**Introduction**

Growth hormone (GH) deficiency (GHD) is currently defined as secondary insulin-like growth factor-I (IGF-I) deficiency (IGFD) [1,2]. In the patients with normal GH secretion and IGFD, significant increase of IGF-I during generation test excludes primary IGFD (PIGFD), however is not considered as a confirmation of secondary IGFD [3]. In such patients, the diagnosis of idiopathic short stature (ISS) is established. The effectiveness of GH therapy in children with ISS is still a matter of research [3-6] and ISS is an approved indication for GH therapy in some countries.

The aim of the study was to assess GH therapy effectiveness in children with IGFD, responding to short-term GH administration despite normal GH peak after falling asleep and in stimulation tests.

**Patients and methods**

Analysis comprised 42 children (34 boys, 8 girls), age 12.0±2.3 years (mean±SD) with short stature (patients’ height below 3rd centile for age and sex) and normal GH peak (>10.0 ng/ml) both spontaneously (after falling asleep) and stimulated (as assessed in 2 stimulation tests – with clonidine and with glucagon), and IGFD (IGF-I SDS for age and sex < -1.0), in whom IGF-I concentrations at least doubled and normalised during generation test, thus enabling to exclude primary IGFD.

All the patients were subjected to recombinant human GH therapy in the dose of 0.18±0.03 mg/kg/week.

First-year response to treatment: height velocity (HV) increase and IGF-I SDS increase was assessed in all of them; final height (FH) was attained in 28 patients.

The therapy effectiveness was compared with a group of 110 children (75 boys, 35 girls), age 11.2±3.3 years, with partial GHD (GH peak in 2 stimulation tests 5-10 ng/ml), treated with the same GH dose, including 42 treated up to the attainment of FH.

The following parameters were measured at diagnosis of GHD:
- height SDS before treatment (HₓSDS)
- height velocity (HVₓ)
- insulin-like growth factor-I (IGF-I), expressed as IGF-I SDS for age and sex

The following indices of GH therapy effectiveness were assessed:
- first-year response to treatment:
  - height velocity in 1st year of treatment (HV₁)
  - increase of HV (ΔHV = HV₁ - HV₀)
  - IGF-I SDS in 1st year of treatment and IGF-I SDS increase in 2nd year of treatment (ΔIGF-I SDS)
  - final height (FH), expressed as FH SDS.

**Results**

The data on 1st year response to GH therapy are presented in Table and in Figures 1 (an increase of HV) and 2 (an increase of IGF-I SDS). The attained FH SDS vs. hSDS₀ in both Groups is presented in Figure 3.

All the differences in age, therapy duration and in all the analysed indices of GH therapy effectiveness between the Groups were insignificant.

**Conclusion**

In children with short stature, normal spontaneous and stimulated GH secretion and decreased IGF-I concentration which increases significantly in generation test, IGFD is non-primary. Such patients may benefit during GH therapy similarly to children with pGHD. It seems worth considering not diagnose idiopathic short stature in them.

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**References**