

## 9<sup>th</sup> Yazd International Congress and Student Award on Reproductive Medicine with 4<sup>th</sup> Congress of Reproductive Genetics

### Oral Presentations

#### O-2

#### Evaluation of the effects of human bone marrow mesenchymal stem cells conditioned medium on growth and maturation of mouse ovarian follicle after vitrification

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**Background:** In vitro culture of isolated follicles of cryopreserved ovaries can be proposed as a fertility preservation method. MSCs secreting various levels of growth factors and are an appropriate option for enriching the follicle culture media.

**Objective:** The purpose of this study was to evaluate the effect of human bone marrow mesenchymal stem cells derived conditioned medium (hBMSCs-CM) on growth and maturation of mouse ovarian follicle, and embryonic development after vitrification.

**Materials and Methods:** hBMSCs were cultured and the collected conditioned medium was concentrated and stored. The collected ovaries from Two-wk-old

mice were divided randomly into vitrified and non-vitrified groups. Preantral follicles of both groups were isolated and cultured in  $\alpha$ -MEM enriched with ITS and FBS supplemented with different concentrations of CM (2.5, 5, and 7.5%) for 12 days. During the culture period, survival rate, follicular maturation, follicular diameter, and levels of 17  $\beta$ estradiol secretion were evaluated. In vitro fertilization and embryonic development were observed after culture.

**Results:** The survival rate, antrum formation, and oocyte maturation were higher in 7.5% CM subgroups than 2.5 and 5% CM in both vitrified and non-vitrified groups. Also, the follicle diameter in 7.5% CM was higher than other subgroups of both groups on day 4. Higher percentages of fertilization and embryo development were seen in 7.5% CM subgroups of the non-vitrified and vitrified group. Also, higher hormone secretion was observed in 7.5% CM subgroup in both vitrified and non-vitrified groups.

**Conclusion:** The present study suggests that the addition of 7.5% CM to mice ovarian preantral follicle culture media enhances follicle growth and oocyte maturation.

**Key words:** Vitrification, Human bone marrow mesenchymal stem cells, Conditioned medium, Follicle.