



BLASTOCYST RATE BETWEEN TIME-LAPSE INCUBATOR AND BENCHTOP INCUBATOR IN IVF-ICSI CYCLES

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INTRODUCTION

Conventionally, embryo assessment has been done by removing embryos from a benchtop incubator daily for development assessment under a light microscope. Even if the observation are performed as fast and efficiently as possible, it will still stress the embryos outside the incubator. Time-lapse systems eased embryo assessment by taking digital images of embryos at frequent time intervals, without taking embryos out from the incubator. The advantages of a time-lapse include the ability to maintain a stable culture environment and to achieve better quality embryos to transfer. This study aims to compare the blastocyst rate between time-lapse incubator and benchtop incubator.

MATERIALS AND METHODS

A retrospective analytical study was conducted in 49 women who underwent IVF-ICSI cycles in Halim Fertility Center, Indonesia from January-November 2019. The oocytes retrieved were examined for metaphase II and fertilized by ICSI. The injected oocytes were then cultured into 2 groups, group 1 was cultured in time-lapse incubator and group 2 in benchtop incubator. The outcome assessed was blastocyst rate. The assessment was done on 116±2h after ICSI.

RESULTS AND DISCUSSION

Based on Table 1 below, the mean number of oocytes retrieved in group 1 and group 2 were 21.00±9.11 and 10.16±3.59, respectively. The mean number of metaphase II oocytes in group 1 and group 2 were 14.54±6.60 and 8.28±2.83, respectively. The blastocyst rate between group 1 and group 2 were 63.31±12.18 and 54.33±20.39, respectively. The result showed no significant difference in blastocyst rate between two groups ($p=0.069$), but group 1 has shown a higher blastocyst rate than group 2.

Table 1. Distribution of parameters between two groups

| Parameter | Time-lapse Incubator | Benchtop Incubator | p value |
|---|----------------------|--------------------|---------|
| Number of Oocytes Retrieved (mean±SD) | 21.00± 9.11 | 10.16±3.59 | |
| Number of Mature Oocytes (MII; mean±SD) | 14.54±6.60 | 8.28±2.83 | |
| Fertilization Rate (mean±SD) | 72.13±15.85 | 83.07±14.67 | |
| Cleavage Rate (mean±SD) | 97.90±4.28 | 97.52±7.12 | |
| Blastocyst Rate (mean±SD) | 63.31±12.18 | 54.33±20.39 | 0.069 |

Sciorio et al. (2017) stated that a slightly higher blastocyst utilization rate was reported in the time-lapse incubator group compared to benchtop incubator, but this was not statistically significant. In another published study by Cruz et al. (2011), they also did not find any significant differences in terms of blastocyst development and pregnancy rate between embryo cultured in a time-lapse incubator and a benchtop incubator. Kirkegaard et al. (2012) and Kahraman et al (2013) also stated no significant difference was found between the time-lapse incubator and benchtop incubator of 4-cell embryos, 7-8 cell embryos, blastocysts as well as in clinical pregnancy rate and implantation rate.

CONCLUSION

The use of time-lapse incubator may increase the blastocyst rate in IVF-ICSI cycle, although it is not significant.

REFERENCE

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