Kompetentiya kriokonservovanych ootcitiv pilia enukleeatsii yadra t transferu pervogo poliarogogo tila v ooplazmu

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Competence of Cryopreserved Oocytes After Enucleation and the First Polar Body Transfer to Ooplasm
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Paatsyntiki z niz'kim ovarialnym rezervom moyat nevysokiy riven chastoty nastannia vagitnosti. Metod per-
renesensiy pervogo poliarogo tila v citoplazmu donory-
koi yajcekstinyi dae mollyivist' zberigli yadernoi gen-
noty paatsyntiki ta moge byti vikoryiany dli podvyseni-
ykh kolkosti ootcitiv. Proty na raz na vidimom, chto zdatni kriokonservovanyi ootci vidnyolovayati svoiu funkciu pilia rekonsstruirovannya (perrenesensiy pervogo poliarogo tila v ooplazmu).

Mega roboti – vvincheniya kompetentnosti kriokon-
servoirnykh rekonsstruirovannykh ootcitiv do zaplideniia ta zravnitku in vitro.

U roboti doslidzhuvali 60 ootcitiv, otmenykh za infor-
manovano dozodo v 16 paatsyntik zii znichenem ova-
rialnym rezervom (grupp 1) ta 60 rekonsstruirovanykh kri-
okservovanykh donorykh ootcitiv (grupp 2) vdi 11 do-
noriv. Serednii vik jnok sklal (36,4 ± 3,9) ta (28,2 ±
2,4) roky dlia 1 ta 2 vipovidno. Perii poliaris tila z yajcekstinyi paatsyntik gruppy 1 bui perenesen
v poperednyy enukleyovani i kriokonservovany donor-
skii ootci gruppy 2. Donorskie ootci kriokonserv-
vayi za metodom M. Kuwayama. Dla predimplanta-
tsiinoi genyttichnoi skryninu (PGS) vykoistrovay-
iy "Ion S5" (Thermo Fisher Scientific, USA) provodili
bionso trofeksendery na piatu dobu zravntku. Piliya
cho yajcekstinyi kriokonservovayi. Statystichni gipotezy
perervirali za dopomogo kriteryu Shaprio-Ukska i
criteryu x^2-
kvadrat.

U gruppy 1 zaplidiliyo 46 (76,7%) ootcitiv i 45
(75,0%) rekonsstruirovanykh ootcitiv gruppy 2. Kolkist
embrinion na drugui dobu zravntku dorivnivala 41 (68,3%)
ta 49 (81,7%); treeto – 39 (65,0%) ta 47 (78,3%), chettveru –
33 (55,0%) ta 40 (66,7%); pyiatu – 27 (45,0%) ta 30 (50,0%)
u gruppakh 1 ta 2 vippidno. Spivkivishennya sulploidnkh/a
neploidnykh embrioniv u gruppe 1 sklyalo 1:1 (12 sulploidykh
i 12 neploydnykh), u gruppy 2 – 1:2 (8 sulploidykh
i 16 neploydnykh).

Takim chinem, kriokonservovanyi ootci pilia rek-
onsstruktsiya zdatni vidnyolovany svoiu funkciu, ots'kilyi chas-
tota ih zaplideniya ta zaplideniya kriteryia morfokinett-
nichnoi zravntku embrionov in vitro ne v'irozhaliya vidi kont-
rollo. Proty chastota aneploydnykh rekonsstruirovannykh
embrionov pervyishe pokaznih kontroll, chto mozh
byti pov'yanet s problemymi struktury veretena podpil
donorskikh ootcitiv pilia dii faktorov kriokonserv-
vuvany.

The patients with a poor ovarian reserve have a low
incidence of pregnancy. The method of transferring the
first polar body to the donor oocyte cytoplasm makes it
possible to preserve the nuclear genotype of a patient and
can be used to double the number of oocytes. However,
whether cryopreserved oocytes are capable of restoring
their function after reconstruction (the transfer of the
first polar body to the ooplasm) is still unknown.

The purpose of the work was to study the competence
of cryopreserved reconstructed oocytes for fertilization
and development in vitro.

The study included 60 oocytes from 16 patients with
a reduced ovarian reserve (group 1) and 60 reconstructed
cryopreserved donor oocytes (group 2) from 11 donors.
All the procedures were performed with patients’ informed
consent. The average age of women was (36,4 ± 3,9)
and (28,2 ± 2,4) years for groups 1 and 2, respectively.
The first polar bodies from the oocytes of group 1 patients
were transferred to pre-enucleated and cryopreserved
donor oocytes of group 2. Donor oocytes were cryopreserved
using the M. Kuwayama method. For pre-implantation
genetic screening (PGS), Ion S5 (Thermo Fisher Scientific,
USA) was used to conduct a trophoblast biopsy to day 5
of development. Afterwards the blastocysts were cryopre-
served. Statistical hypotheses were checked using the
Shapiro-Wilk test and the x-square criterion.

Group 1 had of 46 (76.7%) fertilized oocytes and in
group 2 45 (75.0%) reconstructed oocytes were ferti-
lized. The numbers of embryos reached the second
day of development were in groups 1 and 2, respectively
equally 41 (68.3%) and 49 (81.7%); for the third one these
were 39 (65.0%) and 47 (78.3%), 33 (55.0%) and 40 (66.7%)
for the fourth day, and for the fifth the numbers were
27 (45.0%) and 30 (50.0%). The ratio of euploid/aneuploid
embryos in group 1 was 1:1 (12 euploid and 12 aneuploid),
in group 2 that was 1:2 (8 euploid and 16 aneuploid).

Thus, cryopreserved oocytes after reconstruction
were able of restoring their function, since the fre-
cquency of their fertilization and the characterization of
morphokinetic development of embryos in vitro did
not differ from the control. However, the frequency
of aneuploidy of reconstructed embryos exceeded the
control index, that may be due to the structure of the
mitotic spindle of donor oocytes after the effect of
cryopreservation factors.