DEGLUDEC VERSUS GLARGINE IN PEDIATRIC AND ADOLESCENT PATIENTS WITH TYPE 1 DIABETES

DIABETES AND INSULIN

Gil-Poch, E[1]; Arroyo-Díez, F.J[1]; Beato-Víbora, P[2].
[1] Department of Pediatrics, Badajoz University Hospital, Badajoz, Spain.
[2] Department of Endocrinology and Nutrition, Badajoz University Hospital, Badajoz, Spain.

To **optimal glycemic control without hypoglycemia** must be the aim of insulin treatment for all patients with type 1 diabetes (T1DM). Despite the advantages of the basal-bolus insulin regimens with MDI, **hypoglycemia** presents a major barrier in achieving desirable blood glucose levels.
Degludec is a new basal insulin analog with longer half-life and lower variability.

OBJETIVE

To investigate the **differences between** long-acting insulins **Glargine and Degludec**, in real-life study in pediatric and adolescent patients with T1DM.

MATERIALS AND METHODS

- **19 patients with T1DM**. Observational, prospective study. Each patient serves as a **self-control.**

-Basal bolus therapy with **Glargine administered once daily** and pre-prandial insulin boluses.

-Blinded CGM **(Medtronic iPro 2®)** to monitoring glucose values.

-During treatment with Glargine and 3 months after **switching to Degludec.**

- **Indexes**:
* *HbA1c, total insulin dose, basal/bolus ratio.*
* *Average glucose and SD, fasting mean glucose.*
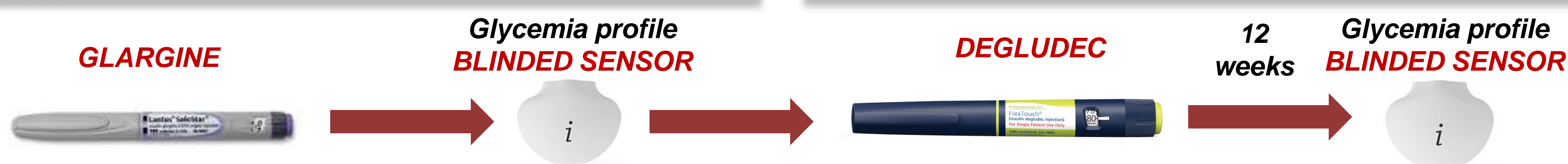* *Time in range (70-180 mg/dl),*
time in hypoglycemia (<70 mg/dl, <54 mg/dl),
time in hyperglycemia (>180 mg/dl, >250 mg/dl), hypoglycemia episodes.
* *Glucose variability (coefficient of variation (CV), MAGE, MODD, CONGA).*

-IMB **SPSS Statistic 19**. T Student test for paired samples.

GLARGINE — **Glycemia profile BLINDED SENSOR** → **DEGLUDEC** — 12 weeks → **Glycemia profile BLINDED SENSOR**

	Glargine	Degludec	p value
Mean glucose (mg/dl)	138 ± 8.5	150 ± 20	*0.017*
SD (mg/dl)	56.4 ± 5.1	60 ±7	0.277
Fasting mean glucose (mg/dl)	122 ± 13	140 ± 13	0.084
HbA1c (%)	7.05 ± 0.7	7.01 ± 0.7	0.644
Time in range (70-180 mg/dl)%	65.4 ± 4.7	61.6 ± 6.6	0.193
Time <70 mg/dl (%)	11.9 ± 2.7	8.4 ± 3.4	0.056
AUC <70 mg/dl	1.5 ± 0.5	1.6 ± 1.3	0.819
Time <54 mg/dl (%)	3.9 ± 1.4	3.7 ± 2.7	0.842
Time >180 mg/dl (%)	23.1 ± 4.9	30 ± 6.4	*0.033*
AUC >180 mg/dl	9.9 ± 3.7	14.9 ± 5.8	*0.035*
Time > 250 mg/dl (%)	4.8 ± 2.1	7.8 ± 3.4	*0.026*
Hypoglycemia episodes	10.7 ± 1.9	7.6 ± 2	0.055
Total daily dose UI/kg/day	0.88 ± 0.1	0.84 ± 0.1	0.198
Total daily basal (UI/day)	23.3 ± 4.2	22.4 ± 4	0.319
MAGE	103 ± 9.6	124 ± 19	*0.024*
CONGA	126 ± 8	138 ± 10	*0.014*
MODD	59 ± 6	65 ± 10	0.255
CV	41 ± 2.5	40 ± 4	0.636

Table 1. All of patients (n=19)

	Glargine	Degludec	p value
Mean glucose (mg/dl)	137 ± 10	151 ± 12	*0.008*
SD (mg/dl)	56 ± 6	61 ±8	0.179
Fasting mean glucose (mg/dl)	120.4 ± 15	141 ± 14	0.055
Time in range (70-180 mg/dl)%	65 ± 6	60 ± 7	0.109
Time <70 mg/dl (%)	12.5 ± 3	8.7 ± 4	0.057
AUC <70 mg/dl	1.6 ± 0.5	1.7 ± 1.5	0.826
Time <54 mg/dl (%)	4 ± 1.5	3.8 ± 3	0.832
Time >180 mg/dl (%)	23 ± 6	31 ± 7	*0.016*
AUC >180 mg/dl	10 ± 4	16 ± 6.5	*0.02*
Time > 250 mg/dl (%)	5 ± 2.5	8.4 ± 4	*0.018*
Hypoglycemia episodes	11 ± 2	8 ± 2	0.09
Total daily dose UI/kg/day	0.88 ± 0.1	0.85 ± 0.1	0.325
Total daily basal (UI/day)	23.5 ± 5	23 ± 4.5	0.448

Table 2. Patients with frequent hpoglycaemia (n=17)

RESULTS

- 10 boys, 9 girls, age 8-19. Average duration of T1DM of 7 years.
- Reason of switching: hypoglycemia or variability.

Overall glucose control was the same between the two treatments.
Looking at hypoglycemia (n=17), a statistically significant increase in mean glycemia was observed, with an increase of time in hyperglycemia.

Time spent in hypoglycemia (<54 and <70 mg/dl) was not statistically different between Glargine and Degludec.
Episodes of hypoglycemia are reduced with treatment with Degludec.

Switching from Glargine to Degludec did no change in terms of daily glycemic variability, despite CONGA index with a significant increase.

DISCUSSION

The potencial limitation of this study is the **small sample size**, but it shows that **Degludec is effective as Glargine in glycemic control**, without differences in glucose variability, and might be advantageous in patients with risk of hypoglycemia.

REFERENCES
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