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EVALUATING EMBRYO EUPLOIDY IN IN VITRO FERTILIZATION PATIENTS DIAGNOSED WITH INFLAMMATORY BOWEL DISEASE

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OBJECTIVE:

Inflammatory bowel disease (IBD), including Crohn's disease and ulcerative colitis, is a chronic condition that commonly manifests in patients during their reproductive years. The treatment of IBD through surgical intervention can negatively influence fertility and assisted reproductive technology (ART) outcomes. Complications deriving from IBD such as pelvic inflammation, scar tissue, and adhesion formation could impede implantation, though little is known about the influence of IBD on ploidy (1). This study aims to investigate the potential association between IBD patients and rate of embryo euploidy.

MATERIALS AND METHODS:

This retrospective cohort study assessed euploidy rates in cycles of in vitro fertilization (IVF) patients with a history of IBD undergoing controlled ovarian hyperstimulation (COH) who completed preimplantation genetic testing for aneuploidy (PGT-A) at a single academic fertility center between 2011-2022. Patients were excluded from the study if they had a history of endometriosis, severe male factor infertility, chemotherapy or radiation, or balanced translocations. Patients with IBD undergoing PGT-A were compared with patients without IBD undergoing PGT-A. Cohorts were matched by age, body mass index (BMI), and anti-Müllerian hormone (AMH) levels. The primary outcome was euploidy. Secondary outcomes evaluated the number of oocytes retrieved, fertilization rate, blastulation rate, and aneuploidy. Comparative statistics were performed using chi square and Kruskal-Wallis. A multivariate logistic regression analysis with a generalized estimating equation adjusting for patient age, BMI, AMH, antral follicle count, days of stimulation, and sperm source evaluated the association between IBD and previously mentioned rates. All p-values were two-sided and <0.05 was significant.

RESULTS:

The study evaluated 43 IBD patient cycles and 129 control cycles. IBD patients had significantly more oocytes retrieved (p=0.03), mature oocytes (p=0.02), fertilized oocytes (p=0.01), and blastocysts (p=0.02) when compared to controls. The number of euploid and aneuploid blastocysts were comparable between the groups. Maturation, fertilization, blastulation, euploidy, and aneuploidy rates were also comparable between groups. In a multivariate analysis, it was found that IBD patients did not have lower odds of euploidy nor did they have increased odds of aneuploidy. Furthermore, after multivariate analysis, IBD was not associated with lower odds of oocyte maturation, fertilization, or blastulation.

CONCLUSIONS:

Compared with patients without IBD, patients with IBD undergoing COH with PGT-A had equivalent odds of euploidy. Patients with IBD had significantly more oocytes retrieved, mature oocytes, fertilized oocytes, and blastocysts compared to controls. These findings suggest that patients with IBD are not anticipated to have worse COH outcomes than patients without IBD.

IMPACT STATEMENT:

IBD does not appear to influence embryo ploidy in patients undergoing IVF treatment.

REFERENCES:

1. Sun H, Jiao J, Tian F, et al. Ovarian reserve and IVF outcomes in patients with inflammatory bowel disease: A systematic review and meta-analysis. *EClinicalMedicine*. 2022;50:101517. Published 2022 Jul 1. doi:10.1016/j.eclinm.2022.101517