Unannounced Meals at Home with the Medtronic Advanced Hybrid Closed-Loop

Author Block: AMIR TIROSH, ROY SHALIT, MAYA LARON HIRSH, OHAD COHEN, NATALIE KURTZ, ANIRBAN ROY, BENYAMIN GROSMAN, Ramat Gan, Israel, Northridge, CA

Background and Aims: Advanced Hybrid closed loop (AHCL) algorithm combines automated basal rate with additional enhancement when a rise in glucose level is detected. This study assessed the effectiveness and safety of AHCL with unannounced meals.

Methods: Fourteen participants were using Medtronic AHCL system at home for a mean of 72.6 days. Each participant spent 4 days in a protected free-living environment while consuming pre-defined meals consisting of up to 80 grams of carbohydrates each day. On day 5, participants initiated a 3-months unannounced meal phase at their homes with the instruction to announce only meals containing over 80 grams.

Results: Fourteen subjects with T1DM (10 males, mean age 44.3±3.9 years) and baseline HgbA1C% of 6.75± 1.2 were enrolled. Patients spent 97±3% of time in Auto-Mode, with mean SG of 157.8±12.8. Mean %time in range was 67.6±12.8, %time <70 mg/dL of 2±1.7%, and % time <54 mg/dL of 0.4±0.5%. Table 1 summarizes the glycemic indices.

Conclusion: Medtronic AHCL system is designed for best performance with meal announcement. Nevertheless, when meals containing < 80 gram of carbohydrates are consumed without meal announcement, the system can provide safe glycemic control with about 67.6% of TIR.

Table 1. At home data with unannounced meals with Medtronic AHCL system

<table>
<thead>
<tr>
<th>Days</th>
<th>Auto Mode, %</th>
<th>Mean SG, mg/dL</th>
<th>70-180 mg/dL, %</th>
<th>&lt;70 mg/dL, %</th>
<th>&lt;54 mg/dL, %</th>
<th>&gt;180 mg/dL, %</th>
<th>&gt;250 mg/dL, %</th>
<th>CV, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>72.6 (31.5)</td>
<td>157.8 (19.2)</td>
<td>67.6 (12.8)</td>
<td>2 (1.7)</td>
<td>0.4 (0.5)</td>
<td>30.4 (13)</td>
<td>8.1 (7)</td>
<td>34.7 (5.2)</td>
</tr>
</tbody>
</table>

All data is Avg. (SD).

* Patients were instructed to correct record, or change sets at the rare occasions when SG was above 250 for more than 3 hours.

Disclosures: A.Tirosh: Advisory Panel; Self; Novo Nordisk Inc., Sanofi. R.Shalit: Research Support; Self; Medtronic. M.Laron hirsh: None. O.Cohen: Employee; Self; Medtronic. N.Kurtz: Employee; Self; Medtronic. A.Roy: Employee; Self; Medtronic. B.Grosman: Employee; Self; Medtronic.