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Oral Presentations

O-53

The influence of single blastomere biopsy on human embryo expansion and pregnancy result

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Background: The use of preimplantation genetic testing (PGT) in fresh and frozen intracytoplasmic sperm injection cycles and the possible damage is still unclear. Studies on aspects of this method, such as the prevalence of expansion on day 5 and pregnancy rate, are limited.

Objective: This study aimed to assess the rate of embryo expansion on day 5 in PGT patients and particular developmental components (expansion stage, inner cell mass, and trophectoderm) of euploid blastocysts influence on pregnancy outcomes.

Materials and Methods: A total of 433 embryos from 115 patients from intracytoplasmic sperm injection with or without PGT using fluorescence in situ hybridization method for X, Y, 13,18, and 21

chromosomes in fresh or freeze cycles between february 2018 and June 2020 was evaluated. The zona pellucida of fresh embryo transfer patients as a control group was untreated. In the PGT group, 6-8 cell embryos on the day 3 with grade A were hatched by laser, and extract one blastomere for PGT. Following evaluation, embryo transfer was done on day 5. Statistical analyzes were performed using SPSS 23 and $p < 0.05$ was considered statistically significant.

Results: In embryos that screened with X, Y, 13,18, and 21 probes in the fresh and freeze PGT cycles, more euploid embryos reached blastocyst with expansion 3, 4, and 5 ($p < 0.001$). Single blastomere biopsy (SBB) in PGT groups increases blastocyst expansion grade, and pregnancy outcomes compare with blastocyst embryos without blastomere biopsy and PGT ($p < 0.01$). Embryos with an expansion grade A compared with C had a higher pregnancy rate ($p < 0.01$). Blastocysts with a trophectoderm and inner cell mass grade of A or B compared with C had a higher likelihood of pregnancy rate ($p < 0.01$).

Conclusion: Among euploid embryos, expansion grade is the best predictor of sustained implantation; however, a composite score of embryo morphology on day 5 may provide additional guidance. Therefore, this investigation shows that the laser zona hatching may positively affect embryo expansion grade and pregnancy rates.

Key words: Preimplantation genetic testing, Zona pellucida, Fluorescence in situ hybridization.