

DIFFERENCES BETWEEN HIGH AND LOW HYPOGLYCAEMIA RISK POPULATIONS USING CONTINUOUS GLUCOSE MONITORING DATASETS

P-070



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INTRODUCTION

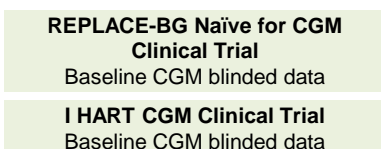
► Little is known about glycaemic patterns in subjects with type 1 diabetes (T1D) with high or low hypoglycaemia risk.

OBJECTIVE

► To investigate the differences in glucose profile in patients with T1D with high and low hypoglycaemia risk using continuous glucose monitoring (CGM) datasets from two representative populations.

METHODS

► Two weeks of blinded CGM data from *REPLACE-BG** (N=119, *low-hypoglycaemia risk cohort*) and *I HART CGM*** (N=40, *high-hypoglycaemia risk cohort*) trials were used to assess the CGM differences between the 2 cohorts.



Time in target 70-180 mg/dl
 Time in hypoglycaemia <54mg/dl; <70mg/dl
 Time in hyperglycaemia >180mg/dl
 Glycaemic variability and risk: SD, CV, MAGE, LBGI, HBGI

SD: Standard deviation
CV: Coefficient of variation
MAGE: Mean amplitude of glucose excursions
LBGI: Low-blood glucose index
HBGI: High-blood glucose index

RESULTS

► The **multilinear regression analysis** showed that HbA_{1c} and being at high risk of hypoglycaemia (*I HART CGM* trial cohort) were independently associated with both time <54mg/dl and LBGI.

| | REPLACE BG NAÏVE | I HART CGM | P-Value |
|-----------------------|-------------------|-------------------|---------|
| N | 119 | 40 | |
| Age (y) | 42.0 (30.0-53.5) | 49.5 (38.8-63.6) | <0.001 |
| T1D duration (y) | 22.8 ± 11.3 | 29.4 ± 12.3 | <0.002 |
| Gender (% F) | 50 | 40 | N.S. |
| HbA _{1c} (%) | 7.0 (6.7-7.4) | 7.3 (6.6-7.8) | N.S. |
| Mean CGM (mg/dl) | 165 (150-176) | 160 (140-176) | N.S. |
| Time 70-180mg/dl(%) | 60.4 ± 12.7 | 54.2 ± 15.5 | <0.02 |
| Time <70mg/dl(%) | 3.6 (1.9-4.8) | 11.1 (6.8-14.3) | <0.0001 |
| Time <54mg/dl(%) | 0.9 (0.3-1.1) | 5.5 (2.1-7.6) | <0.0001 |
| Time >180mg/dl (%) | 36.0 ± 13.4 | 35.0 ± 17.0 | N.S. |
| SD (mg/dl) | 63.0 ± 12.0 | 72.2 ± 19.2 | <0.0001 |
| CV | 0.38 (0.35-0.41) | 0.45 (0.41-0.50) | <0.0001 |
| MAGE (mg/dl) | 124.9 ± 24.0 | 145.9 ± 41.1 | <0.001 |
| LBGI | 0.96 (0.57-1.23) | 2.75 (1.69-3.70) | <0.0001 |
| HBGI | 8.37 (5.81-10.06) | 8.95 (5.05-11.22) | N.S. |

Non-normal variables: Age, gender, HbA_{1c}, time <54mg/dl, time <70mg/dl, mean, CV, LBGI, HBGI. Median (p25-p75).

Normal variables: T1D duration, time in range 70-180mg/dl, time >180mg/dl, SD, MAGE. Mean + SD

CONCLUSIONS

► Glucose profile characteristics and variability indexes differentiate patients with a high risk of hypoglycaemia from those with a low risk.
 ► CGM could be useful to estimate risk of hypoglycemia and introduce preventive approaches in clinical practice.

*Aleppo G et al. Diabetes Care 2017; 40(4):538-45. **Reddy M et al. Diabetic Med 2017 (Epub ahead of print)