

## Study of Incidence of Heart Failure with Reduced Ejection Fraction and Heart Failure with Normal Ejection Fraction



### Medical Science

#### KEYWORDS :

Heart failure, HFNEF, Framingham criteria, 2D ECHOCardiography

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### ABSTRACT

#### Introduction:

Cardiac failure is a very commonly occurring end result of almost all structural as well as functional cardiac diseases and a complication of many cardiac, non cardiac and extra cardiac conditions. In India burden of CHF is higher than in western population.

#### Objectives:

To study relative prevalence of two different types of cardiac failure, i.e. heart failure with reduced ejection fraction and HFNEF.

To study prevalent causes and clinical profile of all patients with cardiac failure.

#### Methodology:

Adult patients admitted in our hospital during the period from July 2010 to Dec 2011 with signs and symptoms of cardiac failure were included. Cardiac failure was diagnosed clinically based on Framingham criteria.

#### Result & Observations:

Prevalence of HFNEF was higher. Cardiac conditions like IHD, Hypertension, DCM, & VHD are most common causes of heart failure in our study.

### INTRODUCTION:

Heart failure is a complex syndrome, resulting from structural or functional cardiac disorders that impair the ability of the cardiac pump to support a physiological circulation. (1) The main symptoms are dyspnea and fatigue, which limit exercising capacity, there is fluid retention and elevated filling pressures lead to pulmonary edema. In addition there is cardiac dilatation and reduced LV ejection fraction. (3)

But with increasing awareness on the part of the patients and clinicians leading to early diagnostic and therapeutic measures this concept has been challenged by studies which show that up to 50% of patients with congestive heart failure have normal or preserved LV ejection fraction (LVEF). (2) This type of heart failure is now being called as diastolic heart failure or Heart failure with Normal Ejection Fraction (HFNEF).

### AIMS AND OBJECTIVES:

- 1) To study prevalence of two different types of cardiac failure, i.e. heart failure with reduced ejection fraction and HFNEF.
- 2) To study prevalent causes and clinical profile of all patients with cardiac failure.

### MATERIAL AND METHODS:

Adult patients admitted in our hospital during the period from July 2010 to December 2011 with signs and symptoms of cardiac failure were included. Cardiac failure was diagnosed clinically based on Framingham criteria as follows:

Framingham criteria for the diagnosis of heart failure:

#### Major criteria

- Paroxysmal nocturnal dyspnoea
- Neck vein distension
- Rales
- Radiographic cardiomegaly
- Acute pulmonary oedema
- S3 gallop
- Increased central venous pressure (>16 cm H<sub>2</sub>O at right atrium)
- Hepatojugular reflex
- Weight loss >4.5 kg in 5 days in response to treatment

#### Minor criteria

- Bilateral ankle oedema
- Nocturnal cough
- Dyspnea on ordinary exertion
- Hepatomegaly
- Pleural effusion
- Decreased in vital capacity by one third from maximum recorded
- Tachycardia (HR >120 beats/min)
- HF is diagnosed when 2 major or 1 major plus 2 minor criteria are present.

After obtaining informed consent from the patients to participate in study, detailed clinical history of each patient was obtained & detailed clinical examination was carried out.

In each patient RBS, RFT, S.LIPID PROFILE, CBC, Chest X-Ray-PA view, ECG & 2D ECHO was carried out. 2D ECHO was done in each patient with Toshiba Nemio XG 2D ECHO machine and ejection fraction was calculated in each patient & also tried to classify in either of 2 categories namely cardiac failure with normal ejection fraction (45%) & cardiac failure with reduced ejection fraction (<45%).

All the patients were followed up in their hospital stay to note down the outcome in form of recovery VS death & relevant data of all the patients was recorded in a master chart & result were analysed by standard statistical formula by using appropriate software.

### RESULT AND OBSERVATIONS:

The study sample consists of 70 patients of cardiac failure with congestive changes. We included adult patients of all age groups and both gender. We observed that 39 patients of these 70 patients of cardiac failure had normal EF (more than 45%) while 31 patients had reduced EF (<45%).

**Table 1:showing age distribution of patients of cardiac failure in present study:**

Age (in years)	HFNEF	HF with reduced EF	TOTAL
<30	0	1	1
31-40	2	1	3
41-50	6	3	9
51-60	13	10	23
>61	18	16	34
TOTAL	39	31	70

Majority of our patients were above 50 years of age. However out of 13 patients younger than 50 years of age, HFNEF was found in 8 patients while in older patients (>50years) there was only marginal difference between the number of patients with HFNEF and HF with reduced EF. Thus more patients in younger patients had preserved EF while more patients in older age group had HF with reduced EF.

**Table 2:showing gender distribution of patients in present study:**

EF%	MEN	WOMEN	TOTAL (OUT OF 70)
<45%	23(43%)	8(47%)	31(44.28%)
>45%	30(56.61%)	9(52.94%)	39(55.72%)
TOTAL	53(75.72%)	17(24.28%)	70

As shown in the table 2, 75.72% were males, while 24.28% were females. Thus male to female ratio in our study was 3:1. We found 31(44.28%) patients having reduced EF with mean value of EF as  $29 \pm 0.078$  and the range varied between 28.84% to 29.165. while in 38(55.72%) patients EF was >45%, the mean was  $54 \pm 0.035$  and the range varied between 53.93% to 54.07%. More no. of male patients had normal EF out of 39 patients while more no. of female patients had reduced EF out of 31 patients.

Common conditions leading to heart failure in these patients were IHD, Hypertension, and Dilated cardiomyopathy.

### Conclusion

More men were affected by HFNEF than women, more female subjects suffered from HFREF.

The high prevalence of symptomatic HF seems likely to be mainly due to the high prevalence of cardiovascular risk factors in this population.

The mortality of heart failure remained high despite effective anti-heart failure Treatment.

Furthermore, the mortality in HFREF was persistently related to the cardiovascular Cause. More than one-third of patients with preserved ejection fraction died of Non-cardiovascular cause. Direction in treating concomitant diseases will play an important role to prevent future HFNEF mortality.