IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 18, Issue 2 Ser. 9 (February. 2019), PP 66-70
www.iosrjournals.org

A Retrospective, Observational Study of Evaluation of Prescription Pattern of Drugs in Cardiovascular Unit of Tertiary Care Hospital

Dr.Raju Dasari[1], Dr.Sujana Sriram[2*]
[1]*Post Graduate, Department of Pharmacology, Kurnool Medical College, Kurnool.*
[2*]*Assistant Professor, Fathima Institute of Medical Sciences, Kadapa.*
Corresponding Author: Dr.Sujana Sriram

Abstract
Introduction: *Cardiovascular diseases (CVDs) are major health problem throughout the world and common cause of premature morbidity and mortality.[1] Today CVD accounts for approximately 30% deaths worldwide including nearly 40% in high income countries and about 28% in middle and low income countries. The global rise in CVD is the result of industrialization, urbanization and associated life style changes.[2]*
Materials and Methods: *It was a retrospective descriptive study carried out in cardiovascular emergency patients who were admitted in the ICU unit of tertiary care hospital of RIMS, Kadapa. Case records of cardiovascular patients admitted to the ICU during the period from 1st January 2018 to 31st June 2018 were studied. Incomplete data entry case records were excluded from the study*
Results: *Analysis of 122 patients was done. Most common cardiovascular emergency was myocardial infarction (50.81%) followed by unstable angina (36.88%) (Table 1). Among 122 patients, incidence of male patients (65.57%) was found more than female (34.42%). Male to female ratio was found 1.83. (Table 2) In each age group, incidence of cardiovascular emergencies was found more in male patients as compared to female patients. Incidence of cardiovascular emergencies in female patients of age group 31-50yrs was found significantly lower than age group of 51-70 yrs.*
Conclusion: *Protocol of management strategy of cardiovascular emergencies in our tertiary care hospital was found near to standard recommended guidelines.*
Key Words: *Cardiovascular emergencies, Drug utilization, Myocardial infarction*

Date of Submission: 01-02-2019 Date of acceptance:18-02-2019

I. Introduction

Cardiovascular diseases (CVDs) are major health problem throughout the world and common cause of premature morbidity and mortality.[1] Today CVD accounts for approximately 30% deaths worldwide including nearly 40% in high income countries and about 28% in middle and low income countries. The global rise in CVD is the result of industrialization, urbanization and associated life style changes.[2]

CVDs generally affect the heart and the circulatory system which includes hypertension, Ischemic heart disease (IHD), congestive heart failure (CHF), stroke, peripheral artery disease and rheumatic heart disease. Important modifiable risk factors of CVDs are unhealthy diet, physical inactivity, tobacco use and the effects insinuate abnormal blood lipid profile and obesity.[1]

Various classes of drugs are available for the management of CVDs. Commonly used drugs to treat CVDs are vasodilators, calcium channel blockers, beta blockers, diuretics, angiotensin converting enzyme inhibitors, angiotensin receptor blockers, antiplatelet and lipid-lowering agents. The most important factor in the treatment of either subclinical or clinical CVD is the presence of co-morbidities.[3]

Rational drug prescribing is defined as the use of the least number of drugs to obtain the best possible effect in the shortest period and at a reasonable cost.[4]

The study of prescribing pattern is a component of medical audit that does monitoring and evaluation of the prescribers as well as recommending necessary modifications to achieve rational and cost-effective medical care.[5] Irrational prescribing of drugs is of common occurrence in clinical practice, important reasons ,being lack of knowledge about drugs, unethical drug promotions and irrational prescribing habits of clinicians. Inappropriate prescribing habits lead to ineffective and unsafe treatment, prolongation of illness, distress and unnecessary economic burden to the patient.[6,7] Erroneous prescriptions are recognized even in the tertiary care hospital.[8]

II. Materials And Methods

It was a retrospective descriptive study carried out in cardiovascular emergency patients who were admitted in the ICU unit of tertiary care hospital of RIMS, Kadapa.

Inclusion Criteria:

Case records of cardiovascular patients admitted to the ICU during the period from 1st January 2018 to 31st June 2018 were studied.

Exclusion criteria:

Incomplete data entry case records were excluded from the study.

During the study period total 122 case records of the cardiovascular patients were studied. Diagnosis along with the drugs prescribed was recorded for each patient of cardiovascular emergencies. From the medical records the following data was collected:

Data collection includes

- Distribution of cardiovascular emergencies (age and sex wise).
- The most common cardiovascular emergencies treated.
- The outcome of each patient of cardiovascular emergencies.
- Average duration of stay in the hospital.
- The correlation of clinical outcome with treatment if possible.
- Average number of drugs prescribed per patient.
- Drug utilization trend in our hospital for cardiovascular emergencies.

The data collected was condensed and master chart was prepared for data analysis.

Statistical analysis

The overall information generated was entered in Microsoft excel sheet (2010 version) and results were expressed in the form of percentage.

III. Results

Analysis of 122 patients was done. Most common cardiovascular emergency was myocardial infarction (50.81%) followed by unstable angina (36.88%) (Table 1). Among 122 patients, incidence of male patients (65.57%) was found more than female (34.42%). Male to female ratio was found 1.83. (Table 2) In each age group incidence of cardiovascular emergencies was found more in male patients as compare to female patients. Incidence of cardiovascular emergencies in female patient in age group 31-50yrs was found significantly lower than age group 51-70 yrs (Figure 1).

Hypertension (42.24%) and Diabetes mellitus (19.51%) were the most commonly associated comorbidities in cardiovascular patients. Average total hospital stay was 5.85 days. In that average ICU stay was 1.85 days and average medicine ward stay was 3.9 days. Average number of drugs prescribed per patient was 8.4. Aspirin Clopidogrel combination (78.63%), Enoxaparin (72.57%), Atorvastatin (72.16%) and Glyceryl trinitrate (70.13%) were the most commonly prescribed drugs. Loading dose of aspirin (325 mg) and clopidogrel (300 mg) was given in 63.56% patient (Table 3).

Use of ACE inhibitors and ARBs (56.10%) was found more as compared to beta blockers (28.05%) and calcium channel blockers (2.43%). Ramipril was the most commonly used ACE inhibitor while Olmesartan was the most commonly used ARBs. In beta blockers, use of Metoprolol was found to be more. Amlodipine was the most commonly used calcium channel blocker. Use of Nicorandil (potassium channel opener) was found in 30.14% patient. Use of insulin was found in 11.45% patient while that of oral hypoglycaemic agents was 8.43% (Table 3).

Improvement was seen in 71.31% patient, while condition was not improved in 12.19% patient at the time of discharge (Table 4).

Table 1: Shows the common cardiovascular emergencies treated

S.No	Cardiovascular emergencies	Number of patients	Percentage
1	Myocardial Infarction	62	50.81
2	Unstable Angina	45	36.88
3	CHF	8	6.55
4	Arrhythmias	7	5.73
5	Total	122	100

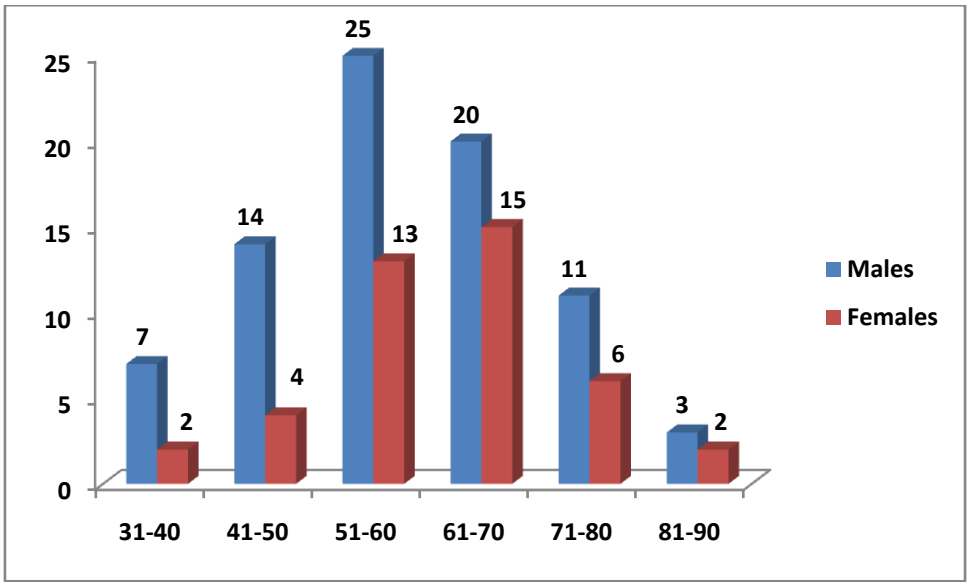

Figure1: Age-wise distribution of male and female patients

S.No	Cardiovascular emergencies	Male	Female
1	Myocardial Infarction	31 (38.75%)	21(50%)
2	Unstable angina	29(36.25%)	13(30.90%)
3	CHF	11(13.75%)	5(11.90%)
4	Arrhythmias	9(11.25%)	2(4.76%)
5	Total	80	42

Table 2: Number of male female patients

S.No	Name of Drugs	Percentage of patients
1	Aspirin (loading dose)	64.86
2	Clopidogrel (loading dose)	63.76
3	Clopidogrel + Aspirin	78.63
4	Streptokinase (IV)	34.46
5	Enoxaparin (S.C.)	72.57
6	Atorvastatin	72.16
7	GTN (IV)	70.13
8	Nicorandil	30.14
9	Ramipril	41.65
10	Olmesartan	5.9
11	Amlodipine	2.43
12	Metoprolol	26.76
13	Furosemide (IV)	24.64
14	Torasemide (IV)	9.23
15	Dopamine	12.8
16	Digoxin (IV)	10.54
17	Buprenorphine (IV)	9.87
18	Lorazepam	9.14
19	Alprazolam	16.13
20	Liquid paraffin	22.16
21	Isapghula	28.13
22	Insulin	11.45
23	Oral hypoglycemic drugs	8.43

Table 3: Percentage of the patients received particular drugs

S.No	Cardiovascular emergencies	Improvement	Unchanged	Expired
1	MI	43	8	2
2	Unstable Angina	37	2	6
3	CHF	4	4	7
4	Arrhythmias	3	1	5
5	Total	87	15	20
6	Percentage	71.31	12.29	16.39

Table 4: Table 4: Condition of the patient at the time of discharge

IV. Discussion

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.[13]

The present study was conducted to find out prescribing pattern of drugs used in cardiovascular emergencies in tertiary care hospital of RIMS, Kadapa. Total 122 patients case papers were analysed during six month study period. Results pointed out that the frequency of cardiovascular emergencies was more in male patients (64.63%) than female patients (35.37%), which is in accordance with the study conducted by Weidner G, Jousilahti P and Chrysohoou C.[14-16]

In the age group 31-50 years, the number of female patients was found significantly less as compare to the number of female patients in the age group 51-70 yrs. The reason for increased incidence of cardiovascular emergencies in female could be the loss of cardio protective effect of estrogen after menopause. Also there was no significant difference between number of male (17.07%) and female (14.63%) patients in the age group 61-70 yrs.[17] As far as age factor is concerned 32.93% patients belong to age group 51-60 yrs and 31.70% patients belong to 61-70 yrs. Hence 63.64% patients belong to age group 51-70 yrs. This shows that CHD manifests 10 years earlier on an average in Indian subcontinent compared with the rest of the world.

Study conducted by Karthikeyan G, average stay in cardiovascular disease patient was found to be 7 days. In our study, average hospital stay was found 5.75 days. Average ICU stay was 1.85 days and that of medicine ward was 3.9 days.

Results showed that myocardial Infarction (50%) was the most commonly cardiovascular emergency followed by unstable angina (36.58%), which is in accordance with the study conducted by M. Martinez and Ian A. Scott.[20,21] Hypertension (42.24%) and diabetes (19.51%) were the most commonly obsereved comorbidities associated with cardiovascular emergencies. These figures of our study are very similar to the study conducted by Ian A. Scott et al. And Prabhakaran D et al[21, 22] Average number of drugs prescribed per patient was found to be 8.4. Study conducted by Nagabushan H. found average number of drugs prescribed per patient is 7.8±2.23

In our study we noticed that utilization rate of antiplatelet (Aspirin and Clopidogrel), Anticoagulant (LMWH), Statins (Atorvastatin), Nitrates (Glyceryl trinitrate) high. 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.

V. Conclusion

The present study concludes, that most of the drugs were prescribed rationally according to the current treatment guidelines in indoor patients of cardiovascular diseases except the under use of ACEIs and ARBs in hypertensive diabetes mellitus patients. This can be changed by taking educative interventions to the physicians and by maintaining regular supply of these drugs in government tertiary care hospital. Despite the limitations, as it was a small sample size study conducted in a single centre, it was our sincere efforts to provide insight into the prescription pattern of indoor cardiovascular disease patients in a government tertiary care hospital. Further studies from time to time are required in drug prescription pattern and standard treatment guidelines should be circulated among practicing physicians to encourage rational prescription.

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