



AMERICAN SOCIETY FOR
REPRODUCTIVE MEDICINE



77th ASRM Scientific Congress & Expo
October 16-20, 2021 // Baltimore, MD, USA

PROLONGED DURATION OF ORAL CONTRACEPTIVE USE IMMEDIATELY PRIOR TO IVF STIMULATION DECREASES BLASTULATION RATE IN GNRH ANTAGONIST CYCLES

Devora Aharon, MD¹, Tamar Alkon, MD, MS, PhD², William J Hanley, BA², Dmitry Gounko, MA², Joseph A. Lee, BA², Alan B Copperman, MD² and Lucky Sekhon, MD²

1. Icahn School of Medicine at Mount Sinai, New York, NY
2. Reproductive Medicine Associates of New York, New York, NY

OBJECTIVE:

Oral contraceptive pills (OCP) are widely used to aid in follicle synchronization and cycle scheduling. Studies remain conflicted regarding the impact of OCP pretreatment on cycle outcomes, with some showing no impact on outcomes, and others showing changes in live birth rate.^{1,2} It is unclear whether the durations of OCP use impacts these discrepant findings. The objective of this study is to determine whether duration of OCP pretreatment impacts controlled ovarian stimulation cycle outcomes.

MATERIALS AND METHODS:

This retrospective cohort study included patients who underwent antagonist cycles with OCP pretreatment from 2016-2021. OCP pretreatment was used within 5 days prior to administered gonadotropins. The association between duration of OCP use with ratio of mature oocytes to eggs retrieved (MII ratio), fertilization rate, and blastulation rate was assessed. Spearman correlation coefficient was used to assess the relationship between baseline demographics and cycle characteristics with OCP duration, and multiple linear regression was used to control for confounders. To determine the most sensitive and specific cut-point for OCP treatment duration that was predictive of blastulation rates (<50% vs. ≥50%), a receiver operator curve (ROC) was generated and Youden Index (YI) was used to determine the most predictive threshold.

RESULTS:

A total of 2126 cycles were identified, with a range of 1-281 days of pretreatment OCP use. Correlation analysis revealed that age, BMI, AMH, days of stimulation, and total gonadotropin dosage were not associated with duration of OCP use. Duration of OCP use was correlated with lower basal antral follicle count (BAFC): $r(1561) = -.09, p=.002$. OCP duration was not associated with number of eggs retrieved or mature oocytes retrieved. Controlling for age and BAFC, duration of OCP use was not associated with MII ratio or fertilization rate. Blastulation rate decreased significantly with longer duration of pretreatment OCP use ($\beta = -0.002 \pm 0.001, p=0.01$). The ROC generated YI demonstrated that more than 17 days of OCP pretreatment was a predictor for blastulation rates <50%.

CONCLUSIONS:

Prolonged pretreatment OCP use did not impact ovarian response, but was correlated with lower blastulation rates.

IMPACT STATEMENT:

Our findings of reduced blastulation rates after prolonged OCP pretreatment may be mediated by changes in egg quality via reduced intraovarian androgen levels due to suppressed luteinizing hormone, as well as overall reduced free androgens due to increased sex hormone binding globulin. These findings may help explain the mechanism for prior findings of decreased ongoing pregnancy



**AMERICAN SOCIETY FOR
REPRODUCTIVE MEDICINE**



and live birth rates in IVF cycles with OCP pretreatment. Further study is needed to confirm these results and clarify whether these findings extend to other stimulation protocols, and to determine the optimal duration of OCP pretreatment to maximize clinical outcome.

REFERENCES:

1. Lu Y et al. Effect of pretreatment oral contraceptives on fresh and cumulative live birth in vitro fertilization outcomes in ovulatory women. *Fertil Steril.* 2020 Oct;114(4)
2. Montoya-Botero P et al. The effect of type of oral contraceptive pill and duration of use on fresh and cumulative live birth rates in IVF/ICSI cycles. *Hum Reprod* 2020 Apr 28;35(4)