clinical profile including

History, risk factors, past illness detailed physical examination, investigation findings and the complications these patients developed in the hospital were recorded in the pretested proforma and the results were analysed and the differences were compared.

In this study 100 cases of acute myocardial infarction patients admitted in ICCU of above hospital studied during the period of 2013 to 2015.

The cases are followed up upto the hospital stay 100 cases are divided into 2 groups.

Group – I Elderly – ( $\geq 60$  years of age)- 50 patients.

Group – II Younger patients – (<60 years of age) - 50 patients.

*Inclusion Criteria*

- a. Age more than 18 yrs of either sex
- b. Acute Myocardial Infarction proved by typical symptoms of acute myocardial infarction, typical ECG pattern (ST segment elevation of >0.1 mV in at least 2 consecutive limb leads or >0.2mV in at least 2 chest leads for ST elevation MI) and Elevated cardiac enzyme levels (CKMB or

Troponin T/I)

*Exclusion Criteria*

1. Age less than 18 yrs of either sex
2. Patients with stable angina
3. Patients with unstable angina
4. Sudden unexplained death

The investigations done in this study

- CBC, Blood Urea, Serum Creatinine, FBS, PPBS, fasting lipid profile
- ECG
- Echocardiography
- Cardiac enzymes CK – MB, Troponin- I

**Results**

SVD being common and equal incidence 64% in both the groups DVD more common 20% in younger age group.

**Table 1:** Coronary angiography

Age Group	>60 Years	<60 Years	P Value
SVD	24 (48%)	23(46%)	>0.05
DVD	4(8%)	10 (20%)	<0.05
TVD	8 (16%)	7(14%)	>0.05
Normal	2 (4%)	0(0%)	
Not Done	12(24%)	10(20%)	>0.05
Total	50	50	

**Table 2:** Management of MI

Age Group	PTCA & Stenting	Medical Management	CABG
>60 Years	20 (40%)	23 (46%)	7(14%)
<60 Years	30 (60%)	15(30%)	5(10%)
P Value	<0.01	<0.05	>0.05

Among elderly patients only 40% underwent PTCA where as 60% of the younger patients underwent PTCA.

Among 50 patients in GR1 only 24(48%) patients thrombolysed where as in Gr2 36(72%) patients were thrombolysed.

**Table 3:** Thrombolysis

Thrombolysis	Gr 1 > 60 yrs	Gr 2 < 60 yrs	P value
Thrombolysed	24 (48%)	36 (72%)	<0.001
Not thrombolysed	26 (52%)	14 (28%)	<0.001

64% of elderly patients had complications but in younger patients only 32% had one or the other complications. 6% V/s 10% patients among elderly patients having LVF, 12% V/s 10% cardiogenic shock in elderly, 20% V/s 8% patients had arrhythmias in

elderly group compared to younger patients. 68% of younger patients had no complications.

In elderly group 13(26%) patients expired where as in younger group only 5(10%) patients expired.

**Table 4:** Complications

Complications	Gr 1 > 60 yrs	Gr 2 < 60 yrs	P value
LVF	3 (6%)	5 (10%)	<0.05
Cardiogenic shock	6 (12%)	5(10%)	>0.05
Cardiac arrest	1 (2%)	0	
Arrhythmias	10 (20%)	4(8%)	<0.01
LV aneurysm	1 (2%)	0	
CHB	3(6%)	1 (2%)	<0.05
RBBB	2 (4%)	1(2%)	
LBBB	3 (6%)	0	
Bleeding	2(4%)	0	
CVA	1 (2%)	0	
No complications	18 (36%)	34 (68%)	<0.001

**Table 5:** Mortality

Mortality	Gr 1 > 60 yrs	Gr 2 < 60 yrs	P value
Death	13(26%)	5(10%)	<0.001
Improved	37(72%)	45(90%)	<0.05
Total	50	50	

## Discussion

In our study PTCA and stenting was done in 40% patients in elderly group and 60% patients in Young group. In Teruo Shiraki et al study PTCA and stenting was done in 81% of the elderly patients and 88% in the younger group.

Among the elderly patients only 48% were thrombolysed compared to younger patients it was 72%. The main reason for not thrombolysing was delayed presentation to the hospital. These observations were comparable with the study Woon VC et al where 35.8% Vs 64.8% in older age compared to younger thrombolysed and showed that elderly patients were more likely to have contraindication for thrombolysis.

In our study 64% of elderly patients had one or the other complications compared to 32% in younger pts. Among the complications noted during the hospital stay were cardiac failure 6% Vs 10%, cardiogenic shock 12% Vs 10%, arrhythmias 20% Vs 10% in the elderly patients compared to younger patients. Various arrhythmias noted were varying degrees of heart block, VPC, ventricular tachycardia. 68% younger patients were having no complications Vs 36% in the elderly group. In study done by MP Holay et al congestive heart failure was seen in 70.2% in elderly as compared to only 46.5% in the young

patients, cardio genic shock was seen in 9.3% in elderly group and 1.7% in young group, cerebro vascular episode was seen in 2.2% of the elderly group and not seen in the young group. AV block was seen in 28.6% in elderly group and 7.1% in younger group.

In VC Woon et al study congestive heart failure was seen in 65.3% in elderly as compared to only 25% in the young patients, cardio genic shock was seen in 8.9% in elderly group and 0.9% in young group. Arrhythmias were seen in 26.7% in elderly group and 22.3% patients in young group indicating no difference between the two age groups with regard to occurrence of arrhythmias.

In a study done by Holay MP comparing young and elderly MI patients revealed that 70.2% elderly MI patients had congestive cardiac failure as compared to only 46.5% young MI patients, 57.8% elderly patients had arrhythmias as compared to 37.5% young MI patients. AV block was seen in 16 (28.6%) of elderly MI patients where as only 4 (7.1%) of young MI patients developed AV block which were similar to our results with respect to development of AV block.

Mortality rate in our study in elderly group was significant (26%) when compared to younger (10%). Similarly in MP Holay et al study mortality was higher in elderly (39%) when compared to younger group (12.5%), in VC Woon et al study mortality was higher

in elderly(20.8%) when compared to younger group (2.7%), in Teruo Shiraki et al study mortality was higher in elderly (24%) when compared to younger group(8%). Thus in these studies there is a higher mortality in older patients when compared to younger patients and was confirmed by our study.

### Conclusion

SVD is the most common Coronary angiogram finding in both the groups. And Stenting was almost equal in both groups .Complications such as Acute Pulmonary edema were more common in the elderly. Mortality was found to be significantly higher in elderly population.

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