



## A STUDY OF CLINICAL PROFILE OF CONGESTIVE CARDIAC FAILURE PATIENTS AT TERTIARY CARE CENTRE, KARWAR.

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### ABSTRACT

**Introduction:** Heart failure is growing epidemic condition and nearly half of the patients have preserved ejection fraction (EF > 50%). However, study regarding prevalence, and etiologies of diastolic heart failure are sparse for Indian population. So, we carried out a study to determine demography and clinical profile of heart failure patients. **Methods:** Prospective observational study was undertaken among the patients admitted in the Micu of KRIMS Teaching hospital, Karwar during feb 2021 to jan 2022. Patients fulfilling Framingham criteria of Heart failure were included in the study. **Results:** Smoking, alcoholism, ischemic heart disease and hypertension were the leading risk factors in developing HF. Breathlessness (100%), swelling of the feet (100%), cough (80.80%) and palpitation (58%) were the most common symptoms observed in the patients. Oedema feet (100%), basal crepitations (81%), raised Jugular Venous pressure (JVP) (92.30%) and S3 (61.50%) were the leading signs in the patients. Chest X-ray (CXR) findings indicate that 84% of the patients reported with increased Cardiothoracic ratio. Arrhythmias (35% and ischemic changes (43%) are main ECG findings. **Conclusion:** Ischemic heart disease and hypertension were the leading risk factors apart from smoking and alcoholism and the management of comorbid conditions may have sizeable effect in clinical management.

**KEYWORDS :** Heart failure, ihd, smoking, hypertension.

### INTRODUCTION

Acute heart failure (AHF) represents a broad spectrum of disease states, with heterogeneous clinical presentations, but is commonly characterized by either a rapid onset or a progressive worsening of signs and symptoms, requiring immediate treatment and thus leading to urgent hospitalization.<sup>1</sup> HF is a global pandemic reported to be affecting 1–2% of the adult population.<sup>2</sup> As there may be unrecognized/undiagnosed HF cases worldwide, the true prevalence is likely to be higher. The prevalence of HF increases with age: from around 1% for people aged < 55 to > 10% in those aged 70 years and above.<sup>3</sup> Framingham heart study has reported that the incidence of heart failure was significantly higher in males than females with an age-standardized incidence ratio of 1.67:1.<sup>4</sup> The prevalence of HF among our Indian population is about 1% of the population or about 8–10 million individuals.<sup>5</sup>

As AHF is a heterogeneous condition, management may differ according to the clinical presentation of patients. Management of those symptoms starts with the search for specific causes of AHF. The common causes of HF include ischemic heart disease, Myocardial infarction, hypertension, and valvular storage disorders.<sup>6</sup> The risk factors of heart failure that are more common were hypertension (seen in 73.21%), ischemic heart disease (seen in 52% of patients) and Diabetes mellitus (seen in 26.78%).<sup>7</sup> AHF may present as the first manifestation of HF (new onset) or due to acute decompensation of chronic HF compared to patients with acutely decompensated CHF.

Those with new-onset HF may have higher in-hospital mortality. Clinical severity and in-hospital course are determined by the complex interplay between precipitants, the risk factors, and the patient's comorbidities. The prognosis is also reported to be very poor after discharge. The mortality risk after hospitalization has been reported to be 33% per year.<sup>8</sup> A study conducted by Krumholz HM et al. reports that 44% of discharged patients were again hospitalized at least once in 6 months.<sup>9</sup> With a better knowledge of various risk factors and etiology of Heart failure, addressing the finer details of heart failure management with newer diagnostic modalities and various outcomes and prognosis of AHF patients, this study will help us give a better insight into the analysis of various risk factors, etiology, and outcome of patients with acute Heart failure.

### Methods

Prospective observational study was undertaken among the 52 patients with an age range of 25 to 70 years (30 male & 22 female) admitted in the Micu of KRIMS Teaching hospital, Karwar during feb 2021 to jan 2022. All the patients fulfilling Framingham criteria for Congestive Heart Failure (CHF) were included.

### Exclusion Criteria

We excluded pregnant and lactating women and children below 15 years from our study. Additionally, patients who were not willing to give informed consent were also excluded.

The protocol was approved by the Institutional Ethics Committee of KRIMS, Karwar. A structured proforma was designed to capture information on clinical profile of the patients and validated in the pilot study. The proforma consisted information on demographic, anthropometric and clinical data. Details of major cardiovascular risk factors such as smoking, alcohol intake, diabetes mellitus (DM), hypertension (HTN), ischemic heart disease (IHD), and hyperlipidemia were recorded. The physical examination included measurement of height, weight, waist-hip ratio (WHR) and blood pressure (BP). Height was measured in centimeters and weight in kilograms using a calibrated spring balance.

Jugular Venous Pressure (JVP) was measured in centimeters as 5+ (as the vertical distance from the top of the pulsation in the jugular veins to the angle of Louis). Patients were examined both at sitting and lying down positions with their head tilted at 45° and for abdomino-jugular reflux. Blood pressure was measured using standard mercury sphygmomanometer. 12 lead standard ECG was recorded using proper standardization. Chest X-ray was taken and cardio-thoracic ratio was calculated. 2D echocardiography (TTE) was done in all cases. Patients were subjected to investigations and medical care as per the protocol.

### Statistical Analysis

All data were instilled chronologically and were calculated statistically. Subgroup analysis were done for statistical significance. Statistical analysis was carried out by IBM SPSS Statistics for Windows version 25.0. All 'p' values < 0.05 were considered significant.

### RESULTS

Prevalence of risk factors in the study population was shown in table 1. Smoking and alcoholism were the predominant risk factors followed by IHD and hypertension. The commonest symptoms observed among the HF patients were breathlessness and swelling in the foot. Around 80 percent of the subjects experienced cough and 58% had palpitation. The symptoms of chest pain, fatigue and giddiness was noticed in about 30-40% of the sample. Syncope was noticed to an extent of 15.40% respectively (Table 2).

**Table 1. Frequency Of Risk Factors.**

S.No	Risk factor	N	%
1	Smoking	24	46.65
2	Alcohol	22	42.30
3	Ihd	16	30.80
4	Hypertension	20	38.50
5	Diabetes mellitus	14	30
6	Hyperlipidemia	8	15.50
7	Rhd	1	1.90

**Table 2. Frequency Of Symptoms.**

S.No	Symptoms	N	%
1	Breathlessness	52	100
2	Swelling of feets	52	100
3	Cough	42	80.80
4	Palpitations	30	58
5	Chest pain	22	42.30
6	Giddiness	16	30.80
7	Syncope	8	15.40

**Table 3. Frequency Of Physical Exam'n Findings.**

S.No	GPE findings	N	%
1	Edema feet	52	100
2	Raised JVP	48	92.30
3	Basal crepitations	42	81
4	Third Heart sound	32	61.50
5	Hepatomegaly	28	54
6	Murmur	22	42.30
7	Pallor & Cyanosis	18 & 2	35 & 3.80

**Table 4. Chest X-ray Findings.**

S.no	Findings	N	%
1	Cardiomegaly	44	84
2	Failure changes	40	77
3	No changes	8	15.40

**Table 5. ECG Changes.**

S.No	Findings	N	%
1	Arrhythmias	18	35
2	Ischemic changes	22	43
3	Other changes	15	29

**Table 6.2D Echo Findings.**

S.No	Findings	N	%
1	EF > 40	32	61.50
2	EF < 40	20	38.50
3	Hypokinesia	28	54
4	Chamber enlargement	18	35

Mean values for anthropometry was recorded. Average body mass index (BMI) in the study population was  $20.62 \pm 5.57$  kg/m<sup>2</sup> ranging between 11.34 and 30.48 respectively. WHR was ranging between 0.78 and 1.02 with a mean value of  $0.91 \pm 0.06$ . Average systolic and diastolic blood pressure in the study population was  $130.38 \pm 25.43$  mmHg and  $89.46 \pm 17.00$  mmHg. Similarly average pulse pressure was  $42.84 \pm 16.25$  respectively.

The frequency distribution of physical examination parameters were shown in table 3. Edema foot was noticed in all the cases under investigation. JVD and Crackles were noticed to an extent of 92.30% and 81%. Third heart sound in 61.50%, hepatomegaly in 54%, murmurs in 42.30% and pallor & cyanosis were noticed in 35% & 3.80% of the patients.

Results on the CXR, ECG and ECHO were shown in table 4, 5 & 6. Among the CXR findings: cardiomegaly was noticed among 84% of the patients. Around 77% percent of the subjects reported with failure changes. No changes were reported among 15% of the patients. Among the ECG findings: 35% were noticed with arrhythmias (Atrial fibrillation 19.2% and premature beats 7.6%) followed by ischaemic changes 43%, others 29%. In the ECHO findings: EF of  $\geq 40$  was noticed among 61.50% and  $< 40$  was noticed in 38.50% of the subjects. Further hypokinesia and chamber enlargement was noticed for about 54% and 35% respectively.

**DISCUSSION**

The present study sought to examine the clinical profile of the patients with heart failure. The results clearly indicate that the most susceptible for developing HF was > 60 years and our results were in best agreement with the findings from Framingham study.<sup>10</sup> The common risk factors associated with HF was found to be smoking, alcohol abuse, ischemic heart disease and hypertension. Though the data from Framingham study shows that systolic arterial hypertension and CAD were the main risk factors for the development of HF, but in our HF patients smoking and alcoholism preceded over the hypertension and ischemic heart disease. Similar observations were reported by Firmida., et al. and Nogueira., et al. Ferreira., et al. study reported that valvular disease, CAD and HTN were the predominant risk factors for developing HF. The relative risk of death in patients with decompensated HF was low pulse pressure. On the other side high pulse pressure may lead to unrecognized thyrotoxicosis or anemia. An increase in respiratory rate (usually > 16 breaths/minute) accompanies dyspnoea, and may signal the onset of acute decompensation of stable HF. In the present sample average respiratory rate was found to be 26.3.<sup>11</sup>

Dyspnoea and edema were the predominant symptoms besides fluid overload with which the patients presented themselves to the hospital as observed by ADHERE study and Euro Heart Failure survey.<sup>12,13</sup> This establishes the primacy of breathlessness, as a presenting symptom of Heart failure. The cardinal symptoms of HF were shortness of breath and fatigue that occur either with rest and/or with exertion. Hence, elucidating the history and physical examination to determine whether the patient is in natural history of syndrome or will have sizeable effect in offering treatment. Non productive cough was the next most prevalent symptom, which is a dyspnoea equivalent and may suggest LVD. Cough was present in 80% of patients in the present study against 69% in a US National Health Interview Survey.<sup>14</sup> The other important symptom was palpitation. This may be a presenting symptom in patients with decompensated HF. The character of palpitation may serve to identify the nature of underlying arrhythmias. Sensation of pauses and skipped or forceful beats suggest premature atrial or ventricular complexes. Rapid palpitations can be irregular as with atrial arrhythmias, such as atrial flutter, fibrillation or tachycardia or regular suggesting sinus supraventricular, or ventricular tachycardia. Arrhythmias are well known precipitants of HF (especially AF) and in the present study arrhythmias were seen in 35% and AF in 19.2% of patients as compared to hyunacia et al which had arrhythmias in 31% of subjects.<sup>15</sup> In the present study, chest pain was found in 42.30% of patients. In our study Fatigue was seen in 82% patients but Evangelesta., et al. study observed 50.4% of men and 51.2% of women with heart failure reported with fatigue.<sup>16</sup>

Measuring the heart rate is critical in the initial assessment of patients because decompensation may be due to bradycardia or tachycardia. But tachycardia is said to be too insensitive to have any useful predictive value. The strength of pulse is also important for assessing the adequacy of cardiac output.

Alteration in intensity of the pulse from strong to weak (mechanical alternans) has been shown to be common in HF and is associated with abnormal cardiac structure and function. Inequality of peripheral pulses may give a clue about the presence of CAD. Physical examination revealed tachycardia in 57.7% in the present study.

Watson., et al. opined that edema is too insensitive to have any useful predictive value.<sup>17</sup> All of the patients in the study reported with edema. JVP is the most useful physical finding for detecting decompensated HF and has high specificity. Elevated JVP is independently associated with adverse outcomes, including progression of HF as observed in the present study.<sup>18</sup> Francis study reported third heart sound in patients with advanced heart failure as noticed in the present study.<sup>19</sup> Further increased cardiothoracic ratio was noticed in our patients. A complete normal ECG has a high negative predictive value for HF (> 90%).<sup>20</sup> In Euro Heart Failure survey, 10% of patients presented with AF [14] against 19.2% in the present study, and the results were in accordance with CHARM trials.<sup>21</sup> ECHO evidence of LVH will remain an independent predictor of adverse events. Thus, it is possible to define a pattern of signs and symptoms and a profile of investigations in patients with HF. The reported data on anthropometry of the study population is in line with other population groups.<sup>22</sup>

## CONCLUSION

This study provides a fairly comprehensive clinical profile of the patients with heart failure. Ischemic heart disease and hypertension are the leading risk factors, apart from smoking and alcoholism and the management of comorbid conditions may have sizeable effect in the clinical management.

**Conflict of Interest:** Nil

**Acknowledgement:** To Statistician of KRIMS ,Karwar.

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