

Factors affecting Growth Response to Growth Hormone (GH) therapy in children with short stature and normal GH and IGF-I secretion and no bone age delay.

Ashraf Soliman, Ahmed Elawwa , Shaymaa Elsayed

Departments of Pediatric Endocrinology , Alexandria University Children's Hospital, Alexandria, Egypt.

INTRODUCTION

There are inconsistencies in the results reported in a small number of previous studies into growth hormone (GH) treatment of short children with idiopathic short stature (ISS).

Patients and Methods

Our study included :

- 20 prepubertal children (Tanner 1 or 2) with
- short stature (HtSDS < -2) and/or HtSDS > 1SD below their mid parental height SD (MPHtSDS) ,
- slow Growth velocity(< -1), with
- normal Peak GH to provocation (15.58 +/- 6.95 ng/dl), normal IGF-1SDS (-0.9 +/- 0.6)
- No bone age delay.
- We treated all the children for 2.5 +/- 1.5 years with rhGH 0.04 mg/kg/day and assessed their linear growth at the end of this period in relation to different possible modifying factors.

Results

Children on GH therapy increased their HtSDS by 0.77 +/- 0.5 at the end of the treatment period (2.5 +/- 1.5 years).

	HtSDS – MPHtSDS before GH Therapy	HtSDS – MPHtSDS after GH therapy	HtSDS gain after GH therapy
Ht SDS < -2.5	-1.20	-0.20*#	0.98#
HtSDS > -2.5 < -2	-0.93	-0.32*	0.60
More than 1SD below their MPHtSDS before GH therapy	-1.5	-0.57*#	0.88#
Less than 1SD below their MPHtSDS before GH therapy	-0.71	-0.1*	0.62
IGF-I increment > 150%	-1.2	-0.4*	0.7
IGF-I increment < 150%	-1.1	-0.25*	0.83
GH response > 15 ng/dl	-1.13	-0.29*	0.8
GH response < 15 ng/dl	-1.07	-0.37*	0.69
Stayed prepubertal during therapy	-1.34	-0.27*	0.71
Proceeded to Tanner 3 & 4 during therapy	-1.36	-0.37*	0.78
Age < 9 years at the start of GH	-1.2	-0.1*#	1.1#
Age > 9 years at the start of GH	-1.04	-0.45*	0.58

*=p<0.05 before vs after therapy, #= p < 0.05 comparing different groups

Ashraf Sliman MD PhD FRCP Department of Pediatrics Hamad General Hospital Doha, Qatar, Atsoliman@yahoo.com

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Management

Figure 1 : Correlation between Delta HtSDS and duration of GH treatment (r = 0.82, p < 0.0001)

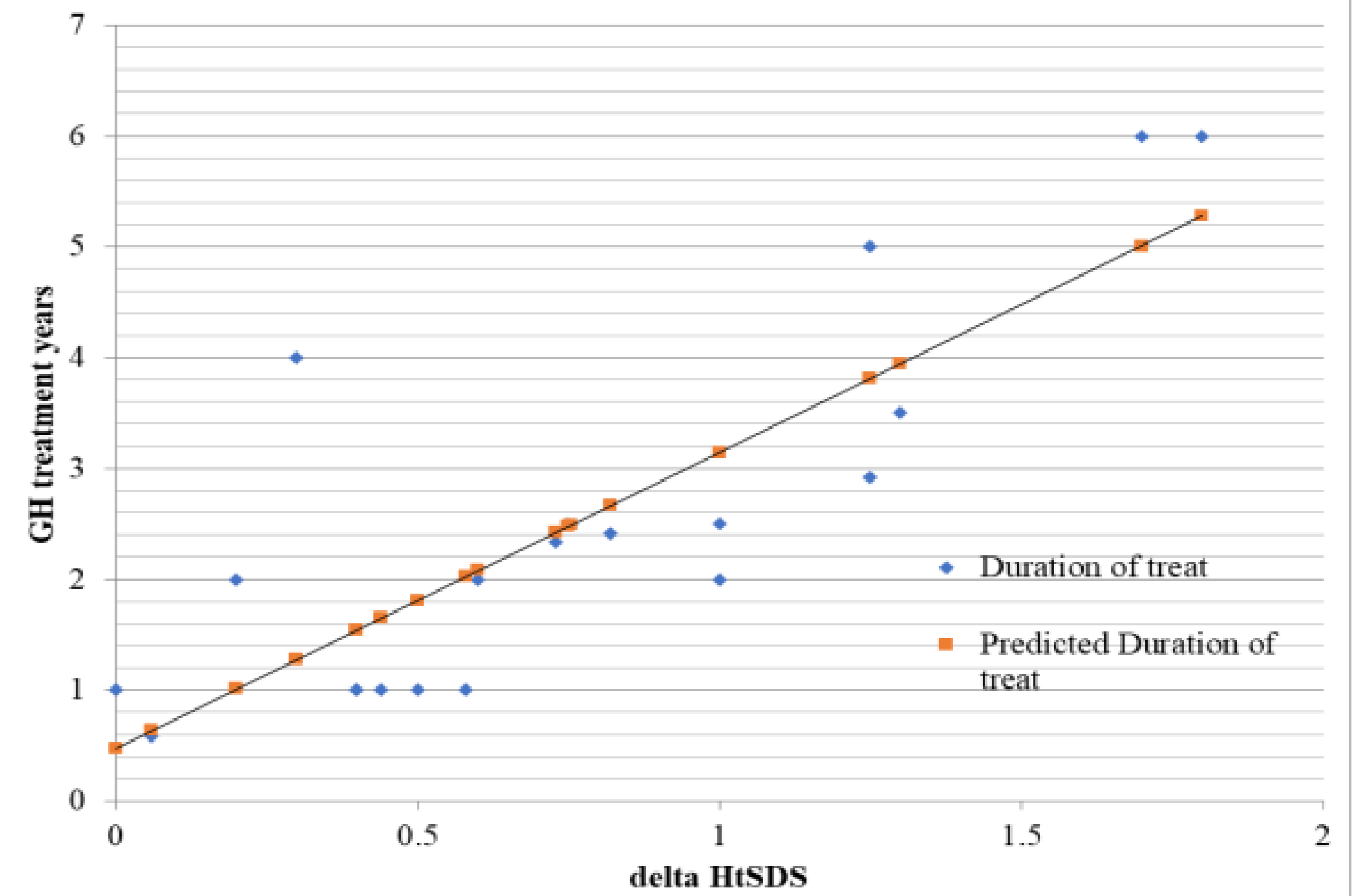
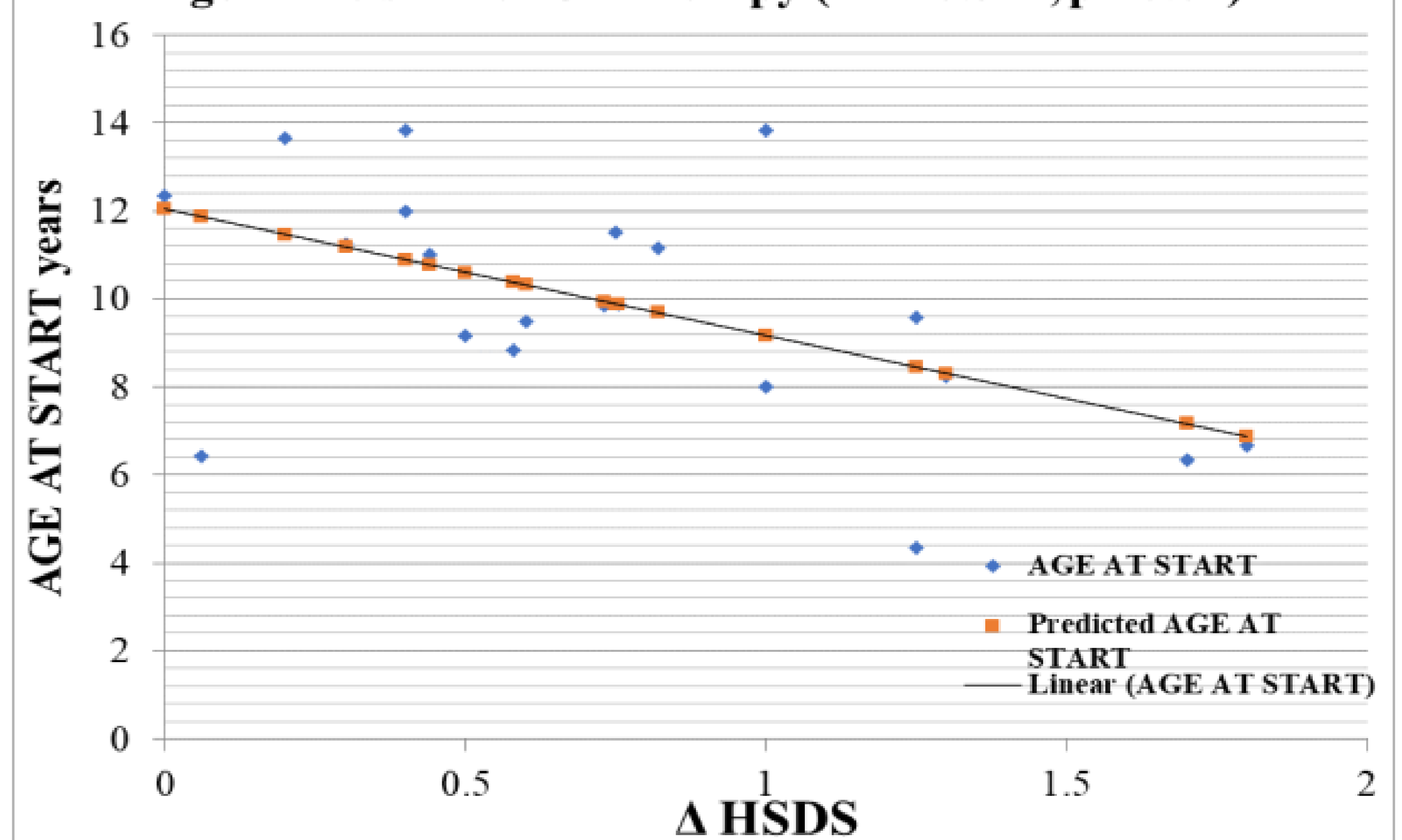


Figure 2 : Correlation between delta HtSDS and age at the start of GH therapy (r = -0.544, p =0.01)



Discussion

Children below 9 years with HtSDS < -2.5 and those whose HtSDS was 1SD or more below MPHtSDS grew better on GH therapy compared to older children and those with HtSDS > -2.5 and were less than 1SD from their MPHtSD

Conclusions

Growth response to GH therapy in short children with normal GH-IGF-I axis, appears to be significantly better in those younger than 9 years, with HtSDS < -2.5 for the population and with HtSDS > 1SDS below their MPHtSDS.

