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Research Article

Cell-Free Nucleic Acid Concentrations in Human Follicular Fluid Undergoing In Vitro Fertilization Treatment.

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Abstract

Introduction: Although assisted reproductive technology (ART) has made significant strides, choosing the most viable embryos for treatment of infertility is still a difficult task. This study looked at whether intra follicular circulating cf. DNA (cell-free DNA) fragments and melatonin levels may be utilized to gauge embryo quality in IVF patients.

Methodology: This work suggests that melatonin concentration and intra-follicular cf. DNA could serve as a novel auxiliary technique to improve non-invasive early prognostic testing for patients having IVF/ICSI procedures.

Results: 895 samples of follicular fluid (ff) were collected from 325 infertile patients undergoing IVF. Patients were treated in the infertility Centre of a tertiary care hospital from August 2017 to December 2018.Each patient's dominant follicles (>18 mm) were harvested.

Conclusion: Patients were treated in the infertility Centre of a tertiary care hospital from August 2017 to December 2018

Key words: nucleic, fertilization, vitro treatment, quality

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Introduction

Methods

895 samples of follicular fluid (ff) were collected from 325 infertile patients undergoing IVF. Patients were treated in the infertility Centre of a tertiary care hospital from August 2017 to December 2018.Each patient's dominant follicles (>18 mm) were harvested of their eggs, and then a non-hematic and clear follicular fluid was extracted Using kits that are easily found on the market, immuno-chemiluminescence was performed to determine the E2 and concentrations of melatonin in each follicular sample. Using ALU-qPCR, the cDNA concentrations in each sample of follicular fluid were determined.

Inclusion criteria:

Participants in the study exhibited no biochemical symptoms of hyperandrogenemia, normal basal FSH levels (8.85 IU/ml), normal sonographic textures in both ovaries, and were undergoing IVF for male infertility (teratospermia,oligospermia, and Asthenozoospermia). In this study, all those women having unexplained infertility were also included.

Exclusion criteria:

Patients with endometriosis following pelvic surgery, ovarian tumors, uterine carcinomas, hyperprolactinemia, metabolic syndrome, polycystic ovary syndrome, or diminished ovarian reserve were also not allowed to take part in the trial.

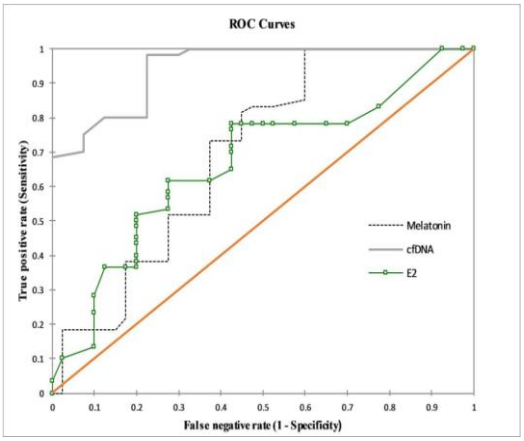

Fig 1: *sensitivity and specificity in a graphical form*

Result and Conclusion

In our investigation, a significant negative correlation between intra-follicular cfDNA and melatonin levels was found (-0.541: P < 0.001).Each individual follicle contains detectable levels of cfDNA [mean: 1.85 2.98 ng/ml (median: 1.86 ng/ml (95% Cl: 0.96-2.87)].Pregnant women had significantly lower levels of cfDNA copy number in follicular fluid samples (ff) collected from mature oocytes compared to immature ones [p 0.01; = -0.42 0.49; median; 1.45 ng/ml (95% Cl: 0.36-2.97) vs. 3.57 ng/ml (95% Cl: 0.37-4.01) respectively].

While the level of melatonin was significantly higher in ff samples linked to mature oocytes than in ff samples linked to immature oocytes (p< 0.001), Furthermore, the level of cfDNA was substantially lower in ff samples from oocytes that develop high-quality vs low-quality embryos in pregnant women [p < 0.001; = 1.81 0.91; median; 1.25 ng/ml (95% Cl: 0.35-1.97)] vs. [(median; 3.65 ng/ml (95% Cl: 1.23-6.36)] respectively. Melatonin levels in non-

pregnant women were also significantly lower in the samples from embryos with a high fragmentation rate (25%) compared to embryos with a low fragmentation rate (< 0.001)..

Conflict of interest: No

Funding Sources: No

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