

# Glucagon versus clonidine stimulation for testing growth hormone secretion in children and adolescents: which is better?



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## BACKGROUND

The definitive diagnosis of childhood growth hormone deficiency (GHD) depends on the demonstration of failure to respond to two stimuli. In our center children are allocated to either glucagon-first or clonidine-first according to the preference of the pediatric endocrinologist following the patient. The nursing staff prefer glucagon-first due to patient safety (less pronounced adverse events and faster recovery time). Few studies have addressed which GH stimulation test should be performed first in the evaluation of children with short stature.

## OBJECTIVE

To investigate the diagnostic value of the glucagon test as compared to the clonidine test in short children.

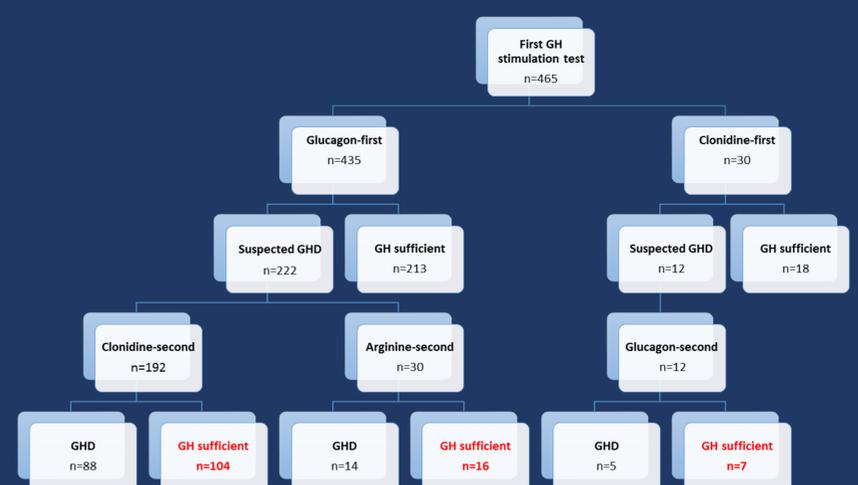
## METHODS

Endocrine nurses performed 1350 stimulation tests (GH, ACTH, LRH, OGTT, water deprivation) in our tertiary pediatric endocrine center during 2015. The primary outcome measures of this retrospective study included prevalence and rate of false positive with glucagon-first as compared to clonidine-first. GH cut-off level was 7.5 ng/ml.

## RESULTS

- The studied cohort was comprised of 465 short children
  - median age 9 years (range 0.8-16 years)
  - 307 (66%) boys.
- Glucagon-first group (n=435) and clonidine-first group (n=30).
- GH stimulation testing is presented in the flowchart.
- Glucagon-first was more often prescribed as compared to clonidine-first (93.5% and 6.5%, respectively,  $P < .001$ ).
- False-positive GH testing was diagnosed in:
  - 27.6% of the children (120/435) in the glucagon-first group as compared to
  - 23.3% of the children (7/30) in the clonidine-first group ( $P = .613$ ).

## Flowchart of GH stimulation testing



GH sufficient: GH  $\geq 7.5$ ng/ml  
suspected GHD: GH  $< 7.5$ ng/ml in one test  
GHD: GH  $< 7.5$ ng/ml in 2 tests

## CONCLUSIONS

Although pediatric endocrinologists more commonly prescribed glucagon as the first test in the evaluation of short children, our preliminary findings do not favor one stimulus over the other as the preferred test in the diagnosis of GHD.

Future prospective studies are warranted to determine which GH stimulation test should be performed first.

