SERUM PROGESTERONE AS AN INDEPENDENT PREDICTOR OF RESPONSE AFTER GnRH AGONIST TRIGGER

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Background: Routinely, serum LH is often measured within 24 hours of GnRH agonist to assess adequate stimulation of oocyte maturity and a post-trigger LH >15 mIU/ml is considered adequate.

Objective: To determine if post-trigger serum progesterone (P) is a good predictor of oocyte maturity and competency independent of LH.

Materials and Methods: Retrospective study of all patients <45 years of age at a single center from 2016-2023 undergoing autologous ovarian stimulation and using GnRH agonist (4 mg, single dose) compared to GnRH agonist and 2,500 IU Human Chorionic Gonadotropin (HCG) (dual trigger) to trigger oocyte maturation. Cycles with intent to cryopreserve oocytes and embryos were included. Primary outcomes of oocyte maturity rate, fertilization rate, and blastocyst conversion were compared between GnRH agonist and dual trigger cycles using Chi-square test. Pearson correlation and linear regression were used to determine LH and P thresholds of oocyte maturity and blastocyst conversion among GnRH agonist cycles. Exclusion criteria included post-trigger LH <10, stimulation cycles in which patients underwent repeat trigger (GnRH agonist followed by HCG the next day), and stimulation cycles in which > 1 retrieval was performed.

Results: 2,866 GnRH agonist cycle and 10,192 dual trigger cycles were compared with similar average oocyte maturity rate (78% v 77%, respectively, p=0.05), fertilization rate (90% v 90%, p=0.95) and blastocyst conversion per MII oocyte (46% v 47%, p=0.07). There was no correlation between post-trigger LH and oocyte maturity (p=0.07) or blastocyst conversion (p=0.19). Post-trigger P was an independent predictor of adequate response to GnRH agonist (Table) with a linear relationship between P and number of follicles > 13mm on day of trigger described as P ≥0.88 ng/mL per follicle (p=0.60).

Conclusion: Among stimulation cycles triggered with GnRH agonist and post-trigger LH >10, there was no correlation between post-trigger LH and oocyte maturity or blastocyst conversion. Post-trigger P ≥ 0.88 ng/ml per follicle >13 mm on day of trigger was an independent predictor of adequate response to GnRH agonist.

Table

Parameter	N	Outcome
Post-trigger P (ng/mL)	2863	MII Rate (%, MoE)
<8	251	77.1, 5.19
8 - 12	585	79.1, 3.29
13 - 16	577	78.2, 3.37
17 - 20	470	79.8, 3.62
21 – 24	372	76.8, 4.29
25 - 28	236	79.4, 5.15
>28	372	77.9, 4.21
P-value	<0.05	
Post-trigger P (ng/mL)	1186	Blast Rate per MII (%, MoE)
<8	106	37.7, 9.22
8 - 12	254	39.6, 6.01
13 - 16	247	42.3, 6.16
17 - 20	195	43.2, 6.95
21 – 24	145	42.5, 8.05
25 - 28	99	41.1, 9.69
>28	140	38.0, 8.04
P-value	<0.05	