

ROYAN
International Twin Congress



22nd September 1 - 3, 2021
Congress on
**Reproductive
Biomedicine**

17th September 4 - 5, 2021
Congress on
**Stem Cell Biology
& Technology**

September 1- 5, 2021 Tehran- Iran

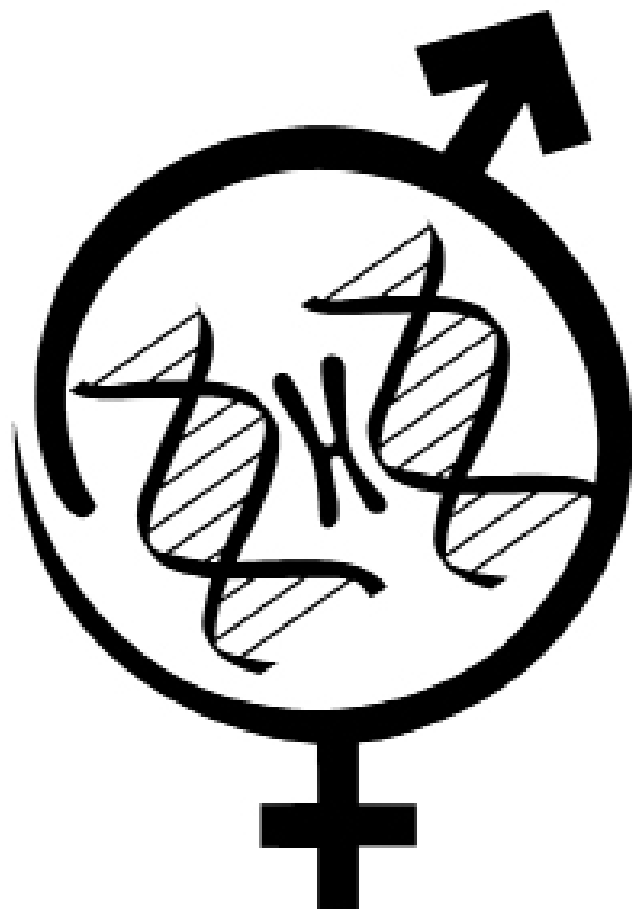
Abstract submission deadline: 5 May 2021

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Abstracts of
Royan International Virtual Twin Congress

22nd Virtual Congress on Reproductive Biomedicine
1-3 September 2021

16th Virtual Seminar on Nursing and Midwifery
2 September 2021



Royan Institute

Reproductive Biomedicine Research Center
Tehran, Islamic Republic of Iran



**Abstracts of the
22st Congress on Reproductive Biomedicine
16th Seminar on Nursing and Midwifery**

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Royan International Virtual Congress (2021)

Congress Chairperson



Marjan Sabbaghian

It is a pleasure to welcome you to the 22nd Royan International Virtual Congress on Reproductive Biomedicine which will be held as a virtual event from 1-5 September 2021. The Royan Annual Meeting provides a forum for the presentation and discussion of cutting-edge science in all areas of Fertility and Sterility.

We are aware that a virtual Congress cannot be equal to a physical one, particularly regarding social interactions, but there are some benefits as well and we will do our best to ensure that it keeps attractive features of the previous Royan Congresses, such as excellent scientific presentations and discussions, poster sessions and workshops. The Congress will feature an impressive number of distinguished scientists presenting key research findings on Andrology, Gynecology, Endocrinology, Embryology and Genetics.

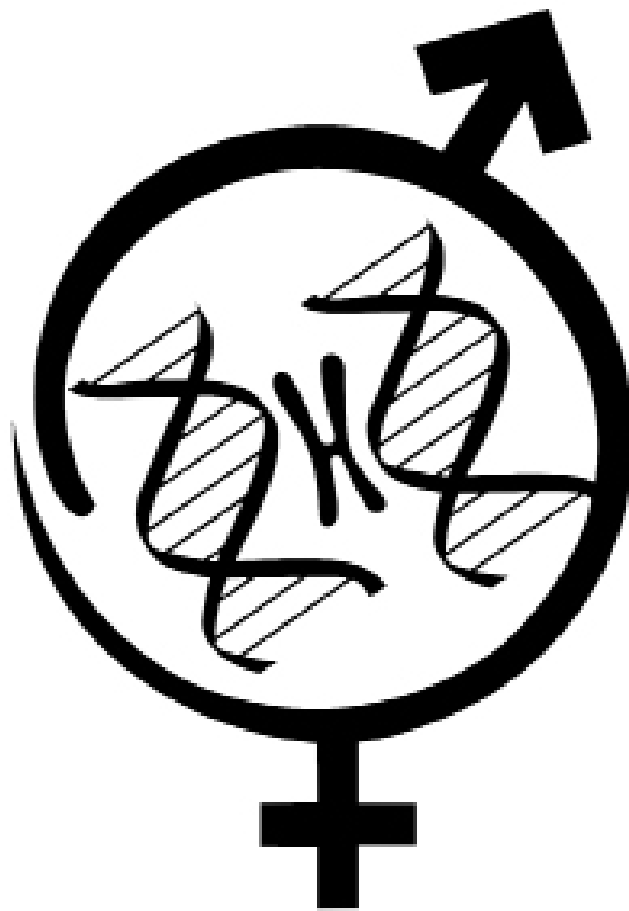
On behalf of the Scientific Committee of Royan congress, I cordially invite prominent and distinguished researchers to attend the 22th Royan reproductive biomedicine congress as invited speakers, the principal investigators, and postgraduate students to participate actively by sending abstracts of their research results or as audience and exchange the latest achievements in various disciplines relevant to congress goals.

I am looking forward to welcoming you to the Royan virtual congress. There is no better time to share knowledge from the comfort of our homes!

**Yours sincerely,
Marjan Sabbaghian, Ph.D
Chairperson of the 22st Royan
Virtual Congress on Reproductive Biomedicine**

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1-3 September 2021



Royan Institute

Reproductive Biomedicine Research Center
Tehran, Islamic Republic of Iran

Invited Speakers

Andrology

I-1: Varicocele and Male Infertility Research: The Search for Answer Continues

Arafa M

Department of Urology, Hamad Medical Corporation, Doha, Qatar
Email: mohamedmostafaarafa@gmail.com

Varicocele effect on male fertility is one of the most studied topics in male infertility, however, it's also one of the most controversial starting with its actual role in infertility and ending by the outcome of varicocele repair on male infertility.

While different pathophysiology theories are proposed to explain the effect of varicocele on semen parameters, new studies are still needed to identify the effect of varicocele at a cellular or even subcellular level and to explain why some men are affected by varicocele while others don't. Controlled genomics, proteomics and metabolomics studies are the only way to unravel this mystery.

The effect of varicocele on routine semen parameters are documented since more than 50 years, however controversies regarding the extent of this effect as well as the effect of varicocele on advanced sperm function tests (sperm DNA fragmentation, oxidative stress tests, sperm capacitation ..etc.) are still needed. Finally, the effect of varicocele repair on male fertility outcome is still debatable with most physicians recommending it in different male infertility scenarios while others are skeptical regarding it. This controversy is mainly due to lack of enough data on effect of varicocele repair on natural pregnancy and live birth rate. Also, predictors of fertility improvement following varicocele repair still need more research.

Therefore, varicocele and male infertility, after more than 70 years of extensive research will still be the subject of choice for many researchers to try to sufficiently answer all the questions.

I-2: Andrological Consequences of COVID-19

Corona G.

Unit of Endocrinology, Department of Medicine, Unit of Medicine, Azienda USL, Maggiore-Bologna Hospital, Bologna, Italy
Email: jcorona@libero.it

The expression at the testicular level of the enzyme angiotensin-converting enzyme 2 (ACE2), the receptor of the spike protein of the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV2), and of the Trans-Membrane Serine Protease 2 (TMPRSS2), an androgen-dependent protein supporting the binding of SARS-COV2 to its cellular receptor, has raised great concern since the beginning of the pandemic for the possible long-term negative andrological consequences of males affected by Coronavirus Disease 2019 (COVID-19). The available evidence produced so far, is still conflicting, but essentially confirms the position of the Italian Society of Andrology and Sexual Medicine (SIAMS), excluding the possible presence of SARS-COV2 in seminal fluid and its transmission through sexual intercourse, outside the acute phase of the disease. However, the possible localization of the virus in the male reproductive system, at least during the acute phase of the disease, suggests the need for close monitoring of affected patients to exclude possible future andrological consequences. Accord-

ingly, preliminary data supported possible long-term negative consequence on semen and hormonal parameters in patients affected by COVID-19. Therefore, the anti-COVID19 vaccination remains the only preventive strategy for the general and andrological well-being of the individual. Unfortunately, the safety trials of the various vaccine formulations currently available have not been designed to evaluate the effects on the male sexual and reproductive sphere. American epidemiological data suggest that one of the main causes of hesitation related to the vaccination campaign in the male population of childbearing age is linked to the lack of clear information regarding the possible negative effects on fertility. Emerging evidence supports, a neutral effect on semen parameters at least of the mRNA derived COVID-19 vaccines.

I-3: Controversies in Varicocele Management: Rational Approach to Varicocele Associated Azoospermia

Saleh R

Department of Dermatology, Venereology and Andrology, Faculty of Medicine, Sohag University, Sohag, Egypt
Email: salehr2010@yahoo.com

The influence of varicocele on testicular function is variable, leaving it apparently unaltered in some cases, and causing partial or total damage of spermatogenesis in others. Clinically palpable varicocele is diagnosed in up to 10% of infertile men with non-obstructive azoospermia (NOA). The patterns of testicular biopsies in infertile azoospermic men with varicocele include hypo-spermatogenesis, Sertoli cell-only histology, and maturation arrest. The last two decades have witnessed a growing interest in the management of varicocele-associated NOA, particularly in light of the great advances in assisted reproductive technologies (ART). Researchers have focused upon testing the efficacy of varicocele repair (VR) in enhancing sperm recovery in the ejaculate and evaluating the outcome of ART in this selected category of infertile men. The professional societies such as the American Urological Association (AUA), the American Society for Reproductive Medicine (ASRM) does not advise against treating varicocele prior to sperm retrieval in cases of NOA associated with varicocele; but they recommended declaring to the patients the lack of evidence supporting such treatment. Important factors to be considered before deciding VR in the patients with NOA include the potential for sperm retrieval from the testis, sperm recovery in the ejaculate, the cost-effectiveness, the time-lapse from surgery to resuming sperm production, the likelihood of reversal to azoospermia after surgery, and the female age.

Keywords: Infertile Men, Non-Obstructive Azoospermia, Varicocele

I-4: Varicocele Repair: Controversies & Recommendations

Shah R

Research Centre of Lilavati Hospital & AMP, Mumbai, India
Email: rupinurvashishah@gmail.com

Despite extensive research the clinical utility and indications for varicocele surgery remain disputed. In this talk we will examine three common clinical situations and make clinical recommendations based on current research.

Scenario-1: Young couple, short trying time, oligoasthenozoos-

spermia, clinical varicocele. Interested in natural pregnancy. Questions: to what extent will varicocele surgery improve their odds; will the decision be affected by grade of varicocele, severity of OAT, duration of infertility?
Scenario-2: Couple in early thirties, oligoasthenospermia, grade 3 varicocele, wanting to go in for IVF.
Question: should they be advised to correct the varicocele before undergoing IVF or can they proceed directly for IVF; is there any benefit to correcting a varicocele prior to IVF?
Scenario-3: Couple in their early 30s, cryptozoospermia, grade 2 varicocele.
Question: is varicocele ligation of any value in such a case or should the lab focus on freezing rare sperm and doing ICSI with that?

I-5: Imaging in Varicocele

Vosough Taghi Dizaj A, Pahlavan F

Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran
Email: vosough@royaninstitute.org

Overall male factor is responsible for approximately 50% of infertility in the infertile couples, during the reproductive age. Varicocele, which is defined as an abnormal dilation in the pampiniform plexus veins, is considered as one of the most prevalent causes of primary or secondly infertility. In order to better describe and detect the varicocele and its risk factors, it is essential to acquire enough knowledge in terms of anatomy, blood circulation and vein drainage of the testes. Additionally, provided that we know the risk factors related to the abnormal drainage of veins in the testes, we might be able to prevent such a reproductive threatening abnormality. An equipped device, which is able to assess and record the main indexes of the veins, namely exact diameters of veins, intensity and direction of the blood, is needed for detecting and grading of the varicocele. Moreover, an experienced sonographer who is familiar with the anatomy of the veins and necessary maneuvers related to the varicocele detection would be responsible for Sonography. The sonographer plays a pivotal role in the exact detection and decision making of the practitioner. It is the case that if a person has been undergone varicocelelectomy surgery, the risk of recurrence should be considered along with paying attention to side effects of surgery; any complication and after effects should be reported. Differential diagnosis such as seminiferous tubule dilation, which is characterized by the increased luminal diameter of the seminiferous tubules, should be considered as well. A comprehensive assessment with ruling out the whole differential diagnosis is essential. Correct detection and grading of the varicocele can lead to cutting back the time consumption and the expenses.

Animal Biotechnology

I-6: Genome Editing Opportunities in Livestock

Eenennaam AV

Department of Animal Science, University of California, Davis, CA
Email: alvaneennaam@ucdavis.edu

Introducing useful genetic variation into the germline of selected parents such that genetic improvement is inherited by the next generation is the ultimate goal of animal breeding. Editing offers an opportunity for geneticists to precisely introduce useful genetic alterations into animal breeding programs. Firstly, these tools can be used in functional genomics studies for hypothesis testing and to elucidate putative gene function. Secondly, they can be used to precisely introduce desired genetic variants into structured livestock breeding programs. Such variation may include the repair of genetic defects, the inactivation of undesired genes, and the moving of useful alleles and haplotypes between breeds in the absence of linkage drag. For editing to be incorporated into livestock breeding schemes, it will need to seamlessly integrate with genetic improvement program design. For this to occur, the efficiency of editing the next generation, through the production of homozygous, non-mosaic developing embryos will have to become routine. Additionally, edits will likely have to be introduced into multiple elite animals to avoid genetic bottlenecks. It will also require editing of different breeds and lines to maintain genetic diversity, and enable structured cross-breeding. This requirement is at odds with the process-based trigger and event-based regulatory approach that has been proposed for the products of gene editing by several countries. In the absence of regulatory harmony, researchers in some countries will have the ability use genome editing in food animals, while others will not, resulting in disparate access to these tools, and ultimately the potential for trade disruptions.

Key Words: Genome Editing, Animal Breeding, Livestock

I-7: CRISPR/Cas9-Mediated Editing of Major Genes Affecting Muscle Hypertrophy in Iranian Goat

Eghbalsaid Sh^{1,2}, Hajian M¹, Jafarpour F¹, Moradi R¹, Kues W³, Nasr-Esfahani MH¹

1. Department of Animal Biotechnology, Cell Science Research Center, Royan Institute for Biotechnology, ACECR, Isfahan, Iran
2. Department of Animal Science, Faculty of Agriculture, Isfahan branch, Islamic Azad University, Iran
3. Friedrich-Loeffler-Institut, Federal Research Institute of Animal Health, Biotechnology, Stem Cell Physiology, Neustadt, Germany
Email: shahin080@gmail.com

Muscle hypertrophy is a favorite phenotype in domestic animals. This phenomenon occurs naturally in specific breeds through single nucleotide polymorphisms (SNPs) in myostatin and callipyge genes. The study of myostatin mutations have shown that these mutations which associate with the double muscling phenotype induce a complete protein ablation. However, the mechanism by which the callipyge SNP creates hypertrophy is unclear. In this study, we optimized an electroporation protocol for efficient transfection of goat fibroblast cells. The protocol was based on OptiMEM-GlutaMAX medium supplemented with 3 % DMSO. Then, using the CRISPR/Cas9-expressing all-in-one vectors, which simultaneously express a single gRNA as well as Cas9 endonuclease and puromycin antibiotic, we transfected goat fibroblast cells and selected puromycin-resistant cells. For myostatin knockout, we co-electroporated two plasmids expressing two gRNAs which target the first exon of myostatin. For callipyge gene, a part from two vectors which include two gRNAs aiming for target deletion of a specific region including the callipyge mutation, we electroporated a donor vector which included the left and right homology arm

and the specific callipyge SNP. Indeed, for callipyge gene both NHEJ-mediated target deletion and indels and HDR-mediated sequence amendment have been carried out. Results of PCR from target genes showed target deletion of a small fragment between the gRNAs as well as insertion/deletions, indels, in the target region. Then, another fraction of gene-edited cells were used for animal cloning. Abattoir-derived oocytes were enucleated using the hand-made cloning and were fused with the donor cells that were edited for either myostatin or callipyge genes. High quality blastocysts were produced using the gene-edited donor cells and were frozen for further embryo transfer step. Producing gene-edited kids for the double muscle phenotype is under progress. In overall, the results of this study confirmed the development of myostatin- and callipyge-edited cells and embryos.

Keywords: CRISPR/Cas9, gRNA, myostatin, callipyge, goat, cloning

I-8: Can SCNT Embryos Benefit from Co-Culture with IVF Embryos? A Possible Role for Exosomes during Early Embryonic Development

Jafarpour F

Department of Animal Biotechnology, Reproductive Biomedicine Research Center, Royan Institute for Biotechnology, ACECR, Isfahan, Iran

Email: jafarpour.farnoosh@gmail.com

SCNT derived embryos suffer from various abnormal mechanisms during nuclear reprogramming which hamper the pre- and post-implantation development of growing embryos. Promoting the epigenetic reprogramming of SCNT embryos similar to IVF embryos using epigenetic drugs, down-regulation (XIST) and over-expression (MECP2, TET3, PGC7 and RTL1) of some target genes, is one of the most important approaches in this field. Discovering new mechanisms and integrating them into SCNT procedure for improving the SCNT efficiency is of great interest. Extracellular vesicles (EVs) secreted by cells and contain non-coding RNAs, mRNA and soluble proteins with which they can modulate the recipient cells. We hypothesized that released EVs from blastomeres in embryos might have a role in the paracrine effect. So, in this study, we used a co-culture system for paracrine communication between IVF and SCNT embryos. Our results showed that co-culture of bovine IVF embryos but not parthenogenetic (PA) embryos significantly improved the blastocyst rate of SCNT embryos. Interestingly, we observed that the blastocyst rate of IVF embryos which were co-cultured with SCNT embryos was lower than their counterparts in non-co-cultured group. To reveal the possible mechanism of communication between the IVF and SCNT embryos, the IVF or SCNT embryos were labelled with PKH26 and were co-cultured with non-labelled SCNT or IVF embryos. Then, we followed the non-labelled embryos for detecting the red fluorescent signal during *in vitro* development for 7 days. We observed that SCNT embryos exhibit the red fluorescent signal on day 4-5 while the IVF embryos exhibit it on day 5-6. In addition, the red fluorescent signal was stronger in SCNT than IVF embryos, which reflects the higher quality of IVF embryos than SCNT embryos. The current study demonstrates that developmental competence of caprine SCNT embryos can be improved through co-culturing with IVF embryos and revealed, for the first time, that both IVF and SCNT embryos can secrete EVs as a paracrine communication which can affect the devel-

opment of co-cultured embryos.

Keywords: Blastocyst rate; Co-culture; Extracellular vesicles; IVF; PKH26; SCNT.

I-9: CRISPR-Mediated Gene-Edited Farm Animals at the FLI in Germany

Petersen B

Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Greifswald, Germany

Email: bjoern.petersen@fli.de

For farm animals such as cattle, pigs, horses and sheep, informative gene maps are now available that form the basis for the development of new breeding concepts and targeted genetic modifications. The discovery of the CRISPR/Cas system and its adaption as a tool for gene editing in mammalian cells has dramatically changed the capabilities of scientists to alter the genome of farm animals. Genome editing in farm animals has a variety of applications for agriculture, biomedicine and basic research. At the Friedrich-Loeffler-Institut, the federal research institute of animal health, we focus on animal models for improving animal welfare by working on the generation of pigs resistant against African Swine Fever, male pigs that show a sex reversal after knockout of the HMG box of the SRY gene and generating polled dairy cattle by genome editing. Dehorning of cattle raised concerns regarding animal welfare as it causes stress and pain for the calves and is a potential risk of infections. The celtic mutation a 208bp duplication and 6 bp deletion originating from beef cattle was introduced into the horned locus on Chr.1 of Holstein Friesian fibroblasts by CRISPR/Cas induced homology-directed repair. The cells were subsequently used as donor cells for somatic cell nuclear transfer and lead to the birth of a single cloned calve with a polled phenotype. Wild boar lung cells transfected with a CRISPR/Cas vector targeting the CPL204 gene of the African Swine Fever Virus (ASFV) were almost . The knockout of the HMG box domain of the porcine SRY gene led to the birth of male pigs with a female phenotype. Though no difference could be detected between male sex reversed (MSD) and normal female pigs at the age of 3 months, MSD pigs did not show any formation of follicles on the ovaries and had an immature uterus compared to controls at the age of 9 months. Xenotransplantation is considered a promising solution to overcome the continuous organ shortage in allotransplantation. Due to its physiological and anatomical similarities to humans, the pig is considered the best available xeno-organ donor. Besides, significant improvements in the past, long-term xenograft survival is still challenging and needs extensive genetic modifications of the pig genome. The major epitopes causing rejection of the pig organ are sugar molecules expressed on the surface of pig cells. Therefore, we used CRISPR/Cas9 to knockout the responsible genes such as GGTA1, CMAH and B4GalNT2. In addition, the generated pigs carry a cassette of five transgenes (human CD46, CD55, CD59, A20 and human heme oxygenase) to overcome incompatibilities between the human and porcine coagulation system and to reduce endothelial cell activation located in combination at a single site on Chr. 6 of the porcine genome. The feasibility to efficiently alter the genome of pigs has dramatically prolonged the survival times of porcine heart xenografts in a pig-to-baboon setting up to 195 days, making xenotransplantation a realistic option to overcome the shortage of suitable allotransplants.

Embryology

I-10: Management of IVF Laboratories during Covid-19 I-PGT-A Use and Overuse

Alikani M

Northwell Health Fertility Laboratories, New York, USA

Email: malikani@northwell.edu

I-11: Follicular Reconstruction in Women with Ovarian Disorders Using Artificial Ovary Strategy

Fathi R

Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: rfathi79@gmail.com

Background: Fertility preservation is an emerging discipline, which is of substantial clinical value in the care of young patients with cancer. Chemotherapy may induce premature ovarian failure (POF) in prepubertal girls and young women. The aim of this study is follicular reconstruction in chemotherapy induced POF (Chemo-POF) patients applying an artificial ovary.

Materials and Methods: Potential Immunogenic DNA and intracellular components were removed from human ovarian pieces of transsexual patients and then we developed an ovarian decellularized ECM (DCT) as a natural scaffold. Human ovarian cortical cells (HOCCS) were enzymatically isolated from both Chemo-POF and transsexual ovaries and then they were seeded on DCT by injection and spinner flask culturing for one week (Artificial ovary). Finally, artificial ovary was xenotransplanted to NMRI mice beneath the abdominal sub-serosal fascia for two months.

Results: Immunofluorescence showed that isolated HOCCS from transsexual and Chemo-POF ovarian tissues included 87-89% stromal cells, 8-10% granulosa and 3-4% oogonial stem cells by expressing the vimentin, Inhibin- α and IFITM3 markers, respectively. Also, HOCCS well expressed IFITM3, vimentin, FSH-R and KI67 genes in real time PCR technique. One-week culture of artificial ovary in spinner flask (before transplantation) showed that HOCCS could penetrate not only into the exterior surfaces also to the depth of the ovarian scaffold (H&E). Histological study and quantitative evaluation of Estradiol production after two months of artificial ovary xenotransplantation confirmed the presence of morphologically health and active reconstructed human ovarian primordial and primary follicles.

Conclusion: This bioengineered ovary may constitute a suitable model for *in vivo* culture of ovarian cells and ovarian follicular reconstruction, as well as a promising tool for follicular reconstruction in chemo-POF patients.

Keywords: Human Ovarian Scaffold, Artificial Ovary, POF Patient, Chemotherapy

I-12: Development and Characterization of Decellularized Ram Testes for Mouse *In Vitro* Spermatogenesis

Topraggaleh TR¹, Rezazadeh Valojerdi M^{2, 3}, Montazeri L⁴, Kowsari-Esfahan R⁴, Alipour-Choshali M², Baharvand H⁴

1. Department of Anatomical Sciences, Faculty of Medicine, Urmia University of Medical Sciences, Urmia, Iran.

2. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.

3. Department of Anatomy, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

4. Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran.

Email: mr_valojerdi@modares.ac.ir.

Background: Tissue-specific extracellular matrix (ECM) has emerged as a fundamental tool for providing ideal platform for growth and development of stem cells. ECM are typically derived by decellularization processes which may be variably destroy ECM structure. Therefore we aimed to evaluate the optimal decellularization method appropriate for testes tissue that efficiently eliminates the cells while preserving the ECM.

Materials and Methods: Thirty testes of Zandi Rams were transported to the laboratory by cold container. After decapsulation, the testicular tissue was cut into 1cm³ fragments. The fragments decellularized at room temperature on a shaker plate by using SDS and Triton X100. Five experimental groups (SDS 24 h, Triton 24 h, SDS 48 h, Triton 48 h and serial combination of Triton 24 h and SDS 24 h) were compared. The extent of decellularization was histologically evaluated. Confirmation of cell removal was done by a DNA content analysis. Retention of testicular ECM were evaluated by collagen assay kit.

Results: Histological analysis showed that SDS 48 h, Triton 48 h and serial combination of Triton and SDS achieved decellularization. However, combination of triton X100 24 h and SDS 24 h resulted minimal DNA content. Also the collagen content was higher by decellularization of testes fragment by serial combination of Triton and SDS.

Conclusion: Serial combination of Triton 24 h and SDS 24 h is suitable for decellularization of ram testicular tissue fragments. The functionality of testicular cells in decellularized tissue needs to be investigated.

Keyword: Testes, ECM, Decellularization, SDS, Triton X100

I-13: Selecting the most viable embryo: Towards Non-Invasive technologies

Sakkas D

Boston IVF Center, Boston, USA

Email: DSakkas@bostonivf.com

Noninvasive assessment to select the most viable embryo has been a goal of embryologists since the first human embryos were cultured. Initially morphology was used however other aspects of the embryo have also been investigated. This lecture will discuss two promising noninvasive technologies. Measurement of DNA in the media and embryo metabolic state.

I-14: *In Vitro* Growth (IVG) of Human Oocytes: Next Steps Towards Clinical Application

Telfer E

Department of Reproductive Biology, University of Edinburgh, Edinburgh, UK

Email: Evelyn.Telfer@ed.ac.uk

I-15: *In Vitro* Derivation of Oocytes from Stem Cells: The State of the Art, or Artificial Egg, Two Decades Later

Tilly J

Department of Biology, Northeastern University, Boston, USA
 Email: j.tilly@northeastern.edu

Ethics and Health

I-16: Ethical Issues about Pre-Implantation Genetic Diagnosis and Screening

Omani Samani R, Ansarin M

1. Department of Medical Ethics and Law, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.
 2. Department of Obstetrics and Gynecology, Iran University of Medical Sciences, Tehran, Iran.
 Email: R.samani@gmail.com

Pre-implantation genetic diagnosis (PGD) is a diagnostic procedure means that we expect a gene defect and would like to test embryos to find it. On the other hand, Pre-implantation genetic screening is for finding mutations or defects that we don't expect.

A relatively simple technique is available called fluorescence in situ hybridization (FISH) which can check some (but not all) of the chromosomes. Mostly FISH technique application is limited to some chromosomes like 13, 18, 21, X, Y which are responsible for genetics diseases that can be born. Nowadays, FISH is applied only for sex selection because other techniques like macro-array is available which can check all chromosomes at the same time. Ethical issues can be summarized as follow: 1) There is no guideline on indications of PGD using FISH technique but it seems that other than sex selection and this technique can not be used for PGS. 2) Sex selection is two types for medical and for non-medical reasons. Medical is used to prevent x-linked diseases in offspring by choosing the gender of the embryos. There seems not to be any ethical argument for using it. But sex-selection for non-medical reasons in our country can be permitted under "Family Balancing Program". In this program, sex selection is applicable for "one successful time" and for couples who have at least two children of the same gender. 3) PGD using single cell PCR is for detecting gene defects that we are searching for. It has been a successful way for many known mutations. When there is a significant possibility for the offspring to have a gene defect from the parents, PGD can help for prevention of this disease. So, after genetics counselling and performing tests, the mutation will be clear and children with that genetic disease can be prevented by PGD. If the patient refuses to do the expensive genetic tests to find the mutation, or do the PGD to prevent the disease in their offspring, then the center must decide not to continue their treatment because the center is responsible for the child too. 4) Savior sibling is giving birth to the second child which is HLA matched to his/her older sick sibling enabling the parents to use the cord blood of newborn for saving their previous child. For this reason, embryos made by IVF will undergo PGD and HLA typing so, HLA matched embryos can be chosen for transfer. It is obvious that couple must undergo IVF and PGD with their complications. It is possible that HLA matched embryo can not be found or be few, so, several IVF cycles are needed to find adequate number

of HLA matched embryos. These children may have some arguments, expectations and psychological problems during their life. One child is born for the other one and saved his/her life. As they are HLA matched they can donate organs to each-other, which brings pressure on siblings for donation. 5) Savior child: we defined savior child for the future, when cord blood stem cells will be able to cure the disease in adults like heart, liver ... It is possible that a couple decide to bring a child which is HLA matched to the sick parent to use the cord blood stem cells. It is ethically unacceptable if someone bears a child just for curing themselves. 6) PGD for fertile couples: as PGD does test on pre-implantation embryo, it can only prevent abortions. Amniocentesis can provide enough cells to do the genetic tests, but if the defect is detected, parents should decide to do the induced abortion called "therapeutic abortion". Abortion has its own complications medical and psychological. Also, there are some religious concerns about abortion. So, if the abortion has too much burden on the couple, PGD can be used to prevent it. 7) PGS can be done for chromosomes and genes using Array and NGS which is not currently available in Iran. Some centers send the sample to the foreign countries to do the test which is really expensive for couples. The ethical issue here is conflict of interest. For this reason, clear criteria should be presented as national and international guidelines enabling physicians to choose best cases to offer PGS. Misguides must be prevented not to encourage everyone to do PGS to have healthy child.

Conclusion: National guideline is needed for indications and criteria for offering PGD and PGS. Autonomy of the patients and also fertility centers should be considered.

Keywords: PGD, PGS, Ethics, Abortion, Prevention

Female Infertility

I-17: Practical Points in Management of RIF

Aflatoonian A

Research and Clinical Centre for Infertility, Yazd Reproductive Sciences Institute, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
 Email: abbas_aflatoonian@yahoo.com

Recurrent implantation failure (RIF) is a multifactorial condition among women undergoing assisted reproductive technology cycles. The definition of RIF is controversial. The most widely accepted definition of RIF is based on the number of failed embryo transfers. However, another definition focuses on the number and quality of transferred embryos. RIF is an immensely frustrating situation for both patients and clinicians and its management is one of the most problematic challenges in the field of infertility. There is ongoing debate about optimal treatments for RIF. Proposed approaches are laboratory procedures including intracytoplasmic morphologically selected sperm injection (IMSI), blastocyst stage embryo transfer, assisted hatching and preimplantation genetic testing for aneuploidies. There are also several studies on immunomodulatory therapies e.g. intravenous immunoglobulin (IVIG), intrauterine peripheral blood mononuclear cell (PBMC) administration, subcutaneous or intrauterine infusion of granulocyte colony stimulating factor (G-CSF), intrauterine autologous platelet-rich plasma (PRP) infusion, and intrauterine human chorionic gonadotropin (hCG) administration. Available evidence showed that blastocyst-stage embryo transfer, AH and PGT-A have no positive

effect on ART outcomes in patients with RIF. However, administration of IVIG and intrauterine hCG infusion have beneficial effects on both clinical pregnancy rate and live birth rates in women suffering from RIF. Moreover, several studies indicated that the result of intrauterine PRP administration at least 72 hours before embryo transfer is encouraging. Regarding endometrial scratching in the cycle preceding the embryo transfer, meta-analyses demonstrated a benefit in terms of clinical pregnancy and live birth rates among women with RIF. However, intrauterine administration of PBMC and subcutaneous G-CSF infusion are the most optimal therapeutic choices for RIF.

Despite these findings, the heterogeneity in the RIF definition per se may confound the process of designing effective studies, which leads to a lack of evidence to efficiently guide management and treatment. Large well-designed research is needed.

I-18: Comparison of Late Complications of Pregnancies in Assisted Reproductive Technology (ART) Pregnancies Versus Spontaneous Ones

Ashrafi, M

1. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

2. Shahid Akbarabadi Clinical Research Development Unit (ShACR-DU), Iran University of Medical Science (IUMS), Tehran, Iran

Email: dr.mahnaz.ashrafi@gmail.com

Today, 43 years after the clinical introduction of *in vitro* fertilization (IVF), over 8 million IVF children have been born, and over 2.5 million cycles are being carried out annually, resulting in over 500,000 deliveries every year. There is increasing evidence that infertility or subfertility is an independent risk factor for obstetrical complications and adverse perinatal outcomes, even without the addition of assisted reproductive technology (ART) (II -2). Recently, a review article reported that the ART singleton pregnancies had a significantly increased risk of some pregnancy-related complications including pregnancy-induced hypertension, gestational diabetes mellitus, placenta previa, placental abruption. Multiple pregnancy is the powerful predictive factor for adverse maternal, obstetrical and perinatal outcomes. Couples should be thoroughly counseled about the significant risks of multiple pregnancies associated with all ART (II -2A). The benefits and cumulative PR of elective single embryo transfer support a policy of using this protocol in couples with a good prognosis for success and e SET should be strongly encouraged in this population (II-:2A). It is now well established that children born as a result of ART have an excess of congenital abnormalities and birth defects when compared with spontaneously conceived children. It was suggested that the reasons for the increased risk of complications in patients that need fertility treatment are advanced ages, high levels of estradiol during ovarian stimulation, laboratory environment, and the micro-manipulation of the gametes. It has been reported that among assisted reproduction cycles, the intracytoplasmic sperm injection method has been associated with the highest risk of congenital fetal malformations. The recent reviews provide evidence to suggest that the short-term health outcome for children born from IVF treatment is positive. However, it is expected that the cardiovascular and metabolic risk factors found in childhood and track into adulthood could be worse in later life, and maybe responsible for chronic cardiometabolic disease.

I-19: Are ART Children at Higher Risk of Cancer?

Faranoush M

Pediatric Growth and Development Research center, Iran university of medical sciences, Tehran-Iran

Email: faranoush47@gmail.com

There is controversy whether exposure to assisted reproductive technology (ART) is associated with increased risk of pediatric cancer. Many studies have investigated the relationship between medically assisted reproduction (MAR) and health outcomes, particularly cancer, in the offspring. Up to now, approximately 8 million children have been born worldwide following ART. Among children born following MAR, several studies observed an increased risk of adverse short-term birth outcomes, such as multiple births, preterm births, and congenital malformations. The etiology of childhood cancer remains largely unclear, but it has been hypothesized that some of them are initiated during the early stages of fetal development. Since the events leading to and carried out around conception can play an important role in childhood cancer, MAR may be a factor risk for this disease. MAR and ART significantly increased the risk of hematological tumors by 21% and 30%, respectively. No significant association was found between hematological tumors and IVF. No fertility treatment was significantly associated with “lymphomas”. MAR showed no significant association with neural tumors risk, while ART showed an increment of 21%. A positive association between ART and neural tumors risk was found in the cohort studies. No association was found between MAR, ART, or IVF and “CNS tumors”. In the case of hepatic tumors, both MAR and ART robustly increased the risk by 177% and 214%, respectively. Neuroblastoma, Retinoblastoma, and renal tumors observed no significant association of tumors with MAR or ART. Considering the increasing use of MAR; the evaluation of short-term and long-term adverse health effects represents a fundamental issue in public health. Several meta-analysis investigated the possible association between fertility treatments and childhood cancer. MAR and ART significantly increased the overall cancer risk. Studies found that MAR is associated with an increased risk of hematological cancers, leukemias, sarcomas, and hepatic tumors, while ART is associated with an increased risk of hematological cancers, leukemias, sarcomas, hepatic tumors, and neural tumors. IVF was associated with an increased risk of all cancers and retinoblastoma. Despite the detection of the major sources of heterogeneity in performing the stratified analysis and the sensitivity analysis, the results should be interpreted cautiously. Considering the increasing number of children conceived by MAR, the evaluation of short-term and long-term outcomes represents an important issue in public health. Based on very large numbers, ART in general, and IVF in particular, are not associated with overall increased risk of pediatric cancer.

I-20: Metabolic and Endocrine Consequences in ART Children

Salehpour Sh

Department Of Pediatric Endocrinology And Metabolism, Shahid Beheshti University Of Medical Sciences

Email: shadab.salehpour@sbm.ac.ir

Introduction: Assisted reproductive technologies (ARTs) are

methods widely used in recent years and a lot of kids are born with its help. ARTs may be associated with a few epigenetic changes expressing several genes involving the health of the offspring with significant association with genomic imprinting abnormalities. These techniques may provide the risk of creation or survival of an affected embryo, who would possibly not been created or survived, otherwise. Still more studies must be performed to reveal the endocrine and metabolic consequences of ART offspring's.

Review of literature: Metabolic syndrome and its components in young adults conceived by intracytoplasmic sperm injection (ICSI) have been reported. Although men conceived by ICSI, but not women, had lower mean HDL cholesterol concentrations in comparison to controls, other markers of the metabolic syndrome were not affected by the mode of conception.

The use of ART may associated with higher risk of autism spectrum disorder (ASD) in the offspring. However, further prospective, large, and high-quality studies are still required. The neuroendocrine impact of ART on the offspring includes slight elevations of systolic blood pressure and diastolic blood pressure, as well as increased circulating triglyceride concentrations, in children born after ART, especially in those with rapid catch-up growth in weight during early childhood.

However, the postnatal growth of most children after ART is normal and no increased incidence of the full metabolic syndrome has been observed in these children and adolescents. The onset and progression of puberty of these children is normal and no increased incidence of premature adrenarche could be discerned in ART children in the absence of restricted fetal growth. A slight modification of the set point of thyroid stimulating hormone sensitivity was observed in ART children without an apparent impact on thyroid function.

Long-term prospective studies should be performed to clear the future reproductive capacity of children born after ART, as well as their cardiovascular risk in later adult life.

Miscellaneous genetic or inherited metabolic disorders
Some examples of genetic or inherited metabolic disorders which are considered to be more prevalent in ART children are: methylmalonic acidemia, propionic academia, HMG CoA lyase deficiency, argeninosuccinyl lyase deficiency, methaphysial chondrodyslasia, spondylo-epiphyseal dysplasia (SED).

Conclusion: There is now evidence that ARTs may be associated with slight epigenetic modifications in the expression of several genes that could have a long-term impact on the health of the offspring. An association between such techniques and genomic imprinting abnormalities has been reported. These techniques may provide the risk of creation or survival of an affected embryo, who would possibly not been created or survived, otherwise. Still more studies must be performed to reveal the endocrine and metabolic consequences of ART offsprings.

I-21: Association between ART Cycle and adverse Obstetrics and neonatal Outcomes

Moini A

Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: ashraf.moieni@gmail.com

Over the past 40 years access and effectiveness of assisted reproductive technologies (ART) have increased, and to date more than 8 million children have been conceived after ART

globally. Most pregnancies resulting from ART are uncomplicated and result in the birth of healthy children. Yet, it is well known that pregnancies following ART are more likely to be affected by obstetrics complication such as hypertensive disorders in pregnancy, preterm birth, and low birth weight compared with spontaneously conceived pregnancies. ART children are also at increased risk of birth defect. the majority of the problems arise as a result of multiple pregnancies and can be reduced by transferring a single embryo.

While the ART program was associated with a greater risk of GDM and postpartum hemorrhage, these outcomes are frequent in older and obese women. Underling problems may also differ in older and obese women, with may further affect risk of GDM.

So, the finding suggest that single embryo transfer was associated with reduction risks of most maternal and infant outcomes. ART program that encourage single ET may have substantial benefits for a range of pregnancy outcomes , beyond prevention of multiple birth alone.

Increased risk of adverse OB and perinatal outcomes in pregnancies conceived after programmed FET. Results support the hypothesis of a changed placentation after programmed FET, where the lack of a corpus luteum probably plays an important role. Where possible stimulated FET, where a corpus luteum is created , is worse considering as an alternative to programmed FET.

Hormone replacement therapy protocol for FET may be associated with adverse maternal and neonatal outcomes, such as hypertension disorders of pregnancy , low birth weight, preterm labor, abnormal placenta formation , post term birth and macrosomia.

Use of IVM of immature oocyte extend to the *in vitro* culture to the early meiotic phase, thus the IVM technique raises concerns as to whether a prolonged *in vitro* culture and the maturation oocyte under artificial conditions might exert a negative impact on fetal growth, malformation risk and long term health. Long term follow up of children should include metabolic and cardiovascular features alongside the evaluation of standard growth parameter, since most IVM children were born to mothers with PCOS, a condition with long term implication for metabolic and cardiovascular health.

ART may be related to an increased risk of birth defects , no matter following IVF or ICSI. Twin after ART appear to have a similar risk of birth defect with twins after non- ART treatment. Besides the process of IVF, ICSI may increase the risk of birth defects such as ovarian hyper stimulation , *in vitro* culture of the embryo , possible damage during the process of ICSI , PGD and thawing of the embryo, exposure to damage for ovarian induction and luteal phase support. Compared with IVF , ICSI have been paid more attention because there was an increased risk of specific malformations and imprinting disorders.

I-22: LUTEAL PHASE SUPPORT IN ART CYCLES

Parsanezhad ME¹, Parsa-Nezhad M²

1. Division, Infertility and Reproductive Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

2. Medicine ward, Ross Memorial Hospital, Lindsay, Ontario, Canada

Email: parsameb@gmail.com

Controlled Ovarian Stimulation (COS) and successful implantation have crucial role in the success of ART cycles. Both

ovarian stimulation (using combination of gonadotropins and GnRha), and the follicular aspiration (aspiration of granulosa cells) compromise the function of the corpus luteum and have negative effect on endometrial receptivity.

In spite of all trials to improve the defect, the outcome is still limited. Among cases transferred less than one-third results in a live birth. Luteal phase support can be considered as the acceptable solutions to improve implantation and pregnancy rates.

Luteal phase defect was assumed to be less impaired in GnRh antagonist and agonist triggering cycles.

Blood level of progesterone in the early and middle luteal phase of stimulated cycle with GnRh antagonist are low, and in the absence of luteal support, the serum progesterone levels were suboptimal that followed by premature luteolysis. So, luteal support is required in both, cycles with GnRha and GnRhan.

The beneficial effects of hormonal supplementation during the luteal phase have been recognized from the early years of assisted reproductive technology. Based on all evidences, the luteal phase is deficient in almost all patients who undergo ovarian stimulation for ART.

Progesterone administration resulted in higher live birth rates compared to placebo or no treatment (Cochrane meta-analysis). Human chorionic gonadotropins (hCG) for luteal phase support have not any beneficial effect on live birth rate compared to progesterone and/or a combination of progesterone and estrogens. Concerning the route of administration dosage of different luteal support formulations, ESHRE recommended the daily administration of 50mg of intramuscular progesterone.

The same result could be achieved using 25mg of subcutaneous progesterone and 600mg of micronized vaginal progesterone.

Regarding the timing of luteal support, progesterone is recommended to be started in the day of oocyte retrieval and day 3 post oocyte pick-ups. Supplementation of progesterone beyond the first positive pregnancy test may not be necessary (ESHRE guideline).

Oral dydrogesterone provides similar ongoing pregnancy rates compared to gel as a LPS in FET.

I-23: Perinatal and Obstetrics Outcome in Pregnancies following Fresh versus Cryopreserved Transfer

Salehpour S

Department of Obstetrics and Gynecology, School of Medicine, Preventative Gynecology Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Email: Saghar.salehpour2014@gmail.com

The transfer of cryopreserved embryos is increasing among IVF caters. In view of obstetrics outcomes, the risk of pre-term labour and low birth weight are significantly lower after cryopreserved transfer Compared to fresh transfer (P:0.04 – RBMO 2020). The rate of large for gestational age birth was significantly higher in FET (P<0.001 – RBMO 2020). The rate of small for gestational age is lower in cryopreserved transfer (P<0.001 – RBMO 2020). The rate of abortion is lower in FET (P: 0.003) but the rate of cesarean delivery is higher (P: 0.03). In conclusion the perinatal and obstetrics outcome is cryopreserved and fresh transfer is different.

I-24: Efficient Cryopreservation Program for Oocytes and Embryos is an Important Tool for Maximizing Efficacy and Efficiency Treatment in ART: Clinical Perspective

Vaiarelli A

Genera Life Centers for Reproductive Medicine, Rome, Italy

Email: alberto.vaiarelli@gmail.com

The development and implementation of an efficient cryopreservation program for human oocytes has been a significant breakthrough in Reproductive Medicine. Indeed the introduction of vitrification over the last decade and its extensive application has improved human oocyte and embryo cryosurvival rates and clinical outcomes after replacement of embryos cryopreserved at different stages of development. Over the time, there was a steep increase in the percentage of cycle where a freeze-all is applied but also, due to the improvement in the lab techniques, a considerable increase in the number of supernumerary embryos, frozen after a fresh IVF cycle.

The optimized oocyte/embryo/blastocyst cryosurvival rates and clinical outcomes achieved with the use of vitrification have important clinical implications, which together allow a personalized approach in the care of different patient populations. As a matter of fact, we are nowadays performing more and more frozen embryo transfers (FET) and this means a significant change and a challenge in the clinical practice. Regarding FET can be performed either in a natural cycle (NC), a semi-natural cycle (with ovulation induction) or an artificial cycle, the so-called hormonal replacement therapy (HRT). One approach has not been demonstrated to be superior to the other, however, the HRT cycle is the mostly used due to its practicality (minimal cycle monitoring and easy scheduling). The two main protagonist of the HRT cycle are the estrogens (E2) and the Progesterone (P). If for the E2 priming of the endometrium it has not been demonstrated that the length, the dose, nor the serum level are associated with the success rate; on the other hands regarding the P, multiple studies have confirmed its crucial role in the establishment and maintenance of the pregnancy. However, P assessment in term of route of administration and type of progesterone is still an open questions. Recent study has been shown that also when the analysis is restricted to single euploid blastocyst transfers the endometrial preparation protocol does not affect the live-birth-rate after vitrified-warmed euploid single blastocyst transfers. In conclusion, no clear consensus exists, and the choice is still largely based on menstrual/ovarian cycle characteristics and patient's needs.

Finally, cryopreservation is an essential component in the treatment of patients undergoing ART and should be optimized in every IVF laboratory, as it allows for increased cumulative LBRs and offers the possibility to reduce multiple gestations and OHSS risk.

I-25: COVID and Reproduction: an Update

Taylor HS

Department of Obstetrics and Gynecology Yale School of Medicine, Yale University, New Haven, Connecticut, USA

Email: hugh.taylor@yale.edu

There have now been approximately 207 million COVID cases worldwide with well over 4 million deaths. This is the largest health crisis of our lifetime and plays a dominant role in all aspects of our lives. Naturally the role of this virus in reproduction and pregnancy is an important concern. The SARS-CoV2 virus is part of a large family of coronaviruses that have caused significant health concerns. SARS-CoV2 is transmitted

in the air with the respiratory track being the principal site of uptake. Therefore, mitigation strategies involve social distancing, masking and avoiding enclosed indoor spaces. Reproductive concerns have been an impediment to optimal treatment of young women. The virus is not thought to infect gametes. Vertical transmission is possible but far from universal. Women who contract COVID infection during pregnancy are at greater risk; they are more likely to require hospitalization, mechanical ventilation and more likely to die than non-pregnant women of the same age. The ability to use some medications to treat COVID is also restricted in pregnancy due to concerns over harmful or unknown effects on the fetus. Vaccine use is recommended for all women; especially those who are pregnant or planning to become pregnant. Vaccine registries have shown that the vaccine is safe in pregnancy. Similarly, several studies have shown lack of any negative effect of the vaccine on future fertility. The long-term solution to this pandemic is vaccination and all women should be offered the vaccine regardless of pregnancy status.

Genetics

I-26: Blastocoel Fluid DNA Analysis for Embryo Selection

Gianaroli L

Italian Society for the Study of Reproductive Medicine, Italy
Email: Luca.gianaroli@sismer.it

I-27: Assessing The Endometrial Factor in Recurrent Implantation Failure

Mcklon N

London Women's Clinic, London, UK
Email: nick.macklon@londonwomensclinic.com

I-28: Chromosome Errors in Human Eggs Shape Natural Fertility Over Reproductive Life Span

Gruhn JR¹, Zielinska A², Shukla V¹, Blanshard R^{3,4}, Capalbo A⁵, Cimadomo D⁶, Nikiforov D^{7,8}, ChiHo Chan A¹, Newnham LJ³, Vogel I¹, Scarica C⁹, Krapchev M¹⁰, Taylor D¹¹, Kristensen SG⁷, Cheng J⁷, Ernst E¹², Bay Bjørn AM¹², Berdiin Colmorn L¹³, Blayney M¹⁴, Elder K¹⁴, Liss J¹⁰, Hartshorne G¹¹, Groendahl ML¹⁵, Rienzi L⁶, Ubaldi F⁶, McCoy R¹⁶, Lukaszuk K^{10,17,18}, Andersen CY⁷, Schuh M², Hoffmann ER^{1,3*}

1. DNRF Center for Chromosome Stability, Department of Cellular and Molecular Medicine, Faculty of Health and Medical Sciences, University of Copenhagen, Denmark
2. Max Planck Institute for Biophysical Chemistry, Department of Meiosis, Göttingen Germany
3. Genome Damage and Stability Centre, School of Life Sciences, University of Sussex, Brighton, UK
4. Illumina Inc., Fulbourn, UK
5. iGenomix, Marostica, Italy
6. GENERA, Clinica Valle Giulia, Rome, Italy
7. Laboratory of Reproductive Biology, The Juliane Marie Centre for Women, Children and Reproduction, Copenhagen University Hospital and Faculty of Health and Medical Sciences, University of Copenhagen, Denmark
8. Unit of Basic and Applied Biosciences, Università degli studi di

Teramo, Teramo, Italy

9. DAHFMO, Unit of Histology and Medical Embryology, Sapienza, University of Rome, Italy

10. INVICTA Fertility Clinic, Gdańsk, Poland

11. Warwick Medical School, University of Warwick and Centre for Reproductive Medicine, University Hospital Coventry, UK

12. Department of Obstetrics and Gynaecology, University Hospital of Aarhus, Skejby Sygehus, Aarhus, Denmark

13. The Fertility Clinic, The Juliane Marie Centre for Women, Children and Reproduction, Copenhagen University Hospital, Denmark

14. Bourn Hall Clinic, Cambridge, UK

15. Fertility Clinic, Copenhagen University Hospital, Herlev Hospital, Herlev, Denmark

16. Department of Biology, Johns Hopkins University, Baltimore, MD, USA

17. Department of Obstetrics and Gynecological Nursing, Faculty of Health Sciences, Medical University of Gdansk, Gdansk, Poland

18. Department of Gynecological Endocrinology, Medical University of Warsaw, Warsaw, Poland

Email: jgruhn@sund.ku.dk

Chromosome errors, or aneuploidy, affect an exceptionally high number of human conceptions and lead to congenital disorders or pregnancy loss. In our study, we followed chromosome segregation patterns directly in human oocytes from females spanning a majority of the reproductive age spectrum, 9 to 43 years. We found that the rate of abnormalities in oocytes follows a U-shaped curve, suggesting that aneuploidies at both young and advanced ages are female in origin. Unexpectedly, specific segregation errors showed different age-dependencies, therefore providing a quantitative explanation for the U shape. Increased aneuploidy in young girls and women (<20) was preferentially associated with whole-chromosome nondisjunction (MI NDJ) events. Whereas women of advancing age (≥33) showed centromeric or more extensive cohesion loss through premature separation of sister chromatids (PSSC) and reverse segregation (RS) events, respectively. Thus, our findings suggest that age-dependent chromosomal errors originating in oocytes shape the curve of natural fertility in humans.

I-29: PGT-A: Controversies in Prescribing to RIF Patients

Gourabi H

Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran
Email: gourabi@royaninstitute.org

After the birth of the first baby by assisted reproduction technique (ART), increasing the efficiency of these kinds of infertility treatments came to the attention of scientists. In 1990 for the first time, preimplantation genetic tests (PGT) were introduced to infertility clinics. Aneuploidy of gametes, especially oocytes, leads to aneuploidy of more than half of the ART embryos. Therefore, this may be one of the main reasons for recurrent implantation failure (RIF) and it can be theoretically prevented by checking the chromosomal integrity of embryos by preimplantation Genetic test for aneuploidy (PGT-A). The first generation of PGT-A was performed by blastomere biopsy in the cleavage stage (day three) and using the fluorescence in situ hybridization (FISH) technique, which can detect a limited number of chromosomes. In the second generation of PGT-A, trophectoderm biopsy in the blastocyst stage and using compre-

hensive chromosomal screenings (CCS) such as array CGH or NGS were substituted. Despite testing all chromosomes and even diagnosis of mosaicism, discussions about the efficacy of PGT-A continued. The pros believe PGT-A can increase implantation rate, clinical pregnancy, live birth and decrease abortion and multiple gestations pregnancies. In contrast, Cons believe in dis-concordance of inner cell mass and trophoctoderm chromosomal status, reduction of embryo implantation potential by biopsy, disappearing of aneuploidies due to self-correction, erroneously discarding viable embryos, and many other objections. Some research-based evidence rejects these allegations, but the question of which groups of patients will benefit from these techniques remain uncertain. It seems there are not enough good randomized controlled trials (RCT) that show the benefit of PGT-A is especially for bad prognosis patients like RIF patients. Multicenter RCTs in ART always have challenges because of the nature of ART, such as different modalities involved in the technique, treatment dependency on the couples instead of one individual, the impact of specialists and centers experience on the results, difficulties in making blindness of RCTs and many others. Because of these problems, the pros believe the results of one-center RCT can be as beneficial as big multicenter RCT and each center must offer PGT-A services on its own experience.

There is much debate on efficacy of PGT-A for RIF patients and the investigation must be continued. These kinds of genetic tests must be performed as the last option, after a full workup of the patient condition and finding no other reasons for the failure of the embryo implantation.

Andrology

O-1: Evaluation of PGK2 and ACR Proteins in Seminal Plasma: Suggestion of Potential New Biomarkers for Prediction of Sperm Retrieval in Non-Obstructive Azoospermia Patients

Ghanami Gashti N^{1*}, Sadighi Gilani MA², Abbasi M³

1. Department of Obstetrics & Gynecology, Reproductive Health Research Center, Al-Zahra Hospital, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran

2. Department of Andrology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

3. Department of Anatomy, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Email: nasringhanami@gmail.com

Background: This study aimed to assess the role of testis-specific proteins, PGK2, and ACR in the prediction of sperm retrieval results by microdissection testicular sperm extraction (micro-TESE) in non-obstructive azoospermia (NOA) patients. **Materials and Methods:** This was a case-control study including 48 semen samples of NOA patients undergoing the micro-TESE procedure, 15 semen samples of normozoospermic men as the positive control, and 12 semen samples of obstructive azoospermia/post-vasectomy (OA/PV) as the negative control. We investigated the levels of candidate proteins by ELISA test in seminal plasma samples.

Results: The ELISA results revealed a significantly higher concentration of PGK2 and ACR in the NOA patients with successful sperm retrieval (NOA+) in comparison to NOA patients with failed sperm retrieval (NOA-) group ($P = 0.0001$, and $P = 0.0001$, respectively). For the first time, data of this study proposed that a seminal PGK2 concentration of 136.3 pg/ml and ACR concentration of 21.75 mIU/ml can be used as cut-off values for the prediction of micro-TESE outcome in NOA patients.

Conclusion: Our study results would be useful to avoid unnecessary micro-TESE operations. Overall, the seminal levels of the PGK2 and ACR proteins may be useful in predicting sperm retrieval success by micro-TESE in NOA patients.

Keywords: Seminal Plasma, Non-Obstructive Azoospermia, Micro-TESE, PGK2, ACR

O-2: Are Ferroptosis Markers Detectable Post Varicocele Induction?

Shaygannia E^{1*}, Nasr-Esfahani MH², Sotoodeh Nejadnematalahi F¹, Parivar K¹

1. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran

2. Department of Animal Biotechnology, Reproductive Biomedicine Research Center, Royan Institute for Biotechnology, ACECR, Isfahan, Iran

Email: mh.nasr-esfahani@royaninstitute.org

Background: Ferroptosis is known as a novel programmed cell death depending on accumulated level of reactive oxygen species (ROS), iron and lipid peroxidation. But its' molecular pathway detail is still remains to be elucidated in varicocele status that the level of oxidative stress is high. Thereby, we decided to

evaluate ferroptosis markers in varicocele rat models.

Materials and Methods: At the current study, 30 male Wistar rats were divided equally into 3 groups: control, sham and varicocele-induced (V.I) groups. All animals were sacrificed 2-month post varicocele induction. Sperm parameters, percentage of DNA damage, lipid peroxidation were assessed at each group. Moreover, relative mRNA expression of Slc7a11 gene as main molecular marker of the ferroptosis and accumulation of fe3+ levels were evaluated at testis level.

Results: We observed significant reduction in all sperm parameters in varicocele group compared with control and sham group ($p < 0.05$). Evaluation of sperm DNA damage in V.I group in comparison with control group showed significant increase ($p < 0.05$). Hence, mean percentage of lipid peroxidation and fe3+ revealed significant increase in V.I group compared to control and sham ($p < 0.05$). Relative mRNA expression of Slc7a11 gene indicates significant increase in Slc7a11 at varicocele facing to control group.

Conclusion: According to our results, we detected elevated level of lipid peroxidation, fe3+ and relative mRNA expression of Slc7a11 gene in varicocele rat model. It seems that ferroptosis could be associated to varicocele status due to increased oxidative stress and heat stress but still more molecular markers at mRNA and protein levels have to be investigated.

Keywords: Ferroptosis, DNA Damage, Lipid Peroxidation, Iron Accumulation.

O-3: Season Effects on Sperm DNA Fragmentation Levels and Sperm Classical Parameters; A Retrospective Analysis Over 1,100 Men

Yazdanpanah P¹, Shahverdi AH², Rashki Ghaleno L², Sadighi Gilani MA³, Vesali S⁴, Janzamin E⁵, Alizadeh AR^{2*}

1. Department of Molecular and Cellular Biology, University of Science and Culture, Tehran, Iran

2. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

3. Department of Andrology, Reproductive Biomedicine Research Center, Royan

Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

4. Reproductive Epidemiology Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.

5. Sababiomedical Center, Science Base Company, Tehran, Iran.

Email: alizadehmasouleh@royaninstitute.org

Background: The seasonal changes, creating an alteration in the organism, particularly the endocrine glands and the gonads. While the human is not normally considered a seasonal breeder, previous studies illustrated the seasonal changes in semen parameters and few studies are focusing on sperm DNA fragmentation (SDF) and several subtypes of SFD.

Materials and Methods: The demographic data of 1,191 records of men who were referred to Royan Institute, for the SDF test from July 2018 to March 2020 were investigated. Semen quality and sperm morphology were evaluated by CASA and Papanicolaou staining, respectively. The sperm chromatin structure assay (SCSA) test was applied for measuring sperm DNA fragmentation.

Results: The data of semen and SDF were compared in 151 patients who had referred in spring, 292 in summer, 389 in autumn, and 353 in winter. The mean of High DFI was significantly ($P < 0.05$) higher in summer ($5.81 \pm 0.33\%$) than spring

(5.52±0.42%), autumn (5.01±0.28%), and winter (4.70±0.23%) Moreover, the high-density stability) HDS (was significantly higher in summer (8.23±0.36%) than spring (6.43±0.36%), autumn (6.19±0.22%) and winter (6.10±0.21%). Likewise, Climate change had affected sperm parameters such that the sperm concentration was significantly higher in autumn (74.27±2.57%) in comparison to other seasons (63.06±2.92%) (P=0.001). the progressive motility was significantly higher in spring and autumn (28.6±1.1) than summer (24.70±1.08%) and winter (27.55±1.02%) (P=0.027). The morphology in winter was significantly (P=0.001) higher (2.24±0.08%) than in other seasons (1.83±0.08%). The highest level of sperm leukocyte was in winter (0.16±0.02 %) and the lowest mean was in summer (0.07±0.01%) (P=0.048).

Conclusion: Our data revealed that the SDF level was highest in summer. Increased ambient temperature, as well as photoperiod changes due to seasonal changes, maybe a detrimental factor for SDF which warrants further studies.

Keywords: Sperm DNA Fragmentation, Sperm Parameters, Season, Environmental Factors,

Animal Biotechnology

O-4: The Effect of One Carbon Cycle Enhancement on Bovine Oocyte Maturation

Golestanfar A^{2*}, Nasr-Esfahani M¹, Niasari-Naslaji A², Jafarpour F¹, Dattilo M³, Menezo Y⁴, Rouhollahi S¹

1. Department of Reproductive Biotechnology, Reproductive Biomedicine Research Center, Royan Institute for Biotechnology, ACECR, Isfahan, Iran

2. Department of Theriogenology, Faculty of Veterinary Medicine at University of Tehran, Tehran, Iran

3. Research and Development, Parthenogen, lugano, Switzerland

4. London Fertility Associates, London, UK

Email: nasr.royan@gmail.com, niasarinaslajiamir@gmail.com

Background: Optimal nuclear and cytoplasmic maturation of oocyte is essential to improve the outcomes of the in-vitro production of embryos. One carbon metabolism is one of the most important cellular metabolic pathway during folliculogenesis, oocyte maturation and embryo culture. A proper regulation of this pathway is crucial for cell growth, differentiation, methylation of chromatin, RNA, proteins and lipids, production of purines and pyrimidines and consequently in genomic repair and synthesis and glutathione production. The objective of this study was to investigate the quality of bovine oocyte cultured in the main substrates and cofactors of one carbon cycle consisting of active form of folate (5-mTHF), active form of vitamin B12 (methyl cobalamin), Riboflavin, pyridoxine, nicotine amid, zinc, L-cystine and betaine.

Materials and Methods: Oocytes were retrieved via aspiration from bovine ovaries received from slaughterhouse. In each replicate, recovered oocytes were divided in two experimental groups: treatment group (IVM+) which was supplemented with one carbon cycle substrates and cofactors, and the control group (IVM), which did not receive any further supplementation. After 24h oocytes were assessed for the number of MII oocytes using Hoechst staining, mitochondrial membrane potential using JC1 staining, mitochondrial distribution by Mito tracker green FM, DNA fragmentation using TUNEL assay.

Results: There was not any significant differences in the number of MII oocyte rate (Treatment: 84.94±4.4, n=41; Control: 85.37±3.5, n=56) and mitochondrial membrane potential (Treatment: 2.42±0.13, n=74; Control: 2.38±0.13, n=80) (P>0.05). However, mitochondrial localization was significantly higher in IVM+ oocyte compare to IVM- (Treatment: 11.42±0.39, n=34; Control: 10.16±0.48, n=30) (P<0.05). DNA fragmentation (TUNEL positive) rate was higher in control compare to treatment group (Control: 12/47 oocyte, 25.53% and treatment: 6/55 oocyte, 10.9%) (P=0.05).

Conclusion: In conclusion, treatment of oocyte maturation medium with one carbon enhancer may reinforce this cycle through increasing mitochondrial localization and decreasing DNA fragmentation. Further study is underway to elaborate the effect of these supplements on developmental competency and quality of derived blastocyst at the cellular and molecular levels.

Keywords: One Carbon Cycle, Oocyte Maturation, Embryo Culture, Folate

Embryology

O-5: Enhancement of Mouse Spermatogenesis in Mini-Bioreactor Dynamic Culture System

Amirkhani Z^{*}, Movahedin M, Baheiraei N, Ghiaseddin A

Department of Anatomical Sciences, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran.

Email: movahed.m@modares.ac.ir

Background: It was in early 20th century when the quest for *in vitro* spermatogenesis started. *In vitro* spermatogenesis is critical for male cancer patients undergoing gonadotoxic treatment. In this study, it was intended to evaluate the progression of spermatogenesis after testicular tissue culture in mini-perfusion bioreactor.

Materials and Methods: 12 six-day postpartum neonatal mouse testes were firstly removed and fragmented, placed on an agarose gel in parallel to bioreactor culture, and incubated for 8 weeks. Histological, molecular and immunohistochemical evaluations were carried out after 8 weeks.

Results: Histological analysis suggested successful maintenance of spermatogenesis in tissues grown in the bioreactor but not on agarose gel, possibly because the central region did not receive sufficient oxygen and nutrients, which led to necrotic or degenerative changes. Molecular analysis indicated that Plzf, Tekt1 and Tnp1 were expressed and that their expression did not differ significantly between the bioreactor and agarose gel. Immunohistochemical evaluation of testis fragments showed that PLZF, SCP3 and ACRBP proteins were expressed in spermatogonial cells, spermatocytes and spermatozoa. PLZF expression after 8 weeks was significantly lower (P < 0.05) in tissues incubated on agarose gel than in the bioreactor, but there was no significant difference between SCP3 and ACRBP expression among the bioreactor and agarose gel culture systems.

Conclusion: Dynamic culture methods was more effective in increasing spermatogenesis. This three-dimensional culture system can provides the similar condition to the physiological environment of testis. Our findings suggest that dynamic culture in a perfusion bioreactor supports induction of spermatogenesis for generation of haploid cells.

Keywords: Spermatogenesis, Organ Culture, Mouse, Perfusion Bioreactor,

O-6: The Pogostone Acts as Epigenetic Modifier in Ovarian Cancer Cell Line (OVCAR-3) by Inducing PTEN and DACT1 Tumor Suppressor Genes Expression

Homayoun M¹, Soleimani M

Department of Anatomical Science, Isfahan University of Medical Sciences, Isfahan, Iran.

Email: mitrasoleimani1@gmail.com

Background: Ovarian cancer is one of the most dangerous cancers among women which Epigenetic alterations in tumor suppressor genes play an important role in causing this disease. Pogostone has anti-cancer effects and is rich in polyphenol compounds. In the present study, we investigated the effects of pogostone on an ovarian cancer cell line (OVCAR-3).

Materials and Methods: OVCAR-3 cells were treated with the IC50 dose of pogostone (90 µg/mL) for 24 and 48 h. Cell viability and the apoptotic rate in the cells were measured by using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) and flow cytometry. Real-time polymerase chain reaction (PCR) was used to determine the expression of genes involved in the cell cycle and apoptosis. The expression of caspase-3 (CASP3) protein was evaluated by the CASP3 assay.

Results: Treatment of OVCAR-3 cells with pogostone increased the expression levels of phosphatase and tensin homologue deleted on chromosome ten (PTEN) and Dapper antagonist of catenin-1 (DACT1) tumor suppressor genes, as well as the apoptotic genes CASP3, 8, and 9 (p<0.001). Moreover, the ratio of the expressed BCL2 associated X (BAX)/BCL2 genes, as pro- and anti-apoptotic genes, was increased. The expression levels of the genes related to the cell cycle progression, cyclin D1 CCND1 (and cyclin-dependent kinase 4 (CDK4), were inhibited (p<0.001). The data obtained from flow cytometry indicated that pogostone induced cell apoptosis in OVCAR-3 cells in a time-dependent manner (p<0.001). The CASP3 colorimetric assay revealed that pogostone treatment resulted in the expression of CASP3 protein (p<0.001).

Conclusion: Pogostone induces the expression of PTEN and DACT1 tumor suppressor genes by modifying the Epigenetic alteration. The increase of these genes expression by down-regulating and upregulating the genes involved in the cell cycle, cell proliferation, and apoptosis reduced cell proliferation and increased the rate of apoptosis in the ovarian cancer cell line OVCAR-3.

Keywords: Pogostone, Ovarian Cancer, Tumor Suppressor Genes, Epigenetic

O-7: Alleviative Potential of Onion (*Allium cepa*. Linn) Aqueous Extract on Testes of Adult Albino Rats Against Silver Nanoparticles Exposure: A Histomorphometric Study

Kamali Y¹, Gholami S, Amirkhani Dehkordi S

Department of Basic Sciences, Anatomy and Embryology Division, School of Veterinary Medicine, Shiraz University, Shiraz, Iran

Email: sgholami@shirazu.ac.ir

Background: There is accumulating evidence that Ag-NPs have detrimental effects on human reproduction and fertility. Ag-np reduces cellular ATP content, causes mitochondrial dam-

age, and increases the production of reactive oxygen species (ROS) in a dose-dependent manner. This study therefore aimed to determine the possible alleviative effects of onion (*Allium cepa*. Linn) aqueous extract as a potent antioxidant against Ag-NPs-induced testis toxicity.

Materials and Methods: 32 adult male Wistar albino rats with the average weight of 220±10 g were divided into four groups of eight rats each and fed diet with (Groups 3 and 4) or without (Groups 1 and 2) onion extract daily for 30 days. The last three days of the experiment, 0.5 ml of distilled water (Groups 1 and 3) or Ag-ng with a concentration of 500 ppm (Groups 2 and 4) was intraperitoneally injected. Testis weight index, testis volume, and testicular histomorphometric parameters, including tunica albuginea and germinal epithelium thickness, seminiferous tubules diameter, and the number of Sertoli cells, Leydig, spermatogonium, spermatocytes, and spermatid were evaluated.

Results: All histomorphometric parameters were decreased in group 2 (Ag-np) compared with control group (group 1) (P<0.05). Group 4 (Ag-np+onion) demonstrated significant improvement in these parameters compared with group 2 (P<0.05), although not as much as in group 3 (onion). There was a significant relationship between total weight and testis weight in all groups except the group 3.

Conclusion: Onion is a rich source of phenolic antioxidant components that can attenuate the harmful impressions of Ag-np exposure on male fertility.

Keywords: Silver Nanoparticles, Onion, Histomorphometry and Stereology, Testis, Rat

O-8: The Effect of Platelet-Rich Plasma on *In Vitro* Development of Human Ovarian Tissue Follicles after Vitrification.

Ramezani M^{1*}, Asgari R¹, Amiri I², Zamani M³, Bahmanzadeh M²

1. Department of Anatomical Sciences, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran.

2. Endometrium and Endometriosis Research Center, Hamadan, Iran

3. Clinical Research Development Unit of Fatemeh Hospital, Hamadan, Iran

4. Endometrium and Endometriosis Research Center, Hamadan, Iran

Email: m.ramezani@umsha.ac.ir

Background: The aim of the present study was to evaluate the effectiveness of platelet-rich plasma on *in vitro* development of human ovarian tissue follicles after vitrification.

Materials and Methods: In this experimental study, human ovarian tissues were obtained from 10 normal female aged 18-35 years who underwent hysterectomy due to non-ovarian disease. The specimens then cut into small fragments and randomly divided into vitrified and non- vitrified groups. Each of the vitrified and non- vitrified groups was further divided into two groups with and without platelet-rich plasma (PRP) and were cultured for 10 days. Morphological studies were evaluated by using hematoxylin and eosin staining and evaluation of follicular development and function were evaluated by 17-beta estradiol concentration. Data were compared by paired-samples and independent-samples T test. Values of p<0.05 were considered statistically significant

Results: The normality rate of follicles was similar in vitrified and non-vitrified groups not only before culture but also

after culturing period between all of the groups ($P < 0.05$). An increase in 17-beta estradiol level was observed in all groups after 10 days of culture, which was higher in the PRP-enriched groups that indicated the development of follicles to higher degrees of development ($P < 0.05$).

Conclusion: The present study showed that Supplementation of human ovarian tissue culture medium with platelet-rich plasma increases follicular development and 17-beta estradiol levels in human ovarian tissue samples.

Keywords: Platelet Rich Plasma, Vitrification, 17 beta -Estradiol, Laboratory Culture ,

O-9: Platelet Lysate Reduces Oxidative Stress and Inflammation Induced following Ovary Transplantation in Mice

Sanamiri Kh^{1*}, Soleimani Mehranjani M¹, Shahhoseini M², Shariatzadeh MA¹

1. Department of Biology, Faculty of Science, Arak University, Arak, Iran

2. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: m-Soleimani@araku.ac.ir

Background: One of the challenges following ovarian transplantation is ischemia/reperfusion injury that leads to massive depletion of the follicular reservoir and tissue damage. Therefore, it is necessary to find ways to reduce hypoxia particularly during the early post-transplant stages. Platelet lysate (PL) as a rich source of growth factors can be used to improve transplant survival through reducing oxidative stress and inflammation.

Materials and Methods: In this experimental study, the Naval Medical Research Institute (NMRI) mice (4-5 weeks old) were divided into three groups: control, autograft and autograft+PL (5ml/kg at the graft sites). Seven days after ovary autografting, blood samples were collected and serum levels of Malondialdehyde (MDA), total antioxidant capacity, tumor necrosis factor alpha (TNF- α), interleukin (IL)-6 and IL-10 were measured. Data were analyzed using one-way analysis of variance (ANOVA) and Tukey test, and the means were considered significantly different at $P < 0.05$.

Results: The serum concentrations of IL-6, TNF- α and MDA increased significantly in the autograft group compared to the control group whereas these parameters reduced significantly in the autograft+PL group. Total antioxidant capacity and the serum level of IL-10 also reduced significantly in the autograft group when compared to the control while it significantly increased in the autograft+PL group.

Conclusion: According to our results, PL can act as a substrate to prepare the ovarian tissue grafting site due to its antioxidant and anti-inflammation properties.

Keywords: Platelet Lysate, Transplantation, Oxidative stress, Inflammation

O-10: Comparison of Three Decellularization Methods for Wharton's Jelly to be Applied as a Biomaterial in Construction of Artificial Ovary

Tajbakhsh F^{1*}, Kazemi Ashtiani M², Tavana S¹, Moieni A³, Zand E¹, Abtahi N¹, Fathi R¹

1. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR,

Tehran, Iran.

2. Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran.

3. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran.

Email: rfathi79@royaninstitute.org

Background: Tissue engineering (TE) is an interdisciplinary approach in regenerative medicine to regenerate, repair or replace damaged or degenerated tissues or organs. Using an appropriate scaffold plays a pivotal role in cells or growth factors function in TE. Wharton's jelly (WJ) is a natural waste and an available postpartum biomaterial that can be used as a decellularized ECM due to its promising biocompatibility and nonimmunogenic properties. The aim of this study was to compare three decellularization methods for WJ to be applied as a biomaterial in construction of artificial ovary.

Materials and Methods: Three methodological groups were organized for WJ decellularization, as following: (A) 0/03% SDS + Tris; (B) 1% SDS + Tris; and (C) 0/03% SDS + Tris buffered saline (TBS), and native WJ was used as control group (D). Histological analysis (hematoxylin and eosin (H&E) and DAPI staining) and DNA content evaluation were done after decellularization procedures.

Results: DNA content was 33.4 ng/mg, 82.4 ng/mg, 44.8 ng/mg, and 263 ng/mg in group A, B, C, and D, respectively. Group A (0.03% SDS + Tris) contained the lowest amount of DNA in comparison to three other groups. The histological evaluation confirmed these findings as no cell nucleus was seen in group A. Based on the results obtained, group A has the best effect in removing the cells from WJ.

Conclusion: Our results showed that 0.03% SDS + Tris was the most suitable procedure for WJ decellularization and can be used in construction procedure of artificial ovary.

Keywords: Decellularization, Wharton's jelly Hydrogel, Tissue Engineering, SDS, Tris

O-11: Evaluation of The Effects of Human Bone Marrow Mesenchymal Stem Cells Conditioned Medium on Growth and Maturation of Mouse Ovarian Follicle after Vitrification

Tork Sh^{1,2*}, Molaeeeghaleh N^{1,2}, Abdi Sh^{1,2}, Movassaghi Sh^{1,2}, Sharifi ZN^{1,2}

1. Department of Anatomical Sciences and Cognitive Neuroscience, Faculty of Medicine, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran

2. Medical Genomics Research Center, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran

Email: sh.abdi@iautmu.ac.ir

Background: The aim of this research study is to evaluate the effect of human bone marrow mesenchymal stem cells conditioned medium (hBMSCs-CM) on growth and maturation of mouse ovarian follicle, and embryonic development after vitrification.

Materials and Methods: The hBMSCs were cultured and the derived CM was collected, concentrated and stored. 14-day-old mice ovaries were collected and randomly divided into vitrified and non-vitrified groups. Vitrification was performed and the morphology of follicles was evaluated by histology analy-

sis. Preantral follicles were isolated and cultured in α -MEM enriched with ITS and FBS supplemented with different concentrations of CM (2.5, 5, and 7.5%) for 12 days and follicle development was evaluated.

Results: The results revealed that vitrified and non-vitrified follicles had normal morphology. All subgroups containing CM showed better results than the control subgroups. In the non-vitrified group, higher antrum formation, oocyte maturation, and hormone secretion were observed in 7.5%. In the vitrified group, the developmental rate of follicles was similar to the non-vitrified group, and the subgroup containing 7.5% CM showed better results than the control, 5%, and 2.5% CM subgroups. However, no changes in fertilization and embryonic development rates were observed.

Conclusion: Supplementing follicle culture media with 7.5% CM could enhance follicle growth and oocyte maturation of follicles after vitrification.

Keywords: Follicle, Human Bone Marrow Mesenchymal Stem Cells, In-vitro Culture, Vitrification,

Genetics

O-12: The Evaluation of Poly-T, TG-Repeats And M470V Polymorphism of The CFTR Gene in Iranian Males With Non -Obstructive Azoospermia

Asadi F¹, Piryaei F²

1. Department of Molecular Genetics, Islamic Azad University, Marvdasht, Shiraz, Iran

2. Department of Molecular Medicine and Human Genetics, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran

Email: fatemehasadi@miau.ac.ir

Background: The mutations in the cystic fibrosis transmembrane conductance regulator (CFTR) gene have been frequently reported in the congenital bilateral absence of the vas deferens (CBAVD) patients in the world. Recent studies have shown that some variations and polymorphisms of CFTR gene could be involved in other types of infertility apart from CBAVD gene. In this study, we decided to survey the poly-T, TG repeats and M470V of the CFTR gene in infertile men with nonobstructive azoospermia (NOA) in Iran.

Materials and Methods: This case-control study was performed on 203 NOA patients and a control group (n = 200), the peripheral blood sample of patients were collected in EDTA vacuum tubes. Then genomic DNA was extracted and PCR-sequencing was carried out on the 3' ends of the Intron 8 CFTR gene to identify poly-T and TG repeats. Genotyping of M470V was performed using the polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP).

Results: The mean age of the infertile males was 31 ± 3.7 years. Frequency of T5 allele in males with non-obstructive azoospermia was found higher than that of the control group (7.38 vs 3, $P < 0.001$). The allelic frequency of T5-TG12 in males with nonobstructive azoospermia was significantly higher than that observed in the control group ($P < 0.001$) and also the T5-TG12 -V470 haplotype was significantly associated with NOA as compared to normal controls ($P < 0.0001$).

Conclusion: Based on our results, TG12-T5 variants and also TG12-T5-V470 haplotype could be correlated with the etiology of NOA in Iranian infertile men with nonobstructive azoo-

spermia.

Keywords: Male Infertility, CFTR, Nonazoospermia, TG-repeats,

O-13: Expression Level of IP3R and SERCA Calcium Channels, in Endometrial Cells of RIF Patients Are Lower Than Fertile Women

Bakhtiyari Z¹, Shahhoseini M², Ghafari F³, Jahangiri M⁴, So-deifi N⁵, Movaghar B⁴

1. Department of Molecular Genetics, Faculty of Basic Sciences and Advanced Technologies in Biology, University of Science and Culture, Tehran, Iran

2. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

3. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

4. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

5. Department of Andrology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: bhromovaghar@yahoo.com

Background: Downregulation of S100A11, calcium binding protein, was seen in the cells of non-receptive endometrium in comparison with a receptive endometrium. IP3R and SERCA are the calcium channels located on the endoplasmic reticulum (ER) and are affected by epidermal growth factor (EGF) and S100A11. In fertile women the highest expression of S100A11, IP3R and SERCA occur in the secretory phase. The aim of this study was the evaluation of S100A11 and its associated calcium channels IP3R and SERCA expression in the endometrium of repeated implantation failure (RIF) patients and fertile women.

Materials and Methods: Endometrial samples were taken using pipette from RIF patients below 40, with at least three cycles of IVF failure and at least five good quality embryo transfers. Endometrial samples of oocyte donors were mentioned as the control group. S100A11, IP3R and SERCA gene expression in the endometrium of RIF patients and oocyte donors were analyzed using Real time PCR.

Results: The expression level of S100A11 in mid luteal endometrial samples of RIF patients was significantly higher than follicular phase samples. In RIF patients, the expression level of IP3R and SERCA was not different between proliferative and mid-secretory phases. Also, their expression in the endometrium of RIF patients was significantly lower than the control group.

Conclusion: IP3R and SERCA expression were significantly lower in the experimental group than the control. Unchanged expression of S100A11 between two groups could be due to interfere of other ligands of these receptors including EGF. Non-rising levels of SERCA and IP3R between follicular and luteal phases could be a reason for implantation failure in RIF patients.

Keywords: RIF, IP3R, SERCA, S100A11, Implantation

Reproductive Imaging

O-14: Features and Appearances of Uterine Fibromas in Hystrosalpingography

Ahmadi F¹, Pahlavan F², Hosseini F², Javam M¹

1. Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

2. Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran

Email: dr.ahmadi1390@gmail.com

Background: Fibroma is found in approximately 20–40% of females in reproductive ages particularly those with infertility. The latest classification scheme is Munro classification. Although Ultrasonography and Magnetic Resonance Imaging are utilized for detecting pelvic masses, Hystrosalpingography (HSG) is an important modality since it provides different distinguishable signs and appearances. We aim to depict some common and frequent diagnostic signs of the fibromas in the HSG along with schematic patterns.

Materials and Methods: The signs in HSG can help for better learning and detection. They might enlarge, elongate, displace, distort or rotate the uterine cavity. Sometimes they cause uterine atony or filling defects. Although Ultrasound, MRI and laparoscopy can roll out the fibroma too, HSG is yet at the top imaging modalities in infertility field since it provides a variety range of information from size, type and location of fibromas, anatomical changes of uterine, filling defects with reasonable price.

Results: The crescent or moon sign is seen when a fibroma presses the uterine and causes asymmetrical elongation of other side of uterine. Lamp, ball or rugby ball appearance is due to lack of uterine tonicity and when it is unilateral, it makes a fish sigh. Cat or the head of a pig sigh is seen as a result of low tonicity in the body and isthmus of the uterus. Flower sign happens as fibroma compresses the fundus and makes a fading defect. The sail appearance is seen when fibroma pushes the normal triangular shape of uterus to one side. A giraffe is a sign that stems from a huge fibroma that elongates and displaces the uterine.

Conclusion: The mentioned images and signs contribute to better learning of the fibromas detection. Using HSG and its distinctive capability, the accuracy, sensitivity and specificity in pelvic masses detection will be enhanced.

Keywords: Uterine, Fibromas, Hystrosalpingography,

O-15: Correlation Between Ovaic Endometriom Characteristics and Severity of Endometriosis

Niknejadi M¹, Javam M¹, Chehrazi M², Rashidi Z¹, Niknejad F¹

1. Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

2. Department of Biostatistics and Epidemiology, School of Medicine, Babol University of Medical Sciences, Babol, Iran

Email: mniknezhady1390@gmail.com

Background: To identify if there is relationship between the number, size, and unilateral or bilateral ovarian endometrioma and severity of endometriosis.

Materials and Methods: A prospective cross-sectional study was conducted at Royan Institute, Tehran, Iran, between April 2010 and March 2013. All women with clinical symptoms of endometriosis, who were booked for laparoscopy, underwent a preoperative transvaginal ultrasound scan and recruited to the study (N=101). Stage of the Endometriosis at laparoscopy was considered as gold standard. All analyses were done using version 12 (Stata Corp., College Station, TX). P value<0.05 was considered as statistically significance.

Results: Mean age of the women was 30.87±4.96 years in average. Among the study patients, 33 women (%32.6) had mild endometriosis (Stage I&II), 10 (%9.9) had moderate endometriosis (Stage III) and 15 (%14.9) had severe disease (Stage IV). Grade of endometriosis by laparoscopy would increase when endometrioma size diagnosed by sonography increased (p<0.0001). Number of endometrioma in severe and moderate was higher in compare to mild, but it was not significant. Among patients without any endometrioma, 61.4% were normal in laparoscopy. 60% of patients with bilateral endometriosis diagnosed severe by laparoscopy. Most patients with unilateral endometrioma were moderate in laparoscopy grading.

Conclusion: This study indicated that there is a significant correlation between the size of ovarian endometrioma on TVS and severity of endometriosis. Therefore, grading of the disease by means of vaginal sonography, as a reliable noninvasive method, can reduce the number of diagnostic surgeries. Therapeutic laparoscopy could be performed for cyst removal in certain cases.

Keywords: Endometrioma, Endometriosis, Transvaginal Sonography, Laparoscopy

O-16: Various Hysterosalpingographic Findings of Proximal Tubal Obstruction: A Case Series

Zaferani F^{1,2}, Ahmadi F¹, Soeimani Mehranjani M²

1. Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

2. Department of Biology, Faculty of Science, Arak University, Arak, Iran

Email: fz.azferani@royaninstitute.org

Background: Tubal and peritoneal disease are the most common causes of infertility and can be either congenital malformation or acquired, proximal or distal, unilateral or bilateral and transient (obstruction) or permanent (occlusion).

Materials and Methods: The current methods of tubal patency assessment include laparoscopy, fluoroscopy, sonohysterography and hysterosalpingography. Although laparoscopy is the modality of choice for investigation of tubal patency and pelvic structure in many infertility centers, hysterosalpingography is still the gold standard for evaluation of tubal lumen and provides useful information about size, contour and anatomy of the inner surface of the fallopian tubes.

Results: Here we present the case series of congenital and acquired structural abnormalities of the proximal tubal pathology proven on HSG. We believe that one of these developmental defects have not been addressed in preceding medical texts.

Conclusion: Accurate diagnosis and reports of such cases are important not only for the benefit of treatment, but also to establish the true incidence of these anomalies and to consolidate embryologic concept.

Keywords: Fallopian Tubes, Proximal, Tubal Blockage, Congenital, Acquired

Andrology

P-1: The Impact of Paternal Age on Sex Chromosomes Aneuploidy, Blastocyst Rate, and Quality with Pregnancy Outcomes

Aghajani Sh^{1,2*}, Mehrafza M², Hosseini A², Salehzadeh A¹, Ghasemiyan F³, Eftekhari A², Vahabzadeh H², Porseifi Gh²

1. Department of Biology, Islamic Azad University Rasht Branch, Rasht, Iran

2. Mehr Fertility Research Center, Guilan University of Medical Sciences, Rasht, Iran

3. Department of Biology, Faculty of Science, University of Guilan, Rasht, Iran

Email: shahzadaghajani1987@gmail.com

Background: Postponing childbirth by couples in developed countries is increasing. Paternal age has been ascending between all educational levels, races, and geographic regions. Over the past four decades, the percentage of fathers older than 40 years has doubled, from 4.1% to 8.9%. Therefore, investigating a possible correlation between chromosomal aneuploidy and paternal age, analyzing embryos derived from the frozen and fresh embryo transfer is questionable.

Materials and Methods: The present study included 277 embryos between February 2018 and June 2020. Seventy-six women underwent ICSI with preimplantation genetic testing for aneuploidy using fluorescence in situ hybridization method cycles were divided into four paternal age groups: ≤ 35 , 36-40, 41-45, and ≥ 45 yr. Primary outcomes were the rate of aneuploidy, blastocyst, and pregnancy. Statistical analyzes were performed using SPSS software version 23, and the data were analyzed using the χ^2 test. The $p < 0.05$ was considered statistically significant.

Results: Significant differences among four groups in a chemical pregnancy ($p < 0.001$), clinical pregnancy ($p < 0.001$), ongoing pregnancy ($p < 0.001$), and live birth rate ($p = 0.22$) were found. There was no early pregnancy loss and clinical pregnancy loss in cycles with paternal age under 35 years rate ($p < 0.01$). The rate of aneuploidy in sex chromosomes, embryo development in frozen embryo transfer, and fresh cycle were not significantly related to parental age.

Conclusion: We found no significant relationship between paternal age and embryo aneuploidy, but an association was found between paternal age and pregnancy outcome in embryos from ICSI cycles.

Keywords: Preimplantation Genetic Testing, Aneuploidy, Fluorescence In Situ Hybridization,

Animal Biotechnology

P-2: Evaluation of Microscopic, Flow Cytometric and Oxidative Parameters of The Frozen-Thawed Bull Sperm in a Freezing Extender Containing Myo-Inositol

Asadpour R^{1*}, Mohammadi A², Tayefi-Nasrabadi H³, Rahbar M⁴, Jafari Joozani R⁴

1. Department of Clinical Science, Faculty of Veterinary Medicine, University of Tabriz, Tabriz, Iran, , Tabriz, Iran

2. Faculty of Veterinary Medicine, University of Tabriz, Tabriz, Iran

3. Department of Basic Sciences, Faculty of Veterinary Medicine, University of Tabriz, Tabriz, Iran

4. Department of Clinical Science, Faculty of Veterinary Medicine, University of Tabriz, Tabriz, Iran

Email: rasadpour4@gmail.com

Background: This study was conducted to assess the effect of myo-inositol (MYO) supplementation in the freezing extender on the quality and oxidative stress parameters of frozen-thawed bull sperm.

Materials and Methods: Semen samples were obtained from four bulls ($n=24$, six ejaculates per bull), twice a week, and diluted into four equal aliquots in freezing extenders containing various concentrations of MYO (0, 2, 3 and 4 mg/mL). After thawing, velocity parameters, plasma membrane functionality, apoptosis statuses, malondialdehyde (MDA) and oxidative stress parameters were evaluated.

Results: Supplementation of freezing extender with 3 mg/mL MYO was found to result in higher rapid motility ($62.22 \pm 2.63\%$) progressive motility ($77.45 \pm 2.65\%$), viability ($78 \pm 0.91\%$), plasma membrane integrity (86 ± 0.85); catalase (CAT; 20.03 ± 0.39 U/mL) activity and lower significant of lipid peroxidation (3.60 ± 0.15 nmol/dL) compared with control group ($p < 0.05$). A significantly lower percentage of intact acrosome was observed for frozen-thawed semen in the extender supplemented with 4mg/mL MYO compared with the control group ($p < 0.05$). Freezing the sperm in the extender containing 3 mg/mL of MYO lead to a higher percentage of live cells (38.3 ± 2.76). Beat-cross-frequency (BCF), amplitude of lateral head displacement (ALH), linearity (LIN), total antioxidant activity (TAC), total peroxidase activity (TPA), and early apoptotic statuses and superoxide dismutase (SOD) activities were not affected by MYO levels in the extenders ($p > 0.05$).

Conclusion: These finding revealed that supplementation of the freezing extender with 3 mg/ mL MYO decreased MDA, Phosphatidylserine (PS) extranailisation and can improve sperm integrity and functionality state following freezing-thawing process.

Keywords: Apoptosis, Cryopreservation, Oxidative Stress, Antioxidants, Sperm Parameters

P-3: Improvement of Rooster Semen Quality Using Gallic Acid during Cryopreservation in the Lake Extender

Najafi A^{1*}, Mehdipour M², Daghigh Kia H²

1. Department of Animal and Poultry Science, College of Aburaihan, University of Tehran, Tehran, Iran

2. Department of Animal Science, College of Agriculture, University of Tabriz, Tabriz, Iran

Email: abozar.najafi@ut.ac.ir

Background: Numerous experiments have been conducted in recent years to enhance the outcome of avian semen cryopreservation through dietary supplementation and using antioxidants in semen extenders prior to the freeze-thawing process. The aim of this study was to determine the effect of gallic acid rooster sperm quality following the freeze-thawing.

Materials and Methods: Ejaculates were obtained using the dorso-abdominal massage technique and were often collected by the same person and under the same conditions. Following processing, the ejaculates were put in a thermal flask containing water at a temperature of 37 °C for 5 minutes before moved to the laboratory for primary examination. Ejaculates with a vol-

ume greater than 0.2 mL, a concentration greater than 3×10^9 sperm/mL, and a total motility greater than 80% were used in this study. After diluting the sperm, it was cooled to 4 °C for 3 hours. Straws were cryopreserved in vapors of liquid nitrogen. Separately, the cryopreserved straws were thawed (37 °C for 30 s) in a water bath and then examined.

Results: The results indicated that addition of gallic acid to the extender had a significant effect on total motility ($P < 0.05$) and progressive motility with increasing values in the 200 µM gallic acid group. Additionally, lipid peroxidation was significantly lower in semen samples diluted with 200 µM gallic acid than in the control group.

Conclusion: According to the findings, using an optimal dose of gallic acid can help protect rooster semen from structural and functional damage during cryopreservation storage.

Keywords: Sperm, Gallic Acid, Freezing and Thawing, Lipid Peroxidation

P-4: Assessment of Freezing and Thawing Procedure on Chromatin Stability and Membrane Integrity of Bull Semen Sample

Roshanzamir A¹, Taravat M²

1. Department of Theriogenology, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran

2. Department of Clinical Science, Faculty of Veterinary Medicine, University of Tabriz, Tabriz, Iran

Email: amirmahdi.rz@yahoo.com

Background: The present study's objective was to evaluate the effect of freezing and thawing processes on fragmentation chromatin of cryopreserved bull semen.

Materials and Methods: For the experiment, twelve ejaculates collected from three bulls were diluted at 37°C in Bioxcell® extender. The diluted semen was cooled to 4°C within 2 hours, equilibrated at 4°C for 4-6 hours following the addition of glycerol, and then filled in 0.5 ml French straws and frozen in a programmable cell freezer before plunging into liquid nitrogen. Semen samples were thawed at 37°C for 40, 50°C for 20, and 65°C for 10 seconds after two weeks of storage inside liquid nitrogen. Post-thaw plasma membrane integrity, DNA damage of each semen sample, was assessed using hypo-osmotic swelling and sperm chromatin dispersion assay.

Results: Findings showed the plasma membrane integrity after thawing was different between fresh and post-thaw semen ($p < 0.01$). Also, the assessment of the type of haloes in the chromatin Dispersion test showed no significant DNA damage differences between groups ($p > 0.05$).

Conclusion: In conclusion, this research revealed that freezing and thawing processes had a malicious effect on the fragmentation of the chromatin of cryopreserved bull semen.

Keywords: Semen Evaluation, Sperm Chromatin Dispersion Assay, Hypo-Osmotic Swelling Test, BULL

P-5: Evaluation of Apoptosis, Dna Fragmentation and Acrosome Integrity Between High and Low Motile Bulls Semen Samples Following Freez-Thawing Procedure

Taravat M¹, Roshanzamir A², Asadpour R¹, Rahbar M¹, Rezaei Topraggaleh T³

1. Department of Clinical Science, Faculty of Veterinary Medicine, University of Tabriz, Urmia, Iran

2. Department of Theriogenology, Faculty of Veterinary Medicine, University of Tehran, Urmia, Iran

3. Department of Anatomical Science, Faculty of medicine, Urmia university of medical science, Urmia, Iran

Email: morteza.taravat@tabrizu.ac.ir

Background: The freeze-thaw process can reduce motility, and fertilization capability of spermatozoa. Growing body of literature have shown that the freeze-thaw process increases sperm DNA fragmentation, apoptosis and acrosome damage. Therefore we aimed to evaluate post-thawed apoptosis status, DNA and acrosome integrity between high and low motile bull semen samples.

Materials and Methods: Sixty four semen samples were collected from 8 hulkstein bull (thirty two from high motile; progressive motility $> 70\%$ and thirty two from low motile; progressive motility $< 40\%$). Semen samples from each two group were then diluted with tris egg-yolk extender and aspirated into a 0.5 mL straws. Straws then frozen in -196°C. After thawing, samples evaluated for apoptosis status, DNA fragmentation and acrosome integrity with Annexin V-FITC, sperm chromatin structure assay (SCSA) and PSA-FITC methods, respectively

Results: Our results showed that in high motile group, the late apoptosis has significantly increase compare to low motile group ($p=0.013$). In early apoptosis, live cell, necrosis and DNA fragmentation there were no significant differences between the both study groups. Acrosome integrity was significantly higher in high progressive samples compared to low motile group (0.009).

Conclusion: Our results demonstrated that late apoptosis and acrosome integrity of high motile samples have significantly higher compare to low motile group after freeze-thaw process, But in other flowcytometric parameters including live cell, necrosis, early apoptosis and DNA fragmentation there were no significant differences between two groups.

Keywords: Apoptosis, DNA FRagmentation,

P-6: Evaluating The Effect of Three Different Extenders on Kinematic Parameters, DNA Fragmentation and Mitochondrial Potential of Bull Semen Following Freezing and Thawing

Taravat M¹, Roshanzamir A²

1. Department of Clinical Science, Faculty of Veterinary Medicine, University of Tabriz, Tabriz, Iran

2. Department of Theriogenology, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran

Email: morteza.taravat@tabrizu.ac.ir

Background: The objective of the present study was to compare the effect using three different extenders such as Triladyl, tris-egg yolk and AndroMed on bull semen Quality parameters.

Materials and Methods: For the experiment eighteen split pooled ejaculates collected from three buffalo bulls possessing more than 80% visual sperm motility, were diluted at 37°C either Triladyl®, AndroMed® and tris-egg yolk extender. The diluted semen was cooled to 4°C, equilibrated at 4°C following the addition of glycerol and then filled in 0.5 ml French straws and frozen in programmable cell freezer. Semen was thawed at 37°C for 40 seconds. Post thaw sperm motility, DNA damage and mitochondrial membrane potential of each semen sample were assessed by computer assisted sperm analyzer, sperm

chromatin structure assay and JC-1, respectively.

Results: No differences were reported post thaw kinematic parameters of bull semen in the Triladyl® extender compared to semen that extended in the tris egg yolk extender ($p>0.05$). However, it was better in AndroMed® in compression with others. Assessment of the post thaw plasma membrane integrity, DNA damage and abnormal mitochondrial membrane potential activities showed not significant differences between extenders ($p>0.05$).

Conclusion: In conclusion, the result of this research revealed that the use of AndroMed® commercial free egg-yolk based extender is suitable and recommendable in compression with Triladyl® for cry preservation of buffalo semen.

Keywords: Triladyl, Andromed, Tris-Egg Yolk

Embryology

P-7: The Influence of Single Blastomere Biopsy on Human Embryo Expansion and Pregnancy Result

Aghajani S¹, Mehrafza M², Hosseini A²

1. Department of Biology, Islamic Azad University, Rasht, Iran
2. Mehr Fertility Research Center, Guilan University of Medical Sciences, Rasht, Iran

Email: shahrzadaghajani1987@gmail.com

Background: Preimplantation genetic testing (PGT) effect in fresh and frozen intracytoplasmic sperm injection cycles and the possible damage is still unclear. Studies on aspects of this method, such as the prevalence of expansion on day five and pregnancy rate, are limited. This study aimed to assess the rate of embryo expansion on day 5 in PGT patients, and particular developmental components (expansion stage, inner-cell-mass, and trophectoderm) of euploid blastocysts influence pregnancy outcomes.

Materials and Methods: In this study, 115 intracytoplasmic sperm injection cycles were evaluated following PGT in fresh or frozen embryo transfer cycles from February 2018 to June 2020. The fresh cycles without PGT included 166 embryos as a control group. Single blastomere biopsy was done for 277 embryos with 6-8 cells and graded A on day three. Following evaluation, embryos were transferred on day five. Statistical analyzes were done with SPSS 23, and $p<0.05$ was considered statistically significant.

Results: In embryos screened with X, Y, 13,18, and 21 probes in the PGT cycles, more euploid embryos reached blastocyst with expansion 3, 4, and 5 ($p<0.001$). Single blastomere biopsy in PGT groups increases blastocyst expansion grade, and pregnancy outcomes compare with blastocyst embryos without blastomere biopsy ($p<0.01$). Embryos with an expansion, trophectoderm, and inner-cell-mass grade A compared with C had a higher pregnancy rate ($p<0.01$).

Conclusion: Among euploid embryos, expansion grade is the best predictor of sustained implantation. Therefore, this investigation shows that laser zona hatching may positively affect embryo expansion grade and pregnancy rates.

Keywords: Preimplantation Genetic Testing, Zona Pellucida, Fluorescence In Situ Hybridization,

P-8: The Protective Effects of Pretreatment with Zinc on The Number of Sertoli Cells in Morphine-Receiving Male Rats

Asgharzadeh F^{1,4*}, Roshan-Milani S^{2,3,4}, Ahmadi K^{2,4}, Abdollahzadeh Fard A²

1. Student Research Committee, Urmia University of Medical Sciences, Urmia, Iran

2. Department of Physiology, Faculty of Medicine, Urmia University of Medical Sciences, Urmia, Iran

3. Neurophysiology Research Center, Urmia University of Medical Sciences, Urmia, Iran

4. Cellular and Molecular Research Center, Department of Physiology, Urmia University of Medical Sciences, Urmia, Iran

Email: shivamilani@umsu.ac

Background: The previous study has reported that morphine enhances apoptosis in testicular cells and also pretreatment with zinc decreases morphine-induced apoptosis at *in vivo* experimental models. This study aimed to investigate the effects of morphine and pretreatment with zinc on the number of Sertoli cells in rat testis.

Materials and Methods: Male Wistar rats were divided into three groups ($n = 5$ /group): Control (normal saline 0.2 mL; IP, for 21 consecutive days); morphine (3 mg/kg; IP, for 21 consecutive days); and morphine pretreated with zinc (zinc 5 mg/kg; IP, 1 h before morphine injection, for 21 consecutive days). In the end, the rats from every group were sacrificed under ketamine (60 mg/kg) and xylazine (10 mg/kg) anesthesia. Testis samples were collected. The intermediate filament protein vimentin, as a marker for Sertoli cell configuration, was used for immunohistochemical staining.

Results: Vimentin immunohistochemical staining revealed a significant reduction in the numbers of Sertoli cells in the morphine-treated group in comparison with the control group ($60\% \pm 5$ versus $100\% \pm 5$, $P<0.01$). Pretreatment with zinc reversed the adverse effects of morphine ($80\% \pm 5$ versus $60\% \pm 5$, $P<0.05$).

Conclusion: In this study, the evaluation of testicular apoptosis via immunohistochemistry staining showed the number of Sertoli cells in morphine-treated rats significantly reduced. Also, there was a protective effect of zinc against the adverse changes induced by morphine. These results were in agreement with the results of other studies that revealed the protective role of zinc in morphine-induced testicular toxicity in rats.

Keywords: Morphine, Rat, Sertoli cell, Zinc,

P-9: Therapeutic Effects of Zinc on Morphine-Induced Testicular Cell Apoptosis in Male Rats

Asgharzadeh F^{1,4*}, Roshan-Milani S^{2,3,4}, Ahmadi K^{2,4}, Abdollahzadeh Fard A²

1. Student Research Committee, Urmia University of Medical Sciences, Urmia, Iran

2. Department of Physiology, Faculty of Medicine, Urmia University of Medical Sciences, Urmia, Iran

3. Neurophysiology Research Center, Urmia University of Medical Sciences, Urmia, Iran

4. Cellular and Molecular Research Center, Department of Physiology, Urmia University of Medical Sciences, Urmia, Iran

Email: shivamilani@umsu.ac

Background: Chronic use of morphine is associated with reproductive complications, such as hypogonadism and infertility. Other studies have previously shown that specific agonists

of different opioid receptors enhance apoptosis in testicular cells. Also, it has been recently shown pretreatment with zinc decreased morphine-induced apoptosis in macrophages. However, little information is available about the effects of morphine on testicular cells apoptosis and the survival effects of zinc on morphine-induced testicular injury.

Materials and Methods: Male Wistar rats were divided into three groups (n = 5/group): Control (normal saline 0.2 mL; IP, for 21 consecutive days); morphine (3 mg/kg; IP, for 21 consecutive days); and morphine pretreated with zinc (zinc 5 mg/kg; IP, 1 h before morphine injection, for 21 consecutive days). In the end, the rats from every group were sacrificed under ketamine (60 mg/kg) and xylazine (10 mg/kg) anesthesia. Testis samples were collected for TUNEL assay.

Results: TUNEL assay showed that exposure to morphine significantly increased cell apoptosis in testicular tissue compared with the control group (41.8 ± 3.08 versus 2.14 ± 0.55 , respectively, $p < 0.001$). Pretreatment with zinc significantly reduced morphine-induced apoptosis in germinal cells of seminiferous tubules (12.8 ± 1.44 versus 41.8 ± 3.08 , respectively, $p < 0.001$).

Conclusion: The evaluation of testicular apoptosis via TUNEL staining revealed a significant reduction of testicular in morphine-treated rats. A potential protective effect of zinc against the adverse changes induced by morphine was also observed. These findings suggest that pretreatment with zinc can relatively prevent morphine-induced injury on testicular tissue. Nevertheless, further studies are required to more clarify this finding.

Keywords: Morphine, Rat, Testis, Apoptosis, Zinc

P-10: Investigating The Effect of Lomustine on Testis Structure And Spermatogenesis Activity

Badri Seighaladehi O^{1, 2*}, Hezavehi M², Esmaeeli V², Hajiagh-alou S², Mohseni Kouchesfehiani H¹, Ghasemi Z²

1. Department of Animal Biology, Faculty of Biological Sciences, Kharazmi University, Tehran, Iran

2. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: kouchesfehiani@khu.ac.ir

Background: Today, cancer is one of the serious diseases around the world, chemotherapy is the main method for treating it. Chemotherapy drugs are highly toxic, that negatively affect sensitive cells like spermatogonia stem cells. Lomustine is a chemotherapy drug that alkylates the cell genome. Therefore, this study aimed to evaluate the effects of lomustine on testicular tissue and sperm quality in adult male mice

Materials and Methods: Accordingly, 15 NMRI male mice were divided into three groups, the control group did not receive any treatment, the group treated with lomustine solvent (saline with ethanol and tween 80) and the group treated with 50 mg/kg lomustine. 35 days after injection sperm quality parameters such as motility, density, viability and morphology were evaluated. Testicular histology was also examined by hematoxylin and eosin staining.

Results: Our findings showed that a dose of 50 mg/kg lomustine resulted in a significant reduction in sperm concentration, total motility percentage, progressive motility, sperm survival compared to the control group. Also, histological evaluation of testes showed an increase in interstitial space and a decrease in spermiogenesis coefficient in the lomustine group compared to other groups

Conclusion: Our results showed that lomustine can damage testicular tissue and the process of spermatogenesis and compromised fertility in men treated with this drug

Keywords: Chemotherapy, Male Fertility, Sperm, Testicular Tissue, Lomustine

P-11: In Vitro Morphological Mouse Sperm Production on Artificial Testis Engineered by 3D Printing of Extracellular Matrix

Bashiri Z^{1, 2*}, Amiri I^{4, 3}, Gholipourmalekabadi M^{5, 6}, Falak Reza⁷, Asgari H^{1, 2}, Koruji Morteza^{1, 2}

1. Stem Cell and Regenerative Medicine Research Center, Iran University of Medical Sciences, Tehran, Iran

2. Department of Anatomy, School of Medicine, Iran University of Medical Sciences, Tehran, Iran

3. Research Center for Molecular Medicine, Hamadan University of Medical Sciences, Hamadan, Iran

4. Endometrium and Research Center, Hamadan University of Medical Sciences, Hamadan, Iran

5. Cellular and Molecular Research center, Iran University of Medical Sciences, Tehran, Iran

6. Department of Tissue Engineering & Regenerative Medicine, Faculty of Advanced Technologies in Medicine, Iran University of Medical Sciences, Tehran, Iran

7. Immunology Research Center (IRC), Institute of Immunology and Infectious Diseases, Iran University of Medical Sciences, Tehran, Iran

Email: koruji.m@iums.ac.ir

Background: In recent years, concerns have been raised about how to maintain fertility in men, which is not only because of the lack of appropriate solutions but also due to the increasing prevalence of infertility problems among men. Therefore, the differentiation of Spermatogonial stem cell (SSC) on printed scaffold derived from the extracellular matrix (ECM) of testis was evaluated.

Materials and Methods: Ram testicular tissue was decellularized using hypertonic solution -Triton X-100. The extracted ECM was used as a bio-ink for the fabrication of artificial testes. Testicular cells were then isolated from the testes of neonate mice. Cell viability evaluated using MTT test and SSCs differentiation on printed alginate-gelatin scaffolds (group I) and ECM-alginate-gelatin scaffolds (group II) using immunocytochemistry, flow cytometry and real-time PCR techniques was assessed. H & E, Toluidine blue and Giemsa staining, and TEM were also used to evaluate cell morphology.

Results: The MTT test indicated that the cell viability in group II was significantly higher than group I ($P > 0.05$). The expression of Scp3, Acr and Prm1 gene using real-time PCR in group II was significantly higher than group I ($P > 0.05$). Immunocytochemistry and flow cytometry analysis confirmed the results of real-time PCR. In group II, cells with distinct heads, necks and tails similar to mature sperm were observed, while in group I, round cells without tails were visible.

Conclusion: We concluded that the culture of SSCs on bioartificial testis improves the process of spermatogenesis to achieve mature sperm. Therefore, 3D printing using testicular ECM can be an ideal strategy for fertility restoration.

Keywords: Sperm Production, 3D Printing, Artificial Testis, Testicular Extracellular Matrix, Fertility Restoration

P-12: Morphological Evaluation of Oocytes With Image Processing Methods in Patients Undergoing Intracytoplasmic Sperm Injection

Eslamdoost A^{1*}, Mehrafza M², Aghajani S²

1. Department of Engineering, Islamic Azad University, Rasht, Iran
2. Mehr Fertility Research Center, Guilan University of Medical Sciences, Rasht, Iran
Email: alireza.eslamdoost.ec@gmail.com

Background: Morphological assessment of oocyte quality is one of the most essential and sensitive steps in infertility treatment and deciding on treatment type. Embryologists do a diagnosis of the type and severity of abnormalities in IVF centers. Diagnosis is based on the appearance of the oocyte and according to scientific standards. Factors such as fatigue, inexperience, and taste can cause differences in the outcome. Using image processing, the oocyte and its cytoplasm can be identified and its features extracted. Finally, with the help of the decision tree, the regular oocyte can be distinguished from the abnormal.

Materials and Methods: The approach of the present study includes four main phases: 1) segmentation, 2) feature extraction, 3) learning model (decision tree), and 4) model assessment. In the segmentation phase, we use two algorithms; first, the oocyte was identified, and then the required features are extracted with the help of the second algorithm using the Hough transform. In the second phase, the extracted features are used to diagnose oocytes according to 11 different, including cytoplasmic and zona-pellucida abnormalities. This approach is made by wavelet transforming and Fourier conversion.

Results: In this study, it was identified with great accuracy using innovative oocyte and cytoplasm algorithms. Seven hundred photos were received from Mehr Infertility Center Rasht. In all cases, the designed algorithms succeeded in distinguishing the normal from the abnormal oocyte.

Conclusion: It seems that measuring the quality of oocytes with image processing helps classify oocytes into normal and abnormal without human intervention.

Keywords: Biomedical Image Processing, Decision Tree, Human Oocyte, Intracytoplasmic Sperm Injection,

P-13: The Effect of Caffeine-Conditioned Mesenchymal Stem Cell Secretions on Sperm Count, Motility, and Survival in Male Rats

Goshadehzein P^{1*}, Babaei-Balderlou F¹, Razi M², Najafi G², Abtahi-Foroushani SM³

1. Department of Biology, Faculty of Sciences, Urmia University, Urmia, Iran
2. Department of Basic Sciences, Faculty of Veterinary Medicine, Urmia University, Urmia, Iran
3. Department of Microbiology, Faculty of Veterinary Medicine, Urmia University, Urmia, Iran
Email: Parinaz.goshadehzein@gmail.com

Background: Mesenchymal stem cells (MSCs) are able to secrete metabolites and factors affecting a variety of cells in the body, including gonadal cells. Due to the prevalence of reproductive disorders in human communities, in the present study, the effects of substances secreted from simple and preconditioned mesenchymal stem cells with caffeine on some sperm characteristics in male rats were investigated.

Materials and Methods: In this study, 18 male rats weighing 190 ± 20 g were divided into three groups of six salines, conditioned medium (MSC-CM), conditioned medium of caffeine-treated cells 0.5 mM (MSC-CCM). MSCs were extracted and cultured from the bone marrow of two rats. Intraperitoneal injection of solutions was performed three times during the treatment period (42 days) at the rate of 0.1 ml. Fourteen days after the last injection, semen was sampled to measure sperm count, motility and viability.

Results: MSC-CM administration significantly increased sperm motility compared to saline injection ($P < 0.05$) but did not have a significant effect on sperm count or survival ($P > 0.05$). MSC-CCM injection significantly reduced sperm count and motility compared to other groups ($P < 0.05$) but did not have a significant effect on sperm survival ($P > 0.05$).

Conclusion: Although the secretions from mesenchymal stem cells increased sperm motility, treatment of these cells with caffeine led to a severe decrease in sperm motility and number. These changes may be due to the influence of secreted factors by simple or preconditioned stem cells with caffeine on the level of steroid hormones and possibly the physiological characteristics of sperm.

Keywords: Stem Cell, Caffeine, Conditioned Medium, Reproduction, Sperm

P-14: Evaluation of The Protective Effect of Melatonin on Oocyte, Embryo & Ovarian Tissue Parameters in Female Mice Exposed To Acetamidrid

Hasanzadeh Teloty R^{1*}, Jorsaraei SG¹, Hejazian LB¹, Feizi F¹, Najafzadeh Varzi H²

1. Department of Anatomical Sciences, School of Medicine, Cellular and Molecular Biology Research Center, BABOL, Iran
2. Department of Clinical Pharmacy, School of Medicine, Cellular and Molecular Biology Research Center, BABOL, Iran
Email: alijorsara@yahoo.com

Background: Acetamidrid (ACP) is a neonicotinoid insecticide and it is the most highly effective insecticide worldwide for crop protection and control fleas infesting in livestock and pet animals. To see the effects of melatonin, a pineal secretory product, against toxic pathological changes after multiple exposures to Acetamidrid on reproductive system parameters of female mice.

Materials and Methods: A subacute toxicity study of ACP was undertaken in 42 female mice in 7 groups. Two different concentrations of ACP (10, 20 mg/kg of body weight) were injected intraperitoneal to mice for a period of a month. The other two groups get ACP and Melatonin combine. The fifth group was treated only with melatonin & control mice that were treated with normal saline as poison solution and melatonin together. The last one was treated by Tween as melatonin vehicle. Different histopathological changes were noted in this experiment.

Results: Acetamidrid-induced mice showed a decrease in body weight, histological damages in the ovary and a decrease in oocytes quality. There was a significant decrease in the toxic pathological injury of ACP in the group which treated by ACP and melatonin combine

Conclusion: This study shows that melatonin can reduce the toxic effects of ACP and be useful for reducing ACP reproductive toxicity.

Keywords: Melatonin, Acetamidrid, Histopathology, Reproductive System,

P-15: Alpha-Lipoic Acid Improves The Structure and Survival of Mouse Ovarian Tissue after Transplantation

Hatami S', Shariatzadeh SMI, Soleimani Mehranjani M

Department of Biology, Faculty of Science, Arak University, Arak, Iran

Email: s.hatami69@gmail.com

Background: The main aim of ovarian tissue transplantation is to restore fertility in young women undergoing chemotherapy. However, the most important complication of its is reperfusion-ischemia and decreased blood supply after transplantation that can lead to ovarian dysfunction. The follicular destruction generally results in the loss of both endocrine and reproductive functions. α -lipoic acid (ALA) has potent antioxidant, anti-inflammatory properties. We aimed to evaluate the effect of α -lipoic acid on the total volume of the ovary, the volume of the cortex and medulla and the number of types of follicles following mouse ovarian tissue transplantation.

Materials and Methods: 18 Mice were randomly divided into control, autograft (whole ovarian tissue transplanted in the gluteus superficialis muscle, receiving intraperitoneal injections of saline), autograft + ALA (receiving 100 mg/kg" intraperitoneal injections of ALA, 30 minutes before transplantation). 28 days after ovary transplantation, the total volume of the ovary, the volume of the cortex and medulla and the number of types of follicles were estimated. Data were analyzed using one-way ANOVA and Tuckey's test and the means were considered significantly different at p-value < 0.05.

Results: the total volume of the ovary, the volume of the cortex and medulla and the number of types of follicles in the autograft group decreased significantly compared to the control, while it showed a significant increase in the autograft + ALA group compared to the autograft group (p < 0.05).

Conclusion: α -lipoic acid protects ovarian tissue against ischemic-reperfusion injury and improves its function after transplantation.

Keywords: Ovarian Tissue Transplantation, α -Lipoic Acid, Ischemia-reperfusion, Ovarian dysfunction,

P-16: Protective Role of Aloe Vera on Offspring Testis of Diabetic Mothers

Khaksar Z', Moradi HR , Jafari Barmak M

Department of Basic Sciences, School of Veterinary Medicine, Shiraz University, Shiraz, Iran

Email: hr.moradi@shirazu.ac.ir

Background: Diabetic mothers during pregnancy don't secrete enough insulin, glucose increases in the mother and fetus blood, and cause many complications. One of the possible disorders of maternal diabetes is the effect on the male reproductive system. The use of medicinal herbs is recommended in reducing complications during pregnancy. The Aloe Vera extract causes a significant decrease in blood glucose levels. This study was carried out to investigate the effects of the Aloe Vera extract on testis histomorphometry in rat offspring from diabetic mothers.

Materials and Methods: Forty adult female rats were divided into four groups including healthy control group (without treatment), diabetic control (50 mg/kg of streptozotocin /IP), Aloe Vera control (400mg/kg /orally) and diabetic+Aloe Vera (400mg/kg /orally). Then, the rats got pregnant, and five male

infants at the age of 30, 60 and 90 days of each group were chosen and dissected and testis tissue was removed for histological study.

Results: The results of testis tissue in infants born to diabetic mothers on different days showed a significant decrease in the number of spermatogonia, Sertoli and Leydig cells and diameter of seminiferous tubules in the diabetic group compared with other groups (p<0.05). On the contrary, Aloe Vera extract resulted in a significant increase in the number of spermatogonia, Sertoli and Leydig cells and seminiferous tubule diameter compared with diabetic group in 30, 60 and 90 day-old rats (p<0.05).

Conclusion: This study showed that Aloe Vera extract improves the histological structure in the testis of 30, 60 and 90 day-old infants born to diabetic mothers.

Keywords: Aloe Vera, Diabetic Mothers, Histology, Testis, Rat

P-17: Evaluation The Effects of Purslane (Portulaca Olerace) and Fennel (Foeniculum Vulgare Mill) Hydroalcoholic Extracts on Human Spermatozoa Functional Parameters after Vitrification

Lorian K', Koohestanidehaghi Y

Research & Clinical Center for Infertility, Yazd Reproductive Sciences Institute, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Email: klorian@alumnus.tums.ac.ir

Background: Reactive oxygen species (ROS) are produced during cryopreservation in human sperm, justifying impaired sperm function and antioxidant compounds reduce the damaging effects of ROS. Therefore, this study aimed to evaluate motility parameters, plasma membrane integrity (PMI), mitochondrial membrane potential (MMP), intracellular ROS and DNA damage to recognize the optimum concentrations of fennel and purslane hydroalcoholic extracts for human spermatozoa cryopreservation.

Materials and Methods: Twenty human sperm samples were used and divided into seven equal groups consisting of fennel hydroalcoholic extract (5, 10 and 15 mg/l), purslane hydroalcoholic extract (25, 50 and 100 mg/l) and no additive.

Results: Supplementation of 25 and 50 mg/l purslane extract and 10 mg/l fennel extract in cryopreservation extender significantly increased motility and PMI of sperm with a significant reduction in intracellular ROS compared to control groups (P < 0.05). Purslane extract 50 mg/l concentration elevated progressive motility and MMP, compared to control group (P < 0.05). No significant differences were seen for motion patterns and DNA damage of frozen-thawed human sperm in an extender containing these extracts.

Conclusion: The results showed that supplementation of 50 mg/l purslane extract and 10 mg/l fennel extract in semen cryopreservation extender has more potential to decrease intracellular ROS, and subsequently elevate motility and PMI of human sperm.

Keywords: Vitrification, Human Sperm, Fennel, Purslane,

P-18: Protective Role of Ginseng on Histological Changes in Offspring Testis of Diabetic Rat

Moradi HR', Khaksar Z, Zare A

Department of Basic Sciences, School of Veterinary Medicine, Shi-

raz University, Shiraz, Iran
 Email: Khaksar@Shirazu.ac.ir

Background: Despite many advances in controlling the complications of diabetes during pregnancy, many maternal disorders in the fetus and then in the infants are still reported. One of the possible disorders of maternal diabetes is the effect on the reproductive system of male offspring. The usage of medicinal herbs is recommended in reducing complications during pregnancy. The aim of this study is the evaluation of the ginseng extract effect on testicular tissue in infants born to diabetic mothers.

Materials and Methods: Thirty-two adult female rats were divided randomly into four groups: control (no treatment), experimental diabetes (50 mg/kg streptozotocin), ginseng extract (400 mg/kg), and diabetes+ ginseng extract. Then, the rats got pregnant, and five male infants at the age of 30, 60 and 90 days of each group were chosen and dissected and testicular tissue was removed for histological study.

Results: The results of testicular tissue showed that the number of spermatogonia, Sertoli, Leydig cells and diameter of seminiferous tubules has decreased in the diabetic group compared with the control group in infants born to diabetic mothers on different days ($P < 0.05$). On the contrary, ginseng extract resulted in a significant increase in the number of spermatogonia, Sertoli, Leydig cells and seminiferous tubule diameter compared to the diabetic groups at different ages ($P < 0.05$).

Conclusion: In summary, it can be concluded that ginseng extract (400 mg/kg) improves the histological structure and cellular parameters in the testis of 30, 60 and 90 days-old infants born to diabetic mothers.

Keywords: Histology, Ginseng, Testis, Diabetic Mothers, Rat

P-19: Melatonin Mitigates The Oxidative Stress And Apoptosis in Ovine SCNT Embryos

Nadri P^{1*}, Jafarpour F², Tanhaei Vash N², Lachinani L³, Dormiani K³, Mahdavi AH¹, Ansari-Mahyari S¹, Nasr-Esfahani MH²

1. Department of Animal Science, College of Agriculture, Isfahan University of Technology, Isfahan, Iran

2. Department of Reproduction and Development, Cell Sciences Research Center, Royan Institute for Animal Biotechnology, ACE-CR, Isfahan, Iran

3. Department of Molecular Biotechnology, Cell Science Research Center, Royan Institute for Biotechnology, ACECR, Isfahan, Iran
 Email: s.ansari@cc.iut.ac.ir; mh_nasr@med.mui.ac.ir

Background: Despite successful outcomes of the somatic cell nuclear transfer (SCNT) technique, the low efficiency of this technique restricts its application. It has been demonstrated that Melatonin can improve the development competence of SCNT embryos in bovine, porcine and rabbit species. Nevertheless, its function in ovine SCNT embryos is unclear

Materials and Methods: In this study, we supplementation of embryo culture medium with 10 nM melatonin for 7 days

Results: We showed that supplementation of embryo culture medium with 10 nM melatonin for 7 days improved the blastocysts rate (32.5 ± 2.6) compared to the control group (19.11 ± 2.4). Furthermore, we observed that melatonin treatment substantially decreased the reactive oxygen species (ROS) level and the ratio of apoptotic cells in derived blastocysts. Real-time gene expression analysis showed that melatonin up-regulated

the BCL2 (anti-apoptotic gene) and down-regulated the CAS-PASE3 (pro-apoptotic gene) in ovine SCNT blastocysts. Unexpectedly, our data revealed that Melatonin did not change either GSH level or the expression of SOD1 and GPX4 in derived blastocysts.

Conclusion: So we conclude that supplementation of embryo culture medium with 10 nM melatonin alleviates the hyperoxic micro-environment in derived blastocysts which leads to a higher developmental rate in the treated group.

Keywords: Melatonin, Reactive Oxygen Species, Somatic Cell Nuclear Transfer, Apoptosis, Gene Expression

P-20: Intracytoplasmic Sperm Injection Outcomes And Pregnancy Rate of Cult-Active Medium (Oocyte Activation) in Patients Undergoing Frozen–Thawed Sperm

Piroozmanesh H^{*}, Jannatifar R

Department of Reproductive Biology, University Jihad Center, Qom, Iran

Email: rahiljanati2016@gmail.com

Background: Fertilization failure is the major problem that may be faced in 30–55% of the patients during an intracytoplasmic sperm injection cycle (ICSI). The present study aimed to investigate the possible effects of cult active medium for patients with Frozen–thawed sperm that underwent ICSI.

Materials and Methods: This retrospective study included 50 patients from routine ICSI with Frozen–thawed sperm (Control group) and 50 ICSI cycles combined with cult active medium for patients with Frozen–thawed sperm. Around 16 to 18 hours after ICSI, fertilization was assessed. The percentage of cleavage and embryo quality were calculated 72 hours after ICSI. The pregnancy rate was determined by a Biochemical experiment.

Results: There are significant differences in the fertilization and cleavage rates of ICSI cycles combined with cult active medium ($P < 0.05$). Embryo quality no difference between with cult active medium and control group ($P > 0.05$). The pregnancy rate significantly increased ($P < 0.05$).

Conclusion: The findings showed that Cult-active treatment may fertilization and cleavage rates, which in turn, affect the implantation and pregnancy rate for patients with Frozen–thawed sperm.

Keywords: Infertility, Cult-Active Medium, Fertilization, Frozen–Thawed Sperm,

P-21: Effect of N-acetyl-L-cysteine and Alpha Lipoic Acid Supplement in Freezing Media on The Post-Thaw Sperm Quality

Piroozmanesh H^{*}, Jannatifar R

Department of Reproductive Biology, University Jihad Center, Qom, Iran

Email: rahiljanati2016@gmail.com

Background: This study aims to evaluate the beneficial effect of N-acetyl-cysteine (NAC), Alpha lipoic acid (ALA), and a combination of NAC + ALA supplement in freezing media on the post-thaw sperm quality.

Materials and Methods: A sample of 30 patients with Asthenozoospermia referred to Qom University Jihad Infertility Treatment Center was evaluated in four groups: freezing me-

dium (control group), freezing medium+NAC, freezing medium+ ALA, and their combination+ freezing medium. Analysis of sperm parameters before and after Post thaw was analyzed according to WHO (2010). Mitochondrial Membrane Potential (MMP) of sperm was evaluated by rhodamine staining. Assessment of sperm Acrosome Reaction (AR) was evaluated by PSA- FITC. MDA level and antioxidant enzymes (CAT, and SOD) using ELISA, DNA fragmentation was assessed using TUNEL staining. The expression level of Nrf2 was assessed by real-time PCR assay.

Results: NAC, and ALA alone significantly improved total, and progressive motility and viability ($p < 0.05$). DNA integrity was decreased in NAC, and ALA-treated samples compared to the control group ($p < 0.05$). But normal morphology no significant difference between ($p > 0.05$). MMP can be increased in samples were frozen by NAC, and ALA supplemented freezing media ($p < 0.05$). While did affect the amount of AR ($p > 0.05$). MDA diminished in samples were frozen by NAC, and ALA alone supplemented freezing media ($p < 0.05$). But the level of CAT, and SOD increased ($p < 0.05$). In addition, sperm in two groups NAC, and ALA supplementation showed a significantly higher expression of the Nrf2 gene compared with that in the control group ($p < 0.05$).

Conclusion: Our results show that adding NAC, and ALA alone can reduce the cry damage of the freeze-thaw process by preserving the sperm quality.

Keywords: N-Acetyl-Cysteine, Alpha Lipoic Acid, Sperm Cryopreservation,

P-22: A Stereological Evaluation on The Effect of L-Carnitine on Histological Changes in Mice Ovary Following Autotransplantation

Sanamiri K¹, Soleimani Mehranjani M¹, Shahhoseini M², Shariatzadeh MA¹

1. Department of Biology, Faculty of Science, Arak University, Arak, Iran

2. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: m-Soleimani@araku.ac.ir

Background: Ovarian tissue transplantation is performed to preserve fertility in patients undergoing chemotherapy and radiotherapy. However, the ischemia-reperfusion injury which occurs after the ovarian tissue transplantation causes follicular depletion and apoptosis. L-carnitine has antioxidant and anti-inflammation properties and can therefore be used to improve follicular survival and ovarian structure following transplantation.

Materials and Methods: 18 Naval Medical Research Institute (NMRI) mice (4-5 weeks old) were divided into 3 groups ($n=6$): control, autograft and autograft+L-carnitine (200mg/kg daily intraperitoneal injections). 28 days after transplantation, ovaries were removed and studied stereologically. Data were analyzed using one-way analysis of variance (ANOVA) and Tukey test, and the means were considered significantly different at $P < 0.05$.

Results: The mean number of primordial, primary, and preantral as well as antral follicles significantly reduced in the autograft group compared to the control group, whereas these parameters were significantly higher in the autograft+L-carnitine group compared to the autograft group. The mean total volume

of the ovary and the mean volume of the cortex and medulla decreased significantly in the autograft group compared to the control group. Meanwhile, a significant increase in the mean total volume of the ovary and the volume of the medulla and cortex was observed in the autograft+L-carnitine group compared to the autograft group.

Conclusion: Our results indicated that L-carnitine can ameliorate the ischemia-reperfusion injuries on the mice ovarian tissue following autotransplantation.

Keywords: Ovary, Transplantation, L-Carnitine, Stereology

P-23: Platelet Lysate Ameliorates The Ischemic-Reperfusion Injuries in The Mice Ovarian Grafts: A Stereological Analysis

Sanamiri K¹, Soleimani Mehranjani M¹, Shahhoseini M², Shariatzadeh MA

1. Department of Biology, Faculty of Science, Arak University, Arak, Iran

2. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: m-Soleimani@araku.ac.ir

Background: Transplantation of ovarian tissue is currently an option to restore fertility in cancerous patients. However, follicle loss caused by free radical production and inflammation is a limiting factor in this procedure. Platelets contain growth factors and cytokines that play a major role in tissue repair. Therefore, we decided to assess the role of Platelet Lysate (PL) in preserving the follicular pool and restoring ovarian graft survival.

Materials and Methods: The Naval Medical Research Institute (NMRI) mice (4-5 weeks old) were randomly divided into the following groups: control, autograft and autograft+PL (5ml/kg daily intraperitoneal injections). 28 days after transplantation, ovaries were studied stereologically. Data were analyzed using one-way analysis of variance (ANOVA) and Tukey test, and the means were considered significantly different at $P < 0.05$.

Results: The mean number of follicles (primordial, primary, preantral and antral) were significantly lower in the autograft and autograft+PL group than the control group, while these parameters were significantly higher in the autograft+PL group compared to the autograft group. The mean total volume of the ovary and the mean volume of the medulla and cortex were significantly lower in both autograft and autograft+PL groups than in the control group. Meanwhile, in the autograft+PL group, these parameters were significantly higher than the autograft group.

Conclusion: Our study results provide the first evidence that treatment with PL can ameliorate ischemia/reperfusion injuries that occur after ovary autotransplantation in mice.

Keywords: Platelet Lysate, Ovary, Transplantation, Stereology,

Female Infertility

P-24: The Relationship Between Vaginismus, Dysmenorrhea, Social Support, and Tokophobia with Mediating Role of Childbirth Self-Efficacy

Esmalian Khamseh L¹, Ahmadi Tahour Soltani M²

1. Islamic Azad North Tehran University, Tehran, Iran

2. Clinical Psychology Department, Faculty Of Medicine, Baqiyatalah University Of Medical Sciences, Tehran, Iran
Email: m.ahmaditahour@gmail.com

Background: Tokophobia is a manifestation of severe anxiety that causes fear for women. As a result, women tend to avoid having children and pregnancy due to their fear of childbirth, despite their great interest in having children and the beauty of motherhood. The present study aimed to examine the relationship between Vaginismus, Dysmenorrhea, and social support and tokophobia through the mediation of childbirth self-efficacy.

Materials and Methods: The present study was a cross-sectional descriptive correlational study. The statistical population of the study consisted of all pregnant women referred to Taleghani Hospital in Tehran. Out of the population, 146 pregnant women were selected as the research sample using the availability sampling technique. Research data were collected using the Tokophobia Questionnaire (2021), Multidimensional Vaginal Penetration Disorder Questionnaire (MVPDQ), Moos Menstrual Distress Questionnaire, Perceived Social Support (MSPSS), and Lowe's Childbirth Self-Efficacy Questionnaire. The collected data were then analyzed using the Smart PLS software and statistical methods of correlation and path analysis.

Results: The results showed that there was a significant relationship between painful intercourse with child birth self-efficacy ($B=0.341$, $t=4.145$, $p<0.001$) and social support with child birth self-efficacy ($B=0.205$, $t=2.591$, $p<0.01$), but relationship between dysmenorrhea with child birth self-efficacy ($B=0.035$, $t=0.293$, $p>0.05$) and child birth self-efficacy with tokophobia ($B=0.210$, $t=1.497$, $p>0.05$).

Conclusion: According to the fitting indices of the model, it can be concluded that the tokophobia model has a weak fit on the basis of painful intercourse, dysmenorrhea, and social support and mediating role of child birth self-efficacy

Keywords: Tokophobia, Vaginismus, Dysmenorrhea, Social Support, Childbirth Self-Efficacy

P-25: A Comparison of Ovulation Induction with Clomiphene Citrate, Letrozol and Recombinant FSH in patients with polycystic Ovarian Syndrome: A Randomized Clinical Trial

Ghaffari F¹, Yahyaei A¹, Vesali S²

1. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

2. Reproductive Epidemiology Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: ghafaryf@yahoo.com

Background: Evaluation of different pharmacotherapy methods for ovulation induction in patients with polycystic ovarian syndrome (PCOS) indicates the crucial importance of selecting the best pharmacotherapy protocol for development and continuation of a safe pregnancy. Accordingly, this study aimed to compare the ovulation induced by clomiphene citrate, letrozole, and recombinant-FSH in patients with PCOS. The resulting findings, i.e. the most effective pharmacotherapy protocol for induction of ovulation to achieve the best therapeutic outcome in patients with PCOS, can be used to optimize the infertility treatment services provided to these patients.

Materials and Methods: This randomized controlled clinical trial was performed in the Royan Institute from 2017 to 2019. A total of 115 patients were enrolled in the study, but 78 patients were statistically analyzed considering the attrition rate. The data were analyzed in SPSS 22 using descriptive indices such as frequency, percent, mean, and standard deviation as well as Chi-square test and one-way ANOVA to compare the three groups in terms of the study variables.

Results: There was no difference between the study groups in terms of the patients' demographic variables, clinical history, and hormone profile before starting the ovulation induction cycle. In addition, no significant difference was observed between the groups in terms of the ovarian stimulation duration and the number of follicles greater than 15 mm on the human chorionic gonadotropin (HCG) administration day. The endometrial thickness on the HCG administration day in the recombinant-FSH group was significantly higher than the other two groups ($p=0.005$). There was no significant difference between the study groups in terms of the cancellation rate of ovarian stimulation cycle due to weak ovarian response; however, the difference regarding the risk of ovarian hyper stimulation syndrome (OHSS) was statistically significant ($p=0.045$). The letrozole group was superior to the other two in terms of the pregnancy and live birth rates ($p=0.021$ and $p=0.005$, respectively).

Conclusion: According to the results of this study, the recombinant-FSH is not recommended as the first line pharmacotherapy for induction of ovulation in patients with PCOS. In addition, considering the outcomes such as minimizing the cancellation rate of cycles due to the lack of a desirable ovarian response, minimizing the risk of OHSS and increasing the rates of clinical pregnancy and live birth, letrozole can be introduced as an efficient approach for induction of ovulation in patients with PCOS.

Keywords: Polycystic Ovarian Syndrome, Ovulation Induction, Recombinant FSH, Clomiphene Citrate, Letrozole

P-26: Radiotherapy During Pregnancy, Efforts to Maintain Fetal Health: Focus on Major Vault Protein (MVP)

Goodarzi M¹, Najafi A¹, Safakhah A²

1. Department of Biology, Farhangian University, Tehran, Iran

2. Department of Developmental Biology, Damghan University, Damghan, Iran

Email: clonerv000@gmail.com

Background: Cancer treatment in pregnant women requires complex programs, radiotherapy is common and verified method. Unfortunately, this method is not without problems and may cause organ deformity or fetal death, especially in the second to tenth week, in addition, radiotherapy causes damage to the DNA structure that effects will be appear in future. On the other hand, Medications used to reduce the side effects of radiotherapy generally include complications, in this article, we are going to suggest a solution for repairing fetal DNA with the help of proteins that are naturally present in the mother body that known Major vault protein or MVP.

Materials and Methods: Our method in this research has been to use article published in scientific research journals, dissertations, reference book in the field of medical sciences as well as approved case reports.

Results: Major vault protein (MVP) is a protein that in humans is encoded by the MVP gene. Vaults are multi-subunit structures that may act as scaffolds for proteins involved in signal

transduction. Vaults may also play a role in nucleo-cytoplasmic transport, Major vault protein It can play a constructive role in DNA repair. In pregnant mothers who cannot use sedatives without restriction, increasing the activity of these proteins helps to repair DNAs that have been damaged by radiotherapy.

Conclusion: Reports indicate that the MVP accelerates the repair of damaged DNA in the fetus, emphasizing that this MVP can be used not as the main drug but as an accelerator in the treatment of patients.

Keywords: Cancer, Radiotherapy, Fetal, Major Vault Protein, DNA

P-27: The Effect of Alpha-Lipoic Acid on Optimizing The Hormonal Activity of Transplanted Mouse Ovarian Tissue

Hatami S^{*}, Shariatzadeh SM, Soleimani Mehranjani M

Department of Biology, , Faculty of Science, Arak University, Arak, Iran

Email: s.hatami69@gmail.com

Background: Although ovarian tissue transplantation is one of the options for maintaining fertility in cancer patients, however, this method also faces limitations such as ischemic-reperfusion that is able to cause disorder in the endocrine function of the transplanted ovary. Alpha-lipoic acid (ALA) act as strong antioxidants through free radical quenching and recycling of other cellular antioxidants. We aimed to investigate the effect of α -lipoic acid on the serum level of progesterone and estradiol following mouse ovarian tissue transplantation.

Materials and Methods: 18 Mice were divided into: control, autograft + saline (whole ovarian tissue transplanted in the gluteus superficialis muscle, receiving intraperitoneal injections of saline), autograft + ALA (receiving 100 mg/kg" intraperitoneal injections of ALA, 30 minutes before transplantation). 28 days after ovary transplantation, serum concentrations of progesterone and estradiol were assayed. Statistical analysis was done with one-way ANOVA and Tuckey's test and the means were considered significantly different at p value < 0.05.

Results: Serum concentrations of progesterone and estradiol in the autograft group decreased significantly compared to the control, while it showed a significant increase in the autograft + ALA group compared to the autograft group (p < 0.05).

Conclusion: Lipoic acid can improve the hormonal and endocrine function of the transplanted ovarian tissue by reducing ischemic reperfusion injury.

Keywords: Ovarian Tissue Transplantation, α -lipoic Acid (ALA), Ischemia-Reperfusion, Endocrine Function

P-28: Breastfeeding and Quality of Life During The COVID-19 Pandemic: A Path Analysis

Jahangiri N^{1*}, Jahanian Sadatmahalleh Sh², Youseflu S³, Moini A^{1,4,5}

1. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

2. Department of Reproductive Health and Midwifery, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

3. Department of Midwifery, School of Nursing and Midwifery, Zanjan University of Medical Science, Zanjan, Iran

4. Breast Disease Research Center (BDRC), Tehran University of

Medical Sciences, Tehran, Iran

5. Department of Obstetrics and Gynecology, Arash Women's Hospital, Tehran University of Medical Sciences, Tehran, Iran

Email: Shahideh.Jahanian@modares.ac.ir

Background: Breastfeeding women are affected by mental health disorders. This is particularly true in infectious disease outbreaks such as COVID-19. The present study proposes a conceptual model describing the reciprocal role of anxiety, depression, general health, breastfeeding, education, income, and corona disease anxiety on the quality of life (QoL) of breastfeeding women.

Materials and Methods: This was a descriptive-analytical study that employed a socio-demographic checklist, Short Form Health Survey (SF-12), Hospital Anxiety and Depression Scale, General Health Questionnaire, and coronary disease anxiety scale to collect data from 279 breastfeeding women between March to April 2020.

Results: The acceptability of the conceptual model (CFI =0.99, RMSEA =0.06) was indicated by the overall goodness-of-fit statistics. According to the results, the women's QoL is influenced directly by the breast-feeding, general health, anxiety, depression, and education. This study highlights the significant mediating effects of general health and breastfeeding and moderating effects of education and income on QoL. In this model, we found an indirect effect of income on QoL through education.

Conclusion: The findings support the hypothetical model of research on development of QoL in breastfeeding women by improvement in breastfeeding, anxiety, depression, general health, education, and income results. The predictors suggested by this model seems to be important and should be considered in psychological care intervention design.

Keywords: Quality of Life, Path Analysis ,Hospital Anxiety and Depressio Scale, Breastfeeding, Covid-19

P-29: Efect of Resveratrol on CA-125 and TNF-Alfa in Infertile Patient with Endometriosis

Khodarahmian M^{1,2*}, Amidi F², Salahi E², Pazhohan A³, Shabani Nashtaei M^{2,4}, Zhaeentan Sh², Farid Mojtahedi M¹

1. Department of Infertility , Arash Women's Hospital, Tehran, Iran

2. Department of Anatomy, School of medicine, Tehran University of Medical Sciences, Tehran, Iran

3. Infertility Center, Academic Center for Education, Culture and Research, East Azarbaijan, Tabriz, Iran

4. Department of Infertility , Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran

Email: zhaeentan.shahrzad@yahoo.com

Background: Resveratrol, a naturally synthesized polyphenolic compound has structural similarities to estradiol and diethylstilbestrol showed anti neoplastic, anti-inflammatory, anti-oxidative, and anti-angiogenic properties. Endometriosis is a hormone-dependent inflammatory disease associated with an impairment in immune response which may affect up to 50% of women who are enduring pelvic pain and/or infertility. The aim of this randomized clinical trial is to evaluate LH, FSH, progesterone, estradiol, prolactin, CA-125, and TNF- α in blood of patients with endometriosis.

Materials and Methods: Women between the ages of 18 to 40 with laparoscopic-proven diagnosis of endometriosis (stage III-IV) were eligible for the study. A total of 20 patients were

randomly divided into treatment (n = 10) and placebo (n = 10) groups, beside the routine protocol for treatment of endometriosis, they received resveratrol and placebo (400 mg) for 12-14 weeks, respectively. Blood samples were collected and LH, FSH, progesterone, estradiol, prolactin and CA-125 have measured by Chemiluminescence method TNF- α blood levels was measured by ELISA.

Results: The Resveratrol group showed significant decrease in CA-125 and TNF- α showed significant decrease following intervention respectively (P = 0.046, P = 0.041) and also significant increase in progesterone level in compare to control group (P= 0.038).

Conclusion: It seems resveratrol improve some plasma factors of endometriosis patients. Further investigations are needed to reveal the potential role of this compound.

Keywords: Endometriosis, Resveratrol, TNF- α , CA-125, Progesterone

P-30: Comparison of Tamoxifen with Gonadotropin-Releasing Hormone Agonist in Frozen Embryo Transfer

Mahmoudinia M¹, Ebrahimi R², Sadeghi T^{1,3}, Khadem N¹, Souzi B⁴

1. Maternal & Neonatal Research Center, Mashhad university of Medical Sciences, Mashhad, Iran

2. Department of Obstetrics and gynecology, Mashhad university of Medical Sciences, Mashhad, Iran

3. Department of Pediatrics, school of Nursing and Midwifery, Nursing and Midwifery Care Research Center, Mashhad, Iran

4. Department of Obstetrics &Gynecology, Sabzevar university of Medical Sciences, Sabzevar, Iran

Email: mahmoudiniam@mums.ac.ir

Background: The use of frozen embryos in the treatment of infertility with assisted reproductive techniques has increased. Different methods are used to prepare the endometrium for frozen embryo transfer. The aim of this study was to compare the pregnancy outcomes after treatment with tamoxifen and recombinant gonadotropin and those after treatment with the gonadotropin-releasing hormone (GnRH) agonist and estradiol in FET. **Materials and Methods:** This randomized clinical trial study was carried out on 196 infertile women in the infertility research center of Milad Hospital in Mashhad during 2018-2020. The patients were randomly divided into two groups (n = 98 each). The tamoxifen group received 20 mg TMX twice a day plus 75 IU of human menopausal gonadotropin and in the GnRH, group received one-third of 3/75 on the 21st day of the previous cycle, and then on the second day, the estradiol cycle was started, and gradually increased to 8 mg. endometrial thickness and pregnancy outcome were measured in both groups.

Results: Mean endometrial thickness in the TMX and GnRH agonist groups were 8.90 ± 0.88 mm and 8.99 ± 0.85 mm, respectively (p = 0.57). There was no statistically significant difference between chemical pregnancy (P = 0.416), clinical pregnancy (P = 0.409) and ongoing pregnancy (P = 0.542).

Conclusion: treatment with Tamoxifen can be as effective as GnRH agonist for endometrial preparation in FET.

Keywords: Tamoxifen, IVF, GnRH Agonist, Frozen Embryos Transfer, Endometrial Thickness

P-31: Validity and Reliability of Persian Version of The Shift Work Disorder (SWD) in Fertile and Infertile Women

Malekzadeh F^{1*}, Moini A^{1,2}, Navid B^{4,5}, Mohammadi M⁵

1. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

2. Department of Gynecology and Obstetrics, Arash Women's Hospital, University of Medical Sciences, Tehran, Iran

3. Breast Disease Research Center (BDRC), Tehran University of Medical Sciences, Tehran, Iran

4. Department of Psychology, Payame Noor University, Tehran, Iran

5. Reproductive Epidemiology Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: F.Malekzadeh@royaninstitute.org

Background: Shift work disorder (SWD) can be causes of insomnia, fatigue, worse work performance, increased risk of accidents, and decreased quality of life. Also, occupation and related factors can be effected on the health of employed women. So, screening methods are always useful to diagnose and identify high-risk individuals and can be an effective step in the timely treatment of SWD to reduce health problems (such as mood disorders, insomnia, fatigue, cardiovascular disease, diabetes, cancer, and infertility). In order to identify women at risk of SWD, we assessed the validity and reliability of the Persian version of SWD in fertile and infertile women.

Materials and Methods: In this descriptive cross-sectional study, 632 fertile and infertile women referred to Royan Institute, Arash Hospital, Gynecological Office in Tehran were selected by sampling available method. At first, the four-question questionnaire of Shift Work Disorder (SWD) was translated from English to Persian by several authors, and after discussion, the final version translated into Persian was translated by three people fluent in English and Persian again into English. It was translated to make sure that the correct and understandable Persian words were used to replace the English words. The tests used in this study were Cronbach's alpha, internal correlation, and confirmatory factor analysis.

Results: This study showed that the internal homogeneity of the SWD questionnaire with Cronbach's alpha is 63.4%. Deleting each of the four-item in the SWD questionnaire reduces the internal homogeneity of the questionnaire. Also, the range of total correlated changes for the four questions of the questionnaire is from at least 0.339 to 0.488, which is more than the minimum of 0.3.

Conclusion: The Persian version of the four-item SWD has acceptable validity and reliability.

Keywords: Shift Work Disorder (SWD), Validity, Reliability, Women

P-32: A Cross-Sectional Study Comparing Psycho-Sexual Factors and The Quality of Life between Breastfeeding and Non-Breastfeeding Women during The COVID-19 Pandemic

Moini A^{1,2,3*}, Jahanian Sadatmahalleh Sh², Jahangiri N¹, Mirzaei N⁴

1. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran, Iran

2. Breast Disease Research Center (BDRC), Tehran University of Medical Sciences, Tehran, Iran

3. Department of Obstetrics and Gynecology, Arash Women's Hospital, Tehran University of Medical Sciences, Tehran, Iran

4. Department of Reproductive Health and Midwifery, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
Email: Shahideh.Jahanian@modares.ac.ir

Background: During the COVID-19 pandemic, concerns about its possible effects on psychological health and quality of life (QoL) prompted us to undertake the present study and compare the psycho-sexual factors and the QoL between breastfeeding and non-breastfeeding mothers.

Materials and Methods: This comparative cross-sectional study was performed between May and Jun 2020. Among the women who were referred to the gynecology clinic of Arash Hospital in Tehran, 123 breastfeeding and 87 non-breastfeeding women were investigated. Depression, anxiety, general health, female sexual dysfunction, QoL, Corona Disease Anxiety, obsessions and compulsions were assessed by appropriate questionnaires which were distributed using online survey.

Results: The results indicated better mental health, sexual function, and QoL for breastfeeding women ($P < 0.001$). Compared to the non-breastfeed group, breastfeeding women showed significantly higher mean of total general health scores (21.92 ± 11.56 vs 27.75 ± 16.09 , $P = 0.003$). No statistically significant differences were found between groups in regards to marital satisfaction and Padua inventory ($P > 0.05$). Multivariate regression analysis revealed that general health questionnaire score of breastfeeding group was 4.5 unit higher than non-breastfeed group ($P = 0.02$).

Conclusion: The results provide important insights into the effect of breastfeeding on maternal mental health, particularly in coronavirus pandemic. It seems that general and certain lactating mothers may need greater psychological support during Epidemic of COVID-19.

Keywords: COVID-19, Breastfeeding, Anxiety, Sexual Function, Quality of Life

P-33: Pregnancy and Quality of Life During The COVID-19 Pandemic: A Path Analysis

Moini A^{1, 4, 5*}, Jahanian Sadatmahalleh Sh², Jahangiri N¹, Alijanpour M³

1. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

2. Department of Reproductive Health and Midwifery, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

3. Department of Midwifery, School of Nursing and Midwifery, Zanjan University of Medical Science, Zanjan, Iran

4. Breast Disease Research Center (BDRC), Tehran University of Medical Sciences, Tehran, Iran

5. Department of Obstetrics and Gynecology, Arash Women's Hospital, Tehran University of Medical Sciences, Tehran, Iran

Email: Shahideh.Jahanian@modares.ac.ir

Background: COVID-19 has spread quickly around the world with creating stress and anxiety as well as depressive problems on lives of women. This problem might be more severe for pregnant. The purpose of the present study was to therefore assess the association between quality of life (QoL) with anxiety, depression, coronavirus related anxiety, sexual function (SF), and marital satisfaction (MS) in pregnant women during the COVID-19 pandemic.

Materials and Methods: Two hundred and sixty one pregnant women took part in this cross-sectional study, adminis-

tered through an online survey. The Short-Form Health Survey (SF_12), Marital Satisfaction Scale (MSS), Female Sexual Function Index (FSFI), Hospital Anxiety and Depression Scale (HADS), and coronavirus induced anxiety questionnaire, Padua Obsession Questionnaire, General Health Questionnaire (GHQ) used to collect information from individuals. The obtained data were analyzed using Pearson Correlation Coefficient and path analysis model using SPSS 22 and Liserl 8.8.

Results: The goodness of fit of a statistical model described that the predictors of QoL had excellent fitness indices (RMSEA=0.02; AGFI=0.99). According to the results, women's QoL is affected directly by coronavirus induced anxiety, marital satisfaction (MS), sexual function (SF), depression, and anxiety. Among variables that directly affected the QoL, GH had the greatest effect and functioned as a mediator variable. The variables including anxiety, depression, and coronavirus induced anxiety by affecting the GH had an indirect impact on the QoL.

Conclusion: During COVID-19 pandemic, providing all the necessities to support pregnant women can help them overcome problems and improve their QoL.

Keywords: COVID-19 Pandemic, Pregnant Women, Quality of Life, Female Sexual Function Index, General health

P-34: Nonadhesion of Fetal Chorionic and Amniotic Membrane as A Risk Factor for Aneuploidy and Reduced Fetal Intrauterine Growth

Moshfeghi M

Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran, Tehran, Iran
Email: moshfeghimaryam@yahoo.com

Background: In a normal pregnancy, the fetal amniotic membrane attaches to the chorionic membrane around the 16th week and the space between the amniotic membrane and the chorionic membrane is lost. This connection must be established between the membranes during amniocentesis to prevent rupture of the membranes around the fetus. Delayed adhesion between the membranes or lack of adhesion can be due to genetic problems or reduced fetal intrauterine growth.

Materials and Methods: In this study, 460 cases of amniocentesis were performed for genetic evaluation. The mean age of amniocentesis was 16 weeks and 4 days, which in some cases could not be performed at this gestational age due to the lack of adhesion of the chorionic membrane to the fetal amniotic membrane and was performed at a higher gestational age.

Results: Eighteen (3.9%) fetuses with amniocentesis were diagnosed with Down syndrome. Out of 18 fetuses diagnosed with Down syndrome, disconnection between fetal membranes and delayed attachment were observed in five cases (27%). All five fetuses with delayed membrane attachment also had reduced fetal intrauterine growth. Rupture of the amniotic membranes was observed in one of the cases of amniocentesis with a delay in the connection of the membranes around the fetus.

Conclusion: Observing a delay in the adhesion of the amniotic and chorionic membranes around the fetus after the 16th week can be a sign of genetic problems, especially trisomy 21 or the beginning of reduced fetal intrauterine growth.

Keywords: Chorionic Membrane, Trisomy 21, Amniotic Membrane

P-35: Comparison of Two and Three Dimensional Culture Methods in Folliculogenesis of Mouse Preantral Follicles

Obtained from Polycystic Ovaries In-Vitro

Nakhaei N^{1*}, Ghasemian F¹, Tavana S², Fathi R²

1. Department of Biology, Faculty of Science, University of Guilan, Rasht, Iran

2. Department of Embryology, Reproductive Biomedicine Research center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: nilin7041@gmail.com

Background: *In vitro* culture of ovarian follicles, which can be two-dimensional (2D) or three-dimensional (3D), would be helpful in understanding the process of folliculogenesis especially in patients with polycystic ovary syndrome (PCOS). Selection of an optimal matrix could increase the survival and maturation of the follicles. Therefore, the purpose of this study was to compare the two and three dimensional culture methods in development of mouse preantral follicles obtained from polycystic ovaries.

Materials and Methods: The mice model of PCOS was induced by intramuscular injection of 4 mg/kg estradiol valerate for 60 days. Then a total of 40 ovaries were removed, and randomly allocated in the culture systems of 2D and 3D. Preantral follicles with diameters of 100-130 μ m were mechanically isolated from PCOS mouse ovaries and placed in two groups of 2D (including MEM-Alpha, FBS, ITS and FSH) and 3D (0.75 % sodium alginate) culture systems for 12 days.

Results: In 2D culture system, maturation outcomes were observed as follows: maturation rate of PCOS follicles (MII; 54.2%, n=19/35), degenerated follicles (14.2%, n=5), MI oocytes (25.7%, n=9). In 3D culture system, maturation outcomes were as mature oocytes (65.7%, n=23/35), degenerated follicles (8.5%, n=3), MI oocytes (20%, n=7), and immature oocytes (5.7%, n=2). The maturation rate of PCOS follicles significantly promoted in 3D culture system with alginate compared to the 2D culture system (P<0.05).

Conclusion: The use of alginate as a 3D matrix for in-vitro folliculogenesis could promote survival and maturation rate of preantral follicles more efficiently compared to the 2D culture system in PCOs mouse model.

Keywords: PCOS, 3D Culture, Alginate, Mouse, Preantral Follicle

P-36: Foeniculum Vulgare Extract Improves Bisphenol A Induced Changes of Estrogen and Total Antioxidant Capacity of Serum, and Ovarian Histology in Rat

Naseri L^{*}, Khazaei M

1. Student Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran

2. Fertility and Infertility Research Center, Health Technology Institute, Kermanshah University of Medical Sciences, Kermanshah, Iran

Email: raha200890@yahoo.com

Background: Bisphenol A (BPA) is one of the endocrine disrupting compounds (EDCs) with an estradiol-like structure and interferes with its natural application in the endocrine system. Foeniculum vulgare (Fennel) contains phytoestrogen compounds and has several medicinal properties. The aim of the present study was to investigate the effect of F. Vulgar hydroalcoholic extract (FVE) on changes caused by BPA in estrogen,

total antioxidant capacity (TAC), nitric oxide (NO) and ovarian structure of rat ovary.

Materials and Methods: In this experimental study, 30 adult female rats (n=6/groups) weighing 180-200 g were allocated to control group received distilled water and BPA (single dose of 25 mg/kg) groups, and three groups of BPA treated with FVE (250, 500 or 1000 mg/ kg body weight, 3 times in a week for 56 days). Then the rats were anesthetized and blood was taken from the heart, and their serum was isolated. Estrogen, TAC and NO were measured. Animal ovaries were isolated and stained with hematoxylin and eosin staining.

Results: BPA significantly reduced estrogen (P<0.01) and TAC of serum and decreased ovarian follicle numbers (P=0.001) and increased serum level of NO (P<0.01). Treatment with FVE increased, serum levels of estrogen and TAC (P=0.04), and antral and preantral follicles (P<0.01). It reduced NO level significantly (P<0.05).

Conclusion: Fennel improved BPA-induced changes of estrogen, TAC, NO and ovarian tissue structure in rats, and it can consider as a natural supplement for the hazard effect of EDCs.

Keywords: Bisphenol A, Estrogen, Endocrine Disruptive, Total Antioxidant Capacity,

P-37: The Effects of Duphaston on Characteristic of Follicles, Oocytes, Embryos, and Pregnancy Rate in Women Undergoing ICSI

Naserpoor L^{*}, Berjis K², Jannatifar R¹, Solemani S¹

1. Department of Reproductive Biology, Academic Center for Education, Culture, and Research (ACECR), Qom branch, Qom, Iran.

2. Department of Biology, Faculty of Science, Islamic Azad University, Qom, Iran

Email: katayon.berjis@yahoo.com

Background: A premature increase in luteinizing hormone (LH) is one of the reasons for its abolition of the reproductive technology cycle, and it is necessary to find new approaches to improve efficacy and safety. To compare the effects of two protocols (Duphaston and Cetrotide) on characteristics of retrieval follicles and embryos in women undergoing intracytoplasmic sperm injection and pregnancy rate after embryo freezing transfer.

Materials and Methods: In this retrospective cross-sectional study, 669 infertile women (aged 25-40years), who were administered recombinant follicle-stimulating hormone from the third day of the menstruation cycle were included. When the follicular diameter reached above 13-14 mm, Cetrotide was prescribed in the control group, while in the case group, Duphaston was taken orally from the third day of the cycle. The retrieved oocytes were fertilized *in vitro* by intracytoplasmic sperm. The level of hormones on the third day of menstruation and the characteristic of follicles, oocytes, embryos, and pregnancy rate were compared between the two groups.

Results: There was no significant difference in the level of follicle-stimulating hormone, estradiol, and LH between the case and control groups (p > 0.05). However, results also showed that Duphaston causes more oocyte retrieval in comparison with Cetrotide (P=0.006). Although the number of the mature oocyte and the total number of viable embryos in the case group was slightly higher, it did not reach a significant difference compared with the control group (p > 0.05). The number of good embryos (Grade I) formed on Day 3 increased significantly in the Case (Duphaston) group (P =0.04). Furthermore, the clinical pregnancy rate did not differ significantly among the two

groups ($P > 0.05$).

Conclusion: Duphaston could be used as an appropriate medication instead of gonadotropin-releasing hormone antagonists in women undergoing controlled ovarian hyper stimulation.

Keywords: Duphaston, Cetrotide, Progesterone Protocol, GnRH Antagonist,

P-38: Serum Concentration of Dehydroepiandrosterone Sulfate Hormone in Poly Cystic Ovary Syndrome and Hypothyroidism in Wistar Rat Model

Rezaei M¹, Babaei Balderloo F, Khazali H

Faculty of Sciences, University of Urmia, Urmia, Iran

Email: Roseseftd654@yahoo.com

Background: Polycystic Ovary Syndrome (PCOS) a multifactorial disorder affecting about 6-20% of women in their reproductive age alongside with thyroid disorders are two of the most common endocrine disorders in general population although the etiopathogenesis of hypothyroidism and PCOS are different these two have many features in common. PCOS is principally a disorder of ovarian androgen excess and in most patients the adrenal glands also contribute to hyperandrogenemia. And because Dehydroepiandrosterone Sulfate (DHEAS) is considered as a marker of AA production, in this experimental research we are going to study the relationship of these two disorders on assessment DHEAS.

Materials and Methods: In this experimental study twenty five randomly selected adult female Wistar rats were divided in 5 groups ($n=5$). To induce PCOS, except control group the other 4 groups received single intramuscular injection of Estradiol Valerate (EV). At day 30 they were given Propylthiouracil (Ptu) orally to induce hypothyroidism. The last day of the experimental period the rats were sacrificed and their sera were collected for any further more assessment and as the result DHEAS was assessed by RIA kits.

Results: In this assessment we see that DHEAS was low in Hypothyroid rats comparing with control group

Conclusion: DHEAS is high in almost 20 -30% of women with PCOS, BUT IN OTHER HAND AS A RESULT OF hypothyroidism affecting on ACTH stimulation we see in this study the assessment of DHEAS was lower in all groups comparing to control group.

Keywords: Dehydroepiandrosterone sulfate, Poly Cystic Ovary Syndrome, Hypothyroidism, Hyperandrogenemia

P-39: The Role of Spiritual Intelligence on Occupational Stress in Midwives, A Psycho-Obstetric Study

Rezaei F¹, Dadsersht S²

1. Department of Midwifery, Faculty of Medical Science, Islamic Azad University, Zahedan, Iran

2. Department of Anatomical Sciences, School of Medical Sciences, Baqiyatallah University, Tehran, Iran

Email: rezaeifa68@gmail.com

Background: Occupational Stress in midwives is a factor that prevents optimal clinical care and reduces job competence. Nowadays, spiritual intelligence, as a modern approach, has an important role in improving mental health. Due to the important role of midwifery clinical performance in maternal and infant health, the present study was conducted to determine the rela-

tionship between spiritual intelligence and occupational stress on midwives.

Materials and Methods: This descriptive cross-sectional study was conducted on 232 midwives working in the maternity hospitals and health centers in Mashhad. The study sample was selected through cluster random sampling technique. The data were collected by the demographic and occupational characteristics questionnaire, Spiritual Intelligence Scale and stress visual analog scale (SVAS). Data analysis was performed using the descriptive statistics, Spearman's correlation coefficient, Mann-Whitney U test, chi square test using SPSS, version 16. P-value less than 0.05 was considered statistically significant.

Results: There was a significant negative correlation between Occupational Stress and spiritual intelligence ($r = -0.314$). According to the Mann Whitney U test, the participants with high spiritual intelligence had lower mean job stress scores than those with medium spiritual intelligence ($P < 0.001$, $Z = -3/7$). (The results of Chi-square test showed that the frequency of job stress has a statistically significant of levels of spiritual intelligence ($\chi^2 = 10/72$, $df = 3$, $p = 0/009$).

Conclusion: Spiritual intelligence affects midwives' Occupational Stress. Therefore, we can reduce job stress among midwives by holding training and retraining courses aimed at participating in religious activities and promoting spiritual intelligence.

Keywords: Occupational Stress, Spiritual Intelligence, Midwives

P-40: Designing A 3D Model of Breast Cancer Using Tissue Engineering for Better Treatment of Patients

Rezakhani L^{1*}, Alizadeh M², Alizadeh A³

1. Fertility and Infertility Research Center, Health Technology Institute, Kermanshah University of Medical Sciences, Kermanshah, Iran

2. Department of Tissue Engineering, School of Medicine, Shahrood University of Medical Sciences, Shahrood, Iran

3. Department of Tissue Engineering and Applied Cell Sciences, School of Medicine, Semnan University of Medical Sciences, Semnan, Iran

Email: leila_rezakhani@yahoo.com

Background: Breast cancer accounts for 15% of all cancer deaths in women. Which also includes young women of child-bearing age and lactation. The two-dimensional (2D) models of breast cancer still exhibit limited success. The three-dimensional (3D) model mimics a body-like condition that is suitable for drug testing in women of childbearing age with breast cancer.

Materials and Methods: Chitosan/ β -glycerol phosphate hydrogel was prepared with final ratio of 2 and 10 %. The hydrogel properties examined by FTIR, MTT, PH, SEM and biodegradability. 3D model of breast cancer induced by injection of 1×10^6 4T1 cells in 100 μ l hydrogel subcutaneously. After 3 weeks induced 3D tumor was evaluated by size and weight determination, ultrasound and H&E staining.

Results: The results showed that hydrogel with physiological pH had no toxic effect. Tumor weight and volume showed a greater increase in the 3D model than the 2D model. Histological and ultrasound findings showed malignancy in the 3D tumor model.

Conclusion: 3D model reported malignancy, so it is more suitable for drug therapy trials.

Keywords: Hydrogel, 4T1, Two-dimensional, Three-dimensional, Tissue Engineering

P-41: Endometrial Preparation for Frozen-Thawed Embryo Transfer with or Without Pretreatment with Gonadotropin-Releasing Hormone Agonist in PCOS Patients: A Randomized Controlled Trial

Salemi Sh¹, Yahyaei A¹, Vesali S², Ghaffari F^{1*}

1. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

2. Reproductive Epidemiology Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: ghafaryf@yahoo.com

Background: Frozen–thawed embryo transfer (FET) enables the excess embryos produce by assisted reproduction techniques (ART) to be stored and transfer at a later time. Patients with polycystic ovarian syndrome (PCOS) are high responder and usually produce lots of embryos in ART cycles. Studies have shown that FET cycles is preferable to the fresh cycle in some patients, such as PCOS patients. One of the most important steps in the FET is to choose the best protocol for endometrial preparation to increase the chances of pregnancy. The present study aimed to compare pregnancy outcomes in PCOS patients undergoing endometrial preparation for FET with or without pretreatment with gonadotropin-releasing hormone Agonist (GnRH-a).

Materials and Methods: In this study, 216 PCOS patients (≤ 37 years old) who referred to Royan Institute were recruited. Patients were randomly assigned to receive estradiol (E2) after down regulation with GnRH-a (group A) or without GnRH-a down regulation (group B).

Results: In this study, 188 PCO patients completed the trial (Group A included 93 patients and Group B included 95 patients). Patients in both groups were matched with respect to the age, type of infertility, body mass index (BMI), and Infertility duration. E2 and luteinizing hormone (LH) were significantly higher in group B, while clinical pregnancy rates were similar in both groups (33.3% vs. 35.7%). Similarly, there were no significant differences in terms of abortion rate (2.2% vs. 1.1%), implantation rate (0.58 vs 0.51), live birth rate (21.7% vs 22.1%) and also medical complications during pregnancy and neonatal anomalies in both groups.

Conclusion: Our findings indicate that endometrial preparation for FET with and without ovarian suppression by GnRH-a provides similar results.

Keywords: Polycystic Ovarian Syndrome, GnRH Agonist, Frozen–Thawed Embryo Transfer, Endometrial Preparation

P-42: Infertility Treatment Outcome and Oral Health Status

Shoorgashti R

Department of Dentistry, Islamic Azad University of Medical Sciences, Tehran, Iran

Email: reyhanehshoorgashti@gmail.com

Background: From previous articles, it is established that there is an association between periodontal health and many systemic diseases like cardiovascular disease and diabetes. Recently maternal periodontitis relation with fertility, infertility treatment and pregnancy outcome has been appraised. The aim of this study was to review infertility treatment outcome and oral

health status.

Materials and Methods: “Infertility treatment, Oral health status, periodontitis” terms were searched on Pubmed for English language publications from 2010 up to May 2021. All related original, case-report, and review studies were included in this research.

Results: There is a limited number of studies looking at the relationship between periodontitis and reproductive health. Results of the most articles support the hypothesis that periodontal disease can lead to bacteremia with release of cytokines, affecting implantation in women trying to conceive naturally or through *in vitro* fertilization. In two original studies different degrees of inflammation of the gingiva did not have an effect on the different clinical parameters and pregnancy positive rates.

Conclusion: Systemic bacteremia due to subclinical infections like periodontitis can hinder the reproductive functions. The importance of addressing the status of oral health before any infertility treatment should be included in primary examinations. However, more extensive research is required to understand the association between periodontal status and possible consequences in women seeking fertility care.

Keywords: Infertility Treatment, Oral Health Status, Oral Disease

P-43: Comparison of Oocyte and Embryo Quality in Women with PCOS and The Control Group Candidate for IVF/ICSI

Souizi B^{*}, Afiat M, Khadem N

Department of Obstetrics & Gynecology, School of Medicine, Sabzevar University of Medical Sciences, Sabzevar, Iran

Email: behnazsovizi1355@gmail.com

Background: Polycystic Ovary Syndrome (PCOS) is the most common cause of female infertility. Female infertility caused by Polycystic Ovary Syndrome (PCOS) is most common. The aim of this study is to compare the oocyte and embryo quality between the PCOS women with the Control group candidate for IVF/ICSI. The objective of this study is to compare the oocyte and embryo quality between the cases PCOS that underwent the controlled stimulation of the ovary and the Control group.

Materials and Methods: The present study was designed at the Infertility Research Center of Milad in the prospective cohort format, and was carried out on 100 cases of infertile women with confirmed Polycystic Ovary Syndrome (PCOS) (case group) and the male factor (control group) for the first *in vitro* fertilization (IVF) cycle candidates. Both groups underwent the ovary stimulation cycle and intracytoplasmic sperm injection (ICSI) under the standard antagonist protocol. The data collected was then processed and analyzed using the SPSS software version 16.

Results: The average age of the study cases was 35±3. The underlying pathological factor in both of the groups was oocyte necrosis (28% in the PCOS and 26% in the Control group). A major number of the embryos belonged to either grade 1, 2 or were 8-cell embryos. Furthermore, the highest number of the transferred embryos among the patients belonged to the 8-cell and grade 1. The occurrences of biochemical pregnancy in the PCOS group were up to 31.91% and in the Control group, it was 22% which respectively led to 72.73% and 60% of the cases going through childbirth. On the subject of the quality and the quantity of the embryos, the oocyte, the transferred embryo, and the germinal vesicles oocytes and the rate of pregnancy

among the two groups there were no significant differences observed ($p > 0.05$).

Conclusion: According to the present study there are no differences concerning the oocyte quality, embryo, and the pregnancy rate between the PCOS cases and any other patients requiring ICSI. Therefore such cases can similarly benefit from ICSI methods as well

Keywords: Polycystic Ovary Syndrome, Oocyte, Embryo, Intracytoplasmic Sperm Injection

P-44: Ovarian Hyperstimulation Syndrome Induction Is Associated with Oxidative Stress in Ovary

Tabandeh MR^{*}, Abbasi MR, Jamshidian J, Basir Z

Department of Basic Sciences, Division of Biochemistry and Molecular Biology, Faculty of Veterinary Medicine, Shahid Chamran University of Ahvaz, Ahvaz, Iran

Email: m.tabandeh@scu.acir

Background: Ovarian hyperstimulation syndrome (OHSS) is an iatrogenic complication of ovulation induction, which may seriously affect the patient's health, with 0.1–2.0% of the patients developing severe forms of the syndrome. The mechanisms of OHSS remain unknown, but the main pathophysiology in experimental animal model is increased vascular permeability and the human chorionic gonadotropin (hCG) is the triggering factor of the syndrome. Previous findings have shown that exposure of ovary to exogenous stimulation causes oxidative stress that affects follicular development, *in vitro* maturation of oocyte and embryo development. This study aimed to evaluate the effect of experimental induction of OHSS in rats on ovarian oxidant/antioxidant status.

Materials and Methods: Twenty female Wistar rats were divided equally into 2 groups; control group which rats received 1 ml/kg of normal saline (PO) for 5 consecutive days and OHSS group which rats were given subcutaneous injections of FSH 10 IU on 4 consecutive days, with induction of ovarian hyperstimulation through the use of 30 IU of hCG on day 5. After that, the blood samples were taken to evaluate the serum levels of estradiol and progesterone and hematocrit value, and the ovaries were removed to determine the oxidant/antioxidant factors. The validity of the OHSS model in rats was confirmed by an increase in weight and hematocrit values.

Results: The results showed significantly higher total ovarian weight, as well as significantly higher body weight and hematocrit on days 6 in OHSS group compared to control group ($p < 0.05$). In comparison to control group, the enzyme activities of SOD, GpX and catalase, GSH level and GSH/GSSG ratio was significantly reduced, while MDA concentration was significantly increased in ovaries of OHSS group ($p < 0.05$).

Conclusion: In conclusion, our results, for the first time, indicated that experimental OHSS resulted in induction of oxidative stress in ovary, demonstrating that oxidative stress may have detrimental role on OHSS related reproductive complications.

Keywords: Ovarian Hyperstimulation Syndrome, Ovary, Oxidative Stress, Rat

P-45: Cottonseed Flour Consumption Induced Subfertility in Female Rats: A Potent Ecofriendly Rodenticide Compound

Tamadon A⁵, Nowzari F¹, Rahmanifar F², Tanideh N^{3,4}, Dorvash MR³, Khoradmehr A⁵, Baghban N⁵

1. Department of Research & Development, Arka Company, Bush-ehr, Iran

2. Department of Basic Sciences, School of Veterinary Medicine, Shiraz University, Shiraz, Iran

3. Stem Cells Technology Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

4. Department of Pharmacology, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

5. The Persian Gulf Marine Biotechnology Research Center, The Persian Gulf Biomedical Sciences Research Institute, Bushehr University of Medical Sciences, Bushehr, Iran

Email: amintamaddon@yahoo.com

Background: Cottonseed with active component "gossypol" reported to have infertility effects in mammals. In this study, effects of cottonseed flour in female rats' fertility based on hormonal and histomorphometry changes were studied.

Materials and Methods: Forty-eight Sprague-Dawley adult male and female rats were randomly divided into control and treatment groups. Treatment group was received diets containing cottonseed flour for 35 days. Control group was given standard rat food. Body weights and serum sex steroid hormones were determined. Histomorphometry alterations of ovary were evaluated. Then, treated female and normal male rats were mated by rats in both groups and after 35 days, number of pups was measured.

Results: Body weight did not have significant difference between the treatment and control groups. Histomorphometry data in female ovary showed significant reduction of primary follicle volume and number in the treatment group comparing to control. Follicle stimulating hormone showed significant reduction in the treatment group. Number of pups was significantly reduced in the female rats fed by cottonseed flour.

Conclusion: Cottonseed flour in rat diet had adverse effects on female rat's reproduction. Therefore, it can be used as an efficient product for control of the rat population as a natural rodenticide agent.

Keywords: Cottonseed, Subfertility, Female Rats, Ecofriendly Rodenticide

P-46: The Investigation of The Relationship Between Metabolic Parameters in Women with Polycystic Ovary Syndrome

Yavari N

Department of Medical Physiology, Isfahan University of Medical Science, Isfahan, Iran

Email: Dr.Akbari.A@gmail.com

Background: For exploring the relationship between metabolic changes and thyroid function in polycystic ovary syndrome (PCOS) patients, metabolic, endocrine, and thyroid parameters were assessed.

Materials and Methods: Alterations in endocrine, metabolic, and clinical characteristics in PCOS patients compared with healthy women were studied within a prospective investigation. Also, thyroid parameters were considered.

Results: 300 women with normal ovulatory and PCOS patients were included and matched by age. There were significant increases in triglyceride (TG), cholesterol (Chol), and total dihydrotestosterone (DHT) in PCOS patients. Also, overall levels of fasting blood sugar (FBS)cc, follicle-stimulating hormone (FSH), testosterone (T), prolactin, and thyroid-stimulating hor-

mone (TSH) were higher in compared with the normal women, but these higher amounts were not statistically significant. There was an insignificant decrease in luteinizing hormone (LH), high-density lipoprotein (HDL), and free T4 in PCOS patients compared with the controls tissues.

Conclusion: Our data suggest the metabolic alterations in PCOS patients. The small increases of TG, CHL, and DHT levels may depend on these alterations in PCOS patients' metabolic parameters. Further investigations may clear a vague understanding of the relationship between metabolic parameters alteration and thyroid function.

Keywords: Polycystic Ovary Syndrome (PCOS), Metabolic Changes, T4, Triglyceride, Cholesterol

Genetics

P-47: Differential Apoptotic Expression in Male Partner of Infertile Couples With Normal and Abnormal Sperm Parameters

Afsari M^{1*}, Talebi AR², Dehghani Tafti F¹, Makki M³, Fesahat F¹

1. Reproductive Immunology Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

2. Department of Biology and Anatomical Sciences, Shahid Sadoughi University of Medical Sciences, YAZD, Iran

3. Parseh Laboratory of medical science, YAZD, Iran

Email: farzaneh.fesahat@gmail.com

Background: The purpose of this study was to investigate the cellular and molecular levels of apoptosis induction in three groups of the male partner of infertile couples with normal sperm parameters and recurrent pregnancy loss (RPL) history, those with abnormal sperm parameters, and fertile men as controls.

Materials and Methods: A total of 50 male partners of infertile couples with RPL was recruited as the experimental group I and experimental group II. For the control group, 25 fertile men were included. The mRNA levels of Fas, Fas ligand, Caspase 8, Bax, and Bcl2 were measured in three groups. The cellular rates of early and late apoptosis were assessed using annexin V and propidium iodide staining.

Results: The expression of Bax, Bcl2, and Bax / Bcl2 ratio in experimental group I was significantly higher than that in experimental II and control groups. However, the ratio of Bax / Bcl2 was less than 1 among all groups. No significant difference was found among study groups regarding the gene expression of Fas, Fas ligand, and Caspase 8. No significant difference was seen in early apoptotic rates of sperm among all study groups. The highest number of necrotic sperm cells was detected in experimental group I.

Conclusion: The findings showed the external pathway of apoptosis was not activated in the absence of external stimuli of sperm apoptosis in ejaculated sperm. Independent of fertility status and RPL, apoptosis gene induction in the internal pathway was associated with abnormalities in sperm motility and/or morphology in men with abnormal parameters.

Keywords: Sperm parameters, Apoptosis, Gene expression, Recurrent Pregnancy Loss,

P-48: Analysis of The Influence of Preimplantation Genetic Testing for Aneuploidy Results With Maternal Age

Aghajani Sh^{1, 2*}, Mehrafza M¹, Hosseyni A¹, Salehzadeh A², Ghasemiyan F³, Eftekhari A¹, Vahabzadeh H¹, Porseifi Gh¹

1. Mehr Fertility Research Center, Guilan University of Medical Sciences, Rasht, Iran

2. Department of Biology, Islamic Azad University Rasht Branch, Rasht, Iran

3. Department of Biology, Faculty of Science, University of Guilan, Rasht, Iran

Email: shahrazadaghajani1987@gmail.com

Background: Assisted reproduction techniques and the preimplantation genetic test for aneuploidies help couples with fertility problems to achieve a healthy live birth worldwide. There is a possible correlation between chromosomal aneuploidy and maternal age.

Materials and Methods: This study included an analysis of X, Y, 13, 18, and 21 chromosomes identified by fluorescence in situ hybridization method in embryos from couples undergoing Assisted reproduction techniques and preimplantation genetic test aneuploidies. The present study included 277 embryos between February 2018 and June 2020. Women were divided into four age groups: ≤ 35 , 36-40, 41-45, and ≥ 45 yr. Primary outcomes were the rate of aneuploidy, blastocyst, and pregnancy. Statistical analyzes were performed using SPSS software version 23. The $p < 0.05$ was considered statistically significant.

Results: Significant differences among maternal age groups were found in the outcomes of the chemical pregnancy ($p < 0.001$). The blastocyst rates ($p = 0.02$), early pregnancy loss ($p < 0.001$), and clinical pregnancy loss ($p < 0.001$) were related significantly to maternal age. In females with age > 40 yrs. Old, there was no euploid blastocyst. Increasing maternal age significantly increases the aneuploidy rate in sex chromosomes in FET and fresh cycles ($p < 0.001$).

Conclusion: The present study results found a significant relationship between maternal age and embryo aneuploidy and showed that the increasing female ages and aneuploidy rate are related. A negative association was found between maternal age and blastocyst rate, chemical pregnancy, clinical pregnancy, ongoing pregnancy, and live birth rates in the couple from ICSI cycles.

Keywords: Preimplantation Genetic Testing, Aneuploidy, Fluorescence In Situ Hybridization, ,

P-49: Comparison of CALM1, PSMD6 and AK124742 Long Non Coding RNA Gene Expression in Cumulus Cells of Infertile Polycystic Ovary Syndrome Women With Normal Oocyte Donor Women

Akbari A^{1*}, Aboutorabi R¹, Kazemi M², Mostafavi FS¹

1. Department of Anatomy, Isfahan University of Medical Sciences, Isfahan, Iran

2. Department of Genetics and Molecular Biology, Isfahan University of Medical Sciences, Isfahan, Iran

Email: Fs.mostafavi@gmail.com

Background: One of the well-known causes of subfertility is polycystic ovary syndrome (PCOs). Genetic components play a critical role in the etiology of PCOs. The recognition of differentially expressed gene in PCOs ovaries might provide a better understanding of the pathophysiology and paves the way for novel therapeutics. Analyzing gene expression profiles in

cumulus cells could be used as biological criteria for embryo competence and might lead to important molecular information about the embryo quality. CALM1, PSMD6, and AK124742 are three well-known genes associated with embryo development so we decide to compare the expression of CALM1, PSMD6, and AK124742 genes in the cumulus cells of infertile PCOs patients with their expression in the cumulus donor fertile group.

Materials and Methods: cumulus cells were collected from the follicular fluid of 33 patients with PCOs as an experimental group and 33 patients who referred to infertility center for egg donation as cumulus donor group. Cumulus cells were frozen until genetic testing. The expression of CALM1, PSMD6, and AK124742 genes were detected by real time PCR.

Results: CALM1 and AK124742 gene expression was significantly increased and PSMD6 significantly decreased in the PCOs group compared to the cumulus donor group.

Conclusion: CALM1 is an interesting competence marker which is highly associated with PCOs. PSMD6 gene expression levels significantly reduce and AK124742 gene expression levels significantly increase in PCOs.

Keywords: AK124742, CALM1, PSMD6, Infertility, PCOs

P-50: Evaluating the Vitamin D Concentration and Foxp3 mRNA Levels in Women with Recurrent Spontaneous Abortion

Dehghani Tafti F¹, Zare F², Miresmaeili SM¹, Fesahat F²

1. Department of Biology, Science and Arts University, Yazd, Iran
2. Reproductive Immunology Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
Email: Farzaneh.fesahat@gmail.com

Background: This current survey investigated the role of the Forkhead 3 box protein (foxp3) gene and serum vitamin D level in women with recurrent spontaneous abortion (RSA).

Materials and Methods: The mRNA level of the foxp3 gene in peripheral blood was evaluated in women with a history of RSA (N=40) to the controls (N=40) via the quantitative polymerase chain reaction. We employed the enzyme-linked immunosorbent assay to assay the serum concentration of 1,25-dihydroxyvitamin D3 (1,25(OH)₂D) in both groups. The statistical analysis was performed by using the U-Mann-Whitney test the Pearson correlation coefficient between and within the study groups, respectively.

Results: Although the mRNA levels of foxp3 were higher in the women with RSA than in the controls, we observed no significant change in mRNA levels of foxp3 between the two groups (P = 0.16). An important positive correlation was observed between the foxp3 mRNA levels and 1,25(OH)₂D in controls (P = 0.003). In contrast, the correlation between the foxp3 expression and 1,25(OH)₂D was not significant in the case group (P = 0.14). The concentration of vitamin D serum was lower in the women with RSA than the controls (P < 0.001).

Conclusion: Our findings demonstrated 1,25Vitamin D3 along with other molecules could act to prevent RSA by providing requirements for the anti-inflammatory state not necessarily through foxp3 expression and T cell differentiation.

Keywords: Recurrent Spontaneous Abortion, 1, 25-Dihydroxyvitamin D3, Forkhead 3 Box Protein

P-51: Impact of Vitamin C on Gene Expression Profile of Inflammatory and Anti-Inflammatory Cytokines in The Male Partners of Couples With Recurrent Pregnancy Loss

Fesahat F¹, Norouzi E¹, Seifati SM¹, Hamidian S¹, Hosseini A², Zare F¹

1. Reproductive Immunology Research Center, Shahid Sadoughi University of Medical Sciences, YAZD, Iran

2. Departments of Anatomical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Email: fatemezare91@gmail.com

Background: Immune system disorders and increased inflammation in the male reproductive system can lead to fetal risk in the early stages of development and implantation. Antioxidants such as vitamin C can play a protective role against sperm inflammatory reactions. This study aimed to evaluate the effect of vitamin C on the expression of inflammatory and anti-inflammatory cytokine genes in the male partners of couples with recurrent pregnancy loss.

Materials and Methods: In this randomized clinical trial, twenty male partners of couples with RPL were examined for sperm parameters and expression profile of some inflammatory and anti-inflammatory cytokine genes before and after treatment with vitamin C.

Results: There was a statistically significant higher rate of normal morphology and sperm concentration in each patient before and after treatment with vitamin C (p ≤ 0.05). The mRNA levels of interleukin 6 and tumor necrosis factor-alpha were significantly decreased in the sperm of patients after treatment with vitamin C compared to before treatment. In contrast, the gene expression levels of Interleukin 4, and transforming growth factor-beta showed a significant increase in the sperm of patients after treatment with vitamin C.

Conclusion: Oral daily administration of vitamin C may be effective in the fertility potential of male partners of couples with RPL not only through the improvement of the sperm parameters but also by modulating the expression profile of inflammatory and anti-inflammatory genes. TNF-α and IFN-γ appears to have a prognostic value in evaluating the recurrent abortion risk in infertile male partners

Keywords: Clinical trial, Cytokines, Inflammation, Recurrent Pregnancy Loss, Vitamin C

P-52: The Association between Testicular Toxicity Induced By Li2Co3 and Protective Effect of Ganoderma Lucidum: Alteration of Bax & C-Kit Genes Expression in NMRI Micele

Ghajari Gh¹, Nabiuni M¹, Amini E³

1. Department of Cell and Molecular Biology, Biological Sciences, Kharazmi University, Tehran, Iran

2. Department of Animal Biology, Biological Sciences, Kharazmi University, Tehran, Iran

Email: devbiokharazmi@gmail.com

Background: Nowadays, infertility has become one of the major problems in advanced societies which about 25% to 30% of infertility problems are related to men and testicular function. Ganoderma lucidum has received a lot of attention recently due to its medicinal potential activities. The aim of this designed experiment was to evaluate the beneficial effects of Ganoderma lucidum extract against lithium carbonate (Li₂Co₃) induced testicular toxicity and related lesions in mice testis.

Materials and Methods: For this purpose, Li₂Co₃ at a dose of 30 mg/kg, followed by 75, 150 mg/kg Ganoderma lucidum

extract orally were administered for 35 days.

Results: The results were obtained from *Ganoderma lucidum* extract analysis prove contained a large quantity of polysaccharides, triterpenoids and poly phenols based on spectrophotometric assay. Also, DPPH assay for *Ganoderma lucidum* extract showed high level of radical scavenging activity. The hematoxylin & eosin cross section from Li₂Co₃ treated group exhibited significant alterations in seminiferous tubules. Moreover, Li₂Co₃ induced oxidative stress via lipid peroxidation and generation of MDA (P<0.001). In addition, Li₂Co₃ induced germ cells apoptosis through increase Bax expression (p<0.001) and reduced germ cells differentiation through down-regulation of c-Kit expression (p<0.05). Results from CASA showed that sperm parameters including: count, motility and viability significantly decreased in Li₂Co₃ treated group (p<0.001).

Conclusion: It is clear that Li₂Co₃ induce sever histopathological damages on male reproductive system via generation oxidative stress but supplementation with *Ganoderma lucidum* extract exhibited prevention effects and repaired induced damages.

Keywords: Testicular Toxicity, *Ganoderma Lucidum*, Lithium Carbonate, Oxidative Stress

P-53: Investigation of Pathogenic Variants of BUBR1 Gene in The Aborted Aneuploid Fetuses

Gorji R^{1,2*}, Borjian Borougeni P², Bazrgar M²

1. Department of Molecular Genetics, Faculty of Basic Sciences and Advanced Technologies in Biology, University of Science and Culture, ACECR, Tehran, Iran

2. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: razigorji1234@gmail.com

Background: Chromosome aberrations certainly aneuploidies are the cause of the majority of spontaneous abortions in humans. Although the incidence of aneuploidies rises significantly with maternal age, it is frequent in young women. BUBR1 is a key protein mediating spindle-checkpoint activation that plays a role in the inhibition of the anaphase-promoting complex/cyclosome (APC/C), delaying the onset of anaphase and ensuring proper chromosome segregation. This study aimed to evaluate the probable role of BUBR1 variants, with pathogenic and uncertain significance, respectively in aborted fetuses with aneuploidy.

Materials and Methods: In this study, we examined forty samples of aborted fetuses with aneuploidy of mothers younger than 36 years. Detection of aneuploidy was done by using quantitative fluorescence polymerase chain reaction (QF-PCR) and/or array comparative genomic hybridization (aCGH). Finally, BUBR1 gene studied using the Sanger sequencing for the Single Nucleotide Variant (SNV) detection, certainly rs34998711 and rs28989185 as pathogenic SNVs of this gene. The sequencing results were analyzed by FinchTV software.

Results: Neither homozygous nor heterozygous variant of the targeted SNVs was observed in the samples. No other SNV was detectable in the analyzed parts of BUBR1 gene.

Conclusion: Since the allele frequencies of the variants of interest were zero in 40 studied samples, these SNVs would not be prioritized for screening in parents with a history of miscarriage due to aneuploidy.

Keywords: Aneuploidy, BUBR1 Gene, Single Nucleotide Vari-

ant (SNV).

P-54: Evaluating the Relationship between TNF-α and IL-17 Serum Levels and Gene Expression Ofleukemia Inhibitory Factor in Women with Recurrent Spontaneous Abortion

Kazemi N^{1*}, Zare F^{1,2}, Miresmaeili SM, Fesahat F

1. Department of Biology, Science and Arts University, Reproductive Immunology Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

2. Reproductive Immunology Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Email: N.kazemi80@yahoo.com

Background: Recurrent spontaneous abortion (RSA) is one of the most prevalent obstetrical obstacle. Numerous etiologies such as endocrine, anatomic, genetic, hematological and immunological causes have been supposed to play a role in the occurrence of this disease. However, more than 50% of the cases still remain unknown. Thrombotic/inflammatory processes are often detected at the maternal-fetal interface as the final pathological attack in several patients with RSA, including those of unexplained etiologies. Leukemia inhibitory factor (LIF) is a cytokine belongs to interleukin (IL)-6 family and has an essential role in reproduction. LIF also modulates ongoing inflammatory responses, this study investigated the association between serum levels of TNF-α and IL-17 and LIF gene expression in infertile women with recurrent spontaneous abortion (RSA).

Materials and Methods: The mRNA level of the LIF gene in peripheral blood was assessed in women with a history of RSA (N=40) compared to the controls (N=40) via the quantitative polymerase chain reaction. The serum concentration of TNF-α and IL-17 were measured by using the enzyme-linked immunosorbent assay in both groups. The statistical analysis was performed by using the U-Mann-Whitney test and the Pearson correlation coefficient between and within the study groups, respectively

Results: The mRNA levels of LIF were significantly higher in the women with RSA than in the controls (P=0.003). Regarding cytokine levels, no significant change was seen between the two groups (P ≥ 0.05). There was no correlation was observed between the LIF mRNA levels and TNF-α and IL-17.

Conclusion: Our results showed that although the expression of LIF in the blood of individuals with recurrent miscarriage increased, this increase was not associated with an increase in inflammatory cytokines

Keywords: Recurrent Spontaneous Abortion, Tumor Necrosis Factor (TNF-α), Interleukin-17 (IL-17), leukemia Inhibitory Factor,

P-55: Evaluation Of Genetic Variations In Exon 2 And 3 Of SPATA6 Gene in Infertile Men with Acephalic Spermatozoa Syndrome

Mahmoudi Nasrabadi SN^{1*}, Eslami M², Sabbaghian M³

1. Department of Genetics, Faculty of Advanced Science and Technology, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran

2. Applied Biotechnology Research Centre, Tehran Medical Science Branch, Islamic Azad university, Tehran, Iran

3. Department of Andrology, Reproductive Biomedicine Research

Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: marjan.sabbaghian@gmail.com

Background: Acephalic spermatozoa syndrome is one of the most severe forms of teratozoospermia which causes male infertility. In this syndrome, the sperm's head is separated from the flagellum because there is a problem in head-tail junction. This syndrome has genetic implications in many cases. SPATA6 (Spermatogenesis Associated 6) produces a testis-specific protein that localized in the mature spermatozoa head-to-tail linkage site and plays a role in the attachment of the head-tail of the flagellum during spermatogenesis. In this study we investigated the variations of exon 2 and 3 of SPATA6 gene in infertile men with acephalic spermatozoa syndrome referred to Royan institute.

Materials and Methods: In the present study, 20 infertile men with acephalic spermatozoa syndrome as a case group and 20 fertile men as a control group were recruited. DNA was extracted from peripheral blood and after designing primers, PCR reaction and sanger-sequencing were performed. The results of sequenced segments were analyzed by Finch TV and Blast.

Results: Results of sanger-sequencing revealed no mutations or single nucleotide polymorphism (SNPs) in men with acephalic spermatozoa syndrome and controls.

Conclusion: Although the present study demonstrated that there is no relationship between the genetic variations of exons 2 and 3 of SPATA6 gene and acephalic spermatozoa syndrome, since SPATA6 is necessary for head-tail junction, it seems for a closer look it should be suggested to examine other exons in this gene, splice sites and the promoter.

Keywords: Male Infertility, SPATA6 Gene, Acephalic Spermatozoa Syndrome

P-56: Effects of Fresh and Frozen Ovarian Parenchyma on *In Vitro* Preantral Folliculogenesis and Expression of Gdf9, Bmp6, Bmp15

Najafi Salehi J^{1*}, Eimani H¹, Shahverdi AH¹, Totonchi M^{2, 3}, Fathi R¹, Taher-Mofrad SMJ¹, Tahaei LS¹

1. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

2. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: eimanih@royaninstitute.org

Background: In recent years, the treatment of cancer through radiotherapy and chemotherapy has caused problems such as ovarian failure and premature menopause. Therefore, extensive studies have been conducted in the field of follicular culture in the lab. Previous studies have shown that co-culture of various cells, including fibroblasts, mesenchymal stem cells, and stromal cells can have positive effects on the follicle growth, survival, and maturation.

Materials and Methods: In the present study, two groups of adult NMRI mice were used to extract ovarian parenchyma cells and 12-14 days old NMRI mice were used to extract preantral follicles (120-140 µm) in 5 experimental groups. The diameter of follicles and immature oocytes, viability, antrum cavity formation, resumption of meiosis on different days were examined. Genes expression was also measured during in the

first 3 hours and day 4 of culture. Statistical data were analyzed with SPSS version 26 program ($P < 0.05$). 105 preantral follicles were cultured in each group for 12 days and vitrification was used for follicles and cell freezing was used for ovarian parenchyma cells. Suspension of ovarian parenchyma cells has been mechanically extracted without use of enzymes. 5-10 thousand cells were placed in the droplets of the culture medium and the culture medium was changed every two days. Experimental groups include the following: G1: Control. G2: Fresh follicles + Fresh parenchyma cell suspension. G3: vitrified-warmed follicles + Fresh parenchyma cell suspension. G4: Fresh follicles + Frozen-thawed parenchyma cell suspension. G5: vitrified-warmed follicles + Frozen-thawed parenchyma cell suspension.

Results: The diameter of the follicles and immature oocytes on days 4 and 8 was significantly higher in G2 and G4 compared to the control group. Also, the survival rate of follicles up to day 12 significantly higher in G2 and G4 compared to the control and G5 groups (G1: 73.66%, G2: 87.99%, G3: 82.70%, G4: 94.37% and G5: 78.59%). Antrum cavity formation, cumulus oocyte complexes, and meiosis resumption were better in the G2 and G4 groups than in the other groups but were not statistically significant. In quantitative evaluation of the expression of pubertal genes, the expression of cryopreserved groups was significantly higher than other groups and the control group, which indicates the positive effects of cell suspension on follicles damaged by vitrification solutions (Gdf9: G5: $p < 0.01$) (Bmp15: G5: $p < 0.19$). Also, the expression of genes in all groups was higher in the first 3 hours and after 4 days had a decreasing trend ($P < 0.05$).

Conclusion: According to the study, the co-culture of ovarian parenchyma cells with preantral follicles induced improved growth, survival and maturation of follicles. In addition, higher expression of maturity genes in cryopreserved follicles indicates the offsetting role and positive effects of ovarian parenchyma on the cryopreservation process

Keywords: IVC, IVM, Co-Culture, Cryopreservation, Preantral Follicle

P-57: Relationship between Decreased Expression of Brca1 and Rad51 Repair Genes in Zygote with Cyclophosphamide Chemotherapy Ovarian Aging Effects

Pourafshar Dizaji A^{1*}, Gourabi H¹, Fathi R², Afsharian P¹

1. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

2. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: gourabi@royaninstitute.org

Background: Ovarian function and fertility maintenance after chemotherapy are among the issues that challenge researchers today. On the other hand, the ability of the oocyte to repair DNA double-strand breaks is important for embryonic development. Cyclophosphamide, as a common drug used in the treatment of various cancers, causes severe and far-reaching damage to the ovaries, which indicates that it reduces ovarian reserve and leads to ovarian aging. In this study, we examined the expression of repair genes in the zygote and blastocyst stage in two groups: control group and the cyclophosphamide-treated group. **Materials and Methods:** In modeling female mice with cyclophosphamide chemotherapy, after injection of different

doses and histological survey of ovarian tissue and follicular count, dose 60mg/kg of cyclophosphamide was selected. After a single dose injection of cyclophosphamide and two weeks recovery and the first estrous cycle observation, mating was performed between male and female mice in different groups. Finally, zygote and blastocyst collection was performed 12 hours and 4 days respectively after observing the vaginal plaque. The expression of double-stranded DNA breaks genes including Brca1, Mre11a, Xrcc4 and Rad51 was evaluated by Real time PCR.

Results: In the zygote stage, we see a significant decrease in the expression of repair genes in the cyclophosphamide-treated group in the two genes Brca1 and Rad51, and in the other two genes, this decrease in expression is close to significant. In the blastocyst stage, we see a decrease in the expression of these genes compared to the zygote stage, and there is no significant difference between expression of these genes in two stages. In histological studies, we see a decrease in primordial and antral follicles while an increase in corpus luteum is observed. In the study of the sexual cycle after the injection of cyclophosphamide, irregularities were seen in the cycle process.

Conclusion: The effect of cyclophosphamide chemotherapy on the primordial follicular stage is greater than other follicular stages and causes the destruction and analysis of these follicles and the follicular reserves are depleted at once and the ovaries lose the initial follicular reserve. On the other hand, corpus luteum is high in chemotherapy samples at a dose of 60 mg / kg of cyclophosphamide. This indicates that the ovaries are still having follicular activity and ovulation has continued at a high rate. In embryos of the blastocyst stage, we do not see an expression change in the oocytes damaged by chemotherapy compared to the control group, this result may indicate that major restorations occurred in the early stages of development. In the zygote stage, reduced expression of repair genes is a sign of loss of oocyte repair ability, and Brca1 and Rad51 genes can be candidates for improving oocyte quality.

Keywords: Oxidative stress, Repair gene, Reactive oxygen species, chemotherapy, cyclophosphamide

P-58: Dysregulated miRNAs-lncRNAs Interactions in Male Reproductive Disorder and COVID-19 Infection

Sabetian S^{1*}, Castiglioni I², Mousavi P³, Namavar Jahromi B⁴, Cava C⁵

1. Infertility Research Center, Infertility Research Center, Shiraz, Iran

2. Department of Physics, University of Milan-Bicocca Piazza dell'Ateneo Nuovo, Milan, Italy

3. Department of Medical Genetics, Faculty of Medicine Hormozgan University of Medical Sciences, Ban-dar Abbas, Iran

4. Department of Obstetrics and Gynecology, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

5. Institute of Molecular Bioimaging and Physiology, National Research Council, Milan, Italy

Email: soudabehsabet@gmail.com

Background: Coronavirus Disease 2019 (COVID-19) as a global pandemic is caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Angiotensin-converting enzyme 2 (ACE2) is the receptor for SARS-CoV-2 to invade cells and transmembrane serine protease 2 (TMPRSS2) facilitate ACE2-mediated virus entry. Moreover, the expression of ACE2 in testes of infertile men is higher than normal, which

indicates that the infertile men may be susceptible to be infected and also SARS-CoV-2 may cause reproductive disorder through pathway induced by ACE2 and TMPRSS2. Little is known about the pathway regulation of ACE2 and TMPRSS2 expression in male reproductive disorder. Since the regulation of gene expression is mediated by micro RNAs (miRNAs) and long non-coding RNAs (lncRNAs) at post-transcriptional level, the aim of this study was to analyze the dysregulated miRNAs-lncRNAs interactions of ACE2 and TMPRSS2 in male reproductive disorder.

Materials and Methods: Bioinformatic analysis.

Results: We found that the miRNAs including miR-125a-5p, miR-125b-5p, miR-574-5p, and miR-936 as regulators of ACE2 and miR-204-5p as a TMPRSS2 regulator are associated to male infertility. The lncRNAs that showed an expression tissue-specific for testis including GRM7-AS3, ARHGAP26-AS1, BSN-AS1, KRBOX1-AS1, CACNA1C-IT3, AC012361.1, FGF14-IT1, AC012494.1, and GS1-24F4.2 were explored.

Conclusion: The identified miRNAs and lncRNAs are proposed as potential biomarkers to study the effect of COVID-19 on male infertility. This study encourages further studies of miRNAs-lncRNAs interactions to explain the molecular mechanisms of male infertility in COVID-19 patients.

Keywords: COVID-19, Male Infertility, miRNA, lncRNA, Interactions

P-59: The rs869320765 STAG3 Pathogenic Single Nucleotide Variant Is Not Incident in The Aborted Aneuploid Fetuses

Shakoiee R^{1,2*}, Borjian Boroujeni P², Bazrgar M²

1. Department of Molecular Genetics, Faculty of Basic Sciences and advanced Technologies in Biology, University of Science and Culture, ACECR, Tehran, Iran

2. Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: r.shakoiee@gmail.com

Background: Nowadays, many couples encounter spontaneous miscarriage, especially recurrent pregnancy loss which is associated with a plethora of factors. One of these crucial factors is aneuploidy, which its incidence increases with the advanced maternal age. STAG3 is one of the vital components of the Multi Protein Cohesion Complex, which plays a fundamental role in the synapsis of homologous chromosomes and the disjunction of the chromosomes. The Cohesion complex's correct functions prevent aneuploidy. The aim of this study was to investigate the frequency of one of the exonic pathogenic variant (rs869320765) of the STAG3 in the aborted aneuploid fetuses.

Materials and Methods: In this study, aneuploidy was diagnosed with either array comparative genomic hybridization (Array-CGH) or quantitative fluorescence polymerase chain reaction (QF-PCR). To exclude the potential effect of the maternal age as a risk factor for aneuploidy, the aborted fetuses was collected from women below 36 years. Sanger Sequencing results of the PCR products containing targeted variant were analyzed by FinchTV for 40 PCR products of aneuploid aborted fetuses.

Results: Not only there were any sign of homozygous and heterozygous c.1945_1946CT[3] variant, but also no mutations or other Single Nucleotide Variants (SNVs) in intended regions (exon 19) were found.

Conclusion: Since there were no alleles related to c.1945_1946CT[3] in the studied fetuses, the inquiry of this mutation associated with STAG3 would not be prioritized in screening test of couples with recurrent pregnancy loss in the reason of aneuploidy.

Keywords: STAG3, Aneuploidy, Miscarriage

P-60: Bioinformatics Evaluation of Mirnas Involved in Diminished Ovarian Reserve

Tafazoli P¹, Siadat F², Fathi R³, Motahari Rad H⁴, Mashayekhi M⁵

1. Department of Veterinary, Garmsar Branch, Islamic Azad University, Semnan, Iran

2. Department of Biology, North Tehran Branch, Islamic Azad University, Tehran, Iran

3. Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

4. Department of Genetics, Faculty of Biological Science, Tarbiat Modares University, Tehran, Iran

5. Department of Endocrinology & Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: rfathi79@royaninstitute.org

Background: Is one of the most common reproductive diseases in the world which occurs in women under 40 years of age. This disease has short and long-term effects on patients and it can reduce the quality of life and longevity. POF has a chronic course and occurs over several years. The person first the early stages of premature ovarian insufficiency (POI) the disease progresses, then reaches a stage of diminished ovarian reserve (DOR). Finally, the end stage of the disease, suffers from premature ovarian failure. In POI, ovarian efficiency decreases, in DOR decrease, and in the POF stage, we have premature ovarian failure. Studies have shown factors such as surgical trauma, autoimmune disorder, endocrine diseases, chemotherapy drugs, radiotherapy and genetically disorder could cause DOR. Genetic studies have proven the role of genes in the occurrence of different stages of the disease. Also, the function of genes in different stages of the disease is controlled by factors called miRNA.

Materials and Methods: In this study, microRNAs involved in different stages of the disease were examined by bioinformatics method for this study. We used databases such as UCSC, NCBI, KEGG, MIRBASE, TARGET SCAN, STRING, etc. In this review, structure, function, regulatory pathways and messaging were examined.

Results: Databases evaluations showed that three miRNAs, miRNA-187, miRNA-33b and miRNA-33a, play an important role in DOR disease.

Conclusion: The results of this study indicate that three miRNA, miRNA-187, miRNA-33b and miRNA-33a, which have lot of functional and regulatory role in the occurrence and progression of the disease.

Keywords: Bioinformatics, miRNA, POI, DOR, POF

Reproductive Imaging

P-61: A Rare Late Onset Complication of Multigestation Fetal Reduction: Case Report

Moshfeghi M

Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran, Tehran, Iran
Email: moshfeghimaryam@yahoo.com

Background: In recent years due to wide usage of assisted reproductive technology (ART), multifetal pregnancy are frequent and we can see its complication as maternal or fetal problems in our daily practice. In order to decrease these problems, reducing the number of fetuses can be suggested to parents who have this trouble. The risk of this procedure should explain to mother and father. After the operation, the patient should be monitored for a while so that in case of complications and problems.

Materials and Methods: Case Presentation. A 34 years old woman with history of 6-years infertility and multi times IVF failure, was referred to us for fetal reduction consultation. In her obstetrical history she said that her first pregnancy resulted from ART terminated at 24-weeks of gestation due to vaginal bleeding, and her second pregnancy aborted. In this third pregnancy achieved by IVF she is triplets and she wanted to reduce her pregnancy to twin pregnancy. she had a history of long septum resection by hysteroscopy after the first pregnancy but a small part of the septum is remained. her chromosomal study was 46XX1+qh, normal variant, . Her ANA test is positive too. We explained for the couple the risks and benefits of fetal reduction. After the ultrasonography of nuchal translucency at 11 to 13 weeks of gestation, All of the foetuses are normal and was tri chorionic and tri amnion Under ultrasonic guide The procedure was performed trans abdominally by intra cardiac injection of potassium chloride 15%. After 2 hours from procedure, she was discharged and explain alarm sign that mother should go to hospital after facing them as fever, chill, watery discharge, abdominal pain, contraction, vaginal bleeding, and so on. Two days later, she presented with a complaint of brief leakage. Maternal examinations were performed and the vital signs were stable and there was no fever or heart palpitations. The mother's secretions were not infectious, and on ultrasound, the fluid level of the two surviving fetuses was normal. And it was found that the excreted fluid is related to the removed fetus and the fetal membranes of alive fetuses were intact. The mother was reassured that the fluid that she was passing was gradually decreasing, during which time it was necessary to monitor her vital signs, and See a hospital if she has any unusual symptoms. After 6 day, the patient suffer from fever and chill and and Sudden abdominal pain and went to the emergency department. At the time of admission, the patient had a tachycardia and a fever of 38° C, In less than 2 hours, the temperature reached 41 ° C, and on ultrasound exam, the amount of fluid around the two live fetuses was normal. Due to the symptoms of infection and severe chorioamnionitis, the mother was hospitalized and immediate termination of pregnancy began when broad-spectrum antibiotics were started. Pregnancy products had a bad odor after emptying the uterus and she was bleeding after emptying uterus and received two units of blood. After stopping the fever, the patient was discharged in good general condition.

Results: In rare cases, the mother develops chorioamnionitis, which is dangerous and requires a quick decision to terminate the pregnancy and receive antibiotics. That usually occurs within a few hours of the fetal reduction, but in our case as a rare case, symptoms of chorioamnionitis was observed with a long interval from the reduction of the fetus

Conclusion: We should follow up fetal reduction patients 7 to 14 days after process to prevent missing complication. Daily temperature chart by the patient is the easy way for helping this patient as soon as possible and reduce side effects.

Keywords: Pregnancy, Triplets, Fetal Reduction

P-62: Correlation Between Pain Experienced and Diameter of Cervical-Isthmus (In. Os Level) during Hysterosalpingography in Infertile Women

Zaferani F¹, Jahangiri N², Ahmadi F¹

1. Department of Reproductive Imaging at Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

2. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: fzafarani@royaninstitute.org

Background: Hysterosalpingography (HSG) is a diagnostic method used in the early evaluation of infertile couple. It is the gold standard for evaluation of internal anatomy of fallopian tubes. However, some patients are suffered from pain and vasovagal reaction during of procedure. The aim of this study is to assess the relationship between the diameter of the internal os and experienced pain and vasovagal reaction in infertile women undergoing HSG.

Materials and Methods: This observational cross-sectional study was conducted on women undergoing hysterosalpingography to evaluate tubal patency and intrauterine investigation. The procedure was performed in follicular phase (8-11 cycles). Main outcome measures included the degrees of pain experienced in three stages of procedure (insertion of instrument, first and second injection of contrast medium), diameter of internal os (isthmus region transverse diameter), correlation of pain and diameter of isthmus during of procedure and dysmenorrhea, vasovagal symptoms (nausea, vomiting, hypotension, sweating) and total time of procedure. Pain was quantified with 10-point visual analog scale. According to the Sample Descriptive Pain Scale, pain was categorized as no pain (0), mild (1-3), moderate (4-6) and severe (7-10).

Results: One hundred twenty infertile women included in this study. There were no significant differences between internal os diameter measured in HSG and mean pain scores experienced in three stages of procedure, the presence of cesarean scar defect, type of infertility, dyspareunia, tubal occlusion and history of previous delivery ($P < 0.05$). According to the non-parametric analysis results, there was a significant difference between the diameter of isthmus and dysmenorrhea ($P = 0.041$).

Conclusion: Since the diameter of the isthmus is significantly lower in the women with dysmenorrhea than in patients with no history of dysmenorrhea, it is recommended to prescribe an analgesic in patients with a history of severe dysmenorrhea prior to any vaginal manipulation.

Keywords: Hysterosalpingography, Pain, Diameter Of Cervical-Isthmus, Infertile Women,

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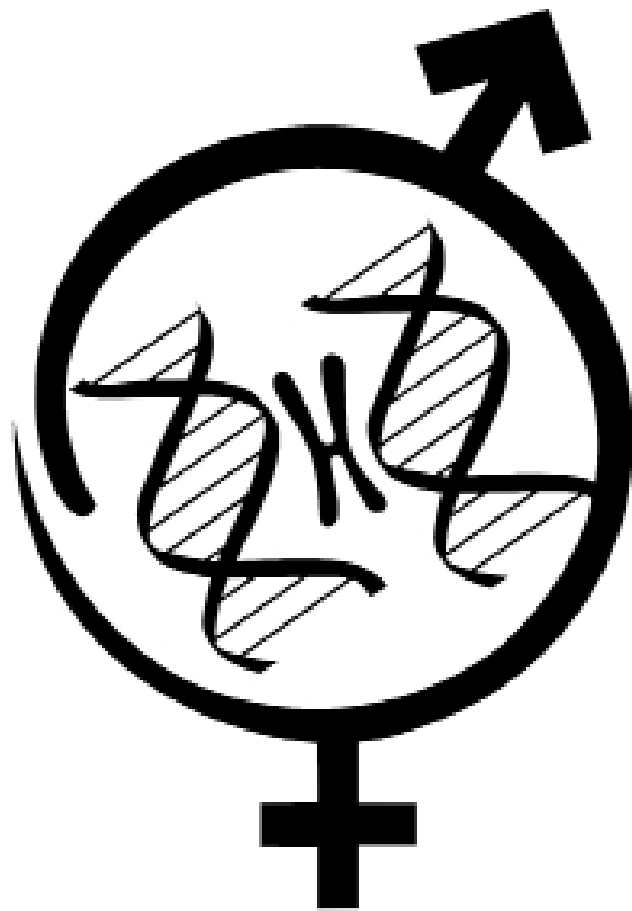
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Abstracts of
Royan International Twin Congress
16th Virtual Seminar on Nursing and Midwifery
2 September 2021



Royan Institute

Reproductive Biomedicine Research Center
Tehran, Islamic Republic of Iran

Invited Speaker

Inm-1: ART Management in Covid 19 Pandemic

Bagheri M

Vali-e-Asr Reproductive Health Research Center, Tehran University of Medical Sciences, Tehran, Iran
Email: M_bagheri58@yahoo.com

The global spread of the new corona virus SARS-CoV-2 (COVID-19) has created an unprecedented situation with substantial path-breaking developments that have severely impacted not only the country's health systems, but also its economic and social institutions. Moreover, The COVID-19 pandemic resulted in the closure of infertility clinics all over the world. Patients receiving treatment lost access to services, and ongoing cycles were abandoned, resulting in the freezing of all embryos in an IVF cycle and the absence of a fresh embryo transfer. Although services have resumed, there is still ambiguity about how treatment services will be resumed, prioritized, and delivered, as well as whether clinics may be closed again due to future waves or localized lockdowns. In light of these circumstances, all guidelines propose that ART institutions follow local and national government guidance on the COVID-19 pandemic while implementing these protocols.

Inm-2: The Effect of Covid 19 on Infertility

Hafezi M

Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran
Email: Maryamhafezi90@yahoo.com

Nowadays, all countries are facing to an extra ordinary global problem, as it called covid-19. All countries in the world have provided to diminish the spread of the virus, and decrease the complications of viral infection. Some scientific societies have recommended numbers of strategies to overcome infection and different side effects, one of these protocols, are included IVF centers. So far, there is some evidence that, the virus may effect on sperm and egg function and finally embryo during manipulation in ivf lab. Covid-19 by attaching to ACE2 receptor and then by modulating and expressing the ACE2 in host cell and it can increase level of angiotensin I & II in cells. ACE2 receptor is widely expressed in the ovary, uterus and vagina & placenta. and then by affecting of virus on these receptor can disturb the female reproductive functions through regulation ACE2.

Inm-3: Metabolic Disorders in Polycystic Ovary Syndrome

Hosseini R

1. Reproductive Epidemiology Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran
2. Department of Andrology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran
Email: rohosseini@yahoo.com

Polycystic ovary syndrome (PCOS) is recognized as the most common endocrine disorder in women of childbearing age worldwide. Insulin resistance is believed to have an intrinsic

role in the pathogenesis of PCOS. The mechanism of insulin resistance in this disease is not fully understood. The main pathophysiological factor in PCOS is the dysregulation of the relationship between the hypothalamus, pituitary, adrenal, and ovary.

Insulin resistance is seen in 50 to 70% of patients with PCOS. Studies using euglycemic clamps show that insulin resistance is higher in both obese and non-obese people with this syndrome than in normal women of similar weight and age. The prevalence of metabolic syndrome in women with PCOS is 43-46%. Obesity occurs in 60% of women with PCOS and can increase the severity of its manifestations. Various studies have shown that the risk of women with PCOS and type 2 diabetes is 5-8 times higher than normal people.

Abnormal blood lipid profile is seen in approximately 70% of women with PCOS. Elevated triglycerides and decreased HDL cholesterol are often seen. Compared to women of the same age and with the same body mass index, HDL cholesterol is lower and VLDL and LDL cholesterol are higher.

It is not yet clear what is the most accurate method or marker for clinical evaluation of insulin resistance. Although insulin resistance indices such as fasting glucose to insulin ratio and HOMA-IR index are highly sensitive and specific in some studies for measuring insulin resistance, extensive studies have shown that these indices for measuring insulin resistance clinically have low diagnostic accuracy.

With considering the association between insulin resistance and PCOS, all women with the disease need to evaluate and identify components of the metabolic syndrome, including obesity, diabetes or impaired glucose tolerance, hypertension, lipid disorders, and the risk of cardiovascular and cerebral events.

Weight loss is the primary treatment for overweight and obese women. Weight loss of as much as 5% by weight in these patients can improve menstrual disorders and enhance the response to ovulation-stimulating drugs and infertility treatments. Women with PCOS should be evaluated for blood pressure and diabetes, and be sure to consult a nutritionist for weight loss and diet before attempting to conceive.

Inm-4: Infertility & Endometriosis

Hosseini R

Department of obstetrics and gynecology, Arash women hospital, Tehran university of medical sciences, Tehran, Iran
Email: rayh_h@yahoo.com

The relationship between endometriosis and infertility has been investigated for many years. Women with endometriosis tend to have a lower monthly fecundity of about 0.02-0.1 per month in compare with normal couple's fecundity is in the range of 0.15 to 0.20 per month.

Infertile women are 6 to 8 times more likely to have endometriosis than fertile women.

several mechanisms have been proposed to explain the association between endometriosis and infertility included distorted pelvic anatomy, endocrine and ovulatory abnormalities, altered peritoneal function, and altered hormonal and cell-mediated functions in the endometrium.

Women with endometriosis may have endocrine and ovulatory disorders, including luteinized unruptured follicle syndrome, impaired folliculogenesis and luteal phase deficiency

A complex network of humoral and cellular immunity factors modulates the growth and inflammatory behavior of ectopic

endometrial implants and affects embryo implantation. These alterations may have adverse effects on the function of the oocyte, sperm, embryo, or fallopian tube. These abnormalities may alter endometrial receptivity and embryo implantation. Some authors have reported that uterine implantation was affected by changes in receptivity in endometriosis.

Inm-6: Growth, Health and Rejuvenation of Population: Role of Financial Support for Infertile Couples

Omani-Samani R1, Ansarin M2

Email: R.samani@gmail.com

Reproductive health has been considered as was accepted between countries as: "Cairo Declaration on Population & Development" by UNFPA in 1994. One of the bases of reproductive health is Family Planning which by mistake is interpreted as contraception. The role of family planning is to control population growth along with health of mothers and children. According to WHO: Family planning allows individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births. There is a great concern among most of the countries in the world about aging the population making many of the countries to pursue guidelines and legislations to encourage child bearing for population rejuvenation. In Iran also there was a law manuscript suggested to the parliament about it. There are some points that must be considered in this law before final approval: 1. Health of Population: pregnancy monitoring or therapeutic abortion are the ways that take care of the health of population. Rejuvenation of the population with mental retards and handicaps cannot be a good aim for any program in the country. Meanwhile, for preventing unnecessary abortions which are prohibited by Islam, clear criteria must be complied and approved by ministry of health. Pregnancy monitoring programs and therapeutic abortion within the well-defined criteria should not be prohibited. 2. Contraception prevents unwanted pregnancies and maybe pregnancies in unacceptable health situations leading to an increase in induced abortion. Contraceptive methods should be available as a right for every human enabling them to attain their desired number of children, good spacing between them and also taking good care of them. Prohibition of contraceptive methods cannot help for rejuvenation of the population but increases induced illegal induced abortion leading to death of women and also increase in number of children without any support. It must be considered that there is no social support for children in Iran. 3. There are people who are trying hard to have children but are infertile and infertility treatment is really expensive and no health care coverage is available now in Iran to cover expenses of infertility treatments including in-vitro fertilization. Any program for rejuvenation of population must consider infertile couples with a prevalence of 10% which is significant in our population. These couple already desire children and will take care of them in a good way, so, should be taken care financially to add children to the population. 4. Any law, legislation or any other program which considers rejuvenation of population should be concentrated on encouragement rather than forbidding or banning, because reproduction is a human right and is not a must for human. Couples can decide for their own family including the size of the family and number of children. Supporting couples for child bearing and taking care of the children with good social support will be ideal program.

Conclusion: good law or legislation about therapeutic abortion along with encouraging programs can be the practical ways for

rejuvenation and health of the population. Banning monitoring tests only increases the handicaps and will not help the population.

Keywords: Rejuvenation, Population, Infertile Couples, Health

Inm-7: Diagnosis and Treatment of Covid 19 in Pregnancy

Poransari P

Shahid Beheshti University of Medical Sciences, Shohadaye Tajrish Hospital, Tehran, Iran

Email: pooransarip@yahoo.com

Current evidence from the UK suggests that pregnant women are no more likely to get COVID-19 than other healthy adults, but they are at slightly increased risk of becoming severely unwell if they do catch COVID-19, and are more likely to have pregnancy complications like preterm birth or stillbirth. Two-thirds of pregnant women with COVID-19 have no symptoms at all, and most pregnant women who do have symptoms only have mild cold or flu-like symptoms. However, a small number of pregnant women can become unwell with COVID-19. Pregnant women who catch COVID-19 are at slightly increased risk of becoming severely unwell compared to non-pregnant women, particularly in the third trimester. Pregnant women have been included in the list of people at moderate risk as a precaution.

A recent study has also found that pregnant women who tested positive for COVID-19 at the time of birth were more likely to develop pre-eclampsia, more likely to need an emergency caesarean and their risk of stillbirth was twice as high, although the actual number of stillbirths remains low.

Current evidence suggests that if you have the virus, it is unlikely to cause problems with your baby's development, and there have been no reports of this so far.

There is also no evidence to suggest that COVID-19 infection in early pregnancy increases the chance of a miscarriage.

Vitamin D supplementation is recommended to all women during pregnancy.

There have been some reports that people with low levels of vitamin D are at an increased risk of serious respiratory complications if they develop COVID-19. However, there is not enough evidence to show that taking vitamin D prevents COVID-19 infection or is an effective treatment.

All visitors and outpatients, including pregnant women attending antenatal appointments or scans, must wear face coverings at all times to protect other pregnant women, patients and staff from COVID-19.

If you have a planned caesarean birth or induction of labour, you may be asked to follow a period of self-isolation and offered a test for COVID-19 prior to admission.

Inm-8: Oncofertility: Preserving Male Fertility

Sadighi Gilani MA

Department of Andrology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: masadighi@gmail.com

The incidence of cancers commonly diagnosed in the adolescent and young adult population, including Hodgkin and non-Hodgkin lymphoma, acute lymphocytic leukemia and testis

cancers, is on the rise worldwide.

Simultaneously, the latest combination chemotherapy regimens have improved the survival rates of these patients to greater than 75%–90%, making it possible for many of these young cancer survivors to form a family.

Both cancer and cancer treatments can adversely affect a man's ability to father children. Cancer can impair spermatogenesis by hormonal derangements as well as by direct involvement of testicular tissue and the reproductive tract. Additionally, erectile and ejaculatory dysfunction may result from the debilitating physical and emotional impacts of the disease and as side effects of various medical and surgical therapies.

The measure of damage as well as the recovery potential is governed by numerous factors. These include the sperm quality before treatment, the type of malignancy and the therapeutic regimen used, e.g., type, dosage and duration of the treatment.^{9,10} There is no single criterion for predicting the recovery of sperm production.

Sperm cryopreservation prior to cancer treatment remains the mainstay of ensuring that a man may father a child in the future with his own sperm. The American Society of Clinical Oncology and the American Society for Reproductive Medicine recommend that, when possible, at-risk patients are referred to a fertility preservation specialist prior to starting cancer treatment.

Inm-9: Covid 19 and male fertility

Sajadi H

Department of Andrology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: hesam1979@yahoo.com

The novel coronavirus SARS-CoV-2 has spread globally since December 2019 and causing the current COVID-19 (coronavirus disease-19) pandemic. There are concerns about the potential impact of COVID-19 on male reproductive organs and male fertility. Therefore, this lecture investigates the current evidence of SARS-CoV-2 impact on male reproduction and pregnancy outcomes. Viruses typically reach the testicle through hematogenous spread. certain viruses may cross the blood-testis barrier and even invade testicular cells.

SARS-CoV-2 is primarily transmitted through respiratory droplets from infected individuals. Viral entry into host cells is mediated by the viral S proteins and the host cell receptor angiotensin-converting enzyme 2(ACE2). ACE2 receptors are up-to-now found in spermatogonia, Sertoli, and Leydig cells.

In spite of the impact of covid on semen parameters, the majority of reports in the current literature, suggest that SARS-CoV-2 is not detected in the semen. Based on the current evidence, the likelihood of SARS-CoV-2 transmission through the seminal fluid is very low.

Nevertheless, men and their partners must be appropriately counseled regarding what is known and remains unknown about SARS-CoV-2 and male reproductive health.

Poster Presentation

Pnm-1: Management of Infertility Anxiety and Stress in Couples Candidate for Reproductive Techniques (ART) in COVID-19

Asadi L*, Kohan Sh

School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran

Email: l_asadi66@yahoo.com

Background: Infertile couples experience a lot of tension and stress due to infertility concerns, which requires them to receive support services. Recently, the corona pandemic and the subsequent social constraints that have limited patient access to services and the stress of the pandemic have caused psychological disorders in infertile couples. The aim of this study was to review the literature on stress and anxiety management in infertile couples seeking ART treatment.

Materials and Methods: The present study was conducted using a review method that searched for studies conducted between 2020 and 2021 in information sources and PubMed, Science Direct, up to date. The English words infertility, ART, stress, Anxiety, mental health, corona virus, covid-19 and their Persian equivalents were used as keywords and the results of 15 related studies were available.

Results: The literature shows that patients who are candidates for assisted reproductive therapy in coronavirus pandemic due to lack of continuous access to infertility centers, receiving limited services, lack of follow-up and referral to centers for psychological problems and stress caused by pandemic. On the other hand, more than other women, they suffer from stress and anxiety, which can affect the failure of their disbelief treatment. In the form of receiving support, counseling and support with a range of psychological care, stress reduction methods such as mindfulness, yoga, group therapy, etc. using people working in the midwifery profession, counseling in midwifery, reproductive health. Many studies have emphasized the need for informed consent and providing online services based on treatment protocols of infertility centers along with monitoring centers to increase effectiveness.

Conclusion: Considering the psychological effects of coronavirus pandemic on the mental health of infertile couples and with the start of virtual care support methods, infertility treatment centers need virtual care support protocols to be able to provide their services in a completely consistent manner

Keywords: Infertility, Stress, Anxiety

Pnm-2: Barriers to Providing Reproductive and Sexual Services to Women with Disabilities in Developing Countries

Asadi L*, Kohan SH

School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran

Email: l_asadi66@yahoo.com

Background: Receiving reproductive and sexual services is a fundamental right for all women of childbearing age. The purpose of this study is to investigate the barriers to providing reproductive and sexual services to women with disabilities in developing countries

Materials and Methods: The present study was conducted using a review method that searched for studies conducted between 2010 and 2021 in information sources and PubMed,

Science Direct, up to date. The English words access, reproductive, disability, sexual health, and their Persian equivalents were used as keywords and the results were inferred from 14 related studies conducted in African and Asian countries.

Results: A review of the literature shows that the main barriers to accessing SRH services in women with disabilities include negative attitudes of providers and society towards women with disabilities, insufficient training of service providers, insufficient knowledge among providers about indications and contraindications, lack of physical facilities of centers such as ramps, examination beds for women with physical disabilities, communication restrictions such as mental problems and disabilities, lack of financial support and support for women, high transportation costs

Conclusion: It is necessary to develop policies to improve access to reproductive and sexual services for women with disabilities in developing countries, and in this regard, service providers should receive adequate training and centers to provide facilities to women with disabilities to facilitate access to reproductive services and sexually equipped.

Keywords: Fertility, Reproductive, Disability

Pnm-3: Polycystic Ovary Syndrome and Inflammatory Markers

Azarbyjani Kh*, Jahanian Sadatmahalleh S

Department of Midwifery and Reproductive Health, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

Email: shahideh.jahanian@modares.ac.ir

Background: Polycystic Ovarian Syndrome (PCOS) is a multifactorial endocrine disease that affects 10-15% of women of reproductive age. Although the main cause of this disorder is unknown, a combination of factors related to the endocrine, hormonal, and immunity system is involved in its physiopathology. Recently, the association between inflammatory markers and PCOS has been considered and inflammation has been suggested as an important factor in the causing and progression of PCOS. This article is an overview to identify the association between PCOS and inflammatory markers and factors that may affect the level of these markers

Materials and Methods: A literature search was conducted through PubMed, Google Scholar and science direct.

Results: According to the results of various studies, PCOS is associated with mild chronic inflammation. But also metabolic disorders and hormonal imbalance such as Hyperinsulinemia, Hyperandrogenism, and dyslipidemia can cause inflammation and exacerbating it. It is revealed that an increased level of inflammatory factors such as TNF α , IL1B, IL1 α , CRP, MCP1, IL6, IL18, a-1 acid glycoprotein, MIP-1 α (macrophage inflammatory protein-1 α) have been observed in women diagnosed with PCOS. In PCOS women BMI and Free Androgen Index (FAI) are significantly correlated with these inflammatory markers. Also, the results of some studies suggest that there is a genetic basis for the inflammation observed in PCOS that might be related with insulin resistance, obesity, and diabetes.

Conclusion: This study has shown that PCOS is a multifactorial disease linked with inflammation and is associated with an increase in several inflammatory marker

Keywords: PCOS, Inflammation, Inflammatory Markers

Pnm-4: Polycystic Ovary Syndrome and Oxidative Stress

Azarbyjani Kh*, Jahanian Sadatmahalleh Sh

Department of Midwifery and Reproductive Health, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
 Email: shahideh.jahanian@modares.ac.ir

Background: Polycystic Ovary Syndrome (PCOS) is the most common endocrine disorder in women of childbearing age. A combination of several factors are involved in its physiopathology but the main cause of PCOS is not understood completely yet. In addition to hormonal disorders, Oxidative Stress (OS) is considered to have an active role in the etiology of the PCOS. Metabolic and hormonal disorders such as obesity, dyslipidemia, and Hyperinsulinemia may play an important role in causing OS in patients with PCOS. This study aimed to evaluate the association between PCOS and OS.

Materials and Methods: A literature search was conducted through PubMed, Google Scholar and science direct

Results: Recently, OS has been considered as an important factor is associated with PCOS. Research has revealed that in PCOS women the level of distributing marker of OS significantly increases. In fact, OS plays a critical role in PCOS pathways and hyperglycemia intensifies the production of OS products. Based on the results of various studies the markers of OS that are essentially elevated in patient with PCOS include: LPO (Lipid peroxidation), MDA (Malondialdehyde), DMA (dimethyl arginine) and total oxidant status. Also, the level of prolidase activity increase. On the other hand antioxidant levels such as vitamin E, vitamin C and SOD (Superoxide dismutase) in women with PCOS were significantly reduced

Conclusion: According to the results of the previous studies, PCOS is associated with oxidative stress situation and level of several OS markers are increase in PCOS women.

Keywords: PCOS, Oxidative Stress, Oxidative Stress Markers

Pnm-5: Health Related Quality of Life and Psychological Parameters in Different Polycystic Ovary Syndrome Phenotypes: A Comparative Cross-Sectional Study e

Bahadori F*, Jahanian Sh

Faculty of Medical Science, Tarbiat Modares University, Tehran, Tehran, Iran
 Email: shahideh.jahanian@modares.ac.ir

Background: Polycystic ovary syndrome (PCOS) is the most common endocrine disorder characterized by hyperandrogenism and chronic anovulation. PCOS is one of the leading causes of infertility and manifests with acne, hirsutism, and obesity PCOS has been shown to cause a reduction in quality of life. The aim of the study was to evaluate the health-related quality of life, Anxiety and Depression in different phenotypes of PCOS.

Materials and Methods: The observational, cross-sectional study was carried out on 239 PCOS women PCOS which had been classied on the basis of Rotterdam criteria into four categories. Then they were classied into four groups according to the Rotterdam criteria: A (n=77), B (n=38), C (n=68), and D (n=56).

Results: No significant differences were observed between the four PCOS phenotypes for anxiety, depression and QoL, as well as, HRQoL domains related to infertility, weight and emotional problems ($P>0.05$). Phenotypes A and B had worse HRQoL related to hirsutism (13.98 ± 5.22 , 14.13 ± 6.23 , $P<0.001$). In addition no significant differences were observed between them for HRQoL domains. While the score of acne in phenotype D

(19.60 ± 5.12 , $P=0.003$) and menstrual score in phenotype C were significantly higher comparing to the other PCOS groups (16.82 ± 3.87 , $P<0.001$).

Conclusion: Presenting similar psychological profiles in all phenotypes unveils the importance of psychological well-being screening, even in milder reproductive phenotypes. These results provide evidence that care and recommendations for improving QoL in these phenotypes should be considered differently

Keywords: Quality of Life, Phenotypes of Polycystic Ovary Syndrome, Poly Cystic Ovary Syndrome, Anxiety and Depression, Health Related Quality of Life

Pnm-6: Oncofertility and Breast Cancer

Gharagozloo M¹, Jahanian Sadatmahalleh Sh^{1*}, Ghaffari F²

1. Department of Midwifery and Reproductive Health, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran.

2. Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: shahideh.jahanian@modares.ac.ir

Background: Oncofertility was established with the aim of preserving and restoring the reproductive future of cancer patients in 2006. Breast Cancer (BC) is the most prevalent malignancy in women. This article is an overview of the fertility preservation options in BC patients.

Materials and Methods: A literature search was conducted through PubMed and Science Direct.

Results: There are two available options for maintaining fertility in BC patients, including preventive methods and Artificial Reproductive Technology (ART). In the first category, anticancer drugs that are less toxic to the ovaries can be used. Gonadotropin-releasing hormone (GnRH) agonists may reduce the gandotoxic effect of chemotherapy. In the future, microRNAs replacement approaches could be useful to reduce ovarian damage from chemotherapy. The second category includes cryopreservation of embryos, oocytes and ovarian tissue. Oocyte and Embryo cryopreservation require Controlled Ovarian Stimulation (COS) and an aromatase inhibitor (or tamoxifen) is used for the prevention of increasing estradiol levels during COS. Ovarian Tissue Cryopreservation (OTC) can be used immediately after diagnosis without any hormonal stimulation as well as prepubertal girls, but this technique is still considered experimental. Retrievable Hydrogels as a novel approach enhance the safety and improve oocyte quality relative to OTC. *In Vitro* Maturation (IVM) is used for immature oocytes obtained transvaginally without ovarian stimulation or OCT.

Conclusion: More powerful studies are needed to document the effectiveness of the newer methods. In the future, It is likely that the list of various techniques will expand.

Keywords: Oncofertility, Breast Cancer, Fertility Preservation, Cryopreservation

Pnm-7: Polycystic Ovary Syndrome and COVID-19

Gharagozloo Hesari N*, Jahanian Sadatmahalleh Sh , Mirzaei N

Department of Reproductive Health and Midwifery, Tarbiat Modares University, Tehran, Iran

Email: shahideh.jahanian@modares.ac.ir

Background: In women of reproductive age, polycystic ovary syndrome (PCOS) constitutes the most frequent endocrine

disorder with a prevalence which may reach or even exceed 10–15%, depending on the studied population and the applied diagnostic criteria. The risk of some disorders and diseases in these women is higher than others, including severe COVID-19 and its complications. The novel severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) reached a pandemic status in March 2020 with a consequent severe impact on international healthcare systems and the global economy

Materials and Methods: A literature search was conducted through PubMed and Google scholar.

Results: Women with PCO are more prone to COVID-19 and its severe side effects than non-PCO women. Decreased levels of vitamin D, high levels of the androgen hormone, and some proinflammatory factors in these women are important risk factors for COVID-19 and its side effects such as acute respiratory distress syndrome with associated multi-organ failure and high mortality.

Conclusion: As the risk of developing COVID-19 increases in women with PCO, these individuals should be specifically encouraged to follow specific health guidelines to prevent infection during the coronavirus epidemic.

Keywords: Polycystic Ovary Syndrome, COVID-19, Inflammatory Factors

Pnm-8: Application of TeleHealth Pregnancy Care during The Pandemy covid-19

Ghasemi M¹, Savabi-Esfahani M²

1. Department of Midwifery, Faculty of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran

2. Department of Midwifery and Reproductive Health, Faculty of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran

Email: ghasemi.m93@yahoo.com

Background: The purpose of prenatal care is to prevent complications of pregnancy in mothers and infants and reduce their mortality. Pregnant women are among the vulnerable groups against coronavirus disease. one of the goals of Tele-Health during the epidemic, was to maintain patient access to care while reducing the risk of COVID-19 for patients and staff.

Materials and Methods: this study, a review and search of sites, Pubmed, Magiran, SID Scopus, Embase, Science Direct, Scholar Google was performed from 2000 to 2020.

Results: The results showed that Telehealth is an essential tool that provides continuous care and reduces the spread of the disease. On the other hand, it is possible to follow up pregnant women with positive covid-19, through education and counseling through telehealth. The use of TeleHealth is useful for women with high-risk pregnancies through counseling, education, telephone follow-up, and telephone visits to patients. One of the weaknesses of this method is cultural barriers, maintaining confidentiality and unfamiliarity of pregnant women and doctors with this method and inefficiency in emergencies.

Conclusion: The use of teleHealth allows for ongoing care and reduces the spread of the disease by facilitating "social distance" and allowing assessment and / or follow-up

Keywords: Prenatal Care, Tele-Health, Covid-19

Pnm-9: Metabolic Syndrome in Adolescence Girls with Polycystic Ovary Syndrome

Ghiyasvand S¹, Jahanian Sadatmahalleh Sh

Department of Midwifery and Reproductive Health, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
Email: Shahideh.Jahanian@modares.ac.ir

Background: There are currently 3 diagnostic sets of criteria for polycystic ovary syndrome (PCOS): oligomenorrhea/ovulation and hyperandrogenism and polycystic ovaries on ultrasound. PCOS is associated with dyslipidemia, obesity, and glucose intolerance, which are also components of the metabolic syndrome. Since adolescents with PCOS are insulin resistant as are their adult counterparts, they would be predicted to be at increased risk for the Metabolic Syndrome as well.

Materials and Methods: A literature search was conducted through PubMed, Google Scholar and science direct.

Results: There are various definition of Metabolic Syndrome (MS) in adolescent: obesity, high blood pressure, high density lipid (HDL) and triglyceride level, and glucose level. adolescents are at increasing risk for type 2 diabetes mellitus and MS since the prevalence of obesity is increasing in this population. this increased risk may be conferred not only by IR but also by hyperandrogenemia, which is a risk factor for MS independent of obesity and insulin resistance. This insulin hormonal dysregulation associated with PCOS begins in adolescence. Women are at risk if they have a genetic predisposition, although the onset of symptoms can be triggered by environmental factors, particularly obesity.

Conclusion: Based on all available articles and studies In Obese girls with PCOS lifestyle intervention, including weight loss, is considered the therapy of choice is effective to treat menses irregularity, normalize androgen, and improve cardiovascular risk factors (CRF) in obese adolescent girls with PCOS.

Keywords: Polycystic Ovary Syndrome, Metabolic Syndrome, Adolescence

Pnm-10: The effect of Immunological Changes in Pregnancy on COVID-19 Infection

Habibi S¹, Amirchaghmaghi E^{2,3}

1. Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Tehran, Iran

2. Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Tehran, Iran

3. Department of Regenerative Medicine, Cell Science Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: amirchaghmaghi_e@yahoo.com

Background: SARS-CoV-2 (COVID-19) as the novel virus spreads rapidly and has caused many deaths worldwide. The modulations of immune system in pregnancy may affect the response to infections specifically to viruses. The aim of this review literature is to summarize the immunological changes in pregnancy and its impact on COVID-19 infection.

Materials and Methods: Literature review on the immunological change in pregnant woman and pathogenesis of COVID-19 infection, was carried out using PubMed and Google Scholar. The search terms include "COVID-19"; "SARS-CoV-2"; "immunological change"; "immunological shift"; and "Pregnancy".

Results: Important immunological changes in a normal pregnancy are proinflammatory response in early phase of pregnancy (Th-1 and Th-17 immunity dominance), anti-inflammatory throughout the rest of pregnancy (Th-2 and T-regulatory (Treg) dominance) and again proinflammatory in the peripartum and postpartum period. The immune response to SARS

CoV-2 infection is activation of both proinflammatory and anti-inflammatory mediators. Although the overall condition is the overproduction of proinflammatory cytokines and activation of coagulation pathway partly via protease activated receptors and IL-6. Many alterations during normal pregnancy including the suppression of PAR-1 expression, the domination of Th-2 anti-inflammatory state such as elevated IL-10 level may contribute to the relatively benign course of COVID-19 in pregnancy. In addition, estradiol (E2), estriol (E3) and progesterone as the anti-inflammatory hormones promote the production of Th-2 cytokines during pregnancy so the increased level of them may complement to the physiological defense to COVID-19 during pregnancy. On the other hand, a decrease in circulating plasmacytoid dendritic cells, which are necessary to production of interferon I against viruses and decrease in circulating natural killer (NK) were noted during pregnancy may be beneficial for COVID 19 pathogenesis.

Conclusion: Overall reports show that the mortality of COVID-19 in pregnant women is relatively low. In spite of much evidence implicated the beneficial effects of immunological change in pregnancy on COVID-19 disease progression, more studies are needed to make any definite conclusion.

Keywords: Pregnancy, COVID 19, Immunological Response

Pnm-11: A Systematic Review Of Pregnancy And COVID-19

Haghipour Z', Jahanian Sadatmahalleh Sh

Department of Midwifery and Reproductive Health, Faculty of Medical Sciences, College of Midwifery, Tarbiat Modares University Tehran, Iran

Email: iaomfr7@gmail.com

Background: In December 2019, a new coronavirus disease (COVID-19) was discovered in Wuhan, China, with a high rate of spread. The COVID-19 pandemic has had a significant effect on healthcare systems, however, the effect of COVID-19 on maternal health remains unknown. We wanted to see whether there was an association between severe acute respiratory syndrome coronavirus 2 infection and poor pregnancy outcomes.

Materials and Methods: A systematic review of observational studies with comparison evidence on SARS-CoV-2 infection and COVID-19 severity during pregnancy was performed. Up until March 20, 2021, we looked for qualifying research in the MEDLINE, Embase, ClinicalTrials.gov, and Cochrane databases. Original English-language publications were eligible if they included COVID-19-infected pregnant women and their newborns. The effect of COVID-19 on neonatal and maternity outcomes was of particular concern.

Results: A review of published studies confirms that the course of COVID-19 in pregnant women is similar to that of other populations. However, pregnant and newly pregnant women with covid-19 who are admitted to hospitals for any cause are less likely to exhibit symptoms such as fever, dyspnea, and myalgia, and are more likely to be admitted to the intensive care unit or need ventilation than non-pregnant women of reproductive age. They are more likely to deliver prematurely and may have an increased risk of maternal death and admission to the intensive care unit.

Conclusion: During the epidemic, there could be a critical need to prioritize safe, reliable, and inclusive maternity care.

Keywords: COVID-19, Immunity, Neonates, Pregnancy, SARS-CoV2

Pnm-12: The Effects of Sars-Cov-2 On Male And Female Reproductive Systems

Haghipour Z', Jahanian Sadatmahalleh Sh

Faculty of medical Sciences, College of Midwifery, Tarbiat Modares University Tehran, Iran

Email: zibahaghipour@gmail.com

Background: Severe acute respiratory syndrome coronavirus-2 mainly attacks the respiratory system, multiple organ involvement has also been detected. A significant concern was raised about SARS-CoV-2 effects on female and male reproductive systems which can be associated with virus expansion through next generations. In the article we will discuss about the effects of SARS-CoV-2 on male and female reproductive systems separately.

Materials and Methods: A literature search was conducted through articles of PubMed and Science Direct.

Results: The higher expression of ACEII enzyme in patients indicated the potential role of hormonal milieu in COVID-19 pathogenesis. Studies revealed higher LH level, lower serum testosterone and lower Testosterone: LH ratio in COVID-19 male patients in comparison to controls. These findings support the effects of SARS-CoV-2 on testicular cells rather than Hypothalamic-pituitary-testicular axis.

Conclusion: SARS-CoV-2 seems to have the potential of affecting both male and female reproductive systems. Close monitoring of young and pregnant COVID-19 patients concerning reproductive health is recommended.

Keywords: Severe Acute Respiratory Syndrome Coronavirus-2, COVID-19, Reproductive Health, ACE II Receptor, Infertility

Pnm-13: Study of Perceived Social Support and its Predictors in Women with Polycystic Ovary Syndrome

Hasanpoor-Azghady SB', Arbabi Moghaddam R, Amiri- Farahani L

Department of Midwifery and Reproductive, Iran University of Medical Sciences, Tehran, Iran

Email: hasanpoorbatoool@yahoo.com

Background: Polycystic ovary syndrome can result in poor quality of life due to different reasons. Therefore, attention to perceived social support and its associated factors can be beneficial for these patients. This study aimed to determine the level of perceived social support and its predictors in women with polycystic ovary syndrome.

Materials and Methods: This cross-sectional study was performed on 181 women with polycystic ovary syndrome, referred to Firoozabadi Hospital and Firoozgar Hospital in Tehran, Iran, using continuous sampling. Data were collected using a demographic questionnaire and Zimet's Multidimensional Scale of Perceived Social Support. The collected data were finally analyzed in SPSS version 22.

Results: The mean score of perceived social support was 5.18 ± 1.01 , and the mean scores of its domains including family, friends, and significant others were 5.58 ± 1.40 , 4.38 ± 1.55 , and 5.58 ± 1.28 , respectively. Perceived social support was significantly correlated with the husband's satisfaction with the woman's body and appearance, marital status, drug use, and having a companion. According to the multiple linear regression model, marital status ($P=0.005$), drug use ($P=0.003$), and having a companion ($P=0.006$) were significantly correlated

with the mean perceived social support. These variables predicted 12% of the total score of perceived social support.

Conclusion: The present results showed that perceived social support is associated with the husband's satisfaction with the woman's body and appearance, marital status, drug use, and having a companion to communicate with. Overall, attention to these influential variables in the design of counselling and training programs, along with other treatment methods for women with polycystic ovarian syndrome, is essential.

Keywords: Polycystic Ovary Syndrome, Social support, Predictors

Pnm-14: Psychological Well Being of Infertile Women and its Relationship with Demographic Factors and Fertility History

Hasanpoor-Azghady SB^{1*}, Sohbaty F¹, Jafarabadi M², Amiri-Farahani L¹, Mohebbi M³

1. Department of Midwifery and Reproductive Health, Iran University of Medical Sciences, Tehran, Iran

2. Department of Obstetrics & Gynecology, Reproductive Health Research Center, Tehran University of Medical Sciences, Tehran, Iran

3. Department of Midwifery and Reproductive Health, Vali-Asr Reproductive Health Research Center, Imam Khomeini Hospital., Tehran, Iran

Email: hasanpoorbatool@yahoo.com

Background: Infertility leads to a wide range of psychological injuries that may reduce psychological well-being. This study aimed to determine the psychological well-being of infertile women and its relation with demographic factors and fertility history.

Materials and Methods: This cross-sectional study was conducted on 300 infertile women referred to three infertility centres, Tehran, Iran. The sampling was continuous. We collected data from a self-generated demographic and fertility questionnaire and Ryff's Psychological Well-being Scale (PWB). Data analysis was done by independent t-test, one way ANOVA. The significance level was set at $P < 0.05$.

Results: The results showed that there was no significant relationship between demographic variables including age, occupation of each couple, spousal's education, economic status and place of residence with PWB, but the mean score of PWB was significantly different in women's educational levels ($P = 0.03$). There was also a significant difference between the mean score of PWB among different groups in the duration of marriage ($P = 0.01$). Fertility characteristics variables include the duration of infertility, duration of treatment of infertility, and current treatment were not the relation with PWB. However, the mean score of PWB in the number of IVF ($P = 0.003$) and the failed IVF pregnancies ($P = 0.01$) had a significant statistical difference.

Conclusion: The results showed that PWB related to several variables. Paying attention to these variables can help in the preparation and development of counseling or educational programs.

Keywords: Psychological Well-Being, Infertile Women, Demographic Factors, Fertility factors,

Pnm-15: Efficacy of Counseling Based on Plissit Model on Sexual Functioning in Women with Polycystic Ovarian Syndrome

Jamshidimanesh M^{*}, Ghol Babaei F

Department of Midwifery and Reproductive Health, Iran Medical University, Tehran, Iran

Email: jamshidimanesh@yahoo.com

Background: Women with Polycystic Ovarian Syndrome (PCOS) suffer from Sexual dysfunction that is largely ignored in health clinics. This study was conducted to assess the efficacy of Permission, Limited Information, Specific Suggestion, and Intensive Therapy (PLISSIT) model on sexual function of women with PCOS.

Materials and Methods: This randomized clinical trial was performed in 66 women with PCOS aged 18-45 years old. They were divided into intervention and control groups ($n=33$ per group). Four weekly sessions of one hour individual counseling based on PLISSIT model were performed for the intervention group, while the control group received only routine care. Female Sexual Functioning Index questionnaire was completed at pre-test, and one month and three months after that in both groups. Data analysis was done applying Friedman, Mann-Whitney U, and Wilcoxon tests.

Results: There were homogeneity in subjects' mean age (29.26 ± 5.96), educational level (12.02 ± 2.65) and BMI (25.95 ± 3.67). Also, the two groups were similar in terms of symptoms including hirsutism, acne, alopecia, infertility and menstrual status. The mean scores for sexual functioning were 20.39 ± 2.56 , 24.40 ± 4.70 and 23.73 ± 1.26 at pre-test, after the intervention, and follow-up in intervention group, respectively ($P < 0.001$), but no significant differences were seen between the scores of the control group ($P = 0.405$). Also, the scores for lubrication were not significantly different between the two groups at post-intervention ($P = 0.245$) and follow-up ($P = 0.423$).

Conclusion: Conclusion: The PLISSIT model improved sexual functioning in women with PCOS, therefore, it could be recommended as an assessment and management tool in investigating sexual problems at early stages in this group of women.

Keywords: Polycystic Ovarian Syndrome, Sexual Dysfunction, PLISSIT Model

Pnm-16: The Psychological Aspect of The COVID-19 Pandemic on Infertile Patients

Khademi S^{*}, Zahmatkesh M

Department of Sexual and Reproductive Health, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran

Email: sahar.khademi975@gmail.com

Background: COVID-19 pandemic caused a fundamental change in health guidelines. While infertile patients are experiencing anxiety and stress, the COVID-19 pandemic raised new concerns. According to recent guidelines to prevent Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) disease, almost all non-urgent care has been cancelled. Thus, infertile patients are affected by the suspension of their infertility treatment. The psychological effect of COVID-19 on people referring to infertility centers needs further attention.

Materials and Methods: This study summarizes recent literature assessing the published data around infertile patient attitudes towards receiving care during the COVID-19 pandemic. Also, the study explored the contributing factors that affect their mental health regarding recent guidelines that postpone infertility care.

Results: Suspension of care for the infertile patient during the COVID-19 pandemic caused additional mental distress in most patients besides their underlying emotional distress due to their medical condition. Most patients prefer to continue or start their

infertility treatment during the COVID-19 pandemic, and they refuse to accept any delays. Factors that cause more distress the cancellation of fertility treatment are diminished ovarian reserve, duration of exposure to the COVID-19 news, age more than 35 years, an underlying medical condition in women such as Endometriosis and Uterine Fibroids, previously unsuccessful *In Vitro* Fertilization (IVF) treatment, and previous psychological disorders.

Conclusion: The psychological aspect of the COVID-19 pandemic in patients seeking infertility care cannot be ignored. This population who are more vulnerable to adverse psychosocial effects should receive psychological support regarding the cancellation of their treatment during this critical period to improve their mental health.

Keywords: Infertility, COVID-19, Psychology

Pnm-17: COVID-19 and Male Fertility

Khalili M^{1*}, Jahanian Sadatmahalleh Sh¹, Montazeri A²

1. Department of Midwifery and Reproductive Health, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

2. Health Metrics Research Center, Iranian Institute for Health Sciences Research, ACECR, , Tehran, Iran

Email: Jahanian@modares.ac.ir

Background: Coronavirus disease 2019 (COVID-19) can affect a large number of organ systems. The binding of COVID-19 converting enzyme receptors to angiotensin2 (ACE2) facilitates cell entry and proliferation. These cells are detectable in human Leydig and Sertoli cells, as well as spermatids and spermatozoa, and the male reproductive system shows high ACE2 expression. As a result, men are more likely to have impaired fertility. This article reviews various aspects of the effect of COVID –19 on male fertility.

Materials and Methods: A literature search was conducted through Scopus and PubMed.

Results: In all COVID-19 and male fertility papers were reviewed. One of the consequences of COVID-19 is the formation of orchitis in the testicles, which in the short term causes blockage of sperm ducts and reduced sperm quality. Mild parts of the disease have less effect on male fertility than the severe disease. COVID-19 can affect sex hormones. The ratio of follicle-stimulating hormone(FSH)/luteinizing hormone(LH) and T/LH is significantly reduced. COVID-19 is not sexually transmitted. Fever is a symptom that also affects spermatogenesis. Fever can cause major changes in sperm parameters, damage to sperm DNA, sperm apoptosis, and germ cell death. It can take a long time, more than 3 or 4 months, for sperm parameters to return to baseline.

Conclusion: COVID-19 can affect male fertility and sperm quality, so it is recommended for those planning to have children or use assisted reproductive technology delay the decision for at least 3 to 4 months after recovery and check their sperm quality.

Keywords: COVID-19, Male Fertility, Coronavirus Disease 2019

Pnm-18: Evaluation of Mental Health and Quality of Life in Pregnant Women during The COVID-19

Khalili M^{1*}, Jahanian Sadatmahalleh Sh¹, Montazeri A²

1. Department of Midwifery and Reproductive Health, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

2. Health Metrics Research Center, Iranian Institute for Health Sci-

ences Research, ACECR, Tehran, Iran

Email: Jahanian@modares.ac.ir

Background: With the onset of coronavirus disease 2019 (COVID- 19) psychological problems have had a significant impact on the mental health (MH) and quality of life (QoL) of people in the community, especially high-risk groups including pregnant women. This paper provides an overview of the effects of COVID-19 on the MH and QoL of pregnant women.

Materials and Methods: A literature search was conducted through Scopus and PubMed.

Results: Overall MH and QoL in pregnant women during the COVID-19 papers retrieved and reviewed. During the COVID-19 pandemic anxiety and depression have become widespread in pregnant women, affecting their MH. Pregnant women were more prone to anxiety. The anxiety was due to fear of contracting the virus, transmitting the virus to the fetus, teratogenicity of the virus, and medications. Decreased contact with friends and reduced activity due to quarantine has reduced the QoL of this population. Alternatively, the need to receive prenatal care services and the impact of anxiety on the immune system has increased the incidence of the virus in this group.

Conclusion: Due to the vulnerability of pregnant mothers and their susceptibility to the disease, it is recommended that health officials take measures to improve MH and QoL for this population.

Keywords: Pregnancy, Mental Health, Quality of Life, COVID-19

Pnm-19: The Role of Psychological Counselling In Fertility Treatments

Khoramabadi MS

Nursing and Midwifery School of Shahid Beheshti University of Medical Sciences, Tehran, Iran

Email: ms.khoramabadi@yahoo.com

Background: Approximately 10 to 15% of child bearing age couples experience infertility, in addition to demand for infertility treatment has increased in recent years because of multiple factors. Infertility is a stressful event that can give rise to psychological difficulties. Many fertility patients express a need for receiving more psychosocial help from the health care system. This article Argues a behavioral treatment can reduce psychological distress and resulted in greater numbers of viable pregnancies than usual care.

Materials and Methods: This review article has been extracted from 26 article that has indexed in most valid scientific cites that has published from year 2018 to 2021.

Results: The experience of infertility is often described by couples as a stress condition and a heartbreaking situation, and its treatment cause a serious strain on their interpersonal relationships, as well as personal distress, reduced self-esteem and periods of existential crisis. Consequently, both members of the couple typically undergo numerous diagnostic medical tests and procedures that can be stressful because they must be sharing of intimate details of one's sexual activities with medical personnel. In some cases, couples may also have to undergo surgical treatment for their infertility or pursue other options such as IVF, GIFT, or ICSI. Such procedures may cause day-to-day strain in missed work and physical discomfort. concerns about using donor eggs or sperm, and uncertainty about what to tell family members and future children about the decision to use "unnatural" reproductive technology. In addition to every sin-

gle procedure of high technology infertility treatments can play a crucial role in increase the risk of pregnancy and perinatal complications. It is known that emotional stress can cause tubal spasm, anovulation, abnormal gamete transport, progesterone deficiencies, hyperprolactinemia, and can potentially lead to the luteinized unruptured follicle syndrome. So a careful pre-conceptual counselling aimed to optimize the general health status of the pre-pregnant women is needed (to stop smoking, reduce BMI in overweight/obese patients, and so on), identifying and treating modifiable reproductive disorders and, finally, an effort should be made to optimize the infertility treatments in order to prevent or reduce the risk of pregnancy complications in these infertile women. Psychological counseling can provide valuable assistance in dealing with infertility treatments and their eventual failures. In recent years, infertility counselling has become a specialist form of counselling requiring professional expertise and qualification.

Conclusion: Today, the positive impact of psychological counselling for stress relief during and after therapy be noted. psychological benefit of helping patients to understand and cope with their medical procedures while continuing to manage and process their cognitive and emotional responses to their difficulties conceiving a child should be considered in any approach to the treatment of infertility.

Keywords: Infertility Treatment , Psychological Counselling, Perinatal Complications

Pnm-20: Potential Risks of SARS-Cov-2 Infection on Male Infertility

Khoramabadi MS*

Nursing and Midwifery School of Shahid Beheshti University of Medical Sciences, Tehran, Iran
Email: ms.khoramabadi@yahoo.com

Background: The outbreak of 2019 novel coronavirus disease (COVID-19) has become a major pandemic threat worldwide. Such a public health emergency can greatly impact various aspects of people's health and lives. To understand factors that may contribute to viral spread and address long-term health sequelae for survivors, it is important to review evidence regarding viral presence in semen, and possible effects on fertility. Surprisingly, men are reportedly more vulnerable to COVID-19 compared to women so this review focuses on negative impact of COVID-19 on male reproductive functions.

Materials and Methods: This review article has been extracted from 25 article that has indexed in most valid scientific cites that has published from year 2019 to 2021.

Results: Viruses that cause febrile illness, such as pandemic influenza, and SARS-CoV-2, are associated with decreased sperm count and motility and abnormal morphology. an important finding is that angiotensin converting enzymes 2 (ACE2) receptor, that aids the SARS-CoV-2 entry into host cells, is profoundly expressed in testicular cells. In addition, the endogenous androgen milieu and its receptors are associated with ACE2 activation reflecting that enhanced testosterone levels may trigger the pathogenesis of COVID-19. Moreover, SARS-CoV-2 infection-induced uncontrolled inflammatory responses may lead to systemic oxidative stress (OS), whose severe disruptive effects on testicular functions are well-documented. Again testicular expression of ACE2 has been shown to be age related. The highest expression in patients aged 30 and older than 20 has been reported. It show that young male patients are more likely than older patients to experience testicular injury

due to COVID-19. On the other the self-isolations reduced opportunities to remain physically active, while In men, moderate physical activity has been positively associated with semen quality so Clinicians can help out their patients in promoting and proposing a lifestyle supportive care. Even if we need to restrict ourselves indoor, care must be taken to spend more time in indoor physical activity and less time in sitting. men are at twice the risk as women of developing the severe form of the disease and the higher prevalence of non-communicable diseases. There are also signs that young men are reluctant wearing of a mask and similarly, hand hygiene performed more regularly by women as compared to men, both generally. The pandemic should be a wake-up call for all involved in the planning and delivery of health and social care for the greater attention to the central role of sex and gender.

Conclusion: However, there may be reproductive consequences of COVID-19 infection in young males and could be a possible aetiopathogenic hypothesis of future infertility in patients who acquire SARS-Cov-2 infection. this current pandemic is demonstrating that there needs to be a more focused view on men's health behavior.

Keywords: Infertility, Men, COVID-19 Infection, Physical Activity

Pnm-21: The Impact of Covid19 on Maternal And Perinatal Outcome

Kouhestani S*, Habibi S

Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran
Email: solmazkouhestani@yahoo.com

Background: SARS-CoV-2 is a novel virus strain that was termed COVID-19 by the World Health Organization (WHO). It has now spread worldwide and is one of the most severe public health threats and is clear that, during the coronavirus pandemic, pregnant woman is one of the most susceptible groups. The aim of this study is review of outcome of pregnancy in women with coronavirus. Although still Data on clinical outcomes of pregnant women suffering from COVID-19 are therefore relatively scarce.

Materials and Methods: Review of studies on the outcome of pregnancy and pathogenesis of COVID-19, with a detailed search was carried out using databases such as PubMed and Google Scholar. The search terms include "COVID-19"; "SARS-CoV-2"; "Maternal effect"; "Maternal outcome"; "Fetal outcome"; "Pregnancy outcome"; "Antenatal" and "Perinatal"; The retrieved papers was filtered to include only systematic reviews, meta-analyses, clinical trials, case series, and narrative reviews.

Results: However, there are limited reports on the impact of COVID-19 during pregnancy but our result from review of relevant articles it shows that COVID-19 may be is associated with increase of caesarian delivery, preterm deliveries, premature rupture of membranes (PROM), elevated Creactive protein, , pre-eclampsia, Post-partum hemorrhage, maternal sepsis, maternal depression, stillbirth, maternal deaths

Conclusion: As a result, the possible effects on pregnancy outcomes are obscure, and more studies are required and it cannot be conclusively said that SARS-CoV-2 infection increases poor outcome of pregnancy

Keywords: COVID-19, Pregnancy Outcome, Maternal Outcome, Pregnant Women, SARS-Cov-2

Pnm-22: Placenta Infection with SARS-CoV-2

Mahmoudinia M¹, Dadgar S¹, Akbari A¹, Attaranzadeh A⁴, Zandie E⁵, Jahanpak N⁶

1. Maternal and Neonatal Research Center, Faculty of Medicines, Mashhad University of Medical Sciences, Mashhad, Iran

2. Imam Reza hospital, Mashhad University of Medical Sciences, Mashhad.

5. Imam Reza Hospital, Mashhad University of Medical Sciences, Mashhad, Iran

6. Mashhad University of Medical Sciences. Mashhad, Iran

Email: mahmoudiniam@mums.ac.ir

Background: Since December 2019, the whole world has been affected by a coronavirus (severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2]). However, the effects of corona on pregnancy and fetal transmission are still unclear. The aim of this study was to evaluate the placenta samples for detection of SARS-CoV-2 RNA in women with coronavirus

Materials and Methods: This is a part of a cohort study that was carried out on pregnant women with a diagnosis of COVID-19 infection who have been admitted to Imam Reza hospital of Mashhad, Iran, from 20th March to 5th August 2020. Clinical and laboratory information of all patients was collected chest CT scans were reviewed. 16 placental tissue for real-time polymerase chain reaction (RT-PCR) testing were sent. All 16 extractions were performed by PCR real-time kit with Powercheck brand (South Korea) with 2 target gene (E gene and RdRp gene), and another kit, Pishtazteb (Iran) with 2 target gene (N gene and RdRp gene)

Results: In the first RT-PCR kit by Powercheck kit, 6 samples were positive for a single gene) E gene (.2 samples were positive for both genes (E gene and RdRp gene). In the second RT-PCR kit by Pishtazteb kit, 3 samples were positive for two genes (N gene and RdRp gene).

Conclusion: Conclusion: This present study shows that infection of placenta with SARS-CoV-2 may occur in pregnancy. However, whether this infection leads to neonatal infection and serious complication in pregnancy remain unclear.

Keywords: Placenta, COVID-19, Pregnancy,, Vertical Transmission

Pnm-23: The Effects of COVID-19 from Fertilization until Birth: A Literature Review

Mirbahari SN^{*}

Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: nasim.mirbahari@yahoo.com

Background: Due to the presence of the main receptor of SARS-CoV-2 (ACE2) in the male and female reproductive systems, infertility and viral damage during pregnancy are possible, in addition to premature birth, abnormal birth, and even maternal death.

Materials and Methods: By searching relevant keywords, a total of 205 articles were retrieved, 62 of which were finally reviewed in this study. Also, the Fertility Society of Australia (FSA), European Society of Human Reproduction and Embryology (ESHRE), and Human Fertilization and Embryology Authority (HFEA) websites were checked to find reports on infertility management during the COVID-19 pandemic in other

countries.

Results: The coronavirus receptor (ACE2) is expressed in the tissues of the male and female reproductive systems, as well as various embryonic stages. The fetus is most likely to be infected by the virus at the time of birth. However, there are few reports of vertical transmission from the mother to the fetus before birth. Couples are generally suggested to freeze their embryos after the COVID-19 pandemic is eradicated.

Conclusion: Considering the presence of the new coronavirus receptors in the male and female reproductive systems, besides reports on the destructive effects of this virus on different parts of the male and female reproductive systems, COVID-19 can harm the next generation, as well as the current world population. Therefore, couples are advised to avoid pregnancy during the COVID-19 outbreak. In the case of pregnancy, they are asked to observe the health protocols as much as possible to prevent the spread of disease.

Keywords: COVID-19, Reproductive System, Pregnancy, Fertilization, Vertical Transmission,

Pnm-24: Coronavirus and Endometriosis

Mirzaei N^{*}, Jahanian Sadatmahaleh Sh

Department of Reproductive Health and Midwifery, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

Email: shahideh.jahanian@modares.ac.ir

Background: The COVID-19 pandemic as a global health crisis trigger an anxiety, depression, and stress to general public because of its power of infection, complexity and ambiguity. Endometriosis as a chronic inflammatory condition affecting 190 million women worldwide probably not has been deemed among the COVID-19 increased-risk group except the thoracic endometriosis. In the COVID-19 pandemic availability of health care services and elective surgery have been reduced; furthermore, stress and anxiety can intensify the symptoms of endometriosis, especially those pertain to pain. This article is an overview to alternative strategies to combat endometriosis symptoms amid the COVID-19 crisis.

Materials and Methods: A literature search was conducted through articles of PubMed and Science Direct.

Results: Women with endometriosis have to adopt some strategies to cope with this situation effectively include: firstly, coherent understanding of endometriosis and the effect of COVID-19 on it such as delayed diagnosis and treatment, reduction of quality of life, increased waitlist services, postponing elective surgery and fertility treatment, pursuing current management if symptoms are remained and considering tele-health services. In addition, maintaining social communication by on-line platforms and attending to endometriosis support group, developing better lifestyle by improving quality of sleep, initiating exercise, adapting gluten-free and anti-inflammatory diet, and sticking on heat patches for long duration(8-12h). finally, considering mindfulness therapy and meditation, adopting positive attitude.

Conclusion: Seeking an alternative non-medication/surgical strategies are considered crucial because of the postponement of surgeries and the limits of visiting gynecologists. Endometriosis, COVID-19, self-management

Keywords: Endometriosis, COVID-19, Self-Management

Pnm-25: Sexual Function During COVID-19 Disease in Pregnant Women

Mirzaei N*, Jahanian Sadatmahalleh Sh, Gharagozloo Hesari N

Department of Reproductive Health and Midwifery, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
Email: shahideh.jahanian@modares.ac.ir

Background: The current outbreak of coronavirus disease 2019 (COVID-19) as the sixth public health emergency of international concern not only can trigger psychological disorders, but also aggravate the previous mental illnesses. In addition, psychological health of pregnant women as a susceptible group has been intensified by experiencing more concerns about COVID-19 and its effects on their infants, and disrupted access to health care centers. According to the strong relationship between sexual activity and mental health and the destructive effect of COVID-19 on the mental health of pregnant women, this article is an overview to assess sexual function during COVID-19 in pregnant women

Materials and Methods: A literature search was conducted through articles of PubMed and Science Direct.

Results: It is revealed that sexual dysfunction has increased in pregnant women during COVID-19 crisis and one study reports its prevalence more than 87.4%. Furthermore, they demonstrated that it would be worsened by increasing trimester. The possible explanation for these results is amplified anxiety of women regarding the well-being of herself and the fetus, and being in hospital giving birth in this situation.

Conclusion: The decreased sexual function of pregnant women during the COVID-19 highlights the importance of psychological intervention and social interaction during this crisis.

Keywords: Sexual Function, COVID-19, Pregnant Women

Pnm-26: The Effect of Sexual Counseling Using BETTER Model on Sexual Function of Women with Infertility: A Randomized Controlled Trial

Mohamadzadeh Farizhandi M^{1*}, Lotfi R², Karimzadeh M³, Kabir K³

1. Student Research Committee, Alborz University of Medical Sciences, Karaj, Iran

2. Alborz University of Medical Sciences, Non-communicable Diseases Research Center, Karaj, Iran

3. Department Of Preschool Education, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

Email: mohammadzadehmarmar@gmail.com

Background: Infertility is among the increasing problems in developing countries which can cause female sexual function disorder and affect their quality of life. Thus, the current study aims to examine the effect of sexual counseling based on the BETTER Model on the sexual function of infertile women.

Materials and Methods: Participants included 80 infertile women in the age range of 20-45 which were randomly divided into intervention and control groups. The intervention group received two sexual counseling sessions weekly based on BETTER Model. Female Sexual Function Index (FSFI) and Enrich Marital Satisfaction Scale (EMSS) were completed by participants before and two months after the intervention.

Results: The mean sexual function scores were respectively 26.33 and 21.72 for the intervention and the control group, two months after the intervention ($p < 0.05$). Moreover, all domains (desire, arousal, lubrication, orgasm) were significantly increased ($p < 0.001$) after sexual counseling, except pain.

Conclusion: two sessions of sexual counseling based on the

BETTER Model can be used in the infertility clinic to improve the sexual health of infertile women.

Keywords: Infertility, Sexual Counseling, BETTER Model, Sexual Function

Pnm-27: The Prevalence ,Risk Factors And Early Outcomes Due To Complications Of Amniocentesis

Moshfeghi M

Department of Endocrinology and Female Infertility, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Email: moshfeghimaryam@yahoo.com

Background: Sampling of amniotic fluid for genetic testing or prenatal diagnosis is possible. Sampling may be associated with complications such as ruptured of amniotic membranes , infection or miscarriage. These complications occur in 0.5-1% of cases and are usually seen 48 hours to two weeks after amniocentesis. In this article, the factors predisposing to complications and early prognosis of these complications for patients are considered.

Materials and Methods: This study was performed on 460 cases of amniocentesis. Problems and complications of amniocentesis were evaluated in these patients up to two weeks after amniocentesis and the results of this study will be presented in this study. These problems include rupture of the amniotic sac, bleeding, or loss of pregnancy following amniocentesis. The age of mothers is between 18 - 45 years and the average gestational age at the time of sampling is 16w and 4 days.

Results: All patients were followed up for two weeks and 8 (1.7%) mothers ,presented with complaints of leakage. Leakage was often reported within the first 48 hours after amniocentesis. All cases were hospitalized and monitored. 5 cases (1.08%),leading to termination of pregnancy.The other 3 cases (0.65%),had normal amniotic fluid within one to two weeks, and were discharged in good general condition. Predisposing factor in three patients with termination of pregnancy was history of bleeding in the first trimester of pregnancy and retro placental hematoma , Another patient had a BMI >30 and hemoglobin A1C =9 and severe hypothyroidism. Three patients who had improved their pregnancies had a long travel history after amniocentesis, and with rest and hydration for one to two weeks, the amount of amniotic fluid became normal and membranes were repaired.

Conclusion: One of the risk factors for amniotic sac rupture following amniocentesis is a history of hematoma, bleeding in first trimester, and maternal medical problems and genetic defect of baby that may not respond to expectant treatment, but conditions such as physical activity and travel usually improve after expectant treatment.

Keywords: Risk Factors, Amniocentesis, Pregnancy Loss

Pnm-28: The Effect of Nutrition and Lifestyle on the Results of Assisted Reproductive Techniques

Rahimi P^{1*}, Farshbaf-Khalili A²

1. Department of Midwifery, Tabriz University of Medical sciences Tabriz, Iran

2. Physical Medicine and Rehabilitation Research Center, Aging Research Institute, Tabriz University of Medical Sciences Tabriz, Iran, TABRIZ, Iran

Email: parnian9797.md@gmail.com

Background: Infertility is defined as the inability to become pregnant after 12 months or more of regular unprotected sexual intercourse in couples. There are various causes for infertility: including ovulation disorders, chromosomal abnormalities, tubular obstruction, sperm factors, etc. One in eight couples are affected by infertility. There are various treatments for infertility; including ART assisted reproductive techniques (IVF, IUI, ICSI, ZIFT, and GIFT). The success rate of these methods in US infertility centers is reported to be 38% and depends on various factors. This low success rate indicates that in addition to the basic and important primary factors, there are other factors that need further investigation. Objective: This study aimed to evaluate the effect of nutritional (high-fat and unhealthy diet, caffeine consumption, vitamins, minerals, and dietary supplements including omega 3, oxidative stress,) and the other lifestyle factors (physical activity, smoking, alcohol and illicit substance, mental and physical health) on the results of infertility treatment

Materials and Methods: In this systematic review, according to the keywords of infertility, lifestyle, nutrition, assisted reproductive techniques, we did a comprehensive systematic literature search in the electronic databases comprised the Cochrane Library, MEDLINE (PubMed), Scopus, ProQuest, SID, Google scholar, as well as SID, Magiran, and Irandoc for Persian literature review up to May 2021. Systematic reviews, RCTs, and quasi-experimental studies that examined the effects of lifestyle factors alone or in combination on the results of infertility treatment were included.

Results: Eighteen interventional studies included in this systematic review. The results of this review showed that nutritional and other investigate lifestyle factors are important on the results of ART. With increasing age, the success rate of infertility treatment decreases. Unhealthy diet and inactivity in people causes obesity, cardiovascular disease, diabetes, and some cancers that these diseases directly and indirectly affect the natural fertility and potentially the results of its treatment. Some studies have shown the effect of oxidative stress from free radicals (ROS) on sperm DNA fragmentation that is one of the causes of sperm failure in fertility. Oxidative stress in smokers resulted from nicotine, cadmium, and tobacco. Antioxidants such as selenium, zinc and vitamin supplements (E and C) can reduce their effects. Eating fresh vegetables and fruits rich in antioxidants have a good effect on BMI and oxidative stress, and reduce disease. ART success rate can be improved because high fat diet reduces reproductive potential and obese people have a higher percentage of sperm with DNA fragmentation, abnormal morphology and low mitochondrial membrane potential (MMP) and sperm selection for use in IVF, IUI, ICSI, ZIFT, GIFT). People undergoing IVF treatment with caffeine intake more than 272 mg per day were less successful (live embryos). Alcohol consumption by the female partner is associated with an increased risk of ovulatory infertility and endometriosis that is associated infertility. Heavy alcohol use by the male partner is associated with abnormalities in gonadal function, which includes reduced testosterone production, impotence, and decreased spermatogenesis. Based on the findings in this review, omega-3 supplements and dietary intake of omega-3 might improve semen quality parameters in infertile men. In many clinical trials, counseling intervention plays an important role in reducing the specific stress of infertility in infertile women because stress affects sexual function through various mechanism.

Conclusion: Poor diet, smoking, oxidative stress, antioxidants such as minerals and vitamins including selenium, zinc, vita-

mins E and C, etc. are all effective factors in fertility and assisted reproductive therapies, and their results in clinical trials have been demonstrated.

Keywords: Infertility, Lifestyle, Nutrition, Assisted Reproductive Methods

Pnm-29: Liver Enzyme and Pregnancy Hypertention in Women with Infertility History

Zare M*

Department of Midwifery, Hafez hospital, Shiraz, Iran
Email: mahshadzare73@gmail.com

Background: Recent studies have shown that maternal organ dysfunction such as liver involvement can be related to pathophysiology of hypertension and preeclampsia and infertility treatment can worsen it. The aim of this study was to evaluate the association between biochemical parameters in serum of pregnant women with infertility history and their blood pressure.

Materials and Methods: A clinical prospective study was conducted and included 50 pregnant women. Outcome measures included biochemical parameters in serum of mothers: SGOT, SGPT, lactate dehydrogenase (LDH), bilirubin (total and direct) and their blood pressure in second and third trimester.

Results: The mean of maternal age was 31.70±5.06 years. Systolic blood pressure and diastolic blood pressure were 112.72±13.08 mg/hg and 73.71±9.50 mg/hg respectively. The mean of LDH was 542.35±170.21 There was not a significant association between the systolic blood pressure and LDH, SGOT and SGPT ($p = 0.866$, $R\text{-squared} = 0.01$). However, there was a negative association between SGOT and SGPT and systolic blood pressure. For diastolic blood pressure negative association emerged just for SGOT which was not significant ($p=0.866$ and $R\text{-squared}=0.02$).

Conclusion: Measurement of liver enzymes could be an early biomarker in predicting hypertension in pregnant women especially in those who are under treatment for infertility and the necessity of screening for them should be evaluated in more studies.

Keywords: Liver enzymes, Hypertension, Infertility

Pnm-30: Infertile Hypothyroidic Women and Neonatal Outcomes

Zare M

Department of Midwifery, Hafez hospital, Shiraz, Iran
Email: mahshadzare73@gmail.com

Background: Thyroid hormones are essential for appropriate growth and development during fetal life and neonatal period. Recent studies have shown that hypothyroidism can result in infertility and maternal thyroid function can affect fetal growths. In this study we evaluated pregnancy outcome in women with the history of infertility and hypothyroidism.

Materials and Methods: A clinical prospective study was conducted during 2020 and included 108 pregnant women (46 hypothyroidic participants and 62 normal pregnant women). Outcome measures included gestational age (weeks), birth weight (grams), head circumference (HC, cm) and height (cm) as neonatal outcomes. All statistical analyses were performed using STATA 17 (StataCorp). Student's t-test and analysis of variance (ANOVA) were applied to do the analysis. Significance was established at $p<0.05$.

Results: The mean of maternal age was 30.77 ± 6.29 years. Gestational age at delivery time was significantly lower in hypothyroid group (37.95 ± 2.92 weeks) compared with normal group (38.7 ± 1.58 weeks, $p=0.045$). Birth weight and head circumference did not show any differences between two groups. However, neonatal height was significantly lower in hypothyroid group (48.65 ± 4.48 vs. 50.96 ± 3.59 , $p=0.001$).

Conclusion: Our results showed that maternal hypothyroidism has a negative impact on fetal growth and newborn infant. It is necessary to monitor maternal thyroid function and fetal and neonatal growth parameters to improve pregnancy outcomes specially in women with infertility background.

Keywords: Hypothyroid, Infertility, Pregnancy outcome

Pnm-31: COVID_19 and Male Fertility

Zeynodini S

Department of Nursing and Midwifery, Rafsanjan University of Medical sciences, Rafsanjan, Iran

Email: zeynodinisamane@gmail.com

Background: COVID-19 is one of the greatest pandemic diseases and the reason of millions infection and death of people these days. Due to the exist of virus entry receptor, Angiotensin Converting Enzyme-2 (ACE2) in reproductive organs like testis and also occurring some events like mitosis and miosis in testis, this organ can be vulnerable to coronavirus. The aim of this review is to find out the possible effect of COVID-19 on male fertility

Materials and Methods: A review literature search of eligible studies was conducted in the PubMed database from 2019 to 2021 for studies evaluating the association between Severe acute respiratory syndrome coronavirus-2 (SARS_CoV_2) and male fertility using the following search strategy : (" COVID_19" OR "SARS_CoV_2") AND ("male fertility" or "male infertility") AND ("semen") AND ("sperm") as used keywords. 11 studies (systematic reviews and meta-analysis) were found and 8 studies were included in this review

Results: Only in one study, viral mRNA has been found in semen of infected men in the acute form of disease. Some evidence of altered seminal parameters and testicular disconformity like orchitis has been reported

Conclusion: Investigating of ACE2 protein in many reproductive tissues and it's expression by Leydig and Sertoli cells of adult testes, suggest that covid_19 may impact the male fertility by having a direct effect on spermatozoa although fever coming from COVID_19 infection, itself can be effective on the man fertility.

Keywords: COVID_19, SARS_CoV_2, Male Fertility , Male Infertility, semen

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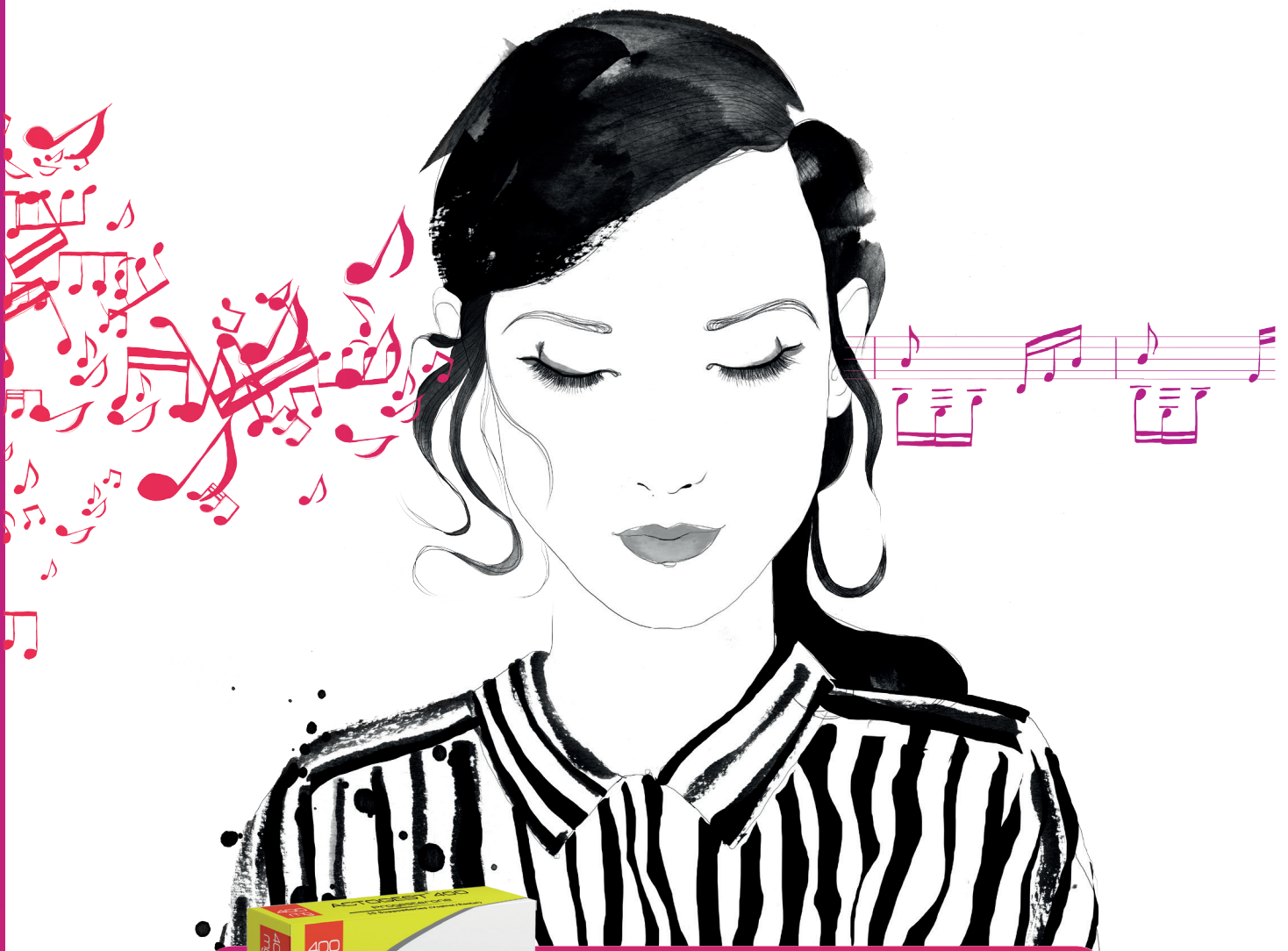
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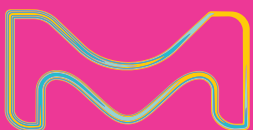
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FOR EFFECTIVE AND IMMEDIATE CYCLE CONTROL

Cetrotide®: Superior safety and proven efficacy¹⁻⁵

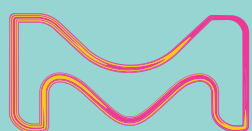
- Superior safety profile by reducing risk of OHSS¹⁻⁴ and other side-effects vs. agonist^{6,7}
- As a GnRH antagonist, comparable efficacy with shorter time to live birth vs. agonist^{1-5,8}
- Immediate cycle control and treatment convenience for you and your patients^{9,10}



PATIENT- PREFERRED ONCE DAILY EFFICACY

Crinone®: Once daily vaginal progesterone for the luteal phase

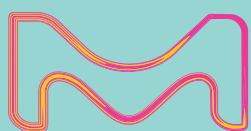
- Unique bioadhesive gel formulation with controlled release over 24 hours¹⁻⁴
- Patient-preferred convenience^{*,5-9}
- Efficacy comparable to other vaginal preparations^{5,8,10-17}



ACCURACY AND RELIABILITY AT A CRITICAL STEP

Ovitrelle®: State-of-the-art recombinant technology for ovulation triggering^{1,2}

- Reliable, consistent product composition for consistently accurate dosing¹⁻³
- Single dose pre-filled pen for convenient, accurate and reliable dosing⁴
- Proven efficacy^{5,6} and well-established safety^{7,8}



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