CORRELATIONS BETWEEN IGF1 LEVELS AND ANTHROPOMETRICAL PARAMETERS IN CHILDREN UNDER GROWTH HORMONE THERAPY

Simona Hutu, Raluca Pop & Ionela Pascanu
Endocrinology Department,
University of Medicine and Pharmacy, Tîrgu Mures, Romania

UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE TÎRGU MUREȘ

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INTRODUCTION

Growth hormone (GH) therapy is used to treat a series of growth disorders in childhood. No recent studies are available in our country regarding the influence of growth hormone after more than 1 year of treatment in children with growth failure.

OBJECTIVE AND HYPOTHESE

The aim of our study is to evaluate the effects of GH treatment and to find out if there is any relationship between IGF1 increment and growth velocity (GV), weight and BMI in children with growth failure caused by growth hormone deficiency, Turner syndrome and those born small for gestational age.

METHODS

Type of study: retrospective; target population: children 3-16 years of age with short stature; sample: composed of 45 children (group 1) with short stature diagnosed in Mures County Hospital and treated 1 year with GH; 29 children (group 2) continued the treatment until 2 years. Variables: age, sex, height standard deviation score (H-SDS), GV, weight, BMI and IGF1 before, after 1 year and after 2 years of treatment. Statistical analysis used Microsoft Office Excel.

The results are expressed as means and standard deviations.

RESULTS

In our study GH treatment increased the H-SDS (first group: from -3.18 SD to -2.64 SD; second group: from -3.13 to -2.15 SD) and IGF1 levels (first group from -1.69 SD to +0.14 SD; second group from -1.75 SD to +0.26 SD)- Figure 1. GV in 1 year GH therapy had a mean velocity of 8.41 cm/year while in the second year of treatment GV decreased to 7.02 cm/year - Figure 2.

We also had a significant correlation between IGF1 increment and height and weight increase ($r=0.69$, $p<0.001$) but without a significant correlation between IGF1 and growth velocity ($r=0.26$, $p=0.08$) – Figure 3.

DISCUSSIONS

This study shows that treatment with GH has an obvious positive influence over growth trajectory, improving the SD for each parameter. There are also some other factors influencing final height, for example the duration of puberty, nutrition; previous studies have shown that earlier age at GH treatment initiation is associated with greater height gain [1, 2, 3] For more significant results we need expanded nationwide study.

CONCLUSIONS

Daily GH treatment in short children demonstrated increased GV and increased IGF1 levels with more significant result on anthropometric parameters in the first year of treatment than in the second year of treatment.
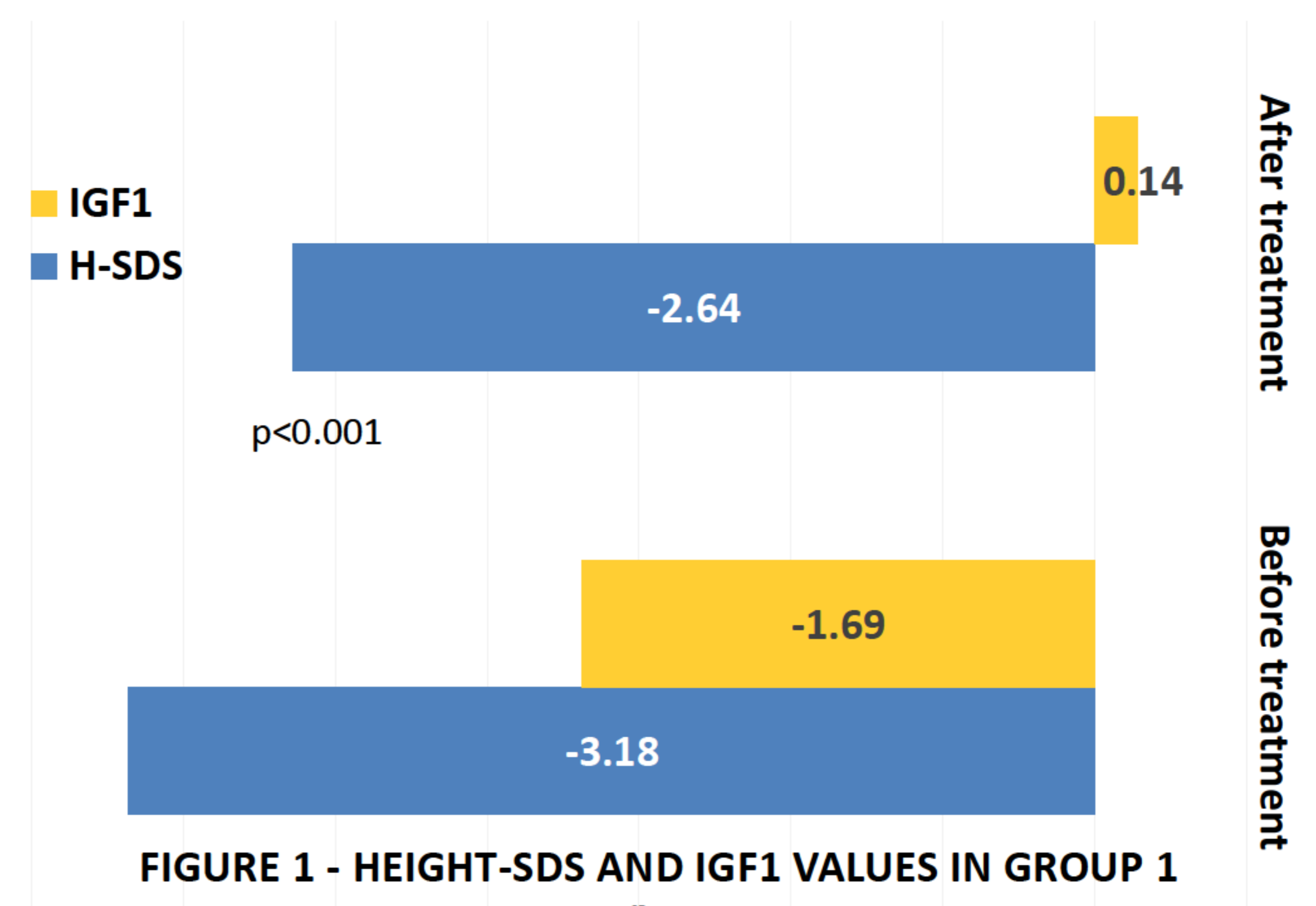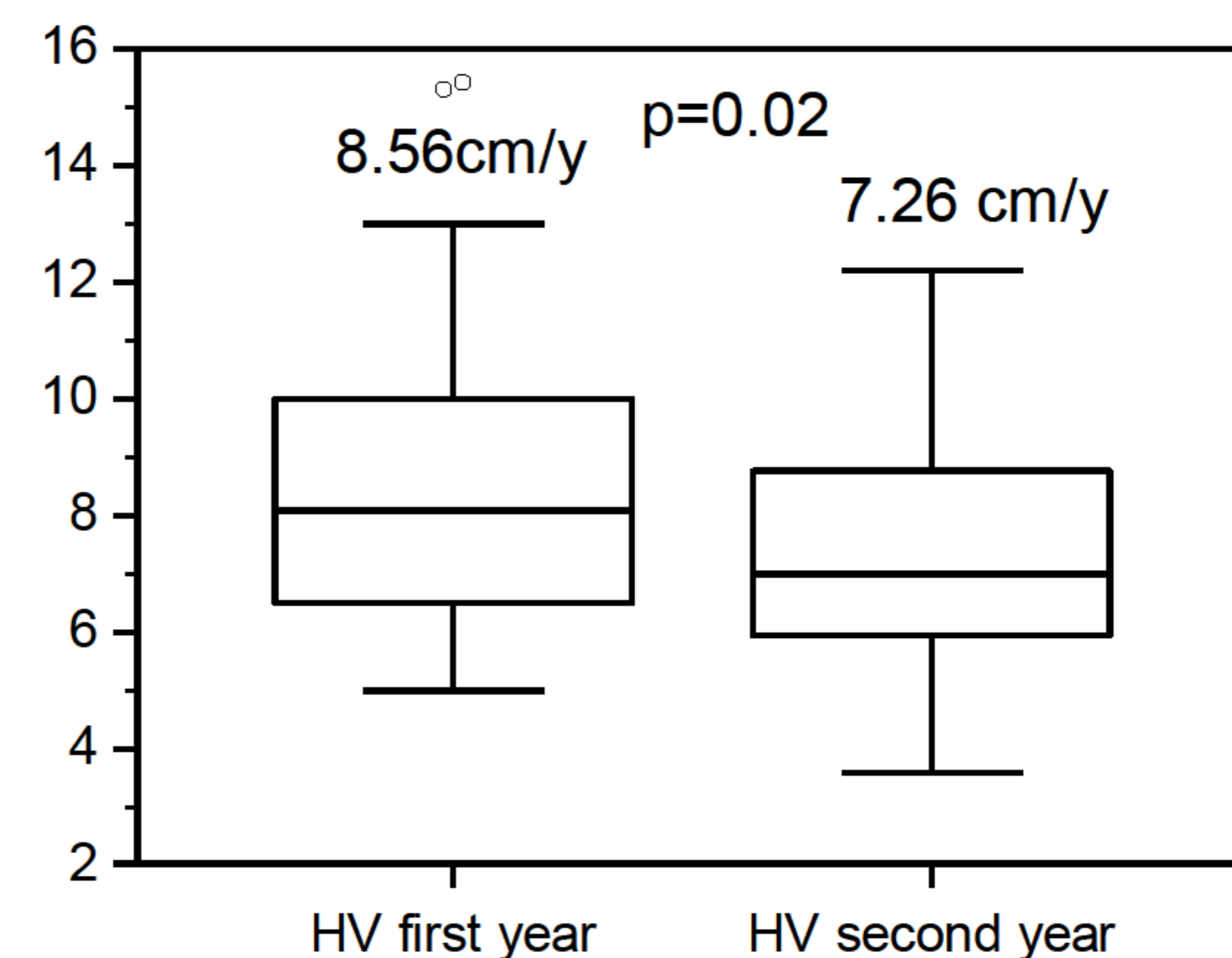

IGF1
H-SDS

After treatment: 0.14, -2.64
$p<0.001$
Before treatment: -1.69, -3.18

FIGURE 1 - HEIGHT-SDS AND IGF1 VALUES IN GROUP 1

8.56cm/y $p=0.02$ 7.26 cm/y

HV first year   HV second year

Figure 2 – Height velocity in the two groups

$r=0.69$, $p<0.001$
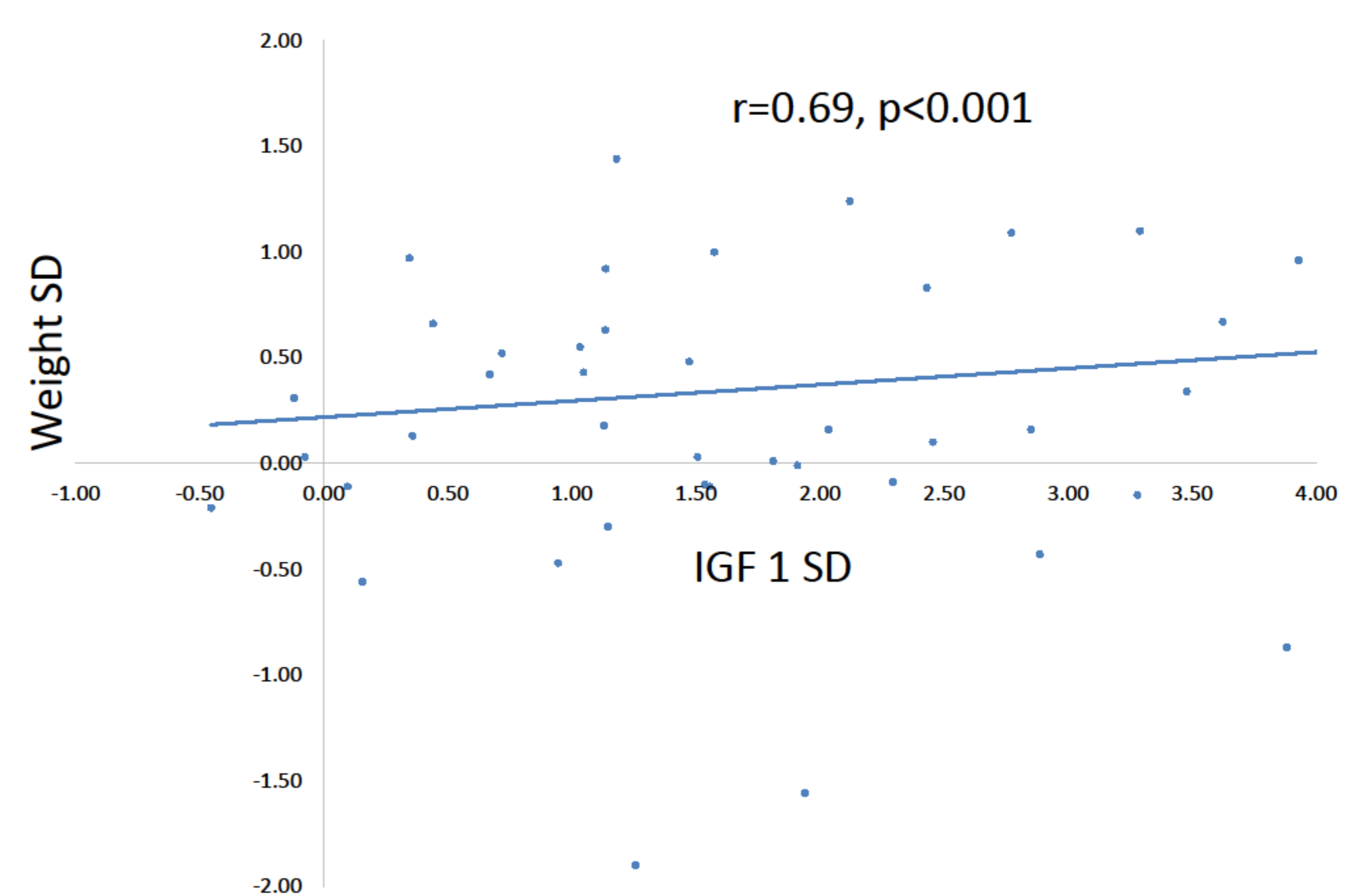
Weight SD
IGF 1 SD

Figure 3 – Weight – IGF 1 correlation

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