

OUTCOMES OF NATURAL CYCLE FROZEN EMBRYO TRANSFERS WITH LUTEAL PHASE SUPPORT ARE COMPARABLE BETWEEN WOMEN WITH SERUM PROGESTERONE <10 ng/mL AND ≥10 ng/mL

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BACKGROUND

In natural cycle frozen embryo transfers (NC-FET), adequate corpus luteum-derived progesterone (P4) is essential for implantation and early pregnancy maintenance.

Low mid-luteal P4 (<10 ng/mL) the day prior to transfer has been associated with reduced live birth rates (LBR) in cycles without luteal phase support (LPS) (1). However, it remains unclear whether empiric P4 supplementation for LPS can overcome the potential adverse effects of low endogenous P4.

OBJECTIVE

Compare reproductive outcomes of first NC-FET cycles with low serum P4 (<10 ng/mL) versus optimal P4 (≥10 ng/mL), measured the day prior to NC-FET, in cycles involving LPS.

METHODS

Subjects

Patients aged 18–45 undergoing their first NC-FET with LPS over five years at an academic institution.

Exposure

Serum P4 was measured the day prior to transfer, and patients were grouped as P4 <10 ng/mL or ≥10 ng/mL.

Three individuals with P4<10 and two individuals with P4>10 received intramuscular P4, while the remaining utilized vaginal P4 suppositories.

Outcome Measures

Clinical pregnancy (CPR) and live birth rates (LBR) were calculated per transfer.

Sample size

101 patients were included: 55 with P4 <10 ng/mL and 46 with P4 ≥10 ng/mL.

RESULTS

Table 1: Patient Demographics. Data expressed as median (interquartile range), mean ± standard deviation, or n (%).

Characteristic	P4 <10 ng/mL	P4 ≥10 ng/mL	p-value
Age (years)	34.56 ± 5.32	35.78 ± 3.50	0.1569
BMI (kg/m ²)	24.98 [21.36–28.03]	22.93 [21.22–29.52]	0.4647
Serum P4 (ng/mL)	6.55 ± 1.82	12.68 ± 2.22	<0.0001
Estradiol at LH Surge (pg/mL)	263.0 [208.0–345.0]	353.5 [264.0–474.8]	0.0025
Endometrial Thickness (mm)	8.5 [7.5–9.5]	8.4 [7.5–9.5]	0.9878
Recurrent Pregnancy Loss (%)	21.8%	11.4%	0.1921
Embryos Transferred	1.06 ± 0.23	1.09 ± 0.28	0.7180
Embryo Morphology ≥3BB (%)	75%	78%	0.8150
PGT-A Use (%)	45.5%	80.4%	0.0013

Table 2: Route of Progesterone Administration

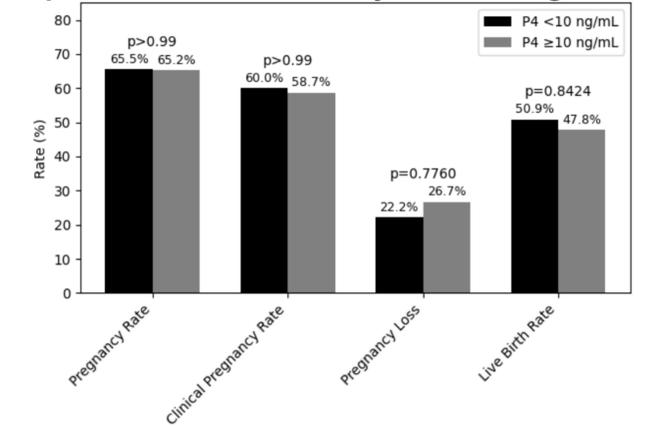
P4 Level	Intramuscular P4	Vaginal P4 Suppositories
<10 ng/mL	3	52
≥10 ng/mL	2	44

Table 3: Timing of Luteal Support

P4 Level	Morning of Transfer	Evening Before Transfer	Day of Transfer	Morning After Transfer	Total
<10 ng/mL	41 (74.5%)	2 (3.6%)	1 (1.8%)	11 (20.0%)	55
≥10 ng/mL	0	0	4 (8.7%)	42 (91.3%)	46

RESULTS

Figure 1: Reproductive Outcomes by Serum Progesterone Level



CONCLUSIONS

In NC-FET cycles with LPS, pre-transfer serum P4 levels (<10 vs. ≥10 ng/mL) were not associated with differences in pregnancy or LBRs. These findings suggest that with LPS, a single pre-transfer P4 measurement may have limited prognostic value.

CITATION

(1) Gaggiotti-Marre S, Álvarez M, González-Foruria I, Parriego M, Garcia S, Martínez F, et al. Low progesterone levels on the day before natural cycle frozen embryo transfer are negatively associated with live birth rates. Hum Reprod. 2020.

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