Linear growth and response to GH therapy in children with short stature with normal Growth hormone secretion: Comparison between children with delayed versus no delay in the bone age at diagnosis.

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Introduction

Bone age (BA) continues to be a valuable tool in assessing children's growth potential.

Children with normal variant short stature can be subdivided into idiopathic short stature (ISS) (with no delay in BA versus chronological age (CA) and constitutional delay (CDG) (with delayed BA versus CA.

The response of these two groups to GH therapy remains controversial.

Materials and methods

We studied linear growth, weight gain, skeletal maturation, and GH-IGF-I axis in prepubertal children with ISS in comparison to prepubertal-children with CDG before and after one year of GH therapy.

Results

At the presentation,

- **The HtSDS, BMI, BMISDS didn't differ among the groups.**
- **The ISS Group was significantly younger than the CDG.**
- **The mid-parental height-SDS (MPHtSDS) of the ISS group was significantly lower compared to the CDG group.**
- **The difference between the HtSDS of patients from their mid-parental HtSDS (MPHtSDS) was significantly higher in the CDG versus ISS group.**
- **Peak GH response to provocation was higher in the ISS group vs the CDG group.**
- **The IGFSDS, Free T4, and TSH levels didn't differ among the two groups.**

After a year of GH therapy (0.03 -0.05 mg/kg/day),

- **A significant increase in the IGFI and IGFSDS in both groups.**
- **HtSDS increased significantly in the two groups ($p < 0.05$).**
- **The increment in the HtSDS was higher in the CDG versus the ISS whereas the increment in the BMISD was higher in the ISS group vs the CDG group.**
- **The difference between the HtSDS and MPHtSDS did not differ between the two groups.**

	Age	Ht SDS1	IGF-1 SDS1	BA	Ht SDS2	IGF-1 SDS2	WGD	Delta-BMI SDS	Delta-Ht SDS
ISS N=31 Mean	9.85	-2.16	-0.74	-0.16	-1.88	0.33	12.56	0.42	0.09
CDG N=18 Mean	11.3	-2.27	1.00	-2.03	-1.95	0.62	10.76	-0.03	0.32
P value	0.03	0.26	0.25	<0.001	0.36	0.34	0.22	0.01	0.03

Conclusion

Growth hormone therapy improved linear growth in ISS and CDG children without fast maturation of their bone age.

The improvement in HtSDS was better in the CDG group compared to the ISS group after a year of GH therapy.

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