Research Article

DRUG UTILIZATION PATTERN IN PATIENTS WITH CONGESTIVE CARDIAC FAILURE IN A SOUTH INDIAN TERTIARY CARE HOSPITAL: A RETROSPECTIVE STUDY

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ABSTRACT

Drug utilization studies are the powerful exploratory tools to ascertain the role of drugs in determining the therapeutic efficacy, cost effectiveness and minimizing the adverse effects. In our study, we have attempted to analyze the drug utilization pattern in Congestive cardiac failure (CCF) patients at AJ Institute of Medical Science and Research Centre, Mangalore, Karnataka, India. The study period was from August 2013 to August 2014. A total of 100 prescriptions were analyzed from medical records of patients admitted to cardiology department with CCF. In the present study, there were 68 male patients and 32 female patients. Most of the patients 83(83%) affected with CCF were above 50 years. Hypertension 43(25.1462%) was the most common co-morbidity seen with CCF. Diuretics 166(29.80251%) were the most common class of drugs used to treat CCF. Under inotropic drugs, Digoxin 79(32.6443%) was used in majority of CCF patients as evident from our study. Our study shows that Polytherapy 96(96%) was preferred than monotherapy 4(4%) in CCF patients. Branded drugs 849(85.2409639%) were most preferred than generic drugs 147(14.7590361%). The most common route preferred was Oral route 720(72.28916%) than 276(27.71084%) intravenous route. The current study has shown that an average of 9.96 drugs was prescribed per patient.

Keywords: Congestive cardiac failure, Co-morbidities, Drug utilization.

INTRODUCTION

Drug utilization is defined by the WHO as the “marketing, distribution, prescription, and use of drugs in society, with special emphasis on the resulting medical, social, and economic consequences¹. A retrospective drug utilization study will detect patterns in prescribing, administering or dispensing drugs in order to prevent recurrence of inappropriate use or abuse, and serves as a means for developing prospective standards and target intervention. Congestive cardiac failure (CCF) is a complex clinical syndrome that results from structural or functional impairment of ventricular filling or ejection of blood, which in turn leads to the cardinal clinical symptoms of dyspnea and fatigue and signs of CCF namely edema and rales².

Congestive cardiac failure (CCF) is a major public health problem, with a prevalence of more than 5.8 million in the United States and more than 23 million worldwide³.

The burden of CCF in India appears high, and estimates of prevalence range from 1.3 million to 4.6 million; with an annual incidence of about 1.8 million⁴. The overall prevalence of CCF in the adult population in developed countries is 2%. CCF prevalence follows an exponential pattern, rising with age, and affects 6–10% of people over age 65. Although the relative incidence of CCF is lower in women than in men². The development of symptomatic CCF still carries a poor prognosis. Community-based studies indicate that 30–40% of patients die within 1 year of diagnosis and 60–70% die within 5 years³⁻⁵.

Drugs used to treat Congestive cardiac failure are Diuretics, Cardiac glycoside, ACE inhibitors, ARB, Beta blockers & etc⁶.

Drug utilization studies in Congestive cardiac failure (CCF) patients are the powerful exploratory tools to ascertain the role of drugs in the society. Hence periodical auditing of drug utilization pattern in CCF patients is vital for promotion of rational use of drugs, for increasing the therapeutic efficacy, cost effectiveness and for minimizing the adverse effects.

MATERIALS & METHODS

Institutional Ethical Committee approval was obtained from A.J. Institute of Medical Sciences and Research Centre Wide Ref. No.IEC/Rev/16/2015-2016. A retrospective study was carried out after the permission from Institutional Clinical Ethics committee, AJ Institute of Medical Science and Research Centre, Mangalore, Karnataka, India. A total of 100 In-patients (IP) case sheet were obtained from medical record section from August 2013-2014. Selected patients included all patients diagnosed of heart failure and on drug therapy. Either sex with co morbidities was included in our study. In a preformed proforma details like age, sex, diagnosis, co morbidities, different classes of drugs used, generic name or brand name, monotherapy or polytherapy, routes of drug administration etc were recorded. These record forms were then used to analyze the most common age, sex affected and co-morbidities associated with heart failure patients and also average number of drugs per prescription, routes of drug administration, whether the drugs were prescribed in generic or proprietary names, whether monotherapy or polytherapy used were noted down.

Statistical Analysis

Data was analyzed by using frequency polygon percentage.

Table 1: Age distribution of CCF in males and females

Sex	Percentage
Male	68%
Female	32%

Table 2: Routes of drug administered

Routes of drug administered	Percentage
Oral	72.28916%
Injection	27.71804%

RESULTS

A total of 100 In-patients prescriptions were scrutinized. About 2(2%) patients were suffering from CCF with an age of less than 1 year. There were no patients between 1 to 18 years. 15(15%) patients were in the age group of 19 to 50 years & 83(83%) patients were in the age group of more than 51 years. Mean age group was 45.04 years. A total of 68(68%) patients were males and 32(32%) patients were females (Figure 1).

Out of 100 patients, 7 patients were admitted only with CCF without any co morbidities but others were associated with co morbidities. Hypertension accounted for 43(25.1462%), diabetes mellitus accounted for 32(18.7134%), coronary artery disease accounted for 26(15.2046%), ischemic heart disease and chronic kidney disease accounted for 14(8.18713%) respectively, COPD accounted for 9(5.26315%), dilated cardiomyopathy accounted for 8(4.67836%), rheumatic heart disease accounted for 7(4.09356%), pulmonary hypertension accounted for 4(2.3391%) & others accounted for 14(8.18713%) (Figure 2).

Total numbers of drugs prescribed in 100 patients were 996 drugs. On an average number of drugs prescribed per patient were 9.96.

Branded drugs were 849(85.2409639%) and generic drugs were 147(14.7590361%) (Figure 3)

Monotherapy was used in 4(4%) of patients, 2-drug therapy was used in 16(16%) of patients, 3-drug therapy was used in 17(17%) of patients, 4-drug therapy was used in 25(25%) of patients & 5 drug therapy was used in 38(38%) of patients (Figure 4).

Different classes of drugs like Diuretics were used in 166(29.80251%) patients, Anti hypertensive's were used in 164(29.44345%) patients, Anti platelets were used in 94(16.87612%) patients, Cardiac glycosides were used in 78(14.00359%) patients & Hypolipidemic drugs were used in 55(9.87432%) of patients (Figure 5).

The most common drugs used in the treatment of these 100 CCF patients were Digoxin 79(32.64463%), Frusemide 70(28.92562%), Atrovastatin 47(19.42149%) and Clopidogrel 46(19.00826%) of patients (Figure 6).

Most common route of drug administration is through oral route in 720(72.28916%) of patients and in 276(27.71084%) of patients parental route was used (Figure 7).

DISCUSSION

Our study revealed that total of 68% of males were affected with CCF compared to 32% of females which is in accordance with the other studies where males were affected more with CCF compared to females^{7, 8}. Our study revealed that as age increases patients are more prone to get affected with CCF above 50 years⁹. In the present study, Hypertension 43(25.1462%) is the most common co-morbidity associated with CCF followed by diabetes mellitus 32(18.7134%), coronary artery disease 26(15.2046%) and ischemic heart disease 14(8.1871%)¹⁰⁻¹².

Average number drugs per prescription is 9.96 was found to be less compared to other studies⁷. Out of the 996 drugs prescribed only 147(14.7590361%) of the drugs were prescribed by generic name showing that most of the drugs were prescribed by brand names which is around 849(85.2409639%) indicating the inclination towards branded drugs compared to generic drugs which seems to be expensive treatment.

We found that Diuretics were most commonly used in CCF patients which is around 166(29.8025%) compared to other classes of drugs.

Among Diuretics, the most commonly used diuretic was frusemide constituting 70 (28.9256%) prescriptions. Antihypertensive were used in 164(29.4434%) Anti platelets were used in 94(16.8761%) of patients, Cardiac glycosides were used in 78(14.0035%) of patients and Hypolipidemic drugs were used in 55(9.8743%) of patients.

Over all the most common drugs used in the treatment of these 100 CCF patients are Digoxin used in 79(32.6446%), Frusemide used in 70(28.9256%) of patients, Atrovastatin used in 47(19.4214%) and Clopidogrel used in 46(19.0082%) of patients and etc. which shows the current trend in prescribing pattern in CCF patients.

Our study showed oral route was the most commonly preferred route of administration of drugs in 720(72.28916%) of patients and parental route was used in 276(27.71084%) of patients (Table.2).

Polytherapy was used in all patients with CCF. Monotherapy was used only in 4(4%) of patients, 2-drug therapy was used in 16(16%) of patients, 3-drug therapy was used in 17(17%) of patients, 4-drug therapy was used in 25(25%) of patients & 5-drug therapy was used in 38(38%) of patients. Practice of polytherapy is a good practice compared to monotherapy for therapeutic effectiveness. Minimum number of drugs used in treatment of CCF & co morbidities patients is 3 and maximum is 28 drugs are used in a single patient. This should be carefully monitored as too many drugs can result in too many adverse effects and drug interactions. Moreover any patients on OTC medications without the concern of the treating physician can lead to many unknown complications along with polytherapy of the concerned disease¹³.

We try to conclude that polytherapy is the best option than monotherapy in patients with CCF. Prescription of generic drugs reduces the patient burden and also the chance of survival for long time depends on absence or presence of co-morbidities.

However further studies are needed with a larger sample size to know the current status of drug utilization in hospital settings involving different centers.

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