

4<sup>th</sup> ASPIRE

Osaka, Japan, 2012.08.31-09.02

## **Investigation of optimal timing to perform ICSI for better fertilization and embryonic development**

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It has not been determined which timing to perform ICSI after ovum pick up (OPU) or how long should we wait after sperm preparation to achieve better fertilization rate and subsequent better embryonic development. In the present study, influence of duration from OPU and sperm preparation to ICSI on fertilization and embryonic development was investigated. Total of 369 cycles from January to December in 2011 were analyzed. They were classified into 4 groups according to the duration from OPU to ICSI (A1: < 4, A2: 4-5, A3: 5-6, A4: > 6 h) and the duration from sperm preparation (density centrifugation and swim up) to ICSI (B1: < 4, B2: 4-5, B3: 5-6, B4: > 6 h). Fertilization rate, abnormal fertilization rate, blastocyst rate and good quality blastocyst rate were compared. Over 40 year-old cases (224 cycles) were excluded from the analyses of blastocyst rate and good quality blastocyst rate. Comparison among A1-A4. There was no significant difference in fertilization rates. Significant difference was confirmed in abnormal fertilization rates (A1: 7.0%, A2: 8.2%, A3: 7.3%, A4: 13.3%). Although significant difference was not confirmed in blastocyst rates (A1: 50.3%, A2: 50.3%, A3: 45.8% and A4: 44.8 %), blastocyst rate of longer duration groups (over 5 h) was tended to be lower. No significant difference was confirmed in good quality blastocyst rates. Comparison among B1-B4. There were no significant differences in fertilization rate, abnormal fertilization rate, blastocyst rate and good quality blastocyst rate. Long interval after OPU seems to increase abnormal fertilization rate and decrease blastocyst rate after ICSI. On the other hand, duration after sperm preparation to ICSI did not show any adverse effect on fertilization and embryonic development. Therefore, it is suggested oocytes degrade more rapidly than sperm and ICSI should be performed within 5 h after OPU.