DOES AUTOLOGOUS TRANSPLANTATION OF CRYOPRESERVED OVARY RESULT IN INDUCTION OF ANTI-OVARIAN ANTIBODIES?

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Objective: Cryopreservation and autologous transplantation of ovary has been recognized as an encouraging technique for preservation of reproductive function and fertility for female cancer patients. Ovarian tissue in human and some laboratory animals has been cryopreserved and autografted for some time, but there are no studies on the immunological consequences following ovarian transplantation. In this study using sheep as a model, we examined whether orthotopic transplantation of cryopreserved entire ovary or ovarian cortical strips can result in antibody formation against ovarian tissue antigens.

Design: Experimental study involving 16 sheep

Materials/Methods: Sixteen adult, non-pregnant merino ewes were included in this study. After perfusion by dimethyl sulfoxide (DMSO), entire ovary (n = 11) or ovarian cortical strips (n = 5) were cryopreserved using a programmable freezer. After thawing these were transplanted back to the same animal and then removed 7-10 days later for further assessment. Blood was withdrawn from all animals, preoperatively, at transplantation and at removal of the transplant. Anti-ovarian antibodies (AOA) in serum were detected by indirect immunofluorescence assay using commercially available slides of monkey ovarian sections and unfixed 5-µm-thick frozen section of sheep ovary as antigen. Following incubation of antigen with diluted serum samples (1:10 in PBS) and fluorescein isothiocyanate conjugated-mouse anti-sheep immunoglobulin, the sections were mounted in PBS-glycerine mixture. The slides examined in a blinded manner under a fluorescent microscope at a X 400 magnification. Both a positive control (antibody positive serum) and a non-serum negative control were included in each experiment.

Results: Ovarian antibody was found only in 1 serum obtained from an intact ovary with occluded vessels at follow up compared to none in the sera obtained preoperatively or at transplantation. This serum was positive both for monkey ovary sections and frozen section of sheep ovary at a dilution of 1/10.

Conclusions: Our data suggest that orthotopic transplantation of entire ovary or ovarian cortical strips do not induce the immune responses against the ovarian antigens. Perhaps long term exposure, rather than short term exposure, will induce the immune response.

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