IS RETESTING IN GROWTH HORMONE DEFICIENT CHILDREN REALLY USEFUL?

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Introduction

Patients with childhood-onset growth hormone deficiency (GHD) are usually retested in late adolescence or young adulthood, after achievement of final height, to verify whether they need to continue GH treatment. Most of the patients found to have idiopathic GHD when tested as children have normal GH responses when retested in the early or late adolescence. Indeed, the 2007 Consensus guidelines for the diagnosis and treatment of GHD adults recommended that idiopathic GHD patients should be re-evaluated.

Aim of the study

The aim of the present study was to investigate if GH stimulation test is really necessary to confirm a permanent status of GHD or if insulin-like growth factor-I (IGF-I) measurement alone at the same time could be used.

Patients

We studied 163 children with idiopathic GHD (54 females and 109 males), age 16.2±1.4 years retested when they reached final height using GHRH (1 mg/kg iv)+arginine (0.5 g/kg iv) test or arginine alone (0.5 g/kg iv). GH and IGF-I levels were measured by a chemiluminescent assay (Immulite 2000).

Results

Thirty-nine (23.9%) patients showed severe GHD (GH peak at diagnosis <5 ng/ml) and 124 patients (76.1%) showed partial GHD (GH peak <10 ng/ml). By taking a peak GH value of less than 10 ng/ml in the arginine test and less than 19 ng/ml in the GHRH+arginine test, 28 patients (17.2%) were found to have persistent GHD and 135 (82.8%) to be transiently GH deficient. Among patients with severe GHD, 32 patients (82.1%) showed transient GHD, while among patients with partial GHD 103 (83.1%) children showed transient GHD. IGF-I levels were comparable between total GHD (0.13±1.04 SDS) and partial GHD subjects (0.18±0.84 SDS). Furthermore, among persistent total GHD patients only two showed very reduced levels of IGF-I (<-2.0 SDS), while in transient total GHD group no patients showed pathologically reduced IGF-I levels.

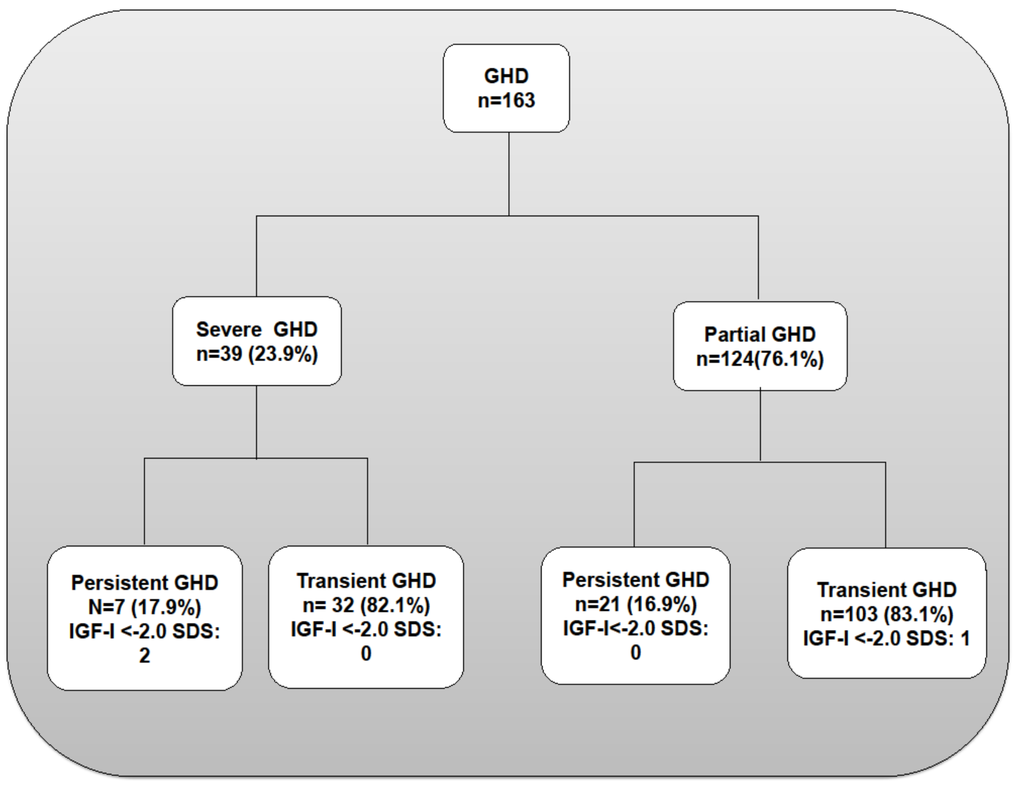

Table 1. Auxological data of the patients before GH treatment. Data are shown as mean±standard deviation.

Subjects	Age (yrs)	Bone age (yrs)	Height (SDS)	BMI (SDS)	Target height (SDS)	MPHD (n)	Abnormal pituitary (n)
Boys (n=109)	10.5±3.8	8.9±3.6	-1.82±0.65	-0.85±2.15	-0.96±086	0	9
Girls (n=54)	10.1±3.1	8.4±2.9	-1.90±0.77	-0.97±1.84	-0.91±0.76	1	5
Total (n=163)	10.4±3.6	8.7±3.4	-1.84±0.69	-0.89±2.05	-0.94±0.82	1	14

SDS, standard deviation score

MPHD, multiple pituitary hormone deficiency

Conclusions

Most of the cases of idiopathic childhood-onset GHD is transient. The reasons for such findings are not clear but may include the variability of GH responses to stimulation. After the end of GH substitutive treatment, a re-evaluation of GH secretion is mandatory for reconfirming the diagnosis of GHD. IGF-I levels alone are not useful for discriminate persistent from transient GHD subjects.

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