ORIGINAL ARTICLE

Role of Trimetazidine (vestral MR) in Acute Myocardial Infarction

HAMAD RAZA, NAHEED HASHMAT * FARAH SHAFI, *SAMEENA AKRAM*

ABSTRACT

Introduction: The coronary artery disease is the leading cause of death in U.S., Europe and in developed countries.

Objectives: To assesses the clinical benefit of use of trimetazidine in acute MI along with thrombolytic therapy. 100 patients with acute MI were included in this study.

Subjects and methods: This study was carried out in the Departments of Medicine at Sir Ganga Ram Hospital and Services Hospital, Lahore on 100 patients fulfilling the criteria for acute MI during the 1 year study period.

Results: One hundred patients were included in group I and group II (50 patients each).In group –I, 50 patients were treated with thrombolytic therapy i.e. Streptokinase alone. In group- II**,** 50 patients were treated with streptokinase along with trimadizidine. These patients were followed up till six month and complications like arrhythmia, congestive cardiac failure, bleeding, re-infarction, angina and death were compared between two groups.

Key words: Vestral MR, acute MI, Trimetazidine

INTRODUCTION

The coronary artery disease is the leading cause of death in U.S., Europe and in developed countries[1]. In 2001 CAD accounted for 54% of all deaths due to cardiovascular disease and was the single most cause of death in the United States[2]. No such data for Pakistan population is available. The cardiovascular disease epidemic in developing countries is highlighted in report of W.H.O[3].

Nearly 85% of global mortality and disease burden from CVD is borne by low and middle income countries like Pakistan. Population survey of 2003 conducted in Karachi, in individual age above 40 years, has suggested an overall prevalence rate of 26.9% in men and 30% in women. Several studies have shown that mortality on average is approximately 2-3% per annum and further 2-3% sustain non-fatal MI. The treatment option for acute MI available in our part of the world are thrombolytic therapy more commonly streptokinase, PCI and By-Pass surgery[4]. During acute MI there is central necrosis which is surrounded by variable amount of viable but dysfunctional myocardium due to metabolic derangements produced by hypoxia[5]. During normal healthy condition the heart derives most of its energy, i.e. 2/3rd from the Free Fatty Acid (FFA) and 1/3rd from Glucose Oxidation and lactate. During hypoxia produced due to reduced blood supply the cellular level glucose uptake is decreased and conversion to lactate is increased and then cellular acidosis is produced[6]. The FFA pathway is also slowed down and ATP production is decreased. These metabolic derangements cause disruption of cell function and cell membrane damage which ultimately leads to arrhythmias, contractility failure and electro-physiological abnormalities[7]. Therefore if we can prevent viable but dysfunction myocardium around the necrotic myocardium by addition of agents which prevent above metabolic derangements, like 3KAT inhibitor (trimetazidine) which increase the glucose and lactate combustion and prevent the cellular acidosis. So complications during acute MI and post MI can be prevented [8]. This study assesses the clinical benefit of use of trimetazidine in acute MI along with thrombolytic therapy. 100 patients with acute MI were included in this study. The patients in which trimetazidine was used the complications like arrhythmia, CCF and post MI angina were compared to the other group in which only thrombolytic therapy was used.

MATERIAL AND METHODS

One hundred patients fulfilling the criteria for acute MI during the 1 year study period were included in this study. In all patients complete history about the risk factors and contraindications for Streptokinase was taken and detailed examination was done and cardiac enzymes; CK-MB, Trop-T, and ECG were carried out. Blood C/E, Urine C/E, Lipid Profile, uric acid, BSR were carried out in all patients. The acute MI was confirmed by cardiac enzymes and ECG changes.

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*Department of Medicine, Sir Ganga Ram Hospital/Fatima Jinnah Medical College, Lahore * SIMS Services Hospital, Lahore.*

Correspondence to Dr. Hamad Raza, Associate Professor Medicine Email: raza.hammad@yahoo.com

After confirmation half i.e. 50 patients were given streptokinase and trimetazidine as early as possible and the remaining 50 with only Streptokinase and follow up for 6 months was done.

Criteria for inclusion

1. Open to all groups above 16 and both sexes.
2. Patients of acute MI confirmed by ECG and Cardiac enzymes.

Criteria for exclusion

1. Unstable angina
2. Patients having contraindications to SK.
3. Patients with Chronic Kidney Disease and Chronic Liver Disease.

RESULTS

In this study 100 patients were included who full filled the criteria for acute myocardial infarction.

In group –I, 50 patients were treated with thrombolytic therapy i.e. Streptokinase alone. In group- II, 50 patients were treated with streptokinase along with trimadizidine. These patients were followed up till six month and complications like arrhythmia, congestive cardiac failure, bleeding, re-infarction, angina and death were compared between two groups. The mean age in males was between 45 and 50 as shown in fig. I

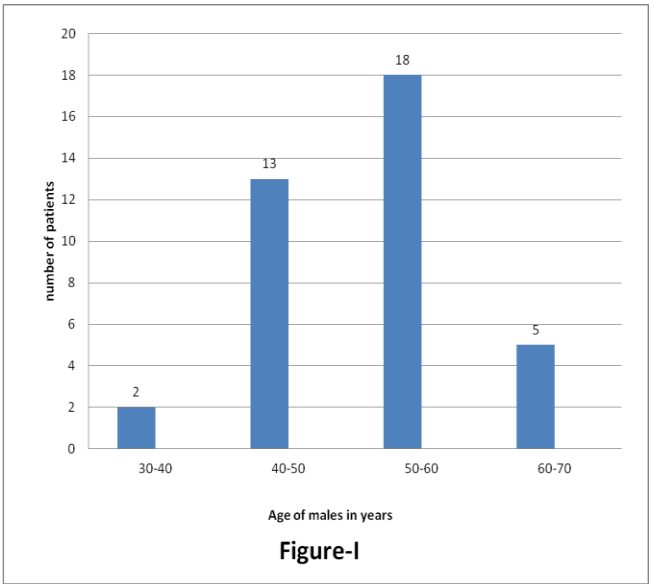


Figure-I

While mean age in females was between 50 and 55 years, as shown in figure 2.

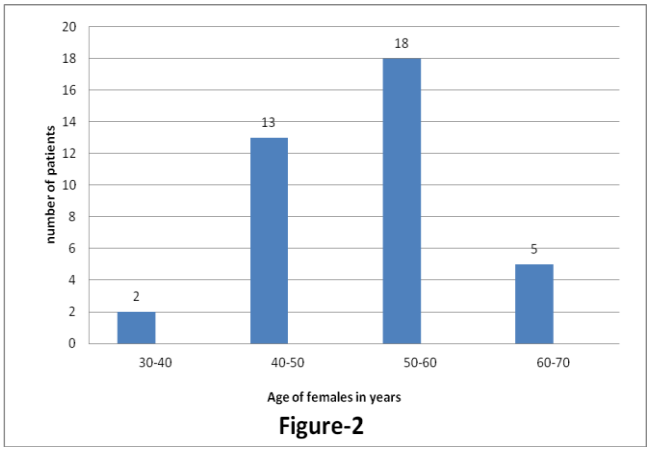


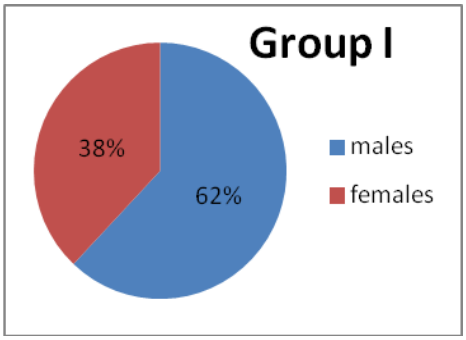
Figure-2

The most common risk factors in both Group-I and Group-II are smoking and only present in male. Although it was high in Group-I that is 12.5% as compared to Group-II that is 10.5%. the percentage of other risk factors like Diabetes Mellitus, Hypertension, Hyperlipidemia and Family history were same in both the groups I and group-II as shown in table 1.

Table 1: Risk factors for coronary heart disease in Group-I and Group-II

Risk Factors	Group-I [n50]	Group-II [n50]
Smoking	25 (50%)	21 (42%)
Diabetes Mellitus	10 (20%)	12 (24%)
Hypertension	10 (20%)	9 (18%)
Hyperlipidemia	3 (6%)	5 (10%)
Family History	2 (4%)	3 (6%)

The acute MI was present in 62% of the males and 38% of females in Group-I while 60% of males and 40% of females in Group-II. Therefore the male ratio was more in both groups as compared to females as shown in Figure 5.



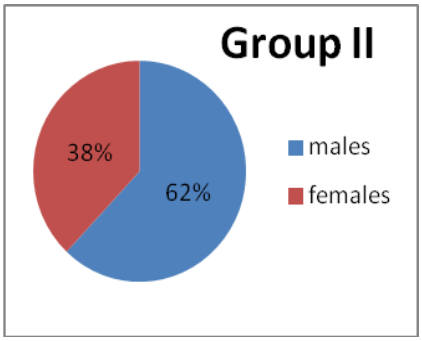


Figure-5

Regarding complication during thrombolytic therapy and follow up period the ventricular arrhythmia in Group-I was 14%, atrial fibrillation 13%, post –MI angina 20%, CCF 12% and bleeding 10% while in Group-II ventricular arrythmia was 2%, atrial fibrillation 2%, post MI angina 3%, CCF 6% and bleeding 8% as shown in Table-2.

Table 2: Complications during thrombolytic therapy and follow-up period in Group-I and Group-II

Complications	**Group-I (Streptoki-nase) [n50]**	**Group-II (streptokinase trimetazidine) [n50]**
Bleeding during SK	5 (10%)	6 (12%)
Ventricular arrhythmia	7 (14%)	2 (4%)
Post MI angina	10 (20%)	2 (4%)
Atrial fibrillation	7 (14%)	1 (2%)
CCF	5 (10%)	2 (4%)

DISCUSSION

In this study 100 patients were included who developed Acute Myocardial Infarction. They were divided into two groups: I and II. The group I was treated with only thrombolytic therapy while in group II trimetazidine was added along with thrombolytic therapy and continued for 6 months. The rate of complication and mortality was compared in both groups. In both the groups, the mean age was between 45 and 50 years in males while 55-60 years in case of female. This is quite similar to other studies where mean age was between 45-50 years [9]. In our study in males acute MI occurs in younger age as compared to other studies in Pakistan where it was between 55-64 years [10]. Male to female ratio in our study was 1.3:1 which is quit similar with other studies in which acute MI occurs more in males as compared to females [11]. Why the MI occurs in young age group in males might be due to typical presentation more common as compared to females in which atypical presentation of MI is more common and so delayed diagnosis of MI in women [12]. In persons older than 70 years no sex difference was noted.

About risk factors, smoking and HTN was more common in group-I patients as compared to group- II. Regarding the complications during thrombolytic therapy and the follow-up period the bleeding in group -I was in 10% patients while in group II, 12% patients which is quit similar in other studies where it was 15.9%[13]. The ventricular arrhythmia in group- I was in 12% patients while in group- II it was in 4% patients which was significantly less as compared to group-I while in other studies ventricular arrhythmia was about 8%[14]. Atrial Fibrillation in group-I was in 13% patients as compared to 3% patients in group-II. The congestive heart failure in group I was in 11% patients while in group II it was in 7% patients. The cardiac arrest was in 3 patients in group I revived after resuscitation while it was 1 patient in group II.

The post MI angina was in 20% patients in group I which is quite similar with other studies[15]. While it was in 6% patients in group II. Therefore the post MI angina was significantly less in group II patients as compared to group I. During 6 months follow up the mortality in group I was in 8% patients while in group II it was 4% patient. Therefore the patient in which the trimetazidine was started along with streptokinase and continued for follow up period the post MI angina was significantly less as compared to group I in which this was not used. These findings are quite similar with other studies.

It is also observed that the rate of ventricular and supraventricular arrhythmias was also significantly less in group II patients using trimetazidine. The long term mortality rate was also less in group II patients as compared to group I patients.

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