Use of steroids for early stage ARDS in ICU patients

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Use of steroids for early stage ARDS in ICU patients
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OBJECTIVE

• Compare outcomes in patients treated with high-dose and low-dose corticosteroids in the early stage of Acute Respiratory Distress Syndrome (ARDS).

BACKGROUND

• ARDS is characterized by excessive inflammation and is associated with a substantial risk of death. Treatment is focused on supportive care, including ventilator support, fluid restriction, and prone positioning.6
• Despite the inflammatory component of the disease, the use of steroids in this setting is controversial.7
• Historically, studies that have focused on high-dose, short-term corticosteroids failed to show improvements in mortality.2,3
• Later studies looking at low-dose corticosteroids found a reduced mortality risk and improvement in morbidity.4,8
• Most recently, a study showed high-dose steroids followed by a taper resulted in increased 60-day mortality and fewer ventilator-free days.7

METHODS

• Retrospective chart review of subjects diagnosed with ARDS that received steroids
• Data was collected on subjects admitted June 2013 – June 2017
• Groups were analyzed based on average dose of methylprednisolone received within first 72 hours following diagnosis:
  Low-dose: < 2.5mg/kg/day
  High-dose: > 2.5mg/kg/day

• Inclusion Criteria:
  Age ≥ 18 years
  Diagnosis of ARDS
  Order for steroids
  Receiving steroids for at least 72 hours following diagnosis

• Outcomes:
  60-day mortality
  Average ICU length of stay (LOS)
  Average ventilator days

Table 1: Baseline Characteristics

<table>
<thead>
<tr>
<th>Low-Dose (n = 19)</th>
<th>High-Dose (n = 4)</th>
<th>p-value (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean PaO2/FiO2 at time of diagnosis</td>
<td>122.3</td>
<td>94.7</td>
</tr>
</tbody>
</table>

Table 2: Baseline Characteristics

<table>
<thead>
<tr>
<th>Low-Dose (n = 9)</th>
<th>High-Dose (n = 5)</th>
<th>p-value (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean PaO2/FiO2 at time of ICU entry</td>
<td>7.8</td>
<td>8.2</td>
</tr>
</tbody>
</table>

Table 3: Baseline Characteristics

<table>
<thead>
<tr>
<th>Low-Dose (n = 29)</th>
<th>High-Dose (n = 9)</th>
<th>p-value (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (years ± SD)</td>
<td>57.1 ± 10.6</td>
<td>47.9 ± 13.2</td>
</tr>
<tr>
<td>Male (%)</td>
<td>65.5</td>
<td>55.5</td>
</tr>
</tbody>
</table>

RESULTS

63 patients diagnosed with ARDS in ICU with order for steroids
45 excluded
• 4 received steroids for ≤ 72hrs
• 4 received steroids following diagnosis
• 40 received stress-doses steroids for sepsis shock
38 patients met inclusion criteria

DISCUSSION & CONCLUSIONS

• Diagnosis of ARDS and treatment with steroids is not a consistent practice among physicians.
• Three subjects were lost to follow up in regards to 60-day mortality.
• Patients in the high-dose group experienced less mortality and ICU length of stay despite being classified as more severe at diagnosis. This is contradictory to what most recent studies have shown.7
• The unexpected improvement in blood glucose from baseline to 7 days is most likely the result of insulin administered during the hospital stay.
• Limitations
  • Retrospective chart review with inadequate documentation
  • Significant exclusion rate resulted in small patient population
  • Single study site may limit generalizability
  • Future Research & Impact on Practice
  • This study did not have a large enough sample size to detect a significant difference in the outcomes.
  • Further prospective, randomized controlled studies are needed to assess the optimal dose of corticosteroids to be used during the early stage of ARDS.
• Overall, the goal would be to develop a standardized practice regarding the treatment of early ARDS.

REFERENCES