
Keynote Forum November 02, 2017

Embryology 2017



World Congress on

Embryology and In vitro Fertilization

November 02-03, 2017 | Chicago, USA



Juergen Liebermann

Fertility Centers of Illinois, USA

Measurement of success in ART: Single, term and normal birth weight infants born


Today, *in vitro* fertilization (IVF) has become more successful than ever, in regards to implantation rate and live birth rate, since its introduction in 1978. A part of this is due to improvements in culture systems and culture media, but also due to improved training and proficiency of embryologists. During the pioneering years of IVF in humans, overall pregnancy rates per treatment cycle were low. Therefore, to increase the success rate of an IVF cycle, it has become an accepted practice to transfer two or even more embryos per patient, regardless of age or embryo quality, to the uterus. As a result, high-order multiples including twin pregnancies were on the rise. Multiple pregnancies are associated with the increased risk of certain congenital abnormalities and other potential complications, which are attributed to an increase in maternal and perinatal mortality and morbidity, family stress, and increased costs for all parties involved. Patient education is vital for encouraging patients to take an eSET as the only truly effective means to avoid multiple gestations. Support in their decision-making can include being made aware of a successful cryopreservation program of supernumerary embryos, which will help to maintain

high pregnancy rates while improving the health of the resulting live births when performing eSET in good prognosis patients. In this presentation, the author will discuss ways to implement elective single embryo transfer in a clinical setting and demonstrate our more recent data on this matter.

Speaker Biography

Juergen Liebermann is Certified as a High-complexity Clinical Laboratory Director through the American Board of Bioanalysis. He has been working in the field of IVF since 1995. Since 2004 he is the Laboratory Director for Fertility Centers of Illinois (FCI) Chicago/River North Embryology, Andrology and the Endocrinology Lab. He received his Doctoral degree from the Technical University Munich in Bavaria/Germany in 1995 and his Post-doctoral thesis in 2004 qualified him as a University Lecturer in Experimental Reproductive Medicine at the Bavarian University of Wuerzburg, Germany. He has authored numerous papers and contributed more than 15 book chapters in the area of reproductive science. In 2007, he co-authored a book with Michael Tucker titled *Vitrification in Human Assisted Reproduction*. He is a Member of the American Society for Reproductive Medicine, European Society of Human Reproduction and Embryology, Society for the Study of Reproduction, and the American Board of Bioanalysis. He serves also as an Ad Hoc for *Fertility and Sterility*, *Human Reproduction*, *Reproductive Biomedicine Online*, *Reproduction*, *European Journal of Gynecology and Obstetrics and Reproductive Biology*, and *Cryobiology*.

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Murid Javed

Thuriah Medical Center, Saudi Arabia

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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Kaberi Banerjee

Advanced Fertility and Gynecology Center, India

Successful pregnancy outcome in retrograde ejaculation—interesting case report


Retrograde ejaculation is the most common cause for Rejaculatory dysfunction and it accounts for 0.3–2% of male infertility. It is a condition in which no or minimal antegrade ejaculate is produced although orgasm is present and all the sensations of ejaculation may be present. The common etiologies are surgical causes (bladder neck surgery, retroperitoneal lymph node dissection surgery for testicular cancer or prostate surgery), medications (high blood pressure, prostate enlargement and depression) and nerve damage causes (diabetes, multiple sclerosis, Parkinson's disease or a spinal cord injury). In our case report, 22-year-old female presented with primary infertility with regular periods and ultrasound showed polycystic pattern of ovary. Husband semen analysis showed aspermia with history of cloudy urine. The diagnosis of retrograde ejaculation was made. The sperms collected from urine showed low count and motility and IVF

with ICSI was advised. The female became pregnant in first cycle only and ultrasound showed single live fetus.

Speaker Biography

Kaberi Banerjee is a seasoned Obstetrician and Gynecologist with more than a decade of experience in IVF infertility management. She is an infertility and IVF Specialist, trained from the prestigious Guys and St. Thomas Hospital, London, where she went as a commonwealth scholar. She has spent three years in London (UK) and done rigorous training in infertility and IVF. She has worked as Senior IVF specialist in major corporate hospitals in Delhi and performed more than 3000 IVF cycles so far. Her field of expertise includes repeat IVF failures and its treatment, donor and surrogacy procedures. She is currently working as a Clinical Director of Advanced Fertility and Gynecology Center, New Delhi. She has received many renowned national awards, including IMA award in IVF in 2007 and Bharat Jyoti Award in 2008, for outstanding contribution in Medicine. She is the organizing chairperson of CUPART (Current Practices and Recent Advances in ART), an International organization to facilitate right treatment and research in fertility and IVF; founded in the year 2011. She has also been a key speaker in this field in many national and international platforms.

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Keynote Forum November 03, 2017

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Jyh-Cherng Ju

China Medical University and Hospital, Taichung, Taiwan

Histone de-acetylation inhibitors (HDACi) and embryo aggregation enhance development and ntES cell derivation in cloned pig embryos


This study was aimed to improve the efficiency of nuclear reprogramming by treating embryos with HDACi. We investigated the effects of two novel inhibitors, HDACi-14 and -79, at the concentrations of 0, 1, 2, or 4 μM on the development of embryos cloned by the oocyte bisection cloning technique (OBCT). Blastocyst rates of the reconstructed embryos reached 60% in the 2 μM HDACi-14-treated groups, which was higher ($p < 0.05$) compared to the untreated group (36.9%). Similarly, HDACi-79 treatment at 2 and 4 μM also conferred higher ($p < 0.05$) blastocyst rates than that of the untreated group (79.4, 74.2, and 50.0%, respectively). Histone acetylation profile by both HDACi-14 (2 μM) and -79 (2 μM) treatments demonstrated a drastic increase ($p < 0.05$) mainly in two cell stage embryos when compared to the control group. After seeding on the feeder cells, the aggregated cloned blastocysts produced by the HDACi-79 treatment showed a significant increase of primary outgrowths compared to the control group (60.0% vs. 42.9%;

$p < 0.05$). Finally, the cloned embryo-derived ES cell lines from aggregated cloned embryos produced from the HDACi-79/14 treatment and the control groups were established. These novel histone de-acetylation inhibitors can improve blastocyst formation and increase the derivation efficiency of ntES cell lines from the cloned porcine embryos produced *in vitro*.

Speaker Biography

Jyh-Cherng Ju earned his PhD training from Department of Animal Science, Cornell University, New York, USA, in 1998, and then came back to Taiwan to work for National Chung-Hsing University, Taichung, Taiwan. In 2012, he moved to Graduate Institute of Biomedical Sciences, China Medical University (CMU) and the Hospital CMUH, Taichung, Taiwan. He has been working on embryo/animal cloning by somatic cell nuclear transfer, pluripotent stem cells, particularly in domestic species, and thermal impacts on embryo development and germ layer differentiation. He has also established a Core Lab for Stem Cell Research in CMUH to differentiate human, as well as animal, ES cells into three germ layer cell lineages, such as motor neurons, cardiomyocytes and hepatocytes from normal and disease individuals, for research and therapeutic purposes.

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Kingsley Onwuzurigbo

Kingswill Specialist Hospital, Nigeria

Improving success of IUI (intrauterine insemination) by performing procedure after ultrasound scan confirmation of ovulation

Background: Artificial insemination, a simple and cost effective form of fertility treatment (when indicated) is reported to have a low success rate worldwide (less than 20%). Hence, any scientific innovation that could improve on the aforementioned success rate will be well appreciated by both practitioners and couples trying to conceive through this process.

Aim: To evaluate the effect of performing intrauterine insemination after confirmation of ovulation on its success.

Method: An observational study was carried out on 65 consecutive women who underwent intrauterine insemination between March 2015 and October 2016 at Kingswill specialist hospital, Lagos. The procedure was performed after ultrasound scan confirmation of ovulation. All the patients had luteal support with 400 mg of progesterone suppository daily.

Result: 28 out of the 65 patients (43.08%) that underwent the procedure (first cycle) were confirmed pregnant 14 days after the procedure.

Conclusion: Confirmation of ovulation before performing

artificial insemination may be the key in improving its pregnancy rate. This may reduce the number of failed cycles that may eventually require IVF.

Speaker Biography

Dr Kingsley I. Onwuzurigbo MBBS (Lagos). FWACS He graduated from the College of Medicine, University of Lagos in 1998 with a distinction in Biochemistry the first professional examination. He did his internships at the Lagos University of Teaching Hospital. After the compulsory National Youth Service, he worked at Providence Hospital Lagos for years (one of the pioneer IVF Centres in Nigeria)before doing his residency train Obstetrician and Gynaecologist at the Lagos University Teaching Hospital between 2005 and 2012. He had a training in Advanced Infertility Management in India at one of the FOGSI (Federation of Obstetrics and Gynecology Society of India), recognised training centres in Aurangabad under Dr Pandit Palaskar in 2011. He commenced advanced infertility management afterwards spanning ovulation induction with planned relation, artificial insemination and *in vitro* Fertilization. He established Kingswill Specialist Hospital Amuwo Odofin , Lagos state in 2012. He recorded a success rate of 56% in his first year on IVF. His research interest include predicting , preventing and management OF OHSS, role of AFC (ANTRAL Follicle Count) as a single prognostic index in predicting response to ovarian stimulation, Relationship between number of follicles aspirated and number of ovum obtained in an IVF cycle; improving successes in IUI, IVF: Where do we go from where are currently? Any new thing? Making a case for preparing prefertilization genetic diagnosis; prevention of parental to offspring transmission of HIV - can assisted conception be the goal

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