



# Evaluating First Year Response and Final Height to Growth Hormone Treatment in Growth Hormone Deficiency based on Peak GH levels on Testing

Saygın Abalı, Serpil Baş, Azad Akbarzade, Zeynep Atay, Belma Haliloğlu,

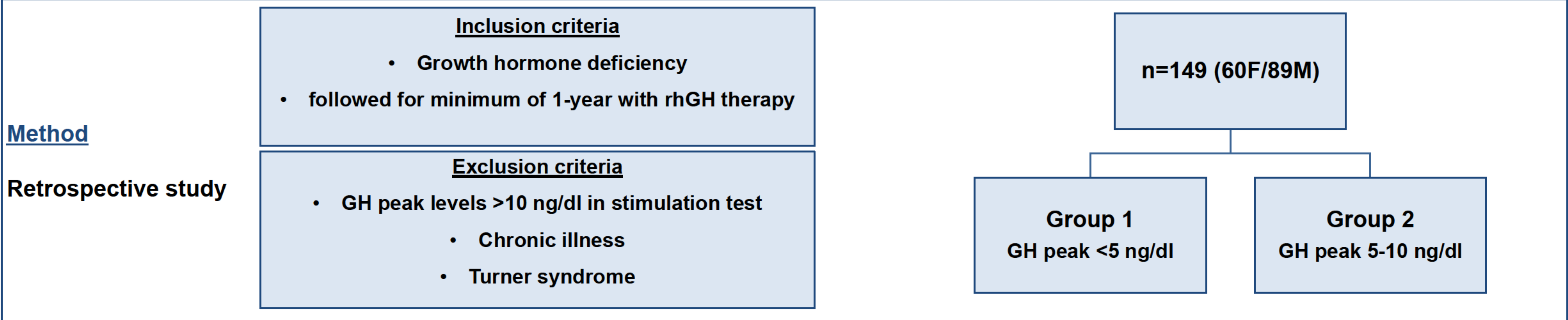
Tülay Güran, Serap Turan, Abdullah Bereket

Marmara University, Department of Pediatric Endocrinology and Diabetes, Istanbul, Turkey

**Background** Diagnosis of GH deficiency (GHD) is a complicated issue especially in isolated GH deficiency.

Auxological evaluation, IGF-I, IGFBP-3 levels and GH response to provocative testing are all considered in the diagnosis. However, cut-off values for GH levels at stimulation tests are controversial.

**Objective** We aimed to evaluate the response to rhGH treatment in patients with different GH peak levels in stimulation test



## Results

The mean age at beginning of rhGH therapy was 11.6±3.5 years.

The mean height standard deviation score (SDS) was -2.9±1.2.

Features of the patients given in Table 1.

First year response was better in group 1 ( $\Delta$  Height SDS +1.0±0.7 vs +0.6±0.3, p<0.001)

At the end of first year,

BMI SDS was reduced in group 1 (0.27±1.43 vs -0.04±1.40, p:0.015); but not changed in group 2 (-0.47±1.37 vs -0.39±1.10, p=0.360).

First year height response had a negative correlation with peak GH level (r:-0.479, p<0.001) and with IGF SDS (r:-0.340, p<0.001).

The final/near final height was available in 57 patients and final height SDS was -1.2±0.7 and -1.4±0.8 in group 1 and 2, respectively (Table 2).

Total gain of height (Final height SDS-Initial height SDS) was significantly higher (2.7 vs 1.5 SDS) in group 1 and group 2, respectively.

Table 1. Features of patients at initiation of rhGH treatment and at first year

	Group 1 (n=68)	Group 2 (n=81)	p
Girl n (%)	28 (41.2)	32 (39.5)	0.836
SGA n (%)	4 (6.7)	13 (19.4)	0.035
Normal sella MR n (%)	30 (44.1)	62 (83.8)	<0.001
MPH SDS, mean±SD (median)	-1.0±0.7 (-0.9)	-1.4±0.8 (-1.3)	0.008
<b>At initiation</b>			
Age (mean±SD)	11.3±3.9	11.7±3.1	0.500
Bone age, mean±SD	8.1±4.0	9.6±2.9	0.004
Age - Bone age, mean±SD	2.8±2.0	2.4±1.6	0.293
Height SDS, mean±SD	-3.4±1.4	-3.0±0.9	0.034
BMI SDS, mean±SD (median)	0.3±1.4 (0.6)	-0.5±1.4 (-0.4)	0.002
IGF1 SDS, mean±SD	-1.5±0.9	-0.9±0.6	<0.001
GH dose (µg/kd/d)	30.0±5.4	34.5±4.9	<0.001
<b>First year</b>			
Age, mean±SD	12.4±3.9	12.8±3.0	0.496
Bone age, mean±SD	9.7±3.6	11.0±2.7	0.041
Age - Bone age, mean±SD	2.7±1.7	2.1±1.5	0.079
Height SDS, mean±SD	-2.4±1.1	-2.4±0.8	0.085
BMI SDS, mean±SD (median)	0.0±1.4 (0.1)	-0.4±1.1 (-0.5)	0.089
First year response (Difference between height SDSs)	1.0±0.7	0.6±0.3	<0.001

Table 2. Patients with the final/near final height (n=57)

	Group I (n=21)	Group II (n=36)
Initial height SDS*	-4.0±1.9	-2.9±0.7
PAH SDS at initiation	-1.7±1.1	-1.2±1.0
MPH SDS	-1.3±0.7	-1.3±0.8
Final height (FH) SDS	-1.2±0.7	-1.4±0.8
FH SDS - Initial Ht SDS*	2.7±1.7	1.5±0.7
FH SDS - MPH SDS	0.2±0.9	-0.2±1.0
FH SDS - PAH SDS*	0.5±1.1	-0.2±1.2

\*p<0.001

## Conclusion

In GHD, patients with peak GH levels under 5 ng/dl had better first year response and final height gain with rhGH treatment.

