Management of acute myocardial infarction

Do we follow guidelines applied in practice?

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ABSTRACT

Objective: Acute myocardial infarction (MI) is a major health problem with a substantial fatality and morbidity. 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. The objective of this study is to determine whether the current practice in managing patients admitted with acute MI in a major community hospital in Riyadh is evidence based compliant.

Methods: The data were collected from patients admitted to the Coronary Care Unit (CCU), Riyadh Medical Complex (RMC), Riyadh, Kingdom of Saudi Arabia, a 1500 bed community hospital, with a diagnosis of acute MI over one-year period (April 1999 to April 2000). The administration of different therapeutic modalities upon admission as well as discharge medications was obtained. Patients outcome (all cause mortality) post treatment were collected. The data was analyzed and compared with the current guidelines.

Results: A total of 335 patients, 315 males (94%), were admitted to the CCU of RMC with a diagnosis of acute MI. Two hundred and seventy-one patients (80.9%) received thrombolytic therapy. Discharge medications were beta-blocker in 255 (76.1%), angiotensin converting enzyme inhibitors in 206 (61.5%), nitrates in 281 (83.9%), hypolipidemic agents in 15 patients (4.5%), and aspirin in all patients. The outcome of these patients obtained either alive or dead was 313 (93.4%) and 22 (6.6%) ($p<0.00001$).

Conclusion: The patients with acute MI received management compliant with evidence-based practice. However, more awareness to the use of angiotensin converting enzyme inhibitors as well as hypolipidemic agents is needed to provide maximum benefit to these patients. Moreover, national guidelines for the management of acute MI are needed for improvement of quality of care.

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Treatment and secondary prevention of myocardial infarction (MI) have been improved, which has led to better patient outcome.[1] Several modalities have proved beneficial in the management of the patient with acute MI. These include aspirin, thrombolysis or direct angioplasty, beta-blockers, angiotensin converting enzyme (ACE) inhibitors, and nitrates.[2-23] Many studies have shown disappointing adherence to the therapies recommended in published guidelines for the treatment of acute MI.[24-27] We conducted this study to audit the current practice of utilizing new modalities in the treatment of patients with acute MI in a large community-based hospital in Riyadh, Kingdom of Saudi Arabia (KSA).

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Methods. Over one-year period from April 1999 to April 2000, data was obtained from the files of patients admitted to the Coronary Care Unit (CCU), Riyadh Medical Complex, Riyadh, KSA with a diagnosis of acute MI. Confirmation of acute MI was based on compatible symptoms; electrocardiographic findings as well as cardiac enzyme rise consistent with acute MI. Information regarding the administration of aspirin, thrombolysis, beta-blockers, ACE inhibitors, and nitrates were collected. The outcome of patients was also obtained. Other information pertaining to patients' age, sex, risk factors for coronary artery disease, and discharge medications were collected.

Results. The total number of patients who fulfilled the criteria for the diagnosis of MI was 335. Males were 315 (94%), non-Saudis accounted for 253 patients (75.5%), current smoking was reported by 206 patients (61.5%), whereas diabetes mellitus, hypertension and hypercholesterolemia were identified risk factors among 99 (29.5%), 78 (23.3%), and 11 patients (3.3%). Anterior MI was shown by electrocardiogram (ECG) in 148 (44.2%) patients, and 146 (43.6%) had inferior MI. 271 patients (80.9%) received thrombolytic therapy, while 64 (19.1%) did not received thrombolytic therapy for some reasons (**Table 1**). Post MI complications were arrhythmia in 54 patients (16.1%), pericarditis in 12 patients (3.6%), cardiogenic shock in 18 patients (5.3%), ventricular septal defect in one patient (0.4%), and heart blocks in 10 patients (3%). Patients who were discharged alive were 313 (93.4%) 11 of 271 patients (4%) who received thrombolytic therapy died while a similar number of the remaining 64 patients (17.2%) who did not receive this medication died. Discharge medications were beta-blockers in 255 (76.1%), ACE inhibitors were administered in 206 (61.5%). There were no clear contraindications to the administration of ACE inhibitors to the rest, nitrates in 281 (83.9%), hypolipidemic agents in 15 patients (4.5%), and aspirin in all patients (**Table 2**).

Discussion. Acute MI is a devastating event that carries tremendous consequences to the patients as well as their families. Hence, the management of MI became almost an obsession to physicians and particularly cardiologist throughout the world. Many studies have been conducted evaluating different modalities of therapy to improve the outcome of patients with acute MI. It is important for the treating physician to provide the best of care to the patients. Therefore, the conclusive evidence coming out of these major trials needs to be applied in general practice. The American College of Cardiology or American Heart Association provided practical guidelines for the management of patients with acute MI.[28] In this report, administration of an ACE inhibitor preferably within the first 24 hours to all patients without a contraindication was recommended. An oral beta-blocker should be continued or begun if the patient has not received early intravenous therapy. The major benefit of beta-blockade appears to occur in the early post-MI period; however, the improvement in outcome persists for at least 2-6 years.[29] Meta-analyses of post-MI trials in which an ACE inhibitor was given to patients after an acute MI for a median of 31 months found the following benefits with ACE inhibition; a significant reduction in mortality, a reduction in the incidence of readmission for heart failure, as well as a reduction in the incidence of reinfarction.[30] Our data showed that all patients admitted with a diagnosis of acute MI received Aspirin. Nonetheless, only 61.5% received ACE inhibitor, while 76.1% received beta-blocker treatment. Improvement in care could

Table 1 - Reasons for not administering thrombolytic therapy (N = 64).

Reason	n (%)
Late presentation (> 12 hours)	44 (68.8)
Post cardiopulmonary resuscitation	6 (9.4)
Previous thrombolytic therapy(streptokinase)	5 (7.8)
Recent stroke	1 (1.6)
Gastrointestinal bleeding	1 (1.6)
Pregnancy	1 (1.6)
Others*	6 (9.4)

*Others: reasons felt by treating physician to carry more harm than benefit when administering thrombolysis; namely, pericarditis, spontaneous reperfusion.

Table 2 - Medications post acute myocardial infarction.

Medication	Patients n	(%)
Aspirin	335	(100)
Beta-blockers	255	(76.1)
ACE I	206	(61.5)
Nitrates	281	(83.9)
Hypolipidemic agent	15	(4.5)

ACE - angiotensin converting enzyme

only be achieved with adherence to guidelines. This was clearly shown from the data of the guidelines applied in practice (GAP) reporting higher level of adherence observed at re-measurement for early quality indicators when acute MI standardized orders were evident in the medical records. The use of Aspirin rose from 76-98%, beta-blockers from 62-100%, as well as ACE inhibitors from 80-89%.[31] Furthermore, modification of known risk factors to coronary artery disease needs to be implemented prior to discharging patients, namely, meeting new guidelines for cholesterol levels as well as documentation of smoking cessation counseling. Therefore, for the purpose of standardization of care, there is an emerging need for national guidelines for the treatment of patients with acute MI. Moreover, CCU management guidelines should keep in line with the national guidelines to provide high quality of medical care.

In conclusion, therapy for patients admitted with acute MI has improved over the past decade. This improvement has been translated into better outcome of patients. The use of different modalities of therapy was effectively utilized in the CCU of RMC although there is room for improvement. More important, the need for national guidelines to follow in the management of patients with acute MI is essential for standardization of therapy.

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