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LEVELS OF OXIDATIVE STRESS BIOMARKERS IN FOLLICULAR FLUID OF WOMEN UNDERGOING IVF AND ITS RELATION WITH ART OUTCOME

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Context: Oxidative stress(OS), plays an important role in determining the developmental competence of an oocyte. Levels of OS markers in follicular fluid may affect the ovarian response in In vitro fertilization (IVF) cycles.
Objective: To compare the OS markers in follicular fluid of women undergoing IVF and to correlate them with ART outcomes
Materials and Methods:
Study design: Cross sectional study
Setting: ART center of a tertiary care hospital
Patients: 118 women undergoing IVF over two years were enrolled.
Intervention: Follicular fluid samples from women with PCOS (group I, N=43), tubal factor infertility (group II, N=57) and endometriosis (group III, N=18) were evaluated for OS biomarkers including ROS, total antioxidant capacity (TAC) and (8IP) levels. ROS levels were detected by chemiluminescence, TAC and 8IP by enzyme immunoassay.
Main outcome measures: Ovarian response parameters including total number of follicles, number of oocytes retrieved, oocyte fertilization, embryo cleavage and quality and pregnancy attained .
Results: The mean levels of ROS in the PCOS group were higher as compared to tubal and endometriosis groups (330.51 vs 160.61 vs 156.31 cpm) but were not statistically significant. The levels of TAC (4.48 vs 4.5 vs 6.65 Mm/ul of trolox equivalents) and 8IP (91.89 vs 72.70 vs 107.06 pg/ul) were significantly higher in the endometriosis group (TAC p=0.05, 8IP p=0.001). On correlating with ovarian response, 8IP levels in the tubal group correlated positively with number of follicles (r=0.37 and p=0.009) and oocytes fertilized (r=0.30 and p=0.03) and negatively with oocytes retrieved (r= -0.34,p=0.016) and embryos cleaved (r= -0.29, p=0.03). Also, ROS levels were negatively correlated with number of embryos in the endometriosis group in a significant fashion (r= -0.69, p=0.01). Pregnancy outcome did not correlate significantly with OS markers except 8IP levels which were significantly raised in the miscarriage group in PCOS patients (p value=0.021).
Conclusion: OS may have a significant impact on ART outcomes. Also 8IP is a novel marker which can be used to predict pregnancy loss in the PCOS women. This needs to be evaluated further with a larger sample size across different ethnic groups to gather robust evidence regarding clinical utility of these

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tests in routine ART practice. Also the role of supplementation of anti oxidants in patients undergoing IVF needs to determined.