

# DIAGNOSING GROWTH HORMONE DEFICIENCY: CAN A COMBINED ARGININE AND CLONIDINE STIMULATION TEST REPLACE 2 SEPARATE TESTS?



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## INTRODUCTION

- The major problems of GH stimulation tests is their inaccuracy, low specificity and sensitivity, and the significant number of falsely abnormal responses
- Diagnosing GHD in children require stimulation with 2 different pharmacologic stimuli, performed separately
- To improve the accuracy of GH stimulation testing, 2 provocative agents administered simultaneously have been suggested.

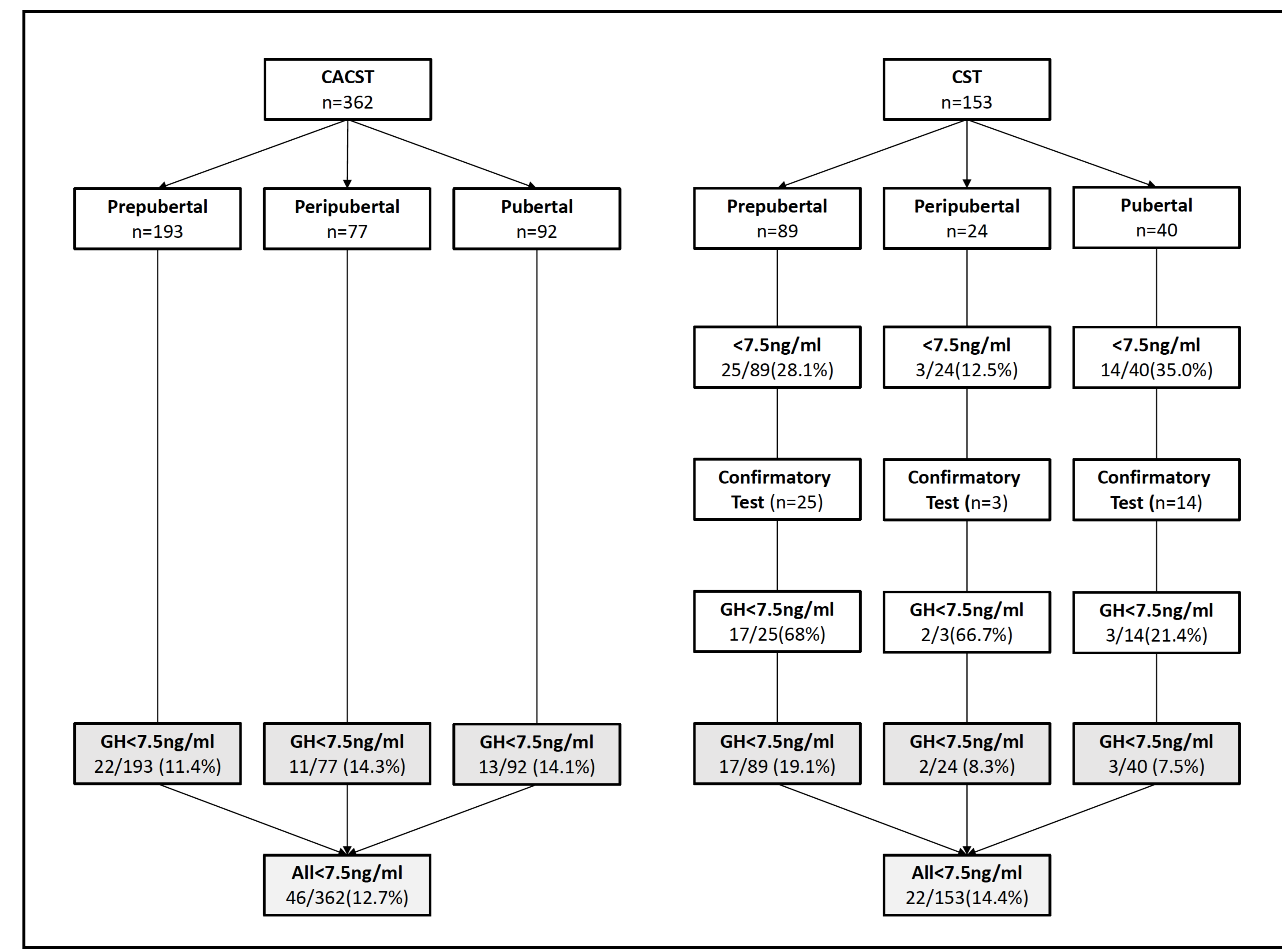
## AIM

- The primary aim of the study was to assess the reliability and safety of a combined arginine-clonidine stimulation test (CACST) in diagnosing GHD
- The secondary aims were to determine whether the CACST's amplitude and the timing of peak GH varied from those of the clonidine stimulation test, and whether pubertal status modified each GH stimulation test result.

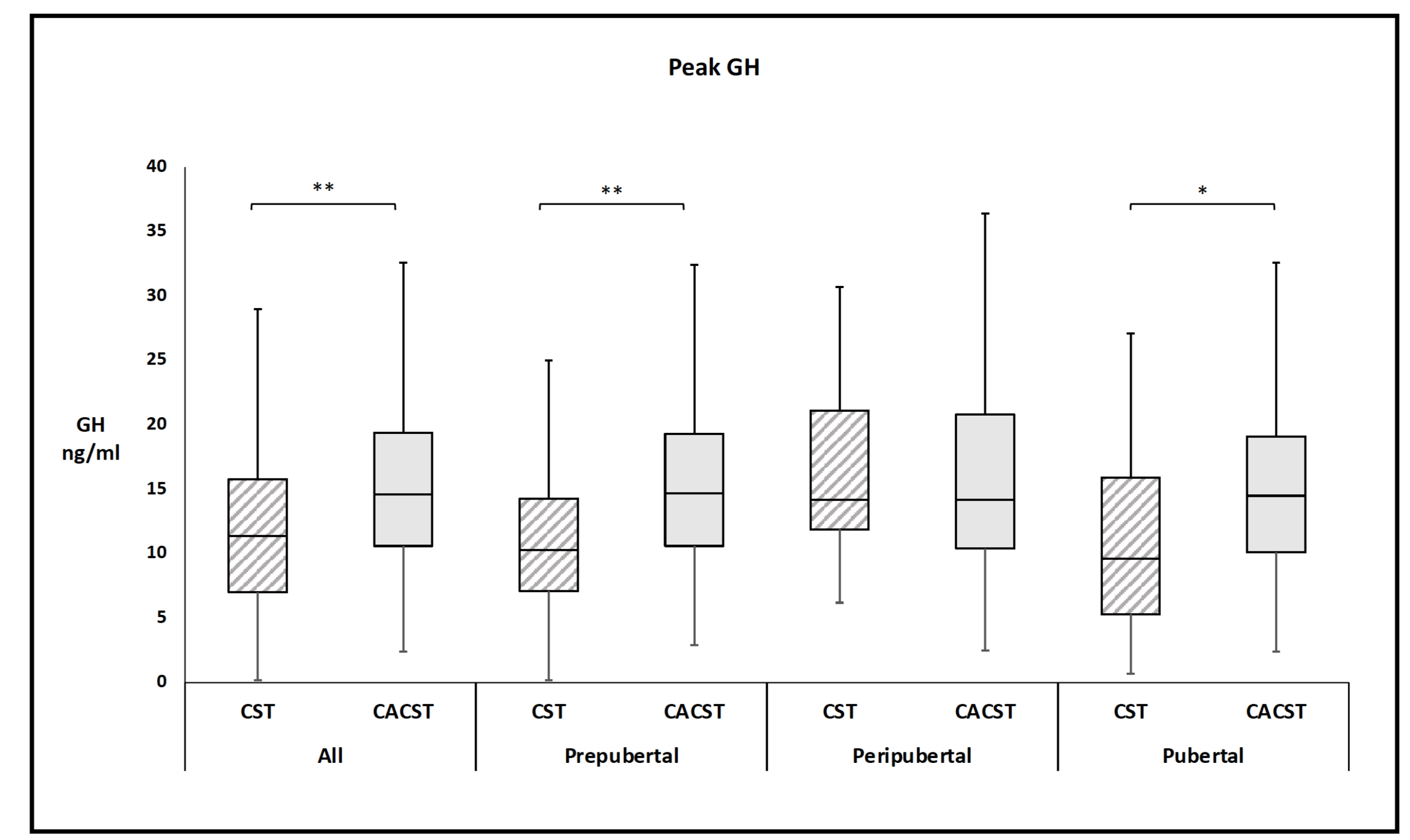
## METHODS

- A retrospective, single-center, observational study
- 515 children aged >8 years underwent GH stimulation tests (combined test [CACST]: n =362 or clonidine stimulation test [CST]: n=153)
- The children were subdivided into 3 subgroups based on their pubertal stage: prepubertal, peripubertal (children who received sex hormone priming) and pubertal.
- Main outcome measures: GH response-sufficiency/deficiency, amplitude and timing of peak GH and safety parameters.

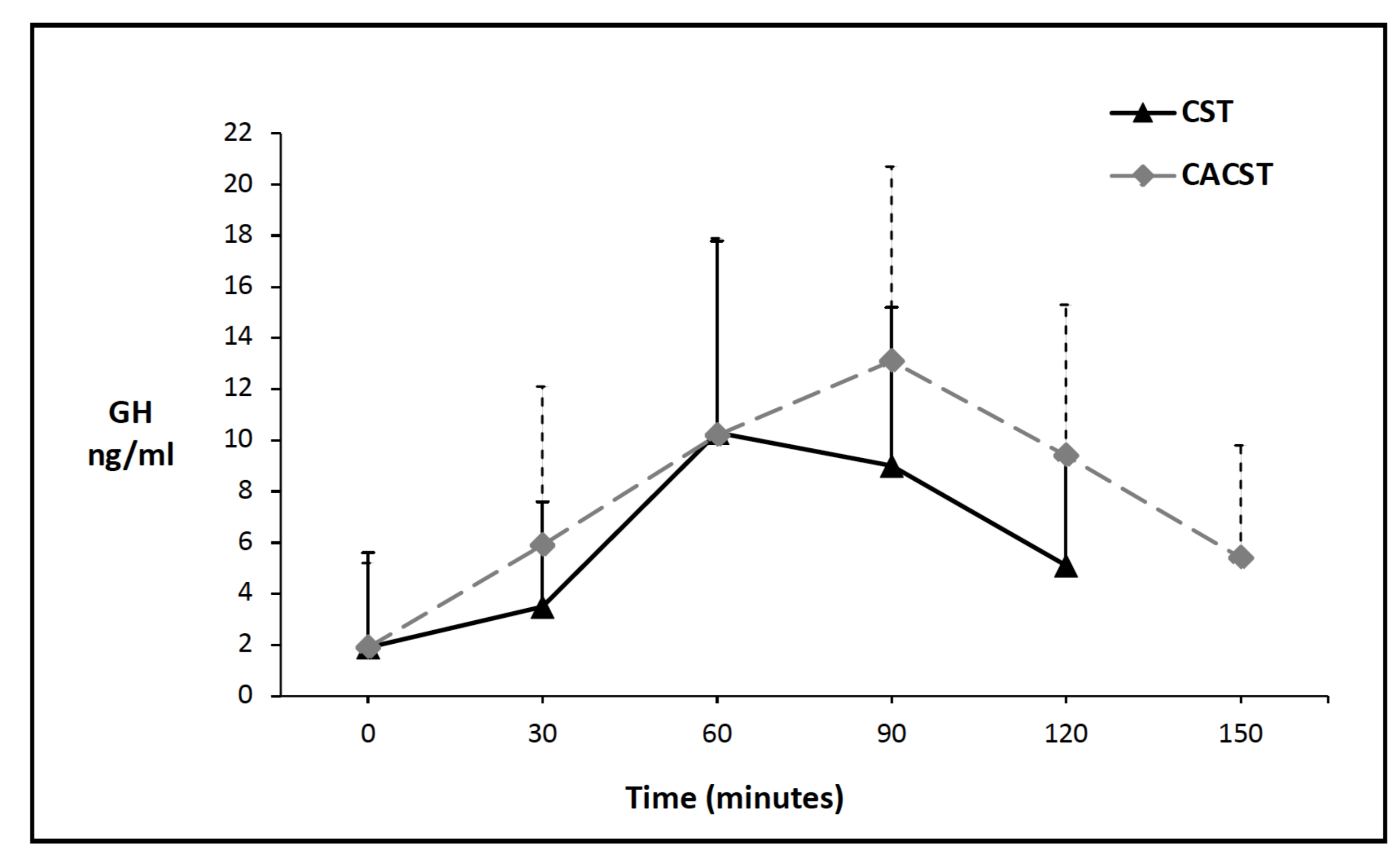
## RESULTS



The study design and GH response to the different GH stimulation tests according to pubertal status. CACST=combined arginine-clonidine stimulation test; CST=clonidine stimulation test; GH=growth hormone.



Peak GH in the CACST and CST-first of the entire cohort and stratified according to the pubertal status. Data are presented as median and interquartile range. \*\*P < .001, \*P < .01. CACST=combined arginine-clonidine stimulation test; CST=clonidine stimulation test; GH=growth hormone.



The pattern of GH secretion in response to CACST and CST-first. CACST=combined arginine-clonidine stimulation test; CST= clonidine stimulation test; GH=growth hormone.

## CONCLUSIONS

- The CACST is consistent in diagnosing GHD in both prepubertal and pubertal children
- The CACST may serve as a single test for evaluating the GH axis in children with short stature
- The additive effect of clonidine and arginine in stimulating GH secretion was demonstrated by the unique dynamics of the combined test
- Adopting the CACST may minimize the stress and inconvenience on children and their parents due to testing on separate days or prolonged sequential testing.
- It may also improve everyday clinical practice by reducing the medical staff's burden and lowering expenses.

## REFERENCE

T. Oron, A. Krieger, M. Yakobovich-Gavan et al., Diagnosing Growth Hormone Deficiency: Can a Combined Arginine and Clonidine Stimulation Test Replace 2 Separate Tests? Endocrine Practice, <https://doi.org/10.1016/j.eprac.2021.08.004>

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