

Clinical pregnancy rates of oocyte donor cycles are similar when universal media and/or oocyte-specific media are used for oocyte vitrification and warming

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Study question:

Did the use of universal vitrification/warming media have an impact on the clinical pregnancy rates in oocyte donation cycles compared with oocyte-specific vitrification/warming media?

Summary answer:

Using universal media for oocyte vitrification and warming yields similar clinical pregnancy rates but higher oocyte survival rates than oocyte-specific media.

What is known already:

Vitrification is now the gold standard for oocyte and embryo cryopreservation. Several commercial kits are available, some are designed for specific cell types (e.g., oocytes, zygotes, cleavage-stage embryos or blastocysts) and others are suitable for several stages, therefore termed “universal”. While the composition and the exposition protocol of stage specific media are optimized for specific cell types, “universal” media display a single composition, therefore exposition protocols need to be adapted to each specific developmental stage to ensure optimal cell survival rates. The potential use of the universal media allows to optimize the management of media in ART laboratories.

Study design, size, duration:

This is a retrospective monocentric study. We compared the results obtained in our center for oocyte vitrification in donor cycles with the successive use of oocyte-specific vitrification/warming media (RapidVit/Warm™ Oocyte, Vitrolife) and afterwards universal vitrification/warming media (RapidVit/Warm™ Omni, Vitrolife). We analyzed 111 oocyte recipient ICSI cycles performed between March 2016 and July 2020 (86 recipient couples) and their 81 corresponding oocyte donation cycles (79 donors) with these media.

Participants/materials, setting, methods:

Oocyte recipient ICSI cycles were divided in three groups depending on the combination of vitrification and warming media used for the oocyte vitrification and warming procedures: “specific/specific” (S/S), “specific/universal” (S/U) and “universal/universal” (U/U). The primary outcome was the clinical pregnancy rate per embryo transfer. Secondary outcomes were the oocyte survival rates, fertilization rates, cleavage and blastocyst rates, live birth and miscarriage rates.

Main results and the role of chance:

The age of the donors (31.7+/-3.6 yo) and the recipients (35.1+/-4.5) was similar for the three groups ($p>0.05$). Total FSH dose was similar for the 3 groups (1814.2+/-505UI) ($p>0.05$)

Clinical pregnancy rates were similar when universal vitrification/warming media were used (25.6% for S/U; 25.8% for U/U) compared with oocyte-specific vitrification/warming media (12.2% for S/S, $p=0.25$). We observed higher oocyte survival rates when universal media were used (93.7% for U/U, 85.5% for S/U) compared with the use of the oocyte-specific media (75.6% for S/S, $p<0.0001$). Fertilization (74.9% for U/U; 68% for S/U; 68.1% for S/S), cleavage (97.9% for U/U; 94.6% for S/U; 89.3% for S/S), and blastulation rates (46.6% for U/U; 50.3% for S/U; 41.7% for S/S) were not different between the three groups ($p>0.05$). There was no difference in miscarriage (6.5% for U/U; 10.2% for S/U; 4.9% for S/S) and live birth rates (19.4% for U/U; 15.4% for S/U; 7.3% for S/S) between the 3 groups ($p>0.05$).

Limitations, reasons for caution:

The preliminary results of this retrospective study need to be confirmed by a larger prospective study.

Wider implications of the findings:

The use of vitrification/warming universal media, which improves the management of media used for vitrification of oocytes and embryos in ART laboratory, allows to obtain similar clinical pregnancy rates for oocyte recipient donors