ACUTE MYOCARDIAL INFARCTION - CLINICAL PROFILE OF 1000 CASES

ABDUL HAMEED SIDDIUQI, AZHAR MEHMOOD KAYANI***

SUMMARY

Acute myocardial infarction is the most common and potentially life-threatening cardiac emergency presenting to a hospital. Having significant mortality and morbidity, the emergency requires early recognition, efficient triage and prompt therapeutic, interventions for maximum benefit. We report clinical profile and management pattern of 1000 cases of myocardial infarction admitted at our institute. In our study, male/female ratio was 8:1. 21.4% were diabetics, 29.1% were hypertensives, 49.2% were current smokers and 9.1% cases had a family history of premature CAD. At the institute, 97.7% patients were given aspirin, 51.6% received SK, ACE inhibitors were given to 72.9% and beta blockers were administered in. 61.8% of patients Calcium antagonists were given to 16% patients, mostly due to some contra-indication to beta blockers. 5.2% had some form of bradyarrhythamia while 8% grade of ventricular arrhythmia. 13.2% patients died in hospital. Of these, 42% died of pump failure, 34% died due to cardiac arrest, 8% died due to refractory arrhythmias and rest due to miscellaneous causes. Mean hospital stay was 5.7 days. Overall in-hospital mortality was 13. 2%. General pattern of management and mortality compares with or is better than international reported figures and reflects high standard of professional care at the institute.

KEYWORDS

AMI, acute myocardial infarction, thyrombolysis, mortality.

INTRODUCTION

Acute myocardial infarction is a major public health problem in the industrialised as well as developing world. In the United States, nearly, 1.5 million people annually suffer from AMI. (1). Despite considerable improvement in management strategies of myocardial infarction, reflected by fall in death rate, over last several decades (in industrialised world), its occurrence is still a fatal event in about one third of patients. (1). AMI can have profound deleterious psycho-social. & economic ramifications as it often strikes an individual during the most productive years.

The exact epidemiological attributes of AMI in various Pakistani populations have not been documented in large series so far, nor have the clinical profiles of these patients been defined well. Since the information may have important clinical, therapeutic, logistic and administrative implications, there is a need for documentation of clinical profiles of AMI patients in various parts of the country, The data thus obtained will also reflect management patterns and quality of care in different institutions and important lessons. may be learnt by all interested in the concept of total quality management.

In this study, we report clinical profile of' 1000 consecutive patients who were admitted to Armed Forces Institute of Cardiology / National Institute of Heart Diseases, Rawalpindi between 1997 -1998

PATIENTS & METHODS

One thousand patients who were hospitalised in AFIC with diagnosis of acute myocardial infarction between 1997 & 1998 were included in this prospective observational study. Patients of all ages and both sexes were included. The diagnosis of acute myocardial infarction was based on fulfilment of at least two of the three following criteria (i) typical pattern of ischaemic chest pain (ii) evolving pattern of electrocardiographic abnormalities and (iii) elevation of myocardial enzymes, (2). The catchment area of AFIC is enormous and patients from all social classes not only from Rawalpindi & Islamabad area,

* *Sqn Ldr Abdul Hameed Siddiqui, FCPS. Cardiology Resident, AFIC/NIHD Cot Azhar Mehmood Kayani, FRCP*

** *Consultant Cardiologist, AFIC/NIHD*

but from adjoining areas of Punjab, NWFP and Azad Kashmir are also referred to this hospital. Thus the study sample can be considered a true representative of our population.

The patients were studied in relation to their time of presentation, type of infarction, eligibility for thrombolysis & presence of associated major risk factors like diabetes, hypertension, smoking, hyperlipidemia etc.

The data on all patients was tabulated and subsequently analysed using commercial software SPSS (Statistical Package for Social Sciences). Student T test was used for comparison of numeric variables while Chi Square Test was used for comparing non numerical variables. A p value of .05 or less was considered significant

RESULTS

Mean age of presentation was 56.6 years (SD ± 11.48). 88.5 % were males and 11.5 %females. Male to female ratio was 8:1(885 males & 115 females). Mean duration of symptoms was 4 hours and 39 minutes with a range of 10 min to 72 hour, 98 % received nitrates and 57.7% Aspirin. 51.6% of patients received streptokinase (the criteria of giving SK therapy was based on (a) chest pain/equivalent consistent with acute MI < 12 hour from symptom onset, (b) 1 mm ST elevation in limb leads (two of three inferior leads or I and AVL) or 2 mm ST elevation in chest leads. (two of six precordial leads or ST segment depression in precordial leads V1-V4 consistent with posterior current of injury- "mirror sign") (c) New left bundle branch block). (3), All patients received heparin after SK as part of protocol. Those patients who did not receive thrombolytic therapy were also given heparin for 48 hours, 72.9% of patient received Angiotensin converting enzyme inhibitors, 61.8% beta blockers, 16% Ca++ antagonist (NON Q MI only). 49.2 % were smokers (who smoked > 10 cigarettes / day), 29.1 % were hypertensives, and 21.4 diabetics (these patients included those who were already on oral hypoglycaemics / insulin and antihypertensives). 9.1% of patients had positive family history of ischaemic heart disease. Mean cholesterol concentration was 182.5mg/dl (SD ± 44.84), mean LDL concentration 110.89mg/dl (SD ± 38.53), mean triglyceride concentration 153 mg/dl (SD ± 104.99), mean CPK elevation was 1413.32 u/l (SD ± 1511.27), mean CK-MB 54.81 u/l (SD ± 71.93), mean LDH 1335.39 u/l (SD ± 1016.60). Mean door to needle time was 15.6 minutes with a range of 5 to 45 minutes. Mean hospital stay was 5.7 days (SD ± 4.7).

Out of this population of patients, 10.2% were non-Q MI and 89.8% were Q wave MI. Out of the Q wave MI, 42.7 % were anterior, 30.7% inferior, 15% posterior, 1.4% lateral, 2.8% anteroseptal, 2% inferolateral, 1% inferior + right ventricular 1.2% anterolateral 1.1 %inferior+ post.

17.6% of patients developed left ventricular failure during the course of their hospitalisation. 94.8% patients remained in normal rhythm while 5.2% developed various bradyarrhythmias. Out of these 11.5 % developed sinus bradycardia but only 1.9% required temporary pacemaker. 21.2% patients developed complete heart block with good junctional escape rhythm while 44.2% patients had complete heart block requiring temporary pace maker. 1.9% had I st degree heart block and 7.7% had 2nd degree heart block. 3.6% had asystole / cardiac arrest. Only 6% of patients had PVC's during first 24 hours which required no treatment. 2% patients developed sustained ventricular tachycardia. ventricular fibrillation

Mean hospital stay was 5.7% days (4.7 days with a range of 0 to 11.9 days. Overall in hospital mortality was 13.2% Pump Failure was the leading cause of death, accounting for 42% deaths. Cardiac arrest was cause of death in 34% of cases. Refractory arrhythmias caused death in 8% and rest died due to

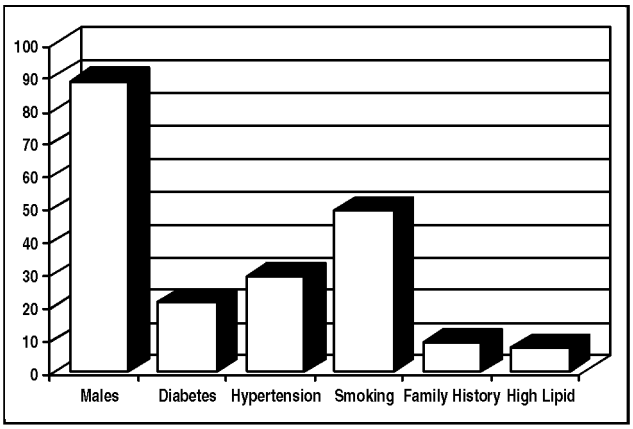
Table-1
CLINICAL PROFILE OF 1000 PATIENTS WITH AMI

Parameter	Mean	SD
Age (Years)	56.6	11.48
Peak CPK (U/L)	1413.32	1511.27
CK -MB (UIL)	54.81	71.93
Cholesterol (mg/dl)	182.85	44.84
Triglycerides (mg/dl)	153.99	104.99
LDL (mg/dl)	110.89	38.54
Hospital Stay (Days)	5.7	4.7
Uric Acid (mmole/1)	370.91	116.46

other causes.

Various attributes of our study population are shown in Table 1 and Figure 1.

Figure-1
RISK FACTORY PROFILE OF 1000 PATIENTS WITH AMI



DISCUSSION

The last one and a half decade has seen enormous progress in the management of acute myocardial infarction. Treatment strategies have almost undergone revolutionary changes. The therapy of myocardial infarction is now based on sound scientific principles, validated by large well, controlled randomised clinical trials. (4)

Aspirin as an anti-platelet agent has well established role in the setting of acute myocardial infarction and has been clearly documented to reduce mortality alone by 23%. (5). Thrombolytic therapy (the agents which had dramatic effects in mortality reduction in acute myocardial infarction) is now the cornerstone in the management of acute myocardial infarction. Despite the totality of evidence documenting the benefits of thrombolytic therapy and the lack of dispute about the mortality reduction observed in clinical trials, only approximately 35% of patients with acute AMI receive thrombolytic therapy in USA (6). In contrast , 51.6% of patients received thrombolytic, therapy at our institute. Administration of streptokinase entails about 24% reduction in risk of death in acute MI and this occurs whether or not concomitant anti-coagulation therapy is used. (4). For maximum myocardial salvage following successful reperfusion by thrombolytic agent, the earliest possible administration of thrombolytic agent is of paramount importance. It has been documented that myocardial necrosis can be prevented if reperfusion occurs within 30 minutes of acute occlusion. Maximum benefit occur if thrombolysis occurs before 3 hours but there remains substantial benefit upto six hours. Therefore a door-to-needle time (time taken in administration of SK after patient presents in emergency) of 15 minutes is considered ideal and speaks of efficient triage of an institution. In our study, mean door-needle time of 11 minutes is an indicator of our emergency services.

The efficacy of angiotensin converting enzyme inhibitors in the convalescent phase more than three days after the onset of symptoms) has also been well documented in clinical trials. (7, 8, 9). The administration of these drugs during the healing phase of infarction and thereafter in patients with left ventricular ejection < 40% whether symptomatic or not reduces morbidity and mortality (10). ACE inhibitors are now recommended in every patient with acute MI, to be started within first 24 hours and continued upto six weeks, unless there are contraindications. 72.9% of patients in the present study received angiotensin converting enzymes inhibitors. Beneficial effects of AEC inhibition in acute MI are related to their prevention of the process of ventricular remodelling. The process begins with in the early hours of acute infarction and leads to expansion of infarct zone due to slippage of myocytes followed by dilatation of non-infarct zone the degree of which depends upon infarct size patency of infarct related artery culminating in rise in left ventricular end systolic volume. The increase in myocardial wall stress as a result of ventricular dilatation has been thought to activate renin angiotensin system locally first through autocrine or paracrine mechanism resulting in increased angiotensin 11 levels long before increase in serum levels.(and also preceding changes in ventricular volume) which then presumably plays a role in the development of compensatory right and left ventricular hypertrophy. (11,12).

Significant benefits have been observed with the use of beta blockers early in acute myocardial infarction. The evidence is at least suggestive that beta blockers instituted with in few hours after the onset of symptoms of infarction may limit infarct size, Any

reduction in infarct size will have long term benefits not only in individual cardiac performance but also in the average survival time. These have also shown a reduction in the incidence of ventricular extra systole and fibrillation with use of these agents.(13). Beta blockers also reduce incidence of sudden death and re-infarction. 61.8% of patients were given beta blockers during acute phase of myocardial infarction at our institute. It has been mentioned that in at least 25-30% of patients, the beta-blockers have to be discontinued within 24 hours due to side effects. However, in our study, almost all those patients who were started on beta blockers. Continued their drug. This may be due to the fact that we did not start beta blockers in all patients, but only in those who had blood pressures and heart rates on higher side at the time of presentation. We had a tendency to reserve beta blockers in patients with overt to manifest LV dysfunction and used preload/afterload reducing drugs instead.

An overall in-hospital mortality of 13.2% is slightly higher than generally reported figure of 10.5% as reported in ISIS-3 trail (8). However, it needs to be kept in mind that our hospital, being a referral centre, receives proportionately larger number of critically ill patients from peripheral hospitals & medical facilities

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