Linear growth and response to GH therapy in children with GHD with normal IGF-I versus those with normal GH secretion associated with low IGFI at presentation.

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Introduction

Children with idiopathic short stature (ISS) have linear growth impairment despite normal or even high levels of GH (NGH). In some of these children IGFI level is low (NGH + Low IGFI (IGFSDS<-1.5).

It was observed that some children with GHD (Peak GH < 7 ng/dl after provocation) have normal IGFI level (GHD +Normal IGFI).

The linear growth of these two groups at presentation and their response to GH therapy was not clearly studied before.

Aim

We studied the linear growth at presentation and response to a year of GH therapy in children with low IGFI and NGH secretion compared to those with GHD with normal IGF-I.

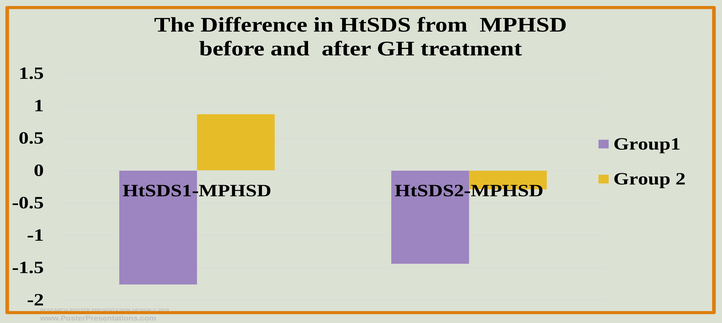
Methods

We conducted a longitudinal study on 78 children presented to pediatric clinic with short stature (January - December 2017).

Children were classified to ISS and GHD based on growth hormone provocation test.

Anthropometrics data (HtSDS, difference from mid-parental height SDS (MPHSD), BMISDS, and weight gain/day (WG) , bone age and insulin-like growth factor 1 (IGF-1) SDS level were studied in all children for 1 year.

We compared the linear growth at presentation and response to a year of GH therapy in children with low IGFI and normal GH secretion (group 1, N= 10) to those with GHD with normal IGF-I (group 2, N = 17).



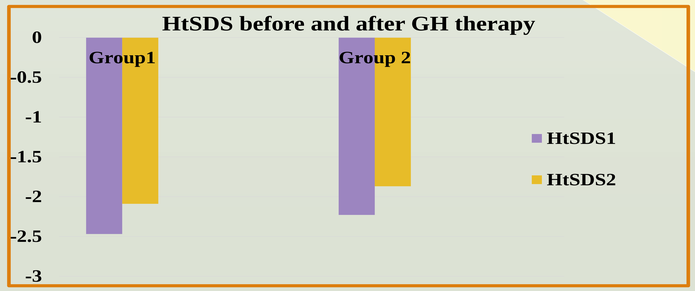
Results

At presentation, the age, HtSDS and BMI did not differ significantly among the 2 groups. The difference between the HtSDS of patients from their MPHtSDS was bigger in the IGFI deficient group vs GHD group (p =0.04).

		Age (yr.)	HtSDS1	BMISDS1	MPHSDS	HSD1-MPHSD
Group1	Mean	11.18	-2.47	17.55	-0.82**	-1.76
N=10	SD	2.86	0.46	3.7	0.73	0.37
Group 2	Mean	9.64	-2.23	17.2	-1.25*	-0.87 *
N=17	SD	3.67	0.59	3.79	1.16	1.2

After an average of 1 year of GH therapy (0.03 -0.05 mg/kg/day), the HtSDS increased significantly in both groups (P<0.01).

No significant difference in weight gain per day was detected between the two groups.



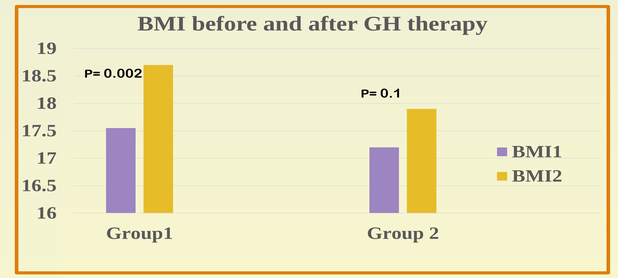
Growth data after year of Growth hormone therapy

		HtSDS2	BMI 2	HtSDS2 - MPHSD	Delta HtSDS	Delta BMISDS	Delta IGF1SD	Wt. gain g/day
Group 1	Mean	-2.09	18.7	-1.44	0.38**	1.16*	1.23**	16.89
N=10	SD	0.4	4.36	0.38	0.38	0.9	1.38	8.3
Group 2	Mean	-1.87	17.9	-0.29	0.36**	0.29	1.36**	11.53
N=17	SD	0.7	4	1.22	0.44	0.89	0.8	6.16

** Significant P <0.05 within same group

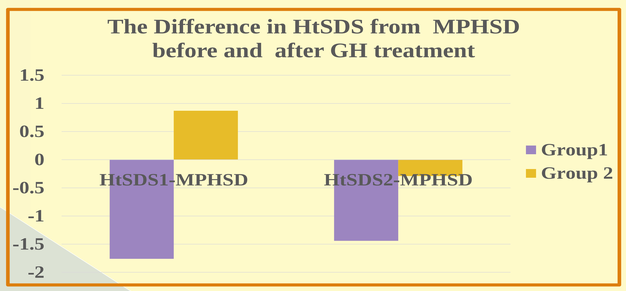
* Significant P <0.05 between two group

BMI in group 1 improved after GH therapy (P= 0.002) whereas it didn't differ in group 2.



After a year of GH therapy, there was a significant increase in the IGFSDS in both groups (p<0.05), and the increments of IGFSDS did not differ among them.

The difference in HtSD from their MPHSD after treatment improved significantly in group 2(P=0.04) but did not differ in group1 (P=0.4).



Conclusion:

Our data suggests a comparably good growth response to GH therapy and increment in IGF-1SDS in children with GHD with normal IGF-1 and those with NGH with IGF-1 deficiency over the first year of treatment.

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