

## **27: THE EFFECT OF MATERNAL AGE, ANTI-MULLERIAN HORMONE CONCENTRATION, AND THE RATE OF EMBRYO DEVELOPMENT ON MITOCHONDRIAL DNA QUANTITY IN EUPLOID BLASTOCYSTS**

SETHURAM, RAMYA<sup>1,2</sup>; BRASILE, DEANNA<sup>2</sup>; GOCIAL, BENJAMIN<sup>2</sup>; GLASSNER, MICHAEL<sup>2</sup>; ORRIS, JOHN J<sup>3</sup>; ANDERSON, SHARON<sup>3</sup>

<sup>1</sup>Drexel University College of Medicine, Philadelphia, PA, USA <sup>2</sup>Main Line Fertility Center, Bryn Mawr, PA, USA

### **Objective**

A significant percent of morphologically and chromosomally normal embryos fail to implant, potentially due to embryo stress. Mitochondria, the cellular powerhouse, has been determined to have higher mitochondrial DNA (mtDNA) gene expression in the stressed embryo. This study assessed the effect of the maternal age, anti-mullerian hormone (AMH) concentration, and the rate of growth into a blastocyst on mtDNA expression in euploid blastocysts.

### **Design**

Prospective observational study set at a university-affiliated fertility practice between 2016 - 2018.

### **Material and Methods**

Women aged 21-41 years undergoing preimplantation genetic testing for aneuploidy (PGT-A) after in vitro fertilization were enrolled in the study. Blastocysts of good or fair quality per the Society for Assisted Reproductive Technology (SART) embryo morphology grades were biopsied for PGT-A by next generation sequencing (NGS). 155 blastocysts that were confirmed to be euploid were further tested for mtDNA scores (Mitoscore, Igenomix USA). The cut off points for assigning mtDNA scores were Mitoscore A (MsA) with a mtDNA content 50.58. MtDNA values were compared against the following variables: age of the patient, AMH concentration, and the day of blastocyst biopsy (day 5 versus day 6). MtDNA copy numbers were compared using SPSS version 24 and two-way analysis of variance (ANOVA). Spearman correlations were used for numeric or ordinal associations.

### **Results**

Of the 155 euploid blastocysts studied, 26.4% had MsA, 56.2% had MsB, 17.4% had MsC and none had MsD. Age of the patient, AMH concentration, and the rate (day 5 versus day 6) at which the embryo develops into a blastocyst had no significant effect on the mtDNA values in euploid blastocysts.

### **Conclusions**

In this study, mitochondrial DNA levels were not affected by age, AMH concentration and the rate at which the embryo develops into a blastocyst.

### **Support**

The study was supported by Ferring Pharmaceuticals, Inc