Metabolic Health and Long-term Safety of Growth Hormone Treatment in Silver-Russell Syndrome

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Conclusion

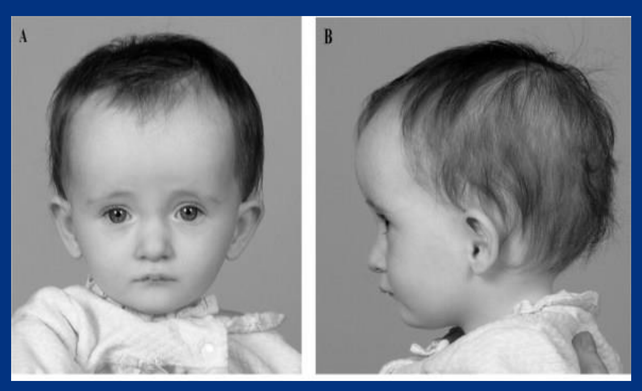
GH-treated SRS patients have similar metabolic health as non-SRS subjects born SGA, and show no adverse events during and two years after long-term GH-treatment

Background

Children with Silver-Russell syndrome (SRS) are born small for gestational age (SGA) and remain short.

Growth hormone (GH)-treatment improves height in short SGA children, including SRS patients[1].

Data on metabolic health and long-term safety of GH-treatment in SRS are lacking.



Picture 1: Dysmorphic features in SRS: Frontal bossing and triangular face

Objectives

To investigate metabolic health in SRS patients, during and after long-term GH-treatment.

Methods

In 29 SRS* and 246 non-SRS subjects born SGA, we measured
-Systolic blood pressure (SBP) and diastolic blood pressure (DBP)
-Serum lipid levels
-Fat Mass percentage (FM%) and Lean Body Mass (LBM) by DEXA-scan
-Insulin sensitivity and ß-cell function by FSIGT
-Risk for metabolic syndrome (ATP-III score)

Both groups received GH-treatment 1 mg/m2/day.
Parameters were compared at GH-start, at adult height/GH-stop, and six months and two years thereafter.

*Diagnosis based on the Netchine-Harbison clinical scoring system[2].
In all SRS patients, additional DNA testing for 11p15 alterations, mUPD7 and CDKN1C and IGF2 mutations was performed

References

[1] Smeets et al., J Clin Endocrinol Metab, 2016
[2] Azzi et al., J Med Genet, 2015

Results

Except for a lower SBP SDS at GH-start (p=0.02), and a lower LBM SDS at GH-stop and 6 months thereafter (p=0.005 and p=0.01) in SRS, there were neither differences in risk for cardiovascular disease and DM2 between SRS and non-SRS at onset of GH treatment, nor at GH-stop and six months and two years thereafter (Figure 1).

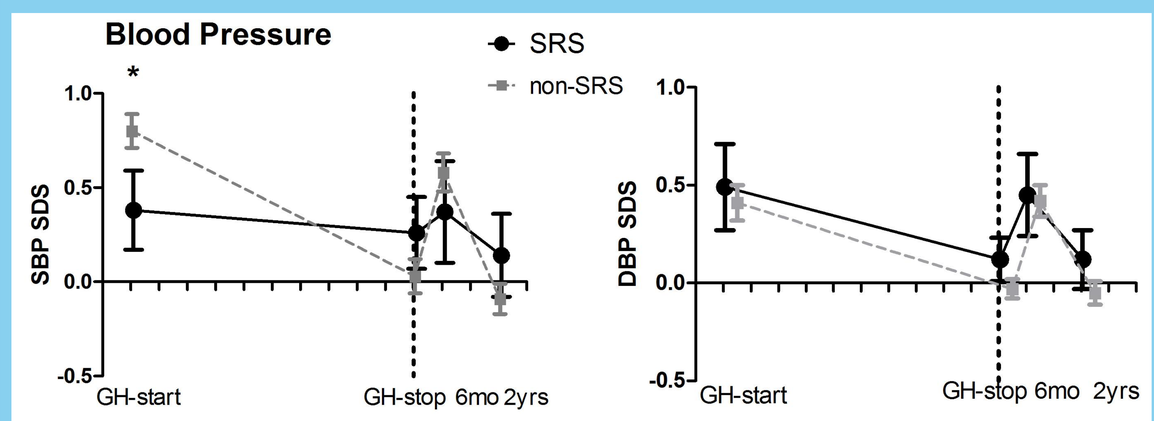
Lipid levels were similar and within the normal range in both groups at all moments. None of the SRS patients developed metabolic syndrome or DM2 until two years after GH-stop (mean age 18.3 years).

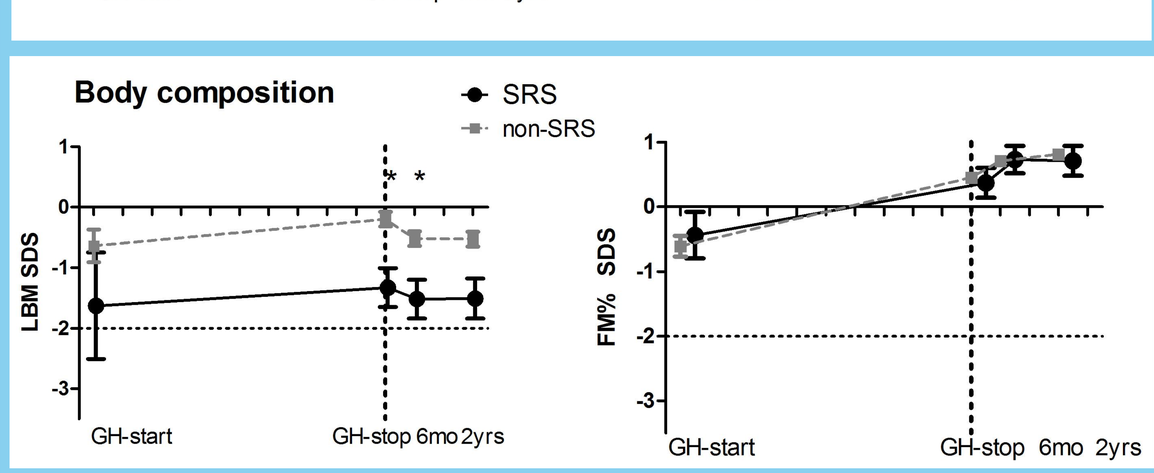
SRS patients benefit similarly with respect to the metabolic effects of GH treatment as non-SRS SGA.

	SRS n=29	non-SRS n=246	p-value
Male/Female	13/16	118/128	0.75
11p15/mUPD7/clinical	14/6/9	NA	NA
Age at start GH	5.1 (2.4)	6.5 (2.0)	**0.001**
Height SDS at start GH	-3.60 (0.8)	-2.95 (0.5)	**<0.001**
Adult height	-1.63 (0.8)	-1.44 (0.8)	0.30

Table 1: Clinical characteristics in mean (SD)

Figure 1: Blood pressure and body composition in SRS and non-SRS at GH-start, GH-stop and 6 months and 2 years therafter. In Estimated Means (±SE). * = p<0.05





No conflict of interest

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