JAMP

Original Research Article

CLINICAL FEATURES, ETIOLOGY AND OUTCOME OF HEART FAIURE PATIENTS: A PROSPECTIVE OBSERVATIONAL STUDY

Divyesh Sherasiya[1], Meghal Anadkat[2], Hiren Makwana[3], Pankaj S Patil[4]

[1]Senior Resident, Department of Medicine, PDU, Government Medical College, India.
[2]Associate Professor, Department of Medicine, PDU, Government Medical College, India.
[3]Assistant Professor, Department of Medicine, PDU, Government Medical College, India.
[4]Assistant Professor, Department of Medicine, PDU, Government Medical College, India.

Abstract

Background: Current evidence indicates that heart failure (HF) is usually a progressive condition that begins with risk factors for cardiac dysfunction, proceeds to asymptomatic changes in cardiac structure and function, and then evolves into clinically overt HF, disability, and death [10-12]. So objectives of our study were (1) To study clinical features & clinical presentation of heart failure patients.(2) To study life style related factors, morbidity and mortality in patients (3) To study echocardiography findings in patients (4) To detect high risk groups for heart failure among patients. **Materials and Methods:** A prospective observational study involving 100 patients. A pre tested semi-structured questionnaire was used to collect data. **Results:** Most common age group was 45 to 60, co-morbidity was hypertension and addiction was tobacco. Dyspnea on exertion and chest pain were common presenting features. Ischemia and LVH were common ECG findings. Cardiomegaly was seen in 33% patients' chest X ray. WMA (wall motion abnormality) and LV dilation were the common 2D ECHO findings. Ischemic heart disease (IHD) was the most common cause of heart failure and dilated cardiomyopathy was most common cause of death. **Conclusion:** Dyspnea on exertion and chest pain were common presenting symptoms. Hypertension was commonest co-morbidity. Regional or global wall motion abnormality was commonest ECHO finding. Ischemic heart disease was the commonest etiology for heart failure. Dilated cardiomyopathy was the commonest cause of mortality.

INTRODUCTION

Numerous studies have addressed the problem of chronic heart failure (HF) but acute HF has widely been neglected in the past. However, the number of patients suffering from acute heart failure (HF) is increasing, and the prognosis of acute, decompensated HF seems to be poor with a high in hospital and midterm mortality.[1–9] Current evidence indicates that heart failure (HF) is usually a progressive condition that begins with risk factors for cardiac dysfunction, proceeds to asymptomatic changes in cardiac structure and function, and then evolves into clinically overt HF, disability, and death.[10-12] So, objectives of our study were.[1] To study clinical features & clinical presentation of heart failure patients.[2] To study life style related factors, morbidity and mortality in patients.[3] To study echocardiography findings in patients.[4] To detect high risk groups for heart failure among patients.

MATERIALS AND METHODS

Study Design: Prospective observational study
Sample Size: 100
Sampling Method: purposive sampling method
Study Duration: September 2020 to October 2021
Study place: Patient admitted at PDU civil hospital Rajkot
Method of selection of participants: All patients who got admitted under medicine department at PDU civil hospital and fulfill inclusion and exclusion criteria were selected for the study (till sample size is achieved)

Inclusion Criteria
Age more than or equal to 20 years
With or without past history of heart failure and any other medical illness,
Willing to give informed written consent by self or through their relative.

Exclusion Criteria
Patients <20 year of age
Pregnant patients
Not willing to provide informed written consent

995

International Journal of Academic Medicine and Pharmacy (www.academicmed.org)
ISSN (O): 2687-5365; ISSN (P): 2753-6556

A pretested semi-structured questionnaire was prepared to gather information like age & sex of patients, addiction, past history of medical illness, thorough clinical examination findings including chest and cardiovascular auscultation. Patients were classified according to NEW YORK HEART ASSOCIATION (NYHA) functional class and diagnosis will be confirmed by ECG and ECHOCARDIOGRAPHY for assessment of left and right ventricular systolic and diastolic function.

Data Entry and Analysis

Data entry was done using MS Excel version 10.0 and data analysis was done using SPSS (Statistical package for social sciences) version 20.0. For qualitative type of data, frequency and percentage were calculated while for quantitative type of data, mean and standard deviation were calculated. Appropriate statistical test of significance of difference was applied according to the type of data. Ethical consideration: the research project was approved from institutional ethics committee of study institute before starting the project.

RESULTS

As seen from table 1 that about 76% patients of heart failure were from 46 to 75 years age group. Most common co-morbidity seen was hypertension. Tobacco and smoking jointly contributed for 58% of addiction among participants.

As seen from table 2 that most common presenting symptom was dyspnea on exertion seen in all cases while 2nd most common symptom was chest pain (70%). NYHA grade 3 or 4 breathlessness was seen in 31% cases. Tachycardia was seen in 67% patients. Hypertension was seen in 33% patients. Crepitations was seen in 73% cases. Murmur was present in 19% cases.

As seen from table 3 that anemia was present in 17% cases while higher cholesterol level was seen in 22% cases. RBS ≥200 mg/dl was seen in 8% patients. 2 most common ECG findings suggestive of ischemia and LVH were seen in 64% and 25% patients. Cardiomegaly was seen in 33% patients' chest X ray. Most common 2D ECHO finding was WMA (69%) followed by LV dilation (30%).

As seen from table 4 that Ischemic heart disease (IHD) was the most common cause (54%) for heart failure in patients while was followed by hypertension (46%) and diabetes (26%) among patients.

As seen from table 5 that most common cause for mortality was dilated cardiomyopathy (DCM) (36.4%) followed by rheumatic heart disease (14.3%)

Table 1: Demographic details and findings of life style related factors of patients

Variable	Sub group	No of patients(=%)
Age group	20-45 year	14
	46-60 year	42
	61-75 year	34
	>75 year	10
Gender	Male	57
	Female	43
Co-morbidities / Past history*	Ischemic heart disease	20
	Hypertension	42
	Diabetes mellitus	24
	Chronic obstructive pulmonary disease	9
	Rheumatic heart disease	6
	Congenital heart disease	1
	Chronic kidney disease	4
	Dilated cardiomyopathy	2
	Absent	20
Addiction**	Smoking	38
	Tobacco chewing	20
	Alcohol	7
	No addiction	49
* each patient can have multiple co-morbidities ** each patient can have multiple addiction		

Table 2: Findings of clinical features and clinical presentation of patients

Findings	Sub group	No of patients (= %)
Presenting symptoms	DOE	100
	Orthopnoea	40
	Chest pain	70
	Cough	37
	Palpitation	24
NYHA Grade of breathlessness	1	40
	2	29
	3	27
	4	4
Pulse rate	Bradycardia	1
	Normal	32
	Tachycardia	67
Respiratory rate	Normal	0
	Tachypnoea	100

Blood pressure	Hypertension	33
	Normal	58
	Hypotension	9
Respiratory system findings	Rhonchi	5
	Crepitations	73
	Wheezing/Crepitations	15
	Rhonchi /Crepitations	7
Cardiovascular system findings	S1S2	100
	MURMUR	19
	OTHER findings	S3 present- 48, LOUD P2 - 8, LP HEAVE - 8

Table 3: Laboratory examination, chest X-Ray and ECHO findings of patients

Findings	Sub group	No of patients (= %)
Haemoglobin	Normal	83
	Anaemia	17
Cholesterol	High cholesterol (>200)	22
	Border line high (150-200)	60
	Normal(<150)	18
RBS (mg/dl)	≥200	8
	<200	92
ECG finding*	ARRHYTHMIA(AF+VT)	14(13+1)
	ISCHEMIA	64
	LVH	25
	LBBB	14
	RAD/RVH	9
	LOW VOLTAGE	7
	NORMAL	7
Chest X Ray finding*	Normal	0
	Cardiomegaly	33
	Left heart failure (Pulmonary oedema + Kerley B line)	101 (88 + 13)
	Right heart failure (COPD + Pleural effusion)	8 (8 + 0)
2D ECHO findings*	LA DILATION	23
	LV DILATION	30
	RA DILATION	19
	RV DILATION	24
	ALL DILATION	11
	WMA (REGIONAL+GLOBAL)	69 (54+15)
	PAH	19
*each patient can have multiple findings		

Table 4: Findings of underlying etiological factors among patients

Underlying Etiology	Total patients No. (%)	Male No. (%)	Female No. (%)
Hypertension	46 (100)	22 (47.8)	24 (52.2)
IHD	54 (100)	32 (59.2)	22 (40.8)
DM	26 (100)	14 (53.8)	12 (46.2)
RHD	7 (100)	2 (71.4)	5 (28.6)
COR-P	8 (100)	7 (87.5)	1 (12.5)
CKD	9 (100)	6 (66.7)	3 (33.3)
ANAEMIA	17 (100)	7 (41.2)	10 (58.8)
HYPOTHYROID	7 (100)	2 (28.6)	5 (71.4)

Table 5: Cause for mortality among patients

Cause for mortality	No. OF PATIENT (%)	No. of EXPIRED PATIENTs (%)
CKD	9 (100)	1 (11.1)
COR-P	8 (100)	0 (0)
DCM	11 (100)	4 (36.4)
RHD	7 (100)	1 (14.3)
IHD	54 (100)	6 (11.1)
HTN	46 (100)	1 (2.2)

DISCUSSION

Ours was a cross sectional study involving 100 patients of heart failure patients admitted to study hospital. In our study, mean age is 58.65 + 1.42 The study conducted by Kamilu M Karaye et al showed that mean age of all the patients was 46.90 ± 17.89

years while they were 73+ 12 and 69 + 12.3 in the studies by Alain Rudiger et al and Masayuki Sato et al respectively.[13-15] In our study the ratio of male to female patients was 57:43 while the same ratio were 55.7: 44.3, 56.4: 43.9, 48:52 and 68.2: 31.8 in the studies conducted by Kamilu M Karaye et al, Alain

997

Rudiger et al , khwaja Afzal Ammar et al and Masayuki Sato et al respectively.[13,14,16,15]

In our study, hypertension was seen in 42% patients while the same were seen in 53.8% , 29.32% and 89.4% patients in the studies by Alain Rudiger et al, khwaja Afzal Ammar et al and Masayuki Sato et al respectively.[14,16,15] So it can be seen from above studies that hypertension prevails in range of 42% to 89% among patients. In our study, diabetes was present in 24% patients while it was seen in 32.1%, 7.54% and 39.5% patients in the studies by Alain Rudiger et al, khwaja Afzal Ammar et al and Masayuki Sato et al respectively.[14,16,15] So it can be seen from above studies that diabetes prevails in range of 8% to 40% among patients. In our study, cigarette smoking was seen in 38% patients while the same were seen in 32.1% and 46.3% patients in the studies by Alain Rudiger et al and Masayuki Sato et al respectively.[14,15]

Most common 3 presenting symptoms in our study were shortness of breath (100%), chest pain (70%) and orthopnea (40%) while they were dyspnea (94%), orthopnea (71.8%) and chest pain (36.4%) in study by Alain Rudiger et al.[14] Breathlessness of NYHA grade 3 or 4 was seen in 31% patients in our study while the proportions of the same were 94.1% and 11% in the study by Alain Rudiger et al and Masayuki Sato et al respectively.[14,15]

 Mean RR was 27.92 + 0.35 in our study while it was 22 in study by Alain Rudiger et al.[14] So RR ranges from 22 to 28 in patients as seen from both of these studies. Mean heart rate in our study was 111.46 + 3.29 while the same were 90 and 73.4 in studies by Alain Rudiger et al and Masayuki Sato et al respectively.[14,15] So it can be said from above studies that heart rate ranges from 73 to 111 among patients. In our study, anaemia was seen in 17% patients while the same were seen in 40.5% and 42.1% patients in studies by Kamilu M Karaye et al and by Alain Rudiger et al respectively.[13,14] Ischemia was seen in 64% in our study while ACS (Acute coronary syndrome) was seen in 26.9% in the study by Alain Rudiger et al.[14]

Chest X ray showed pulmonary edema in 88% patients while 13% showed Kerley B lines in our study. Chest X Ray showed Alveolar infiltrates in 14.3%, Interstitial congestion in 27.6% and Pleural effusion in 50.7% as per the study by Alain Rudiger et al.[14] ECG showed arrhythmia in 40.5%, prolonged Qt interval in 27.9%, compete LBBB in 2.5% in the study by Kamilu M Karaye et al while arrhythmia was seen in 14% & LBBS was seen in 14% patients in our study.[13] So prevalence of arrhythmia ranges from 14 to 40% and LBBS ranges from 2.5 to 14% as can be seen from both of these studies. LEEF ≤50% was seen in 70% patients in ECHO findings of our study. LVEF ≤ 50% was seen in 66.8% and 34.5% in the studies by Alain Rudiger et al and Masayuki Sato et al respectively.[14,15] So LVEF ≤50% was seen in range of 35% to 67% from above studies.

IHD (ischemic heart disease) was cause of heart failure in 54% patients in our study while the same was the cause in 50.3% patients in the study by Masayuki Sato et al.[15] Hypertension was underlying etiology in 46% patients in our study while the same was seen in 57% in the study by Kamilu M Karaye et al.[13] Rheumatic Heart disease (RHD) was responsible for 7% case of heart failure in our study while the same was responsible for 12.7% cases in the study by Kamilu M Karaye et al.[13] Co-pulmonale was underlying etiology in 9% cases in our study while the same was responsible for 2.5% cases in the study by by Kamilu M Karaye et al.[13] So it can be seen that IHD contributed for heart failure in 50 to 54% cases, Hypertension for 46 to 57% cases, RHD for 7 to 13% cases and cor pulmonale for 2.3 to 3% cases as seen from above studies.

CONCLUSION

Three most common presenting symptoms of heart failure patients were dyspnea on exertion, chest pain and orthopnea. Most common age group involved was 46 to 60 years. Three most common co-morbidities were hypertension, diabetes and Ischemic heart disease. Tobacco addiction was found in about 60% patients. NYHA grade 3 breathlessness was seen in about 1 out of every 4 cases. Crepitations was seen in about 3/4th cases while murmur was seen in about 1/5th cases. Regional or global wall motion abnormality was the most common ECHO finding which was followed by left ventricular dilation. Ischemic heart disease was the most common etiology for heart failure. Dilated cardiomyopathy was the most common cause of mortality among patients.

REFERENCES

1. McMurray J, McDonagh T, Morrison CE, Dargie HJ. Trends in hospitalization for heart failure in Scotland 1980–1990. Eur Heart J 1993;14:1158– 62.
2. Cowie MR, Mosterd A, Wood DA, et al. The epidemiology of heart failure. Eur Heart J 1997;18:208– 23.
3. Cowie MR, Wood DA, Coats AJ, et al. Incidence and aetiology of heart failure: a population-based study. Eur Heart J 1999;20:421– 8.
4. Brophy JM, Deslauriers G, Boucher B, Rouleau JL. The hospital course and short term prognosis of patients presenting to the emergency room with decompensated congestive heart failure. Can J Cardiol 1993;9:219– 24.
5. Haldeman GA, Croft JB, Giles WH, Rashidee A. Hospitalization of patients with heart failure: National Hospital Discharge Survey, 1985– 1995. Am Heart J 1999;137:352– 60.
6. Jaagosild P, Dawson NV, Thomas C, et al. Outcomes of acute exacerbation of severe congestive heart failure. Arch Intern Med 1998;158:1081 –9.

998

International Journal of Academic Medicine and Pharmacy (www.academicmed.org)
ISSN (O): 2687-5365; ISSN (P): 2753-6556

7. Rame JE, Sheffield MA, Dries DL, et al. Outcome after emergency department discharge with primary diagnosis of heart failure. Am Heart J 2001;142:714– 9.

8. Levy D, Kenchaiah S, Larson MG, et al. Long-term trends in the incidence of and survival with heart failure. N Engl J Med 2002;347:1397 –402.

9. Jessup M, Brozena S. Heart failure. N Engl J Med 2003;348:2007– 18.

10. Hunt SA, Abraham WT, Chin MH, Feldman AM, Francis GS, Ganiats TG, Jessup M, Konstam MA, Mancini DM, Michl K, Oates JA, Rahko PS, Silver MA, Stevenson LW, Yancy CW. ACC/AHA 2005 guideline update for the diagnosis and management of chronic heart failure in the adult: summary article: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Update the 2001 Guidelines for the Evaluation and Management of Heart Failure). Circulation. 2005;112:1825–1852.

11. Kenchaiah S, Narula J, Vasan RS. Risk factors for heart failure. Med ClinNorth Am. 2004;88:1145–1172.

12. Kamilu M Karaye, Mahmoud U Sani. Factors associated with poor prognosis among patients admitted with heart failure in a Nigerian tertiary medical centre: a cross-sectional study. BMC Cardiovascular Disorders 2008. 8;16:1-8

13. Alain Rudiger, Veli-Pekka Harjola, Andreas Mqller, Eero Mattila, Petrus S7ila, Markku Nieminen, Ferenc Follath. Acute heart failure: Clinical presentation, one-year mortality and prognostic factors. The European Journal of Heart Failure. 2005;7: 662– 670

14. Masayuki Sato , Yasuhiko Sakata, Kenjiro Sato , Kotaro Nochioka b, Masanobu Miura , Ruri Abe et al. Clinical characteristics and prognostic factors in elderly patients with chronic heart failure -A report from the CHART-2 study. IJC Heart & Vasculature.2020;27:100497-503

15. Khawaja Afzal Ammar, Steven J. Jacobsen, Douglas W. Mahoney, Jan A. Kors, Margaret M. Redfield, John C et al. Application of the American College of Cardiology/American Heart Association Heart Failure Staging Criteria in the Community. Circulation. 2007;115:1563-1570

999

International Journal of Academic Medicine and Pharmacy (www.academicmed.org)
ISSN (O): 2687-5365; ISSN (P): 2753-6556