Linear growth response to Growth hormone therapy in underweight versus normal weight children with idiopathic short stature (ISS)

Sohair Elsiddig, Nada Alaaraj, Ahmed Khalil, Hannah Ahmed, Ashraf Soliman

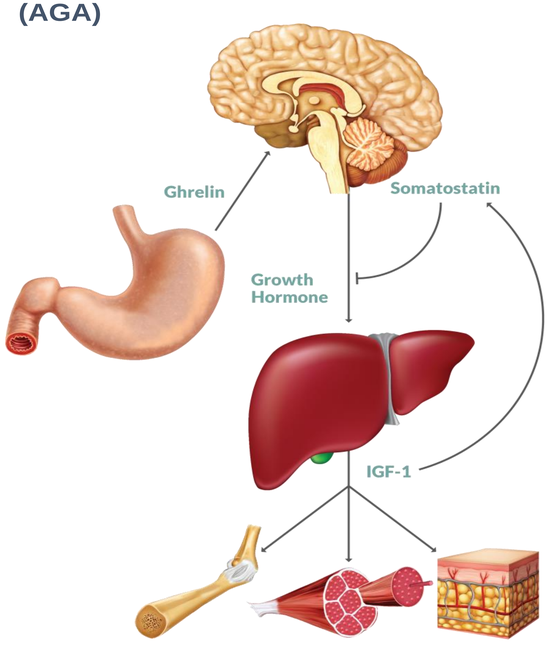
Department of Pediatrics, Hamad General Hospital, Doha, Qatar

Introduction

A multicenter clinical trial in the US showed that underweight small for gestation (SGA) children responded to GH treatment like non-underweight SGA children. However, data on growth response to GH therapy in short underweight children with normal birth size is not studied well.

Objectives

To measure growth response to GH therapy in short underweight versus short normal weight children with idiopathic short stature (ISS) who were born appropriate for gestational age (AGA)



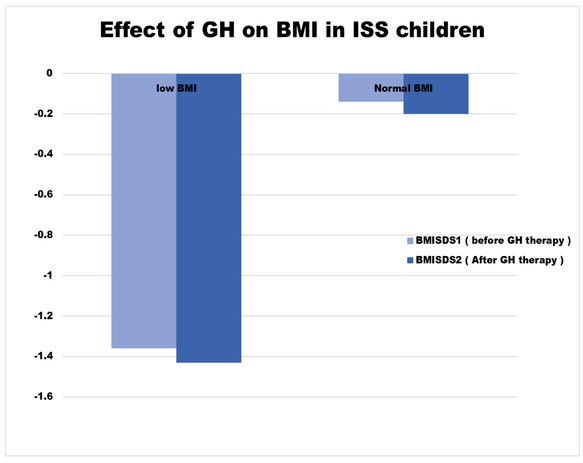
Material and Methods

We studied 52 short prepubertal children (HtSDS <-2 born AGA (i.e., normal birth weight and length for their gestational age) with normal growth hormone peak to provocation, thyroid, hepatic and renal functions and hemogram and negative celiac screening.

Fifteen children were underweight at presentation (BMI SDS <-2) and 37 had normal (BMISDS >-1.5).

Both groups received rhGH at 0.03: 0.05 mg/kg/day for 1 year. In addition, underweight children had nutritional counseling and supplementation.

Anthropometric data {height (Ht), weight (W), HtSDS and BMISDS} and insulin-like growth factor 1 (IGF1) were evaluated and recorded for all the children before and after GH therapy.



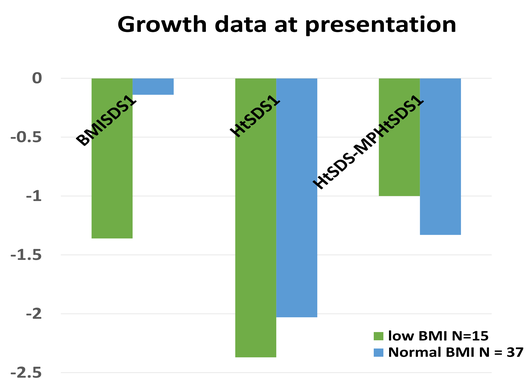
Results

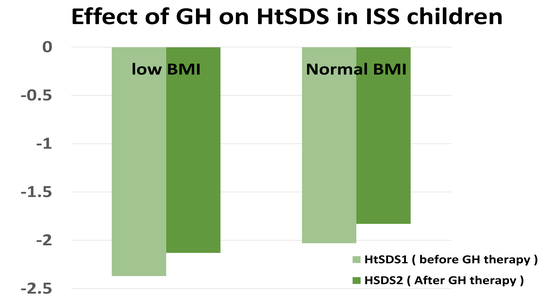
Before treatment with GH:

Age, HtSDS and bone age did not differ between the 2 groups.

The difference between HtSDS and Mid-parental HtSDS (MPHSDS) did not vary between the two groups.

IGF1SDS was significantly lower in the underweight group versus the normal weight group.



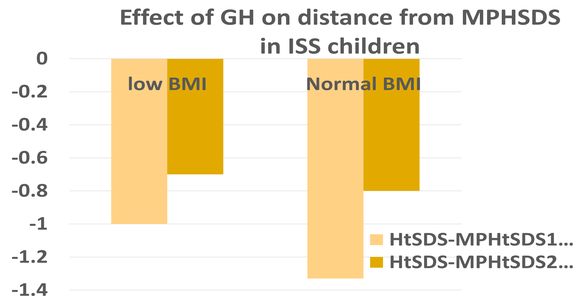


After a year of GH treatment:

The BMISDS did not change significantly in both groups.

The HtSDS and IGFSD increased significantly in the normal weight group but not in the underweight group.

The difference between the HtSDS and MPHSDS decreased significantly in the normal weight versus the underweight group.



Conclusion

GH therapy significantly increased the IGF1 concentration and HtSDS in prepubertal children with ISS and normal BMI but not in underweight short children (BMI<-1.5). Underweight children with ISS who received GH therapy grew at normal growth rate without catch-up in height.

Contact

Sohair Elsiddig
Sohairabdeldaim@yahoo.com
Ashraf Soliman
Atsoliman@gmail.com

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GH and IGFs Ashraf Soliman
P1-140
www.PosterPresentations.com