FREQUENCY OF COMPLIANCE TO GUIDELINE RECOMMENDED TREATMENT IN HEART FAILURE PATIENTS WITH LVEF <40%

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ABSTRACT

Objective: To determine the frequency of compliance to guideline recommended treatment among patients with STAGE-C or STAGE-D heart failure and LVEF<40%.
Study Design: Descriptive cross-sectional study.
Place and Duration of Study: Adult cardiology department of AFIC/NIHD, Rawalpindi, from Sept to Dec 2019.
Methodology: Eighty Four patients of Heart Failure with reduced LVEF after satisfying inclusion and exclusion criteria were recruited in this study through non-probability consecutive sampling technique. Data was collected from ER and OPD patients through complete history based on demographics (i.e. age and gender), co-morbidities (i.e. diabetes, hypertension, CAD and smoking history), previous EF record measured on 2D-echo, functional improvement of the patients using NYHA dyspnea class and guideline recommended medication history with compliance. The data was analyzed using SPSS version 23.
Results: A total of 84 patients of Heart Failure with LVEF = 31.61 ± 7.61% were enrolled out of whom 62 (73.8%) were male and 22 (26.2%) female patients. The mean age of patients was 62.26 ± 9.879 years. About 30 (35.7%) patients were diabetic, 44 (52.4%) were hypertensive, 19 (22.6%) were current smokers, 16 (19%) were ex-smokers and 49 (58.2%) were nonsmokers. Those with history of CAD were (SVCAD=8 (9.5%), DVCAD=14 (16.7%), TVCAD 15 (17.9%). Compliance of patients to treatment was 74 (88.1%) good. Patients presenting with NYHA Class I/II 3 (3.6%)/20 (23.6%) showed significant improvement after medical therapy 34 (40.5%)/30 (35.7%), whereas those with class III/IV did not show significant improvement in functional status.
Conclusion: This survey shows that patient's compliance is relatively goods but patients with NYHA III/IV were receiving suboptimal treatment. Secondly patients presenting with NYHAI/II after medical therapy showed significant improvement in functional status as compared to those with NYHA III/IV. Thereby further actions are needed for improving quality of life and standard of care among HF patients by optimization of treatment according to guidelines.

Keywords: Coronary artery disease, Left ventricular ejection fraction, New-York heart association.

INTRODUCTION

Chronic heart failure (CHF) is a worldwide weight for human services frameworks. Numerous patients across the world are influenced by this condition, which is related with high death rates and intermittent and delayed hospitalizations[1]. From a physiological point of view, HF can be defined as an inadequate cardiac output to meet metabolic demands or adequate cardiac output secondary to compensatory neurohormonal activation (generally manifesting as increased left ventricular filling pressure)[2,3]. HFrEF is defined as the clinical diagnosis of HF and EF ≤40%. Those with LV systolic dysfunction commonly have elements of diastolic dysfunction as well[8]. Although coronary artery disease (CAD) with and without myocardial infarction (MI) is a majorcause of HFrEF, many other risk factors may lead to LV enlargement and HFrEF[4]. Chronic heart failure affects more than 6.5 million Americans, and its prevalence may increase to more than 8 million Americans by 2030[5]. It is a global disease which is affecting a large number of people across the world in those areas where the heart failure risk factors like hypertension, diabe-

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tes and ischemic heart disease is common[6]. It is very much reported that compliance to medication is an essential piece of the self care for heart failure patients. Regardless, numerous heart failure patients neglect to accept their drugs as endorsed at the danger of adverse health outcomes. Medications planned for improving adherence to heart failure, may help reduce hospital readmissions and mortality[6,7]. The pharmacological treatment for heart failure with reduced ejection fraction is changed in last 25 years. The introduction of angiotensin converting enzyme inhibitors (ACEIs), beta-blockers, angiotensin receptor blockers (ARBs), mineralocorticoid receptor antagonists (MRAs) and, more recently, ivabradine has been associated with a significant outcome improvement in large clinical randomized controlled trials. International guidelines recommend these classes of drugs to improve mortality and/or reduce hospitalizations for heart failure (HF), with the aim of achieving the target doses used in the randomized clinical trials[8,9].

METHODOLOGY

This cross sectional study was carried out at Emergency Department and Out Patient Department of Armed Forces Institute of Cardiology and National Institute of Heart Diseases, Rawalpindi, Pakistan from 1st September to 31st December, 2019. Patients satisfying following inclusion criteria were recruited for the study; all outpatients (>18 years old) with CHF of either gender, patients hospitalized for worsening HF within the previous 3-15 months and patients with reduced ejection fraction as demonstrated by left ventricular ejection fraction (LVEF) ≤40% measured on the most recent echocardiogram (≤2 years). Following patients were excluded i.e. Patients in whom revascularization was planned, patients with volvuli pathology, liver pathology or with chronic kidney disease and patients with ejection fraction more than 40% i.e. heart failure with preserved ejection fraction are excluded from study. In the current participants satisfying theinclusion and exclusion criteria were selected using non-probability consecutive sampling technique. Data of all participants was recorded on a pre- designed preform. Data was collected from ER and OPD patients through complete history based on demographics (i.e. age and gender), comorbidities (i.e. diabetes, hypertension, CAD and smoking history), previous EF record measured on 2D-echo, functional improvement of the patients using NYHA dyspnea class and guide line recommended medication history with compliance. Formal permission was taken from hospital ethical committee. Written informed consent was taken from participants of study. Anonymity and confidentiality of participants' response and clinical data was maintained. Statistical analysis was performed using statistical software SPSS-23. Mean and standard deviation was calculated for quantitative variable i.e. age. Frequency and percentage was calculated for qualitative variable i.e. gender, diabetes mellitus, hypertension, smoking history.

RESULTS

A total of 84 patients of Heart Failure with LVEF = 31.61 ± 7.611 were enrolled out of whom 62 (73.8%) were male and 22 (26.2%) female patients. The mean age of patients was 62.26 ± 9.879 years. About 30 (35.7%) patients were diabetic, 44 (52.4%) were hypertensive, 19 (22.6%) were current smokers, 16 (19%) were ex-smokers and 49 (58.2%) were nonsmokers. Those with

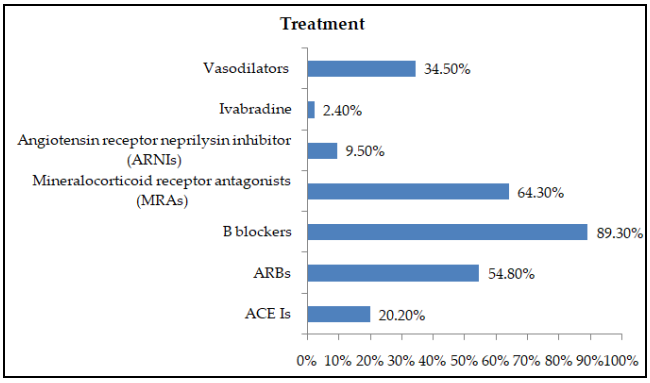

Figure: Type of guideline recommended medications for the treatment of heart failure.

history of CAD were: (SVCAD=8 (9.5%), DVCAD =14 (16.7%), TVCAD 15 (17.9%). Compliance of patients to treatment was 74 (88.1%) good. Patients presenting with NYHA Class I/II, 3 (3.6%)/20 (23.6%), showed significant improve-

ment in functional status after medical therapy, 34 (40.5%)/30 (35.7%), whereas those with class III/IV, 35 (41.7%)/26 (31.0%), did not show significant improvement in functional status, 14 (16.7%)/6 (7.1%), as assessed by NYHA, as patients with NYHA III/IV were receiving suboptimal treatment.

Table-I: Characteristics of Study Population (n=84%).

S. No	Variables	Mean ± SD / Frequency (Percentage)
1.	**Age**	
	Age	62.26 ± 9.879 years
2.	**Gender**	
	Male	62 (73.8%)
	Female	22 (26.2%)
3.	DM	30 (35.7%)
4.	Hypertension	44 (52.4%)
5.	**Smoking**	
	Current Smoker	19 (22.6%)
	Ex-Smoker	16 (19%)
	Non-Smoker	49 (58.2%)
6.	**CAD**	
	SVCAD	8 (9.5%)
	DVCAD	14 (16.7%)
	TVCAD	15 (17.9%%
7.	EF (%)	31.61 ± 7.611

Table-II: NYHA Functional Classes.

NYHA Class	Before Treatment	After Treatment
Class I	3 (3.6%)	34 (40.5%)
Class II	20 (23.6%)	30 (35.7%)
Class III	35 (41.7%)	14 (16.7%)
Class IV	26 (31.0%)	6 (7.1%)

DISCUSSION

HF has poor prognosis over the long run and carries an elevated risk of CV and HF admission, irrespective of EF[10]. In the present study aim was to check for compliance of HF patients to GDMT by assessing improvement in functional status by NYHA, in order to reduce the risk of adverse future outcomes. Result showed that compliance was good but patients with NYHAIII/IVwere receiving suboptimal therapy.

The pathway to improve outcomes after HF hospitalization begins with admission, continues through the process of decongestion and transition to oral therapies before the day of discharge, and connects through the first post-discharge follow-up[11].

Complex associations between co-morbidities themselves as well as between co-morbidities andthe cardiovascular system gave rise to the development of HF (both HFpEF and HFrEF). On the other hand, HF may give rise to co-morbidities, which is associated with adverse outcomes. In present study HTN is the most prevalent risk factor followed by history of smoking, as compared to a study conducted abroad showed that obesity and diabetes were most prevalent risk factors for most of HF related co-morbidities[12,13].

Although optimal pharmacological treatment for heart failure, with reduced ejection fraction (HFrEF), is carefully scripted by treatment guidelines, many HF patients are not treated with guideline directed medical therapy (GDMT) in clinical practice[14,15]. Similar to this, our study also highlighted that among patients with NYHA III/IV were receiving sub optimal therapy. Sacubitril/valsartan, an angiotensin receptor neprilysin inhibitor (ARNI), is new class of drug with mortality benefit, (PARADIGM-HF) trial, showed about 20% reduction in cardiovascular death in patients who received it compared with those who received enalapril in the Prospective Comparison of ARNI with ACEI (Angiotensin-Converting Enzyme Inhibitors)[16].

From The Champ-HF Registry, conducted in US outpatients of HFrEF, the large majority of eligible patients did not receive required dosage, there by further efforts are needed to improve titration of medical therapy according to guideline recommendations[17].

In our population setting similar efforts are needed for appropriate management of patients for their future well-being.

Similar to our study results, patients with NYHA class I/II on GDMT showed significant improvement in functional status, a study conducted at Imperial College of Science Technology

and Medicine, London, UK in 2007, which showed that observer variation exist in assessing NYHA class, but HF patients with class II/III gave a relatively better result[18]. Similarly another study showed that NYHA class II patients had a better survival compared with those in NYHA class III–IV[19,20].

CONCLUSION

This survey shows that patient's compliance is relatively goods but patients with NYHA III/IV were receiving suboptimal treatment. Secondly patients presenting with NYHAI/II after medical therapy showed significant improvement in functional status as compared tothose with NYHA III/IV. Thereby further actions are needed for improving quality of life and standard of care among HF patients by optimization of treatment according to guidelines.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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