Good Growth Response to Growth Hormone Therapy in Short Children with Normal Growth Hormone Secretion

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Introduction & Objectives

The availability of biosynthetic growth hormone (GH) ensures that children who are deficient can have replacement therapy, but it also has created the opportunity to treat children who are short but do not have a deficiency. Non-GH deficient short stature, without treatment, the height outcomes in most studies have failed to reach mid-parental target height. GH therapy has resulted in mixed height outcomes; some patients reached or exceeded genetic target height whereas others did not.

The aim of this study was to report the outcome of the included cases with initial height below - 2 SD score, normal stimulated GH levels (>10 µg/L), and treatment with biosynthetic GH for at least one year.

Methods

That was retrospective study included patients with the inclusion criteria for one year attending pediatric endocrine clinic in Sidra Medicine, Doha, Qatar from January 2017 till January 2018.

Results

Twenty children, 15 males and 5 females aged 4.3 to 13.8 years with mean peak GH of 15.58 ± 6.95 ug/L received GH for duration of 2.49 ± 1.61 years with The average GH dose was 0.04 mg/kg/day. The mean Mid Parental Height Standard Deviation Score (MPHSDS) was minus - 1.23 ± 0.57 SD.

Table 1. Patients' information before and after GH therapy

		Start of treatment	On last visit	Differences
Age in years	Mean	9.88	12.36*	2.49
	SD	2.62	2.27	1.61
IGF-I ug/L	Mean	143.4	407.1*	263.7
	SD	57.4	162.4	105
HtSDS	Mean	-2.34	-1.57*	0.77
	SD	0.41	0.55	0.14
Pubertal stage	Mean	1.35	2.7*	1.35
	SD	0.65	1.35	0.7

•p < 0.05

1. There was no bone age delay with bone age difference of - 0.13±0.67 years.
2. The mean HSDS at start of treatment was -2.33 ±0.41 and after one year of treatment was -1.83 ±0.48 with 0.5 SD change and at the last visit was -1.56 ±0.54 with 0.75 SD change.
3. The average deviation from MPHSDS was -1.08 SD at start versus -0.3 SD at the last visit.
4. The increment in HSDS was positively correlated with the increment in IGF-1 levels (P = 0.018 and r = 0.6).

Conclusion

- Growth hormone therapy benefits short children with normal growth hormone secretion achieve normal HSDS and approach MPHSDS.
- The IGF-1 increment correlates with the HSDS increment.

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