Evaluation of acute kidney injury in trough-guided vancomycin dosing
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Background
- Acute kidney injury is a concern with vancomycin use.
- In 2020 new guidelines on the therapeutic monitoring of vancomycin for serious methicillin-resistant Staphylococcus aureus infections were published.\(^1\)
- The guidelines now recommend targeting a vancomycin area under the curve /minimum inhibitory concentration of 400 to 600 using area under the curve-guided dosing.
- Previously recommended trough-guided dosing may have a higher occurrence of vancomycin-associated acute kidney injury.\(^2\)
- Area under the curve-guided dosing is now recommended to achieve therapeutic effect and minimize the risk of acute kidney injury.
- Salina Regional Health Center’s current pharmacy-initiated vancomycin dosing protocol uses trough-guided dosing.

Objective
- Evaluate the rate of vancomycin-associated acute kidney injury in patients receiving trough-guided vancomycin dosing at SRHC. Acute kidney injury was defined as an increase in the serum creatinine level of \( \geq 0.5 \text{ mg/dL} \), or a 50% increase from baseline in consecutive daily readings.

Methods
- A retrospective data collection was conducted to identify all patients that received intravenous vancomycin from January 1, 2020 to March 31, 2020

Inclusion Criteria:
- Received greater than or equal to 48 hours of intravenous vancomycin therapy
- At least one vancomycin level available

Exclusion Criteria:
- Less than 18 years of age
- Serum creatinine >2 at baseline
- Receiving renal replacement therapy at baseline
- Known or suspected central nervous system infection or meningitis
- Receiving vancomycin therapy as an outpatient

Results

<table>
<thead>
<tr>
<th>Demographic Data</th>
<th>Patients</th>
<th>Male</th>
<th>60</th>
<th>Female</th>
<th>39</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>Mean</td>
<td>64</td>
<td></td>
<td>Median</td>
<td>4</td>
</tr>
<tr>
<td>Length of Therapy (days)</td>
<td>Mean</td>
<td>4.5</td>
<td></td>
<td>Median</td>
<td>4</td>
</tr>
</tbody>
</table>

Vancomycin-Associated Acute Kidney Injury in Trough-Guided Dosing

- 9% of patients receiving trough-guided vancomycin dosing developed vancomycin-associated acute kidney injury.
- Lower rates of acute kidney injury have been shown with area under the curve-guided dosing in a study by Finch et al.\(^2\) Additionally, the 2020 guidelines recommend area under the curve guided dosing.\(^1\)
- An area under the curve-guided vancomycin dosing protocol is being implemented to potentially reduce vancomycin-associated nephrotoxicity.
- The occurrence of vancomycin-associated acute kidney injury with area under the curve-guided dosing will be evaluated in future research.

Conclusions

- Nine percent of patients receiving trough-guided vancomycin dosing developed vancomycin-associated acute kidney injury.
- Lower rates of acute kidney injury have been shown with area under the curve-guided dosing in a study by Finch et al.\(^2\) Additionally, the 2020 guidelines recommend area under the curve guided dosing.\(^1\)
- An area under the curve-guided vancomycin dosing protocol is being implemented to potentially reduce vancomycin-associated nephrotoxicity.
- The occurrence of vancomycin-associated acute kidney injury with area under the curve-guided dosing will be evaluated in future research.

Disclosures

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:
- Jantz Budde: nothing to disclose
- Linda Radke: nothing to disclose

References