Pre-implantation Genetic Screening (PGS) Significantly increases Clinical Pregnancy and Implantation Rates following Frozen Blastocyst Transfer

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ABSTRACT

Objectives: To evaluate whether the use of Pre-implantation Genetic Screening (PGS) significantly improve the clinical outcome for IVF patients following FET cycles at Alpha Fertility Centre, Malaysia. **Methods:** Seven-hundred-and-eighty-six (786) patients who had vitrified-warmed blastocysts transferred from July 2013 to December 2016 were analysed. In the non-PGS-group, blastocysts were vitrified without biopsy. In the PGS-group, 2-8 trophectoderm cells were biopsied before the blastocysts were vitrified. PGS was performed using either Micro-array Comparative Genomic Hybridisation (MaCGH) or Next Generation Sequencing (NGS). All blastocysts were vitrified on day 5 and/or day 6; and warmed using the Cryotec method (Cryotech, Japan) for elective FET. The cases were stratified into 5 age groups: <35, 35-37, 38-40, 41-42 and >42. In each age group, number of cases in non-PGS-group and PGS-group were 258 vs 231, 68 vs 67, 60 vs 61, 20 vs 13 and 4 vs 4 respectively. A total of 683 unscreened blastocysts and 487 euploid blastocysts were warmed and transferred in non-PGS-group and PGS-group respectively. All 1170 blastocysts survived post-thaw with morphologically intact inner cell mass and trophectoderm cells (100% post-thaw survival rate). All 1170 blastocysts that had been thawed were transferred. Clinical pregnancy and number of gestational sacs (IUGS) were determined using ultrasound. **Results:** The mean age of patients in each group was similar (p>0.05): non-PGS-group was 32.2 (range 18-44) and PGS-group was 32.2 (range 18-43). The mean number of blastocysts transferred was 1.7 and 1.3 for non-PGS-group and PGS-group respectively (p<0.0001). CPR for PGS-group was significantly higher than non-PGS-group (66.2% vs 55.9%; p=0.0034), particularly in age group 35-37 (71.6% vs 54.4%; p=0.0499) and 41-42 (69.2% vs 20.0%; p=0.0096). Correspondingly, implantation rate (IR) for PGS-group was also significantly higher than non-PGS group (60.2% vs 46.9%; p=0.0001). IR was statistically significant for all age groups more than 34 years old: 35-37(66.7% vs 44.9%; p=0.0032), 38-40(54.1% vs 32.6%; p=0.0069), 41-42(71.4% vs 14.7%; p=0.0003) and >42(75.0% vs 0.0%, p=0.0242). (30.7% vs 55.0%, p=0.0001). **Conclusion:** PGS significantly increases the IR compared with non-PGS cases in frozen blastocyst transfer. PGS also significantly increases the CPR compared with non-PGS cases in frozen blastocyst transfer even with a lower mean number of blastocysts transferred (1.3 vs 1.7).

A 5 Year Review (2010-2014) of Stillbirths from the National Obstetrics Registry, Malaysia

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ABSTRACT

Introduction: In 2014, the World Health Assembly endorsed a target of 12 or fewer stillbirths per 1,000 births in every country by 2030. In Malaysia stillbirth is death of fetus from 22 weeks onwards or 500 grams. **Methodology:** This is a retrospective cohort study over a 5-year period from 1st January 2010 to 31st December 2014. Data was obtained from the National Obstetrics Registry, Malaysia. It is an online data base that captures obstetric data from 14 tertiary hospitals which represents approximately one third of the deliveries in Malaysia. The analysis were performed using Stata Statistical Software. Pearson's Chi-square test for Independence was used to study association between Categorical Data and Categorical Data while Fisher's exact test was used if assumptions of Pearson's Chi-square test for Independence are not met. All probability values were used two-sided and a level of significance of less than 0.05 (p-value < 0.05) was considered as statistically significant. **Results:** During the 5-years duration, there were 654,390 patients registered in the registry. Malays were (74.5%) followed by Chinese (6.4%) and Indian (5.0%). Most patients were 25 to 29-year-old (35.0%) in age group 30 to 34-year-old (25.1%) followed by age group 30 to 34 year-old (25.1%). Mean age for our patients was 28.6-year-old (standard deviation = 5.72). The stillbirth rates from 2010-2014 were 4.1, 5.2, 4.9, 5.0 and 3.9 per 1,000 births. With increasing maternal age and parity the stillbirth rates were higher. Stillbirth rates were higher among babies that were < 1,500 gms, severe preterm (22-<28 weeks) and women of Indian ethnicity. In women with co-morbidities stillbirth rates were higher in women with pre-existing Diabetes and Chronic hypertension as compared to Gestational Diabetes and hypertension. Small for gestational age babies that were severe preterm had the highest stillbirth rate at 44.4 per 1,000 livebirths. **Discussion:** Preconception counselling in women with co-morbidity and improved pregnancy care is important to reduce stillbirths. Women are up to 4 times more likely to have stillbirths if they had a previous stillbirth. Pregnancies after a stillbirth should be closely monitored. Every effort must be taken to prevent preventable stillbirths.