

Impact on final height of functional insulin-therapy in type 1 diabetes mellitus pediatric patients



experience from a Portuguese Pediatric Endocrinology Unit

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INTRODUCTION

Type 1 diabetes mellitus (1DM) has well known long term vascular and neuropathic complications. It has also been described a positive effect of good glycemic control on physical growth and pubertal development, achieved with improvement of insulin-therapy.

PURPOSE

To evaluate the effect of functional insulin-therapy on final height in children with type 1 diabetes mellitus.

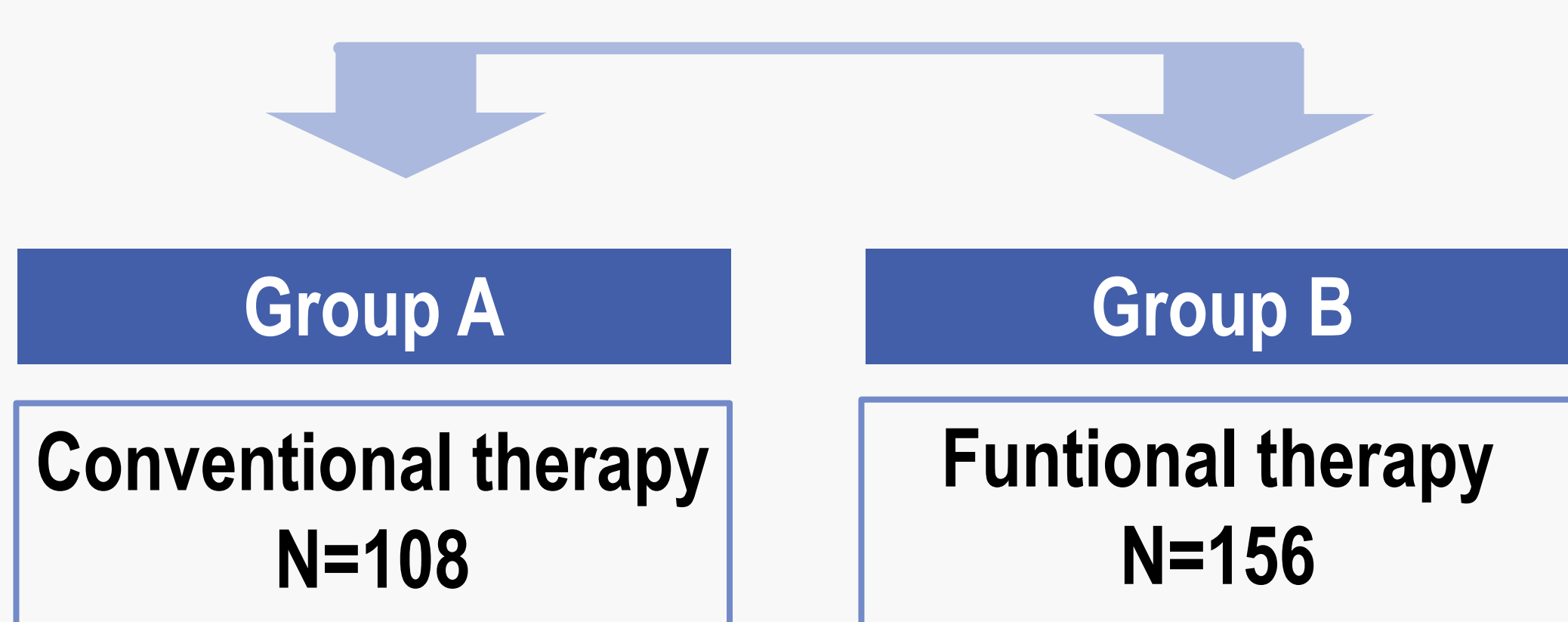
MATERIAL AND METHODS

Retrospective analysis of a cohort of portuguese 1DM children followed up to final height at a tertiary Hospital clinic from 1981 to 2017. Variables collected: age at diagnosis, sex, 1DM duration, type of treatment (conventional vs functional), height at diagnosis, final height, body mass index, family target height (FTH), age at pubertal start, mean A1c, blood pressure (BP) and lipid profile. Patients with syndromic diseases were excluded. Statistical analysis: SPSS22® (p<0.05).

RESULTS

DEMOGRAPHIC CHARACTERIZATION

N = 264



	Group A	Group B
Males	57 (52,8%)	82 (52,6%)
Age at diagnosis (years)	8,3 ± 3,14	8,4 ± 3,92
Disease duration (years)	9,6 ± 3,50	9,7 ± 3,99
Family target height (cm)	164,6 ± 8,72	166,5 ± 8,85
Final stature (cm)	166,2 ± 8,40	168,0 ± 9,30

Values presented as means ± standard deviation

There were no statistical differences between groups

CONVENTIONAL VS FUNCTIONAL INSULIN THERAPY

	N=264	Group A N=108	Group B N=156	p
Clinical parameters				
A1c (%)		9,0 ± 1,2	8,1 ± 1,1	<0,001
Body mass index (kg/m ²)		23,5 ± 2,7	24,0 ± 3,4	0,207
Systolic arterial pressure (mmHg)		123,5 ± 11,3	120,1 ± 9,2	0,020
Dyastolic arterial pressure (mmHg)		67,5 ± 8,6	64,9 ± 8,1	0,011
Age at puberty start (years)		11,6 ± 1,2 (N=82)	11,0 ± 1,1 (N=102)	0,001
Laboratory parameters				
Total cholesterol (mmol/L)		4,43 ± 1,0	4,36 ± 0,9	0,527
HDL cholesterol (mmol/L)		1,39 ± 0,4	1,50 ± 0,4	0,027
LDL cholesterol (mmol/L)		2,46 ± 0,8	2,39 ± 0,6	0,466
Triglicerydes (mmol/L)		1,24 ± 1,1	1,01 ± 0,8	0,035
Final stature outcome				
Family target height (FTH) (cm)		164,6 ± 8,72	166,5 ± 8,85	0,085
Final stature (cm)		166,2 ± 8,40	168,0 ± 9,30	0,079

p=0,001 p < 0,001

The longer duration of funtional therapy, the better final stature outcome (Pearson correlation 0.17, p=0,03)

	Group A			Group B		
	Diagnosis before puberty N=71	Diagnosis during puberty N=37	p	Diagnosis before puberty N=101	Diagnosis during puberty N=55	p
Family target height (cm)	164,2 ± 9,2	165,3 ± 7,8	0,523	165,9 ± 8,8	167,4 ± 8,9	0,309
Final stature (cm)	165,8 ± 9,2	167 ± 8,3	0,534	167,0 ± 9,2	170,5 ± 9,0	0,023

p=0,014 p=0,034 p=0,058 p<0,001

CONCLUSION

Functional insulin-therapy had:

- a positive effect on metabolic control
- decreased microvascular complications
- younger age of puberty onset
- but this had no significant impact on final height

However, this had no significant impact on final height nor on body mass index