



Clinical Profile of Patients Hospitalized with Heart Failure in Bharatpur, Nepal

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ABSTRACT

Introduction: Heart failure (HF) is a common cardiovascular condition whose incidence and prevalence are increasing. Being a common reason for urgent hospital admission, it is a major cause of morbidity and mortality for the patients. In the developed countries coronary artery disease remains the leading cause of HF, whereas, in the underdeveloped countries, rheumatic heart disease leading to valvular lesion still remains the commonest causes of HF admission. The current 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. **Methods:** Clinical profile and prescribed medications of patients with diagnosis of HF who were admitted in the cardiology department of College of Medical Sciences & Teaching Hospital (CMS-TH), Bharatpur, Nepal, April 2010 to May 2012, were analyzed. A total of 255 patients presented with HF during the studied period were included. **Results:** Coronary artery disease, rheumatic heart disease, dilated cardiomyopathy, hypertensive heart failure, cor-pulmonale, and congenital heart disease leading to HF were found in 93 (36.5%), 65 (25.5%), 37 (14.5%), 22 (8.6%), 31 (12.2%), and 7 (2.7%) patients respectively. The commonest presenting symptom was shortness of breath (81%) and the commonest sign was bilateral basal crepitations (68%). From all patients, 89%, 64%, 51%, 16%, 48%, and 32% received loop diuretics, angiotensin-converting enzyme inhibitor, digoxin, angiotensin receptor blocker, spironolactone, and beta-blocking agents respectively. **Conclusion:** Coronary artery disease leading to HF was the commonest cause of HF admission in our centre. Despite current guidelines suggesting the use of beta-blocking agent in patients with HF, only 32% of our patients received this class of medications. Thus, many patients were not being managed fully in accordance with the evidence-based guidelines.

Introduction

Heart failure (HF) is a growing cause of hospitalization around the world. With increase in both survival rate and prevalence of coronary artery disease (CAD), HF has gained epidemic proportions in developed country. Whereas, in developing countries like Nepal, rheumatic heart disease leading to valvular lesions still considered as one of the commonest causes of HF admission.

Having a prevalence of over 5.8 million in the USA, and over 23 million worldwide, HF is a major public health issue.¹ With a lifetime risk of one in five, HF can originate from CAD, high blood pressure, rheumatic heart disease, or other causes like cardiomyopathies, congenital heart disease, endocarditis and myocarditis. It not only is still a common reason for urgent admission to hospital but also is a major cause of morbidity and mortality.

HF is primarily considered as a condition of the elderly²

with an incidence of 10 per 1000 population after age 65; while approximately 80% of patients hospitalized with HF are more than 65 years old.³ Despite all novel approaches in HF therapy, patients with advanced HF tend to contribute to high rates of hospitalizations and mortality; additionally, HF related costs are the most expensive expenditures globally.

The trend is about to alter towards CAD in developed world from rheumatic heart disease to valvular lesion and HF.^{4,5} However, the commonest cause of HF in our setting is still not well studied in spite of the fact that a large number of controlled clinical trials carried out demonstrate benefits of HF medications, particularly beta-blocker and angiotensin-converting enzyme inhibitor. However, very little is known about the use of these medications, in the underdeveloped countries like Nepal. Therefore, this study was designed to evaluate the clinical

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profile and medications prescribed reflecting the extent to which evidence based medicine is being practiced at our community.

Materials and methods

This was a retrospective study analysing registered data of HF admissions in cardiology department of CMS-TH from April 2010 to May 2012. A total of 255 patients with diagnosis of HF based on Framingham Criteria⁶ were included in the study. All patients admitted for HF management of NYHA functional class II and above were included in this study. Patients with history of myocardial infarction, electrocardiographic changes suggestive of ischemic heart disease, positive cardiac enzymes, or selective coronary angiography with lesion more than 50% obstruction in any coronary artery were considered patients with CAD. Patients with dilated cardiomyopathy having dilated left ventricle with or without right ventricle involvement with reduced left ventricular ejection fraction (<40 were excluded).

Results

A total of 255 patients were admitted in cardiology department of CMS-TH, Nepal, with the diagnosis of HF, from April 2010 to May 2012, from which 158 (62%) people were male and 97 (38%) were female. Demographic data of the patients are listed in Table 1. The mean age of the patients was 57 years (age ranges from 11 to 95 years). Various causes of HF leading to hospitalization are listed in Table 2.

Table 1. Demographic features of patients admitted with heart failure

Age	11-95 years (mean 57 years)	
Female sex	97	(38%)
Smokers	79	(31%)
NYHA functional class		
NYHA II	123	(48%)
NYHA III	96	(38%)
NYHA IV	36	(14%)
HF with preserved EF	38%	
NYHA: New York Heart Association; HF: Heart failure; EF: Ejection fraction		

Table 2. Causes of heart failure

Causes	Number (n=255)	Percentage (%)
Coronary heart disease	93	36.5
Rheumatic heart disease	65	25.5
Dilated cardiomyopathy	37	14.5
Hypertensive heart disease	22	8.6
Congenital heart disease	7	2.7
Cor-pulmonale	31	12.2

CAD leading to HF was found in 93 (36.5%) patients. Rheumatic heart disease leading to valvular lesion and HF in 65 (25.5%), dilated cardiomyopathy in 37 (14.5%),

hypertensive heart failure in 22 (8.6%) and HF due to congenital heart disease was found in 7 (2.7%) patients. Although, HF due to cor-pulmonale is not usually advised to be admitted in cardiology department, 31 (12.2%) patients were admitted for the management of HF due to cor-pulmonale.

The commonest presenting symptom was shortness of breath (81%) followed by leg swelling (56%) and fatigue (23%). The commonest sign was bilateral basal crepitations (68%), peripheral edema (42%), elevated jugular venous pressure (34%), and hypotension (Systolic Blood Pressure < 90 mmHg) in 25%.

When medications received by these patients were analyzed, 89%, 64%, 51%, 16%, 48% and 32% of the patients received loop diuretics (furosemide or torsemide), angiotensin-converting enzyme inhibitor, digoxin, angiotensin receptor blocker, spironolactone and beta-blocking agents respectively (Figure 1).

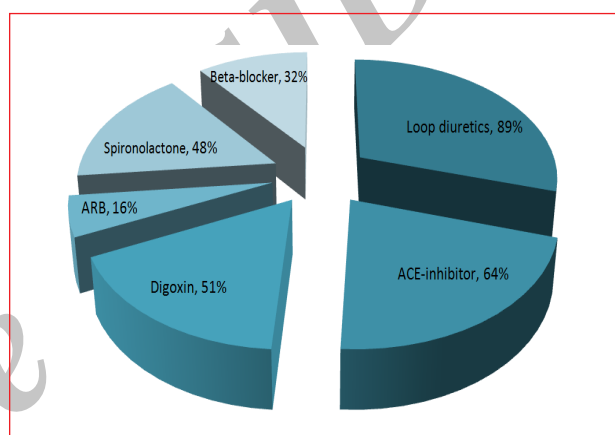


Figure 1. Percentage of prescribed drug therapy

Discussion

HF is a progressive clinical syndrome originating from a cardiac disorder. The ability of the heart to pump blood is impaired and fails to meet the metabolic demands of the body.^{1,7} This is mostly caused by impaired ventricular relaxation and filling during diastole, ventricular contractile dysfunction during systole, or a combination of both. Based on being systolic or diastolic, HF is divided into two major categories. Preserved systolic function can be seen in approximately twenty to fifty percent of incident cases of HF^{8,9}, which could be missed if diagnostic measures are not taken in clinical practice.^{1,10}

The process of the disease begins with a primary insult later affecting the myocardium. Major causes include CAD, hypertension, valve disease and dilated cardiomyopathy, in which genetics can play a role in up to thirty percent of patients.^{1,10,11} Control of risk factors affecting the heart, such as hypertension, atherosclerotic disease and diabetes mellitus could contribute to prevent or delay the development of the disease. In fact, a relative

risk reduction of twenty-nine to over fifty percent has been reported after the treatment of hypertension.^{12,13} Progression of HF is mostly altered by activation of certain neurohormonal systems such as the sympathetic nervous system and the renin-angiotensin-aldosterone system after the disease is established. The aforementioned neurohormonal systems assisting the failing heart in the short term would ultimately be associated with undesired effects on myocardial function over time; hence, resulting in increased hospitalization and death rates.

HF prevalence is rising throughout the world. The reasons for this pandemic include the 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. The results of the Framingham Study published in 1971¹⁴ showed that hypertension was the commonest (75%) underlying heart disease contributing to congestive HF. In our study, however, only 8.6% of HF patients had hypertension as an underlying heart disease. In developed countries, CAD causing HF remains to be the highest reason, and we found the 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 25.5% of patients hospitalized with HF had rheumatic heart disease.

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^{11,15}, but less than half of our 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, and all above-mentioned trials are more recent than those been conducted on angiotensin-converting enzyme inhibitors.

In conclusion, CAD leading to HF was the commonest cause of HF admission in our centre. Despite current guidelines suggesting the use of beta-blocking agents in patients with HF, 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 in our setting, adherence to HF guidelines is needed.

Conflict of interests: The authors declare no conflicts of interest.

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