RELATIVE RISK OF CLINICAL PREGNANCY LOSS BY AGE IN UNTESTED VS PREIMPLANTATION GENETIC TESTED (PGT-A) EMBRYOS

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OBJECTIVE:

PGT-A allows for selection of embryos with the highest reproductive potential. PGT-A can improve pregnancy outcomes per embryo transfer cycle compared to untested embryos, particularly with advancing age. This study attempted to quantify the benefit of PGT-A on reducing clinical pregnancy loss rates (CPLR) by comparing CPLR in untested vs tested embryo transfers and providing the relative risk of CPL with advancing age.

MATERIALS AND METHODS:

The study included single frozen embryo transfers (FET) from January 2016 - December 2022. Cycles were divided: Group 1: FET with a single, untested embryo; Group 2: FET with a single, euploid embryo tested with Next Generation Sequencing. Comparative statistics on oocyte age, BMI, anti-mullerian hormone, antral follicle count, endometrial thickness, number of prior transfers, and embryo quality were performed using Mann-Whitney U and chisquare analysis. Relative risks (RR) of CPL between groups were calculated for each age: < 30, 30-34, 35-36, 37-38, 39-40, 41-42, and >42 years. Multivariate logistic regression fitted with generalized estimating equation was performed to compare the odds of CPL between untested and tested FETs. Secondary outcomes included chemical pregnancy, implantation, biochemical pregnancy, and live birth rate.

RESULTS:

A total of 11,912 cycles met inclusion criteria: 1397 in Group 1 and 10,515 in Group 2. RR of CPL with untested embryos compared to tested embryos increased with increasing age. At 37-38 years, the rate of CPL became significantly higher in untested vs tested embryos (18.0% vs 8.6% X^2 (1, N = 1033) = 5.2, p = .002) with RR of 2.1. In all ages, there was a statistically significant difference in CPLR between untested and PGT-A cycles (11.6% vs 8.5%, p=0.008). A multivariate logistic regression adjusted for all variables, including age, showed significantly higher odds of

CPL in patients who underwent untested FETs (OR 1.81, CI 1.2-2.7, p = .02). Secondary outcomes below.

Rate (%)	Group 1: Untested (n = 1397)	Group 2: PGT-A Tested (n = 10,515)	P value
Pregnancy Rate	65.71	74.9	<.0001
Biochemical Loss Rate	16.78	16.04	0.5641
Implantation Rate	54.69	62.89	<.0001
Clinical Pregnancy Loss Rate	11.57	8.52	0.008
Live Birth Rate	37.94	46.71	<.0001

CONCLUSIONS:

There is a lower rate of CPL in FETs with a euploid embryo compared to FET with an untested embryo. The relative risk of CPL was 1.3 times higher in untested embryos vs PGT-A tested embryos in patients < 30 years old. This increased to 2.1 times higher risk at 37-38 years, and 8.3 times higher risk at > 42 years with untested embryos. Clinicians should appreciate the significance of increased CPLR with untested embryos in patients of all age groups, as its repercussions can be both physical and emotionally taxing to the patient.

IMPACT STATEMENT:

The use of PGT-A is associated with lower odds of clinical pregnancy loss.

REFERENCES:

N/A