Gómez AM, Rondon M, Henao D , Parra D, Taobada L, Robledo M, Rebolledo M, Muñoz O, Leon F.

Objective: to determine the clinical variables and indices of glycemic variability evaluated by continuous glucose monitoring (CGM) associated with hypoglycemia in a group of patients with type 2 diabetes and a history of hypoglycemia.

Methods: Observational study with retrospective analysis of the data. We included patients seen at the San Ignacio University Hospital (Bogotá, Colombia) with a diagnosis of type 2 diabetes and a history of hypoglycemia. We evaluated demographic variables, Hb1Ac, previous antidiabetic therapy, complications of diabetes, glomerular filtration rate and all the measures used to evaluate glycemic variability by MCG. Hypoglycemia was defined when the interstitial glucose was less than or equal to 54mg / dL for at least 20 minutes. Bivariate analysis was performed and then a logistic regression model for data analysis.

Results: A total of 140 patients were included (table 1). 52 patients presented hypoglycemia (31.3%). The demographic variables, complications of diabetes and pharmacological management were not associated with the presence of hypoglycemia (<70 and <54 mg/dL).

Table 1. Baseline Characteristics of the Included Patients

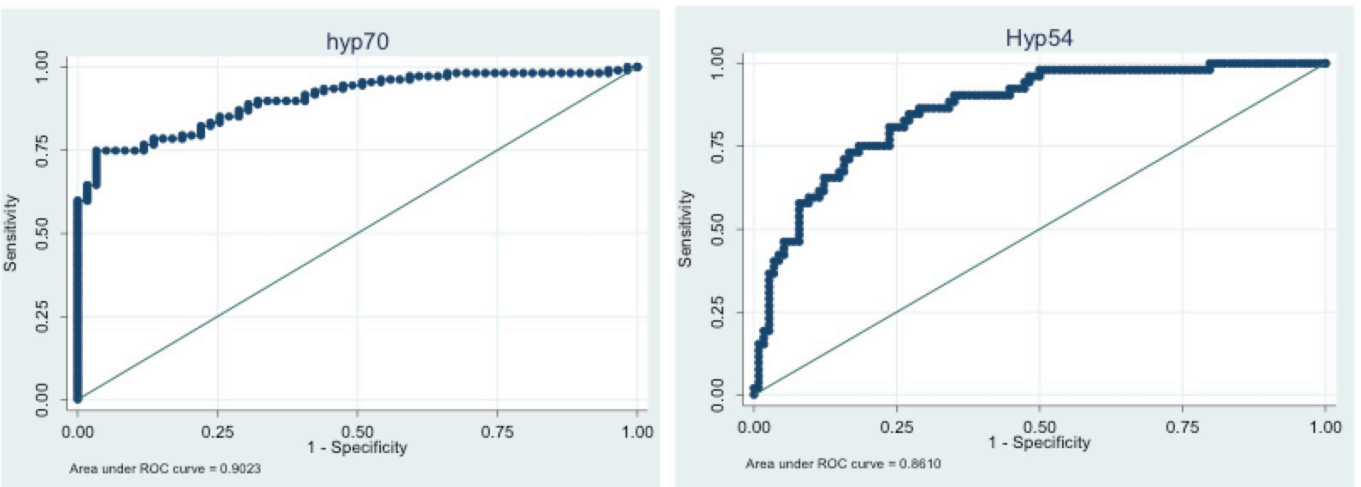| VARIABLE	n=140
Gender, male % (n)	47.1% (66)
Age, years, mean (SD)	68.9 (11.2)
IMC Kg/mt2, mean (SD)	27.4 (4.2)
Duration of diabetes, years, mean (SD)	15.5 (9.7)
HbA1C (%) mean, (SD)	7.71 (1.44)
GFR mL/min/1.73m2, mean (SD)	64.3 (29.4)
On insulin treatment * % (n)	88.5 (124)
On sulfonylurea treatment % (n)	8.57 (12)
History of severe hypoglycemia % (n)	14.4 (20)

*On any regular/analog, basal and/or prandial insulin (including pump therapy) SD: standard deviation.

Table 2. Factors associated with hypoglycemia

Metrics	< 70 mg/dl		< 54 mg/dl	
	OR	IC 95%	OR	IC 95%
Age	0,99	0,96-1,023	0,99	0,99-1,02
A1c	0,84	0,68 – 1,04	0,95	0,76-1,18
GRF 45 – 60 ml/min	1,06	0,41-2,75	12,84	0,73-4.59
GRF 44 – 30 ml/min	0,86	0,36-2,05	1,36	0,48 – 3,86
SD	1,01	0,99-1,03	0,99	0,98-1,0
CV%	1,4	1,09-1,21	1,68	0,59 – 4,7
LBGI	1	0,99-1,1	1,02	1,01 – 1,03
MAGE	1,001	1-1,02	1,01	1-1,02

The percentage of the CV was associated with hypoglycemia ($p <0.000$). In the adjusted multivariate model, the best predictor of hypoglycemia was the percentage of the CV (OR 1.31 IC95% 1.20 - 1.44), with a cut-off point of CV percentage above 30%. (Figure 1)

Figure 1. Area under the curve for Coefficient of variation (CV) as predictor of hypoglycemia

Area under ROC curve = 0.9023 (hyp70)
Area under ROC curve = 0.8610 (Hyp54)

CONCLUSIONS: In this study, no significant association was found between the clinical variables and the presence of hypoglycemia; the only associated variable **was the % CV,** this makes evident the importance of carrying out MCG in patients with a history of hypoglycemia.

References

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