AN ITALIAN SURVEY ON GH STIMULATION TESTS AND THEIR ADVERSE SIDE EFFECTS.

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INTRODUCTION

The diagnosis of GHD requires the coexistence of anamnestic, auxological and laboratory data. The latter are burdened by the poor accuracy and adverse effects of the stimulation tests. A recent european audit (Horm Res Paediatr 2019;92(3):150-156) on GH diagnostic reported as preferred tests in Italy Insulin tolerance test (ITT), glucagon, clonidine, arginine and Arg-GHRH.

AIM

We conducted a survey to explore which tests are most used in Italy and which are the most frequent adverse events.

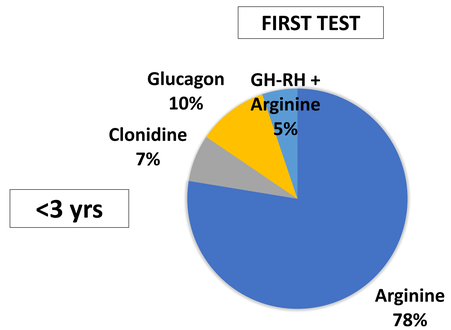
METHOD

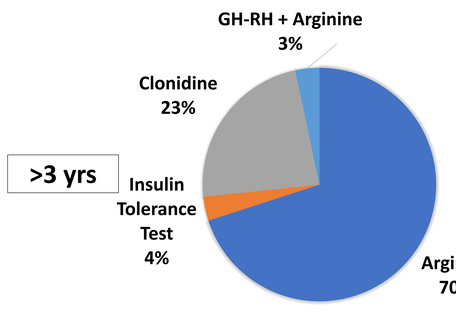
We have proposed an on-line 14 multiple choice questionnaire to 46 pediatric centers of 38 Italian towns to detect the stimuli used for the diagnosis of GHD and the adverse effects observed.

QUESTIONAIRE

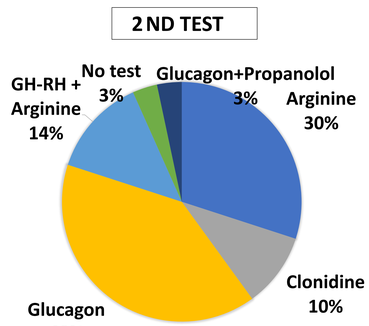
1. How many GH assessment tests are performed in your center each year?
2. In what regimen do you practice the tests?
3. What test do you use as a first GH assessment test in a child under 3 years of age?
4. What test do you use as a second test GH assessment test in a child under the age of 3?
5. What test do you use as the first GH assessment test in a child over 3 years of age?
6. What test do you use as a second GH assessment test in a child over 3 years of age?
7. What test do you use as GH assessment test at retesting?
8. Have you ever observed adverse effects during or after stimulus tests in the past five years?
9. If "YES" during or after which tests?
10. What types of adverse events
11. Have you reported the adverse event?
12. If "YES" to whom did you report the adverse event?
13. Have you observed remote outcomes of the adverse event?
14. If "YES" which ones?

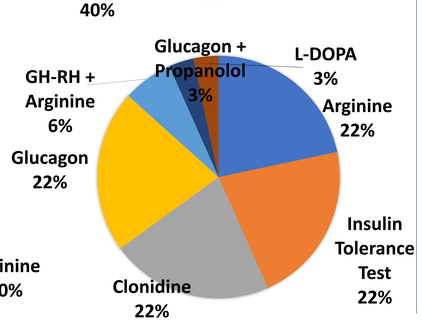
FIRST TEST



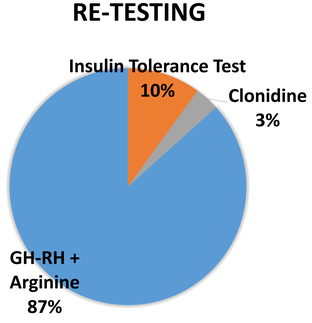


2 ND TEST

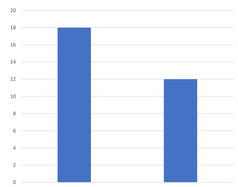




RE-TESTING

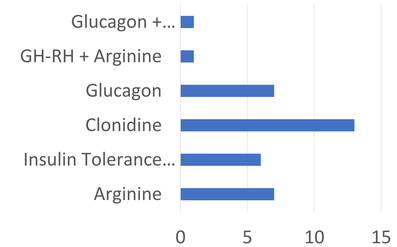


Have you ever observed adverse effects during or after stimulus tests in the past five years?

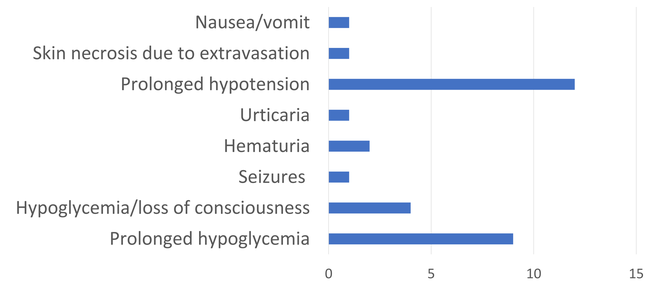


ADVERSE SIDE EFFECTS

DURING OR AFTER WHICH TESTS?



WHAT TYPES OF ADVERSE EVENTS?



RESULTS

30/46 centers answered the questionnaire. 40% of the centers performed more than 100 tests/year and the remaining between 20 and 100 tests/year. The most commonly stimuli used as primary screening were arginine (more than 70% for all ages), glucagon (10% <3-year-old) and clonidine (23% ≥3-year-old). The most commonly stimuli used to confirm GH deficiency were glucagon (40%), arginine (30%) and Arg-GHRH (14%) in <3-year-old children, and Insulin Tolerance Test (ITT) (22%), Glucagon (22%), Clonidine (22%) and Arginine (22%) in older children. The most commonly used stimulus for retesting was Arg-GHRH (87%). The choice of the types of stimulus to be used was independent of the number of tests carried out per year in each center. 18 centers (60%) reported side effects. The most frequent side effects referred to ITT [prolonged hypoglycemia (6) with (3) or without loss of consciousness (3) or seizures (1) reported by 6 centers], arginine [hematuria (3) or extravasation necrosis (2) with keloid outcome (1); reported by 6 centers], clonidine [prolonged hypotension (12) or prolonged sleepiness (1) reported from 13 centers] and glucagon [prolonged hypoglycemia; reported from 6 centers].

CONCLUSIONS

On the basis of the present survey, the most frequently used stimuli for the diagnosis of GHD were arginine, as first test, glucagon as confirming test in < 3 year old children, ITT, Glucagone and Clonidine, with equal frequency, as confirming test in older children and Arg-GHRH as retesting at the end of the therapy. Although all tests for GH secretion assessment have adverse side effects, most centers prefer to avoid ITT due to the hypothetical risk of severe hypoglycemia with loss of consciousness or seizures. Unfortunately there are no reliable data on the real frequency of such adverse events during ITT.

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