Use of Echocardiography in Delineating Different Heart Failure Patients in a Tertiary Care Centre – A Cross Sectional Study

Anubha Srivastava[1], Dheeraj Kumar Yadav[2]

ABSTRACT

Introduction: Echocardiography is an essential investigation in patients with suspected heart failure. It provides proper assessment of valvular function, ejection fraction, chamber size etc.

Material and methods: A total of 185 consecutive heart failure patients aged >18 years (mean age 58.4 years; 57.3% males) underwent 2d echo testing and findings were assessed. Data was analyzed using SPSS 21.0 software.

Result: On 2-D Echo, the most common diagnosis was Ischemic Heart Disease (IHD) (n=59; 31.9%) followed by Dilated Cardiomyopathy (DCMP) (n=39; 21.1%), Ischemic Cardiomyopathy (ICMP) (n=35; 18.9%) and Rheumatic Heart Disease (n=32; 17.3%) respectively. A total of 20 (10.8%) patients were placed under other categories (3 LVH, 2 PPCM, 1 each CHD, Ebstein anomaly, LA Myxoma, mild MR/TR, Severe MR).Majority of cases (72.4%) had ejection fraction <50%. There were 51 (27.6%) cases with ejection fraction ≥50% .

Conclusions: On 2-D Echo, the three most common diagnoses were Ischemic Heart Disease (31.9%), DCMP (21.1%) and ICMP (18.9%) respectively. Majority of cases (72.4%) had ejection fraction <50%. So we concluded that 2d echo should be done at the earliest hospital visit in heart failure patients which can impact the physician's decision on their treatment, prognosis and long term follow-up.

Keywords: Heart Failure, 2D echo.

INTRODUCTION

Heart failure is a progressive disorder that is initiated after an index event either damages the heart muscle, with a resultant loss of functioning cardiac myocytes or, alternatively, disrupts the ability of the myocardium to generate force, thereby preventing the heart from contracting normally.[1]

Echocardiography is key in the diagnosis and management of patients with heart failure. Determination of LVEF is the primary method to distinguish heart failure with reduced ejection fraction (HFrEF) from heart failure with preserved ejection fraction (HFpEF). Echocardiography is generally the single most useful test in evaluating the patients of heart failure and can help distinguish among the different types and narrow down the potential causes of heart failure. Echocardiography can assess global systolic and diastolic function, regional wall motion abnormalities, valvular functions, hemodynamics including estimates of filling pressure and cardiac output and pericardial disease.[1]

Considering the significance of echocardiography in diagnosis and prognostication of heart failure, the present study was planned to emphasize upon the early identification and treatment of potential causes of heart failure.

Aims and Objectives

To assess the prevalence of different causes of heart failure on the basis of echocardiography.

To assess the prevalence of heart failure patients with reduced EF (HFrEF) and those with preserved EF (HFpEF).

MATERIAL AND METHODS

An Observational study was carried out at Department of Cardiology, SRN Hospital, Motilal Nehru Medical College. Prayagraj. The study population included 185 consecutive heart failure patients (both male and female) age > 18 years attending Cardiology department, during the study period of one year, in MLN Medical College, Prayagraj after taking ethical clearance from ethics committee.

Inclusion Criteria

Patients with diagnosis of heart failure based on history, examination, ECG, and 2-D Echo.

Both genders, age > 18 years,

Exclusion Criteria

Patients unwilling to participate in the study

Patients/primary legal caregivers of the patients falling in sampling frame were invited to participate in study and were explained about the procedures involved. Only those subjects providing an informed consent were enrolled in the study.

After enrolment, demographic characteristics were noted. Details of the diagnosis of heart failure were ascertained using history, examination, ECG, and 2-D Echo.

Data was analyzed using IBM Statistical Package for Social Sciences, 21.0.

RESULTS

The present study was carried out to assess the prevalence of different causes of heart failure on the basis of echocardiography. For this purpose, a total of 185 patients

[1]Professor, Department of Internal Medicine, [2]Junior Resident 3rd year, Department of Internal Medicine, Motilal Nehru Medical College and Swaroop Rani Nehru Hospital, Prayagraj

Corresponding author: Dheeraj Kumar Yadav, Room No 221, PG Boys Hostel, SRN Hospital Campus, Prayagraj, Uttar Pradesh, Pin - 211001, India

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SN	ECHO Findings	No. of cases	Percentage
1.	Condition		
	IHD	59	31.9
	DCMP	39	21.1
	ICMP	35	18.9
	RHD	32	17.3
	Others	20	10.8
2.	Ejection fraction		
	≥50%	51	27.6
	<50%	134	72.4

Table-1: Distribution of cases according to 2-D ECHO findings

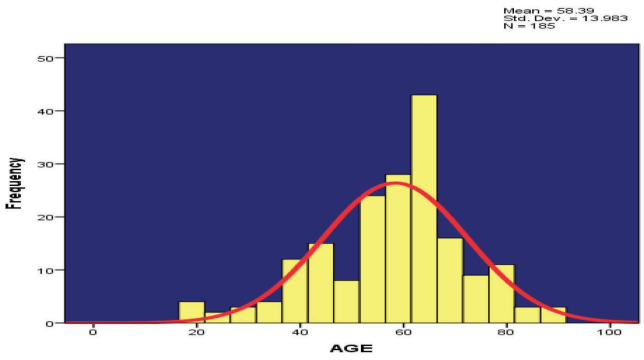

Figure-1: Gender distribution of cases

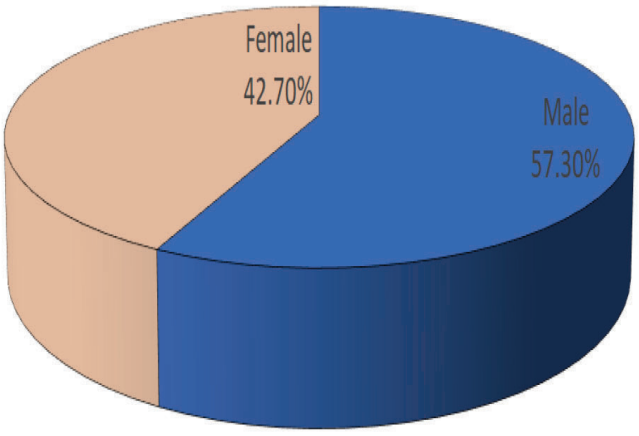

Figure-2: Histogram showing age dispersion of cases

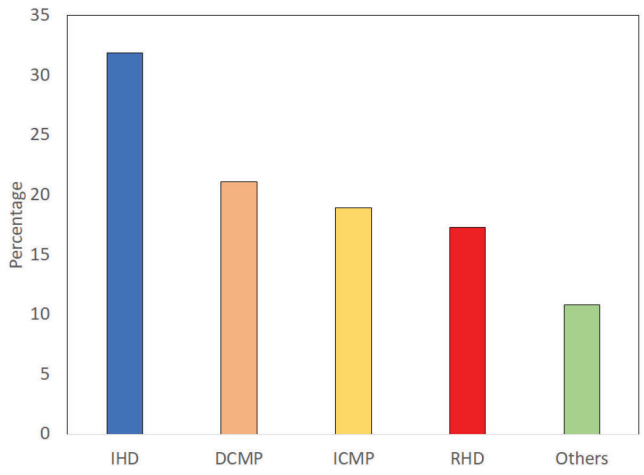

Figure-3: 2-D ECHO Diagnosis

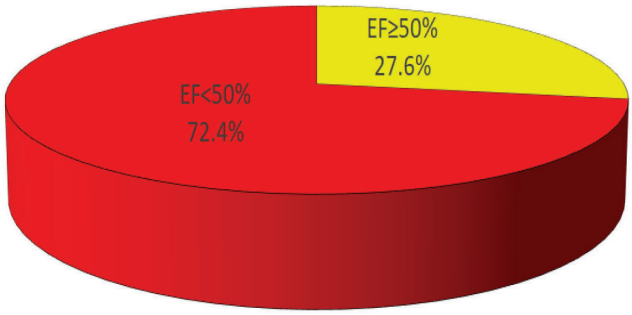

Figure-4: Distribution of cases according to Ejection Fraction status

with diagnosis of heart failure were enrolled in the study.

Fig 1 shows the gender profile of cases wherein majority of cases were males (n=106; 57.3%). There were 79 (42.7%) females. Sex-ratio (M: F) of study population was 1.34.

Fig 2 shows the age profile of cases. Age of patients ranged from 19 to 90 years. Mean age of patients was 58.39±13.98 years. Majority of patients (61.5%), males (60.4%) as well as females (60.7%) were aged between 51 and 70 years. Mean age of male and female patients was 58.82±14.10 and 57.81±13.89 years respectively.

As it is evident from table 1, on 2-D Echo, the most common diagnosis was ischemic heart disease (IHD) (n=59; 31.9%) followed by dilated cardiomyopathy (DCMP) (n=39; 21.1%), ischemic cardiomyopathy (ICMP) (n=35; 18.9%) and rheumatic heart disease (n=32; 17.3%) respectively.

A total of 20 (10.8%) cases were placed under others category (3 LVH, 2 PPCM, 1 each CHD, Ebstein anomaly, LA Myxoma, mild MR/TR, Severe MR).

Majority of cases (72.4%) had ejection fraction <50%. There were 51 (27.6%) cases with ejection fraction >50%.

DISCUSSION

The present study included only adult patients aged between 19 and 90 years, thus showing a broad spectrum of age. Mean age of patients was 58.39±13.98 years and majority (61.5%) were aged between 51 and 70 years. There was a dominance of males (57.3%). No significant difference in age profile of males and females was observed.

On 2-D Echocardiography, the most common diagnosis was ischemic heart disease (IHD; 31.9%), followed by dilated cardiomyopathy (n=39; 21.1%), ischemic cardiomyopathy (ICMP; 18.9%) and rheumatic heart disease (RHD; 17.3%) respectively. These findings corroborated with the study findings of AK Agarwal et al[2] conducted in the Arab population wherein the most common cause was found to be IHD (51.7%). Moreover, the study conducted by Di Lenarda A et al in Trieste, Italy[3] also concluded that IHD was the most common etiology of heart failure in their population (50%). It was contrary to the study findings of Oyoo GO et al[4] conducted in Nairobi, Africa wherein RHD was the most common etiology of CHF in their setup.

In the present study, most of the cases had ejection fraction <50% (72.4%) which is similar to the findings of Dike B Ojji et al[5] conducted in Abuja, Nigeria wherein 75.5% patients

had HFrEF.

CONCLUSION

Our Observational study conducted on 185 consecutive heart failure patients enlists the various causes of heart failure. The age and sex profiling of patients of symptomatic heart failure concluded a male preponderance (57.3%). Mean age of patients was 58.39±13.98 years and majority (61.5%) were aged between 51 and 70 years. On 2-D Echo, the three most common diagnoses were ischemic heart disease (31.9%), DCMP (21.1%) and ICMP (18.9%) respectively. Majority of cases (72.4%) had ejection fraction <50%. This study emphasizes the role of echocardiography which is indispensable in the management of heart failure.

This study represents systematic compilation of data on the prevalence and etiology of symptomatic heart failure in Prayagraj, Uttar Pradesh, India which is amongst the very few studies conducted in the Indian subcontinent. It is essential to focus on the prevalence and the common causes of heart failure to initiate early management in view of increasing case load of heart failure patients in near future and its added burden on the growing economy of the nation.

Limitation

Despite the best efforts, our study had few limitations:

The sample size of our study was small involving only a single centre patients of heart failure which might not be representative of the overall heart failure population.

We only analyzed the patients who reached the hospital so it might not be a true representative of the population.

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