Introduction

Staffing levels and availability of diagnostic resources are reduced during weekends, which may compromise the quality of emergency care. This phenomenon, labeled as the "weekend effect", has been identified as a risk factor for poor health outcome. Weekend delay could influence the Monday mortality rate, due to increased severity of illness of patients presenting to the emergency department (ED) on this day. Elderly patients are underrepresented in research on the "weekend effect".

Results

Data on 1784 ED visits by elderly internal medicine patients (mean age 77.5 years) were included. 1300 ED visits (72.9%) resulted in hospitalization, of which 267 admissions (20.5%) occurred on weekends.

Patient characteristics

Table 1: Baseline characteristics of elderly internal medicine patients hospitalized following ED visits.

<table>
<thead>
<tr>
<th></th>
<th>Week N = 1033</th>
<th>Weekend N = 267</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (SD)</td>
<td>78.2 (7.8)</td>
<td>77.0 (7.2)</td>
<td>0.589</td>
</tr>
<tr>
<td>Male (%)</td>
<td>453 (43.9%)</td>
<td>128 (47.9%)</td>
<td>0.241</td>
</tr>
<tr>
<td>CCI, mean (SD)</td>
<td>2.6 (2.2)</td>
<td>3.0 (2.4)</td>
<td>0.011</td>
</tr>
<tr>
<td>Triage code (%)</td>
<td>0.039</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urgent</td>
<td>142 (13.7%)</td>
<td>45 (16.9%)</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>599 (58.0%)</td>
<td>168 (62.9%)</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>286 (27.7%)</td>
<td>54 (20.2%)</td>
<td></td>
</tr>
<tr>
<td>No triage</td>
<td>6 (0.6%)</td>
<td>0 (1.1%)</td>
<td></td>
</tr>
<tr>
<td>Referral (%)</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General practitioner</td>
<td>811 (78.5%)</td>
<td>186 (69.7%)</td>
<td></td>
</tr>
<tr>
<td>Specialist</td>
<td>83 (8.0%)</td>
<td>16 (6.0%)</td>
<td></td>
</tr>
<tr>
<td>Ambulance</td>
<td>71 (6.9%)</td>
<td>34 (12.7%)</td>
<td></td>
</tr>
<tr>
<td>Self-referral</td>
<td>68 (6.6%)</td>
<td>31 (11.6%)</td>
<td></td>
</tr>
<tr>
<td>No. of diagnostic tests on ED, mean (SD)</td>
<td>3.4 (1.8)</td>
<td>3.8 (1.9)</td>
<td>0.001</td>
</tr>
<tr>
<td>Median ED-LOS in minutes (range)</td>
<td>176 (21-1413)</td>
<td>171 (15-371)</td>
<td>0.052</td>
</tr>
<tr>
<td>Median hospital LOS in days (range)</td>
<td>7 (1-91)</td>
<td>5 (1-74)</td>
<td>0.203</td>
</tr>
</tbody>
</table>

Material and methods

A retrospective cohort study of ED encounters of internal medicine patients ≥65 years presenting to MMC between 01-09-2010 and 31-08-2011 was conducted. The weekend was defined as the period from midnight on Friday to midnight on Sunday. Logistic regression was performed to evaluate the effect of factors on patient mortality and calculate Odds Ratio (OR) and 95% Confidence Intervals (CI).

Patient Outcome

Weekend effect

Severity of illness at ED presentation based on vital parameters, biochemical measurements and acuity level was similar for elderly patients hospitalized on weekends and weekdays.

Table 2: Mortality rates of elderly internal medicine patients hospitalized following the ED visit on weekends compared with weekdays.

<table>
<thead>
<tr>
<th></th>
<th>Weekend admission N = 267</th>
<th>Weekday admission N = 1033</th>
<th>OR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-hospital mortality rate (%)</td>
<td>30 (11.2%)</td>
<td>106 (10.3%)</td>
<td>1.1 (0.7-1.7)</td>
</tr>
<tr>
<td>2-day in-hospital mortality rate (%)</td>
<td>8 (3.0%)</td>
<td>26 (2.5%)</td>
<td>1.2 (0.5-2.7)</td>
</tr>
<tr>
<td>30 day mortality rate (%)</td>
<td>38 (14.2%)</td>
<td>156 (15.1%)</td>
<td>1.1 (0.7-1.6)</td>
</tr>
<tr>
<td>1-year mortality (%)</td>
<td>104 (39.0%)</td>
<td>430 (41.6%)</td>
<td>0.9 (0.7-1.2)</td>
</tr>
</tbody>
</table>

Monday effect

The baseline characteristics were comparable among elderly patients hospitalized on Monday or Tuesday to Friday (midweek).

Table 3: Mortality rate of elderly internal medicine patients hospitalized following the ED visit on Monday compared with Tuesday to Friday (midweek).

<table>
<thead>
<tr>
<th></th>
<th>Monday admission N = 212</th>
<th>Midweek admission N = 821</th>
<th>Weekday admission N = 267</th>
<th>OR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-hospital mortality rate (%)</td>
<td>18 (8.5%)</td>
<td>88 (10.7%)</td>
<td>30 (11.2%)</td>
<td>0.8 (0.5-1.3)</td>
</tr>
<tr>
<td>2-day in-hospital mortality rate (%)</td>
<td>6 (2.8%)</td>
<td>20 (2.4%)</td>
<td>8 (3.0%)</td>
<td>1.2 (0.5-2.9)</td>
</tr>
<tr>
<td>30 day mortality rate (%)</td>
<td>35 (16.5%)</td>
<td>121 (14.7%)</td>
<td>38 (14.2%)</td>
<td>0.9 (0.6-1.3)</td>
</tr>
<tr>
<td>1-year mortality (%)</td>
<td>93 (43.9%)</td>
<td>337 (41.0%)</td>
<td>104 (39.0%)</td>
<td>1.1 (0.8-1.2)</td>
</tr>
</tbody>
</table>

Conclusion

The in-hospital and 2-day mortality rates were comparable among elderly patients hospitalized on weekends or on weekdays following an ED visit. Monday admissions was not associated with poor health outcomes. Emergency care for the elderly is not compromised by the changed logistics during the weekend at our hospital.

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