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Chromosomal analysis by array comparative genomic hybridization reveals high normality of blastocysts that develop from embryos containing multinucleated blastomeres

T. Nakano, Y. Akamatsu, S. Hashimoto, Y. Nakaoka, Y. Morimoto

IVF NAMBA CLINIC, the Centre for Reproductive Medicine and Infertility, Osaka, Japan

OBJECTIVE: Embryos containing multinucleated blastomeres, so called multinucleated embryos are often present even in the good quality embryos, when we perform the morphological evaluation of the embryos under an inverted microscope. Multinucleated embryos have been believed to have highly chromosomal abnormality and result in lower pregnancy rate. On the other hand, multinucleated embryos often develop up to blastocyst stage. And there is a report of giving birth to normal babies by transfer of multinucleated embryo. In this study, the viability of multinucleated embryos was estimated by blastocyst formation, and their chromosome constitutions analyzed by Array Comparative Genomic Hybridization (aCGH).

DESIGN: Clinical study.

MATERIALS and METHODS: Sixty multinucleated embryos intended for disposal without transfer were used after obtaining the informed consent of the patients between May and December 2012. These multinucleated embryos were cultured to the blastocyst stage. Their blastocyst formation rate and the good blastocyst rates in multinucleated embryos were compared to that in embryos without multinucleated blastomeres (non-multinucleated embryos). In addition, 11 blastocysts developing from multinucleated embryos were chromosomally analyzed by aCGH.

RESULTS: The blastocyst formation rate in Day5 and Day6 were 13.3% (8/60), 30.0% (18/60) of multinucleated embryos and 34.9% (22/63), 46.0% (29/63) of non-multinucleate embryos, respectively. The significant difference was found in Day5 blastocyst development. The good blastocyst rate of them was 23.3% (14/60) of multinucleated embryos and 15.9% (10/63) of non-multinucleated embryos. In addition, 10 of 11 good blastocysts from multinucleated embryos showed euploid.

CONCLUSION: In this study, multinucleated embryos have the same viability as non-multinucleated embryos morphologically and chromosomally. These results suggest that multinucleated embryos to grow up to blastocysts are possible to use for embryo transfer.