Evaluation of delayed hypoglycemia incidence after hyperkalemia treatment with intravenous insulin regular

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Background

- The treatment of hyperkalemia utilizes insulin regular IV to shift extracellular potassium intracellularly
- The recommended dose for IV insulin regular is 10 units IV push
- Insulin regular is renally adjusted and requires a dose reduction with creatinine clearance below 50 ml/min
- Patients with renal impairment are subjected to an increased risk of delayed hypoglycemia, with rates ranging from 13-20%
- 5-unit IV insulin regular doses are recommended for patients with creatinine clearance below 50 ml/min to reduce hypoglycemia risks

Purpose

- Evaluate current management of hyperkalemia to determine if patients with renal impairment are at an increased risk of developing hypoglycemia

Methods

- The IRB approved retrospective study was conducted at a 617-bed academic teaching medical center
- An EPIC-generated report compiled patients who received an order for IV insulin regular from hyperkalemia order sets
- Patients included were given IV insulin regular between May 1st, 2020 to September 30th, 2020
- This study included 40 patients in the analysis

Outcomes

Primary outcome:
- Incidence of hypoglycemic events in a 24-hour period after IV insulin regular administration

Secondary Outcome:
- Mean time from IV insulin regular administration to hypoglycemic event

Inclusion/Exclusion Criteria

Inclusion criteria:
- Patients with renal impairment, as defined by CrCl<50 or an acute kidney injury
- Patients given insulin regular IV from a hyperkalemia order set
- Patients whose age is >18 years and whose age is <90 years
- Male and female patients

Exclusion criteria:
- Patients whose age is <18 years or age is >90 years
- Patients with CrCl<50 ml/min or patients without documented acute kidney injury

Charts and Graphs

Baseline Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Patients with Hypoglycemia (n=15)</th>
<th>Patients without Hypoglycemia (n=25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (years)</td>
<td>67.06</td>
<td>63.06</td>
</tr>
<tr>
<td>ED Admission</td>
<td>3 (20%)</td>
<td>22 (88%)</td>
</tr>
<tr>
<td>History of DM2</td>
<td>9 (60%)</td>
<td>13 (52%)</td>
</tr>
<tr>
<td>History of CKD</td>
<td>9 (60%)</td>
<td>13 (52%)</td>
</tr>
<tr>
<td>History of CKD and DM2</td>
<td>6 (40%)</td>
<td>9 (36%)</td>
</tr>
<tr>
<td>Cr&lt;80 ml/min</td>
<td>14 (93%)</td>
<td>24 (96%)</td>
</tr>
<tr>
<td>Cr&gt;80 ml/min</td>
<td>1 (7%)</td>
<td>4 (16%)</td>
</tr>
<tr>
<td>Acute kidney injury</td>
<td>10 (67%)</td>
<td>19 (76%)</td>
</tr>
</tbody>
</table>

Chirag Gosalia, PharmD has nothing to disclose
Andrea Winston, PharmD, BCACP has nothing to disclose
Kathryn Sowers, PharmD has nothing to disclose

Reference