DIFFERENT STRESS HORMONE RESPONSE IN INSULIN PUMP TREATMENT COMPARED TO MULTIPLE DAILY INJECTION: PRELIMINARY DATA

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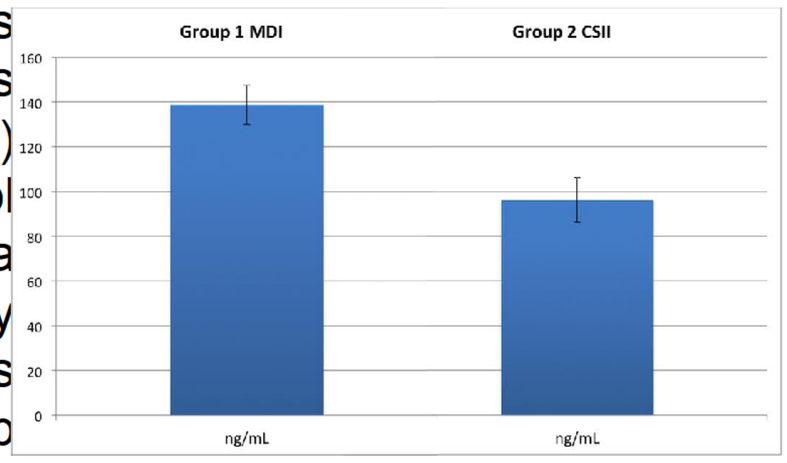
Objective

It is known that in type 1 Diabetes Mellitus (T1DM) continuous subcutaneous insulin infusion (CSII) therapy improves metabolic control and reduces risk of hypoglycemia in comparison with multiple daily injection (MDI). Metabolic outcomes usually considered are Glycated Hb (HbA_{1c}), body mass index (BMI) and inflammatory parameters. Neverthless few data are available on pituitary and gonadal hormone responses, involved in metabolic processes. In order to study the response of anabolic hormones in patients treated with CSII or MDI, we evaluated IGF-1, dehydroepiandrosterone (DHEAS) and testosterone (T) levels in a cohort of T1DM patients, comparing these two different ways of intensive insulin administration.

Methods

We enrolled 41 patients, aged 19-55 ys , 25 males and 16 females; 23 were treated by MDI (group 1) and 18 by CSII (group 2). The groups were similar for age, BMI, duration of DM. An overnight fasting blood plasma sample was collected at 9:00 am and we evaluated, HbA_{1c}, IGF-1, DHEAS, T.
HbA_{1c} was measured using IFCC-NGSP standardized method, IGF-1 was assayed using the ECLIA method (Electro-chemiluminescent immunoassay), while T and DHEAS using the CMIA method (Chemiluminescent Microparticle ImmunoAssay).

Fig. 1



Results

Despite similar glycemic control (mean±SEM HbA_{1c}: 7.9 ±0.01 in males and 7.4 ±0.01 in females of group 1; 7.3 ±0.01 in males and 7 ± 0.01 in females of group 2, see Table 1), we found in males of group 2 a significant difference in IGF-1 levels (Fig.1) and a trend toward lower in DHEAS (Fig. 2); T levels were higher in premenopausal females of group 1 than group 2 (Fig. 3).

	MALES		FEMALES	
	MDI (n=15)	CSII (n=10)	MDI (n=8)	CSII (n=8)
HbA_{1c} (%)	7.88 ± 0.01	7.30 ± 0.01	7.44 ± 0.01	7 ± 00.1
IGF-1 (ng/ml)	132.77 ± 9.4	96.25±11.2*	114.71 ± 13.51	146.2 ± 22.9
DHEAS (ng/ml)	2912 ± 432.9	1909.63 ± 216.9	2727.57 ± 784.9	2329.2 ± 410.5
T (ng/ml)	7.12 ±0.68	9.92 ± 1.07	1,6 ± 1.04 (a)* 0.15 ± 0 (b)	0.49 ± 0.10 (a)

a) Premenopausal
b) Postmenopausal
* p<0.05

Tab. 1

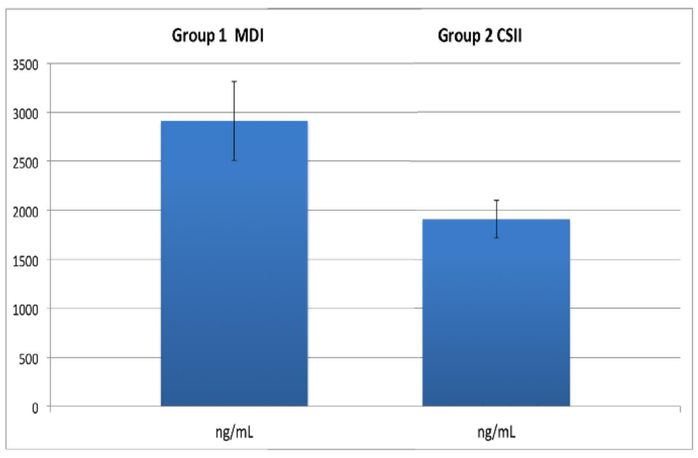


Fig. 2

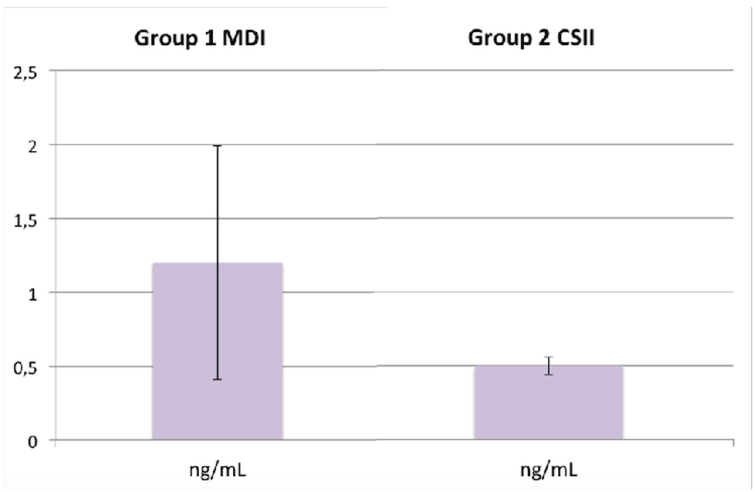


Fig. 3

Conclusions

These preliminary data seem to indicate a different hormone response in patients treated by CSII or MDI, with lower stress hormone pattern response for patients on CSII, despite similar glycemic control. Better ovarian response was observed in women on CSII, with lower androgen production. Further studies are needed to better understand these complex relationships and their prognostic implications.

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