

ORIGINAL RESEARCH

A study of incidence and significance of arrhythmias in early and pre discharged phase of acute myocardial infarction

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ABSTRACT

Background: To study and evaluate the incidence and significance of acute myocardial infarction in early and pre discharged phase.

Materials & methods: A total of 100 patients were enrolled. The age of patients was between 45 to 70 years. They were divided into groups as Group 1: early discharged (24-72hr) and group 2: non early discharged patients (Pre-discharge phase). Complete history was taken. Collection of data was done & analysed by using student-t test. Result was analysed using SPSS software.

Results: A total of 100 patients were enrolled. Out of which, 60 were discharged early. The early discharged patients had better hospital outcomes compared to the other group as they showed less prevalence of post myocardial infarction pulmonary edema [1.7% (P = 0.005)] and higher LVEF 40.62 (P < 0.001). Among group 1 patients, arrhythmias were seen in 28 patients while among group 2 patients, arrhythmias were seen in 15 patients.

Conclusion: Early and safe discharge in selective patients with AMI is considered better.

Keywords: myocardial infarction, incidence, early discharge.

INTRODUCTION

Acute myocardial infarction (AMI) is one of the leading causes of fatal in the world. ¹ The prevalence of the disease includes three million people worldwide, with more than one million fatal rates in the United States annually. Acute myocardial infarction can be categorised in two ways, non-ST-segment elevation MI (NSTEMI) & ST-segment elevation MI (STEMI). Unstable angina is similar to NSTEMI. However, cardiac markers are not elevated. ^{2,3}

AMI, referred to in lay terms as a heart attack, is most often caused by a drop or stoppage of blood flow to a portion of the heart, leading to necrosis of heart muscle. Basically, this is the blood clot findings in the epicardial artery that supplies that territory of heart muscle. It is now acceptable that, depend on how AMI is referred, not all cases necessarily need a blood clot etiologically. In all living tissue like heart muscle, the blood supply must equal the muscle's oxygen demands. This is termed the supply-demand ratio. It is now appreciated that an imbalance in this ratio (too little provided or too much expectations) as might occur with a very rapid heart rate (too much expected) or a decrease in blood pressure (too little provided)

may lead to myocardial damage without the presence of a blood clot per se. Over the last 10 years, a universal definition of AMI has been seen helping the clinician with its diagnosis.^{4,5} Spontaneous arrhythmic death, often followed by 'warning' ventricular arrhythmias, can exacerbate the acute phase of AMI.⁶ The convalescent period of AMI has gained less attention while patients remain at risk of severe cardiac arrhythmias and sudden death. A significant link between early post-hospital mortality & the incidence of arrhythmias while in the hospital was found. However, with the trend toward even earlier discharge from hospital after AMI, the above investigation may need further re-examination.⁷ Hence, this study was conducted to study and evaluate the incidence and significance of acute myocardial infarction in early and pre discharged phase.

MATERIALS & METHODS

A total of 100 patients were enrolled. The age of patients was between 45 to 70 years. They were divided into groups as Group 1: early discharged (24-72hr) and group 2: non early discharged patients (Pre-discharge phase). Complete history was taken. Laboratory investigations were done. Follow up was done of patients who were discharged early. Collected the data and analysed it by using student-t test. Result was analysed using SPSS software.

RESULTS

A total of 100 patients were enrolled. Out of which, 60 were discharged early. Mean age of the patients of group 1 and group 2 was 48.6 years and 45.1 years respectively. In group 1 as observed, 48 patients were diagnosed with STEMI and 12 with NSTEMI whereas in group 2, non-early patients the STEMI were 27 and 13 were NSTEMI. The early discharged patients had better hospital outcomes compared to the other group as they showed less prevalence of post myocardial infarction pulmonary edema 1.7% ($P = 0.005$) and higher LVEF 40.62 ($P < 0.001$). Among group 1 patients, arrhythmias were seen in 28 patients while among group 2 patients, arrhythmias were seen in 15 patients.

Table 1: Demographic details

Variable	Group 1	Group 2
Mean age (years)	48.6	45.1
Males (n)	32	21
Females (n)	28	19

Table 2: Intergroup comparison

AMI presentation	Group 1 (n, %) 60 (100%)	Group 2 (n, %) 40 (100%)	P-value
STEMI	48 (80)	27 (67.5)	0.125
NSTEMI	12 (20)	13 (32.5)	
Post AMI- LVEF	40.62	33.83	<0.001
Pulmonary edema	1 (1.7)	3 (7.5)	<0.001

Table 3: Incidence of arrhythmias

Arrhythmias	Group 1	Group 2
Present	28	15
Absent	32	25
Total	60	40

DISCUSSION

It has been proved that substantial reduction in-hospital stay length has been associated with decrease of in-hospital charge with no increase in post-discharge mortality.⁸ Few authors in previous studies have concluded that patients with low risk of subsequent complications can be safely discharged within 2 days following primary PCI, however, it is important to focus on the fact that lesser hospital stay limits time for appropriate patient rehabilitation and education. Hence, the clinical follow-up post-early discharge should be carried out to assess safety.^{9,10} Therefore, this study was conducted to study and evaluate the incidence and significance of acute myocardial infarction in early and pre discharged phase.

In the recent study, registrations of a total of 100 patients were done. Out of which, 60 patients were discharged early. It has been noted that in group 1, 48 patients were diagnosed with STEMI and 12 with NSTEMI. On the other hand, non early patients the STEMI were 27 and 13 were NSTEMI seen in group 2. Khaled S et al study, showed shortening of the hospital stay in patients admitted with acute myocardial infarction (AMI) has been found within the last decades. Out of 557 patients of AMI are treated with percutaneous coronary intervention (PCI), 310 (56%) were discharged early. Pilgrims and male patients were more prevalent in the early discharge group. Early discharged ones had significantly little comorbidities as compared to the other group of patients. In addition, they presented with ST-elevation myocardial infarction ($P = 0.04$) & cured more with primary percutaneous coronary intervention (PPCI) ($P = 0.04$). They had favourable coronary anatomy ($P = 0.01$ & 0.02 for left main and multi-vessel coronary artery disease), better hospital course, higher left ventricular ejection fraction compared to non-early discharged patients ($P = 0.006$ and < 0.001 for pulmonary edema and left ventricular ejection fraction post myocardial infarction).¹¹

In the recent study, the early discharged patients had better hospital outcomes related to the other group because they showed less amount of prevalence of post myocardial infarction pulmonary edema 1.7% ($P = 0.005$) and higher LVEF 40.62 ($P < 0.001$). Moreover, in another study of Shah JA et al, authors evaluated the incidence & risk factors & an outcomes of cardiac arrhythmias in the patients of AMI, primary percutaneous coronary intervention (PCI) of the index hospitalization, in between the first 24 hours. A total of 110 patients were taken; the mean age was 59.6 ± 13.1 years. Most of them were men (70.9%). 89.1% of the patients of arrhythmia has been noted, with 169 episodes. In the course of hospital, 65.5% raised arrhythmias during the balloon time arrival, 30% during the procedure, and 53.6% within 24 hours of the procedure. The in-hospital mortality rate was 15.5% with a particular association with the lethal arrhythmias development within 24 hours of the procedure (21.1% vs. 5.1%; $p = 0.026$).¹² In another similar study conducted by Albanese M et al, authors observed that most of the malignant arrhythmias occurred within 96 hours of MI and found to be associated with an increased mortality rate.¹³ Today, the preferred acute management strategy of STEMI is PCI of the infarct lesion if the patient is in a hospital with these capabilities. Otherwise, thrombolytic agents are still used when PCI cannot be performed rapidly after a patient's presentation, usually because the patient is admitted to a non-PCI-performing hospital.¹⁴ Most of the studies engaged with early discharge developed practical score for risk stratification of their AMI patients to identify the patients with low risk of subsequent complications who do not need an extensive in-hospital monitoring and observation.^{15,16}

CONCLUSION

From the above results, the authors concluded that early and safe discharge in selective patients with AMI is considered better.

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