Characteristics of acute heart failure hospitalizations in a general medical ward in Southwestern Uganda

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Keywords

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Predictors of in-hospital mortality among acute heart failure (AHF) patients managed in general wards of sub-Saharan Africa are unknown, yet it poses enormous socioeconomic burden due to high prevalence and mortality, especially among young, economically productive individuals [1,2] and there are few specialized cardiology centers in the region [3]. Knowledge of the patients' course before the admission, during the in-hospital phase, and out of hospital follow-up, could aid in identifying patients at higher risk of mortality to whom focused intervention can be directed.

We carried out a cohort study using medical records to describe the clinical characteristics and predictors of in-hospital mortality in adults hospitalized with acute heart failure in a general medical ward at Mbarara Regional Referral Hospital in Uganda, a publicly operated tertiary care hospital. Eligible patients were those hospitalized with acute de novo or decompensation of preexisting heart failure between February 1, 2013 and February 28, 2014. Mbarara University Institutional Review Board approved this study and waived the requirement for informed consent given that this was a retrospective study.

A total of 516 black African patients were identified to have a diagnosis of heart failure at admission over the one year study period. Of these, 177 (34.3%) patient charts were not found for review and 65 patients were excluded because, after review, they were deemed not to have heart failure at admission. We analyzed data of the remaining 274 patients whose

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charts were available and who fulfilled a criterion for the diagnosis of acute heart failure at admission. The median age was 52 (IQR 35–67) years. Females constituted 69.7% (191) of the sample. The common chronic comorbidities were hypertension, human immunodeficiency virus (HIV), chronic kidney disease, and diabetes mellitus in 98 (35.8%), 31 (11.3%), 22 (8.0%), 20 (7.3%) patients respectively. One hundred fifty four (56.2%) patients had acute "de novo" heart failure while 120 (43.8%) patients had a prior diagnosis of heart failure. Among patients with a prior admission for heart failure, medication noncompliance, infections, and anemia were the precipitating factors for decompensation in 38 (31.7%), 32 (26.7%), and 22 (18.3%) respectively.

In our study participants, the chronic medication prescriptions prior to admission were oral diuretics in 107 (39.1%), angiotensin converting enzyme inhibitors (ACEI) and/or angiotensin receptor blockers (ARB) in 70 (25.6%), and beta blockers in 57 (20.8%). During admission therapies prescribed included: intravenous furosemide and inotropic agents in 251 (91.6%) and 59 (21.5%) patients respectively. Of the oral drugs: digoxin, ACEI/ARBs, aspirin, and beta blocker were prescribed in 93 (33.9%), 93 (33.9%), 90 (32.9%), and 88 (32.1%) patients respectively. At discharge, the percentage prescription of all AHF drugs modestly improved when compared with the prescription levels at admission (Table 1).

Our patients predominantly had reduced ejection fraction (LVEF   45%) and few with preserved ejection fraction (LVEF   45%), (mean LVEF 29.47% vs. 64.11%, p < 0.00001).

At 12 months, the in-hospital mortality rate was 18.3% (50/274) whereas 206 (75.2%) patients were discharged after clinical improvement. A total of 14 (5.1%) patients were self-discharges, and 4 (1.5%) were referred to a higher level of care facility (Table 2). The overall median length of hospital stay for all patients was 5 (IQR, 3–9) days. The median length of hospitalization for those who died was 2 days (IQR, 0–6) compared to 6 days (IQR, 4–9) for those who survived to discharge (p = 0.0013). Concurrent infection (AOR, 2.48, 95% CI 1.106–5.596, p = 0.0027) was an independent predictor of longer hospital stay (>14 days). A total of 86 patients were readmitted within the 12 month study period and the 30 day readmission rate was 34.9% (30/86). The overall median days to re-hospitalization were 40 (IQR, 18–100) days.

In the multivariate logistic regression analysis, being admitted with hypotension (AOR, 4.6, 95%CI 1.6–13.2, p = 0.005) and a reduced LVEF (AOR, 7.6, 95%CI 1.6–35.4, p = 0.010) were independent predictors of in-hospital mortality. After controlling for concurrent infection, hypotension remained a strong predictor of in-hospital mortality (AOR, 3.2, 95%CI 1.6–6.3, p = 0.0003).

In this population, patients admitted to the general medical ward with acute heart failure commonly presented at a younger age, had a shorter length of hospital stay but a higher 12-month re-hospitalization rate and a higher in-hospital mortality rate than reported in US [4,5] and European [6–8] studies. The low rates of prescription/utilization of evidence based therapies could be the explanation for the observed high mortality and/or re-hospitalization rates. Further research to investigate factors that affect utilization/prescription of guideline based cardiovascular medication in this setting need urgent exploration.

Acknowledgments

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Table 1

Hospital course characteristics

CHARACTERISTIC	N = 274, n (%)
Admission treatment	
Intravenous Furosemide	251 (91.6)
Oral digoxin	93 (33.9)
ACEI/ARB[¥]	93 (33.9)
Aspirin	90 (32.9)
Beta blocker	88 (32.1)
Intravenous Inotropic agent	59 (21.5)
Clinical presentations	
Dilated cardiomyopathy	86 (31.4)
De novo heart failure	77 (28.1)
Valvular heart disease (Rheumatic)	38 (13.9)
Hypertensive heart disease (Left Ventricular hypertrophy)	25 (9.1)
Acute coronary syndrome	15 (5.5)
Discharge treatment	
Diuretics	155 (56.6)
ACEI/ARB[¥]	90 (32.9)
Beta blockers	74 (27.0)
Aspirin	55 (20.1)
Left ventricular ejection fraction (LVEF)[a]	
Severely depressed LVEF, (35%)	88 (47.1%)
Mild-moderately depressed LVEF, (35–55%)	53 (28.3%)
Preserved LVEF, (55%)	46 (24.6%)
Blood test results	
Hemoglobin (n = 58), (g/dL) median (IQR)	10.6 (7.3–13)
Serum potassium (n = 82), (mmol/L), median (IQR)	4.48 (3.9–5.6)
Serum creatinine (n = 83), (mmol/L), median (IQR)	1.43 (1.0–3.5)

Abbreviations: ACEI/ARB¥: Angiotensin converting enzyme inhibitor/angiotensin receptor blocker; IQR: Inter Quartile Range.

[a] Only 187 patients had echocardiograms.

Table 2

In hospital outcomes.

In hospital outcomes	N = 274, n (%)
Discharged after improvement	206 (75.2)
Self-discharge	14 (5.1)
Transfer to higher level of care facility	4 (1.5)
Died in hospital	50 (18.3)
Length of hospitalization, median (IQR)	
All patients, days	5 (3–9)
Patients who died (n = 50), days	2 (0–6)
Days to re-hospitalization, median (IQR)	40.5 (18–100)
Re-admitted within 30 days	30 (34.9)