Mortality among Elderly Patients Newly Diagnosed with Acute Lymphoblastic Leukemia (ALL), Using 100% Medicare All Data

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Introduction
• ALL is a rare disease. In 2014, it is estimated that 65,900 new cases accounted for 0.4% of all new cancer cases in the US.
• The incidence of ALL in adults increases with age; thus, as the general population continues to age, the number of older adults with ALL also increases.
• Elderly patients with ALL have a markedly poorer prognosis that may be attributable to age, higher likelihood of Ph-positive disease, and use of less aggressive therapy.
• Mortality data for elderly ALL patients has been limited by the underrepresentation of elderly ALL patients in clinical trials and the scarcity of large population-based studies.
• Thus, we assessed the risk of death in a population-based cohort of elderly ALL patients diagnosed with ALL in 2008-2011.

Methods
• Data Source: 100% Medicare All data, 2007-2012.
• Cohort: Patients aged ≥66 years, newly diagnosed with ALL in 2008-2011, and continuously enrolled in Medicare fee-for-service for 12 months before ALL diagnosis (baseline period).
• ALL diagnosis was defined by ≥1 ICD-9 coding for ALL in a Medicare facility claim or ≥2 ICD-9 coding for ALL in a Medicare inpatient claim.
• ALL diagnosis date was defined as the earliest date of the first ICD-9 diagnosis or death. The follow-up period started from ALL diagnosis date and ended at 5 years after the date.
• Charlson Comorbidity Index (CCI) was calculated using ICD-9 codes for comorbidities.

Results

Table 1. Baseline characteristics of elderly patients newly diagnosed with ALL in 2008-2011.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at ALL diagnosis (years)</td>
<td>72.9</td>
<td>73.1</td>
<td>73.0</td>
<td>72.8</td>
</tr>
<tr>
<td>Male</td>
<td>52%</td>
<td>53%</td>
<td>54%</td>
<td>54%</td>
</tr>
<tr>
<td>Female</td>
<td>48%</td>
<td>47%</td>
<td>46%</td>
<td>46%</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>73%</td>
<td>74%</td>
<td>75%</td>
<td>76%</td>
</tr>
<tr>
<td>Black</td>
<td>26%</td>
<td>26%</td>
<td>24%</td>
<td>24%</td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Diabetes (31%)</td>
<td>27%</td>
<td>30%</td>
<td>33%</td>
<td>36%</td>
</tr>
<tr>
<td>COPD (15%)</td>
<td>18%</td>
<td>19%</td>
<td>20%</td>
<td>21%</td>
</tr>
<tr>
<td>Hypertension (39%)</td>
<td>34%</td>
<td>36%</td>
<td>38%</td>
<td>40%</td>
</tr>
</tbody>
</table>

Figure 1. Unadjusted cumulative probability of death by analysis.

Discussion
• We observed high 30-day mortality among elderly patients diagnosed with ALL that clearly highlights the unmet medical need in this patient population.
• Unadjusted analyses demonstrate that the risk of death significantly increased with advancing age and comorbidity level.
• Patients aged 85 years or older had the highest risk of death, which may have been exacerbated by decreased frailty and a decreased likelihood of receiving intensive therapy options.
• Strengths:
  • Large population-based study
  • Real-world rates of mortality among older ALL patients.
  • Limitations:
  • Identification of patients with ALL was based on diagnostic codes in administrative claims data, the potential for misclassification exists using this methodology.
  • Clinical and biological characteristics of ALL are not available in the Medicare database.
• Future studies that assess the real-world management of ALL in elderly patients will provide additional insight into factors contributing to the high mortality risk observed in this patient population.