TRENDS OF UTILIZING MEDICATION, RECOMMENDED BY EVIDENCE BASED GUIDELINES, FOR MYOCARDIAL INFARCTION, IN A TERTIARY CARE HOSPITAL, "TOO FAR BUT NOT TOO DARK"

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ABSTRACT

Background: Acute myocardial infarction (MI) is a major health problem with a substantial mortality and morbidity. Numerous guidelines have been established that should be followed in the management of acute MI. **Objective:** To determine whether the current practice in managing patients admitted with acute MI in a tertiary care hospital is evidence based compliant. **Patients & Methods:** This retrospective study was based on the record of the patients with diagnosis of MI admitted between January to June 2007, at Sheikh Zayed Hospital, Rahim Yar Khan, who fulfilled the predefined criteria. **Results:** Total number of cases were 58, mean age of the study subjects was 47 ± 8.65 years, with age range of 16 to 95 years. It was observed that 81% of study subjects were male. Half of the patients belonged to lower income group; Laborer and house wives were 31% and 19% respectively. Sixteen percent of patients were hypertensive and diabetic. 19 % were smoker and 5% had family history of coronary artery disease. Anterior and inferior wall MI were reported in 64% and 32% of the patients, respectively. Injection Streptokinase (SK) was given to 52% of the patients. Aspirin, clopidogril and nitrates were given to all patients, whereas 34 % and 36% were prescribed Beta blocker (BB) and statins, respectively. Angiotensin converting enzyme inhibitor (ACEI) was given in 43% patients. **Conclusion:** SK, the only means of acute revascularization was given in only 52% patients mainly due to delayed presentation. Use of Aspirin is an unbeatable target and given to all patients. Use of BB and statins in < 40% and ACEI in<50% is not optimal. However, these trends of cardiac medication in a tertiary care hospital with limited provision, reflects the diffusion of light of evidence based medicine into darkness of periphery.

Key Words: Acute Myocardial Infarction, Streptokinase, Revascularization, Evidence based guidelines.

INTRODUCTION

Acute myocardial infarction (MI) is a major health problem with a substantial mortality and morbidity.[1] Cardiovascular diseases account for 12 million deaths annually, worldwide. MI continues to be a significant problem in industrialized countries and is becoming an increasingly significant problem in developing countries.[2] The mortality from ischemic heart disease (IHD) has significantly decreased in most developed countries in recent years.[3] However, different trends have been observed in many developing countries.[4] The decline in incidence and decrease in mortality from IHD in the West is related to improvement in both primary and secondary prevention, resulting in reduction in sudden cardiac death and in-hospital mortality.[5] However, in the developing world, it is related to increasing incidence and prevalence of IHD and lack of acute cardiac care facilities. The management of patients with acute MI has been addressed in major trials to improve the survival and enhance the quality of life of the patients. Numerous guidelines have been established for the management of such patients.[5] Emergency physicians have for many years, focused their evaluation and targeted interventions for acute ST-segment elevation myocardial infarction (STEMI). Recent advances, both, in the understanding of pathophysiology and aggressive management of non-ST-segment elevation chest pain and ST-segment elevated chest pain have provided an increased capability to approach these elements of acute cardiovascular disease as well. Large scale clinical trials have identified numerous beneficial interventions for patients with STEMI that, can and should, be initiated in the emergency department (ED); such as aspirin, fibrinolytic agents, beta-blockers and angiotensin-converting enzyme (ACE) inhibitors, but these remain frequently underutilized for eligible patients with NSTE ACS.[6,7] The present study was designed to assess whether current practices in treating acute MI patients follow the evidence based guidelines in our tertiary care hospital.

PATIENTS AND METHODS

This retrospective study was based on the medical record of the patients with diagnosis of acute Myocardial Infarction (MI)-admitted between 1st

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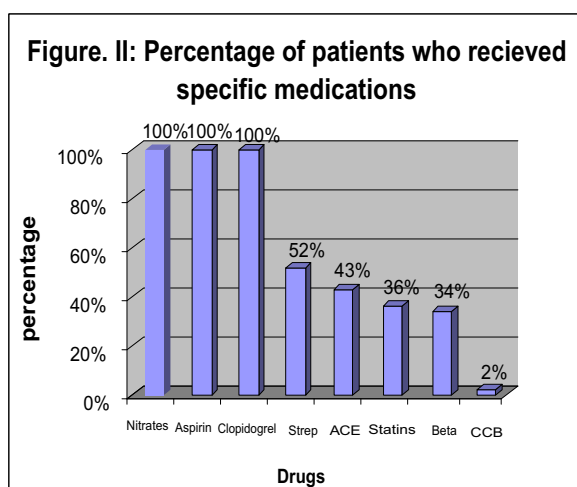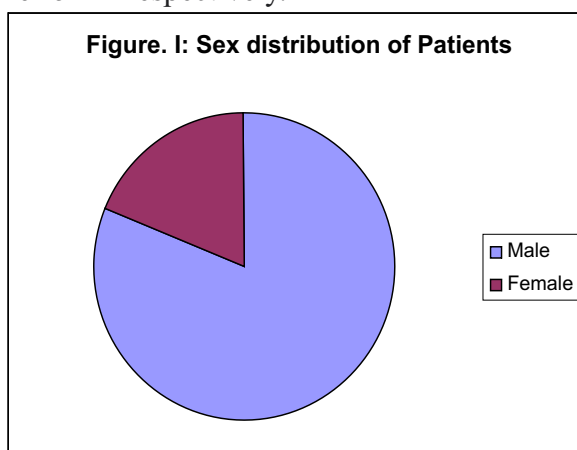4. National Institute of Cardiovascular Diseases Karachi

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January to 30th June, 2007, at Sheikh Zayed Hospital Rahim Yar Khan, who fulfilled the predefined criteria of WHO for diagnosis of acute MI.[8]

RESULTS

Total cases were 58, of which 81% were male (Figure I). 88% of the study subjects were below 60 years of age and between the range of 16 to 95 years. 50 % belonged to lower income laborer and house wife groups with 31% labour and 19% house wives.

It was observed that 16% of patients were hypertensive and diabetic, 19 % were smokers, 5% had family history of Coronary Artery Disease, 64 % and 32 % had anterior MI and inferior MI respectively.

Figure. I: Sex distribution of Patients

- Male
- Female

Figure. II: Percentage of patients who recieved specific medications

Streptokinase (SK) was given to only 52% of the patients, whereas; nitrates, clopidogril and aspirin were given to all (100%); 34 % and 36% were prescribed beta blockers (BB) and statins, respectively. Angiotensin converting enzyme inhibitors (ACEI) were given in 43% patients, calcium channel blockers were given to 2% of cases (Figure II).

DISCUSSION

This study was conducted in a tertiary care hospital of southern Punjab that provides health care to patients from Southern Punjab, neighboring Balochistan and Upper Sindh. Present study revealed that out of a total of 58 cases, males were predominant. Our study has revealed that aspirin, nitrates and clopidogril were given to all patients; whereas administration of SK, BB, statins and ACEI (52%, 34%, 36% and 43% respectively) was far from optimal.

Even in developed countries like America, despite considerable investment in the development and dissemination of national guidelines for the management of acute myocardial infarction (AMI) it is reported that quality of care for Medicare beneficiaries with AMI was far from optimal.[9,10] Many subsequent studies have shown similar disappointing adherence to the therapies recommended in published guidelines.[11,12] Hospitals that strictly adhered to laid down protocols have a better outcome as far as patient morbidity and mortality is concerned. The under use of evidence based treatment may in fact be harmful to patient as shown by the extensive study (4578 patients) conducted by Yan RT et al across 9 provinces in Canada.[13]

In a multicenter, cross national study by Goldberg RJ et al, relatively steady increases in the use of ACE inhibitors, beta-blockers and statin therapy were observed over time, with particularly marked increases in the use of lipidlowering therapy (from 45% in 2000 to 85% in 2005). Aspirin use remained highest (95% of patients after AMI). The higher rates of use of BB and aspirin was found to have contributed to the better survival outcome in some of America's best hospitals, as compared to others.[14] The percentage of hospital survivors treated with all 4 cardiac drugs increased from 23% in 2000 to 58% during 2005.[15] In another study, it was revealed that although internationally, strong evidence exists for American Heart Association guidelines for treatment of acute myocardial infarction, therapies are widely underutilized.[16] There is also a difference in quality of care provision between urban and rural hospitals. Lower number of patients in rural hospitals received optimal medication including aspirin and beta blockers.[17] In a study, by Rajendra H et al, after an intervention to improve the quality of care to AMI

patients, it was shown that increase in adherence to key treatment was seen with utilization of following key drugs at the end of intervention; administration of aspirin 87% and Beta-blockers 74% on admission and smoking cessation counseling 65% at discharge.[18] Our study has revealed that use of aspirin was even better i.e 100% patients got aspirin on admission. However, only 34% of the AMI patients in our study received ß-blockers which is almost half of the above study.

Our study results show that medication for treating MI are not consistent with the evidence based guidelines, as Streptokinase (SK) was given only to 52 % of the cases, mainly due to the fact that the total time recommended for SK infusion had elapsed. The causes of this delayed presentation may be related to traveling from far-flung areas for seeking treatment of MI. In addition, financial constraints may also have limited the use of SK. It has been shown that patients receiving SK for acute MI have significantly lesser in hospital mortality as compared to patients who do not receive it.[19] 34 %, 36% and 43% patients of MI were prescribed ß-blocker (BB), statins and Angiotensin converting enzyme inhibitor (ACEI), respectively. In addition to Aspirin that was given to 100% of patients in our study, clopidogril and nitrates were also given to all the patients. The evidence from literature has shown that many different types of initiatives are tried worldwide to improve medical care to AMI patients and to follow evidence based guidelines.[9,10] In a quality improvement initiative it was observed that it is correlated with more frequent use of reperfusion therapy (98%), and with aspirin use in the emergency department (95%), in ideal eligible patients. Similarly, adherence to discharge quality indicators, including use of aspirin (97%), ß-blockers (94%), angiotensin-converting enzyme inhibitors (90%), and lipid-lowering agents (67%); avoidance of calcium channel blockers (93%); a low-fat diet (96%); smoking cessation counseling (94%); and outpatient rehabilitation referral (70%) was higher, including in the very old (those aged= 80 years) and in women.[20]

CONCLUSION

Injection Streptokinase, the only means of acute revascularization was given in 52% patients. Use of Aspirin is an unbeatable target, and given to all the patients. Use of BB & statins in <40% and ACEI in <50% is not optimal. However, these trends of cardiac medications at a newly established tertiary care hospital with limited provision, reflects the diffusion of light of evidence based medicine into darkness of periphery. Furthermore, it is suggested that for improving the quality of care in AMI patients and to ensure that the guidelines are followed, a comprehensive dissemination plan must be initiated in Pakistan.

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