Original research article

To determine the prescription pattern of drugs used in myocardial infarction in Bihar region: an observational study

Dr. Indrajit Kumar[1], Dr. Trishla[2], Dr. Kamlesh Kumar[3]

[1]Assistant Professor, Department of Medicine, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India

[2]PG. Final Year, Department of Pharmacology, Patna Medical College and Hospital, Patna, Bihar, India.

[3]Associate Professor, Department of Medicine, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India

Corresponding Author: Dr. Kamlesh Kumar

Abstract

Aim and objective: the aim of the present study was to determine the prescription pattern of drugs used in myocardial infarction in Bihar region.

Material and methods: This was a Retrospective observational and analytical study was done in the Department of Medicine, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar for one Year. Total 100 patients were included in this study. The data from the case records of all patients admitted to hospital with a diagnosis of AMI during study period.

Results: Total 100 patients case paper were analysed during one year study period. Results pointed out that the frequency of myocardial infarction was more in male patients (62%) than female patients (38%). As far as age factor is concerned 42% patients belong to age group 50-60 yrs and 39% patients belong to 60-70 yrs. In our study, average hospital stay was found 6.21 days. Average ICU stay was 1.88 days and that of medicine ward was 4.1 days. The percentage of prescription pattern of various classes of drugs was for Antiplatelet Agents (92%), Antianginal drugs (65%), Hypolipidemics (62%), Beta receptor antagonist (35%), Angiotensin Converting Enzyme Inhibitors (ACEI) (31%) , Diuretics (24%) , Anticoagulants (16%), Calcium Channel Blockers (CCBs) (14%), Angiotensin Receptor Blockers (ARBs) (13%), NSAID's (7%) and Bronchodilators (2%) drugs respectively. Most of the patients received Aspirin as well as Clopidogrel.

Conclusion: Antiplatelet drugs were the most commonly prescribed and alpha blockers were prescribed least as evident from our study.

Keywords: Myocardial Infarction, Prescription Pattern, Retrospective Study, Tertiary Care Hospital

Introduction

Cardiovascular diseases (CVD) are group of disorder of heart and blood vessel which included coronary artery disease, cerebrovascular disease, congenital heart disease, rheumatic heart disease, deep vein thrombosis and pulmonary embolism. CVD is mainly caused by high blood pressure, smoking, diabetes, lack of exercise, obesity, poor diet, high blood cholesterol and excessive alcohol consumption.[1] Hypertension is a major risk factor for coronary artery disease, myocardial infarction and stroke.[2] Myocardial infarction can be defined from a number of different perspectives related to clinical, electrocardiographic (ECG), biochemical and pathological characteristic. It is accepted that the term myocardial infarction reflects death of cardiac myocytes caused by prolonged ischaemia.[3] According to WHO

cardiovascular diseases are number one cause of death globally. An estimated 17.5 million people died from cardiovascular disease in 2008 and by 2015 almost 20 million people may endure from death due to CVDs, mainly heart disease and stroke and they will remain the single leading causes of death.[4] The area of muscle that has either zero flow or so little flow that it cannot sustain cardiac muscle function is said to be infracted and overall process is called myocardial infarction (MI) or heart attack.[5] The most common symptoms of MI are chest pain or discomfort which may travel into the shoulder, arm back, neck or jaw. Often it is in the centre or left side of the chest and last for more than few minute without prompt treatment this can lead to damage to the affected part of heart.[6] Lipid lowering agent, calcium channel blocker, ACE inhibitor, diuretic, anti angina drug, anti platelets agent, proton pump inhibitor, etc. are the number of drug to obtain the best possible effect in the shortest period and at a reasonable cost.[7] The initial management plan for patient with acute MI has restoration of the balance between oxygen supply and demand to prevent further ischemia. Management of myocardial infarction should be based on sound evidence, derived from well-conducted clinical trials whenever possible, or motivetd expert opinion when needed. It must be recognized that, even when excellent clinical trials have been undertaken, the results are open to interpretation and treatments may need to be adapted take account of clinical circumstances and resources.[8] After an attack of acute myocardial infarction only 10-20% cases do not develop major complication and recover, remainder 80-90% cases develop one or more major complication some of which are fetal.[5]

Material and methods

This was a Retrospective observational and analytical study was done in the Department of Medicine, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar for one year . Total 100 patients were include in this study. The data from the case records of all patients admitted to hospital with a diagnosis of AMI during study period was obtained from the medical records department, Anugrah narayan Magadh medical college and hospital, Gaya, bihar, India. All the data was recorded in a preformatted proforma and analysed. Data were interpreted in terms of percentage.

Results

The present study was conducted to find out prescribing pattern of drugs used in emergencies in tertiary care hospital of Bihar, India. Total 100 patients case paper were analysed during one year study period. Results pointed out that the frequency of myocardial infarction was more in male patients (62%) than female patients (38%). As far as age factor is concerned 42% patients belong to age group 50-60 yrs and 39% patients belong to 60-70 yrs. In our study, average hospital stay was found 6.21 days. Average ICU stay was 1.88 days and that of medicine ward was 4.1 days. (table.1)

Table 1: Demographic Profile of Patients

Gender	No. of patients	Percentage
Male	62	62
Female	38	38
Age in years		
Below 40	7	7
40-50	12	12
50-60	42	42
60-70	39	39

The percentage of prescription pattern of various classes of drugs was for Antiplatelet Agents (92%), Antianginal drugs (65%), Hypolipidemics (62%) , Beta receptor antagonist (35%) , Angiotensin Converting Enzyme Inhibitors (ACEI) (31%) , Diuretics (24%) , Anticoagulants (16%), Calcium Channel Blockers (CCBs) (14%), Angiotensin Receptor Blockers (ARBs) (13%), NSAID's (7%) and Bronchodilators (2%) drugs respectively. Most of the patients received Aspirin as well as Clopidogrel.

Table 2: Prescription pattern of drugs used in myocardial infarction

Drug Group	Frequency	Percent (%)
Anti-platelets	92	92
Anti-anginals	65	65
Hypo-lipidaemics	62	62
H2-Blockers	41	41
Antianxiety	36	36
Laxatives	35	35
Beta blockers	35	35
ACE Inhibitors	31	31
Antidiabetic drugs	25	25
Diuretics	24	24
Opioids	18	18
Anticoagulants	16	16
Antibiotics	15	15
Antiemetics	14	14
CCB's	14	14
ART's	13	13
Thrombolytics	10	10
Inotropic drugs	8	8
NSAID's	7	7
Antipsychotic	3	3
PPI's	3	3
Anti-epileptics	2	2
Bronchodilators	2	2
Alpha blockers	1	1
Others	1	1

Discussion

During past few years numerous research studies have been conducted worldwide to determine the safe and effective drug utilization indicating that inappropriate drug use is a universal phenomenon.[9] To examine the use of drugs in a society, trend of drug utilization studies has been raised globally in different health setups. Such types of drug utilization studies are helpful to determine the pattern of prescription and for setting the priorities to avoid the irrational drug use.[10] The present study was conducted to find out prescribing pattern of drugs used in cardiovascular emergencies in tertiary care hospital of Bihar, India. Total 100 patients case paper were analysed during one year study period. Results pointed out that the frequency of myocardial infarction was more in male patients (62%) than female patients (38%), which is in accordance with the study conducted by Weidner G, Jousilahti P and Chrysohoou C.[11-13] In the age group 30-50 years, the number of female patients was found significantly less as compare to the number of female patients in the age group 50-70 yrs. The reason for increased incidence of myocardial infarction in female could be the loss

of cardio protective effect of estrogen after menopause. Also there was no significant difference between number of male (22%) and female (17%) patients in the age group 60-70 yrs.[14] As far as age factor is concerned 42% patients belong to age group 50-60 yrs and 39% patients belong to 60-70 yrs. This shows that CHD manifests 10 years earlier on an average in Indian subcontinent compared with the rest of the world.[15] Study conducted by Karthikeyan G, average stay in cardiovascular disease patient was found to be 7 days.[16] In our study, average hospital stay was found 6.21 days. Average ICU stay was 1.88 days and that of medicine ward was 4.1 days.

In our study the percentage of prescription pattern of various classes of drugs was for Antiplatelet Agents (92%), Antianginal drugs (65%), Hypolipidemics (62%) , Beta receptor antagonist (35%) , Angiotensin Converting Enzyme Inhibitors (ACEI) (31%) , Diuretics (24%) , Anticoagulants (16%), Calcium Channel Blockers (CCBs) (14%), Angiotensin Receptor Blockers (ARBs) (13%), NSAID's (7%) and Bronchodilators (2%) drugs respectively. Most of the patients received Aspirin as well as Clopidogrel.

The association of physicians of India recommends that all patients with AMI including those with ST-elevation myocardial elevation (STEMI) should receive combination of antiplatelet therapy. The use of fibrinolytics in our study is much lower than compared to those reported found in the registry of Clinical Trial of Reviparin and Metabolic Modulation in Acute Myocardial Infarction Treatment Evaluation (CREATE), where the use of fibrinolytics in tertiary care hospital was found to be 58%. In the study conducted by Cohen M et al., the use of reperfusion therapy among 2741 patients (STEMI) from various geographic regions ranged from 34.5% to 53.8%.[17] Similarly in the study conducted by Schiele et al., the use of Fibrinolytics, Aspirin / Clopidogrel combination, Beta receptor blockers, ACE inhibitors and statins was 33, 33, 91, 39,45 and 62% respectively. The year wise prescription rate of various classes of drugs on admission shows a steady increase in the prescription rate of antiplatelet agents, ACEI / ARBs and Hypolipidemics. A decrease in the prescription of fibrinolytic is seen which can be partly explained by the presence of contraindications to the same. The prescription pattern of beta receptor blockers was lower and this might be due to a higher incidence of left ventricular dysfunction / cardiogenic shock

In our study the percentage of prescription pattern of various classes of drugs was for Antiplatelet Agents (92%), Antianginal drugs (65%). This finding correlates with the standard guidelines mentioned for use of drug in cardiovascular emergencies. These results were found to be similar to various studies conducted by Ian A. Scott et al, Venu menon et al, F venturini et al.[18-20] Further in our study, utilization rate of ACE inhibitors and ARBs was found to be much more than that of calcium channel blockers. This finding coincides with the study conducted by M. Martinez et al, Kizer JR et al and Escosteguy CC et al.[21-23] According to Friedman B.M. Recent data from the mega trial support the early use of ACE inhibitors after acute MI. In this mega trial the use of ACE inhibitors was associated with substantial reduction in mortality in MI patients.[24]

Conclusion

Antiplatelet drugs was the most commonly prescribed and alpha blockers were prescribed least as evident from our study

Reference

1. Thomas B, Sabu N, Baby N, TJ C, ES L. Prescribing Pattern of Cardiovascular Drug- A Prospective Observational Study. Indian Journal of pharmacy Practice. 2017;10(4):287-92.
2. Chaudhary MK, Pandey B, Thiaba B, Pokharel J, Rana P, Chaudhary M. Antihypertensive medication prescribing pattern in Crimson hospital. Pharmacology

online. 2016;2:49-55.

3. Ardissino D, Betriu A, Cokkinos DV, Falk E, Fox KAA, Julian D et al. Management of acute myocardial infarction in patients presenting with ST-segment elevation. European Heart Journal. 2003;24:28-66.

4. Muhit MA, Rahman MO, Raihan SZ, Asaduzzaman M, Akbar MA, Sharmin N, Faroque ABM. Cardiovascular disease prevalence and prescription patterns at a tertiary level hospital in Bangladesh. Journal of Applied Applied Pharmaceutical Science. 2012;02(03):80-84.

5. Patel R, Jawaid T, Shukla PK, Singh MP. Evalution of Drug Utilization Pattern in Patient of Myocardial Infraction and Prevalence of the MI by Comparison of Age, Sex, Diet, Smokers and Non- smokers, Alcoholic and Non- alcoholic. American Journal of Pharmacology and Pharmacotherapeutic. 2015;2(1):72-80.

6. Male A, Sneh K, Swathi V, Tripathy S. Drug Utilisation and prescription pattern Analysis Study in Myocardial Infraction patients at Tertiary Care Hospital in Krishna District, AndhraPradesh, India. International Journal of Advanced Pharmaceutical Sciences. 2017;1(2): 136-142.

7. Paudel B, Paudel K, Paudel R, Shrestha G, Maskey A, Panta B. A study of acute coronary syndrome in Western region in Nepal. Nepalese Heart Journal. 2014;2(1):12-

8. Sonia SA, Salim Y, Rafael D, Rosengren A, Shofiqual I, Franzosi MG, Steyn K, Keltai, Rangarajan S. Risk factor for myocardial infarction in women and men: insight from the interheart study, European Heart Journal. 2008; 29:932- 40.

9. Taskeen M, Anitha N, Ali SR, Bharath R, Khan AB. A study on rational drug prescribing pattern in geriatric patients in hyderabad metropolitan. JDDTJ. 2012;2:109-13.

10. Laporte JR, Baksaas I, Lunde PKM. General background. In Dukes MNG (Edn) Drug utilization studies methods and uses, WHO regional publication. European series No.45 Copenhagen WHO. 1993.

11. Weidner G. Why do men get more heart disease than women? An international perspective J Am Coll Health. 2000;48(6):291-4.

12. Jousilahti P, Vartiainen E, Tuomilehto J, Puska P. Sex, age, cardiovascular risk factors, and coronary heart disease: a prospective follow-up study of 14 786 middle-aged men and women in Finland. Circulation. 1999;99(9):1165-72.

13. Chrysohoou C, Panagiotakos DB, Pitsavos C, Kokkinos P, Marinakis N, Stefanadis C. Gender differences on the risk evaluation of acute coronary syndromes: the Cardio 2000 study. Prev Cardiol. 2003;6(2):71-7.

14. Mendelsohn ME, Karas RH. The Protective Effects of estrogen on the Cardiovascular System N Engl J Med. 1999; 340:1801-11.

15. Goyal A, Yusuf S. The burden of cardiovascular disease in the Indian subcontinent. Indian J Med Res. 2006;124(3):235-44.

16. Karthikeyan G, Xavier D, Prabhakaran D, Pais P Perspectives on the management of coronary artery disease in India Heart. 2007;93:1334-8.

17. Schiele F, Meneveau N, Seronde MF, Caulfield F, Fouche R, Lassabe G, et al. Compliance with guidelines and 1-year mortality in patients with acute myocardial infarction: a prospective study. *Eur Heart J* 2005;26:873- 80.

18. Scott IA, Heath K, Harper C, Clough A. An Australian comparison of specialist care of acute myocardial infarction. International Journal for Quality in Health Care. 2003;15(2):155-61.

19. Menon V, Rumsfeld JS, Roe MT, Cohen MG, Peterson ED, Brindis RG. Regional outcomes after admission for high-risk non-ST-segment elevation acute coronary syndromes. The American Journal of Medicine. 2006;119(7):584-90.

20. Venturini F, Romero M, Tognoni G. Acute myocardial infarction treatments in 58 Italian hospitals: a drug utilization survey. The Annals of pharmacotherapy. 1995;29(11):1100
21. Martinez M, Agusti A, Arnau J, Vidal X, Laporte JR. Trends of prescribing patterns for the secondary prevention of myocardial infarction over a 13-year period. European Journal of Clinical Pharmacology. 1998;54(3):203-8.
22. Kizer JR, Cannon CP, McCabe CH, Mueller HS, Schweiger MJ, Davis VG. Trends in the use of pharmacotherapies for acute myocardial infarction among physicians who design and/or implement clinical practice: the MILIS-TIMI experience. American heart journal. 1999;137(1):79-92.
23. Escosteguy CC, Portela MC, Vasconcellos MTL, Medronho RA. Pharmacological management of acute myocardial infarction in the municipal district of Rio de Janeiro. Sao Paulo Medical Journal. 2001;119(6):193-9.
24. Friedman BM. Early interventions in the management of acute uncomplicated myocardial infarction. Western journal of medicine. 1995;162(1):19-27