Growth response to growth hormone therapy in short children in relation to their distance from mid-parental heights (MPHt).

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Introduction

In normal children, mid parental height (MPH) is a valuable tool in assessing children's growth and predicting their final adult height. However, this may not be true for short children, especially those with height SD (HtSDS) > - 1SDS compared to their mid-parental height SDS (MPHtSDS). The big difference may indicate underlying pathology.

Aim of the study :

To assess growth response (change in HtSDS) to GH therapy in short prepubertal children in relation to their MPHtSDS.

Methods

This retrospective study reviewed 42 prepubertal short children with HtSDS <-2. Children classified based on distance from MPHtSDS in two groups.

- Group1 included children whose HtSDS were 1SDS or more below their MPHSDS (N=25).
- Group 2 whose HtSDS is less than 1SDS from MPHSDS (N=17).

Their BMISDS, IGF1SDS, bone age and growth velocity (GV), and difference from MPHSDS were measured before and after one year.

Sixteen children in Group 1 and 11 children in group 2 were treated with growth hormone therapy (0.03- 0.5 mg/kg/d) subcutaneously to keep their IGF1 SD in the normal range (0 to 2 SD).

Results

Children in group 1 had HtSDS - MPHSDS = -1.72±0.52 while in group 2 the difference was -0.33±0.75. (p <0.01).

Children in Group 1 were significantly shorter compared to group 2 (HtSDS (-2.35±0.57) vs. (-1.89±0.61) respectively P=0.02). There was no statistical difference in BMISDS, IGF1SDS, or bone age at presentation.
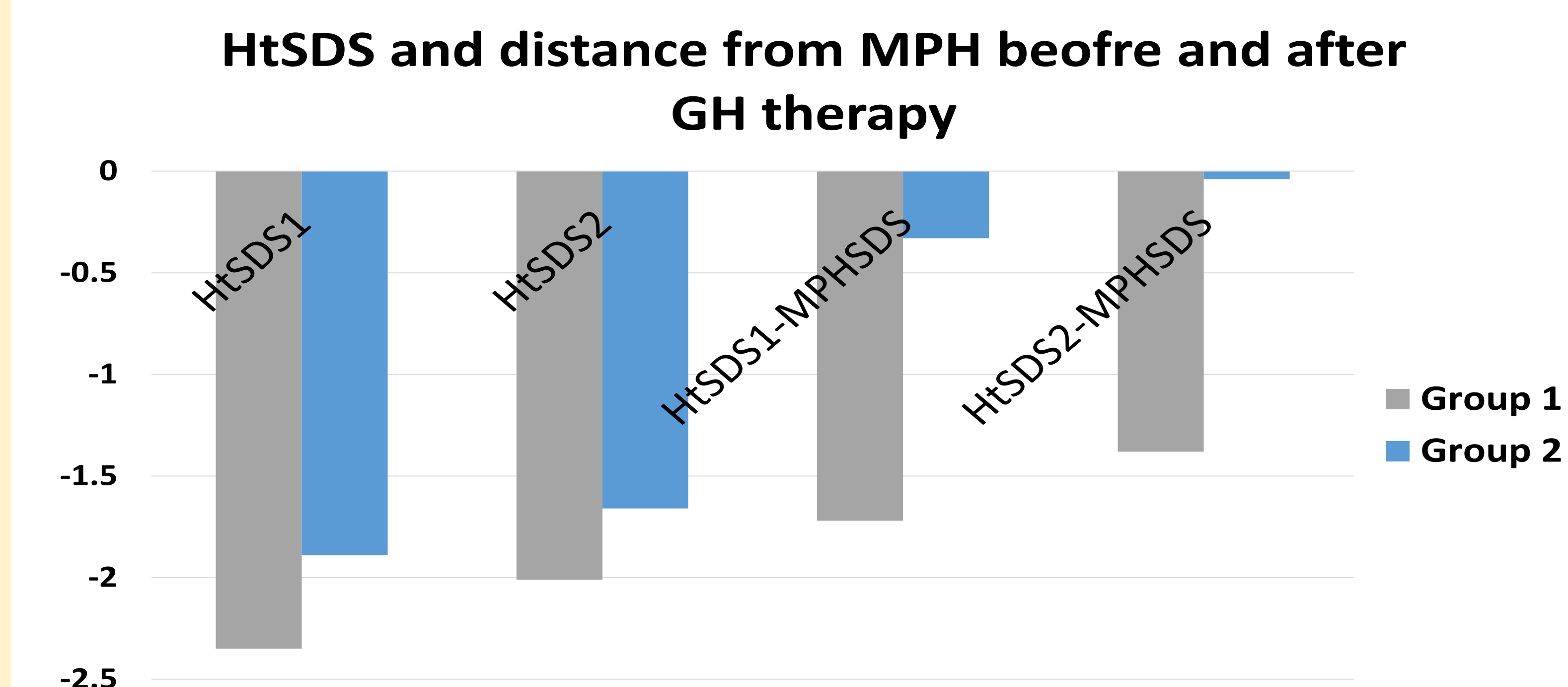
After a year of GH therapy;
The HtSDS of children in group 1 increased to -2.01±0.59 (P=0.005), and their difference from MPHSDS improved by (0.67±0.85) P<0.0000.

In group 2 the HtSDS increased to -1.66±0.68, (p< 0.01) and their difference from MPHSDS improved by (0.30±0.32) (P=0.01)

Conclusion

In short peripubertal children: GH therapy had significantly increased their HTSDS and improved the difference between their height and their genetic background (MPHtSDS). Moreover, those with a higher HTSDS difference compared to MPHTSDS at the beginning had significantly faster correction towards their genetic potential (significant catch up towards the genetic background).

HtSDS and distance from MPH beofre and after GH therapy

	Age	HtSDS1	BMISDS1	HtSDS1-MPHSDS	HtSDS2	BMISDS2	HtSDS2-MPHSDS	Delta HtSDS	Delta HtSDS-MPHSDS
Group 1	10.55	-2.35*	-0.84	-1.72*	-2.01	-0.57	-1.38*	0.33	0.67
	2.85	0.57	0.94	0.52	0.59	1.11	0.52	0.52	0.85
#P					0.005	0.9	0		
Group 2	9.48	-1.89	-0.16	-0.33	-1.66	-0.09	-0.04	0.2	0.3
	3.87	0.61	1.17	0.7	0.68	1.13	0.91	0.3	0.32
#P					0.01	0.2	0.01		

Group 1; HtSDS were 1SDS or more below MPHSDS .

Group 2: HtSDS less than 1SDS from MPHSDS.

*P <0.05 between groups
#P <0.05 in the same group