EFFECTS OF SIMVASTATIN TREATMENT ON VITRIFIED-WARMED MOUSE OVARIAN TISSUE TRANSPLANTATION

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Objective: After the ovarian tissue transplantation, the ischemia-reperfusion injury causes depletion and apoptosis of ovarian follicle. Recent reports stated that simvastatin reduces ischemic damage. Therefore, we used the mouse whole ovarian vitrification and transplantation models to investigate the effects of simvastatin.

Methods: The B6D2F1 mice were randomly assigned to 4 groups. The mice were treated with 5 mg/kg of simvastatin at 2 h before or once daily for 3 or 7 days before ovariectomy and vitrification (2 h, 3 d, and 7 d group, respectively). Same volume of water was treated in the control group. The vitrified ovaries were warmed 1 week later and auto-transplanted. The ovaries were collected at 2, 7 or 21 days after transplantation. Ovarian follicle morphology and apoptosis were assessed by H&E staining and TUNEL assay. Serum FSH level was measured to estimate the transplanted ovarian reserve.

Results: The 2 h group showed significantly higher intact follicle ration at 7 and 21 days among the 4 groups. There was no significant difference among the 4 groups with respect to the apoptotic follicle ratio on 2, 7 and 21 days after transplantation. In most groups, serum FSH levels were decrease as time goes on after transplantation, but there was no statistical difference among the groups.

Conclusion: Our results suggest that simvastatin treatment 2 hours before ovarian tissue vitrification have beneficial effects on ovarian survival and function.