Optimal strategy for ovarian function assessment in girls with central precocious puberty before and during GnRH analogue treatment

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BACKGROUND
GnRH analogue (GnRHa) suppresses gonadotrophin secretion in girls with central precocious puberty (CPP); however, the extent of ovarian function suppression under GnRHa treatment has not been evaluated. Inhibin B, produced by granulosa cells in small antral follicles, is regulated by FSH and local factors and reflects follicular ovarian activity.

OBJECTIVE
To evaluate the ovarian acute response in terms of estradiol and inhibin B production to depot GnRH analogue in CPP girls, before and during treatment.

METHODS
CPP girls Naive of treatment

n=11

Depot Triptorelin 3.75 mg
First dose 4 th dose 7 th dose 13 th dose

Assays
LH, FSH and E2: ECLIA, Roche.
Inhibin B: ELISA, Inhibin B Gen II, Beckman Couter Inc.
CVs were <10%
Limit of quantification = 5 pg/mL.

RESULTS

First depot GnRH dose

LH and FSH increased 10 and 5-fold over baseline after 3 h (mean ± SEM): 1.8 ± 2.4 to 22.2 ± 3.9 IU/L and 4.4 ± 1.5 to 19.9 ± 1.9 IU/L, respectively; p<0.001
E2 and INH-B increased 10 and 5-fold over baseline after 24 h (24 ± 8 to 250 ± 42 pg/mL and 53 ± 5 to 263 ± 30 pg/mL, respectively, p<0.001)

During treatment - Ovarian response 24 h after depot GnRHa

E2-24 h during treatment

INH-B-24 h

Correlation between E2 and INH-B levels

Patient LH-3h (IU/L) FSH-3h (IU/L)
#1 24 48.3
#2 3 29.1
#3 29.5 34.6

CONCLUSION
A similar profile of Inhibin B and estradiol levels were observed in CPP patients prior to and after depot GnRH analogue administration reflecting the activation and further suppression of the hypothalamic-pituitary-ovarian axis activity. High Inhibin B and estradiol levels in response to the first dose of depot GnRH analogue, may suggest an increment in the number of granulosa cells and therefore, a marked follicular activity in CPP girls. Sustained GnRH analogue administration induces gonadotrophin suppression and negligible ovarian endocrine activity.

We have nothing to disclose