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Oral Presentations

O-42

Evaluation of the miR-144 and its candidate target gene expression in cumulus cells and its impact on in vitro maturation of oocyte in patients with polycystic ovary syndrome (PCOS)

Shafienia H[1], Montazeri F[2], Heydari L[3], Khalili MA[3], Sheikhha MH[4], Mazloomzadeh S[5], Biglari A[1].

1. *Department of Genetics and Molecular Medicine, School of Medicine, Zanjan University of Medical Sciences (ZUMS), Zanjan, Iran.*
2. *Abortion Research Center, Yazd Reproductive Sciences Institute, Shahid Sadoughi University of Medical Sciences and Health Services, Yazd, Iran.*
3. *Research and Clinical Center for Infertility, Yazd Reproductive Sciences Institute, Shahid Sadoughi University of Medical Sciences and Health Services, Yazd, Iran.*
4. *Biotechnology Research Center, International Campus, Shahid Sadoughi University of Medical Sciences and Health Services, Yazd, Iran.*
5. *Department of Epidemiology and Statistics, School of Medicine, Zanjan University of Medical Sciences (ZUMS), Zanjan, Iran.*

Email: Biglari63@hotmail.com

Background: Polycystic ovary syndrome (PCOS) is the most common endocrine disorder in women of reproductive age. One of the problems in IVF cycles in PCOS women is predisposing to develop ovarian hyperstimulation syndrome. Therefore, in vitro maturation (IVM) of the oocytes has grown as an alternative treatment. Transcriptomic signatures of cumulus cells (CC) have the potential to serve as valuable non-invasive biomarkers for oocyte competence. Recent studies suggest miRNA involvement in regulating follicular growth, differentiation and development. miR-144 is one of the miRNAs that has been shown to involve in oocyte maturation.

Objective: In this study, the expression level of miR-144 and cyclooxygenase-2 (COX-2) as its candidate target gene was examined in women with PCOS, then its impact on IVM outcome of oocyte was evaluated.

Materials and Methods: A total of 30 cumulus-oocyte complexes with oocyte at GV stage were retrieved from 20 women with PCOS during IVF cycles and cultured in IVM medium for 24 hr at 37°C. After IVM, maturity of oocytes was assessed through morphological criteria and the samples were divided into two groups: matured and unmatured oocytes. The expression level of miR-144 and COX-2 in CCs of each group were detected by qRT-PCR and the relation between the expression level of them and IVM of oocytes was evaluated.

Results: In the 30 retrieved GV oocytes, 18 oocytes (60%) were matured after IVM and placed in matured group, whereas 12 oocytes (40%) could not mature and placed in U group. We found that the expression level of miR-144 was lower (P-value: 0.0008) and the COX-2 mRNA level was higher (P-value: 0.005) in CCs of matured group than in CCs of unmatured group. So, the selected miRNA was related to oocyte nuclear maturation in PCOS women.

Conclusion: We determined that the expression profile of miR-144 and COX-2 were different in CCs isolated from oocytes that could mature after IVM compared with those that could not in PCOS women. Since oocyte competence has an important role in formation of normal zygote and blastocyst, the expression level of this miRNA can be used for predicting oocyte quality before IVM process.

Key words: *Polycystic ovary syndrome, In vitro maturation, miR-144, COX-2, Cumulus cells.*