Characteristics, Treatment and Short-Term Survival of Patients with Heart Failure in a Cardiology Private Practice in Jamaica

GR Lalljie, SE Lalljie

ABSTRACT

Background: *Randomized clinical trials have demonstrated improvement in mortality with angiotensin converting enzyme inhibitors (ACEIs), β blockers and aldosterone antagonists. The use of these life-saving treatments remain inadequate.*

Aim: *To determine the clinical features, aetiology, treatment and short-term survival of heart failure in a cardiology private practice in Jamaica.*

Methods: *This is a retrospective analysis of the medical records of 1055 consecutive patients presenting to a consultant cardiologist private practice between January 2002 and March 2003. Data were extracted from the records of the first 100 patients with heart failure.*

Results: *Most were over 65 years of age, female, never smoked cigarettes, overweight/obese and hypertensive (82%). The most commonly prescribed medications at one month were ACEIs (91%), β blockers (88%) and loop diuretics (55%). The main aetiologies were hypertension (54%) and ischaemic heart disease (IHD) (26%). Ninety-one per cent were in sinus rhythm and 6% in atrial fibrillation. Forty-nine per cent had echocardiograms, of these 39% had ejection fractions (EF) > 40% and 27% had EF ♯ 20%. The survival at one year was 81%.*

Conclusion: *Hypertension was the major aetiology of heart failure followed by IHD. Medical treatment closely approached the recommended standards of major heart failure guidelines with high ACEI and β blocker use comparable to recent heart failure trials. Short-term survival was very high.*

Características, Tratamiento y Supervivencia a Corto Plazo de los Pacientes con Fallo Cardiaco en una Consulta Privada de Cardiología en Jamaica

GR Lalljie, SE Lalljie

RESUMEN

Antecedentes: *Los ensayos clínicos randomizados han demostrado mejoramiento de la mortalidad, con inhibidores de la enzima de conversión de la angiotensina (IECA), bloqueadores ß, y antagonistas de la aldosterona. El uso de estos tratamientos que pueden salvar vidas, sigue siendo inadecuado.*

Objetivo: *Determinar las características clínicas, etiología, tratamiento y supervivencia a corto plazo del fallo cardiaco en una consulta privada de cardiología en Jamaica.*

Métodos: *El análisis retrospectivo de las historias de 1055 pacientes consecutivos que acudieron a la consulta privada de un cardiólogo consultante entre enero de 2002 y marzo de 2003. Los datos fueron extraídos de las historias de los primeros 100 pacientes con fallo cardíaco.*

Resultados: *La mayoría tenían más de 65 años de edad, eran mujeres, nunca fumaron cigarrillos, presentaban sobrepeso/obesidad, y eran hipertensas (82%). Los medicamentos prescritos más común-mente en un mes, fueron los IECAs (91%), los bloqueadores ß (88%), y los diuréticos de asa (55%). Las etiologías principales fueron la hipertensión (54%) y la enfermedad isquémica del corazón (EIC) (26%). El noventa y uno por ciento estaba en ritmo sinusal y el 6% en fibrilación atrial. El cuarenta y nueve por ciento tenía ecocardiogramas, de los cuales el 39% presentaban fracciones de eyección (FE) > 40% y el 27% tenía FE ? 20%. La supervivencia en un año fue 81%.*

Conclusión. *La hipertensión fue la etiología principal del fallo cardíaco, seguida por la EIC. El tratamiento médico se acercó a los estándares recomendados en las principales guías para el fallo*

From: Coastal Internal Medicine and Cardiology, Suite F-204 Baywest Centre, Harbour Street, Montego Bay, Jamaica

Correspondence: Dr GR Lalljie, Suite F-204 Baywest Centre, Harbour Street, Montego Bay, Jamaica, West Indies. Fax: (876) 971-8617, e-mail: glmd@hotmail.com.

cardíaco con un alto uso de IECA y bloqueadores ß, comparable a los ensayos recientes de fallo cardíaco. La supervivencia a corto plazo fue muy elevada.

INTRODUCTION

Congestive heart failure is rapidly becoming a major public health problem worldwide (1). In the last decade, major randomized trials have demonstrated new, effective and life-saving treatment – angiotensin converting enzyme inhibitors (ACEIs), β blockers and aldosterone antagonists (2–5), which have been incorporated into many guidelines (6, 7). Several studies from different parts of the world have reported the clinical characteristics of these patients and the inadequate use of these treatments (8–12). Although many factors predisposing to congestive heart failure (CHF) such as hypertension, coronary artery disease (CAD) and diabetes mellitus (DM) are common in Jamaica, no data about CHF in Jamaica are available.

This study reports the clinical characteristics, aetiology, treatment and short-term mortality of heart failure patients in a cardiology private practice in Jamaica.

METHODS

The medical records of 1055 consecutive patients presenting to the authors' private practice, between January 2002 and March 2003 were retrospectively analyzed. The authors' practice is one of two cardiology practices in the city of Montego Bay (population 150 000) in Western Jamaica.

Data were abstracted from the charts of the first 100 patients with heart failure. The patients were self-referred or referred by general practitioners. The same consultant cardiologist saw all patients fortnightly, on the average, until stable and then monthly or bi-monthly. At each visit, history and physical examination including height, weight, body mass index (BMI), blood pressure and heart rate were obtained. In addition, patients were counselled with regard to low sodium diet, weight reduction (where appropriate), exercise and medication adherence. Data on blood pressure, heart rate, medications prescribed and mortality were extracted at presentation, one month and one year after presentation. Telephone contact with the patients' relatives were made as necessary.

Heart failure was diagnosed according to the Framingham criteria (13). Major criteria were: paroxysmal nocturnal dyspnoea, orthopnea, raised jugular venous pressure, crepitations on chest auscultation, cardiomegaly and gallop sounds. Minor criteria were: ankle oedema, nocturnal cough, dyspnoea on exertion, hepatomegaly, pleural effusion and tachycardia. Diagnosis of heart failure required a minimum of two major criteria or one major and two minor criteria to be present concurrently.

Hypertension was defined as the presence of systolic blood pressure (SBP) $ 140 mmHg or diastolic blood pressure (DBP) $ 90 mmHg or if patient was already receiving antihypertensive therapy.

Ischaemic heart disease (IHD) was diagnosed by a) definite history of myocardial infarction, b) electrocardiographic (ECG) or echocardiographic findings c) significant history of chronic stable angina, d) significant coronary artery disease on angiogram or e) positive exercise stress test.

Echocardiogram was done using a Biosound Caris Plus ultrasound system with a 2.5–3.5 mHz adult cardiac probe and use of colour flow, pulse wave and continuous wave doppler imaging.

RESULT

Of the 1055 charts reviewed, 100 (9.5%) had a diagnosis of heart failure. The patients with heart failure were of mixed ethnicity, predominantly of African descent.

Table 1 shows the characteristics of the patients with heart failure. Most patients were over 65 years of age,

Table 1:   Characteristics of the 100 patients with heart failure

Characteristics	Number	Per cent
Age < 65 years	40	40
Male	48	48
Never smoked cigarettes	72	72
BMI 25–29	35	35
BMI > 30	31	31

female, never smoked cigarettes and overweight/obese. Table 2 presents the predominant co-morbidities of the

Table 2:   Predominant co-morbidities of the 100 patients with heart failure

Co-morbidities	Number	Per cent
Hypertension	82	82
Diabetes mellitus	42	42
Ischaemic heart disease	28	28
Gastroesophageal reflux disease	13	13
Atrial fibrillation	10	10
LDL $ 3.4 mmol/L (n = 44)	15	34

patients with heart failure. Most were hypertensive, had a LDL cholesterol < 3.4 mmol/L and almost half were diabetic.

The predominant presenting symptoms of the patients with heart failure are shown in Table 3. Most patients pre-

Table 3:   Predominant presenting symptoms of the 100 patients with heart failure

Presenting symptoms	Number	Per cent
SOB	76	76
Palpitations	43	43
Orthopnea	35	35
Leg swelling	35	35
Fatigue	26	26
None	8	8

sented with shortness of breath and almost half had palpitations, however, very few were asymptomatic.

Table 4 presents the drugs prescribed to the patients with heart failure. At the end of the first visit, most were

Table 4:   Drugs prescribed to the patients with heart failure

	At first visit (n = 100)	At one month (n = 86)	At one year (n = 56)
ACEIs	91 (91%)	74 (86%)	38 (68%)
β blockers	88 (88%)	75 (87%)	45 (80%)
Diuretics (loop)	55 (55%)	52 (60%)	36 (64%)
CCBs	47 (47%)	33 (38%)	32 (57%)
Digoxin	24 (24%)	19 (22%)	3 (5%)
Vastarel	14 (14%)	9 (10%)	4 (7%)
Statin	15 (15%)	13 (15%)	18 (32%)
α blocker	7 (7%)	11 (13%)	8 (14%)

prescribed ACEIs, β blockers and diuretics. This was also noted at one month and one year. Almost half were prescribed calcium channel blockers (CCBs) at the end of the first visit and at one year. Almost one-quarter was prescribed digoxin at the first visit, but only few were still on it at one year.

The ECG findings of the patients with heart failure are illustrated in Table 5. Most patients were in sinus rhythm and

Table 5:   Echocardiographic findings of the patients with heart failure (n = 93)

Findings	Number	%
Rhythm:		
C Sinus	85	91
C Atrial	6	6
fibrillation/flutter	2	2
C Junctional		
LVH	46	49
Left atrial abnormality	15	16
Left bundle branch block	11	12
Right bundle branch block	4	4
Ischaemia/infarct	29	31

only a few in atrial fibrillation/flutter. Almost half had ECG criteria for left ventricular hypertrophy (LVH).

Table 6 shows the echocardiographic findings of the patients with heart failure. Almost half had LVH and delayed LV relaxation, while just over one-quarter had ejection fractions (EF) # 20% and over one-third EF > 40%. Over half of the echocardiograms correlated with hypertensive heart disease or hypertensive cardiomyopathy with approximately one-quarter with ischaemic heart disease.

Table 7 shows the aetiology of heart failure as determined by review of all available data, both clinical and laboratory. More than half had hypertensive heart disease, just over one-quarter had ischaemic heart disease and very few rheumatic heart disease. The cause could not be determined in 6%.

Table 6:   Echocardiographic findings of the patients with heart failure (n = 49)

Findings	Number	%
Ejection fraction:		
C < 20%	13	27
C 21–40%	17	34
C > 40%	19	39
Mitral regurgitation	18	37
Hypertensive heart disease	20	41
Hypertensive cardiomyopathy	7	14
Ischaemic heart disease	13	26
Restrictive mitral filling	5	10
Abnormal left ventricular relaxation	20	41
LVH	20	41

Table 7:   Aetiology of heart failure (n =100)

	Number	%
Hypertensive heart disease	54	54
Ischaemic heart disease	26	26
Dilated cardiomyopathy	3	3
Degenerative valvular disease	3	3
Rheumatic heart disease	2	2
Indeterminate	6	6
Other	6	6

Table 8 shows the one-year survival of the patients with heart failure. Eighty–one per cent were alive and outcome data could not be obtained for 7%.

Table 8:   One-year survival of heart failure patients (n = 100)

Outcome	Number	%
Alive	81	81
Dead (any cause)	12	12
Unknown	7	7

DISCUSSION

The results of this study support the major heart failure guidelines – European Society of Cardiology, American College of Cardiology (6,7), which recommend the use of ACEIs and β blockers. The use of these two agents was much higher in this study (86% and 87% respectively at one month) than in most reported studies and demonstrates that percentage use as high as those achieved in recent randomized clinical trials of heart failure (14–16) can be achieved in routine cardiology practice. When such high percentage use is achieved, short-term survival may be very high as we reported (81% at one year).

These results contrast with those from various parts of the world. Komajda *et al* in the EuroHeart Survey (8) reporting from 24 countries in Europe, found that loop diuretics (86%), ACEIs (61%), and β blockers (36%) were the most commonly prescribed medications in heart failure. Only

17% were on the combination of ACEIs, β blockers and diuretics. Similarly, Cleland *et al* (9) reporting from 15 European countries in The Improvement in Heart Failure Programme, found that 60% of patients received ACEIs, 34% β blockers and only 20% the combination. From the United States of America, O'Conner *et al* (11) reported percentage use of ACEIs and β blockers in patients discharged after hospitalization for decompensated heart failure of 71% and 62% respectively. These rates are much closer to those achieved in this study, however, the sixty-day rehospitalization or death rate in that group was 31%.

The reasons for such differences may be the comfort level of physicians in prescribing these medications to ill patients, especially in big centres, where many different physicians care for the same patients at different times and continuity of care is difficult to achieve. The authors patients were seen weekly, as necessary, and then monthly by the same cardiologist.

The high percentage use of the ACEIs and β blockers in this study cannot be attributed only to the fact that the patients were cared for by a cardiologist. McKee *et al* (10) reporting from a university hospital setting in Scotland found that the percentage use by cardiologists in heart failure patients was 80% for ACEIs and only 37% for β blockers, but use of β blockers by cardiologists was significantly higher than that of non-cardiologists (37% *vs* 21%). They suggested 'a lack of organizational developments to facilitate the increasingly complex management of patients with heart failure as a reason for these results.

Results similar to these were reported by Anguita (18) for ACEI use but lower β blocker use. This report from 62 heart failure clinics in Spain, found 87% ACEI/ARB and 59% β blocker use. This percentage use resulted in a one-year survival of 94% *vs* 81% in our study, although mortality data could not be obtained for 7% of our patients. Furthermore, Anguita *et al* reported from specialized heart failure clinics whereas our patients were seen in routine clinical practice.

The survival data reported here differed from that reported by O'Conner *et al* (11). Their use of ACEI (71%) and β blocker (62%), though high was reported at hospital discharge and hence these patients may have been less stable than ours resulting in high short-term mortality. In addition, target doses may not have been achieved. Our survival data was similar to that reported by specialized heart failure clinics (19, 20).

The patients in our study were similar to those reported by other investigators in terms of left ventricular dysfunction. In the BADAPIC registry reported by Anguita (18), EF was < 45% in 68% of patients versus EF < 40% in 61% of our patients. These results are consistent with many published reports of normal EF in 30–45% of unselected heart failure patients (21–23).

The aetiology of heart failure in our study is different from that seen in more developed countries where CAD accounts for most cases (11, 12, 23, 24). We found that systemic hypertension accounted for 54% and IHD 26% of cases. These results were similar to those of McSwain *et al* (17) from Antigua and Barbuda (41% hypertension, 33% IHD). This reflects the much higher prevalence and severity of hypertension in our population and may contribute to better tolerability of ACEIs, β blockers and their combination, hence the higher percentage use of these medications. Further studies in this area are required.

This study is inherently limited by its retrospective nature but it represents the first such study in Jamaican heart failure patients. Our study sample represents a consecutive series of patients in a private practice and is not a random sample of all individuals with heart failure in the community and hence our results cannot be applied to the general heart failure population. Only 49% of patients had echocardiograms and thus EF was unknown for 51%. This could have affected the survival data and the percentage use of ACEIs and β blockers. However this rate of echocardiograms is similar to other studies of unselected heart failure patients (Philbin *et al* (22) 44%, Mair *et al* (25) 30%, and McDermott *et al* (21) 54%). The one-year follow up data for medication use is only available for 56% of our patients. This may reflect the natural migration patterns and behaviour of patients, as similar one-year follow up rates (48%) for unselected heart failure patients were reported by Tarantine *et al* (26). ACEI and β blocker use rates were expressed, in our study, as a percentage of patients still in the practice at one year, and therefore may be over estimated.

In summary, this study found that systemic hypertension was the main aetiology of heart failure followed by IHD. Medical treatment closely approached the recommended standards of major heart failure guidelines with high ACEI and β blocker use comparable to recent heart failure trials. This is the only report of such high levels of ACEI and β blocker use in routine clinical practice. Short-term survival was high.

REFERENCES

1. Coates AJ. Is preventive medicine responsible for the increasing prevalence of heart failure? Lancet 1998; **352 (suppl 1):** S139–41.
2. The CONSENSUS Trial Study Group. Effect of enalapril on mortality in severe congestive heart failure: results of the Cooperative North Scandinavian Enalapril Survival Study. N Engl J Med 1987; **316:** 1429–35.
3. The SOLVD Investigators. Effects of enalapril in patients with reduced left ventricular ejection fraction and congestive heart failure. N Engl J Med 1991; **325:** 293–302.
4. Packer M, Bristow MR, Cohn JN, Colucci WS, Gilbert EM, Shusterman NH. The effect of carvedilol on morbidity and mortality in patients with chronic heart failure. N Engl J Med 1996; **334:** 1349–55.
5. Pitt B, Zannad F, Remme WJ, Cody R, Castaigne A, Perez A et al. The effect of spironolactone on morbidity and mortality in patients with severe heart failure. N Engl J Med 1999; **341:** 709–17.
6. Remme WJ, Swedberg K; Task Force for the Diagnosis and Treatment of Chronic Heart Failure, European Society of Cardiology. Guidelines for the diagnosis and treatment of chronic heart failure. Eur Heart J 2001; **22:** 1527–60.
7. Hunt SA, Baker DW, Chin MH, Cinguegrani MO, Feldman AM, Francis GS et al; Committee to revise the 1995 guidelines for the

evaluation and management of heart failure. ACC/AHA guidelines for the evaluation and management of chronic heart failure in the adult: executive summary a report of the American College of Cardiology/ American Heart Association Task Force on Practice Guidelines. Circulation 2001; **104:** 2996–3007.

8. Komajda M, Follath F, Swedberg K, Cleland J, Aguilar JC, Cohen-Solal A et al. The EuroHeart Failure Survey Programme – a survey on the quality of care among patients with heart failure in Europe part 2: treatment. Eur Heart J 2003; **24:** 464–74.

9. Management of heart failure in primary care (The Improvement of Heart Failure Programme): an international survey. Lancet 2002; **360:** 1631–9.

10. McKee SP, Leslie SJ, LeMaitre JP, Webb DJ, Denvir MA. Management of chronic heart failure due to systolic left ventricular dysfunction by cardiologist and non-cardiologist physicians. Eur J Heart Fail 2003; **5:** 549–55.

11. O'Conner CM, Stough WG, Gallup DS, Hasselblad V, Gheorghiade M. Demographics, clinical characteristics and outcomes of patients hospitalized for decompensated heart failure: observations from the Impact-HF Registry. J Cardiac Failure 2005; **11:** 200–5.

12. Cox JL, Ramer SA, Lee DA, Humphries K, Pilote L, Svenson L et al. Pharmacological treatment of congestive heart failure in Canada: a description of care in five provinces. Can J Cardiol 2005; **21:** 337–43.

13. Ho KK, Anderson KM, Kannel WB, Grossman W, Levy D. Survival after the onset of Congestive Heart Failure in Framingham Heart Study subjects. Circulation 1993; **88:** 107–115.

14. Pfeffer MA, Swedberg K, Granger CB, Held P, McMurray JJ, Michelson et al. Effects of candesartan on mortality and morbidity in patients with chronic heart failure: the CHARM-Overall programme. Lancet 2003; **362:** 759–66.

15. Poole-Wilson PA, Swedberg K, Cleland JG, diLenarda A, Hanrath P, Komadja M et al. for the COMET Investigators. Comparison of carvedilol and metoprolol on clinical outcomes in patients with chronic heart failure in the Carvedilol or Metoprolol European Trial (COMET): randomized control trial. Lancet 2003; **362:** 7–13.

16. Maggionia A, Anand I, Gottlieb SO, Latini R, Tognoni G, Cohn J, on behalf of the Val-Heft Investigators. Effects of valsartan on morbidity and mortality in patients with heart failure not receiving angiotensin converting enzyme inhibitors. J Am Coll Cardiol 2002; **40:** 1414–21.

17. McSwain M, Martin TC, Amaraswamy R. The prevalence, aetiology and treatment of congestive cardiac failure in Antigua and Barbuda. West Indian Med J 1999; **48:** 137–40.

18. Anguita SM. Clinical characteristics, treatment and short-term morbidity and mortality of patients with heart failure followed in heart failure clinics: results of the BADAPIC Registry. Rev Esp Cardiol 2004; **57:** 1159–69.

19. Ducharme A, Doyon O, White M, Rouleau JL, Brophy JM. Impact of care at a multidisciplinary congestive heart failure clinic: a randomized trial. CMAJ 2005; **173:** 40–5.

20. Stewart S, Horowitz J. Home-based intervention in congestive heart failure: long-term implications on readmission and survival. Circulation 2002; **105:** 2861–6.

21. McDermott M, Feinglass J, Lee P, et al. Systolic function, readmission rates and survival among consecutively hospitalized patients with congestive heart failure. Am Heart J 1997; 134: 728–36.

22. Philbin EF, Rocco TA Jr, Lindenmuth NW, Ulrich K, Jenkins PL. Systolic versus diastolic heart failure in community practice: clinical features, outcomes and the use of angiotensin converting enzyme inhibitors. Am J Med 2000; **109:** 605–13.

23. McAlister F, Teo K, Taker M, Montague T, Humen D, Cheung L. Insights into the contemporary epidemiology and outpatient management of congestive heart failure. Am Heart J 1999; **138:** 87–94.

24. Study Group on Diagnosis of the Working Group on Heart Failure of the European Society of Cardiology. The EuroHeart Failure Survey Programme – a survey on the quality of care among patients with heart failure in Europe part 1: patient characteristics and diagnosis. Eur Heart Journal 2003; **24:** 442–63.

25. Mair FS, Crowley TS, Bundred PE. Prevalence, aetiology and management of heart failure in general practice. Br J Gen Practice 1996; **46:** 77–9.

26. Tarantin L, Faggiano P, Senni M, et al. Clinical features and prognosis associated with a preserved left ventricular systolic function in a large cohort of congestive heart failure outpatients managed by cardiologists. Data from The Italian Network on Congestive Heart Failure. Ital Heart J 2002; **3:** 656–64.