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A STUDY ON CLINICAL PROFILE OF THE PATIENTS WITH CONGESTIVE HEART FAILURE

Medicine

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ABSTRACT

Background: Heart failure (HF) is a common cardiovascular condition whose prevalence and incidence is increasing in the recentpast. Multiple risk factors involved in its genesis makes it more complex in the prevention and management.
Objective: The present study aimed to assess the clinical profile of the patients suffering with heart failure.
Methods: Prospective observational study was undertaken among the patients admitted in the Medical unit of Govt. Medical College and Hospital, Bettiah during October 2018 and September 2019. Patients fulfilling EuropeanSociety of Cardiology (ESC) criteria of HF were included in the study. Prevalence of congestive HF was estimated based on community study and hospital OPD.
Results: Smoking, alcoholism, ischemic heart disease and hypertension were the leading risk factors in developing HF. Breathlessness(100%), swelling of the feet (92.3%), cough (57.7%) and palpitation (50%) were the most common symptoms observed inthe patients. Oedema feet (100%), basal crepitations (80.3%), raised Jugular Venous Distention (JVD) (57.7%) and S3 (57.7%)were the leading signs in the patients. Chest X-ray (CXR) findings indicate that 76.9% of the patients reported with increasedCardiothoracic ratio. Arrhythmias (predominantly AF-19.2%) and Left Ventricular Hypertrophy (LVH) accounted for 26.9% each. The prevalence of HF was estimated to be in between 0.51 to 27.27 respectively.

KEYWORDS

Heart Failure; Smoking; Hypertension; Prevalence.

INTRODUCTION

Heart failure (HF) is a major public health problem having a prevalence of range from 1.3 million to 4.6 million, with an annual **incidence** of 491 600–1.8 million in India. HF is primarily considered as a condition of theelderly with an incidence of 10 per 1000 population afterage 65; while approximately 80% of patients hospitalized withHF are more than 65 years old. The linear growth rate ofHF is a sign of its increased prevalence due to population agingand advances in medical treatment. Recent statistics indicatesthat length of survival among the HF patients is increasing. Thistrend entails high costs for countries of which elderly populationis on the rise. HF is a complex syndrome, characterized by its inability to supply blood to cater the metabolic needs of tissuesin the presence of normal filling pressures or being capable ofdoing it only at high filling pressures. HF is a growing causeof hospitalization around the world with a lifetime risk of 1 in 5.

HF can originate from CAD, high blood pressure, rheumatic heartdisease, or other causes like cardiomyopathies, congenital heartdisease, endocarditis and myocarditis. It is still a common reasonfor urgent admission to hospital and a major cause of morbidityand mortality.

Since HF is a multifactorial one, often it becomes difficult toframe health policies for its reduced incidence. In spite of theincreasing recognition of the importance of HF, epidemiological, clinical and therapeutic data on the disease are still woefullyinadequate which makes it difficult to define priorities in orderto establish preventive strategies. Economic and social impactof heart failure has warranted the necessity to have furtherinformation on these patients' profiles. The incidence of HF and thenumber of hospital admissions have increased in recent years tosuch proportions as to become an important public health problemin India. Therefore, the present study was undertaken to assess theclinical manifestations of the patients with HF and to identify themost frequent risk factors associated with HF among the patientstreated at Medicine ward in GMC, Bettiah, Bihar.

MATERIALAND METHOD

Prospective observational study was undertaken among the 26patients with an age range of 25 to 70 years (15 male + 11 female)admitted in the Medical unit of GovernmentMedical College and Hospital, Bettiah, W. Champaran, Bihar during October 2018 and September 2019. All the patients fulfilled the European Society of Cardiology(ESC) criteria for Congestive Heart Failure (CHF). The sample sizewas established assuming a 95% confidence interval with 3%sampling error. A structured proforma was designed to capture information onclinical profile of the patients and validated in the pilot study. Theproforma consisted information on demographic, anthropometricand clinical data. Details of major cardiovascular risk factors suchas smoking, alcohol intake, diabetes mellitus (DM), hypertension(HTN), ischemic heart disease (IHD), and hyperlipidemia wererecorded. The physical examination included measurement ofheight, weight, waist-hip ratio (WHR) and blood pressure (BP).

Height was measured in centimeters and weight in kilograms usinga calibrated spring balance. The supine waist girth was measuredat the level of the umbilicus (during quite breathing) and thestanding hip girth was measured at the inter-trochanteric level.

Jugular Venous Pressure (JVP) was measured in centimetersas 5+ (as the vertical distance from the top of the pulsation in thejugular veins to the angle of Louis). Patients were examined bothat sitting and lying down positions with their head title at 45^0 andfor abdomino-jugular reflux. Blood pressure was measured using standard mercury sphygmomanometer. 12 lead standard ECG wasrecorded using proper standardization. Chest X-ray was takenand cardio-thoracic ratio was calculated. Trans thoracic echocardiography(TTE) was done in all cases. Patients were subjectedto investigations and medical care as per the regular practice inthe ward.

Further an attempt was made to quantify the problem ofcongestive HF in the community. Because of paucity of datathis exercise may provide, at the best, an educated guess or aguesstimate.

ESC guidelines

Essential features: Symptoms of heart failures (e.g.breathlessness, fatigue, either at rest or during exertion, or ankleswelling) and objective evidence of cardiac, dysfunction (at rest).

RESULTS

Prevalence of risk factors in the study population was shownin table 1 and 2. Smoking and alcoholism were the predominantrisk factors followed by IHD and hypertension. The commonestsymptoms observed among the HF patients were breathlessness.

More than 90 percent of the subjects developed swelling in thefoot. Around 50 percent of the subjects experienced cough andpalpitation. The symptoms of chest pain, fatigue and giddiness wasnoticed in about 30 per cent of the sample. Syncope was noticed toan extent of 19 percent respectively.

Table 1 : Relative frequency of risk factors for HF (n=26)

Sl. No.	Risk Factor	Number	Percentage
1	Smoking	10	38.5
2	Alcohol	10	38.5
3	IHD	8	30.8
4	HTN	6	23.1
5	DM	2	7.7
6	Hyperlipidemia	1	3.8
7	Rheumatic fever	1	3.8

Table 2 : Relative frequency of symptoms in patients with HF (n=26)

Sl. No.	Risk Factor	Number	Percentage
1	Breathlessness	26	100.0
2	Swelling of feet	24	92.3
3	Cough	15	57.7
4	Palpitation	13	50.0
5	Chest pain	9	34.6
6	Fatigue	8	30.8
7	Giddiness	7	26.9
8	Syncope	5	19.2

Mean values for anthropometry was presented in table 3. Averagebody mass index (BMI) in the study population was 20.62 ±5.57 kg/m2 ranging between 11.34 and 30.48 respectively. WHRwas ranging between 0.78 and 1.02 with a mean value of 0.91 ± 0.06. Average systolic and diastolic blood pressure in the studypopulation was 130.38 ± 25.43 mmHg and 89.46 ± 17.00. mmHg.

Similarly average pulse pressure was 42.84 ± 16.25 respectively.The frequency distribution of physical examination parameterswere shown in table 4. Edema foot was noticed in all the cases underinvestigation. JVD and Crackles were noticed to an extent of92.3% and 80.3%. Third heart sound, hepatomegaly, pallor andmurmurs were noticed in 50% of the patients. Sacral edema wasseen in 35% of the subjects followed by parasternal pulsation, flatnote on percussion and cyanosis for about 15.3%, 11.5% and 3.8%respectively.

Table 3 :Anthropometry in patients with HF

Criteria	Range	Mean	S.D.	Median
Weight (Kg)	32-84	54	12.8	53.5
Height (Meters)	140-173	159	9.55	158
BMI (Kgs/m^2)	11.34-30.48	20.62	5.57	19.71
Waist circumference (cms)	34-95	75.19	14.40	74
Hip circumference (cms)	36-105	82.5	13.81	80.5
WHR	0.78-1.02	0.91	0.06	0.91
Pulse rate (bpm)	74-160	101.76	20.72	100
SBP (mmHg)	80-180	130.38	25.43	130
DBP (mmHg)	40-120	89.46	17.00	90
Pulse pressure (mmHg)	20-70	42.84	16.25	40

Table 4 : Relative frequency of symptoms in patients with HF (n=26)

Sl. No.	Condition	Number	Percentage
1	Edema feet	26	100.00
2	JVD	24	92.3
3	Crackles	21	80.3
4	Third heart sound	15	57.7
5	Hepatomegaly	13	50.0
6	Pallor	12	46.1
7	Murmurs	12	46.1
8	Sacral edema	9	34.6
9	Parasternal pulsation	4	15.3
10	Flat note	3	11.5
11	Cyanosis	1	3.8

Results on the CXR, ECG and ECHO were shown in table 5.

Among the CXR findings: cardiomegaly was noticed among 77%of the patients. Around 23 percent of the subjects reported withfailure changes. No changes were reported among 31% of the patients.Among the ECG findings: 27% were noticed with LVH andarrhythmias (Atrial fibrillation 19.2% and premature beats 7.6%)followed by ischaemic changes 23%, others 19%, RVH 7.6%, LBBBand RBBB each 3.8% respectively. In the ECHO findings: EF of ≥ 40was noticed among 69% and < 40 was noticed in 27% of the subjects.Further hypokinesia and chamber enlargement was noticedfor about 47% and 31% respectively.Prevalence data on congestive heart failure in medical OPD andcommunity setting was shown in table 6. In medical OPD, 2% ofthe subjects noticed with heart failure. HF was below 2% in 25 – 59years age group and it was 5.35% in those aged above 60 years.

Similarly in Geriatrics OPD: 5% of the patients had HF; in emergencyOPD: 4.5% of the patients had HF in the age group of 15 – 59years and 27% of patients in those above 60 years subjects. In thefield survey, 0.5% had HF in the age group of 25- 59 years and 1.7%among those ≥ 60 years. The frequency of HF was found to be 3% in old age homes.

Table 5 : Relative frequency and percentage findings on CXR, ECG and ECHO

Sl. No.	Risk Factor	Number	Percentage
CXR			
1	Cardiomegaly	20	76.9
2	Failure changes	6	23.1
3	No changes	8	30.7
ECG			
1	LVH	7	
2	Arrythmias Arterial Fibrillatin Premature beats	7 5 2	
3	Ischemic changes	6	
4	Others	5	
5	RVH	2	
6	LBBB	1	
7	RBBB	1	
ECHO			
1	EF ≥40 <40	18 7	69.2 26.9
2	Hypokinesia	12	46.9
3	Chamber enlargement	8	30.8

Table 6 :Data on the prevalence of congestive heart failure in medical OPD and community setting

Age	Number screened	Heart failure	Percentage
Medical OPD			
25-59	718	12	1.67
≥60	56	3	5.35
Total	774	15	1.91
Geriatric OPD			
≥60	309	15	4.85
Emergency OPD			
25-59	179	8	4.46
≥60	22	6	27.27
Total	201	14	6.96
Field survey data on 150 households			
25-59	389	2	0.51
≥60	59	1	1.69
Total	448	3	0.67
Old age homes			
≥60	63	2	3.17

DISCUSSION

The present study sought to examine the clinical profile of thepatients with heart failure. The results clearly indicate that themost susceptible

for developing HF was > 60 years and our resultswere in best agreement with the findings from Framingham study. The common risk factors associated with HF was found to besmoking, alcohol abuse, ischemic heart disease and hypertension.Though the data from Framingham study shows that systolic arterialhypertension and CAD were the main risk factors for the developmentof HF, but in our HF patients smoking and alcoholism precededover the hypertension and ischemic heart disease. Similarobservations were reported by Firmida.,*et al*. [7] and Nogueira., *et al*. Ferreira., *et al*. study reported that valvular disease,CAD and HTN were the predominant risk factors for developingHF. The relative risk of death in patients with decompensated HFwas low pulse pressure. On the other side high pulse pressuremay lead to unrecognized thyrotoxicosis or anemia. An increase inrespiratory rate (usually > 16 breaths/minute) accompanies dyspnoea,and may signal the onset of acute decompensation of stableHF. In the present sample average respiratory rate was foundto be 26.3.

Dyspnoea and edema were the predominant symptoms besidesfluid overload with which the patients presented themselves to thehospital as observed by ADHERE study and Euro Heart Failure survey.This establishes the primacy of breathlessness, as a presentingsymptom of Heart failure. The cardinal symptoms of HF wereshortness of breath and fatigue that occur either with rest and/orwith exertion. Hence, elucidating the history and physical examinationto determine whether the patient is in natural history ofsyndrome or will have sizeable effect in offering treatment. Nonproductivecough was the next most prevalent symptom, whichis a dyspnoea equivalent and may suggest LVD. Cough waspresent in 57.7% of patients in the present study against 69% ina US National Health Interview Survey. The other important symptom was palpitation. This may be a presenting symptom inpatients with decompensated HF. The character of palpitation mayserve to identify the nature of underlying arrhythmias. Sensationof pauses and skipped or forceful beats suggest premature atrial orventricular complexes. Rapid palpitations can be irregular as with atrial arrhythmias, such as atrial flutter, fibrillation or tachycardiaor regular suggesting sinus supraventricular, or ventricular tachycardia.

Arrhythmias are well known precipitants of HF (especiallyAF) and in the present study arrhythmias were seen in 26.9% andAF in 19.2% of patients. In the present study, chest pain was foundin 34 6% of patients. Fatigue was another common complaint inpatients with HF. Evangelesta., *et al*. study observed 50.4% of men and 51.2% of women with heart failure reported with fatigue.

Measuring the heart rate is critical in the initial assessment ofpatients because decompensation may be due to bradycardia ortachycardia. But tachycardia is said to be too insensitive to have anyuseful predictive value. The strength of pulse is also importantfor assessing the adequacy of cardiac output. Alteration in intensityof the pulse from strong to weak (mechanical alternans) has beenshown to be common in HF and is associated with abnormal cardiacstructure and function. Inequality of peripheral pulses may givea clue about the presence of CAD. Physical examination revealedtachycardia in 57.7% in the present study.

Watson.,*et al*. opined that edema is too insensitive to haveany useful predictive value. All of the patients in the study reportedwith edema. JVP is the most useful physical finding for detectingdecompensated HF and has high specificity. Elevated JVP is independentlyassociated with adverse outcomes, including progressionof HF as observed in the present study. Francis studyreported third heart sound in patients with advanced heart failureas noticed in the present study. Further increased cardiothoracicratio was noticed in our patients. A complete normal ECG has a highnegative predictive value for HF (> 90%). In Euro Heart Failuresurvey, 10% of patients presented with AF against 19.2% inthe present study, and the results were in accordance with CHARMtrials. ECHO evidence of LVH will remain an independent predictorof adverse events. Thus, it is possible to define a pattern ofsigns and symptoms and a profile of investigations in patients withHF. The reported data on anthropometry of the study population isin line with other population groups.

REFERENCES

1. Drazner MH., et al. “Prognostic importance of elevated jugular venous pressure and a third heart sound in patients with heart failure”. New England Journal of Medicine 345.8 (2001):574-581.
2. Evangelista LS.,et al. “Correlates of Fatigue in Patients With Heart Failure”. Progress in Cardiovascular Nursing 23.1 (2008): 12-17.
3. Ferreira A., et al. “Epidemiologic features of congestive heart failure. Retrospective analysis of 2561 hospitalizations”. Revista Portuguesa de Cardiologia15.5 (1996): 395-410.
4. Firmida CC and Mesquita ET. “O paradoxo do tratamento da ICC com betabloqueadores: implicaçõesparapacienteshipertensos”. RevistaBrasileira De Hipertensão8.4 (2001): 458-465.
5. Francis GS. “Pathophysiology of chronic heart failure”. American Journal of Medicine 110.7A (2001): 37S-46S.
6. Hanyu Ni. “Prevalence of Self-Reported Heart Failure Among US Adults: Results from the 1999 National Health Interview Survey”. American Heart Journal 146.1 (2003): 121-128.
7. Hawkins NM., et al. “Prevalence and prognostic implications of electrocardiographic left ventricular hypertrophy in heart failure: evidence from the CHARM programme”. Heart 93.1 (2007): 59-64.
8. Ho KKL., et al. “The epidemiology of heart failure: the Framingham study”. Journal of the American College of Cardiology 22.4A (1993): 6A-13A.
9. Hummel A., et al. “De Novo Acute Heart Failure and Acutely Decompensated Chronic Heart Failure”. DeutschesÄrzteblattInternational 112.17 (2015): 298-310.
10. Hunt SA., et al. “2009 focused update incorporated into the ACC/AHA 2005 Guidelines for the Diagnosis and Management of Heart Failure in Adults: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines: developed in collaboration with the International Society for Heart and Lung Transplantation”. Circulation 119.14 (2009): e391-e479.
11. Masoudi FA., et al. “The burden of chronic congestive heart failure in older persons: magnitude and implications for policy and research”. Heart Failure Reviews 7.1 (2002): 9-16.
12. Nogueira PR., et al. “Epidemiological, clinical and therapeutic profile of heart failure in tertiary hospital”. ArquivosBrasileiros de Cardiologia95.3 (2010): 392-398.
13. Petrie CJ., et al. “Low pulse pressure as a poor-man’s indicator of a low cardiac index in patients with severe cardiac dysfunction”. Journal of Cardiovascular Medicine 15.4 (2014): 315-321.
14. Reddy TM.,et al. “Metabolic Profile and Body Fat Distribution in Diabetic Hypertensives and Normotensives”. Journal of Life Science 5.1 (2013): 23-28.
15. Remme WJ and Swedberg K. “Guidelines for the diagnosis and treatment of chronic heart failure”. European Heart Journal 22.17 (2001): 1527-1560.
16. Schocken DD., et al. “Prevalence and mortality rate of congestive heart failure in the United States”. Journal of the American College of Cardiology 20.2 (1992): 301-306.
17. Vasan R and Levy D. “Defining diastolic heart failure. A call for standardized diagnostic criteria”. Circulation 101.17 (2000): 2118-2121.
18. Watson RD., et al. “ABC of heart failure. Clinical features and complications”. British Medical Journal 320.7229 (2000): 236-239.