Talk

Increase of blastocyst rate when environment conditions are improved during handling of human oocytes and pre-embryos in an IVF treatment

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ABSTRACT

Motivation: There is not yet a standardized system of human pre-embryo culture during in vitro fertilization (IVF) treatments and several technical improvements are continually emerging. We have recently performed a study showing better success rates when pre-embryos are culture in group at low oxygen tension (5% O2) in a benchtop incubator instead of individually at atmospheric oxygen tension (20% O2) in a conventional incubator. We have continued this line of research using these updated culture conditions in order to evaluate the efficacy of a new ART station with a closed environment in comparison of an open flow cabinet. This new system keeps a controlled environment maintaining a carbon dioxide (CO2) concentration of 6% and a temperature of 37ºC. The present study aims to assess whether oocyte and embryo handling within a closed station improves the embryo quality (measured as the probability of transferring or freezing an embryo) compared to an open flow cabinet.

Methods: Prospective randomized study performed from 2016 to the present. 57 patients have been included to date, who signed the corresponding consent for the study and met the inclusion and exclusion criteria. During their IVF treatments, pre-embryos were cultured in group at low oxygen in the K-MINC incubator. The population of patients was assigned randomly to the following groups:

- Control group: oocyte and pre-embryo handling was performed inside a conventional open flow cabinet without a controlled environment.
- Study group: Oocyte and pre-embryo handling was performed inside a closed station with a controlled environment: 6% CO2 and 37ºC.

Results: To date, 30 patients have been included in the control group with 301 pre-embryos in total while 27 patients have been included in the study group with 224 pre-embryos in total. Blastocyst rate (67.4% vs. 61.8%, p = 0.18), good quality blastocyst rate (31.3% vs. 25.9%, p = 0.18) and viable blastocyst rate (54.9% vs. 48.2%, p = 0.13) have been higher in the study group compared with the control group. No significant differences were found in the fertilization rate, in the implantation rate or in the clinical pregnancy rate.

Conclusions: Blastocyst rate, good quality blastocyst rate and viable blastocyst rate were increased in more than a 5% when oocytes and pre-embryos were handled in a closed station. However, this improvement is not yet significant and the recruitment of patients must continue.

REFERENCES

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