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Clinical Profile of Patients with Heart Failure at Tertiary Care Hospital

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Abstract

Introduction: Heart failure is third most common cardiovascular disease in the US affecting 2 per cent of the U.S. population, or almost 5 million people. The prevalence of heart failure increases with the age from less than 1 per cent in the 20 - 39-year-old age group to over 20 per cent in the people age 80 year or older. The life time risk of developing heart failure is estimated at about 20 per cent both in men and women.

Methodology: The target population consisted of patients of either sex diagnosed as Congestive Heart Failure according to the Framingham Criteria for Congestive Heart Failure, either admitted to the In-Patient Department (IPD) or visiting the out-patient department. They were contacted, explained about the purpose of study and requested for enrolment. They were provided with a patient information sheet either in Kannada, Hindi or English.

Results: The mean arterial blood pressure was subsequently measured and patients were divided into two categories – Normal (70-105 mg/dl) and Hypertensives(>105 mg/dl).

Conclusion: The mean value of MABP in the study group was 96.43 ± 12.38 mmHg with a median value of 95 mmHg. In the study group, 78.67% patients had normal MABP (70-105 mg/dl) while 21.33% patients had high MABP (> 105 mmHg).

Keywords: Heart failure; MABP; Hypertensive.

Introduction

Heart failure (HF) is a common cardiovascular condition with increasing incidence and prevalence.[1] Several large clinical trials on use of pharmacological therapy and devices has resulted in an increasing use of evidence based therapy of heart failure. Despite these advances the morbidity and mortality of those afflicted with heart failure continues to remain high. Adherence to guidelines results in improved outcomes of heart failure patients.

Unlike western countries where heart failure is predominantly a disease of elderly, in India it affects younger age group. The important risk factors for heart failure include coronary artery disease, hypertension, diabetes mellitus, cardiotoxic drugs, valvular heart disease and obesity.[2,3] In India coronary artery disease, diabetes, hypertension, valvular heart diseases and primary muscle diseases are the leading causes for heart failure. Rheumatic heart disease is still a common cause of heart failure in Indians.

Heart failure is third most common cardiovascular disease in the US affecting 2 per cent of the U.S. population, or almost 5 million people.[2,3] The prevalence of heart failure increases with the age from less than 1 per cent in the 20–39-year-old

age group to over 20 per cent in the people age 80 year or older.[4] The life time risk of developing heart failure is estimated at about 20 per cent both in men and women. The lifetime risk of developing HF at the age of 40 year is 11.4 per cent for men and 15.4 per cent for women. More than 500,000 new cases are diagnosed each year.[5] Around 30 to 40 per cent of patients die from heart failure within 1 year after receiving the diagnosis.

Reliable estimates of heart failure are lacking in India because of the absence of a surveillance program to track incidence, prevalence, outcomes and key causes of heart failure. Nevertheless, it is proposed that the incidence and prevalence rates of heart failure are rising due to population, epidemiological and health transitions. Based on disease-specific estimates of prevalence and incidence rates of heart failure, it is estimated that the prevalence of heart failure in India due to coronary heart disease, hypertension, obesity, diabetes and rheumatic heart disease ranges from 1.3 to 4.6 million, with an annual incidence of 491 600–1.8 million.

Methodology

Study Design: A Cross Sectional – Observational Study.

The target population consisted of patients of either sex diagnosed as Congestive Heart Failure according to the Framingham Criteria for Congestive Heart Failure, either admitted to the In-Patient Department (IPD) or visiting the out-patient department. They were contacted, explained about the purpose of study and requested for enrolment. They were provided with a patient information sheet either in Kannada, Hindi or English. Only those patients who volunteered for participation after fully satisfying themselves about the nature of the study were included into the study.

A written informed consent was obtained from these patients. 85 consecutive patients fulfilling all inclusion and exclusion criteria were included in the study as cases after obtaining a written informed consent.

Inclusion Criteria

Patients with congestive heart failure due to any aetiology (diagnosed by the Framingham Criteria for Congestive Heart Failure.

Exclusion Criteria

- Patients having heart failure with preserved ejection fraction (HpEF; Ejection Fraction>50%).
- Patients with Chronic Kidney Disease - Stage 4 and 5 (eGFR< 30 ml/min/1.73m2; according to KDOQI Classification of CKD).
- Patients presenting with Acutely Decompensated Heart Failure (ADHF).
- Patients on Uric Acid Lowering Agents (Uricosurics and Xanthine Oxidase Inhibitors).
- Individuals with malignancy on chemotherapy (Tumor Lysis Syndrome).
- Individuals on drugs causing increased levels of uric acid including low-dose salicylates, cyclosporine, pyrazinamide, ethambutol, levodopa, and nicotinic acid.
- Individuals with a history of rapid weight loss/fasting.

Results

Age distribution of the study population varied from 36 years to 80 years.The mean age was 56.4 ± 19.03 years with Median age of 57 years. Inter-quartile range for the population was 45 – 70.750 years.

Table 1: Age category and frequency.

Age group	Frequency	Percent
> 60	32	37.6
21–40	4	4.7
41–60	49	57.6
Total	85	100.0

Out of 85 patients enrolled, 64 were males (74.67%) and 21 were females (25.33%). (Fig. 1)

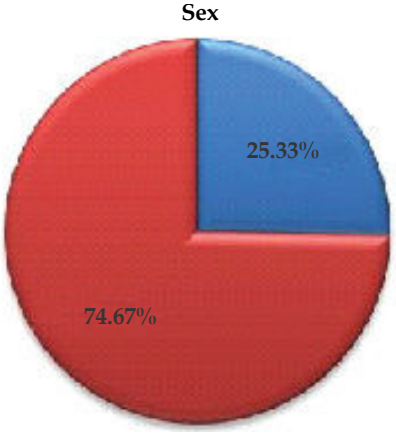

Fig 1: Sex distribution in population.

Of the 85 patients enrolled in this study, the BMI varied from 14.04 kg/m^2 to 43.76 kg/m^2 with a mean value of 25.49 ± 5.14. The median BMI was 25.1 kg/m^2. The patients were divided according to their BMI category. 33 patients fell in the normal category of 18.5–24.9 kg/m^2, which was 44% of the study group and 28 patients were over-weight (37.33%). Only 1 patient was found to be morbidly obese (1.33%). (Table 1) (Fig. 2)

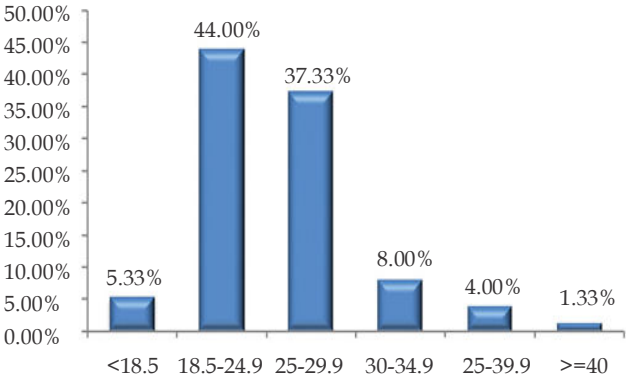

Fig 2: Frequency of patients among BMI categories.

The enrolled patients underwent blood pressure measurements according to standard protocols. The mean arterial blood pressure was subsequently measured and patients were divided into two categories – Normal (70–105 mg/dl) and Hypertensives(>105 mg/dl).

The mean value of MABP in the study group was 96.43 ± 12.38 mmHg with a median value of 95 mmHg. In the study group, 78.67% patients had normal MABP (70–105 mg/dl) while 21.33% patients had high MABP (> 105 mmHg). (Fig. 3)

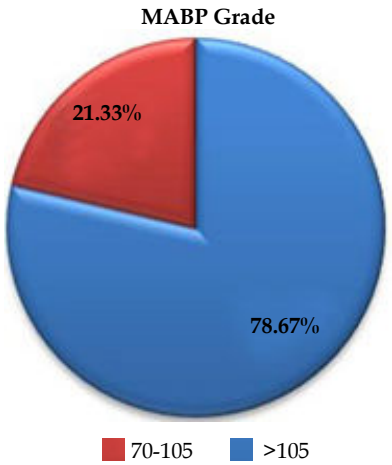

Fig 3: Frequency of MABP among study group.

Of the total enrolled patients of 85 in the study, estimated GFR (eGFR) was calculated using MDRD (Modified Diet in Renal Disease) equation and staging was done according to KDOQI (Kidney Disease Outcomes Quality Initiative) guidelines.

Table 2: Categories of eGFR.

Category	eGFR
1	>90 ml/min/1.73m2
2	60–89 ml/min/1.73m2
3	30–59 ml/min/1.73m2

Discussion

Our study included 85 patients diagnosed as congestive heart failure by the Framingham Criteria for congestive heart failure. Serum uric acid levels were estimated in all the patients. Left ventricular ejection fraction (LVEF) was taken as a marker for the severity of heart failure. The statistical correlation between the two was studied along with variables – Age, Sex, Body Mass Index (BMI), Mean arterial blood pressure (MABP) and Estimated glomerular filtration rate(eGFR). (Table 2)

Patients (N=85) had a mean (±SD) age of57.73 (±19.03) years; 64 were males (75.3%) and 21 were females(24.7%).

The study showed that in patients with reduced ejection fraction, there was a significant rise in uric acid levels (correlation coefficient = –0.245). This was evident by the mean uric acid level in each category of LVEF, that progressed from 7.12 mg/dl in patients with mild dysfunction (LVEF = 41–50%) to 7.67 mg/dl in patients with moderate dysfunction(LVEF = 31–40%) to 8.08 mg/dl in patients with severe dysfunction (LVEF <30%).

Dr. S Suresh, et al(2016) 6 conducted a study in Coimbatore medical college hospital, Coimbatore, which included 100 patients (62% males and 38% females) who were admitted with features of heart failure. Patients, who satisfied the criteria for inclusion, were subjected to basic blood investigations and serum uric acid levels were measured in them. Echocardiography was done in all the patients to assess the severity of heart failure. The patients were followed up for a period of one month to determine the mortality and adverse outcomes. The patients were followed up for a period of one month to determine the mortality and adverse outcomes. Hyperuricemia was found to be significantly higher in patients with cardiac failure and the severity of UA rise had a high correlation to the severity of heart failure. Hyperuricemia was more common in acute decompensated heart failure than chronic heart failure patients. Elevated serum uric acid levels correlated inversely with ejection fraction suggesting that progressive hyperuricemia in cardiac failure indicates deteriorating cardiac function. Patients with elevated serum UA levels

were associated with poorer NYHA functional class proving that hyperuricemia predicts the severity of cardiac failure. Hyperuricemia patients were associated with adverse clinical and biochemical features compared to normouricemic patients in the form of increased QRS duration and inotropic requirements. Serum uric acid levels were increased in diabetes and hypertension and had an independent association, irrespective of the etiology of heart failure. Patients with higher uric acid levels were associated with adverse outcomes and poor prognosis in the form of increased re-hospitalization rates and 30-day mortality rates. This study showed that hyperuricemia was found in majority (73%) of heart failure patients with increased prevalence in females compared to males.

Thus, it was evident from this study that high serum uric acid levels could be a strong and valid biomarker of impaired prognosis and mortality in patients with cardiac failure, predicting the severity and hemodynamic derangements.

Pinelli M, et al[7] carried out a study in patients with Heart Failure to see if serum uric acid levels correlated with left ventricular ejection fraction (LVEF) and systolic pulmonary artery pressure (SPAP). Fifty consecutive patients with heart failure underwent serum (UA) determination and echocardiographic examination, with measurement of LVEF and SPAP. Twenty healthy age-matched subjects served as controls. Mean serum UA in patients with HF were significantly higher than in controls (7.5 +/– 0.3 vs 4.5 +/– 0.3 mg/dl, P< 0.0001). In patients group serum UA correlated negatively with LVEF (R = –0.45, P < 0.01) and positively with SPAP (R = 0.51, P < 0.001); these relations persist in a multivariable regression analysis, after adjustment for other variables potentially confounding (P = 0.031 and P = 0.003, respectively).

It was concluded that in patients with HF, serum UA correlates with LVEF and SPAP independently from other clinical determinants8,9,10, supporting the possibility that the detection of progressive hyperuricemia in these patients may be an indicator of deteriorating cardiac function.

Conclusion

The mean value of MABP in the study group was 96.43 ± 12.38 mmHg with a median value of 95 mmHg. In the study group, 78.67% patients had normal MABP (70–105 mg/dl) while 21.33% patients had high MABP (> 105 mmHg).

References

1. Rosamond W, Flegal K, Friday G, Furie K, Go A, Greenlund K, et al. Heart disease and stroke statistics 2007 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Circulation 2007; 115 : e69– 171.
2. Jessup M, Brozena S. Heart failure. 2. N Engl J Med 2003; 348 : 2007–18.
3. Kenchaiah S, Narula J, Vasan RS. Risk factors for heart failure. 3. Med Clin North Am 2004; 88 : 1145–72.
4. Lloyd-Jones DM, Larson MG, Leip EP, Beiser A, D´Agostino 4. RB, Kannel WB, et al. Lifetime risk for developing congestive heart failure: the Framingham Heart Study. Circulation 2002; 106 : 3068–72.
5. Owan TE, Redfield MM. Epidemiology of diastolic heart 5. failure. ProgCardiovasc Dis 2005; 47 : 320–32.
6. Dr.S Suresh, Dr.MPalaniappan, Dr.P Praveen Kumar, Dr B Vetriveeran , Dr T Ravikumar, Dr P Vishnuram. Dr. Isaac Christian Moses. Prognostic Significance of Serum Uric Acid Levels in Congestive Cardiac Failure And Its Correlation With Ejection Fraction. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) e- ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 15, Issue 9 Ver. II (September.2016),PP 78–82.
7. Pinelli M, Bindi M, Filardo FP, Moroni F, Castiglioni M. Serum uric acid levels correlate with left ventricular ejection fraction and systolic pulmonary artery pressure in patients with heart failure. 2007,98(12):619–623.
8. Adriana Iliesiu, Alexandru Campeanu ,Daciana Marta , Irina Parvu , Gabriela Gheorghe. Uric Acid, Oxidative Stress and Inflammation in Chronic Heart Failure with Reduced Ejection Fraction. (RevistaRomână de Medicină de LaboratorVol. 23, Nr. 4, Decembrie,2015).
9. LinpingLi, Mengyi Sun, Yabing Zhang. Serum uric acid, NT-ProBNP and hs-CRP as biomarkers in chronic heart failure. Int J ClinExp Med 2016;9(9):18324–18331.
10. Borghi C, Cosentino ER, Cicero AF. Uricaemiaand ejection fraction in elderly heart failure outpatients. Eur J ClinInvest.2014 Jun;44(6):573–8.