BACKGROUND AND OBJECTIVE

Background:
It is well-known that human growth hormone (hGH) treatment increases growth rate in idiopathic short stature (ISS) in the short term which might predict the overall height gain. However, the fact that ISS might involve a heterogeneous group of individuals with individual benefits from hGH treatment makes the decision to treat or not to treat difficult. There is some evidence in the literature suggesting an IGF generation test might be a tool for distinguishing ISS individuals who would benefit from hGH treatment (2,3).

Objective:
The aim of this study was to investigate retrospectively whether an IGF-I generation test (IGFST) might be used as a tool to predict the first year growth response to GH treatment in individuals with ISS.

METHODS

Fifty seven subjects with ISS who had at least 5%/2 increase in IGF-I levels with an IGFST and who were treated for at least one whole year with GH were included in the study. Of these 57 subjects, 29 were girls. The mean age of the patients was 11.47 ± 1.95 years and 38 were prepubertal. Blood samples for IGF-I concentration measurements were collected in morning hours, before the 1st rhGH injection (first day) and on the 5th day after 4 daily doses of 0.033 mg/kg (0.1 IU/kg). IGF-I levels were measured by a chemiluminescence immunoassay. IGF-I levels and heights were expressed as SDS both for age and gender (1). Bone age was evaluated by Greulich Pyle method. The increase in IGF-I levels were expressed both as the percentage of the absolute change in IGF-SDS.

RESULTS

In the prepubertal group both basal and stimulated IGF-I SDS were higher than those in the pubertal group. However, ΔIGF-I SDS in the pubertal group was significantly higher than in the prepubertal group (Table 3). Although bone age SDS and weight SDS were similarly affected in prepubertal and pubertal children, delta height SDS was significantly higher in the pubertal group than in the prepubertal group (Table 4).

CONCLUSION

Our results suggest that in individuals with ISS, the lower basal IGF-I SDS is and the higher increase in IGF-I SDS (in an IGFST) is, the more the height gain after one year of GH treatment is. Our findings might be explained by a recent observation which indicates that the degree of the individual IGF-I response to GH in childhood and thus individual growth hormone sensitivity is modulated by genetic and epigenetic variation at the GHR and IGF-I loci (4).

REFERENCES


Figure 1: The relationship between delta IGF SDS and delta height SDS