

23: DEHYDROEPIANDROSTERONE(DHEA) AMELIORATES ABNORMAL MITOCHONDRIAL DYNAMICS AND MITOPHAGY OF CUMULUS CELLS IN POOR OVARIAN RESPONDERS

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Objective

To assess whether DHEA could regulate mitochondrial homeostasis and mitophagy of cumulus cells (CCs) in poor ovarian responders (PORs).

Design

A prospective cohort study (ClinicalTrials.gov Identifier: NCT03438812)

Material and Methods

A total of 68 women who underwent in vitro fertilization (IVF) treatment in the Reproductive Medicine Center of Kaohsiung Veterans General Hospital were included in this study. 28 normal ovarian responders (NORs) and 40 PORs were enrolled. PORs were assigned to receive DHEA supplementation (n=19) or not (n=21) before IVF cycles. Mitochondrial morphology of CCs was staining by mitotracker and using MicroP image analysis. Expression of mitochondrial dynamics and mitophagy-related genes in CCs was determined by Q-PCR.

Results

DHEA prevents mitochondrial function via decreasing the activation of Drp1, Fis1 and Mff, increasing the expression of Mfn1 and Mfn2. Upregulation of Pink1 and Parkin occurred after DHEA treatment, and increased formation of lysosomes. The results showed that DHEA could not only promote mitochondrial mass and DNA copy number but also improve mitochondrial homeostasis and dynamics in the CCs of PORs. We also observed effects with alterations in mRNA known to regulate mitochondrial biogenesis, dynamics and mitophagy in the CCs of PORs.

Conclusions

DHEA may partially prevent mitochondrial dysfunction through regulating mitochondrial homeostasis and mitophagy.

Support

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