DISCORDANT FOLLICLE-STIMULATING HORMONE AND ANTI-MULLERIAN HORMONE AND THE PREDICTION OF EUPLOID BLASTOCYST YIELD.

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OBJECTIVE: To determine the predictive value of discordant (FSH) and anti-M€ullerian hormone (AMH) levels on blastocyst yield and ploidy results during in-vitro fertilization cycles.

DESIGN: Retrospective, cohort analysis of a large database at a single IVF center. Primary outcome: euploid blastocyst yield. Secondary outcomes: number of mature oocytes retrieved, number of fertilized oocytes, total number of usable blastocysts (prior to genetic screening).

MATERIALS AND METHODS: A retrospective cohort of patients who underwent ovarian stimulation and oocyte retrieval followed by trophoblast biopsy for pre-implantation genetic screening from 2012 to the present. The patients were divided into four groups based on their FSH and AMH levels: normal FSH and normal AMH (group A); elevated FSH and normal AMH (group B); normal FSH and decreased AMH (group C); and elevated FSH and decreased AMH (group D). The cutoff values were 12 IU/L for FSH and 1.5 ng/mL for AMH. Outcomes were quantified and compared using ANOVA, with a p-value significance threshold of 0.05. Linear regression was employed to investigate covariates which may have impacted outcome. The most parsimonious model was selected to compare the impact of AMH/FSH levels on the average rate of embryo euploidy when controlling for age.

RESULTS: Of the 3898 patients, 2486 were assigned to group A, 49 to group B, 1137 to group C, and 226 to group D. Average mature oocytes retrieved per cycle were 14.6 _8.2 in group A, 8.8 _4.1 in group B, 7.5 _ 4.4 in group C, and 4.9 in group D (p<0.01). A significant difference in fertilization paralleled the above findings (p<0.01). The percentage of usable blasts were similar for groups B and C but were significant for all other comparisons (p<0.04, P<0.01). In the adjusted linear regression, both groups with an elevated FSH level (B and D) had a lower rate of euploid blastocysts in comparison to group A, no difference was seen in group C. This suggests that FSH is a better predictor of the likelihood of obtaining a euploid blastocyst.

CONCLUSIONS: Values of a low AMH and high FSH are well correlated with diminished ovarian reserve. This is the first study to look at discordant AMH/FSH values as a predictor of embryologic parameters. This data suggests that in patients with discordant values a high FSH is a better predictor of the diminished likelihood of obtaining a euploid blastocyst.
This information may be helpful in counseling patients with diminished ovarian reserve in the prediction of a successful outcome.