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DIFFERENT GLYCEMIC PATTERNS IN PATIENTS WITH STEROID DIABETES AND TYPE 2 DIABETES

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OBJECTIVES

Long-term use of glucocorticoids has impact on reduction of β-cell function and peripheral insulin sensitivity, leading to a steroid diabetes.

The aim of our study was to assess patterns of change of glycemia and need for insulin at the addmission to hospital, during days 1-5 and at the discharge in patients with newly diagnosed type 2 diabetes (NST) compared with patients with a history of taking corticosteroids and newly diagnosed diabetes mellitus (ST).

METHODS

Twenty patients with newly diagnosed diabetes were included; ten without, and ten with a history of taking corticosteroids.
The day after admission (day 1) basal-bolus insulin scheme was introduced. Bolus insulin (aspart or lispro) was used in the initial dose of 0.05 IU/kg/meal, and a basal insulin (NPH) 0.2 IU/kg BW at bedtime.
The changes of glycemia during days 1-5 were observed by measurements of plasma glucose profiles before meals and 2 hours after, and before bedtime, and the need for insulin during the investigated time was recorded.
A statistical analysis of data was performed (statistica ver.7.1).

RESULTS

	NON STEROID				STEROID			
	DAYS 1-5.		AT DISCHARGE		DAYS 1-5.		AT DISCHARGE	
	F	M	F	M	F	M	F	M
INSULIN FASTING (No units) 1-5	13,43	14,55	12,67	18,0	8,73	8,25	9,17	8,0
Per kg BW	0,17	0,14	0,16	0,18	0,11	0,10	0,12	0,10
INSULIN BEFORE LUNCH (No units) 1-5	9,16	10,95	9,0	8,0	9,4	8,0	10,17	11,5
Per kg BW	0,13	0,11	0,12	0,08	0,12	0,10	0,13	0,14
INSULIN BEFORE DINNER (No units) 1-5	7,28	6,25	6,33	5,25	11,6	11,65	6,5	6,0
Per kg BW	0,10	0,06	0,08	0,06	0,15	0,14	0,09	0,07
INSULIN BEDTIME (No units) 1-5	10,97	9,95	10	10,75	10,26	12,7	7,7	8,5
Per kg BW	0,15	0,10	0,14	0,11	0,13	0,15	0,09	0,10

F- female; M- male; 1-5 days during hospitalization; velvet coloured: statistically significant differences

Table 1. Number of insulin units in patients with non steroid vs.steroid diabetes

Twelve women (6 NST, 6 ST) and 8 men (4 NST, 4 ST) were included in the study. The longest period of taking corticosteroids was 150 days, with a cumulative dose of 9600 mg of methylprednisolone. NST group patients were 41-88 years old, and in ST group 51-81 years. Plasma glucose values at admission for NST patients were: male 10.0-13.7 mmol/L; female 9.7-20.6 mmol/L, and for ST group: male 8.9-13.5 mmol/L; female 9.6-33.0 mmol/L. Statistically significant differences (p<0.05) were obtained (Table 1): in total dose bolus insulin and the number of units/kg BW before dinner between NST and ST groups, and in the ST group in the first 5 days of treatment vs.at discharge; changes in plasma glucose in the period after lunch to dinner in ST group. There was a positive correlation between the cumulative dose of corticosteroids and the plasma glucose at admission at women in ST group.

CONCLUSIONS

Corticosteroids primarily cause hyperglycemia in the afternoon and evening (Fig.1), and the targeted treatment and monitoring of glycemic control should be directed to the above hours.

Fig.1. Average glycemic values during the day in patients with steroid vs.non steroid diabetes