SERUM PROGESTERONE PRIOR TO AND AFTER FROZEN EMBRYO TRANSFER CYCLES DO NOT CORRELATE WITH LIVE BIRTH RATES IN PROGRAMMED CYCLES UTILIZING INTRAMUSCULAR PROGESTERONE FOR LUTEAL SUPPORT

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OBJECTIVE:

While numerous studies have evaluated the relationship between serum progesterone concentration (P) and pregnancy outcomes in programmed frozen embryo transfer (FET) cycles with vaginal (PV) progesterone replacement, P is higher with intramuscular progesterone (IMP) relative to PV, and it remains unknown whether P correlates with success following programmed FET with IMP. The current study aimed to evaluate the relationship between serum progesterone (P) and live birth rates (LBR) in women receiving IMP in programmed FET cycles.

MATERIALS AND METHODS:

The study included all single, euploid FET cycles at a single academic center from 2014 to 2022. All patients underwent programmed endometrial preparation cycle with IMP replacement. IMP was started at 50mg once daily (QD) and was increased if P was <18 ng/ml at any time during monitoring. The dose was initially increased to 75mg QD and further increased to 100mg QD if P remained <18 ng/ml. If a patient required a dose increase in a prior cycle, then a higher dose was started in the subsequent cycle(s). Serum P was obtained the day prior to FET, two days after FET and at time of pregnancy test. The primary outcome was live birth following euploid
FET. Mixed effects logistic regression model was performed to account for multiple cycles in the same patient for the primary outcome of live birth.

RESULTS:

A total of 4731 cycles from 3343 unique patients were analyzed. The mean serum P and interquartile ranges for the day prior to FET, two days after FET and at the time of pregnancy test were 26.57 ng/ml (19.7 - 32.1), 28.95 ng/ml (22.4 - 34.6), and 28.97ng/ml (22.7 - 34.3), respectively. After adjusting for patient age, body mass index, endometrial thickness, embryo grade, embryo development, number of prior cycles and multiple cycles within the same patient, there was no statistically significant association between serum progesterone and live birth rate at each time interval with p values of 0.617, 0.844, and 0.712 for P the day prior to FET, two days after FET and at the time of pregnancy test, respectively.

CONCLUSIONS:

To our knowledge, this is the largest study evaluating the relationship between P and LBR in programmed FET cycles utilizing IMP replacement. While the study was limited by the varying doses of IMP utilized, it indicates that P with IMP, was generally sufficient and was not associated with LBR. Therefore, routine monitoring prior to and following FET may not be indicated when IMP is used. However, given the retrospective nature of this study, additional prospective studies should be performed to further elucidate the relationship between P and pregnancy outcomes in FET cycles using IMP for luteal support.

IMPACT STATEMENT:

Based on these data, LBR is not likely to be associated with serum P concentration in programmed cycles where IMP is used, given the high P generally achieved with IMP administration for FET. Serum P monitoring may not be necessary after initiation of IMP in programmed cycles. Prospective confirmatory studies are needed to confirm these findings.

REFERENCES:

