Metabolic Health in short children born SGA treated with GH and GnRHa: Results of a randomized, dose-response trial.

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CONCLUSIONS

- **Combined GH/GnRHa treatment has no long-term negative effects on metabolic health in young adults compared to only GH**
- **Started in early puberty, a GH dose of 2mg/m²/day results in a similar metabolic health at AH and a more favorable fat mass % than 1mg/m²/day**

Background

Children born SGA can benefit from combined treatment of GH and 2 years of GnRH analogue (GH/GnRHa). GnRHa treatment might have negative effects on body composition and blood pressure. Long-term effects of combined GH/GnRHa treatment and GH-dose effects on metabolic health at adult height (AH) are unknown.

Aims

I. To investigate body composition, blood pressure (BP) and lipid profile during GH treatment, with or without 2 yrs of GnRHa.
II. To assess whether a higher GH dose results in a similar or more favorable metabolic health at AH.

Results

I. At AH, metabolic health was similar between children treated with combined GH/GnRHa and those treated with GH
II. A higher GH dose (2mg/m²/day) resulted in a lower fat mass % SDS and similar blood pressure

I. Safety parameters at AH in the total group

	Total group	GH/GnRHa	GH	*P*-value
N	107	64	43	
Boys / girls	49/58	23/41	26/17	**0.013**
GH dose 1 vs 2mg/m²/day	53/54	31/33	22/21	0.782
Body composition				
FM% SDS	0.4 (0.8)[a]	0.4 (0.7)[a]	0.4 (0.9)[b]	0.545
LBM SDS	-0.3 (1.3)[c]	-0.4 (1.3)[c]	-0.03 (1.3)	0.423
Blood pressure				
Systolic BP SDS	0.5 (1.0)[a]	0.4 (0.9)[a]	0.6 (1.1)[a]	0.553
Diastolic BP SDS	0.7 (0.7)[a]	0.7 (0.7)[a]	0.8 (0.7)[a]	0.379
Lipid levels				
TC (mmol/l)	3.95 (0.7)	3.93 (0.6)	3.98 (0.7)	0.437
LDLc (mmol/l)	2.23 (0.6)	2.24 (0.6)	2.22 (0.6)	0.841
HDLc (mmol/l)	1.40 (0.3)	1.41 (0.3)	1.40 (0.3)	0.841
TG (mmol/l)	1.01 (0.4)	0.97 (0.4)	1.07 (0.4)	0.164
ApoA-I (g/l)	1.37 (0.2)	1.36 (0.2)	1.38 (0.2)	0.752
Apo-B (g/l)	0.70 (0.2)	0.70 (0.2)	0.70 (0.2)	0.847

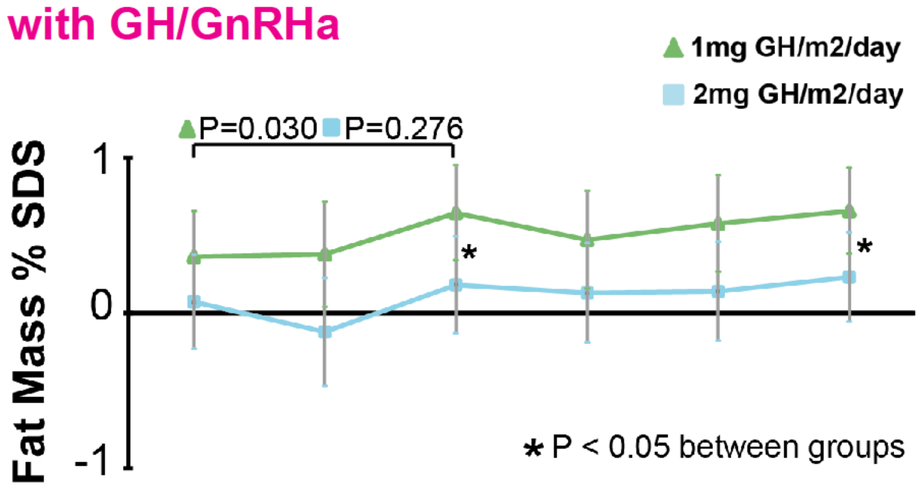
[a,b,c] Variables in SDS compared with zero SDS: [a] P ≤ 0.001, [b] P < 0.01, [c] P < 0.04.

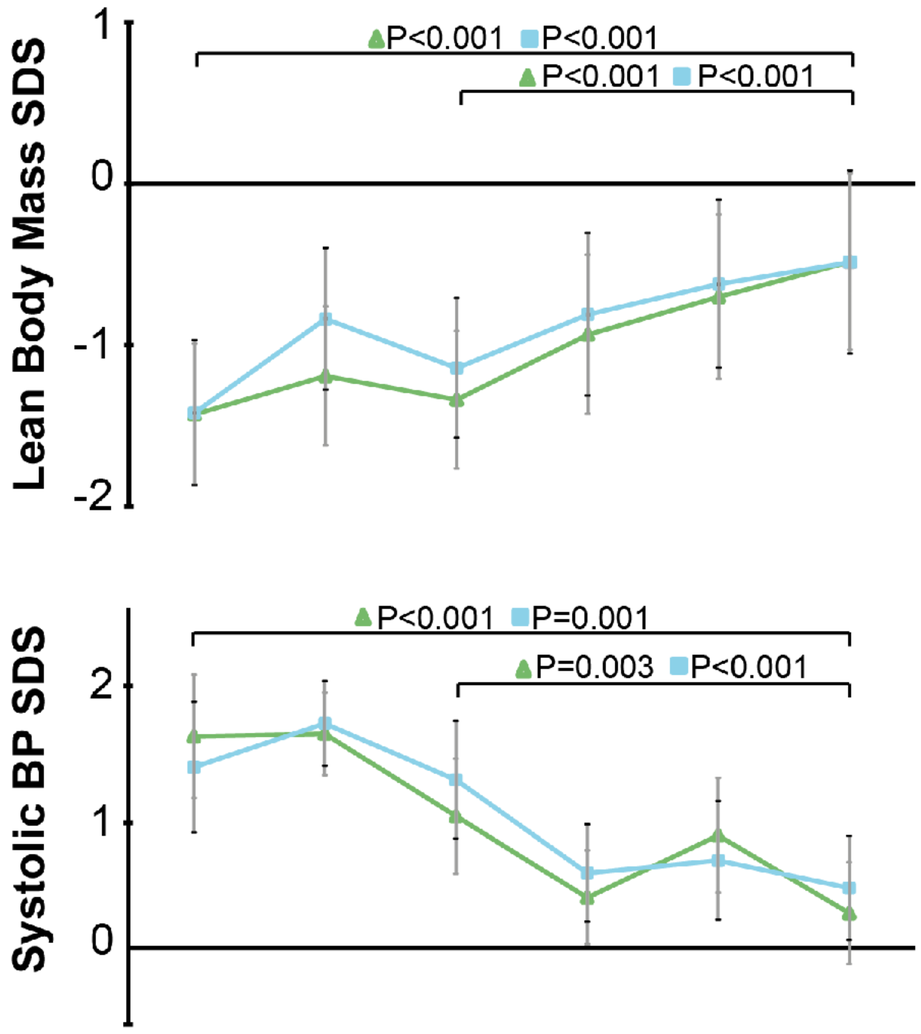
Methods

- 107 short SGA children, 11.5 years at start (58 girls)
- GH treatment until AH, mean follow-up 5.9 years
- At start of puberty
  Height < 140cm → additional GnRHa for 2 yrs
  - GH/GnRHa-group: N=64 / GH-group: N=43

  Randomisation to GH **1mg/m²/day** (~0.033mg/kg/d) or **2mg/m²/day** (~0.067mg/kg/d)

II. GH-dose effect on body composition and blood pressure in children treated with GH/GnRHa





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