International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

Clinical Profile of Patients Hospitalised with Heart Failure in a Tertiary Care Hospital of Central India

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Abstract: ***Heart failure HF is a widespread global health concern, with increasing prevalence attributed to factors such as aging populations, obesity, and chronic diseases. However, the landscape of HF etiology and management varies across regions. This study, conducted in India, sought to elucidate the clinical characteristics and medication patterns of HF patients, shedding light on the extent of evidence - based medicine implementation within the local community. A retrospective observational analysis of 186 HF patients was performed, revealing key findings: a notable proportion of patients had preserved systolic function, coronary heart disease was the leading cause of HF, and medication adherence to recommended therapies, especially beta - blockers, was suboptimal. These insights highlight the need for targeted interventions and guideline adherence to improve HF management outcomes in the Indian context.***

Keywords: Heart failure, India, clinical profile, medication patterns, evidence - based medicine

1. Introduction

Heart failure (HF) is a complex clinical syndrome resulting from structural and functional impairment of ventricular filling or ejection of blood (1 - 2). The global incidence and prevalence rates of HF have reached epidemic proportions because of aging populations in both industrialized and developing nations; a growing incidence of obesity, diabetes, and hypertension in many countries; improved survival after myocardial infarction; and success in preventing sudden cardiac death (3). But in developing countries like India, valvular heart disease remains one of the most common causes of heart failure.

HF affects nearly 23 million people worldwide. In the United States, 6.2 million adults have HF, and it is estimated that by 2030 the prevalence will increase 46%. The lifetime risk of developing HF is approximately one in five for a 40 - year - old and can originate from CAD, myocarditis, valvular heart disease, tachycardia, diabetes mellitus, structural heart disease related to congenital heart disease, genetic factors, etc. (4). It is a common cause for urgent admission and a major cause of mortality and morbidity.

The prevalence of HF increases with age and affects 4% to 8% of people over age of 65 years, with an incidence of 10 per 1000 after age 65; while 80% of patients hospitalised with HF are more than 65 years old (4). Despite all novel approaches in HF therapy, HF hospitalisations contribute to high rates of mortality and HF related costs are one of the most expensive expenditures globally.

The trend in developing world is about to alter towards CAD from rheumatic heart disease to valvular lesion and HF. However, the commonest cause of HF is still not well studied in our setting. Despite of the fact that a large number of controlled clinical trials demonstrate benefits of HF medications, particularly beta - blockers and angiotensin - converting enzyme inhibitor, not much is known about the use of these medications in India. Therefore, this study was designed to evaluate the clinical profile and medications prescribed reflecting the extent to which evidence - based medicine is being practiced at our community.

2. Materials and methods

A retrospective observational study was conducted in cardiology department of GMC Nagpur from March 2021 to Feb 2023. The registered data of 186 patients in total with diagnosis of HF based on Framingham Criteria (3) comprised the study and was analysed. All patients known to be admitted for HF management of NYHA functional class II and above were included in the study. The CAD patients were defined as patients with a history of myocardial infarction, electrocardiographic changes suggestive of ischemic heart disease, positive cardiac enzymes, or selective coronary angiography with greater than 50% obstructive lesion in any coronary artery.

Inclusion criteria

1) Patients in HF as per Framingham Criteria (3)
2) Patients with NYHA class II and above symptoms
3) Patients willing to participate voluntarily with written consent

Exclusion criteria

1) Patients with malignancy
2) Patients with HIV, HbsAg& HCV seropositivity
3) Patients with Cor - Pulmonale
4) Patients not willing to participate

3. Results

A total of 186 patients were admitted in cardiology department of GMC Nagpur, with the diagnosis of HF, from March 2021 to Feb 2023, from which 108 (58%) people were male and 78 (42%) were female. Demographic data of the patients are listed in Table 1. The mean age of the patients was 54 years (age ranges from 15 to 92 years)

Table 1

Age	15 - 92 years (mean 54 years)
Female sex	78 (42%)
Smokers	71 (38%)
NYHA functional class	
NYHA II	97 (52%)
NYHA III	67 (36%)
NYHA IV	22 (12%)
HF with preserved EF	42%

NYHA: New York Heart Association; HF: Heart failure; EF: Ejection fraction

Various causes of HF leading to hospitalization are listed in Table 2. CAD leading to HF was found in 78 (42%) patients. Rheumatic heart disease leading to valvular lesion and HF in 53 (28.5%), dilated cardiomyopathy in 33 (18%), hypertensive heart failure in 17 (9%) and HF due to congenital heart disease was found in 5 (2.5%) patients. The commonest presenting symptom was shortness of breath (92%) followed by leg swelling (68%) and nocturnal cough (33%). The commonest sign was bilateral basal crepitations (78%), peripheral edema (56%), elevated jugular venous pressure (38%), and hypotension (Systolic Blood Pressure < 90 mmHg) in 32%.

Table 2

Causes	Number (n = 186)	Percentage (%)
Coronary heart disease	78	42
Rheumatic heart disease	53	28.5
Dilated cardiomyopathy	33	18
Hypertensive heart disease	17	9
Congenital heart disease	5	2.5

When medications received by these patients were analyzed, 84%, 64%, 31%, 16%, 68% and 32% of the patients received loop diuretics (furosemide or torsaemide), angiotensin - converting enzyme inhibitor, digoxin, angiotensin receptor blocker, spironolactone and beta blocking agents respectively (Figure 1).

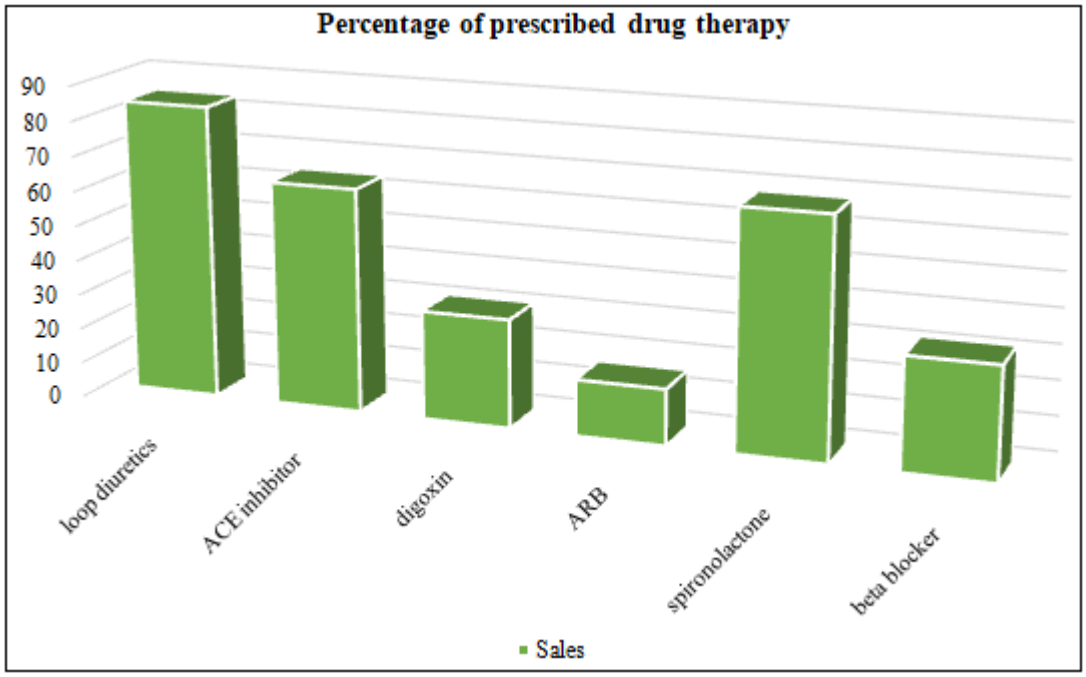

Figure 1

4. Discussion

1) Preserved Systolic Function

HF is divided into two categories one with reduced ejection fraction (HFrEF) and one with preserved ejection fraction (HFpEF). In our study 42% of patients had preserved systolic function. Senni M et al and Jessup M et al found preserved systolic function in 25% to 50% of incident cases of HF (5 - 6).

2) Causes of HF

The results of the Framingham Study (3) published in 1971 showed that hypertension was the commonest (75%) underlying heart disease contributing to congestive HF. In our study however, hypertension was the cause of HF in only 9% of patients. In developed countries, CAD causing HF remains to be the highest reason, and we found similar results in this study. However, rheumatic heart disease leading to valvular lesion is more prevalent in this part of the world and we found 28.5% of patients hospitalized with HF had rheumatic heart disease. A study from Nepal also documented similar results with 25.5 % of patients had rheumatic heart disease as cause for HF (9).

3) Medications

Reaching its epidemic levels, HF, as a growing public health concern, requires treatment and prevention. Angiotensin - converting enzyme inhibitors, beta - blockers, and spironolactone have been documented to improve HF patients' clinical status and survival (7 - 8), but only 32%patients who were hospitalized with HF received beta - blockers. However, 64% of patients received angiotensin - converting enzyme inhibitors. This relatively low percentage of patients treated with beta - blockers may be explained by the fact that the practical usage of the results of trials on this class of drugs is more difficult due to the fact that beta - blockers have been contraindicated in congestive HF

patients for many years. A study by Dubey L et al reported similar findings with only 1/3 patients receiving beta blockers in their study (9).

In conclusion, CAD leading to HF was the commonest cause of HF admission in our centre. Current guidelines recommend the use of beta - blocking agents in patients with HF, but only 32% of our patients received this class of medications. Thus, many patients were not being managed fully in accordance with evidence - based guidelines and strategies. To improve the outcome of these patients, adherence to HF guidelines is needed.

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