Evaluation of Nebulized Heparin in Burn Inhalation Injury

Katherine Weigartz, PharmD Candidate1; Kaitlin McGinn, PharmD1,2; Alicia Linter, BSN, CCRN3; Michael J. Scalese, PharmD, BCPS, CACP1,2
1University of South Alabama Medical Center; Mobile, AL
2University of South Alabama Harrison School of Pharmacy; Auburn, AL

Background

- Smoke inhalation lung injury is a leading cause of morbidity and mortality in burn victims due to inflammation and direct cellular toxicity damaging the lungs
- Bronchial obstruction, atelectasis and perfusion mismatch result from damage
- Nebulized heparin targets resolution of fibrin production and deposition in the lungs
- Previous studies have found the implementation of a nebulized heparin protocol in burn units reduced lung injury score1-3
- Nebulized heparin has been found to be safe to use with no adverse effects on coagulation parameters1-3
- Further evaluation is needed to determine effects on duration of mechanical ventilation and intensive care unit (ICU) and hospital length of stay

Purpose

The purpose of this study is to evaluate the efficacy of nebulized heparin in reducing the duration of mechanical ventilation in patients with smoke inhalation injury.

Objectives

Primary Outcome
- Duration of mechanical ventilation

Secondary outcomes
- Burn ICU length of stay
- Hospital length of stay
- Rate of reintubation

Methods

- Retrospective, single center, observational study
- Approved by University of South Alabama Institutional Review Board
- Patients were identified from the electronic medical record based on diagnosis of known or suspected inhalation injury
- Patients placed on nebulized heparin protocol were matched to a non-heparin patient within 10% of total body surface area of burn (TBSA) as a indicator of burn severity
- Continuous data were reported as a mean or median

Statistical Analysis
- Data were analyzed using a Students T-Test
- A-priori α of significance was defined as p < 0.05

Results

Patient Demographics

<table>
<thead>
<tr>
<th></th>
<th>Heparin Group (n=18)</th>
<th>Non-Heparin Group (n=18)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male (%)</td>
<td>12 (67%)</td>
<td>15 (83%)</td>
<td>0.443</td>
</tr>
<tr>
<td>Average Age (SD)</td>
<td>55 (+/- 18.7)</td>
<td>46 (+/- 14.0)</td>
<td>0.111</td>
</tr>
<tr>
<td>Average Weight (SD)</td>
<td>93.83 kg (+/- 31.68)</td>
<td>89.98 kg (+/- 21.38)</td>
<td>0.067</td>
</tr>
<tr>
<td>Average TBSA (SD)</td>
<td>10.4 (+/- 19.7)</td>
<td>18.3 (+/- 21.4)</td>
<td>0.257</td>
</tr>
<tr>
<td>&gt; 20% TBSA (%)</td>
<td>2 (11%)</td>
<td>6 (33%)</td>
<td>0.226</td>
</tr>
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</table>


demonstrated a statistically significant reduction in mechanical ventilation days

No statistically significant differences were seen in:
- Burn ICU length of stay
- Hospital length of stay
- Need for reintubation

Conclusions

- Larger, prospective, randomized controlled trials are needed to further evaluate the clinical effectiveness of nebulized heparin for inhalation burn injury

References


Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:
- Katherine Weigartz: Nothing to disclose.
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