



Original Article

Long-term outcomes of patients admitted with heart failure in a tertiary care center in India



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ABSTRACT

There are limited studies on heart failure in Indian population

Objective: Present study aimed to assess the in-hospital 90-day and two year outcomes in patients with ischemic (IHD-HF) and non ischemic heart failure (NIHD-HF).

Methods: Patients with NYHA Class III & IV, who were admitted to our intensive care unit with heart failure (HF), were evaluated and followed up for 2 years.

Results: In our cohort of 287 patients, there were 192 (66.9%) males and 95 (33.1%) females. Patients were divided into IHD-HF of 180 (62.7%) patients and NIHD-HF of 107 (37.3%) patients. Mean age of IHD-HF group was 66 (+/-10) and in the NIHD-HF group was 61 (+/-11). Prevalence of HF increased with age in the IHD-HF population and there was no relation with age in the NIHD-HF population. Patients readmitted within 90 days in the IHD-HF were 56% (n=101) and in the NIHD-HF were 32.7% (n=35) [p=0.001]. Two- year recurrent admissions were 69.4% (n=125) in the IHD-HF patients and 52.3% (n=56) in the NIHD-HF patients, respectively (p=0.004). Mortality at 90 days in the IHD-HF patients was 26.6% (n=48) and in NIHD-HF patients were 14.9% (n=16) [p= 0.021]. Two-year mortality was 42.3% (n=76) in the IHD-HF patients and 29.9%(n=32) in the NIHD-HF patients, respectively (p=0.037).

Conclusions: HF in IHD-HF heralds a bad prognosis with recurrent hospitalizations and high mortality when compared to patients with NIHD-HF.

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1. Introduction

Heart failure (HF) is a common cardiovascular condition with increasing incidence and prevalence.¹ Mortality rates of HF approach 20% per year in spite of the current medical therapy, and nearly one million patients are hospitalized with congestive HF annually in the United States alone.² With the increasing longevity of Indian population, HF incidence is increasing with its attendant high mortality and morbidity. Despite advances in the treatment, chronic HF with systolic dysfunction, remain at high risk for re-hospitalization and higher mortality.³ This may be attributed to the aging of the population, progressive disease, and persistently high event rates. Up to 30% of patients experience a

serious adverse cardiovascular event after every hospital admission for HF.⁴ The present study was to assess the in-hospital 90-day and two- year outcomes in patients with ischemic heart failure (IHD-HF) and non-ischemic heart failure (NIHD-HF) and the factors associated with re admissions and mortality.

2. Methods

2.1. Study population

This was a prospective descriptive study done at the Kerala Institute of Medical Sciences, Trivandrum, over a 2 year period from 1st June 2012. A cohort of 287 patients with chronic HF, who were admitted to our intensive care unit above the age of 40 were selected, as there were few patients below these age groups. Those who were not willing to provide informed consent were excluded. Diagnosis of HF was made by Framingham criteria⁵ and by assessing left ventricular ejection fraction (LVEF) with echocardiography by biplane Simpson's method.⁶ Patients were evaluated

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clinically and all of them underwent routine cardiac investigations, including cardiac biomarkers and echocardiography. Follow-up of the patients were done by hospital visits and/or through telephone.

2.2. Follow-up

The patients were reevaluated at 90 days and 2 years, by revisit in outpatient department, by subsequent readmissions and through telephonic calls

2.3. Definitions

2.3.1. Ischemic heart failure (IHD-HF)

Heart failure patients admitted with a history of chronic stable angina or acute coronary syndrome or with evidence of significant coronary artery disease by coronary angiogram were labeled as IHD-HF.

2.3.2. Non ischemic heart failure (NIHD-HF)

Patients with dilated cardiomyopathy, valvular heart disease, hypertensive heart disease, cor pulmonale, hypertrophic cardiomyopathy, primary pulmonary hypertension, drug induced cardiomyopathy, congenital heart disease and restrictive cardiomyopathies were labeled as NIHD-HF.

2.3.3. Optimal medical management

The “optimal” medical management was defined as a combination of beta blockers, angiotensin converting enzyme inhibitors (ACEI) or angiotensin receptor blockers (ARB), and aldosterone receptor blockers in patients with left ventricular systolic dysfunction (LVSD, EF <45%).⁷ This was in addition to diuretics and digoxin, as and when necessary.

2.4. Statistical methods

The categorical variables were presented as proportions, and continuous variables as means with standard deviation (SD) or as median with inter-quartile range (IQR). Chi-square test applied to find the association between categorical variables among the two groups. The multivariate model included all covariates which were ‘significant’ ($p < 0.05$) in the univariate analysis. The final model included demographic variables (age and sex), baseline comorbidities (diabetes, hypertension, pulmonary disease, chronic kidney disease, and stroke), etiology of HF, behavioral risk factors (tobacco use), ejection fraction and optimal treatment status. Analyses were carried out using the statistical software’s (Statistical Package for Social Sciences) SPSS Version 16.0 and STATISTICA.

3. Results

3.1. Age and gender wise distribution of patients

A total of 287 patients were analyzed, there were 192 (66.9%) males and 95 (33.1%) females. There were 180 (62.7%) patients with IHD-HF and 107 (37.3%) patients with NIHD-HF. The mean age of the IHD-HF patients was 66 (+/– 10) and in the NIHD-HF patients were 61(+/– 11).

Males predominated in the IHD-HF group (n- 140/77.7%) and females predominated in the NIHD-HF group (n-55/51.5%). Patients were divided into 4 age group intervals ranging from 40 to 90 years. Prevalence of heart failure increased with advancing age in IHD-HF group, while it likely decreased in NIHD-HF group. (Fig. 1). In this cohort, 174 (60.6%) patients were in the NYHA functional class four and rest of the 113 (39.4%) patients was in functional class three.

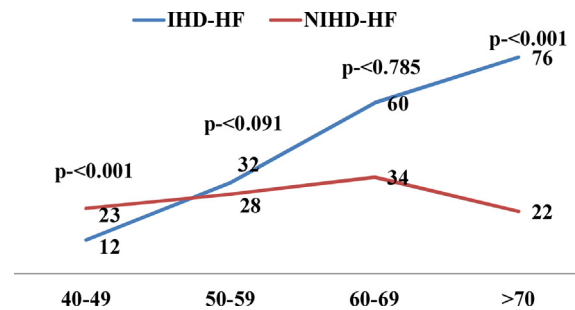


Fig. 1. Showing the age wise distribution of patients.

3.2. Etiology of chronic heart failure

In IHD-HF patients with history of old STEMI was the primary diagnosis in 116 (64.4%) patients and history of old NSTEMI in 64 (35.6%) patients. In the STEMI patients, only 14 (7.8%) had primary PCI and 9 (5%) had rescue PCI. Thrombolytic therapy was received by 19 (10.6%) patients. The interval between the first medical contact to the interventionist varied from 1 h to 24 h. Diagnostic angiogram was performed in all patients with coronary artery disease. Triple vessel disease was present in 121 (67.3%) patients, double vessel disease in 37 (20.5%) and single vessel disease in 22 (12.2) patients. Coronary artery bypass graft was done in 38 (21.1%) patients, angioplasty in 67 (37.3%) patients and 75 (41.6%) patients were on medical management. Medical management was instituted in 75 (41.6%) patients, of whom 11 (6.1%) patients had severe diffused triple vessel disease and 64 (35.5%) patients did not give consent for any interventional management. All IHD-HF patients had reduced ejection fraction.

NIHD-HF patients (Table 2) includes, dilated cardiomyopathy (n-36), valvular heart disease (n-21), heart failure with preserved ejection fraction (HFpEF) which includes hypertensive heart disease (n-13) and hypertrophic cardiomyopathy (n-6), cor pulmonale (n-13), primary pulmonary hypertension (n-6), drug induced (n-6), restrictive cardiomyopathies (n-3) and congenital heart diseases (n-3).

3.3. Co morbid factors in IHD-HF and NIHD-HF patients

IHD-HF patients had significant increase in incidence of diabetes, systemic hypertension and dyslipidemia as described in literature. The risk factors were directly related to the development of IHD-HF. There were 133 (73.9%) patients with diabetes mellitus in IHD-HF patients and 57(53.3%) patients in NIHD-HF ($p < 0.001$). Systemic hypertension was found in 117 (65%) in IHD-HF patients, compared with 50 (46.7%) in the NIHD-HF patients ($p = 0.002$), chronic renal disease in 91 (50.6%) patients in IHD-HF patients and 32 (29.9%) in the NIHD-HF patients ($p < 0.001$). Dyslipidemia in 131 (72.8%) patients in IHD-HF and 44 (41.1%) in the NIHD-HF patients ($p < 0.001$). Levels of high density lipoprotein (HDL) cholesterol (38 ± 8.8) remains low in IHD-HF patients. Smokers were more in IHD-HF patients ie 81 (45%) and in NIHD-HF patients, it was 29 (27.1%) ($p = 0.003$).

3.4. Hospital stay, re-admissions and mortality

There was no significant difference in duration of hospital stay in both groups (7 ± 8 days, 7 ± 5 days). In IHD-HF group, 101 (56.1%) patients were readmitted at 90 days and 125 (69.4%) patients at 2 years. However, only 35 (32.7%) patients were readmitted at 90 days and 56 (52.3%) patients at 2 years in NIHD-HF group. Ninety days mortality was significantly higher in IHD-HF patients ($p = 0.021$) (Table 3). This trend continued for our follow-up till 2 years

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