Timing of serum progesterone collection and clinical pregnancy rates in medicated euploid frozen embryo transfer cycles

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OBJECTIVE

- To determine the association between timing of serum progesterone (P4) collection (1–3 days prior to frozen embryo transfer (Pre-FET) vs. day of FET) and clinical pregnancy rate in medicated euploid FET cycles

METHODOLOGY

- Retrospective cohort study of medicated euploid FET cycles at a single academic fertility clinic from January–December 2024
- Patients grouped based on timing of serum P4 collection (Pre-FET vs. day of FET)
- Primary outcome: clinical pregnancy rate (viable intrauterine pregnancy)
- Secondary outcomes: biochemical pregnancy, miscarriage, and ectopic pregnancy rates
- Statistical analysis performed with significance defined as $p<0.05$

RESULTS

- 594 medicated euploid FET cycles performed:
  - 221 had serum P4 collected on the day of FET only
  - 357 had serum P4 collected Pre-FET
  - 16 cycles had no serum P4 levels surrounding FET
- Mean serum P4 and estrogen (E2) levels were higher in the Pre-FET group, whereas endometrial (EM) lining was thicker in the day of FET group **(Table 1)**

Table 1. Baseline characteristics and outcomes of patients undergoing medicated euploid FET cycles

	Day of FET (*n*=221)	Pre-FET (*n*=357)	*p*-value
Mean age, years (range)	36.2 (24.8–48.9)	35.9 (25.4–50.7)	0.54
Mean BMI, kg/m^2 (SD)	27.2 (6.2)	27.0 (6.4)	0.71
AMH (SD)	3.2 (3.0)	2.9 (3.1)	0.31
Reason for infertility, n (%)			0.27
Diminished ovarian reserve	28 (13%)	52 (14%)	
Genetic	7 (3%)	23 (6%)	
Polycystic ovarian syndrome	36 (16%)	51 (14%)	
Endometriosis	7 (3%)	9 (3%)	
Male factor	57 (26%)	90 (25%)	
Recurrent pregnancy loss	3 (1%)	15 (4%)	
Tubal disease	5 (2%)	12 (3%)	
Unexplained	62 (28%)	88 (25%)	
Other	16 (7%)	17 (5%)	
Mean P4, ng/mL (SD)	22.9 (9.6)	25.2 (9.0)	0.0008
Mean E2, pg/mL (SD)	326.8 (283.9)	391.4 (401.5)	0.018
Mean EM lining, mm (SD)	10.2 (2.3)	9.7 (2.2)	0.004
Pregnancy outcome, n (%)			0.15
Clinical pregnancy	107 (48%) P4 inc in 45 (42%)	180 (50%) P4 inc in 52 (29%)	
Chemical pregnancy	21 (10%)	24 (7%)	
Miscarriage	22 (10%)	42 (12%)	
Ectopic pregnancy	0 (0%)	6 (2%)	
Not pregnant	65 (29%)	88 (24%)	
Unknown outcome	6 (3%)	17 (5%)	

RESULTS

- There was no significant association between pregnancy outcome and serum P4 collection on day of FET vs. Pre-FET (p=0.15)
- Logistic regression of clinical pregnancy rate by collection of serum P4 on day of FET vs. Pre-FET did not demonstrate a significantly increased odds of pregnancy in the Pre-FET group (OR=1.26, p=0.18), or in cycles where P4 dose was increased (OR=1.36, p=0.10)
- P4 dose was increased in 172/578 cycles (30%), of which 99 (58%) had intrauterine pregnancies, 9 (5%) had biochemical pregnancies, 18 (10%) had miscarriages, 3 (2%) had ectopic pregnancies, and 43 (25%) were not pregnant

CONCLUSIONS

- Collecting serum P4 levels prior to FET vs. day of FET, and increasing P4 dose based on lower serum P4, was not associated with a higher clinical pregnancy rate
- Further research on clinically meaningful associations of serum P4 timing with FET outcomes is warranted in larger prospective cohorts that include natural cycles

REFERENCES

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