2019 Annual Clinical & Scientific Meeting of
The American Congress of Obstetricians and Gynecologist
May 3-6, 2019 ● Nashville, TN

Title:

ESTRADIOL-TO-GONADOTROPIN RATIO AS PREDICTOR OF IN VITRO FERTILIZATION SUCCESS

Authors:

Christopher D. Beyer, MD[1], Dmitry Gounko, MA[2]; Stephanie Pan, MS[1]; Joseph A. Lee, BA[2]; Alan B. Copperman, MD[1,2]; Daniel Stein, MD[1,2]

Affiliations:

1. Obstetrics, Gynecology and Reproductive Science, Icahn School of Medicine at Mount Sinai West, New York, New York, United States
2. Reproductive Medicine Associates of New York, 635 Madison Ave 10th Floor New York, New York, United States, 10022

Introduction:

There are currently no markers that effectively correlate with cycle-specific oocyte yield, euploid embryo yield, and ultimately, in vitro fertilization (IVF) success. We hypothesize that patients with a greater response to gonadotropin stimulation, as demonstrated by the ratio of peak estradiol (E2) level to total dose of gonadotropins (G), will have better odds of achieving a higher yield of euploid embryos than will poor responding patients.

Methods:

Patients who underwent IVF and pre-implantation genetic testing for aneuploidy (PGT-A) from 6/25/2015 to 5/20/2017 were included in this retrospective study. 1,885 cycles were evaluated for peak E2 (pg/ml), total dose of gonadotropins (G, IU), E2/G ratio (pg/ml-IU), and confounders including age, anti-mullerian hormone level (AMH, ng/ml), and body mass index (BMI, kg/m2). The primary outcome was total number of euploid embryos; secondary outcomes were number of retrieved oocytes, mature oocytes, and fertilized oocytes. Odds of additional embryo or oocyte were modeled by multivariable logistic generalized estimating equations.

Results:

Accounting for confounders, E2/G ratio was significantly and positively associated with all outcomes. A 0. 5-unit increase in E2/G above the mean was associated with one additional euploid embryo (odds ratio [OR] 1. 74, 95% CI 1. 53-1. 98, P<. 001), higher counts of oocytes retrieved (OR 3. 13, 95% CI 2. 65-3. 70, P<. 001), mature oocytes (OR 2. 92, 95% CI 2. 43-3. 49, P<. 001) and fertilized oocytes (OR 1. 92, 95% CI 1. 65-2. 24, P<0. 001).

Conclusions:

Optimal stimulation is essential to achieving IVF success. The association between E2/G and yield of euploid embryos may serve as a novel marker and predictive tool for patients undergoing IVF with PGT-A.

Support:

None