Effects of growth hormone treatment on glucose tolerance in young adults with Prader-Willi syndrome

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Conclusion

GH treatment has no adverse effects on glucose homeostasis in young adults with PWS

Background

Patients with Prader-Willi syndrome (PWS) are severely at risk to develop morbid obesity and diabetes mellitus type 2 (T2DM). Reports on the prevalence of T2DM vary from 7-50% in adults with PWS.

During childhood, growth hormone treatment (GH) improves body composition, height velocity and mental and motor development, and counteracts the natural course of increasing obesity. Discontinuation of GH after attainment of adult height (AH) deteriorates body composition, which might increase the risk of impaired glucose tolerance and T2DM.

Aim

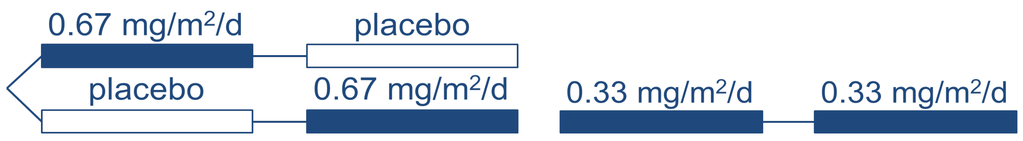
To evaluate the effects of GH versus placebo, and the effects of 2 years of GH treatment on glucose metabolism in young adults with PWS who were treated with GH during childhood.

Participants & Method

I) Two-year, randomized, double-blind, placebo-controlled, cross-over study investigating the effects of 1 year placebo versus 1 year GH (0.67 mg/m2/d ≈ 0.023 mg/kg/d) on glucose tolerance in 27 young adults with PWS who attained AH.

II) prospective open-label study in 16 young adults with PWS during 2 years of GH treatment (0.33 mg/m2/d ≈ 0.012 mg/kg/d).

An OGTT was performed yearly.

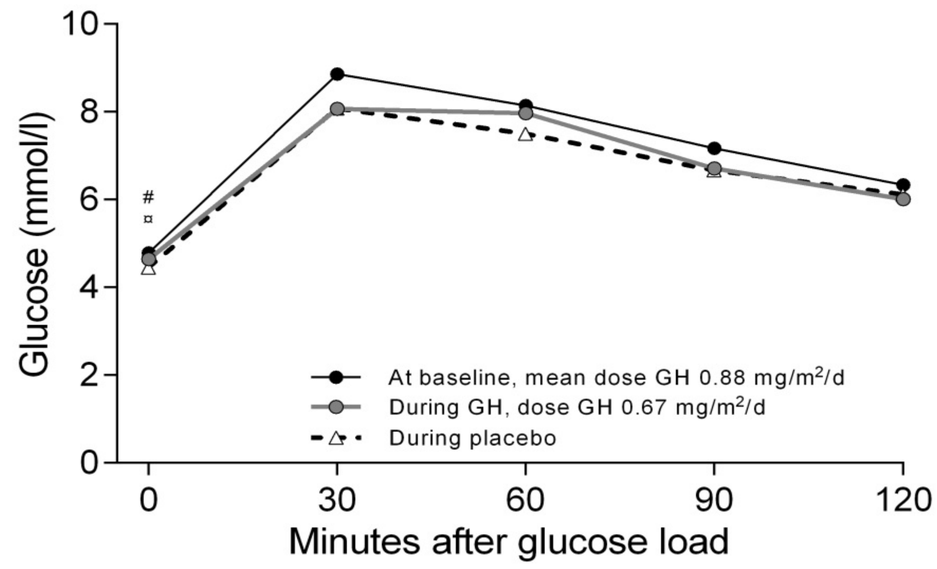


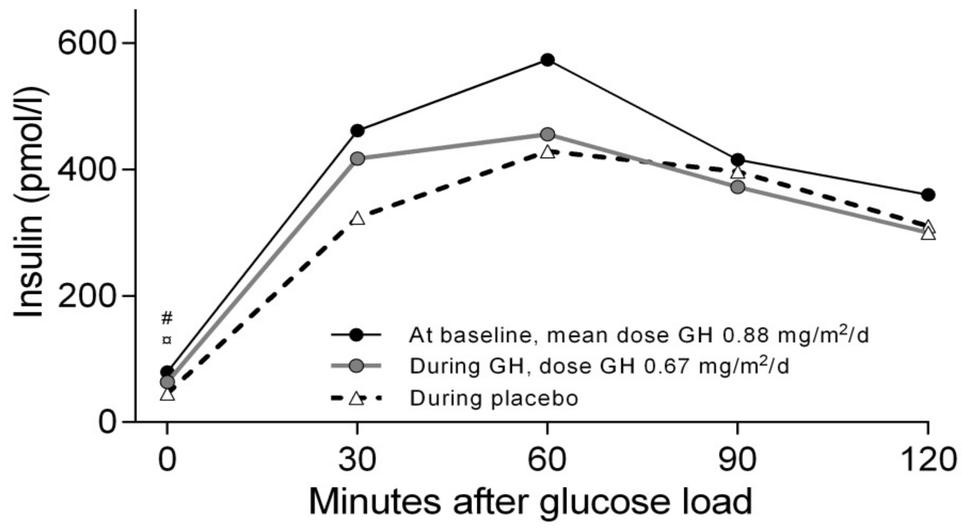
Baseline characteristics

	I) GH vs placebo	II) 2 years of GH
Age (years)	17.2 (1.8)	19.0 (1.9)
Gender (♂ / ♀)	8 / 19	6 / 10
Genetic subtype		
- Deletion	9 (33.3%)	4 (25.0%)
- mUPD	15 (55.6%)	9 (56.2%)
- ICD	2 (7.4%)	2 (12.5%)
- Translocation	1 (3.7%)	1 (6.3%)
Height SDS	-1.3 (0.9)	-1.2 (0.7)
BMI SDS	0.9 (1.3)	1.1 (1.3)
Fat mass percentage	38.0 (10.9)	42.1 (9.3)

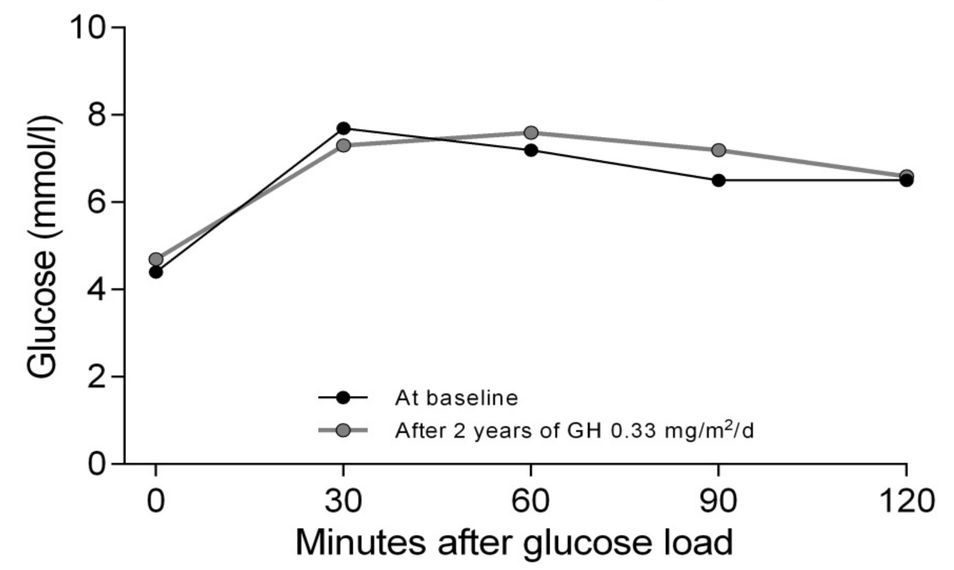
- GH treatment did not affect glucose-stimulated glucose and insulin levels, AUC for glucose and insulin and insulin/glucose ratios.
- Fasting glucose and insulin levels were slightly higher during GH compared to placebo, but stayed within the normal ranges.
- None of the patients developed T2DM during 2 years GH treatment.

I) 1 year GH versus 1 year placebo





II) 2 year open-label GH study



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