Evaluation of Sublingual Selenium in Patients Requiring Home Parenteral Nutrition

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BACKGROUND

• Selenium (Se) is required for essential biochemical functions such as antioxidative defense and regulation of thyroid hormone metabolism.

• The American Society for Parenteral and Enteral Nutrition recommends the addition of 60-100 mcg/day of Se either in a multiple trace element (MTE) combination product or as a separate entity.

• The price of intravenous (IV) Se increased by 1,300% in July 2019.

OBJECTIVES

To evaluate the efficacy and associated cost-savings of maintaining Se requirements administered sublingually (SL) alone or in combination with IV supplementation in patients requiring home parenteral nutrition (HPN)

METHODS

• In August 2019, patients requiring IV Se in addition to or in lieu of MTE provisions were converted to SL Se

• Retrospective chart review

• Adult patients (≥ 18 years old) followed by Duke HPN Team, that received SL Se and had at least one serum Se level drawn after the conversion were included

• Primary outcome: % of patients with a serum Se within reference range

• Cost-savings were evaluated based on the change in IV Se requirements pre- vs post-intervention

RESULTS

<table>
<thead>
<tr>
<th>Selenium Provisions</th>
<th>Baseline</th>
<th>Intervention</th>
<th>Post-Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiving MTE, n (%)</td>
<td>8 (53.3)</td>
<td>8 (53.3)</td>
<td>6 (40.0)</td>
</tr>
<tr>
<td>Additional IV dose (mcg/day)</td>
<td>73.3 ± 23.5</td>
<td>-</td>
<td>16.0 ± 27.5</td>
</tr>
<tr>
<td>Total IV dose (mcg/day)</td>
<td>105.3 ± 20.7</td>
<td>32.0 ± 31.0</td>
<td>40.0 ± 29.3</td>
</tr>
<tr>
<td>SL dose (mcg/day)</td>
<td>-</td>
<td>80.0 ± 29.3</td>
<td>52.0 ± 44.6</td>
</tr>
<tr>
<td>Total (mcg/day)</td>
<td>105.3 ± 20.7</td>
<td>112.0 ± 21.1</td>
<td>92.0 ± 38.4</td>
</tr>
</tbody>
</table>

Based on the change in IV Se requirements pre- vs post-intervention, most patients (73.3%) maintained serum Se concentrations within reference range which presents a viable option for patients with malabsorptive syndromes of varying etiologies.

The IV to SL conversion resulted in over $178,000 in cost-savings.

This study is the first to evaluate the use of alternative routes of Se administration in HPN patients

CONCLUSIONS

• When converted from IV Se to SL Se, most patients (73.3%) maintained serum Se concentrations within reference range which presents a viable option for patients with malabsorptive syndromes of varying etiologies.

• The IV to SL conversion resulted in over $178,000 in cost-savings.

• This study is the first to evaluate the use of alternative routes of Se administration in HPN patients.

References

2. Silverman E. A Drug Maker Revamped An Old Treatment — And Hiked The Price By 1,300%. [online] STAT. [Accessed 8 September 2020].