Factors impacting Mortality in Geriatric patients with Acute Spinal Injuries: A 12-year study of 613 patients in Singapore

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Introduction

- Acute geriatric spinal trauma contributes significantly to healthcare costs & admissions in Singapore

- Population of geriatric patients in Singaporeans is expected to rise

- However, local geriatric mortality data and epidemiology following spinal trauma has been sparingly assessed
Objectives

- First Singaporean study of Singaporean Geriatric patients who have sustained acute spinal injuries over 12-year studies, providing:
  
  1. Mortality data
  2. Demographics of Geriatric patients with spinal injuries
  3. Risk factors for poor outcome

- Definitions:
  - Geriatric: Aged above 80 years old
  - Radiologically proven (via X-ray/CT/MRI scans) fractures AND/OR spinal cord injuries
Methods

- The institutional registry of a high-volume tertiary hospital was reviewed.
- All patients (aged >80 years) admitted with acute spinal trauma to the institution’s Emergency Department were evaluated.
- Gathered variables such as: age, co-morbidities, ASIA scoring, mechanism, type and level of injury and eventual cause of death.
- Mortality rates reviewed at 3, 6 months and 1 year from admission.
- Mortality date and cause of death were verified using Singapore’s Ministry of Health National Healthcare Database to improve accuracy of data.
Results – Epidemiology

- 613 patients were available for analysis after exclusion

Inclusion criteria
• Above 80 years of age
• Spinal compression fracture
  • Acute
  • Single OR
  • Multi-level
• +/- Spinal cord injury

Exclusion criteria
• Pathological fracture
Results – Epidemiology

- The most susceptible group were females (82.4%).

- The most common mechanism of injury was:
  - A fall (77.8%), or
  - Atraumatic back pain (18.3%).

- Predominant injury was an AO Type A compression fracture, without spinal cord injury (98.5%).

- Most common regions affected were T11-L1 (47.4%).
Results – Mortality Rates

- Mortality rate at 1 year post-injury was 10.4%.

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<thead>
<tr>
<th></th>
<th>(n=)</th>
<th>(%)</th>
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<tbody>
<tr>
<td>At 3 months</td>
<td>36</td>
<td>6</td>
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<tr>
<td>At 6 months</td>
<td>50</td>
<td>8.2</td>
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<tr>
<td>At 1 year</td>
<td>63</td>
<td>10.4</td>
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The most common cause of death was Pneumonia.

<table>
<thead>
<tr>
<th>Cause of death at 3 months (n = 37)</th>
<th>(n=)</th>
<th>(%)</th>
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<tbody>
<tr>
<td>Pneumonia</td>
<td>9</td>
<td>24.3</td>
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<tr>
<td>Ischemic Heart Disease</td>
<td>7</td>
<td>18.9</td>
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<tr>
<td>Urinary Tract Infection (Urosepsis)</td>
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<td>13.5</td>
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<th>Cause of death at 6 months (n = 50)</th>
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<tbody>
<tr>
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<td>28</td>
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<tr>
<td>Ischemic Heart Disease</td>
<td>11</td>
<td>22</td>
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<tr>
<td>Metastatic Cancer</td>
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<td>12</td>
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<th>Cause of death at 1 year (n = 65)</th>
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<tbody>
<tr>
<td>Pneumonia</td>
<td>18</td>
<td>27.7</td>
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<tr>
<td>Ischemic Heart Disease</td>
<td>14</td>
<td>21.5</td>
</tr>
<tr>
<td>Metastatic Cancer</td>
<td>10</td>
<td>15.4</td>
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</tbody>
</table>
Results – Risk factors for poor outcome

- **Gender**
  - Males have higher mortality rate

- **Age at admission**
  - Mortality increases by 6.3% for every year older

- **ASIA scoring**
  - ASIA scoring A-C significantly higher mortality rate (hazard ratio 12.36)

*Based on multivariate analysis*
Conclusion

- Geriatric Spinal Injuries in Singapore have risen over the last 12 years.
- Females are the most susceptible, with the thoracolumbar junction most commonly affected.
- Mortality rate for this population is **10.4%** at 1-year.
- Most common cause of mortality is Pneumonia.
- Increasing age, Poor ASIA grading (A-C) and Male gender were predictors of a poorer outcome in patients with an acute spinal injury.
Annual Meeting of Eurospine 2018

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