Symptom Burden Among Patients Who Were Hospitalized for Heart Failure

Heart failure (HF) is a leading cause of 30-day readmission.1 Missing from our understanding of decompensated HF is the range and natural history of the symptoms that affect patients. Residual symptoms are known to be a powerful driver of health care use after hospitalization for HF.2 Intensive symptom management, including palliative care, may represent a promising approach to improving patient outcomes after hospitalization for HF. Our objectives were to evaluate the spectrum of symptoms experienced by patients hospitalized for HF, the improvement in symptoms after discharge, and patients’ perceptions of palliative care.

Methods | This was a prospective study of patients who were hospitalized for HF at Yale-New Haven Hospital. The study was conducted from August 21, 2013, through December 31, 2014. Institutional review board approval was given by Yale-New Haven Hospital and written patient consent was obtained. Patients were enrolled within 2 days of hospital admission and queried about symptoms using the Edmonton Symptom Assessment Scale during hospitalization and a follow-up telephone interview 1 week after discharge. This scale ranges from 0 to 10, with higher scores denoting greater severity. Severity ratings were compared between the in-hospital and postdischarge assessments to assess improvement in symptoms. Patients were also queried about existing knowledge of palliative care and interest in receiving palliative care services while hospitalized.

Results | Ninety-one patients were enrolled. The mean (SD) time for the baseline interview was 2.5 (1.6) days after hospital admission. The mean (SD) time for the follow-up interview was 9.9 (4.3) days after hospital discharge. The patients’ indiscriminate UA ordering has the potential to improve UC and antimicrobial prescribing practices among GM patients.

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Study concept and design: Yin, Leis.

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Drafting of the manuscript: All authors.

Critical revision of the manuscript for important intellectual content: Yin, Leis.

Statistical analysis: Kiss, Leis.

Study supervision: Leis.

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Table. Symptom Severity and Lack of Improvement

<table>
<thead>
<tr>
<th>Symptom</th>
<th>ESAS Score, Mean (SD)</th>
<th>P Value*</th>
<th>Patients Who Reported No Improvement in Symptom Severity, No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline Interview</td>
<td>Follow-up Interview</td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>2.4 (3.0)</td>
<td>2.8 (3.0)</td>
<td>.21</td>
</tr>
<tr>
<td>Fatigue</td>
<td>5.0 (2.8)</td>
<td>4.3 (2.8)</td>
<td>.86</td>
</tr>
<tr>
<td>Drowsiness</td>
<td>4.3 (3.3)</td>
<td>3.8 (3.0)</td>
<td>.19</td>
</tr>
<tr>
<td>Nausea</td>
<td>0.7 (2.1)</td>
<td>0.1 (0.8)</td>
<td>.04</td>
</tr>
<tr>
<td>Lack of appetite</td>
<td>2.5 (2.9)</td>
<td>1.8 (2.4)</td>
<td>.02</td>
</tr>
<tr>
<td>Dyspnea</td>
<td>4.7 (3.1)</td>
<td>4.0 (2.4)</td>
<td>.03</td>
</tr>
<tr>
<td>Depression</td>
<td>2.8 (3.2)</td>
<td>2.0 (3.0)</td>
<td>.02</td>
</tr>
<tr>
<td>Anxiety</td>
<td>3.4 (3.3)</td>
<td>3.0 (3.1)</td>
<td>.26</td>
</tr>
<tr>
<td>Decreased well-being</td>
<td>5.2 (4.2)</td>
<td>4.5 (1.9)</td>
<td>.02</td>
</tr>
<tr>
<td>Edema</td>
<td>4.1 (3.4)</td>
<td>2.2 (2.5)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Abbreviation: ESAS, Edmonton Symptom Assessment Scale.

* Compares the baseline and follow-up mean (SD) ESAS scores.
mean (SD) age was 71.5 (12.6) years, 47 (52%) were female, and 68 (75%) had an ejection fraction of less than 50%.

The Table shows the patients’ symptom severity at baseline and follow-up as well as the percentage of patients who reported no improvement. Severe symptoms during hospitalization included symptoms that are traditionally associated with decompensated HF (decreased well-being, fatigue, and dyspnea) as well as those that are not (anxiety and pain). A lack of symptom improvement shortly after hospital discharge was common. A total of 49 patients (58%) reported no improvement in fatigue, 36 (42%) reported no improvement in dyspnea, 35 (41%) reported no improvement in pain, and 35 (41%) reported no improvement in anxiety.

While only 19 patients (22%) reported familiarity with palliative care, after a standardized explanation, 58 (68%) were interested in receiving palliative care services. Of those who were already familiar with palliative care, the perceptions about the types of services provided are shown in the Box.

Discussion | Our findings suggest that patients who are hospitalized for HF often present with symptoms that are not traditionally associated with HF and that current management approaches may fail to adequately address symptoms. There may be several reasons for this failure. The existence of multiple comorbid medical conditions is common in aging patients with HF, and these comorbidities may contribute to symptoms and complicate management. Physicians who care for patients with HF in the hospital setting may not be prepared to thoroughly assess and treat symptoms such as pain, anxiety, depression, and fatigue. Finally, there is pressure on health systems to reduce patients’ lengths of stay. Once patients no longer meet the clinical criteria for hospitalization (eg, hypoxia or hemodynamic instability), there is an impetus for discharge even if troublesome symptoms persist.

The progressive nature of HF, coupled with high mortality rates and poor quality of life, make it suited for the incorporation of palliative care. Given that symptoms frequently drive health care use, early integration of palliative care may reduce readmissions. There have been numerous calls to include palliative care as a component of HF management, but fewer than 10% of patients with HF receive palliative care.

To our knowledge, this is the only study that included a longitudinal assessment of symptom burden during hospitalizations for HF and shortly after discharge. Future studies should evaluate whether palliative care is effective in reducing symptom burden and readmission among patients who are hospitalized for HF.

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LESS IS MORE

**Statin Use in Very Elderly Individuals, 1999-2012**

There is little randomized evidence to guide the use of statins (HMG-CoA reductase inhibitors) in very elderly individuals (>79 years). Despite this, the very elderly have the highest rate of statin use in the United States. Given that few studies have investigated the use of statins among this population in a longitudinal manner by vascular disease, we set out to do so.

**Methods** | The 1999-2012 Medical Expenditure Panel Survey (MEPS) was used for the analysis. The MEPS is nationally representative of the civilian noninstitutionalized population of the United States for each year and is sponsored by the Agency of Healthcare Research and Quality and the Centers for Disease Control and Prevention. The survey consists of 5 interviews over 2 years and contains self-reported demographics, medical conditions, and prescription drug information. The analysis included all individuals older than 79 years without liver disease. Prescription drug information was verified by pharmacy data and has been shown to be valid and not biased by sociodemographic variables. Statins were identified, and use was classified as the report of any statin prescription. Atorvastatin or rosuvastatin were considered high-potency statins. Primary prevention was defined as individuals without vascular disease (coronary heart disease [CHD], stroke, or peripheral vascular disease). Secondary prevention was defined as vascular disease, which increased in 2007 after questions regarding CHD and/or stroke were asked at every interview instead of once a year.

Logistic regression was used to investigate trends in medication use, while multivariable logistic regression was used to determine if high-potency statin use was associated with vascular disease controlling for year. A sensitivity analysis was conducted that included individuals with diabetes mellitus in the secondary prevention group. Complex survey weighting was included in all analyses, using STATA statistical software (version 13; STATA Corp). The Ohio State University institutional review board ruled this study exempt from review.

**Results** | The sample included 13,099 individuals from 1999 to 2012. The rates of vascular disease in the population increased from 27.6% (95% CI, 24.8%-30.5%) in 1999 to 2000 to 43.7% (95% CI, 41.2%-46.1%) in 2011 to 2012. Among the primary prevention population, the rate of statin use increased from 8.8% (95% CI, 6.3%-12.2%) in 1999 to 2000 to 34.1% (95% CI, 30.4%-38.1%) in 2011 to 2012 (*P* < .001). There was an increasing trend in statin use in both primary and secondary prevention (*P* < .001 for both comparisons) (Figure, A). High-potency statin use was not associated with vascular disease (odds ratio, 1.01 [95% CI, 0.83-1.22]). The proportion of statin users who used atorvastatin peaked in 2005 to 2006 and then steadily declined, while the proportion that were simvastatin users were steady until 2007 to 2008 when it started to rise. The percentage of statin users who used rosuvastatin steadily increased after its introduction (Figure, B).

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**Figure. Statin Use in Very Elderly Individuals, 1999-2012**

**Figure A.** Statin Use in the Very Elderly by Vascular Disease, 1999-2012

**Figure B.** Statin Use by Drug in the Very Elderly, 1999-2012

<table>
<thead>
<tr>
<th>Year</th>
<th>1999</th>
<th>2001</th>
<th>2003</th>
<th>2005</th>
<th>2007</th>
<th>2009</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patients, %</strong></td>
<td>0</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
</tr>
</tbody>
</table>

**Patients** | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

**Year** | 1999 | 2001 | 2003 | 2005 | 2007 | 2009 | 2011 |

**Figure A.** Secondary prevention (black) and primary prevention (white) are shown. **Figure B.** Atorvastatin (triangle), simvastatin (circle), pravastatin (square), lovastatin (diamond), and rosvastatin (bar) are shown. Years are grouped into 2-year intervals (eg, 1999-2000). A, Percentages of very elderly individuals (>79 years) who reported a prescription for a statin from 1999 to 2012, by vascular disease. Primary prevention is defined as no history of previous coronary heart disease, stroke, or peripheral vascular disease. Secondary Prevention is defined as a history of coronary heart disease, stroke, or peripheral vascular disease. B, Percentage of very elderly individuals (>79 years) who reported a prescription for a statin reported by specific statin type (atorvastatin, lovastatin, pravastatin, rosuvastatin, and simvastatin) from 1999 to 2012. Individuals could be counted multiple times if they reported use of different drugs.