EVALUATION OF CARBOHYDRATE RESTRICTION AS PRIMARY TREATMENT FOR POST-GASTRIC BYPASS HYPOGLYCEMIA

Jorick van Meijeren1, 2, Ilse Timmer1, 2, Hans Brandts2, Hans de Boer3

1HAN University of Applied Sciences, Nijmegen, Departments of 2 Clinical Nutrition and 3 Internal Medicine, Rijnstate Hospital, Arnhem, Netherlands

Background
Up to 18% of patients who underwent Roux-en-Y gastric bypass surgery may eventually develop postprandial hypoglycemia [1]. In a clinical setting, a 30 g carb-restricted meal does not provoke any symptoms [2].

Methods
- Single-center retrospective analysis based on medical records and telephone questionnaires. Frequency and severity of hypoglycemia were assessed before and after the carbohydrate restricted dietary advice (CRD).
- The data collection was carried out in April 2016.
- Hypoglycemia was defined as blood glucose < 3.0 mmol/L.
- 41 patients included with documented post-gastric bypass hypoglycemia (Fig. 1).

Aim
To evaluate the daily life efficacy of a carb-restricted dietary advice (CRD) of six meals per day with a 30 g carb maximum per meal in patients with documented post gastric bypass hypoglycemia.

Results
Table 1 Frequency and severity of hypoglycemic episodes, and quality of life before and after carb-restricted dietary advice (CRD).
Frequency of hypoglycemia was recorded as the number of times per month patients experienced symptoms of hypoglycemia that disappeared after carb ingestion. Severity of hypoglycemia was evaluated by the lowest measured blood glucose during a hypoglycemic event, and by the number of patients that needed outside help for the treatment of hypoglycemia.

<table>
<thead>
<tr>
<th></th>
<th>Before CRD</th>
<th>After CRD</th>
<th>Difference</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of hypoglycemia (times/month)</td>
<td>17.1 (1.5-180)</td>
<td>2.5 (0-180)</td>
<td>-14.6</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Lowest blood glucose (mmol/L)</td>
<td>2.1 ± 0.4</td>
<td>2.6 ± 0.2</td>
<td>+0.5 ± 0.2</td>
<td>0.004</td>
</tr>
<tr>
<td>Outside help required (number of patients)</td>
<td>23/41</td>
<td>6/41</td>
<td>-17</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Quality of Life (1 to 10 scale)</td>
<td>5.4 ± 0.3</td>
<td>7.4 ± 0.3</td>
<td>+2.0 ± 0.3</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

Results expressed as mean ± standard error or as median and range

Figure 2 Number of hypoglycemic events per month, before and after the carb-restricted dietary advice (CRD). Results of patient who remained on CRD-only are shown as solid lines. The dashed lines represent the patients (14/41, 37%) who were later put on insulin suppressive treatment because of lack of response to CRD-only. Results of insulin suppressive treatment are not shown in this figure.

Conclusion
A carb-restricted dietary advice, consisting of six meals with up to 30 g carbs each, is an effective treatment of post gastric bypass hypoglycemia in the majority of patients. Additional medication is needed in about a third of patients.

References