TROPHECTODERM BIOPSY FOR PREIMPLANTATION GENETIC TESTING (PGT) FOR SICKLE CELL ANEMIA: SUCCESSFUL OUTCOME IN A DEVELOPING COUNTRY.

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ABSTRACT

OBJECTIVE: Preimplantation Genetic Testing (PGT) for sickle cell anemia in Nigeria: cleavage stage versus blastocyst.

DESIGN: Retrospective Study

MATERIALS AND METHODS: All patients undergoing In-vitro fertilization (IVF) and PGT for sickle cell anemia from April 2011 to February 2017. Embryos were biopsied either on Day 3 (blastomere) (N=18) or Day 5/6 (trophectoderm) (N=16). Laser pulses (ZILOS-tk Laser) perforating the zona pellucida were followed by either blastomere aspiration from a Day 3 cleavage stage embryo or trophectoderm biopsy from a Day 5/6 blastocyst. Embryos were vitrified awaiting subsequent thaw and transfer. After excluding homozygous hemoglobin SS embryos, frequencies of positive hCG, clinical pregnancy, implantation rate and live birth rate were compared between Day 3 cleavage stage embryos (Group A) versus day 5/6 blastocysts (Group B).

RESULTS: Of the 34 patients undergoing IVF-PGT for sickle cell anemia, embryos from 18 underwent Day 3 blastomere aspiration (Group A) whereas embryos from 16 underwent Day 5/6 trophectoderm biopsies (Group B). The mean patient age was 34.4 years for group A and 34.1 years for group B. A total of 131 embryos were biopsied in group A and 106 in group B. Percentages of unaffected embryos (i.e. HB AA and AS) in Groups A and B were 40.5% and 68.0%, respectively. Positive hCG rates were 7.7% versus 60%, clinical pregnancy rates 7.7% versus 20%, implantation rates 3.7% versus 32.1% and live birth rates 3.7% versus 20%, respectively.

CONCLUSIONS

In this developing country, PGT using trophectoderm biopsy for interrogating embryos at risk for sickle cell anemia proved superior to blastomere aspiration at the cleavage stage.

REFERENCES