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IS LOW SERUM PROGESTERONE THE DAY BEFORE SINGLE EUPLOID EMBRYO TRANSFER CYCLE ASSOCIATED WITH POOR PREGNANCY OUTCOMES DESPITE PROGESTERONE SUPPLEMENTATION?

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OBJECTIVE:

The clinical management of low pre-transfer serum progesterone (P) and its association with pregnancy outcomes remains a topic of debate among reproductive specialists. This study assesses whether the detection of low serum P, amidst exogenous supplementation during a single euploid embryo transfer (SEET) cycle is associated with suboptimal pregnancy outcomes.

MATERIALS AND METHODS:

This study included patients who underwent programmed frozen-thawed SEET cycles between January 2016-March 2024. Patients were grouped based on serum P levels (low P (<18 ng/dL) one day before SEET; low serum P (<18ng/dL) 2 days after SEET; normal serum P (≥18 ng/dL) throughout the cycle. All patients with low serum P increased the dose of P supplementation to 75 mg. Only patients with an intramuscular P supplementation route were included. Baseline characteristics were compared using Kruskal-Wallis. The primary outcome was odds of live birth. Secondary outcomes included odds of biochemical pregnancy, clinical pregnancy, ongoing pregnancy, biochemical loss, and clinical loss. Multiple logistic regression fitted with generalized estimating equations for repeated subjects was used to assess the association between low serum P and outcomes controlling for confounders.

RESULTS:

A total of 6,880 programmed SEET cycles were evaluated. 406 (6.0%) patients with low serum P before SEET and 185 (2.7%) with low serum P after SEET were compared to 6,289 controls. Body mass index (BMI), estradiol at normalized surge, and P at normalized surge were significantly different across groups ($p < 0.0001$). No significant differences were observed in biochemical pregnancy (71.2%, 75.2%, 73.3%), clinical pregnancy (58.7%, 62.9%, 59.9%),

ongoing pregnancy (47.9%, 48.9%, 48.6%), live birth (43.5%, 46.0%, 41.7%), biochemical loss (12.3%,12.1%, 12.9%), and clinical loss (11.3%, 14.0%, 11.6%) rates between the low serum P before SEET, low serum P after SEET, and control groups, respectively. Adjusted analysis for oocyte age, BMI, anti-mullerian hormone (AMH) level, NsrgE, NsrgP, endometrial thickness at transfer, and year of treatment demonstrated a higher odd of biochemical pregnancy with low serum P before embryo transfer compared to controls (aOR1.64, 95% CI 1.12-2.38). Otherwise, no association was shown between low serum P and pregnancy outcomes compared to controls.

CONCLUSIONS:

Supplemental P administration may provide enhanced luteal phase support for patients with low serum P thereby optimizing implantation potential during programmed SEET. Further studies can help elucidate the increased odds of biochemical pregnancy with low serumP4 prior to SEET.

IMPACT STATEMENT:

Patients with low serum P who receive exogenous supplementation during programmed SEET have similar pregnancy outcomes compared to patients with normal serum P.

REFERENCES:

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