

STUDY OF PHARMACO THERAPEUTIC CONSIDERATIONS IN THE MANAGEMENT OF HEART FAILURE

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HOW TO CITE THIS ARTICLE:

Souris Kondaveti, Bhuvaneshwari, Balakrishna Namala. "Study of Pharmacologic Therapeutic Considerations in the Management of Heart Failure". Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 9, March 02, 2015; Page: 1211-1214.

ABSTRACT: BACKGROUND AND OBJECTIVES: Congestive heart failure (CHF) continues to be a major clinical and public health problem. Conflicting data exists about its rate of occurrence in general population, relative frequencies of predisposing heart diseases and the prognosis of the patient. In the present study, gender aspects, age wise distribution, drug distribution pattern were assessed in these patients. **MATERIALS AND METHODS:** A total number of 100 patients from the medical outpatient department of medicine, M.G.M. Hospital Warangal were enrolled into the study. All male and female patients between 30 to 85 years of age, diagnosed with heart failure falling into the category of functional New York Heart Association (NYHA) class II or III with left ventricular ejection fraction (LVEF) $\leq 35\%$ were included in the study. **RESULTS:** Of the 100 subjects studied 55 (40-75 yr) were male and 45 (35-73 yr) were female. 94 patients presented with ischemic heart failure compared to only 6 patients with non-ischemic heart failure. Out of total subjects enrolled, 61 were put on Digoxin, 71 on Diuretics, 47 on ACEI, 20 on Beta Blocker (Carvedilol), 30 on Nitrates, 64 on Anticoagulants, 19 on Statins. **CONCLUSION:** The incidence of heart failure was more in advanced age groups and slightly more common in males. Ischemic heart disease accounted for heart failure in majority of patients in our study we found that Digoxin, Diuretics, ACEI and Anticoagulants followed by Nitrates, Beta blockers and Statins were the most prescribed medications in the management of heart failure

KEYWORDS: congestive heart failure, left ventricular ejection fraction.

INTRODUCTION: Cardiovascular diseases are leading cause of death in developing countries, accounting for 17% of the total deaths, majority of which are due to heart failure and coronary artery disease.^{1,2,3} Congestive heart failure (CHF) continues to be a major clinical and public health problem although the management of heart failure has improved over the past decade. In physiological terms heart failure may be defined as circumstances in which heart does not deliver the oxygen to the tissues at a rate to maintain their oxygen requirement or demand. There was a shift in the etiology of heart failure in the last decade. The most common cause of CHF is no longer hypertension or valvular heart disease. Ischemic heart disease has been reported as the cause of heart failure in two thirds of patients in developed countries.^{4,5,6} Our current therapeutic strategies rely on treating patient symptoms with diuretics and digitalis, as well as on the use of neuro hormonal antagonism with pharmacologic agents, such as angiotensin converting enzyme inhibitors and angiotensin receptor blockers, beta blockers, to antagonize the toxic effects of the renin angiotensin system and the adrenergic system respectively.^{7,8} In this study, we evaluated the pharmacotherapeutic considerations of management profile of patients with CHF in our hospital by assessing the drug utilization patterns in these patients.

ORIGINAL ARTICLE

METHODS: The study was conducted with the joint collaboration of M.G.M Hospital and the Department of Pharmacology, Kakatiya Medical College, Warangal. The study protocol was approved by the institutional ethical committee. All the subjects enrolled into the study gave written informed consent for their participation. A total number of 100 patients were enrolled in the study. All male and female patients between 30 to 85 years of age, diagnosed with heart failure falling into the category of functional New York Heart Association (NYHA) class II or III with left ventricular ejection fraction (LVEF) $\leq 35\%$ were included in the study. Patients were excluded if they have a history of drug sensitivity or allergic reaction to alpha or beta-blockers or asthma or severe chronic obstructive pulmonary disease or liver or kidney diseases or having second-degree or third degree heart block, Sick sinus syndrome. Medical records of consecutive patients of heart failure were reviewed to collect data on patient demographics, cause of heart failure, NEW YORK HEART ASSOCIATION (NYHA) functional classification, concomitant condition, medical history, clinical Features, result of laboratory investigations, usage of cardiovascular medication and drug allergy. The New York Heart Association (NYHA) Functional Classification of Heart Failure describes four stages based on physical activity which includes stage I-No Limitation: ordinary physical exercise does not cause undue fatigue, dyspnea or palpitations. II-slight limitation of physical activity: comfortable at rest but ordinary activity results in fatigue, palpitations or dyspnea. III-Marked limitation of physical activity: comfortable at rest but less than ordinary activity results in symptoms and IV-Unable to carry out any physical activity without discomfort: symptoms of heart failure are present even at rest with increased discomfort with any physical activity.

RESULTS: Of the 100 subjects studied 55 were male and 45 were female. The range of age for males was from 40-75yr and for females it was from 35-73yr. The number of males and females presenting with heart failure was 12 vs. 10 in (35-50) age group, 14 vs. 14 in (50-60) age group and 29 vs. 21 in (60-80) age group respectively. 94 patients had ischemic heart failure and 6 patients were having non-ischemic heart failure. 61 patients received digoxin, 71 diuretics, 47 ACEI, 20 Carvedilol, 30 Nitrates, 64 Anticoagulants, 19 Statins (Graph-1). The baseline characteristics were shown in the (Table-1)

DISCUSSION: The present study was conducted as analysis of pharmaco therapeutic considerations in the management of heart failure. The study was performed as a cross sectional study among those attending the outpatient department. We observed that the presentation of heart failure condition was slightly more common in the male population and the incidence was relatively more common in the later age groups for both male and females. The majority of the patients presenting with heart failure was very significantly more with the ischemic conditions like ischemic heart disease, dilated cardiomyopathy, bundle branch blocks followed by other conditions like acute left ventricular failure, old anterior wall myocardial infarction etc. Anemia and viral myocarditis accounted for the non-ischemic causes of heart failure. In our study we found that the pharmacotherapeutic considerations in the management of heart failure, Digoxin, Diuretics, ACEI and Anticoagulants are the most prescribed of the medications followed by Nitrates, Beta blockers and Statins. More number of patients in our study group have used

ORIGINAL ARTICLE

digoxin as it is a low cost inotropic, other reason could be more number of patients were having atrial fibrillation which is substantiated by higher numbers using anticoagulants. Digoxin is effective in patients with systolic HF complicated by atrial flutter and fibrillation and a rapid ventricular rate, who benefit both from slowing of the ventricular rate and from the positive inotropic effect. Although digoxin does not improve survival in patients with systolic HF and sinus rhythm, it reduces symptoms of HF and the need for hospitalization.^{9,10}

Our study helps to contribute to the data that is already available and also to compare it with the relevant guidelines to make our approach more current in the pharmacotherapeutic considerations of the management of patients with heart failure.

CONCLUSION: Treating heart failure is a challenge to the physician because of its rising incidence, high rate of hospitalization and mortality and frequent co-morbid disease and drug interactions. The pharmacological treatment of patients with CHF should include preventive measures addressing the underlying cause of the disease. Loop diuretics are mandatory in those patients with evidence of pulmonary or peripheral congestion. If tolerated, ACE inhibitors and beta blockers reduce mortality rates and can prevent the progression of symptoms and the need for hospital in CHF patients. The improvement of myocardial contractility by digoxin is useful in the control of HF. The role of angiotensin-II antagonists and low dose spironolactone increases survival in patients with severe heart failure (NYHA III-IV). Effective implementation of these treatments on an individual basis should greatly improve the outcome of patients who develop heart failure.

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ORIGINAL ARTICLE

Drugs	Distribution (%)	Gender	Age	Height	Weight	BMI
Digoxin	61	M-34/F-27	61.03±12.08	1.61±0.09	64.40±4.05	24.84±3.02
Diuretics	71	M-41/F-30	60.84±11.52	1.61±0.09	64.64±4.01	24.93±0.04
ACEI	47	M-22/F-25	58.88±11.39	1.60±0.08	60.09±4.17	23.62±1.17
Beta blocker	20	M-14/F-6	60.10±6.30	1.58±0.06	61.55±5.27	24.84±3.10
Nitrates	30	M-16/F-14	62.97±12.26	1.60±0.85	65.13±3.64	24.09±2.06
Anticoagulants	64	M-32/F-32	60.98±11.27	1.63±0.09	62.91±4.12	23.67±1.09
Statin	19	M-10/F-9	57.55±9.51	1.60±0.08	63.56±4.06	24.86±0.17

Table 1: DEMOGRAPHIC PARAMETERS

ACKNOWLEDGEMENT: I am much honored to thank my institution, M.G.M hospital & Kakaliya Medical College, for granting this work and special thanks to Dr. B. Anandam. I want to thanks also the participants for their willingness to participate in the study by understanding the benefit from it.

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Date of Submission: 06/01/2015.
Date of Peer Review: 07/01/2015.
Date of Acceptance: 13/01/2015.
Date of Publishing: 24/02/2015.