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TITLE

STUDY ON HUMAN OVARIAN TISSUE CRYOPRESERVATION AND XENOTRANSPLANTATION IN NUDE MICE

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ABSTRACT

Objective To study the effectiveness of human ovarian tissue cryopreservation technique by testing the tissue quality in a mouse model.

Materials and Methods 36 BALB/C female nude mice were divided into 3 groups: group 1 (n=12), control group; group 2 (n=12) ovariectomized group; group 3 (n=12), frozen thawed human ovarian tissue transplantation group. Six ovarian tissue samples from three cancer patients were transplanted into the ovarian bursa cavity (OBC), thigh subcutaneous (TS) and neck subcutaneous (NS) of the nude mice and removed 1.5 months and 2.5 months after the transplantation, respectively. The follicular growth rate (GFR), total follicle surviving rate (TFSR), tissue recovery rate (TRR) and antral follicles (AF) were evaluated. Follicle stimulating hormone (FSH), estradiol (E2) and anti-mullerian hormone (AMH) levels were measured.

Results GFR in OBC was significantly higher than in TS ($p < 0.05$); TFSR was 100% in the sites of OBC, NS and TS. TRR in three groups did not differ significantly ($p > 0.05$); AF were found only in OBC; TFSR was 100% after retransplantation, and GFR in 2.5 months after transplantation group was significantly higher than 1.5 months after transplantation group ($p < 0.05$). The level of AMH and E2 in group 1 and group 3 were significantly higher than the level of group 2 ($p < 0.05$); in contrast, FSH was significantly lower.

Conclusions The frozen thawed ovarian tissue transplanted to the nude mice survived and the follicles grew and developed, which verified our human ovarian tissue cryopreservation technique and xenotransplantation was successful. Ovarian fossa site was the best site for transplantation.

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