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Original Research Article

An Observation on Clinical Profile of Patients of Heart Failure at VAMCRH, Banthra, Shahjahanpur, U.P.

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Abstract

Background: Heart failure may cause by abnormalities of the heart valves in which that heart muscle is damaged by long standing pressure or volume overload or by recurrent rheumatic process. In another group of patient, a similar clinical syndrome is present but without any apparent abnormality of myocardial function. In some patients, the normal heart suddenly presented with mechanical load that exceeds its capacity such as an acute hypertensive crisis, rupture of an aortic valve cusps due to infective endocarditis or trauma or massive pulmonary embolism. It was aimed at identifying common causes and outcome of heart failure. Data regarding risk factors, co-morbid states, etiology, clinical features and investigations were collected in study periods.

Materials and Methods: This study was conducted in patients admitted to different medical wards and ICU of VAMCRH, Banthra, Shahjahanpur, U.P. from August 2019 to October 2021. A total of 108 admitted patients. The outcome of the study was documented and to find out the etiology, clinical presentation, treatment profile and outcome of cases of heart failure and increase awareness among patients regarding newer treatment modalities available.

Results: In this study, most of the patients were managed with combination of ACEI/ARB, Beta blockers and Diuretics. The dose of ACEI/ARB, Beta blockers was gradually titrated to optimal. Those patients who remain symptomatic or there is worsening of heart failure were added Aldosterone antagonists and or Digitalis. Antiplatelets, Nitrates, LMWH, Antiarrythmic, Digitalis, Benzathene penicillin and Hypolipidemic drugs were used accordingly. 14.28% cases of ischemic cardiomyopathy required DC cardioversion for pulseless VT. 4.63% cases required hemodialysis for their volume overload states not properly controlled with diuretics. 92.68% cases of RHD were promoted for valvular surgery (repair/replacement). 54.28% cases of ischemic cardiomyopathy and 42.86% cases of Dilated cardiomyopathy were promoted for Device therapy. The overall mortality was 13.9%. It was highest (35.48%) among patients with EF<25%. Maximum number of patients who recovered or partially recovered were had EF>40%.

Conclusion: Recovery or partial recovery was highest among patients with heart failure of rheumatic origin while the rate of worsening and mortality was highest among patients with heart failure due to ischemic heart disease.

Keywords: Endocarditis, co-morbid states, cardiomyopathy, rheumatic origin

Introduction

Heart failure is a complex clinical syndrome that arises secondary to abnormalities of cardiac structure and or function that impair the ability of the left ventricle to fill or eject blood.

The cardinal manifestation of heart failure is dyspnea and fatigue. Many of the typical signs and symptoms of heart failure are not directly attributed to the cardiac abnormalities that occur in the failing heart, but rather arise secondarily to abnormalities that occur in the remote organs (Eg. – Kidney or Skl. Muscle). The dysfunction that occurs in these organs and tissue cannot be explained solely by decreased perfusion pressure, suggesting that other systemic processes (neuorohormonal activation) must contribute to Syndrome of HF.

Although HF was once thought to arise primarily in the setting of depressed LVEF, epidemiological studies have shown that approximately 50% of patients who develop HF have a normal or preserved EF.

Accordingly, the patients may be broadly categorized as HF with depressed EF (Systolic failure) or having HF with normal or preserved EF (Diastolic failure).

The incidence of HF, like the prevalence, increases with age [1,2]. In the Framingham Study, the incidence approximately doubled over each successive decade of life, rising more steeply with age in women those in men. The annual incidence in men rose from 2 per 1000 at age 35 to 64 years to 12 per 1000 at age 65 to 94 years. Because the increase in riks with age is balanced by the decreased life expectancy with older age, the lifetime likelihood of developing HF is approximately 20 percent at all ages above 40 [2].

Materials and Methods

The present study was conducted in patients admitted to different medical wards and ICU of VAMCRH, Banthra, Shahjahanpur, U.P. from August 2019 to October 2021.

Selection of patients

Inclusion Criteria

1. The admitted patients with NYHA class II, III or IV after excluding COPD, pneumothorax, pneumonia, and pleural effusion.
2. Patients admitted with features of fluid retention (Leg or abdominal swelling) after excluding cirrhosis, renal sodium retention, drug side effects (eg CCB), venous thrombosis or insufficiency.

Exclusion criteria

1. Heart failure due to congenital heart disease.
2. Potentially non-compliant.

All those patients who had been selected for the study group were present and past history, Physical examinations, Investigations i.e. biochemical, radiological examination, ECG, Echo were done. The other investigation like S. lipid profile, HbA_{1c}, LFT, cardiac enzymes, Thyroid function test was done where ever indicated.

Results

Table 1: Sex distribution of HF patients.

Groups	No. of cases	Percentage
Male	60	55.55
Female	48	45.55

Among the 108 patients included in the study, 55.6% were male and 44.4% were female.

Table 2: Age wise distribution of HF patients

Age group	Male	%	Female	%	Total	%
20 – 39	12	30	28	70	40	37.03
40 – 59	31	73.8	11	26.19	42	38.88
≥ 60	17	65.38	9	34.62	26	24.07

Table 3: Distribution of Etiology of HF

Etiology	Make	%	Female	%	Total	%
RHD	11	26.82	30	73.18	41	37.96
IHD	24	68.57	11	31.43	35	32.4
HTN	24	58.54	17	41.46	41	37.96
DCM	14	66.67	7	33.33	21	19.44
CCP	3	60	2	40	5	4.62

[HTN was present as Co-morbid states in other causes of HF as well]

Table 4: Showing relationship between age group and Etiology of HF

Age group	RHD	%	DCM	%	ICM	%
< 40	38	(95)	2	(5)	-	-
≥ 40	3	(4.41)	19	(27.94)	35	(51.47)

Table 5: Risk factor and co-morbid states in HF – Sex wise distribution

Risk factor/ Co-morbid states	Male	%	Female	%	Total	%
Smoking	23	74.2	8	25.8	31	28.7
Alcohol	15	100	-		15	13.8
Obesity	7	63.64	4	36.36	11	10.2
DM	8	57.14	6	42.86	14	12.96
CAD	24	68.57	11	31.43	35	32.4
Dyslipidemia	14	66.67	7	33.33	21	19.4
HTN	24	58.54	17	41.46	41	37.96
COPD	9	69.23	4	30.77	13	12.04
CKD	4	80	1	20	5	4.63

Table 6: Showing the distribution of symptoms and signs of HF in various patients of the study group.

A. Major	Physical signs/symptoms	No. of cases	Percentage
1	PND	36	33.3
2	Basal Rales	89	82.4
3	Cardiomegaly	76	70.4
4	Acute Pulmonary Edema	8	7.4
5	S_3 gallop	47	43.52
6	JVD	43	39.8
7	Hepatojugular reflux	25	23.15
B. Minor	**Physical signs/symptoms**	**No. of cases**	**Percentage**
1	Edema	88	81.48
2.	Night cough	49	45.37
3.	Exertional Dyspnea	101	93.52
4.	Congestive Hepatomegaly	73	67.6
5.	Pleural effusion	04	3.7
6.	Tachycardia (HR > 120/min)	61	56.48
C. Others	**Physical signs/symptoms**	**No. of cases**	**Percentage**
1	Orthopnea	33	30.5
2.	Painchest	38	35.2
3.	Palipitation	40	37
4.	Pulsus alternans	08	7.4
5.	Wheeze	20	18.5
6.	Ascites	21	19.4

Table 7: Showing No. of cases belonging to different NYHA group

SL. No.	No. of cases
NYHA –II	17
NYHA –III	56
NYHA –IV	35

Table 8: Distribution of HF patients related to EF

Ejection fraction (%)	No. of cases	Percentage
≤ 25	31	28.7
26 – 39	33	30.5
40 – 49	37	34.26
≥ 50	7	6.48

Table 9: Showing relationship between reduced EF and QRS duration.

No. of cases with EF $\leq$ 35%	No. of cases with QRS > 120 ms	Percentage
64	24	37.5

Table 10: Treatment Profile

Diagnosis	Prior to hospitalization					In Hospital Medication/Intervention				Referred for	
	NM	Dx + DR	BB+ ACEI/ARB + DR	CCB + NT + DR	Suboptimal dose of ACEI/ ARB + BB + DR	BB + ACEI/ARB + DR	BB + ACCEI/ARB + DX + DR + WF	BB + DR	DC Cardioversion	Valvular Surgery	Device therapy (CRT/ICD)
RHD	12 (29.3%)	25 (60.9%)	4 (9.75%)			13 (31.7%)	17 (41.5%)	11 (26.8%)		38 (92.68%)	
Ischemic Cardiomyopathy	8 (22.8%)	3 (8.57%)	3 (8.57&)	13 (37.14)	8 (22.8%)	35 (100%)			5 (14.28%)		19(54.28 %)
DCM	4 (19%)	8 (38%)	3 (14.28%)		6 (28.57%)	18 (85.7%)	3 (14.3%)				9 (42.86%)

Table 11: Relationship between EF and outcome

Ejection fraction (%)	No. of Cases	Outcome							
		R		PR		W		Ex	
		T	%	T	%	T	%	T	%
≤ 25	31			3	9.67	17	54.84	11	35.48
26 – 39	33	5	15.15	13	39.4	12	36.4	3	9.1
40 – 49	37	29	78.38	7	18.92			1	2.7
≥ 50	7	3	42.85	4	57.14				

Table 12: Relationship between Diagnosis and outcome

Diagnosis	No. of Cases	Outcome							
		R		PR		W		Ex	
		T	%	T	%	T	%	T	%
RHD	41	27	65.85	12	29.27	1	2.43	1	2.43
Ischemic Cardiomyopathy	35	3	8.57	5	14.28	19	54.28	8	22.86
DCM	21	4	19.04	4	19.04	9	42.85	4	19.04

Table 13: Showing mortality rates of HF in different age group

Age group	No. of PTS expired.	Total No	Percentage
20 – 39	-	40	-
40 – 59	9	42	21.42
≥ 60	6	26	23.08

Discussion

Among the 108 patients included in the study, 55.6% were male and 44.4% were female (Table–1) Male preponderance was seen in the study group. Considering the fact that major etiologies causing HF in males and female are the same, this male preponderance may be due to the fact that female still ignore their health and seeks medical attention only when they become seriously ill. The male dominance in society and lack of female literacy may be a contributing factor.

Age wise distribution showed 37.03% of the study population were in 20-39 yrs of age group, out of these 30% (12) were male and 70% (28) were female. Female preponderance was seen in this age group (Table-2).

Maximum number of patients (38.88%) was in 40-59 yrs age group. Out of these 73.8% were male 26.19% were female.

The rest 24.07% of the study group were in ≥ 60 yrs of age group.

Male preponderance was seen in the age group 40-59 and ≥ 60 yrs. (Table-2) the mean age in our study was 45.57 yrs. Among males it was 48.95 yrs and among females it was 41.35 yrs.

When all possible etiology or risk factors, such as hypertension and alcohol abuse, were excluded, the rate of "idiopathic" dilated cardiomyopathy in our study was 19.04% which is comparable to 18% as in Solvd studies [3]. In our study the rate of idiopathic dilated cardiomyopathy shown a relatively high percentage when compared to that reported in EPICAL study (11.4%) [4]. In the Framingham Heart Study [5], 11.2% of men and 16.8% of the women had CHF that was not attributable to hypertension, ischemic heart disease or rheumatic heart disease.

In our study, 77% of the ischemic heart disease group (CHD subgroup) had hypertension or a history of hypertension, a relatively high percentage when compared to that reported in the EPICAL study (44%). The high incidence of a history of hypertension in our study is consistent with that reported for CHF in the Framingham study, Solvd study and the Flolan International Randomized Survival Trial (FIRST) [6].

Hypertension was the sole cause of HF in 10.18% of the study population which is comparable to EPICAL study (13.8%) and a relatively high percentage when compared to that reported in white patients in Solvd.

Alcoholic cardiomyopathy is a well-known entity and alcohol abuse is a strong risk factor for idiopathic dilated cardiomyopathy. A number of studies have shown that disease progression is different in alcoholism compared with idiopathic DCM. In our study 13.8% of patients presented with alcohol abuse, and the level of alcohol abuse appeared higher in the non CHD subgroup than in the CHD subgroup (17% Vs 5.71%) as compared to (26% Vs 11%) in the EPICAL study [4,7].

Attributable causes of heart failure included CAD (n=35; 32.4%) and non CAD causes (n=73; 67.6%), [RHD (n=41; 37.96%),

dilated cardiomyopathy (n=21; 19.44%), others (n=10; 10.2%)].

When compared to the EPICAL study [8], non CAD subgroup showed a significantly higher percentage because of burden of Rheumatic heart disease. Low socioeconomic status, overcrowding, and unhyegneic environment in which the people live may be contributing factors. Of the dilated CM group (19.44% of the study group) had at least one concomitant predisposing or contributing risk factor: alcohol abuse (61.9%), hypertension (19.04%). No contributing risk factors were seen in the 19.04% of the DCM group patients.

Heart failure has diverse etiologies. In our study the commonest etiology was Rheumatic heart disease which constitutes 37.96% of the study group. Females (73.18%) were affected about three times as compared to males (26.82%) (Table-3).

The next most common cause was ischemic heart disease accounting for 32.4% of the study group. Males (68.57%) were affected more than females (31.43%).

Dilated cardiomyopathy constitutes 19.44% of the study group as a cause of HF (66.67% male; 33.33% females) [9].

Hypertension contributes to heart failure in 37.96% cases. It was present as co-morbid states in other causes of heart failure as well.

Among the other causes, chronic cor pulmonale contributes 4.62% of the study group.

When etiology of heart failure was charged with age group, it was seen that ischemic cardiomyopathy was the commonest cause of heart failure in 40 yrs age group and RHD was the commonest cause in <40 yrs age group. (Table-4)

In 40 yrs age group, Ischemic cardiomyopathy contributes to HF in 51.47% cases followed by DCM (27.94%).

Out of 108 patients included in the study, 28.7% population were smokes (74.2% were male and 25.8% were female.) 13.8% were alcoholic and 10.2% were obese (Table-5)

Hypertension was found to be the most common co-morbid states. It comprises 37.96% of the study group (58.54% were male and 41.46% were female) [10].

The next most common co-morbidities associated was coronary artery disease which comprises 32.4% of the study group (68.57% were male and 31.43% were female).

19.4% of the study group had dyslipidemia (66.67% male; 33.33% female), 12.96% had diabetes (57.14% male; 42.86% female) and 12.04% had COPD (69.23% male; 30.77% female) as co-morbid states. (Table-5)

The least common co-morbidities associated was chronic kidney disease which comprises 4.63% of the study group.

Out of 108 patients included in the study, 51.85% of HF patients belonged to NYHA-III (commonest), 32.41% of NYHA- IV and remaining 15.74% belonged to NYHA-II (Table-7).

Exertional dyspnea (93.52%) documented to be the commonest presentation followed by edema (81.48%), Night cough (45.37%) pain chest (35.2%), palpitation (37%) and orthopnea in 30.5% cases (Tabe-6).

Basal rales (82.4%) documented to be the commonest physical sign followed by cardiomegaly (70.4%), congestive hepatomegaly (67.6%), tachycardia (>120bpm)-56.48%, S_3 gallop (43.52%), JVD (39.8%). PND (33.3%), HJR (23.15%), ascites (19.4%), wheeze (18.5%), pulsus alternans and acute pulmonary edema

(7.4%) and pleural effusion in 3.7% cases. (Tables-6).

Anemia (36.1%) were documented to be the commonest precipitating factors in the study group followed by myocardial ischemia or infarction (32.4%), cardiac arrhythmia, AF (19.44%), Alcoholism (13.8%), infection (10.2%), volume overload (4.62%), pregnancy (3.7%) and thyrotoxicosis (1.85%).

In our study, the patient's outcome was categorized into recovered, partial recovery, worsening of HF and mortality depending on symptoms, exercise tolerance, NYHA functional class and physical findings. When outcome in HF was charted with ejection fraction, it was seen that mortality was highest (35.48%) among patient with EF 25%, followed by 9.1% among patients with EF 26-39%. The mortality was least (2.7%) among patient with EF40-49%. None of the patient expired among pt with EF 50%. The rate of worsening of HF among patients with EF 25% (54.84%) was about 1.5 times higher as compared to patients group with EF, 26-39% (36.4%) (Table - 11) [11].

The maximum number of patients who recovered or partially recovered were had EF 40%.

From the above discussion it was concluded that outcome in HF was directly related to the severity of LV systolic dysfunction [12,13].

When outcome in HF was charged with common causes of HF, it was seen that recovery or partial recovery (65.85%, 29.27%, respectively) was highest among patient with heart failure of rheumatic origin while the rate of worsening (54.28%) and mortality (22.86%) was highest among patient with heart failure due to ischemic heart disease (Table-12).

The rate of mortality in patient with ischemic heart failure in present study (22.86%) was lower as compared to EPICAL study [14] in which patients with ischemic heart failure carried a significantly increased (30%) risk of death compared to patients whose heart failure was due to non-ischemic causes.

The overall mortality was 13.9%. Maximum mortality was seen in age group ≥ 60 years (23.08%) (Table-13).

Conclusion

Thus, we conclude that more studies on heart failure, population based, with special emphasis on RHD and IHD are required to quantitate the problem. Aggressive screening for and treatment of Co-morbidities such as hypertension, CAD, Diabetes is required to identify the underlying structural heart disease. It is equally important to identify and treat factors that lead to worsening heart failure in stable patients. Alcohol and Smoking should be discouraged.

Health education (importance of proper diet as well as importance of compliance with the medical regimen) and promotion of drugs that prevent disease progression such as ACEI, ARB and Beta blockers with early identification and referral of patients who are candidates for Device therapy or valvular surgery can significantly affect frequent hospitalization and mortality.

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