EDITORIAL

Maternal Age, Abortion and Aneuploidy

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Epidemiologic studies demonstrated that fertility begins to decline while women reached age 25. This is due to a decline in oocyte quality such as aneuploidy rather than merely decreasing oocyte number. The decline in oocyte quality becomes clinically relevant for women from their mid-30s. The prevalence of infertility increases from 1% at age 25 to 55% at age 45. While 75% of women attempting conception at age 30 conceive within 12 months, by age 40 this has declined to 44%. Further, 20% of women who conceive at age 35 will have a spontaneous abortion. The monthly fecundity resulting in live-birth rate among women aged 30, 35 and 40 year is 17%, 12% and 5% respectively.[1]

The age-associated decline in female fecundity and increased risk of spontaneous abortion are largely attributable to abnormalities in the oocyte. The meiotic spindle in the oocyte of older women frequently exhibits abnormalities in chromosome alignment and micro tubular matrix composition. Higher rates of single chromatid abnormalities in oocytes, as well as aneuploidy in pre-implantation embryos and ongoing pregnancies, are observed in older women. The higher rate of aneuploidy is a major cause of increased spontaneous abortion and decreased live birth rates in women of advanced reproductive age.[2]

Currently efforts to screen the risk of chromosomal or genetic abnormalities are through pre-implantation genetics screening (PGS) in IVF program.

New technologies for genetics and chromosomal abnormalities screening are based in personal genomics: comparative genomic hybridization (CGH), microarray-based CGH, multiplex real-time polymerase chain reactions (PCR), digital PCR, real time PCR, single nucleotide polymorphism (SNP) and next generation sequencing (NGS). One of today's challenges is to perform multiple analyses on each embryo, not only for multiple mutations, but also for a combination of diagnosis and aneuploidy screening, perhaps thereby creating a broader testing platform that can be used in all patients.[2,3]

References

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