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**Original article**

# Clinico-etiological and echocardiographic evaluation of patients with heart failure: a cross sectional study

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**Abstract**

**Introduction**: Heart failure is one of most frequent cardiovascular condition. It is characterised as a condition that arises as a result of cardiac illness and is clinically recognised by a constellation of signs and symptoms induced by complicated circulatory and neurohormonal responses to cardiac failure. Because of increasing burden of heart failure demonstrated in various studies done in western population , we wanted to exactly assess the severity of problem in our region and associate the findings of an echocardiogram in a group of people to heart failure indications and symptoms. As a result of this backdrop, we performed the current study with the following aims in mind.

**Aims and Objectives**: To investigate the clinical characteristics and aetiology of heart failure patients admitted to the hospital & to look at the echocardiography profile of heart failure patients.

**Materials and Methods**: This is a cross sectional, hospital based study. Patients hospitalised to MICU and medicine wards were included, which has been done in general medicine department.

**Observations & results :** This cross sectional study was conducted at a tertiary care centre in general medicine department where 84 patients with HF were studied for their clinics etiological profile and echocardiography findings for period of 2 years. The most prevalent kind of heart failure was heart failure with a reduced ejection fraction, followed by heart failure with a preserved ejection fraction and heart failure with a mid-range ejection fraction.

**Conclusion:** Heart failure was seen predominantly in ages above 50 years in the patients. Most common associated co morbid condition were Hypertension , Diabetes mellitus, Hypertension plus Diabetes, Ischemic heart disease, COPD. Breathlessness was commonest presenting complain followed by orthopnea & palpitations. Elevated JVP, tachycardia and tachypnea were the commonest clinical signs observed in the patients, Common etiological factors identified in the study were Hypertension, Diabetes mellitus, Hypertension plus Diabetes , Valvular heart disease, Ischemic heart disease, Cardiomyopathy, Multifactorial, Cor pulmonale, High output states and Pulmonary embolism. Echocardiography is the important tool in diagnosing and categorising the patients in different types of HF.

**Keywords**: Heart failure, Echocardiography

**Introduction**

Heart failure is a common ailment that affects 1–2% of the population and is a primary cause of mortality, sickness, and bad quality of life. It is characterised as a condition that arises as a result of cardiac illness and is clinically recognised by a constellation of signs and symptoms induced by complicated circulatory and neuro-hormonal responses to cardiac failure. (1) European Society (Cardiology) recommends that, in addition to clinical characteristics, verifiable evidence of heart dysfunction be present (e.g. Breathlessness or exhaustion, at still or while excercise, swelling over feet). (2) (3). It is one of the most serious public health issues, affecting about 23 million people globally (4). Because it is responsible for high costs connected with hospitalizations, readmissions, and outpatient visits, it is a huge financial burden on the healthcare system. Cardiovascular disorders (CVDs) have been India's leading cause of death since turn of the century (5) CVD attacks Indians at least for ten years before they reach their peak productivity. (6)

LVEF is a clinically valuable trait which indicates underlying pathophysiological processes and therapeutic sensitivity. patients of heart failure are currently classified as heart failure with decreased, mid- range or preserved ejection fraction. (7) Natriuretic peptides are an alternative means of detecting heart failure and asymptomatic LVSD. Several studies have shown that natriuretic peptides, particularly BNP and N-BNP, have been used to identify individuals with heart failure and asymptomatic LVSD. It has been suggested that greater BNP levels are linked to a higher LVEF. We wanted to exactly assess the severity of problem in our region and associate the findings of an echocardiogram in a group of people to heart failure indications and symptoms.

AIMS & OBJECTIVES

1) To investigate the clinical characteristics and aetiology of heart failure patients admitted to the hospital.

2) The goal of this study was to look at the echocardiography profile of

heart failure patients.

**Materials & methods**

Study design – This is a cross sectional, hospital based study. Study setting- Patients hospitalised to MICU and medicine wards were included , which has been done in general medicine department.. Study population- Patients with signs and symptoms of heart failure were enrolled throughout this time and their echocardiogram findings were analysed. The study lasted 24 months. Sample size is determined considering the proportion of left ventricular failure as the main outcome measure.

- Expected proportion – 67.9 % (p= 0.679)
- Precision – 10 % (d = 0.10)
- Desired confidence level-- 95% (A=5%)
- Required sample size – n= 84

Therefore 84 patients will be included in this study.

Sampling technique: This is a hospital-based study in which all consecutive heart failure patients admitted to the medical ward and MICU who meet the inclusion and exclusion criteria will be chosen using a convenient sampling approach until the sample size is reached.

Inclusion criteria-

1. All participants above age of eighteen,

2. Clinically and echocardiographically labelled as cases of heart failure.

Exclusion criteria-

1. Subjects who are not willing to participate.

2. Patiets with malignancy, chronic kidney disease and debilitating medical conditions.

After receiving approval from the institute's Ethics Committee, the study
was launched, and patients who met the inclusion criteria were enrolled after giving their informed consent.

**Observations & results**

Following are the results of 84 patients included in our study. Of 84 cases, the predominant gender was males with 61.90% and male: female ratio was 1.62:1; 69.05% were having normal BMI, 23.81% were overweight, 2.38% were obese and 4.76% were under weight. The most common symptom was breathlessness (90.48%),orthopnea(77.3%) and palpitations (53.57%). The most common sign observed was elevated JVP(100%),tachynpnoea (90.48%) and tachycardia (90.48%). The most common respiratory system finding was crepts(90.48%) followed by signs of pleural effusion in 7.1% of the patients. Of the 84 cases, 16.67% had ascites and 27.38% had tender hepatomegaly. The most common observation on cardiovascular system examination was presence of S3 gallop in 39.29% of patients. While 32.1% patients had signs of valvular heart diseases including signs of mitral stenosis, mitral regurgitation , aortic stenosis and aortic regurgitation and also multi valvular involvement. Of 84 cases, 9.52% had mid range heart failure, 25% had preserved ejection fraction and 65.48% had reduced ejection fraction. So the most common type of heart failure observed in our study was that with reduced ejection fraction. The most common etiological factor observed in our study of 84 patients is hypertension(55.95%), diabetes mellitus(50%), diabetes plus hypertension(35.7%) followed by valvular heart disease (32.1%), cardiomyopathy(26.19%),multifactorial(15.4%), corpulmonale(7.14%).High output states including anemia and hyperthyroidism made 4.76% of the patients, while pulmonary embolism occurred in 3.57%of the patients.

**Discussion**

We did a study on 84 participants over span of 2 years. The maximum of patients were age group of 51 – 70 years with average age of 58.7years which was similar to the earlier studies from India . In their study, Siddanathi NR et al(1) found that the age groups most impacted were 41-70years old and 15-30 years old. Our findings were also consistent with those of previous Indian research undertaken by Poffo MR et al and Rodrigues R et al(3). The average age of patients with cardiac failure in Sajeev CG et al(4) research was 56.35 years. Commonest comorbidity which was observed in our study was Hypertension (55.95%%) in about 47patients followed by Type 2 diabetes mellitus in 50% of the patients followed by both Diabetes mellitus plus Hypertension seen in 30 patients (35.7%). Patients with known case of ischemic heart disease were 14.29% of the total patients. Other Co morbidities observed were Hypothyroidism (9.52%), Congenital heart disease(7.14%), COPD (7.14%). Findings in our study were consistent with other studies done in India. The majority of the patients in Siddanathi NR et al(1) research complained of dyspnea, palpations, oedema, easy fatigability, and chest discomfort. Basal crepts , S3 or S4, apex impulse abnormalities, murmurs,elevated Jugular venous

pressure were most common physical findings in about 67 percent of the patients. Crackles were the most common physical sign in Goncalvesova E et al(8) (69.9 percent ). blood pressure (systolic) was more than 140 mm Hg in 37.8% of patients, QRS duration was more than 120 ms in 21.4 percent. Our study showed similar findings as comparable with other studies done in this domain. On echocardiography, about 63.1% that is 53 patients had changes of valvular heart disease followed by changes of pulmonary hypertension in 55.95%, 28.57% of the patients had regional motion wall abnormalities,27.38% had grade 3 dysfunction.86.9% had abnormal ejection . Multiple etiological factors have been identified in all the patients.

**Conclusion:**

The factors identified were as follows : Hypertension (55.9%), Diabetes mellitus(50%), HTN with DM in 35.7%, Valvular heart disease(32.1%), Ischemic heart disease(30.95%), Cardiomyopathy(26.19%),Multifactorial(15.4%),Cor pulmonale(7.14%) , High output states(4.76%), Pulmonary embolism(3.57%). Ischemic cardiomyopathy was found to be the leading cause of HF in a study conducted by Siddanathi NR et al(1) with a 28 percent prevalence, followed by chronic rheumatic heart disease (CRHD) with a 24 percent prevalence, hypertension-acute left ventricular failure (LVF) with an 18 percent prevalence, dilated cardiomyopathy with a 14 percent prevalence, corpulmonale with an 8 percent prevalence, Congenital Heart Disease with a 4 percent .

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