Sample Abstract

Development of Sibling Embryos in Two Culture Media Systems

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Objective: To compare embryo utilization and pregnancy rates in IVF cycles where two media systems were used to culture sibling embryos.

Design: Retrospective study in a private assisted reproductive technology program.

Materials and methods: This study consists of 249 IVF cycles performed during 2007 in which after fertilization check step sibling zygotes were randomly allocated for growth into both Media1 (Good company 1) and Media2 (Good company 2) media systems. Embryos were cultured for 72 hours before embryo transfer. For transfer, best quality embryos were selected regardless of the type of the media used. Remaining good quality embryos were cryopreserved for future use.

Mean number of cells and mean grade for the transferred embryos (Grade 1=0-10% fragmentation, Grade 2=10-25% fragmentation, Grade 3=26-50% fragmentation, Grade 4>50% fragmentation) were compared between Media1 and Media2 groups. Additionally embryo utilization rates (sum of transferred and cryopreserved embryos divided by the total number of embryos) and pregnancy rates were compared between the two groups Fischer's exact test was used to determine statistical significance of study findings, with $p<0.05$ considered significant.

Results: A total of 2121 embryos were generated in 249 IVF cycles. Nine hundred and forty of those embryos were cultured in Media2 media, whereas the remaining 1181 embryos were placed in Media1. In the Media1 group, 433 embryos were selected for transfer, 361 were frozen and 387 were discarded, resulting in 67% embryo utilization rate. In comparison, 215 embryos were transferred, 300 embryos frozen and 425 embryos discarded in the Media2 group for an embryo utilization rate of 55% ($p<0.01$).

In patients under 40 years of age, selection of embryos based solely on their quality resulted in 88 transfers with exclusively Media1 embryos transferred, 22 transfers with only Media2 embryos replaced and 89 transfers with both Media1 and Media2 embryos. Pregnancy rates were 48%, 73% and 44% respectively in these three groups ($p<0.05$). Interestingly, 16 out of 22 patients (73%) in Media2 were less than 35 years of age versus 45% and 43% in Media1 and Media1/Media2 groups, respectively.

Conclusions: Culture in Media 1 resulted in higher embryo utilization rate when compared to Media 2. However, while both systems resulted in high pregnancy rates, some younger patient's embryos seem to have optimal development when placed into Media2 system. These results indicate that effects of culture media can be patient-specific and further studies are warranted to identify optimal media regimens for various patient populations.

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