To investigate the changes of body mass index and hormone levels in pubertal children with growth retardation

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Objectives:

To investigate the changes of body mass index and hormone levels in pubertal children with growth retardation.

Methods:

A non-randomized clinical controlled study was conducted in 208 cases (male 122, 10-14 years; female 86, 8-13 years) with growth retardation who were divided into two groups.

Graphs and tables

Table 1

Total	Prepubertal (Male/Female 61/43)	Pubertal (Male/Female 61/43)	t	P
Peak GH	9.99 ± 5.71	10.17 ± 5.48	-0.227	0.821
IGF1	149.56 ± 76.25	221.78 ± 84.67	-6.464	0.000
Height SDS	-2.60 ± 0.96	-2.21 ± 0.68	-3.458	0.001
Age (years)	11.44 ± 1.25	11.50 ± 1.25	-0.347	0.729
Bone age (years)	8.68 ± 1.76	9.98 ± 1.52	-5.688	0.000
TSH(Uiu/L)	2.96 ± 1.49	2.87 ± 1.40	0.490	0.625
FT4(pmol/L)	17.50 ± 1.99	16.96 ± 2.44	1.748	0.082
FT3(pmol/L)	5.96 ± 0.96	6.42 ± 1.10	-3.205	0.002
Insulin (Mu/L)	2.57 ± 2.44	4.02 ± 4.19	-3.050	0.003
C-peptide(nmol/L)	0.40 ± 0.14	0.47 ± 0.19	-3.274	0.001
BG (mmol/L)	4.81 ± 0.47	4.98 ± 0.51	-2.467	0.014
TC(mmol/L)	4.05 ± 0.79	4.15 ± 0.69	-0.906	0.366
HDL(mmol/L)	1.46 ± 0.30	1.46 ± 0.30	-0.200	0.842
TG(mmol/L)	0.80 ± 0.47	0.85 ± 0.38	-0.710	0.478
BMI	20.56 ± 4.21	21.71 ± 3.93	-2.027	0.044

Table 2

	Pubertal	Prepubertal	t	P
Female BMI	20.70 ± 2.84	19.18 ± 2.41	-2.811	0.006
Male BMI	22.57 ± 4.52	21.74 ± 5.01	-0.919	0.360

Table3

	Pubertal	Prepubertal	t	P
Female TSH	2.72 ± 1.30	2.75 ± 1.48	0.111	0.912
Male TSH	2.98 ± 1.47	3.14 ± 1.47	0.555	0.580

Results:

Compare with the prepubertal group, the mean peak GH of pubertal group was increased slightly but insignificantly (P = 0.821), the level of IGF-1 was increased significantly (1.48 times, P = 0.000), and height SDS of puberty group increased by 0.39 SDS (P = 0.001), while bone age increased by 1.3 years (P = 0.000). TSH level was increased slightly but insignificantly (P = 0.625), FT4 level was decreased slightly but insignificantly (P = 0.082), while FT3 level increased significantly (P = 0.002). Levels of insulin, C peptide and blood glucose of pubertal group were in normal range and increased significantly (P = 0.003, P = 0.003, P = 0.014). Blood lipid level remained constant, but the body mass index (BMI) was increased (P = 0.044) in pubertal subjects. Furthermore, we divided our cases by sex, BMI of pubertal females increased significantly (P = 0.007), and BMI of males increased slightly and insignificantly (P = 0.406).

Conclusions:

The reaction of GH-IGF1 axis in children with growth retardation was poor during puberty. The height increased in pubertal group slightly, while bone age increased significantly, and growth time reduced, for pubertal children with growth retardation, treatments are urgent.

References:

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