Medical Management of ST elevation Myocardial infarction -Where are we?

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ABSTRACT

Background and Aims: *Despite well developed guidelines in the management of ST elevation myocardial infarction, registries worldwide have demonstrated incomplete implementation of evidence-based recommendations. Our study aims to assess the adherence of our practices to the recommended clinical guidelines, which is based on the discharge prescription in Shahid Gangalal National Heart Centre.*

Methods: *Medical records of 495 ST elevation myocardial infarction patients discharged from our centre in between January 2012 to December 2012 were retrospectively reviewed.*

Results: *Among the 495 patients included in this study, 372 (75.1%) were males and 123 (24.9%) were females. The mean age was 56.9±12.4 years.*

Aspirin, Clopidrogel and statin were prescribed in more than 95% of the patients. Angiotensin Converting Enzyme inhibitor/ Angiotensin Receptor blockers was prescribed more often than β-blockers. Only a small numbers of patients were discharged without Angiotensin Converting Enzyme inhibitor /Angiotensin Receptor Blockers or β-blockers.

Conclusions: *Usage of Aspirin, clopidogrel, statins, beta blockers and Angiotensin Converting Enzyme inhibitor/ Angiotensin Receptor Blockers s is comparable to international studies. We still need some effort to increase improve our prescription rate of β-blockers and Angiotensin Converting Enzyme inhibitor/ Angiotensin Receptor Blockers.*

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Keywords

Aspirin; β-blocker; Medical Management; Statin; ST elevation myocardial infarction.

INTRODUCTION

Outcomes in ST elevation myocardial infarction (STEMI) patients can be improved by medical therapies (e.g., statins, antiplatelts, β-blockers etc).[1] . They are cost-saving, cost-effective, and are considered 'best buys' by the World Health Organization.[2] Despite well developed guidelines, [3,4] registries worldwide have demonstrated incomplete implementation of evidence-based recommendations. [1,5,6,7,8,9,10] Our study aims to assess the adherence of our

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practices to the recommended clinical guidelines, which is based upon the medicine prescribed during the discharge in Shahid Gangalal National Heart Centre.

METHODS

It is a retrospective, single centre study, performed at Shahid Gangalal National Heart Centre, Bansbari, Kathmandu, Nepal. Discharge summaries of 495 acute STEMI patients who were admitted for the first time and were discharged in between January 2012 to December 2012 were retrospectively reviewed. Performa was designed to collect patient information which included; age, gender, diabetes, dyslipidemia, hypertension, smoking status, left ventricular function and the discharge prescriptions were recorded.

Cardiovascular risk factors were defined according to American College of Cardiology Key Data Elements and Definitions for Measuring the Clinical Management and Outcomes of Patients with Acute Coronary Syndrome.

1. Smoking: History confirming cigarette smoking (regularly smokes one or more cigarettes per day)
2. Dyslipidemia: History of Dyslipidemia diagnosed and/or treated by physician or meets the criteria of National Cholesterol Education Program:

a. Total cholesterol (TC) greater than 5.18 mmol/l; or

b. Low-density lipoprotein (LDL) greater than or equal to 3.37 mmol/L; or

c. High-density lipoprotein (HDL) less than 1.04mmol/L.

3. Hypertension (HTN): defined as blood pressure ≥ 140/90 mmHg or on treatment.
4. Diabetes (DM): defined as a fasting glucose ≥ 7.1 mmol/L or on treatment.

All the variables were entered into the Statistical Package for Social Sciences software, version 14 (SPSS Inc) for data analysis. Descriptive statistics were computed and presented as means and standard deviations for continuous variables like age and Left Ventricular Ejection Fraction (LVEF), categorical variables were reported in percentages for the gender, hypertension, diabetes mellitus, dyslipidemia.

RESULTS

A total of 495 patients were included in this study. Table-1 shows the demographic and clinical characteristics of the studied cohort. The mean age was 56.9±12.4 years. A total of 495 patients who were admitted in the Department of Cardiology in the hospital during the study period was analyzed according the to the study parameters. Of the total number of patients included in the study, 372 (75.1%) were males and 123 (24.9%) were females.

Table 1. Demographic and clinical characteristics

Demographic and clinical character	n=495 (%)
Mean Age	59.0+12.6 years
Total cholesterol	4.2±0.9 mmol/L
HDL	1.0±0.1 mmol/L
LDL	2.3±0.8 mmol/L
Fasting Blood Sugar	6.7±2.9 mmol/L
LVEF	45.9±12.7 %
Male	372 (75.1)
Female	123 (24.9)
Thrombolysis (Streptokinase)	53 (10.7)
Primary Percutneous Coronary Intervention	79 (15.9)
LVEF <40%	171 (34.5)
LVEF >40%	324 (65.5)
Hypertension	324 (65.5)
Diabetes	154 (31.1)
Dyslipidemia	225 (45.5)
Smoking	286 (57.8)

Aspirin,Clopidrogel and Statin were prescribed in more than 95% of the patients. Angiotensin Converting Enzyme inhibitor (ACEI)/ Angiotensin Receptor Blockers(ARB) was prescribed more commonly than β-blockers. Only small numbers of patients were discharged without ACEI/ ARB or β-blockers.

Table 2. Drugs distribution

Drug name	Number	Percentage
Aspirin	488	98.5
Clopidrogel	474	95.7
Statin	485	98.7
β-blockers	336	67.8
ACEIs / ARBs	335/55	67.7/11.1
No β-blockers +No ACEIs / ARBs	42	8.4
B-blockers +ACEIs/ARBs	271	54.7
ACEIs/ARBs only	119	24.1
B-blockers	65	13.1
Nitrates	225	45.5

DISCUSSION

Discharge prescription in the STEMI survivors provides information about the adherence to the clinical guidelines of the institute. Along with life style modification, medicine plays an important role in the secondary prevention of the disease.

The higher proportion of male patients (75.1%) in our study is similar in registries from Kerala[10] (77.4%), Poland[7] (64%), and Taiwan[1] (84.3%). In our study mean age of our patients was 59.0+12.6 years which is similar to the registries from Kerala[10] (60.4±12.1), Poland[7] (64.0±12.4) and Taiwan[1] (61.1±13.6).

Though numerous studies have demonstrated the benefits of antiplatelet therapy in management of cardiovascular diseases,[11,12] however, it is under utilized in the real world scenario.[13,14]In our study aspirin and clopidrogel was prescribed in 98.5% and 95.7% patients which is higher than the prescription rate in Taiwan[1] (80.3% and 84.6%), Poland[7] (85% and 62%) and Kerala ACS Registry India[10] (75% and 77.1%).

The initiation or continuation of high-intensity statins is a class I recommendation in all patients with STEMI. It is prescribed in 98.7% patients in our patients which is comparable to the studies from Poland [7](81%), Taiwan [1](64.7%), China[9] (96.2%), Kerala registry [10] (69%).

Use of beta blockers and ACEIs/ARBs were given a great importance in the guidelines for the secondary prevention. In our study 67.8% of the patients were treated with a β-blocker at the time of discharge, whereas 78.8% of the patients were treated with ACEI/ARB. When we compared with the international studies our prescription rate was comparable 56.7% β-blocker and 29.4% ACEIs/ARBs in Kerala registry [10], close to 90% β-blocker and 85% ACEIs in China[9], 76% β-blockers and 72 % ACEIs in Poland and[7] 57% β-blockers and 68.6% ACEIs/ARBs in Taiwan.[1]

Though the ACC/AHA guideline states that there is no role for the routine use of oral nitrates in the convalescent phase of STEMI. In our study 45.5% of the patients received nitrate. Its use varies from 36% in Poland[7], 69% in Kerala registry.[10] Its use in China[9] vary between the hospitals from 54.3% in a tertiary hospital to 63.3% in other hospitals.

The limitations of this study are; it is a retrospective, observational, non-randomized study that depends only on the data of a single centre. However, this study provides valuable reflection of our day to day practices.

CONCLUSION

Though our medical management is comparable to international studies we still need some more effort to improve our prescription especially stressing on β-blockers and ACEIs/ARBa. We also need a follow up study to ensure that our patients are complying well with the medications we have prescribed.

REFERENCES

1 Kou-Gi Shyu, Chiung-Jen Wu, Guang-Yuan Mar,Charles Jia-Yin Hou, Ai-Hsien Li, Ming-Shien Wen,et al. Clinical Characteristics, Management and In-Hospital Outcomes of Patients with Acute Coronary Syndrome _ Observations from the Taiwan ACS Full Spectrum Registry. Acta Cardiol Sin 2011;27:135-44.

2 Global Status Report on Noncommunicable Diseases 2010. World Health Organization. Geneva, Switzerland, 2011.

3 Patrick T. O'Gara, Frederick G. Kushner,Deborah D. Ascheim, Donald E. Casey, JR, Mina K. Chung, James A. de Lemos, Steven M. Ettinger, et al. A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. 2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction. J Am Coll Cardiol. 2013;61(4):485-510. http://dx.doi.org/10.1016/j.jacc.2012.11.019 http://dx.doi.org/10.1016/j.jacc.2012.11.018

4 Ph. Gabriel Steg,Stefan K. James , Dan Atar , Luigi P. Badano, Carina Blo¨mstrom-Lundqvist,Michael A. Borger et al. The Task Force on the management of ST-segment elevation acute myocardial infarction of the European Society of Cardiology (ESC). ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation. European Heart Journal 2012;33, 2569–2619 http://dx.doi.org/10.1093/eurheartj/ehs215

5 Chew DP, Amerena JV, Coverdale SG, et al. Invasive management and late clinical outcomes in contemporary Australian management of acute coronary syndromes:observations from the ACACIA registry. Med J Aust 2008; 188: 691-697.

6 Aliprandi-Costa B, Ranasinghe I, Chow V, et al.Management and outcomes of patients with acute coronary syndromes in Australia and New Zealand, 2000–2007. Med J Aust 2011; 195:116-121.

7 Lech Poloński, Mariusz Gąsior, Marek Gierlotka, Zbigniew Kalarus, Andrzej Cieśliński, Jacek S. Dubiel et al. Polish Registry of Acute Coronary Syndromes (PL-ACS) Characteristics, treatments and outcomes of patients with acute coronary syndromes in Poland. Kardiol Pol 2007; 65: 861-872

8 Mohammad Zubaid MB,On Behalf of Gulf RACE. Preliminary results from GULF registry of Acute coronary events (GULF RACE). Heart Views 2008;8(4) 155-158

9 Yiping Chen1, Lixin Jiang, Qiuli Zhang, Xiaoshuai Wei, Xi Li, Margaret Smith,et al. Doctor-reported hospital management of acute coronary syndrome in China: A nationwide survey of 1029 hospitals in 30 provinces. World Journal of Cardiovascular Diseases 2012;2: 168-176. http://dx.doi.org/10.4236/wjcd.2012.23029

10 Padinhare Purayil Mohanan, Rony Mathew, Sadasivan Harikrishnan,Mangalath Narayanan Krishnan, Geevar Zachariah, Jhony Joseph,et al, on behalf of the Kerala ACS Registry Investigators. Presentation, management, and outcomes of 25748 acute coronary syndrome admissions in Kerala, India: results from the Kerala ACS Registry. European Heart Journal 2013; 34 (2): 121-129. http://dx.doi.org/10.1093/eurheartj/ehs219

11 Sabatine M, Cannon C, Gibson C, et al. Addition of clopidogrel to aspirin and fibrinolytic therapy for myocardial infarction with ST-segment elevation. N Engl J Med 2005;352:1179-89. http://dx.doi.org/10.1056/NEJMoa050522

12 Chen Z, Jiang L, Chen Y, et al. Addition of clopidogrel to aspirin in 45,852 patients with acute myocardial infarction: randomized placebo-controlled trial. Lancet 2005;366:1607-21. http://dx.doi.org/10.1016/S0140-6736(05)67660-X

13 Bhatt D, Steg P, Ohman E, et al. International prevalence, recognition,and treatment of cardiovascular risk factors in outpatients with atherothrombosis. JAMA 2006;295:180-9. http://dx.doi.org/10.1001/jama.295.2.180

14 Patrono C, Bachmann F, Baigent C, et al. Expert consensus document on the use of antiplatelet agents. The task force on the use of antiplatelet agents in patients with atherosclerotic cardiovascular disease of the European society of cardiology. Eur Heart J 2004;25:166-81. http://dx.doi.org/10.1016/j.ehj.2003.10.013