Clinical Investigations

Quality of Life Assessment for Acute Heart Failure Patients From Emergency Department Presentation Through 30 Days After Discharge: A Pilot Study With the Kansas City Cardiomyopathy Questionnaire

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ABSTRACT

Background: There are no well validated patient-reported disease status instruments for acute heart failure (HF). We assessed the feasibility of using the Kansas City Cardiomyopathy Questionnaire (KCCQ) during acute heart failure hospitalization, and the association of acute changes with 30-day readmission.
Methods and Results: A convenience sample of acute HF patients were administered the KCCQ on presentation, discharge, and 30 days after discharge. We examined mean differences in KCCQ scores over time, and we stratified by readmission status to examine differences in hospital-based changes with the use of *t* test and logistic regression. Among 52 patients (mean age 63 ± 35 years, 56.9% male, 46.2% white), discharge and 30-day assessments were each completed by 90%. Scores were lowest at presentation, improved during hospitalization, and were highest at 30 days. The mean change was +11.9 ± 97.0 ($P = .007$) between presentation and discharge and +19.8 ± 87.8 ($P < .001$) between discharge and 30 days. Within the 30-day follow-up, 10 patients were readmitted, and there were no significant differences in score changes during hospitalization between patients with and without readmission (readmitted patients: +4.8 ± 81.5 vs no readmission +16.2 ± 27.4; $P = .32$).
Conclusions: In this pilot study, the KCCQ is feasible to use during acute HF hospitalizations and demonstrates sensitivity to acute changes, but score changes during hospitalization did not predict 30-day readmission. (*J Cardiac Fail 2014;20:18–22*)
Key Words: Patient-reported health status, acute heart failure, emergency department, readmission.

Patient-reported outcomes are increasingly being used as end points in clinical trials for monitoring quality assessment and as tools for improving clinical care.[1,2] Heart failure (HF) patients experience significant limitations in function and quality of life, with studies suggesting that patients with severe symptoms are willing to trade years of life for improved quality.[3] Optimizing quality of life, in addition to survival, is a central goal of HF management.[2,4]

Care for HF patients spans multiple clinical settings, including hospitals and clinics. Increasing emphasis on successful transitions from one care setting to another has arisen from a newfound focus by the Centers for Medicare and Medicaid Services on episodes of care and value-based purchasing in HF.[5] To be able to monitor the health status of patients in these settings—from outpatient clinics to decompensated HF emergency department (ED) visits and

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hospitalization to discharge and back to outpatient clinics—is central to understanding and identifying opportunities to improve HF patients' health status.[6–8] In addition, emerging therapies for acute HF (AHF) require methods to assess the responses to therapy between admission, discharge, and follow-up.[8] Currently, there is no single health status measure that has been shown to provide clinically valid and responsive data across these various clinical settings.

The Kansas City Cardiomyopathy Questionnaire (KCCQ) is a validated instrument for assessing chronic HF patients in the outpatient setting.[6] Its reliability and responsiveness to clinical change have been well established; and lower scores have been shown to independently predict HF hospitalizations and mortality.[6,9,10] However, the 2-week recall frame for the KCCQ items suggests that it may not be responsive to the acute changes in HF hospitalizations that occur between admission and discharge. In a pilot study, we sought to examine and provide empirical evidence that the KCCQ could be used to monitor acute changes in HF status during hospitalization, which has not been previously examined. As a secondary objective, we examined the association between improvement in KCCQ score during hospitalization and 30-day readmissions for heart failure to explore the possibility that it could be used to identify patients at high risk of returning after discharge.

Methods

Study Design

Instrument. The KCCQ is a 23-item heart failure–specific tool that measures the following health status domains: physical limitation, symptoms, self-efficacy, and specific quality of life and perceived social limitations related to heart failure. An overall summary score ranges from 0 to 100, with higher scores correlating with fewer symptoms, fewer limitations, and better disease-specific quality of life. The details and validity of the questionnaire have been previously reported.[6]

Setting. The study was conducted at a single urban academic medical center with an active cardiac transplant program. The study was approved by the Institutional Review Board and conducted in accordance with the Declaration of Helsinki.

Patient Selection. A convenience sample of patients was enrolled within 12 hours of ED presentation. Inclusion criteria were designed to ensure that enrolled patients had a clear diagnosis of acute heart failure, and to avoid enrollment of patients with very mild symptoms or unclear diagnosis, we used the following criteria: age >18 years, B-type natriuretic peptide >400 ng/dL, primary admission diagnosis of worsening heart failure, treatment with intravenous loop diuretic therapy in the ED or prehospital setting, dyspnea at rest or with minimal exertion, and ≥2 of the following: jugular venous distension, peripheral edema, rales, and chest radiography consistent with AHF. Exclusion criteria were: ongoing acute coronary syndrome or troponin level >3 times the upper limit of normal, inability to provide informed consent, pregnancy at time or enrollment or within past 60 days, non–English speaking, and terminal illness with life expectancy <6 months. Given the exploratory nature of this pilot study and lack of any data to inform a power calculation, target enrollment was determined to be 50 patients based on constraints of our study time-period and resources.

Table 1. Clinical Characteristics, % (n)

Comorbidities	
Anemia	40.4% (21)
Asthma/COPD/pulmonary disease	17.3% (9)
Cancer history	7.7% (4)
Coronary artery disease	40.4% (21)
Diabetes mellitus—insulin dependent	23.1% (12)
Diabetes mellitus—noninsulin dependent	23.1% (12)
Hypertension	80.9% (42)
Liver disease	1.9% (1)
Obesity	34.6% (18)
Peripheral vascular disease	5.8% (3)
Prior myocardial infarction	17.3% (9)
Primary cardiomyopathy	26.9% (14)
Prior percutaneous coronary intervention	19.2% (10)
Prior coronary bypass graft	13.5% (7)
Renal insufficiency	44.2% (23)
Stroke	9.6% (5)
Valvular disease	11.5% (6)
Medications or therapies	
ACE inhibitor	53.9% (28)
Aldosterone antagonist	1.9% (1)
Amlodipine/Felodipine	23.1% (12)
Angiotensin receptor blocker	15.4% (8)
Aspirin	38.5% (20)
Beta-blocker	84.6% (44)
Cardiac glycoside	1.9% (1)
Cardiac resynchronization therapy	5.8% (3)
Coumadin	34.6% (18)
Digoxin	1.9% (1)
Diuretic	63.5% (33)
Implantable cardioverter-defibrillator	3.9% (2)
Nitrates	13.5% (7)
Pacemaker	5.8% (3)
Clopidogrel	9.6% (5)
Statins	46.2% (24)
Precipitating factor(s) for acute HF	
None	1.9% (1)
Acute coronary syndromes	0
Arrhythmia	3.9% (2)
Dietary noncompliance	9.6% (5)
Drug-induced HF	1.9% (1)
Hypertension	7.7% (4)
Infection	1.9% (1)
Medication noncompliance	9.6% (5)
Post-surgical HF	1.9% (1)
Valvular dysfunction	1.9% (1)
Worsening renal failure	7.7% (4)
Other	9.6% (5)
Unknown	48.1% (25)

COPD, chronic obstructive pulmonary disease; ACE, angiotensin-converting enzyme; HF, heart failure.

Data Collection. After obtaining written informed consent, a trained research assistant administered the KCCQ, reading each question aloud and recording the patient's responses. The first assessment was completed within 12 hours of hospital presentation, most often in the ED. The second assessment was completed on the date of discharge or hospital day 7 (whichever came first). We anticipated that most patients would be discharged within 1 week and therefore complete assessment 2 before hospital day 7. For patients with longer lengths of stay, we chose to perform assessment 2 on hospital day 7 to capture responsiveness of the KCCQ instrument to AHF treatment. A third assessment was performed (in person or over the telephone) 30 days after discharge. Post-discharge hospital readmissions were patient reported. Chart abstraction was performed to identify whether the readmission