Introduction & Aims

✓ Currently, the minimum of the GH peak (pGH) to GH provocative stimuli, including the glucagon stimulation test (GST), has been arbitrary set in children at 7 µg/L, irrespective of gender and age.
✓ It is unclear whether decreases blood glucose after initial increase are related to the GH response.
✓ Several doses (fixed or per bodyweight) and ways of administration (IM or SC) of glucagon are being used in daily practice.
✓ We therefore wanted to explore the influence of gender, age, and adiposity on the pGH after an IM administered maximal dose glucagon stimulation (0.1 mg/kg (max 2 mg)) and the relationship between blood glucose (BG) and GH dynamics.

Patients & Methods

✓ Both auxological and hormonal data of 84 (49 male) slowly growing (growth velocity < P25) children and adolescents (age < 18 years), who underwent a standardized GST in 2013-2014 in two Belgian University Hospitals were retrieved.
✓ In 26 subjects an insulin tolerance test (ITT) had been performed before and in 3 subjects after the GST.
✓ In 11 subjects the GST was performed after priming with sex steroids.
✓ Blood glucose, GH and cortisol was measured at baseline and after 90, 120, 150 and 180 minutes during the GST.
✓ GH was measured in all samples by the IDS-ISYS assay.
✓ Statistical analysis included Mann Whitney U test for comparisons and Spearman Rank test for correlations.

Results

The GST, when performed as a second test in a dose of 0.1 mg/kg bodyweight, is more powerful in releasing GH than the ITT. The pGH after GST is dependent on age in a non-primed condition, but independent of gender or weight status. We propose to use the GST as a first line GH test to avoid the need for a second ITT test, given its higher potency, independency of weight status and low risk of hypoglycemia.