

Abstract Details

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Abstract title:

Impact of elevated progesterone on cumulative live birth rates: an analysis of 956 freeze-only cycles

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Study question:

Is late follicular elevated progesterone (LFEP) in the fresh cycle hindering cumulative live birth (CLBR) rates when a freeze only strategy is applied?

Summary answer:

LFEP in the fresh cycle does not affect embryo utilization rate, nor CLBR of the frozen transfers in a freeze only approach.

What is known already:

Ovarian stimulation promotes the production of progesterone (P) which has been demonstrated to have a deleterious effect on IVF outcomes. While there is robust evidence that this elevation produces impaired endometrial receptivity, the impact on EQ remains still a matter of debate. Previous studies have shown that LFEP is associated with hindered CLBR, nonetheless, clinical insight on the effect of progesterone on embryo quality in terms of cumulative live birth rates should be derived from freeze-all cycles where no fresh embryo transfer is performed in the presence of progesterone elevation, and the entire cohort of embryos is cryopreserved.

Study design, size, duration:

This was a matched case-control, multicentre (three centres), retrospective analysis including all GnRH antagonist ICSI cycles where a freeze-only policy of embryos on day 3/5/6 of development was applied between 2012-2018. A total of 956 patients (478 cases with elevated P and 478 matched controls with normal P values) were included in the analysis. Each patient was included only once.

Participants/materials, setting, methods:

The sample was stratified according to the following P levels on the day of ovulation triggering: ≤ 1.5 ng/mL and > 1.50 ng/mL. The matching of the controls was performed according per age ± 1 year and number of oocytes retrieved $\pm 10\%$. The main outcome was CLBR defined as a live-born delivery after 24 weeks

Main results and the role of chance:

The baseline characteristics of the two groups were not significantly different. The estradiol levels on the day of trigger were significantly higher in the elevated P group. There was no significant difference in terms of number of fertilization rate between the two groups. The elevated P group had significantly more cleavage stage embryos frozen compared to the normal P group; while the total number of

cryopreserved blastocyst stage embryos was the same. The CLBR did not differ between the two study groups, (29.1% and 28.0%, $p=0.720$, respectively), also when following confounder adjustment using multivariable logistic regression analysis (accounting for age at pick up, number of fertilized oocytes, progesterone levels, total number of cryopreserved embryos and top-quality embryos).

Limitations, reasons for caution:

This is a multicentre observational study based on a retrospective data analysis. Better extrapolation of the results could be validated by performing a prospective analysis.

Wider implications of the findings:

This is the first study demonstrating that LFEP in the fresh cycle does not hinder CLBR of the subsequent frozen cycles in a freeze only approach.

Trial registration number:

N/A

Keywords:

Progesterone

freeze all

cumulative live birth rate

freeze only