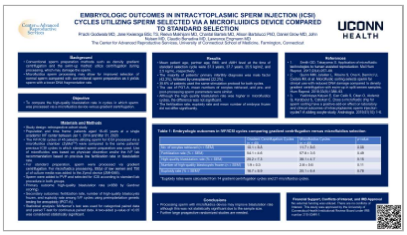
Track: ART - LAB, Assisted Reproductive Technology

Poster Session: ART Lab: Technology

(P-96) EMBRYOLOGIC OUTCOMES IN INTRACYTOPLASMIC SPERM INJECTION (ICSI) CYCLES UTILIZING SPERM SELECTED VIA A MICROFLUIDICS DEVICE COMPARED TO STANDARD SELECTION

Saturday, October 17, 2020 4:30 PM – 6:00 PM



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Objective: Microfluidics sperm sorting allows for improved selection of normal sperm compared with conventional sperm preparation, but blastulation rate after its use has not been studied. We aim to compare the high-quality blastulation rate in cycles in which sperm was chosen via a microfluidics device versus standard sperm selection. **DESIGN:** Single academic IVF center retrospective cohort study. **MATERIALS AND**

Methods: The IVF/ICSI cycles of 45 patients aged 18-46 years between 2014-20 utilizing a microfluidics chamber (ZyMot^{TM}) with ICSI for sperm selection were compared to the same patients' previous ICSI cycles in which standard sperm selection was used. Use of microfluidics was based on physician discretion and/or the IVF lab recommendation based on previous low fertilization rate or blastulation rate. For standard selection, after centrifugation and washing by swim-up method sperm was chosen manually based on motility and morphology. In study cycles, motile sperm were manually selected after traversing through a microfluidics chamber. Primary outcome was high-quality blastulation rate (≥3BB by Gardner scoring). Secondary outcomes included fertilization rate, number of high-quality blastocysts frozen, and euploidy rate among IVF cycles using preimplantation genetic testing for aneuploidy (PGT-A). For paired data, McNemar's test was used for categorical and paired T-test for continuous data. A two-sided p-value of <0.05 was considered statistically significant.

Results: Mean patient age, partner age, BMI, and AMH level at the time of standard selection cycle were 37.3 years, 37.7 years, 25.5 kg/m^2, and 2.5 ng/mL, respectively. The majority of patients' primary infertility diagnosis was male factor (42.2%), followed by unexplained (22.2%). 35.6% of patients used the same stimulation protocol for both cycles. The use of PGT-A, mean numbers of oocytes retrieved, and pre- and post-processing sperm parameters were similar. Although the high quality blastulation rate was higher in microfluidics cycles, the difference was not significant. The fertilization rate, euploidy rate and mean number of embryos frozen did not differ significantly (Table 1).

Table 1: Embryologic Outcomes	Standard Selection Cycles	Microfluidics Cycles	p-value
No. of oocytes retrieved (n ± SEM)	10.1 ± 8.8	11.7 ± 8.6	0.08
Fertilization rate (% ± SEM)	54.1 ± 4.6	57.8 ± 3.5	0.49
High-quality blastulation rate (% ± SEM)	25.2 ± 7.3	38.1 ± 4.7	0.15
Number of high-quality blastocysts frozen (n ± SEM)	1.9 ± 0.3	2.8 ± 0.6	0.11
Euploidy rate (% ± SEM)	16.7 ± 8.9	20.1 ± 6.4	0.78

Conclusions: Microfluidics sperm selection did appear to improve blastulation rate although this was not statistically significant due to the sample size. Further large prospective randomized studies are needed.