



ORIGINAL RESEARCH PAPER

Medicine

STUDY OF ETIOLOGY AND CLINICAL PROFILE OF PATIENTS WITH HEART FAILURE WITH PRESERVED EJECTION FRACTION

KEY WORDS: Heart failure and preserved ejection fraction.(HFPEF), hypertension, diabetes mellitus, obesity, dyslipidemia and renal dysfunction, Ischemic heart disease.

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ABSTRACT

AIM–To study the etiology and clinical profile of patients with Heart failure and preserved ejection fraction.
METHODS – Patients admitted to the PMCH central emergency and the OPD with heart failure were included in the study. After proper evaluation and data collection the patient of Heart Failure with preserved ejection fraction were taken as case and those with decreased ejection fraction formed the control wing. The data collected were tabulated and statistically analysed.
RESULTS – HFPEF accounts for 40% of all heart failures. HFPEF is more common in elderly population(mean age 70 yrs). Important risk factors for HFPEF are female gender(60%), hypertension(78%), diabetes mellitus(45%), obesity(60 %), dyslipidemia(30%) and renal dysfunction(25%). Ischemic heart disease(40%) and hypertension are the common causes of HFNEF. The electrocardiographic profile consisted of atrial arrhythmias(60 %), LVH(30%), bundle branch blocks, etc. Chest radiography revealed cardiomegaly(30%), pulmonary venous hypertension, pulmonary plethora, pulmonary edema(2%). Echocardiographic profile included preserved ejection fraction(mean 55%), diastolic dysfunction, left ventricular hypertrophy, reduced mitral inflow, increased LA volume.
SUMMARY AND CONCLUSION – HFPEF contributes to 40% of all heart failures. HFPEF is more common in elderly population. Important risk factors for HFPEF are hypertension, diabetes mellitus, obesity, dyslipidemia and renal dysfunction.

INTRODUCTION

Diastolic heart failure (DHF) is a clinical syndrome in which patients have symptoms and signs of heart failure (HF), normal or near normal left ventricular (LV) ejection fraction (EF), normal or near normal LV volume, and evidence of diastolic dysfunction (eg, abnormal pattern of LV filling and elevated filling pressures)¹. By contrast, systolic heart failure (SHF) is characterized by increased LV volume and reduced EF.

There is increasing consensus that about 50% of patients with the clinical features of chronic heart failure suffer from heart failure with preserved ejection fraction (HFpEF)². Epidemiological observations from different populations confirm that the prevalence of HFpEF is increasing, especially in obese³ hypertensive females. The available epidemiological data suggests that these patients are, as a group, older, more commonly female, and more frequently have systolic hypertension (associated with stiff large arteries) than those patients with a reduced LVEF⁴.

MATERIALS & METHODS :-

Eighty patients admitted with symptoms and signs of heart failure at Patna Medical college & Hospital, Patna from July 2016 to June 2018 were included in the study. It was a cross sectional study. All patients with heart failure by Framingham Criteria⁵ were included in the study group. Patients with congenital heart disease and Cor pulmonale with CHF were excluded from the group. The selected patient were then be evaluated clinically for demographics, age ,sex, occupation, clinical presentation – symptoms and signs and comorbid conditions- hypertension, DM, obesity, hyperlipidemia. The subjects underwent the following routine biochemical and radiological tests CBC, R/E of urine, Serum creatinine, Blood urea, Blood sugar, Hb%, Lipid profile, X Ray Chest, ECG and ECHOCARDIOGRAPHY.

The clinical evaluation included symptoms and signs of heart failure. The symptom profile included dysnoea, orthopnoea, PND, palpitation, pedal edema, chest pain, cough ,easy fatigability etc . physical examination included signs like basal crepitation, JVP , hepatomegaly, pedal edema, S3 ,murmur etc.

2-D echo was done and EF and diastolic dysfunction were measured. Subjects having EF >45 and diastolic dysfunction were classified as HFPEF, and subjects with EF less than 45 were classified as systolic heart failure. Ejection fraction was determined by M mode measurement⁶ and Simpson's method⁷. Diastolic

dysfunction was assessed by using echo Doppler markers i.e E/A ratio, e' and E/e' ratio.

The clinical, etiological and biochemical profile of both the groups were compared and tabulated.

Classification of HF

Each incident HF was classified sequentially by
 (1) LVEF and
 (2) hierarchical causal classification. HF was categorized as HFREF (LVEF <45%) or HFPEF (LVEF ≥45%) on the basis of an a prior cutoff value derived from a prior evaluation, which demonstrated a linear increase in mortality risk for ejection fractions (EFs) <45%.

HF cause was classified as CHD if prior myocardial infarction or coronary insufficiency were present. Those without CHD were classified as having VHD if there was severe aortic or mitral valve disease on echocardiography with the use of standard criteria.

The majority of participants with a systolic murmur grade ≥3/6 or any diastolic murmur by physician auscultation were also found to have significant valvular disease on echocardiography and were therefore also classified as having VHD.

HF was attributed to hypertension if the participant did not have CHD or VHD but had Joint National Committee stage II hypertension (blood pressure ≥160/100 mm Hg) at a clinic visit or was taking antihypertensive therapy.

Those without CHD, VHD, or hypertension were classified as "other or unknown." Therefore, after the classification process described above, HF patients were categorized into 4 mutually exclusive causal groups.

RESULT

	HFPEF	LVSD
MEAN AGE(YRS)	70	64
FEMALES %	60	40
RISK PROFILE		
DM	45 %	35 %
HTN	78 %	60 %
HYPERLIPIDEMIA	30 %	36 %
ATRIAL ARRHYTHMIAS	35 %	25 %
OBESITY	60 %	30%

CKD	25 %	22 %
SMOKING HISTORY	56 %	70%
ETIOLOGY		
ISCHEMIC	40 %	52 %
HYPERTENSIVE	35 %	20 %
VALVULAR HEART DISEASE	25 %	17 %
IDIOPATHIC	20 %	15 %
CLINICAL PROFILE		
ACUTE PUL EDEMA	2%	5%
CHEST PAIN	24%	23%
DYSPNOEA AT REST	40%	40%
DYSPNOEA ON EXERTION	60%	60%
RALES	62%	60%
LOWER EXTREMITY EDEMA	60%	70%
JVD	24%	36%
ECG PROFILE		
SINUS RYTHM	40 %	50 %
QRS DURATION IN ms	100	112
ATRIAL FIBRILLATION	60 %	50 %
LBBS	10 %	20 %
RBS	22 %	24 %
ST CHANGES	30 %	40 %
LVH	30 %	20 %
ECHO PROFILE		
EF(mean)	55%	35%
DIASTOLIC DYSFUNCTION	100 %	20 %
Grade 1	55%	90%
Grade 2	30%	10%
Grade 3-4	15%	
LVH	30%	15%
VALVULAR HEART DISEASE	25 %	17%

DISCUSSION

The present study aims to evaluate the clinical profile of patients with heart failure with preserved ejection fraction. In our study out of 80 heart failure patients 40% had HFPEF and 60 % had systolic heart failure. Among cases with HFPEF mean age was 70 years and 60% were females, among patients with reduced ejection fraction mean age was 64 years and 40 % were females.

DEMOGRAPHIC PROFILE

In our study HFPEF is more common in elder age group, mean age in our study is 70 years.

HFPEF was more common in females as compared to heart failure with systolic dysfunction, in our study 60% of cases with HFPEF were female.

In our study HFPEF was present in 40 % of total heart failure cases. Hypertension, diabetes mellitus, renal dysfunction, atrial fibrillation and obesity were common in HFPEF than heart failure with reduced ejection factor. Overall hypertension was the most common risk factor for HFPEF.

Dyslipidemia, and smoking were more common in heart failure with reduced ejection fraction than in HFPEF.

ETIOLOGICAL PROFILE

Ischemic heart disease and hypertension were the common causes of heart failure in both preserved ejection fraction group and reduced ejection fraction group. But, hypertension was commoner in HFPEF (35%) as compared to heart failure with reduced ejection fraction (20%).

FINDINGS ON ADMISSION

Dyspnoea on exertion was the commonest presenting feature of HFPEF which was present in 60 % of cases, it was followed by dyspnoea at rest in 40 percent of cases, chest pain was present in

24% of patients with HFPEF. Lower extremity edema was present in 60 percent of cases, and JVD was present in 24 % of cases.

ECG PROFILE

Atrial arrhythmias were more common in HFPEF(60%) as compared to systolic heart failure (50%). Bundle branch blocks were commoner in systolic heart failure.

ECHO PROFILE

In our study the mean ejection fraction in HFPEF was 55% and in systolic heart failure was 35%.

CONCLUSION

Eighty patients admitted with symptoms and signs of heart failure at Patna Medical college & Hospital, Patna from July 2016 to June 2018 were included in the study. The conclusions of the study are -

1. HFPEF accounts for 40% of all heart failures.
2. HFPEF is more common in elderly population.
3. Important risk factors for HFPEF are hypertension, diabetes mellitus, obesity, dyslipidemia and renal dysfunction.
4. Ischemic heart disease and hypertension are the common causes of HFPEF.
5. The electrocardiographic profile consisted of atrial arrhythmias, LVH, bundle branch blocks, etc.
6. Chest radiography revealed cardiomegaly, pulmonary venous hypertension, pulmonary plethora, pulmonary edema.
7. Echocardiographic profile included preserved ejection fraction, diastolic dysfunction, left ventricular hypertrophy, reduced mitral inflow, increased LA volume.

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