

Growth hormone(GH) treatment of children with idiopathic short children(ISS) with normal insulin-like growth factor-1(IGF-1) versus those with low IGF-I at diagnosis.

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Introduction

Idiopathic short stature (ISS) is a condition in which the height of the individual is more than 2SD below the corresponding mean height for a given age, sex and population, in whom no identifiable disorder is present.

ISS patients may have varying degrees of insulin-like growth factor-1 deficiency. Recombinant GH treatment has been used with variable results. Theoretically, low IGF-I level at presentation can affect their response to GH therapy. The question is:

Do children with ISS and low IGF-I respond differently to GH therapy than those with normal IGF1 level?

Aim

We studied the effect of GH therapy on linear growth and weight gain (WG) in children with ISS who have low IGF-I versus those who have normal IGF1 at presentation.

Methods

We conducted longitudinal study on 78 children presented with short stature (January - December 2019).

ISS Children were classified to 2 groups based on IGF1 level at presentation. low IGF-I (IGF SDS < -1.5)(n =12) and normal IGF1 (n =10).

Low IGF1 group received GH therapy (0.035 mg/kg/day)

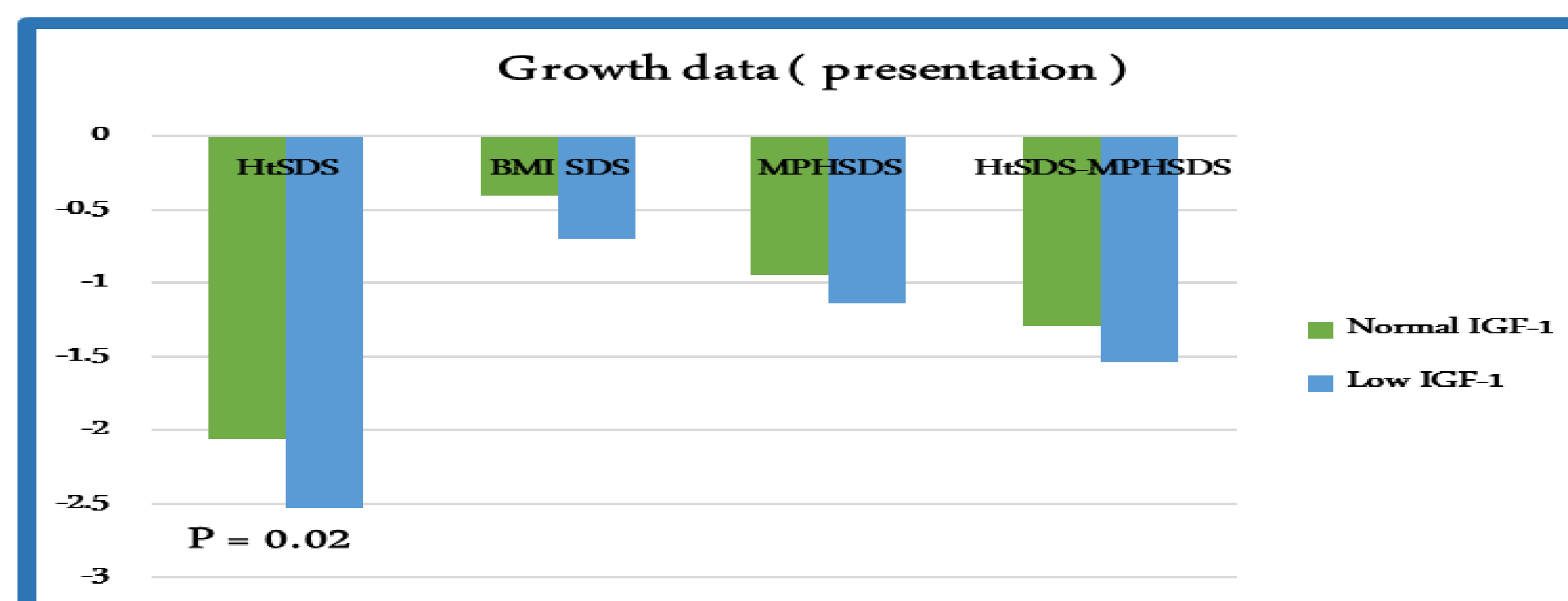
Anthropometrics data (HtSDS, difference from MPH, BMISDS, and WG) , bone age and IGF-1 level were studied in all groups for 1 year.

Results

At presentation, the HtSDS of the low IGF1 group was statistically lower compared to the normal IGF1 group.

The age, BMI, BMISDS, peak GH response to clonidine provocation and bone age did not differ between the two study groups (Low vs normal IGFSDS).

		Age1 (yr.)	HtSDS	BMISDS	MPHSDS	HtSDS-MPHSDS	IGF-1 SDS	Bone age	GH-P
Normal IGF-1	M	10.6	-2.06	-0.4	-0.94	-1.29	-0.04	-1.89	12.2
	SD	1.56	0.49	0.58	0.45	0.55	1	0.54	1.7
Low IGF-1	M	10.3	-2.53	-0.7	-1.14	-1.54	-2	-1.15	14.4
	SD	2.16	0.3	0.8	0.6	0.44	0.19	0.77	4.49
	P	0.4	0.02	0.3	0.362	0.235	< 0.001	0.09	0.09

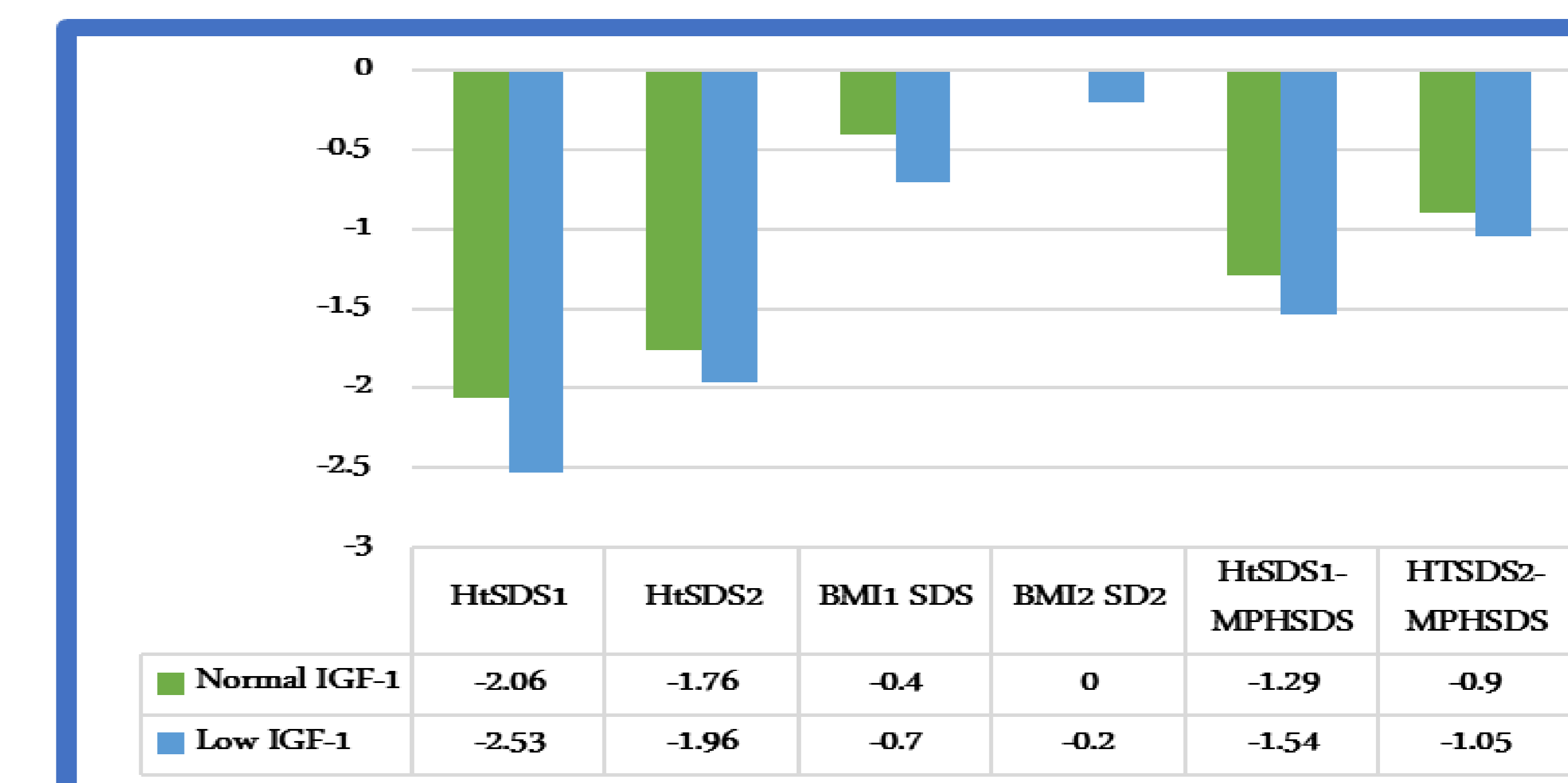


After a year of treatment with GH (0.035: 0.05 mg/kg/day) IGF1 increased significantly in both groups (p < 0.05), however the IGFSDS was still lower in the low IGF1 group.

Both groups had significantly increased HtSDS that decreased the difference between their HtSDS and their mid-parental HtSDS.

		Age2 (yr.)	HtSDS2	BMISD2	HTSDS2-MPHSDS	WG g/d	Delta IGF1SD	Delta BMI	Delta HtSDS
Normal IGF-1	M	11.2	-1.76	0	-0.9	9.45	1	0.16	0.22
	SD	1.37	0.31	0.46	0.47	2.09	0.75	0.27	0.26
Low IGF-1	M	11.8	-1.96	-0.2	-1.05	16.7	1	0.13	0.41
	SD	1.88	0.22	0.71	0.85	4.53	0.8	0.2	0.14
	P	0.12	0.02	0.38	0.09	0.03	0.44	0.41	0.04

The increase in the HtSDS and weight gain per day were significantly higher in the low IGF1 group. The IGFSDS, BMISDS, HtSDS and difference between HtSDS and mid-parental HtSDS were significantly higher in the treated versus not treated group.



Conclusions

Growth hormone therapy improved linear growth and weight gain in children with ISS. This improvement was superior in those who had lower IGF1 at presentation compared.