The authors declare no conflict of interest

IMPACT OF GROWHT HORMONE (GH) TREATMENT IN CHILDREN FINAL HEIGHT AND WEIGHT STATUS

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INTRODUCTION

GH revolutionized treatment of children with GH deficiency, conditioning an improvement in height outcome but also an increase of lean body mass and reduction of fat mass.

AIMS

Evaluate the growth and weight response in children with GH deficiency and identify potential factors affecting the outcome of these patients.

METHODS

The growth and weight data of 58 children (33 boys and 25 girls) with GH deficiency, treated with 0.033 ± 0.004 mg/kg/day of GH, for 5.4 ± 3.1 years, were retrospectively analyzed. 62.1% of the studied population had idiopathic GH deficiency (IGHD) and 37.9% had organic GH deficiency (OGHD).

Statistical analysis: SPSS(21).

RESULTS

Baseline characteristics of children with GH treatment:

	IGHD	OGHD	p
Number	36	22	
Boys (%)	55.5	40.9	0.79
Age (years)	11.6 ± 2.3	10.6 ± 4.2	0.34
Height-SDS	-2.75 ± 0.83	-3.11 ± 1.6	0.12
BMI-SDS	-0.11 ± 1.44	0.22 ± 1.6	
Underweight (%)	5.6	13.6	0.43
Normal weight (%)	86.2	72.8	
Overweight* (%)	8.3	13.6	
IGF1-SDS	-2.25 ± 0.58	-1.83 ± 1.07	0.45
Isolated GH deficiency (%)	94.4	36.4	0.01

*Including also obese children.

TREATMENT

IGHD and OGHD children were treated respectively with 0.033 ± 0.004 mg/kg/day and 0.033 ± 0.0025 mg/kg/day of GH

At first one year of GH treatment:

	IGHD	OGHD	p
Height-SDS	-2.29 ± 0.77	-2.34 ± 1.3	0.12
BMI-SDS	-0.25 ± 1.42	0.26 ± 1.45	0.22
IGF1-SDS	-2.25 ± 0.58	-1.83 ± 1.07	0.14
Growth velocity (GV1)-SDS	2.15 ± 3.35	3.73 ± 3.58	0.07

GV1-SDS was only negatively correlated to age at the onset of therapy (r=-0.56, p=0.008)

FINAL EVALUATION

- **Final height-SDS was not significantly different between IGHD and OGHD** (-1.6 ± 0.8 vs. -1.8 ± 1.1, p>0.05)
- **23(39.7%) patients achieved the predicted target height** based on mid-parental height
  - 15 boys with 168 ± 5 cm
  - 8 girls with 155 ± 2 cm

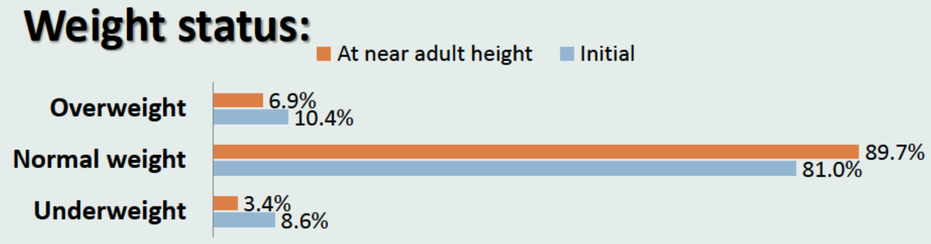
Correlations of final height with different parameters:

Initial age	NS
Initial height-SDS	**+0.35***
GH dose (UI/kg/day)	NS
Duration of GH treatment (years)	NS
Age at start of puberty (years)	NS
GV1 SDS	NS
Target height SDS	**+0.44****

NS = non-significant; *p < 0.01; ** p < 0.001.

- GH treatment was also associated with a slight increase of global BMI-SDS, either in patients with OGHD (+0.21 ± 0.96) or IGHD (+0.12 ± 0.87)

Weight status:



- Underweight and normal weight children increased their BMI-SDS (0.70 ± 1.5 and 0.15 ± 0.87, respectively) whereas obese ones decreased their BMI-SDS (-0.07 ± 0.55)

CONCLUSIONS

More than one third of the children with GH deficiency achieved a final height comparable to their genetic potential.

The most significant determining factors were children's age (influencing GV during first year) and height at the onset of the treatment.

Our study also confirmed that long term GH treatment contributes to normal weight status, particularly in children that are underweight or obese.

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