

Evaluation of the effect of IGF-1 level and growth hormone stimulatory test with height changes in the first year of growth hormone administration in 2-14 years old children from 2021 to 2022

Abstract

Background: The main goal of treatment with growth hormone is to increase and, if possible, to normalize the speed of height growth and reach appropriate height until adulthood. However, in previous studies, it has not been determined that the response rate of patients following the administration of growth hormone as an increase in height depends on what factors, and the relationship between the level of IGF-1 and the results of growth hormone stimulation tests and this response of patients to the administration of growth hormone. The definitive form has not been determined.

Aim: The present study was conducted with the aim of determining the relationship between IGF-1 level and growth hormone stimulation test with height increase in the first year of growth hormone administration in children aged 2-14 years from 1400 to 1401.

Materials and methods: Our study population included patients with short stature who were referred to Kausar Ardabil clinic who received recombinant growth hormone. The information required for each patient includes gender, chronological and bone age, initial height and height one year later, weight, birth weight, father's height, mother's height, IGF-1 level before and after treatment, growth hormone indication and total growth hormone dose was included in a check list.

Results: 145 children referred to pediatric endocrinology clinic were included in the study. 85 cases (58.6%) were girls and 60 cases (41.4%) were boys. The average chronological age of the participants was 91.9 ± 3.05 years and their average bone age was 8.66 ± 3.02 years. The average initial height of the participants was 124.65 ± 18.64 cm and the average height one year later was 133.78 ± 17.22 cm. The weight of the participants was 29.09 ± 11.60 kg. All patients underwent growth hormone stimulation test, which was reported positive in 78 cases (53.8%). In terms of indications for growth hormone administration, 15 people (10.3%) had low PAH, 79 (54.5%) GHD, 27 (18.6%) ISS, 20 (13.8%) GSS and 4 (2.8%) had Turner syndrome. The average birth weight of the patients was 2.98 ± 0.52 kg. Also, the average height of the father was 167.97 ± 9.37 cm, the average height of the mother was 157.61 ± 6.84 , and the average height of the patients' parents was 162.79 ± 6.54 . There was no significant difference in height growth rate of patients in the studied children based on gender ($P=0.323$), age range ($P=0.092$) and indication of growth hormone administration ($P=0.766$). Correlation of height growth rate with the studied variables shows a significant correlation with mother's height ($r=0.178$ and $P<0.05$), average height of parents ($r=0.164$ and $P>0.05$ P), and chronological age ($r=0.235$ and $P<0.01$). IGF-1 changes in patients with different indications for growth hormone administration were not significantly different.

Conclusion: Children's height growth has no significant relationship with IGF-1 level before treatment and its changes.

Keywords: IGF-1, growth hormone, growth hormone stimulation test