Acute Kidney Injury in Pediatric Hematopoietic Stem Cell Transplant Patients Predicts Day 100 Mortality

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Background

- Acute kidney injury (AKI) is an independent predictor of mortality in pediatric patients.
- Most AKI occurs within the first 3 days of PICU admission.
- Previous studies suggest that AKI is associated with chronic kidney disease and mortality in patients undergoing hematopoietic stem cell transplant (HSCT).

Methods

- We retrospectively reviewed data on 132 consecutive pediatric patients who received HSCT at The Children’s of Alabama Hospital between 2004-2001.
- AKI was defined using AKIN criteria (SCR only). Baseline SCR values for all patients were obtained during the pre-transplant evaluation.
- Statistical analysis was done using T test and chi square test to compare differences between two groups.

Results

Table 1: Differences between survivors and non-survivors at 100 days

<table>
<thead>
<tr>
<th>Stem Cell Source</th>
<th>Died (n=19)</th>
<th>Survived (n=113)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BM</td>
<td>10 (53%)</td>
<td>43 (38%)</td>
<td>0.68</td>
</tr>
<tr>
<td>UCB</td>
<td>4 (21%)</td>
<td>29 (26%)</td>
<td></td>
</tr>
<tr>
<td>PBSC</td>
<td>5 (26%)</td>
<td>40 (36%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Differences between survivors and non-survivors at 1 year

<table>
<thead>
<tr>
<th>Stem Cell Source</th>
<th>Died (n=43)</th>
<th>Survived (n=89)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BM</td>
<td>20 (46%)</td>
<td>33 (38%)</td>
<td>0.46</td>
</tr>
<tr>
<td>UCB</td>
<td>9 (21%)</td>
<td>24 (27%)</td>
<td></td>
</tr>
<tr>
<td>PBSC</td>
<td>14 (33%)</td>
<td>31 (35%)</td>
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</tr>
</tbody>
</table>

Conclusions

- As opposed to critically ill pediatric ICU patients, in which 82% of AKI occurs in the first few days of ICU admission, incident AKI occurred throughout first 30 day post HSCT.
- AKI at 30 days post-HSCT was associated with increased mortality at 100 days post-transplant (p<0.05), but not 1-year mortality.
- We were not able to show a significant difference between AKI within 7 days of life and mortality.
- Improved understanding of the risks of AKI, and differences in early and late AKI after HSCT needs to be explored.

Bibliography