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Incidence of embryonic aneuploidy in different age groups of Saudi population

Objective: Preimplantation genetic screening (PGS) is becoming more frequently employed for detection of aneuploid embryos to prevent transmission of genetic defects. A few cells are micro-surgically removed from the embryo to analyze the DNA, thus selecting embryos with the highest potential for implantation to optimize a woman's chance of healthy live birth and reduce the risk of miscarriage due to chromosomal aneuploidy. The objective of this study was to determine incidence of embryonic aneuploidy in different age groups of Saudi patients undergoing ICSI-PGS cycles at Thuriah Medical Center, Riyadh, Saudi Arabia.

Design: A retrospective study of patients undergoing ICSI-PGS from Jan to Dec 2016 was done.

Materials & Methods: Data from 248 patients undergoing ICSI-PGS were analyzed. The ovarian stimulation, oocyte retrieval, ICSI, PGS, culture and transfer were performed according to standard protocols. All sperm samples were from male partners; 242 fresh ejaculates, four frozen-thawed micro-TESE and two TESA. The embryo biopsies were performed on day-3 and analyzed using fluorescence *in-situ* hybridization with probes for chromosomes 13, 18, 21, X and Y. The total embryos analyzed were 1055 and grouped into normal, abnormal, mosaic and undiagnosed. The patients were grouped into following age categories; <35, 35-37, 38-40, 41-42 and 43-48 yrs. The statistical analyses were performed by SPSS.

Results: The percentages of euploid embryos were; 43, 46, 42, 24 and 28 in <35, 35-37, 38-40, 41-42 and 43-48 year females, respectively (Table 1). The percentages of aneuploidy embryos were; 36, 32, 37, 53 and 54 in these study groups, respectively. The percentages of normal embryos decreased and percentages of abnormal embryos increased significantly in females >41 yrs of age. The

percentage of mosaic embryos was significantly higher in 43-48 year females. The pregnancy rate was 28, 33, 22, 0 and 25 % in <35, 35-37, 38-40, 41-42 and 43-48 years age groups, respectively. In an earlier study of Saudi population conducted in 2013, the abnormal embryos constituted 36 % in women with an average age of 34.9 yrs. In our study the % of abnormal embryos in <35 years age group is similar; however, it increased significantly in women ≥41 yrs. Such data is not available in the previous report.

Conclusions: The embryonic aneuploidy rate is similar until age 40 years, however, it increases significantly in embryos of 41 years or older women.

Speaker Biography

Dr. Javed is Director of ART Laboratories at Thuriah Medical Center, Riyadh, Saudi Arabia. He has been certified by Canadian Fertility and Andrology Society. He is member of Practice Committee and Chair of Certification Committee of American College of Embryology, USA. He is member of many professional societies including American Society for Reproductive Medicine, Canadian Fertility and Andrology Society and European society for Human Reproduction and Embryology. His professional carrier started after obtaining Doctor of Veterinary Medicine Degree in 1981. He earned MS in Reproductive Physiology in 1984. His initial research experiments were in Embryo Physiology of research animals. This was the time when this technology was just beginning in human. In 1986, his curiosity for further knowledge, took him to Washington State University, USA for PhD in Embryo Physiology. He earned PhD in 1990. He had the opportunity to earn 2 post doctorate fellowships; first at Kyoto University, Japan and second at University of Georgia, Athens, USA. At these institutions, he conducted research on *in vitro* fertilization, embryo culture and embryo vitrification. In 1997, he joined Toronto Institute for Reproductive Medicine in Toronto, Canada as Laboratory Manager and served for more than 4 years. In 2001, he was selected by University of Michigan, USA as Senior Clinical Technologist to initiate sperm cryopreservation facility for cancer patients. He was then selected by Toronto Centre for Advanced Reproductive Technology as Clinical Embryologist where he worked for 8 years. In 2010, he took the responsibility of Director ART Laboratories at Astra Fertility Clinic which had 4 locations across Greater Toronto Area. In Oct 2015, he was selected as Director ART laboratories at Thuriah Medical Center, Saudi Arabia. Dr. Javed has extensive research and clinical experience in all aspects of Assisted Reproductive Technology. He has published extensively and has written a book chapter. He implements all measures for best care of sperm, eggs and embryos in the laboratory to achieve high levels of pregnancy.

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