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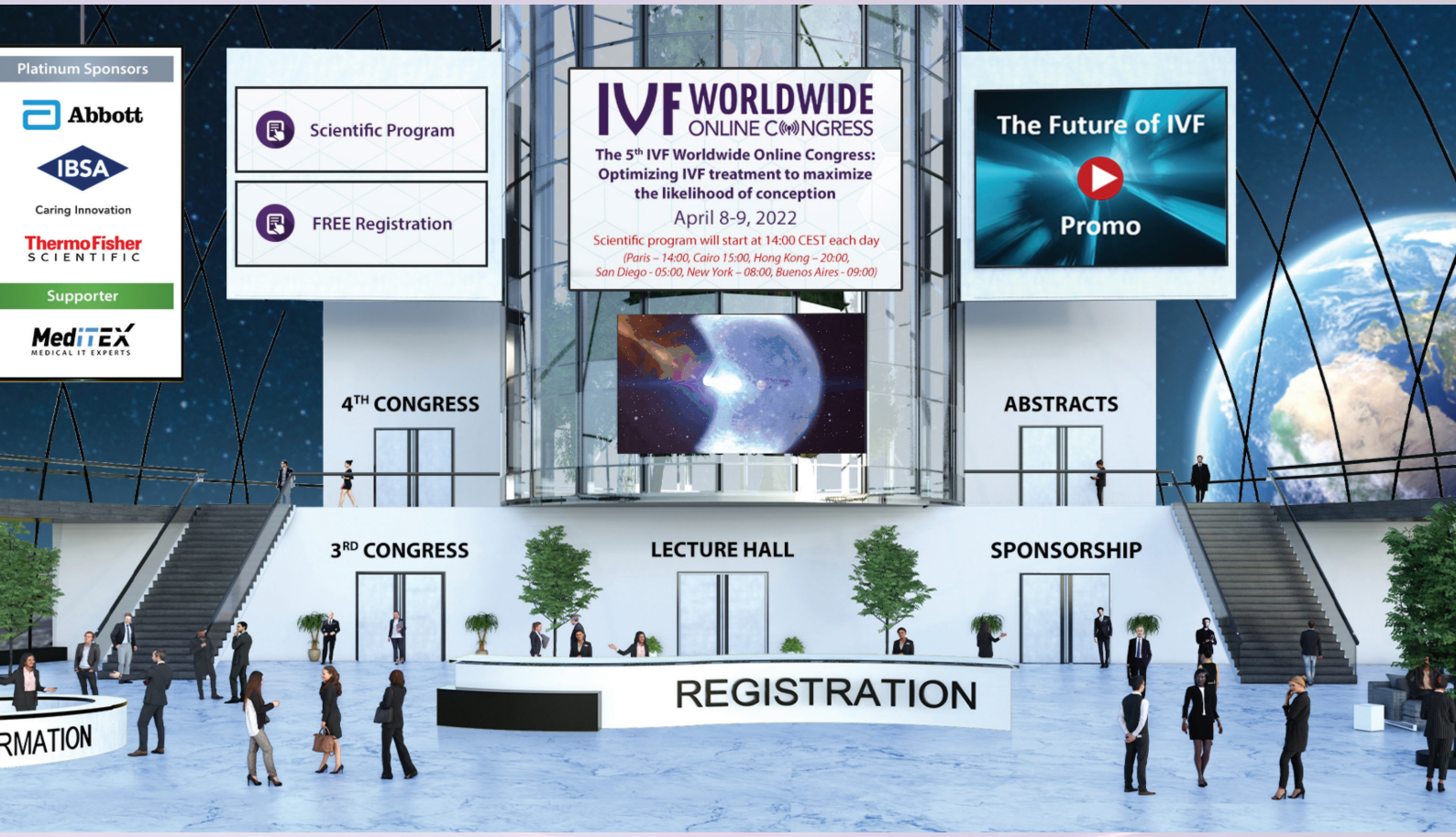
ABSTRACT BOOK



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A DEEPER LOOK IN DEEP ENDOMETRIOSIS: FREQUENT AND INFREQUENT PLACES ON MRI

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Abstract

Endometriosis is a common disease that affects 10% of the female population of reproductive age, present in women with infertility in 20 to 50% and up to 90% in those with chronic pelvic pain. Deep endometriosis is a gynecological disorder that is defined as subperitoneal invasion that exceeds more than 5 mm in depth. It can affect the different compartments of the pelvis as well as other extraperitoneal pelvic sites. The clinical translation will depend on the location, commonly manifesting with dysmenorrhea, dyspareunia, pelvic pain, urinary tract symptoms and infertility.

Although transvaginal ultrasound (TV) has a sensitivity and specificity comparable to magnetic resonance imaging (MRI) in terms of evaluating rectosigmoid involvement, MRI has greater sensitivity for detecting endometriosis in the rectovaginal septum and for general mapping of other endometriosis with atypical locations. Given that in most cases the treatment will be surgical, preoperative MRI appears to be a fundamental pillar for finding endometrial implants in unusual places, therefore representing a great benefit to reduce comorbidity and reintervention.

In the present study we will review frequent and infrequent places of deep endometriosis as well as their characteristics in the different MRI sequences that will help to establish a better preoperative diagnosis.

Authors' COI

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A NOVEL NON-INVASIVE TOOL FOR OOCYTE SELECTION USING GENE EXPRESSION AND ARTIFICIAL INTELLIGENCE

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Abstract

Introduction

Proper oocyte selection is an important bottleneck for In Vitro Fertilization (IVF) success. Nowadays, oocyte selection relies mainly in morphological analyses, which is not an unbiased method and may fail to reveal the real competence status of gametes. *Cumulus oophorus* cells (CC) are somatic cells that surround the oocyte at the antral follicle. It is directly involved in oocyte maturation and development, and thus is a valuable non-invasive source of biological information regarding the oocyte's health. Artificial intelligence can be used to identify key biological processes and markers of interest through machine learning methods.

Materials and Methods

This is a prospective study that included data from 80 CC samples retrieved from publicly available microarray data (GSE27377) and 65 cumulus samples from each oocyte of 26 patients submitted to Intracytoplasmic Sperm Injection (ICSI). Samples were divided in two groups: CCs from oocytes that developed into top quality blastocysts in day 5 after ICSI and CCs from oocytes that presented arrested development. Samples were submitted to real time quantitative PCR. Afterwards, gene expression levels for each gene and sample were submitted to the final software product, the OsteraTest, in a double-blind approach. The software indicated the development potential of each oocyte and this ranking was compared to the embryologist's day 5 blastocyst classification according to Gardner.

Results and Conclusion

The bioinformatic approach implemented resulted in the OsteraTest, composed of 8 machine learning models using a 25-gene network that altogether can predict oocyte quality, thus representing a very complex assembly. The software presented more than 86% efficacy in predicting the oocyte developmental capacity into a top-quality day 5 blastocyst. The OsteraTest proved to be a valuable non-invasive tool to predict embryo formation and oocyte capacity even before fertilization. It can enable the clinics to anticipate successful treatments and provide a predictive report for oocyte freezing patients. Although this study shows that OsteraTest may present great value for fertility clinics, a large-scale prospective randomized study is necessary for further validation of findings.

Authors' COI

Lucia von Mengden Meirelles, co-founder of Ostera. Marco Antônio De Bastiani, co-founder of Ostera. Fábio Klamt, co-founder of Ostera. Carlos Alberto Link, co-founder of Ostera. Mariana Faller: N/A. Lauren Dorneles: N/A. Renata Pedo: N/A. Letícia Arruda: N/A. Rafaela Link: N/A.

ASSOCIATION OF FOLLICULAR FLUID REPRODUCTIVELY SIGNIFICANT AUTOANTIBODIES WITH CONTROLLED OVARIAN STIMULATION (COS) OUTCOME IN WOMEN UNDERGOING IVF

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Abstract

Background and aims:

Autoimmune factors are believed to be involved in ovarian reserve decline. The aim of this study was evaluation of ovarian reserve and controlled ovarian stimulation (COS) outcome depending on the presence of autoantibodies among women with infertility.

Methods

90 women undergoing IVF were included. Inclusion criteria were: age 20 - 40 years, random anti-Müllerian hormone (AMH) level ≥1 ng/mL, normal thyroid function (TSH level ≤2,5 mIU/L), normal karyotypes, normal basal levels of folliclestimulating hormone (FSH), luteinizing hormone (LH), prolactin (PRL) measured on the 2nd -3rd day of the menstrual cycle. A standard flexible gonadotrophin-releasing hormone antagonist protocol was used in all patients. Depending on the follicular fluid anti-thyroperoxidase, anti-thyroglobulin and anti-cardiolipin values measured by commercial ELISA kits (E01T0531, E01T0767, E01A2151 (BlueGene, China)) two groups were formed: 52 women with FF antibody values more than three standard deviations from the mean values comprised the study group, 38 women with FF autoantibodies less than three standard deviations from the mean values - the comparison group.

Results

Patients of both groups were comparable by age, body mass index (BMI), etiology of infertility and its duration and basal hormonal profile. In the study group lower levels of AMH (1,9 *vs.* 3,3 ng/ml; p<0.05) and AFC (8,5 *vs.* 11; p<0.05) were noted. The number of oocytes retrieved negatively correlated with levels of AT-TPO FF (Rs=-0.4), AT-TG FF (Rs=-0.5) and anti-CL FF (Rs=-0.4), p<0.05. The cut-off values for FF antibodies associated with suboptimal response to COS (4-9 oocytes retrieved) were calculated using logistic regression analysis. A significant association between AT-TG FF ≥ 8.4 IU/ml (OR 3.62, 95% CI 2.02–6.49; *p*<0.01), AT-TPO FF ≥75 IU/ml (OR 4.53, 95% CI 2.4–8.21; *p*<0.01) and anti-CL FF ≥ 4.8 IU/ml (OR 2.48, 95% CI 1.4-4.38, *p*<0.01) and suboptimal response was noted.

Conclusion

The presence of antithyroid and anti-cardiolipin autoantibodies in the FF represents a risk factor for suboptimal response to COS, reflecting ovarian reserve decline among women with infertility.

Authors' COI

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BLASTOCYST DIAMETER AND MORPHOLOGICAL GRADE AS PREGNANCY PREDICTORS INDEPENDENT OF PATIENT BACKGROUND AND OTHER EMBRYO PARAMETERS

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Abstract

Introduction

The relationship between pregnancy outcomes and embryo parameters such as developmental speed, abnormal cleavage, blastocyst collapse, and blastocyst diameter, has been reported in previous studies. It is considered to be useful in embryo transfer selection. However, some reports suggest that these embryo parameters may be confounded with the patient's background, morphokinetics, and morphological grade. Therefore, it is unclear which factors should be considered for embryo selection. The purpose of this study was to identify useful factors for embryo selection.

Methods

We retrospectively analyzed 481 transferred blastocysts derived from ICSI between January 2019 and December 2020. Multivariate logistic regression analysis was used to identify useful factors for embryo selection. The selection of factors was based on evidence in previous literature. It included the patient's age, BMI, AMH, embryo developmental speed (time to 2cell, 4cell, and blastocyst), direct cleavage, multinuclear formation, blastocyst collapse, blastocyst diameter, and morphological grade. The multivariate model was developed by performing univariate logistic regression analysis for each factor and including variables in the subsequent analysis if their statistical significance for clinical pregnancy was $p \leq 0.10$.

Results

The univariate logistic regression analysis showed that patient's age, BMI, AMH, embryo developmental speed (time to 2cell, 4cell, and blastocyst), blastocyst diameter, blastocyst collapse, and morphological grade were significantly correlated to clinical pregnancy. Direct cleavage and multinuclear formation were not significantly correlated to pregnancy. Subsequent multivariate logistic analysis showed that poor grades (=C) of ICM and TE resulted in significantly lower pregnancy rates compared to good grades (=A or B) (ICM [aOR: 0.182, 95%CI: 0.044–0.764, p = 0020], TE [aOR: 0.297, 95%CI: 0.110–0.800, p = 0.016]). In addition, the blastocyst diameter was also a significant predictor of the pregnancy (aOR: 1.017, 95%CI: 1.003–1.032, p = 0.015). Embryo developmental speed and blastocyst collapse were not significant predictors and were confounded with other parameters.

Conclusions

The factors that have been previously reported as predictors of pregnancy may be confounded by the patient's background and other embryo parameters. However, blastocyst diameter is an independent predictor and can be combined with the morphological grade to select embryos with higher pregnancy rates.

Authors' COI

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COMPARISON OF SEMEN CRYOPRESERVATION TECHNIQUES: SLOW FREEZING VERSUS VITRIFICATION. SYSTEMATIC REVIEW

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Abstract

Sperm cryopreservation has been extensively used at ART because of its great potential for male infertility treatments.

Two main approaches have been adopted: slow freezing considered as "conventional" and rapid one "vitrification". Slow freezing, has been successfully employed during the last years however, it has been shown to have a negative impact on sperm function, structure and sperm DNA integrity reason why after big efforts in the past decade, vitrification has become more tested for cryopreserving human spermatozoa. Although slow cooling and vitrification are well-established, numerous studies have been carried out to evaluate the advantages and disadvantages of each techniques.

First of all, slow cooling protocols are practical and better suited for quantification and reproducibility. In conventional freezing, progressive motility and vitality were substantially higher. Thinking in vitrification, this method gave better results in normal morphology rates showing significantly lower defects on sperm head, midpiece and tail.

Unlike vitrification, slow cooling protocols are more time-consuming. This apparent disadvantage can entail a more homogeneous distribution of CPAs (cryoprotecting agents) protecting sperm from extra-cellular ice formation. Contrariwise, in vitrification, samples solidify with no crystal formation using extremely high cooling rate without CPAs. Some studies found that vitrification was optimal for sperm cryopreservation resulted in higher mitochondrial activity. Instead of that, diverse problems have arisen with this method because it usually requires small volume of load to achieve high cooling rate which makes it less feasible with samples of large volumes. Other important problem is the potential contamination risk because of most the proposed methods are described as open systems exposing semen samples directly to LN_2. Recently, many new strategies and designs have been tested and developed to reduce this two problems.

The aim of this work was to present a compilation of the results of different recent studies in which the effect of conventional freezing and vitrification regarding to motility, vitality and morphology of sperm was analyzed and compared. Despite the pros and cons, specific sperm cryopreservation approaches should be individually designed to reach the optimal results depending on the variety of semen parameters and on the personalized purposes at ART clinics.

Authors' COI

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DECREASED GDF9 AND BMP15 IN FOLLICLE FLUID AND GRANULOSA CELLS AND OUTCOMES OF IVF-ET AMONG YOUNG POOR OVARIAN RESPONDERS

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Abstract

Purpose

To determine the outcome of in vitro fertilization and embryo transfer (IVF-ET) treatment and the levels of growth differentiation factor 9 (GDF9) and bone morphogenetic protein 15 (BMP15) in follicle fluid (FF) and granulosa cells (GCs) derived from young women with poor ovarian response (POR).

Methods

A prospective cohort study was carried out by enrolling 52 patients with POR stratified according to the POSEIDON classification group 3 (age < 35, poor ovarian reserve parameters) (POR group) and 51 age-matched patients without POR (control group). All patients underwent IVF-ET treatment. The outcomes of the two groups were compared. FF and GCs were collected after oocyte retrieval. Enzyme-linked immunosorbent assay (ELISA) was used to determine the concentration of the GDF9 and BMP15 proteins in the FF. Quantitative real-time polymerase chain reaction (qRT-PCR) was used to measure the mRNA levels of the GDF9 and BMP15 in GCs.

Results

The ongoing pregnancy rate per treatment cycle started was significantly lower in the POR group than in the control group (26.92% *vs.* 49.02%, $P = 0.021$). Compared with the control group, the POR group had significantly higher cancel cycle rate (15.38% *vs.* 0, $P = 0.006$), fewer oocytes (4.00 ± 2.31 *vs.*12.67 ± 5.67, $P < 0.001$). The concentration of the GDF9 (1067.21 ± 177.09 pg/mL *vs.* 1205.47 ± 210.76 pg/mL) and BMP15 (716.49 ± 122.99 pg/mL *vs.* 793.43 ± 145.70 pg/mL) in the FF, and mRNA levels of GDF9 and BMP15 in the GCs were significantly lower in the POR group compared with the control group ($P < 0.001$).

Conclusion

The outcomes of IVF-ET were poor in young poor ovarian responders in accompany with decreased GDF9 and BMP15 expression in the ovary.

Keywords

GDF9; BMP15; poor ovarian response; in vitro fertilization; young woman

Authors' COI

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DIFFERENCES IN THE GENE EXPRESSION PROFILES OF HUMAN CUMULUS CELLS ISOLATED FROM PATIENTS WITH POLYCYSTIC OVARY SYNDROME

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Abstract

Background

Polycystic ovary syndrome (PCOS) is a common endocrine and metabolic disorder in women. The developmental competence of oocytes in PCOS patients is reduced compared to normal patients during the in vitro fertilization (IVF) process. Furthermore, in-vitro oocyte maturation technique known to worsen the quality of mature oocyte. However, the molecular mechanism underlying oocyte competence are still largely unknown. Several studies have provided evidence that some gene expression levels could be used as objective markers of oocyte competence and capacity to sustain a successful pregnancy.

Methods

In order to understand the complex genetic network that controls the oocyte maturation process, we performed a systematic review of current literature on processes essential in oocyte maturation involving CCs as well as messenger RNA (mRNA), microRNA (miRNA), and protein biomarkers of metaphase II (MII) stage oocytes identified in CCs. We performed a literature search using PubMed to identify all relevant studies published as original article within the last 10 years (n=12).

Result

Distinct sets of genes were revealed by comparing the expression profiles of oocyte. Oocyte competence depends on the quality of the follicular microenvironment and the presence of adequate bidirectional interaction between cumulus cells and oocytes. Known components of genes were linked to oocyte maturation. A total of 18 miRNAs were identified: 10 miRNAs upregulated, and 8 miRNAs downregulated on PCOS compared with control. There are 9 mRNA markers, ADAMTS1, HAS2, PDE3A, AREG, PTGS2, BCL2, PTX3, GPER and LHCGR, as the primary predictors of the MII status of an oocyte. GLUT 6 was expressed in PCOS patients with insulin resistance and 10 genes were overexpressed in obese PCOS compared to normal. Expression of GLUTs 9, 11, and 12 correlates with successful rates of IVM. TGF-b protein, BMP 15 and GDF-9 play a critical role in oocyte maturation.

Conclusion

Several cumulus cell genes were associated with oocyte maturation, fertilization and embryo quality in PCOS patients.

Authors' COI

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DO THE STRUCTURAL FEATURES OF THE T-SHAPE UTERINE CAVITY AFFECT THE PERISTALSIS OF THE ENDOMETRIUM

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Abstract

There are controversial data on the effect of T-shaped uterine anomaly on reproductive function, pregnancy carrying, frequency of ectopic pregnancy, and ART outcomes.

Objectives

Mechanisms of decreased fertility in T-shaped uterine anomaly are still subject of investigation. It is known that one of the pathogenic factors of infertility is abnormal intrauterine sperm cell transport due to impaired endometrial peristalsis. Aim of study: to analyze characeristics of uterine motility in infertile women with T-shaped uterine cavity anomaly using ultrasound.

Methods

We examined 27 patients with T-shaped uterine cavity anomaly and 27 patients with normal uterine cavity shape who presented for primary infertility. All patients were 20-40 years of age (mean age 31.8±4.8 years); infertility duration was 3-5 years. During their periovulatory period (menstrual cycle day 14-16) all patients underwent transvaginal ultrasound with registration of motor activiy of subendometrial layers of myometrium in sagittal projection of whole uterus and with 5-minute fixed position with video recording of the entire scan. We recorded direction and number of peristaltic waves (cervico-fundal or fundo-cervical), as well as presence of dysmotility.

Results

We found a statistically significant ($p<0.05$) increase in peristaltic wave frequency in patients of study group (5-7/min) compared to control group (2-3/min). Dysmotility waves were recorded in only 5% of patients in control group and in 89% in study group, which was statistically significant.

Conclusions

The results suggest marked impairment of motor activity of subendometrial layers of myometrium in T-shaped uterine anomaly which may be a cause of subfertility in this patient category.

Authors' COI

Karine Tokhunts N/A

EFFECT OF COVID-19 INFECTION TOWARDS OOCYTE AND EMBRYO QUALITY ON IVF PATIENTS IN MELATI IN VITRO FERTILIZATION (IVF) CLINIC, HARAPAN KITA WOMEN AND CHILDREN HOSPITAL, INDONESIA

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Abstract

Introduction

The COVID-19 pandemic in Indonesia affected most healthcare services including In Vitro Fertilization (IVF) Clinic. Therefore, we aim to assess the influence of COVID-19 infection osn patients who underwent IVF treatment.

Objective

To describe the management of COVID-19 positive IVF patient and determine the effect of COVID-19 on oocyte and embryo quality of patients who underwent the IVF cycle.

Material and Methods

An observational cohort study of 10 female patients going through IVF cycle in Melati IVF Clinic Harapan Kita Women and Children Hospital from June 2021 to February 2022. All subjects had responded to triage questionnaire before the start of the cycle with negative antigen or reverse transcriptase-polymerase chain reaction (RT-PCR), but became positive when screened for Ovum Pick Up (OPU) procedure. After obtaining informed consent, OPU was done in a spesific COVID-19 surgery room in Pinere Ward. Embryo resulted from the fertilization then freezed. RT-PCR was done on 4 samples of embryo culture medium and follicular fluid.

Results

A total of 94 oocytes were collected with 85% mature, 7.5% immature, and 7.5% poor quality. Fertilization rate was 74%. A total of 59 embryos were formed with 51% good, 24% moderate and 25% poor quality. Negative RT-PCR was obtained from embryo culture medium and follicular fluid sample.

Conclusions

COVID-19 does not affect oocyte and embryo quality of the patients and is not detectable in embryo culture medium and follicular fluid from the positive patients.

Keywords

COVID-19, In Vitro Fertilization, Oocyte, Embryo

Authors' COI

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EFFECT OF EXOGENOUS GSH SUPPLEMENTATION ON HUMAN SPERM AND ITS IMPLICATIONS IN ART

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Abstract

Glutathione is an important, abundant, non-enzymatic antioxidant found in all mammalian cells. Sperm motility is positively correlated with seminal reduced glutathione (GSH) levels and infertile men are known to have lower GSH levels. Past studies on GSH supplementation in improving sperm functions in infertility patients have been limited and not very encouraging. Here we re-investigate the effect of exogenous GSH supplementation on human sperm motility and kinematic parameters. Residual semen samples from 73 infertility patients who came for routine semen analysis for infertility assessment were studied. Liquefied raw semen was supplemented with GSH (0-10 mM) for 1 hour followed by two washes. The washed sperm was then incubated before analyzing for sperm motility and kinematic parameters by computer assisted semen analysis (CASA). At 2hrs post treatment, GSH supplementation significantly altered many of the kinematics, but the motility parameters were unaffected. Some of the kinematics such as straight-line velocity-VSL (p=0.0293), curvilinear velocity-VCL (p<0.0001), average path velocity-VAP (p<0.0001) and lateral head amplitude-ALH (p<0.0001) were significantly decreased whereas some others such as straightness-STR (p=0.0017), linearity-LIN (p=0.0007), and beat cross frequency-BCF (p=0.0441) were significantly increased, and the difference was dose dependent. To our knowledge this is the first study showing that exogenous GSH supplementation does alter sperm kinematics in humans. Increased LIN and decreased ALH are known to facilitate sperm passage in utero-tubal junction. Similarly increased STR and decreased VSL are known to be favorable for fertilization. Hence, we postulate that these altered kinematic parameters may enhance the chances of sperm reaching and fertilizing eggs and consequently increase the success rates of IUI/IVF if implemented in ART procedures.

Authors' COI

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EFFECT OF PRE-OVULATORY TUBAL FLUSHING WITH RINGER LACTATE ON INTRAUTERINE INSEMINATION OUTCOMES (IUI).

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Abstract

Introduction

The pregnancy rate per cycle after IUI is 12.6% according to ESHRE. Flushing or Pertubation is the technique of pushing a liquid media though the cervix into the uterine cavity and fallopian tubes. This is said to improve pregnancy rates by removing intrauterine debris and inflammatory mediators and opening minor tubal adhesions. So this study was conducted to assess the effect of Pre-ovulatory Pertubation with Ringer Lactate (RL) on IUI outcomes (pregnancy rate & clinical pregnancy rate).

Materials and Methods

We conducted a prospective observational study between September 2021-March 2022. We included 200 patients who were assigned into two groups: Group 1 (n=100) patients undergoing pertubation before IUI and Group 2 (n=100), patients undergoing only IUI. Women between 20-40 years, with at least one patent tube and normal/mild male factor, planned for IUI at our centre were included. 20ml RL was flushed slowly using an IUI catheter once the dominant follicle ≥14mm /on the day of trigger. Urine pregnancy test was performed 20 days post-IUI and clinical pregnancy was confirmed by ultrasound at 6 weeks gestational age.

Results

The baseline parameters (age, duration, type & cause of infertility, BMI, antral follicular count, semen parameters and the drugs used for stimulation) were similar in both the groups. The number of dominant follicles, endometrial thickness (ET) and the presence of ovulation on the day of IUI were comparable between the study groups. Semen concentration, total motility, progressive motility & morphology were similar, but the total motile sperm count (TMSC) and the number of motile sperms inseminated (NMSI) was significantly higher in Group 2 than Group 1 {TMSC: Median 24.33 (IQR 13.02-47.21) vs 14.20 (IQR 6.47-27.79) million, *p-value: 0.02*, NMSI: Median 6.6 (IQR 3.70-11.40) vs 5.21 (IQR 2.48-9.0) million, *p-value: 0.03*}. The pregnancy rates and clinical pregnancy rates were significantly higher in group 1 compared to Group 2 {16.6% vs. 6.6%; 16.6% vs. 6.6%}, *p-value: 0.03*). Majority of the patients who conceived (14/15) in group 1, underwent flushing 96 hours prior to IUI.

Conclusions

Pre-ovulatory flushing is a simple and minimally invasive treatment that might improve IUI cycle outcomes in limited resource facilities.

Authors' COI

Dr. Navya S. N/A, Dr. Radha V.N/A, Dr. Siddhartha N.N/A, Dr. Monna Pandurangi N/A, Dr. N. Sanjeeva Reddy N/A.

IMPACT OF ACUPUNCTURE ON OVARIAN RESERVE: A LITERATURE REVIEW PUBLISHED IN THE LAST 7 YEARS

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Abstract

Problem Statement

Diminished ovarian reserve (DOR) is a cause of IVF failure, with a prevalence between 9–24%. Common markers for DOR are: decreased antral follicle count, increased day 3 follicle-stimulating hormone level and decreased anti-müllerian hormone level. Acupuncture has been used to improve reproductive outcomes in women undergoing assisted reproductive technology. Several possible mechanisms have been identified that could explain its results, although there is a need for high-quality research to demonstrate that its effectiveness in improving ovarian reserve. The objective of this review is to analyze the literature published on Pubmed in the last 7 years which can serve to evaluate the effect of acupuncture on ovarian reserve. If evidence is found on the action of acupuncture at this level, it may be considered as a complementary therapy to improve ovarian reserve.

Methodology

The search was performed on March 2022, using Pubmed-Mesh database. The search was performed using the following keywords and search strategy: (("Acupuncture"[Mesh] OR "Acupuncture Therapy"[Mesh] OR "Acupuncture, Ear"[Mesh] OR "Acupuncture Points"[Mesh]) AND ("Ovarian Reserve"[Mesh] OR "Anti-Müllerian Hormone"[Mesh])).

Results and conclusions

A total of 23 articles were found, being excluded 20 articles. Reasons for exclusion were: animal studies (n=2), non-RCT studies (n=7), consensus (n=1) and other languages (n=10). Literature analysis and synthesis were performed. Acupuncture may have beneficial effect in improving ovarian reserve. However, lack of studies, small sample sizes and heterogeneity of treatment protocols and measured outcomes reinforce the need to develop and carry out more clinical investigation, which may allow a better understanding and validation of the effects of acupuncture on ovarian reserve.

Authors' COI

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IMPACT OF DIFFERENT MENSTRUAL LENGTHS IN ANTAGONIST REGIMENS ON IVF ASSISTANCE AND PERGNANCY OUTCOMES

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Abstract

Introduction

To compare whether there is a difference between the two groups of patients with different menstrual lengths in the antagonist regimen in terms of controlled ovarian stimulation(COS) and pregnancy outcome.

Material and methods

In a retrospective analysis, data of patients receiving IVF/ICSI assisted conception in the Department of Human Assistive Technology at the Affiliated Hospital of Southwestern Medical University from August 2018 to August 2021 were included and classified as having periods ≤4 days (n=103) and periods >4 days (n=442) based on the length of menstrual periods, basic information, ovulation procedures, laboratory data, and pregnancy outcomes were compared. Patients who achieved pregnancy were divided into 2 groups according to the length of menstruation, and the mode of delivery and complications were recorded separately. Women were followed up until delivery and divided into different menstrual groups, the number of weeks of delivery, infant length, and infant weight were analyzed in both groups.

Result(s)

Based on the length of periods, the patients with periods >4 days had lower FSH/LH (p=0.000<0.05). In contrast, AMH was higher (p=0.038<0.05). And the initiation dose (bottles) and total Gn dose (bottles) were significantly higher in patients with ≤4 days of menstruation (p=0.004,0.021<0.05). While the number of eggs obtained, the number of MII, and the number of 2PN yet lower than in patients with periods >4 days (p=0.011,0.030,0.008<0.05). During transplantation and post-transplantation follow-up, it was found that patients with periods>4 days had thicker endometrium (mm) at transplantation day (p=0.000<0.05), clinical pregnancy and biochemical pregnancy were higher than those with periods ≤4 days (p=0.027<0.05). There was no statistically significant difference between the two groups with different menstrual periods for mode of delivery, ectopic pregnancy, early/late miscarriage, week of gestation of delivery, fetal weight/length in patients after fresh embryo transfer with antagonist regimen.

Conclusions

From this retrospective study, it can be deduced that the sensitivity of patients with <4 days of menstruation to pro-ovulatory drugs, the number of eggs obtained by pro-ovulation, the thickness of the endometrium on the transplantation day, and the pregnancy outcome (clinical pregnancy, biochemical pregnancy) are lower than those with ≥4 days of menstruation during IVF.

Authors' COI

Yunzhu Lan N/A, Xingyu Sun N/A, Ling Liu N/A, Li Fu N/A, Guiying Huang N/A, Xinjian Feng N/A

IS BREASTFEEDING AFTER INFERTILITY TREATMENT OVERLOOKED? TRENDS AND PROFILES OF THE LITERATURE ABOUT INFERTILITY AND BREASTFEEDING: SCIENTOMETRIC STUDY

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Abstract

Introduction

Although breastfeeding experiences has been studied extensively in general populations, there is little research about breastfeeding experiences in first-time mothers who were previously infertile. The aim of this study was to determine the publications about infertility and breastfeeding and investigate the trends and their profiles.

Material and methods

The study was conducted in March 2022 using the Web of Science Core Collection database. The related publications were eliminated filtering with (ALL=(infertility)) AND ALL=(breastfeeding) keywords. Also, to achieve recent publications, the publication year was limited from 2012 to 2022. As a result of this filtering, it was reached 50 publications. For the scientometric analysis of these publications, Python programming language and the libraries in DataSpell 2021.3.1 were used. Data analysis was performed to determine the most popular 10 keywords, the most popular 10 journals that these publications publish in, the most popular 10 authors who publish an article about infertility and breastfeeding subject, and the most cited 10 articles.

Results

The results showed that the most popular 10 keywords were 'breastfeeding', 'infertility', 'pregnancy', 'fertility', 'contraception', 'breast feeding', 'amenorrhea', 'lactation', 'assisted reproductive techniques', 'reproductive health'. The most popular 10 journals were 'BREASTFEED MED', 'J HUM LACT, 'CLIN LACT', 'AM J OBSTET GYNECOL', 'FERTIL STERIL', 'INT J GYNECOL CANCER', 'ADV CONTRACEPT', 'WOMEN POLIT POLICY', 'SCAND J GASTROENTERO', 'ACTA PAEDIATR'. Five of the first 10 authors who have more articles were 'Diaz Saez, Jorge', 'Fernandez-Medina, Isabel Maria', 'Granero-Molina, Jose', 'Fernandez-Sola, Cayetano', 'Hernandez-Padilla, Jose Manuel'. Five of the most cited 10 articles were 'Inflammatory Bowel Disease in Pregnancy', 'Breast Milk as the Forgotten Ethical Right in Surrogacy and Suggestions for Its Recognition: Islamic Perspective, Iranian Experience', 'Pregnancy and Breastfeeding in Inflammatory Bowel Disease', 'Fertility after breast cancer', 'Contraceptive role of breastfeeding'. Surprisingly, there isn't an article about breastfeeding after infertility treatment among the most cited 10 articles.

Conclusions

The breastfeeding process is emotional and physical. Women may feel insufficient in breastfeeding. The infertility process is a life crisis. So, we should consider breastfeeding women who gave birth after infertility treatment. Experiences, challenges, needs, and opinions should be investigated in order to lead to health care professionals.

Authors' COI

N/A

IS IUI WITH OVARIAN STIMULATION EFFECTIVE IN COUPLES WITH UNEXPLAINED SUBFERTILITY

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Abstract

Objective

The aim of this study was to determine the chances of conception after expectant management or starting IUI-OS in a cohort of unexplained subfertile couples that included couples who followed both strategy

STUDY DESIGN, SIZE, DURATION

A prospective cohort study on couples with unexplained or mild male subfertility who could start IUI-OS at any point after completion of the fertility workup, recruited in two centers (Alshifa medicare khanpur and THQ Hospital khanpur) between December 2020 – May 2021.

Materials and Methods

For the follow up of selected couples, we distinguished between time spent pursuing expectant management and time spent receiving IUI-OS cycles. The start of the IUI period was defined as the first day of menstruation before the first IUI cycle. The end of the IUI period was defined as the first day of menstruation before the last IUI cycle. With this definition, and because natural conceptions after unsuccessful IUI cycles were not recorded, all pregnancies in the IUI period resulted from IUI. The start of expectant management coincided with the completion of the fertility workup and ended at the last date of contact, first day of last menstruation before starting IUI or IVF or, in case they conceived naturally, the first day of the last menstruation before conceiving. We visualized the transition from expectant management to IUI-OS in the cohort by counting the number of couples in both groups over follow up.

The endpoint was ongoing pregnancy, defined as the presence of foetal cardiac activity at transvaginal sonography at a gestational age of at least 12 weeks (van der Steeg et al., 2007). Couples who miscarried before 12 weeks were not censored since they could still achieve ongoing pregnancy in subsequent cycles after their miscarriage. If no ongoing pregnancy occurred, we censored follow up at the end of expectant management or, if treated, at the end of the IUI period.

Authors' COI

Dr Maria Nadeem COI N/A, Dr Tahseen Fatina COI N/A, Dr Abeera COI, N/A

IS LASER ASSISTED HATCHING ON DAY 3 NECESSARY FOR EMBRYOS UNDERGOING PGT?

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Abstract

Introduction

Preimplantation genetic testing for aneuploidy (PGT-A) is an important clinal tool for patients undergoing in vitro fertilization (IVF) to improve implantation and reduce miscarriage rates. However, embryonic damage caused by biopsy procedures is a limiting factor for PGT-A cases. There is a need for standardization of embryo biopsy procedures to increase efficiency of pregenetic testing (PGT). Identification of best timing (during the cleavage or blastocyst stage) of zona pellucida breaching for biopsy is critical factor for embryo development and survivability. Even though hatching the zona at cleavage stage cause higher risk of inner cell mass (ICM) incarceration than hatching at blastocyte stage, the association between timing of zona breaching and embryo development is not well understood. The objective of the current study was to compare blastocyte, euploidy, and mosaicism rates of sibling embryos hatched with laser on day 3 and blastocyte stage (day 5, day 6, and day 7).

Methods

Total of 447 sibling embryos from 27 patients were created with intracytoplasmic sperm injection (ICSI). One batch of sibling embryos were hatched three days after ICSI, and other batch of sibling embryos were hatched at blastocyst stage for trophectoderm biopsy.

Results

Analyses of sibling embryos indicated that average blastocyte rate of embryos hatched on day 3 and blastocyte stage were 64 % and 63.1% respectively, and these values were not statistically significant ($P > 0.05$). In addition, analyses of next generation sequencing results for PGT-A revealed that there was no significant difference in euploidy and mosaicism rates of embryos hatched on day 3 and at blastocyte stage ($P > 0.05$).

Conclusion

These findings demonstrated that there is no need to disturb the culture conditions for laser assisted hatching on Day 3 embryos undergoing PGT.

Authors' COI

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IVF OUTCOMES IN COUPLES WITH SEVERE MALE INFERTILITY

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Abstract

The use of sperm extracted from the men testicles with azoospermia provides an opportunity of pregnancy, however data on the embryo quality, the effectiveness and feasibility of IVF programs in this case are quite contradictory. The results regarding the successfulness of IVF programs in men with oligoasthenoteratozoospermia (OATS) are also ambiguous.

Aim

The aim of the study was to compare the key parameters of IVF and the blastocyst euploidy rate in case of fertilization with spermatozoa, obtained by aspiration from testicular tissue (TESA) in men with obstructive azoospermia, and by ejaculated ones in men with OATS.

Methods

64 couples with male factor infertility treated with IVF methods were included in the study. The average age of women was (36,5±3,6), men – (37,7±2,5) years old. 44 couples, in which fertilization was performed with sperm obtained by TESA were Group 1. The percentage of spermatozoa with normal morphology was ≤2%. Group 2 consisted of 20 couples, in which oocytes were fertilized with ejaculated sperm of men with OATS (concentration <15 million/ml, the percentage of sperm with normal morphology - ≤2%). Oocyte fertilization was performed by intracytoplasmic injection of morphologically selected sperm (IMSI). The obtained embryos were cultured during 5-6 days after fertilization. The fertilization rate, the blastocyst formation rate, the level of blastocyst euploidy and the clinical pregnancy rate were determined.

Results

The fertilization rate in Group 1, in which oocytes were fertilized with aspirated sperm, was 75.3% and did not differ significantly from the value in Group 2, in which ejaculated sperm was used for fertilization (77.3%). However, the blastocyst rate in Group 1 was 1.7 times higher than in Group 2 (61.4% vs 35.0%, respectively, $p<0.05$). At the same time the percentage of euploid blastocysts in Group 1 was significantly lower than in group 2 (22.7% vs 40.0%, $p<0.05$). Besides, the clinical pregnancy rate in Group 1 was also lower than in Group 2 (15.9 vs 30.0%, $p<0.05$).

Conclusions

Despite the high blastocyst formation rate in patients after TESA, the blastocyst euploidy rate and the clinical pregnancy rate were significantly lower than after fertilization with ejaculated spermatozoa of men with OATS.

Authors' COI

Yuliia Zin, Olexander Feskov, Olena Somova, Olexandera Zozulina

MAGNETIC RESONANCE HYSTEROSALPINGOGRAPHY IN THE EVALUATION OF THE INFERTILE FEMALE

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Abstract

Introduction

Female infertility is attributed to numerous causes, however the most common among these are ovarian dysfunction and disorders of the tubes and uterus. Tubal assessment remains the warp for evaluation of the infertile female. The past decade has seen evolution of MRI to evaluate problems associated with female infertility, with unparalleled advantages of having no radiation and being less operator dependent. The need to assess tubal patency has been addressed by increasing literature for utilization of gadolinium in MR and comparing it with HSG alone or a mixture of HSG and an occasional laparoscopy. The purpose of this study was to determine if MR HSG, using a clinically available MR angiographic sequence (3D time-resolved imaging of contrast kinetics [TRICKS]), could be used to reliably ascertain tubal patency.

Materials and Methods

66 female patients with primary or secondary infertility aged between 18–40 years were recruited. Uterine cannulation was done using an 8F Foley's balloon catheter. After acquisition of the preliminary localizing sequences, the imaging protocol of pelvis was used. Following this 40 mL of a 1:100 mixture of Gadodiamide to normal saline (0.9%) was gently hand-injected during a multiphase acquisition using dynamic time-resolved T1-weighted angiographic sequence. An oblique axial plane through the pelvis to include the uterus, ovaries, and cul-de-sac was used. A final axial T1-weighted,fat-suppressed 3D spoiled GRE series was obtained to assess for free peritoneal spill. Comparison was made between MR HSG and diagnostic laparoscopy which was done within a five-month period after MR HSG. RESULTS: Three patients were excluded from the study on account of catheter dislodgement. 54 patients out of 63 had bilateral tubal patency (85.7%).A total of 9 patients had tubal pathology (14.3%) out of which one had unilateral and eight had bilateral tubal obstruction. Endometrial cavity abnormality were detected in four patients, with three showing features of adenomyosis and one showing deformity of uterine cavity contour secondary to endometrial polyp. Ovarian abnormalities were detected in 28.5% patients which included polycystic ovarian morphology, endometriotic cyst and atrophic ovaries.

Conclusion

MR HSG proved reliable in the diagnosis of tubal patency. Furthermore, it turned out to be a one-stop shop for the evaluation of female infertility: a single examination may assess multiple diseases. Notwithstanding, it is expected that better, faster and crisper MR sequences will evolve to allow assessment of contrast progression through the fallopian tubes.

Authors' COI

N/A

MANAGEMENT OF SEVERE AND CRITICAL FORMS OF OVARIAN HYPERSTIMULATION SYNDROME

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Abstract

Background

Ovarian hyperstimulation syndrome (OHSS) is a consequence of controlled ovarian stimulation protocols for in vitro fertilization (IVF). The incidence of severe and critical forms of OHSS is 3.1-8.0%. The aim of the study was to assess the management of severe and critical OHSS.

Materials and methods

The study included 42 cases with OHSS, without embryo transfer, managed in the Intensive Care Unit, during 2013-2021. Clinical, paraclinical and statistical methods were used.

Results

All patients were admitted on the 10th to 14th day after the onset of ovarian stimulation. They presented: abdominal compartment syndrome (ACS), tachycardia, dyspnea, generalized edema, oliguria (100%); nausea and vomiting (56.7%) and Ht>0.45 (95.2%). Investigations reported: polyserositis (100%); hyperkalemia (90.5%); hyponatremia, hypoproteinemia and increased size of ovaries (95.2%); elevated transaminase levels (57.1%) and SIRS (69.2%). The evolution of the clinical cases revealed: daily increase of abdominal circumference; weight gain; *pyrexia*; oliguria; consequences of the ACS; persistent haemoconcentration; dyselectrolithemia (Na^+<135mmol/l, K^+>5.0mmol/l); leukocytosis >16.000/l; hypoalbuminemia (<26 mmol/l). OHSS was complicated by: acute kidney injury (59.5%); liver dysfunction (100%); ARDS (21%) and DIC syndrome (7.1%). An approach to the management of OHSS was established: restoration of Ht and correction of the ACS and restrictive respiratory failure. The performed therapy included: human chorionic gonadotropin and synthetic progestins withdrawal; delaying embryo transfer; conservative and surgical treatment. Conservative treatment was referred to correction fluid and electrolyte disorders; respiratory support (O_2 flow if necessary); thromboprophylaxis; analgesia and antiemetic drugs. Paracentesis was performed in: severe abdominal distension with pain and compromised breathing due to ascites; increased intraabdominal pressure and oliguria due to an increase in intra-abdominal pressure, with reduced renal perfusion. The surgical treatment allowed the evacuation of ascitic fluid and was performed in 33 patients (78.6%). The evacuation of the pleural fluid was performed in 12 cases (28.6%), and was repeated in 4 cases (33.3%).

Table 1: List of complex mosaic blastocyst transfers

Embryo no.	Summary	beta hCG +	Sac seen	Fetal heart	Live birth	Mosaic level[a]	No. of Chromosome mosaic	Blastocyst Grade
1	25% (+3,+13) 35% (+5)	No	No	No	No	35	3	5BB
2	30% (+5,+10,+16)	Yes	Yes	Yes	Boy	30	3	5AB
3	25% (+1), 25% (-7,-21)	No	No	No	No	25	3	5BB
4	25% (-7,+19), 30% (+2)	Yes	Yes	Yes	Girl	30	3	5AA
5	25% (-3,+20), 35% (-12)	Yes	Yes	Yes	Girl	35	3	5BA
6	25% (+7), 40% (+5,+20,+22), 45% (+18)	Yes	Yes	Yes	Girl	45	5	6BB
7	25% (+11,+X), 40% (+14)	Yes	Yes	No	No	40	3	6BB
8	25% (+19,+20), 30% (+17)	Yes	Yes	Yes	On-going[b]	30	3	5BA
9	30% (-5,-15,+20)	Yes	Yes	Yes	On-going[b]	30	3	5BA
10	25% (-7,+22),30% (-2,+13), 35% (+1), 40% (+6), 55% (+5)	No	No	No	No	55	7	5BB
11	25% (+4,+5,+18)	Yes	Yes	Yes	On-going[b]	25	3	5BA
12	25% (-2,+10,+13), 30% (+12)	No	No	No	No	30	4	5BB
13	25% (+14,+20), 30% (+16)	Yes	Yes	No	No	30	3	5BB
14	25% (+6,+16,-X)	Yes	Yes	Yes	On-going[b]	25	3	5BB

Note: [a] Estimated percentage of aneuploid cells in biopsy. Highest value is indicated

[b] NIPT normal

Table 2: Clinical outcome of complex mosaic embryo transfer

	3 mosaic chromosomes	>3 mosaic chromosomes	All
Number of Frozen Embryo Transfer	11	3	14
Number of gestation sac seen	9	1	10
Number of fetal heart detected	7	1	8
Number of live birth/on-going pregnancy	7	1	8
Clinical pregnancy rate (gestation sac seen)	81.8% (9/11)	33.3% (1/3)	71.4% (10/14)
Clinical pregnancy rate (fetal heart)	63.6% (7/11)	33.3% (1/3)	57.1% (8/14)
Live birth + on-going pregnancy rate	63.6% (7/11)	33.3% (1/3)	57.1% (8/14)
Misscarriage rate	22.2% (2/9)	0.0% (0/3)	20.0% (2/10)

Conclusions

OHSS is an important complication that can be encountered while preparing for the IVF procedure. Severe and critical forms require a complex medical approach, in order to prevent possible complications and give the couple the opportunity to fulfill their reproductive function.

Authors' COI

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ONE CENTRE EXPERIENCE IN TRANSFERRING OF COMPLEX MOSAIC BLASTOCYST

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Abstract

Introduction

A complex mosaic blastocyst is defined as a blastocyst with mosaicism detected in 3 or more of it chromosomes by using next-generation sequencing (NGS). Generally, those embryos are reported to have lower implantation rates and higher miscarriage rates. There were some circumstances where patients are left with only complex mosaic embryo and no other embryos to choose. Therefore, we would like to study the attributes of complex mosaic embryos towards clinical outcomes.

Materials and Methods

Fourteen (14) patients underwent single complex mosaic blastocyst transfer from January 2019 to January 2022. All patients fully understood the potential risk of such transfers after counselling by clinician. All day 5 and day 6 blastocysts transfers were done using hormone replacement therapy cycles. The clinical pregnancy rate (gestation sac seen) and miscarriage rate were calculated.

Results

Of 14 complex mosaic blastocysts transferred, 11 had 3 affected mosaic chromosomes. The remaining 3 blastocysts had 4, 5 and 7 consequently affected mosaic chromosomes. Affected mosaic levels were range from 25% to 55% as shown in *Table 1* below.

Overall clinical pregnancy rate for complex mosaic transfers was 74.1% with miscarriage rate of 20.0% as shown in *Table 2.* While clinical pregnancy rate for blastocyst with 3 affected mosaic chromosomes was 81.8% with 22.2% miscarriage rate. Blastocysts with more than 3 affected mosaic chromosomes achieved 33.3% for both clinical pregnancy and live birth rate. Furthermore, we noticed blastocyst with 5 affected mosaic chromosomes (embryo number 6 in *Table 1)* was still able to result in normal live birth.

Conclusion

Our finding suggested that transfer of blastocyst with 3 affected mosaic chromosomes can achieve good clinical outcome compared to blastocyst with more than 3 affected mosaic chromosomes. However, this study only involved a small number of patients thus we would continue to collect data and update our study results.

Authors' COI

Cheong Siew Ying (N/A), Yew Li Lian (N/A), Ng Peng Wah (N/A)

PRECOMPACTION MOUSE EMBRYOS UNDER ANOXIC CONDITIONS SHOW METABOLIC PLASTICITY THROUGH UPREGULATION OF HIF-1-MEDIATED GLYCOLYTIC PATHWAYS

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Abstract

Introduction

Precompaction embryos cannot utilize glycolysis since the phosphofructokinase (Pfk) enzyme is inhibited, and glucose transporters (Gluts) are not located in the cell membrane. Cancer cells switch their metabolism to aerobic glycolysis by upregulating Hif-1 (hypoxia-inducible factor), Glut1, and Pfk known as the Warburg Effect (WE) under the presence of sufficient oxygen. Akt supports WE, and mTOR increases the surface expression of Glut1 and activates Hif-1. We previously showed that under anoxic conditions precompaction embryos can undergo several divisions and Glut1 is upregulated in their membrane. Thus, we aimed to investigate whether precompaction embryos under anoxic conditions can utilize glycolysis as an alternative metabolic pathway through Hif-1-mediated glycolytic pathways.

Material and methods

Two-cell embryos from Balb/c mice were distributed into control (5% O_2), and anoxia (0.06% O_2) groups. The onset of culture was accepted as 0 hours. To evaluate the Hif-1, Pfk, Akt, p-s6K, and p53 expressions by western blot, 2-cell, 4-cell and 8-cell embryos were collected at 6th, 12th and 24th hours, respectively. The anoxia group was subgrouped as divided and arrested embryos. DIC embryo images were also acquired. A group of embryos from the same mice was cultured until the blastocyst stage as an internal control.

Results

The development rates in groups were presented in Table1. Precompaction embryos underwent more than two divisions under anoxic conditions. Hif-1 and p-s6k expression increased significantly in the 2-cell anoxia and divided-4-cell anoxia groups compared to controls ($p<0.05$). Pfk and Akt expression increased significantly in the divided-4-cell anoxia group compared to controls ($p<0.05$). In the 8-cell anoxia group; Hif-1, Pfk, and p-s6k expression decreased significantly compared to controls ($p<0.05$). Significantly high p53 expression in 2-cell anoxia, 4-cell anoxia, and arrested-8-cell anoxia groups was present ($p<0.05$).

Table 1: Developmental rates of embryos in both control and anoxia groups

	2-CELL STAGE	3-CELL STAGE	4-CELL STAGE	6-CELL STAGE	8-CELL STAGE
CONTROL 2-CELL GROUP	100%				
CONTROL 4-CELL GROUP	14,80%	8,91%	75,24%		
CONTROL 8-CELL GROUP	1,61%	1,61%	8,06%	5,64%	83,06%
ANOXIA 2-CELL GROUP	100%				
ANOXIA 4-CELL GROUP	44,89%	19,62%	35,51%		
ANOXIA 8-CELL GROUP	55,93%	10,16%	19,49%	6,77%	7,62%

Conclusions

Upregulation of Hif-1, Pfk, Akt, and p-s6k in embryos under anoxic conditions indicates that precompaction embryos have metabolic plasticity that can promote blastomere division by utilizing glycolytic pathways. This novel phenomenon, already known in blastocysts and cancer cells, is also described in precompaction embryos now and highlights the presence of metabolic plasticity during early embryonic development.

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Authors' COI

N/A

PREGNANCY AFTER TUBOPLASTYAS A RECANALIZATION PROCEDURE FOLLOWING TUBAL LIGATION

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Abstract

Objective Study design Place & Duration of study Methodology Results Conclusions Pregnancy After Tuboplasty As A Recanalization Procedure Following Tubal Ligation Dr. Tahseen Fatima To determine the rate of pregnancy in patients with recanalization by tuboplasty after tubal ligation. Descriptive case series. Bahawal Victoria Hospital / Quaid-e-Azam Medical College Bahawalpur, from January 2010 to December 2020 This study included all patients who underwent tuboplasty after tubal ligation. During the study period 150 patients requested for reversal of tubal ligation via tuboplasty, out of whom 29 were included found most suitable for this procedure. Tuboplasty was done via open abdominal approach. Patients were followed up for one year to observe the pregnancy rate in this cohort of patients. Twenty nine patients underwent tuboplasty of whom 3(10.34%) were lost to follow up two months after surgery. Twenty (76.9%) women conceived in this series. Six (23.07%) patients did not conceive even after one year of tuboplasty. Hysterosalpingography (HSG) was then performed on these six patients. Three (50%) had bilaterally patent tubes, 2 (33.33%) had unilateral occlusion of fallopian tubes while 1 (16.6%) had bilateral tubal occlusion on HSG. Success rate of pregnancy after tuboplasty in women who underwent bilateral tubal ligation was good if most suitable candidates were selected and an effective technique was used for tubal recanalization. It is an alternative to ICSI (Intra-cytoplasmic Sperm Injection) and IVF (In-vitro Fertilization) on account of lower cost and lack of religious conflicts. Key words Bilateral tubal ligation, Tuboplasty, Pregnancy rate.

Authors' COI

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PREGNANCY OUTCOME AFTER MYOMECTOMY

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Abstract

Introduction

The aim of the study was to show the outcome of pregnancy after myomectomy Material and methods: In order to assess the outcome of pregnancies after myomectomy, a prospective observational study was carried out in the University Clinic for Gynecology and Obstetrics in Skopje, Republic of North Macedonia, from July 2015 and June 2019. Study included 60 married women of reproductive age, suffering either from primary or secondary subfertility, and who had uterine fibroid and strongly wished to conceive shortly after myomectomy with no existence of other male and female subfertility factor. These women were followed up at 3, 6, 12 and 24 month intervals. Data were recorded on preformed questionnaires. Patients were advised to try for pregnancy after 12 weeks of operation.

Results

Maximum number of women belonged to age group 25-30 years (18, 63%); primary subfertility was 73.0% and secondary 27.0%; in maximum number of cases duration of subfertility was 1-3 years (n=20, 55%); type of fibroid were solitary (58.5%) and multiple (41.5%); type of myoma were intramural (76%) and combined (24%); location of myoma were fundal (7%), anterior wall (30%), posterior wall (17%) and combined (46%); diameter of removed myoma were <5cm (1.5%), 5-10cm (69.5%), 11-15(21%) and >15cm (8%). Menorrhagia after myomectomy was present only in 7% cases. After uterine myomectomy, 34(56.66%) women conceived, common time interval between myomectomy and conception was 1-2 years (44.2%), conception was spontaneous in 78.6%. Out of 34 who conceived after myomectomy 22(64.7%) delivered live babies spontaneously vaginally, and most of the babies weighed >3kg (68.4%).

Conclusions

Our study showed a positive pregnancy outcome after myomectomy.

Authors' COI

Drage Dabeski

QUANTIFICATION OF FOLLICULAR FLUID CELL-FREE DNA AS A NEW NON-INVASIVE BIOMARKER TO IVF SUCCESS

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Portugal

Abstract

Introduction

Cell-free DNA fragments, detected in blood and in other biological fluids, are released from apoptotic and/or necrotic cells. Cells that undergo programmed cell death (apoptosis) are accompanied by a physiologically orchestrated deterioration of genomic DNA, which results in small fragments (180-200 base pairs). On the other hand, in cell necrosis, a large variety of fragments with different sizes are formed as a consequence of random digestion. The discovery of cfDNA in plasma brought many innovations in several areas of medicine, making them a marker with growing interest due to its clinical applications, expanding the possibilities of non-invasive diagnosis and prognosis. In this study we investigate the association of cfDNA levels in follicular fluid samples from patients with infertility.

Material and methods

CfDNA was extracted from case subjects, 178 samples of follicular fluid (FF) of women under 39 years of age that failed to establish a clinical pregnancy after 12 months of regular, unprotected sexual intercourse, and quantified by qPCR, using ALU115 and ALU247 primers. Statistical tests were performed using the SPSS. Results were considered significant when $p \leq 0.05$.

Results

CfDNA concentration was significantly higher in FF pools from women aged ≤ 35 than in women under 35 years of age, concluding that exists a significant statistical association between these two groups ($p=0.039$). We also found that q247cfDNA levels were significantly higher in women with infertility factor than in women with no specific cause of infertility ($p=0.023$). In view of embryo quality, cfDNA concentration was significantly higher in FF pools of embryos with high fragmentation rate than with low fragmentation rate ($p=0.010$). Finally, when we compared the results of pregnant women with non-pregnant women, we found that women who did not become pregnant during PMA treatments had higher q247 cfDNA level than women who had a confirmed pregnancy ($p=0.043$).

Conclusions

cfDNA quantification could be an important non-invasive biomarker of follicular micro-environment quality to predict embryo quality and success of IVF treatments, leading to treatment personalization and higher effectiveness.

Authors' COI

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REPRODUCTIVE OUTCOME IN INFERTILE WOMEN AFTER MYOMECTOMY OF INTRAMURAL MYOMAS

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Abstract

Introduction

The purpose of the study was to show the reproductive outcome in infertile women after myomectomy of intramural myomas.

Material and methods

This was a cohort study involving 86 infertile women aged 20 to 40 years with ultrasound findings of at least one and up to 17 intramural myomas between 3 and 15 centimeters in diameter. The study was conducted at the University Clinic of Gynecology and Obstetrics in Skopje, Republic of North Macedonia from January 2017 to December 2021. In all women was done abdominal myomectomy, myomas were confirmed by histopathological analysis, and pregnancy was confirmed by determination of beta chorionic gonadotropin hormone.

Results

The overall clinical pregnancy rate following myomectomy was 67.4% (n = 58). Women with successful conception were significantly younger (24.4 ± 4.3 years versus 35.0 ± 4.0 years; p = 0.012), and mostly with one myoma (63.3% versus 20.1%; p = 0.007). In addition, patients who conceived had smaller myomas demonstrated in pre-operative imaging and during surgery (6.4 versus 8.8 cm and 6.8 versus 9.1 cm; p = 0.003 and p = 0.023, respectively), with fewer cases of cavity entry determined during surgery (6.5% versus 27.3%; p = 0.004).

Conclusions

Our study showed that myomectomy is likely to be necessary in infertile women and has a higher reproductive outcome in younger women, women with one myoma and those with smaller myomas.

Authors' COI

Drage Dabeski

SIMILAR FERTILIZATION RATES AND PREIMPLANTATION EMBRYO DEVELOPMENT AMONG TESTOSTERONE-TREATED TRANSGENDER MEN AND CISGENDER WOMEN

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Abstract

Introduction

Transmen are assigned female sex at birth but identify as men. This mismatch might induce distress that is termed gender dysphoria. Testosterone therapy induces "masculine" physical traits, suppresses "feminine" ones, and relieves gender dysphoria. More transmen present for testosterone therapy, their average age is decreasing, and many express the desire to have biological children. Therefore, understanding the effects of testosterone on fertility is crucial. Previous data suggest that despite testosterone treatment, the ovarian reserve and the in-vitro oocyte maturation are preserved among transmen. The aim of the current study was to assess the effect of testosterone treatment on oocyte fertilization and preimplantation embryo development among transgender men who underwent fertility preservation.

Methods

A retrospective study was undertaken in a university-affiliated tertiary hospital between 04/2016-11/2021. The source of embryos was divided into three groups: 210 embryos from 7 testosterone-exposed transgender men, 135 embryos from 10 cisgender women who cryopreserved embryos, and 276 embryos from 24 cisgender women who underwent fertility treatment. Statistical analyses compared ART data and outcomes between the group of transgender men and both groups of cisgender women. Morphokinetic and morphologic parameters were compared between the embryos derived from these three groups.

Results

The transgender men (30.2±3.59 years of age) were significantly younger than the cisgender women who cryopreserved embryos (35.1±1.85 years; $p = 0.005$) and the cisgender women who underwent fertility treatment (33.8±3.23 years; $p = 0.017$). After adjusting for participant age, the fertilization rate was comparable between the transgender men and both cisgender women groups ($p = 0.391$ and 0.659). There were no significant differences between the transgender men and the cisgender women who preserved fertility in the number of cryopreserved embryos (7.2±5.09 and 3.5±2.66; $p = 0.473$) or the distribution of the embyros' ages at which they were frozen ($p = 0.576$). All morphokinetic parameters that were evaluated by time-lapse imaging, as well as the morphologic characteristics, were comparable for the embryos of all three groups.

Conclusions

Testosterone exposure among transgender men has no adverse impact upon fertilization rates or preimplantation embryo development and quality.

Authors' COI

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SMALL MOLECULE JQ1 DECREASES THE FUNCTIONAL COMPETENCE OF HUMAN SPERMATOZOA

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Abstract

Background

Bromodomains are highly conserved proteins, which recognises acetylated lysine residues on histone and other proteins. Bromodomain extra terminal (BET) family proteins play a significant role in epigenetic regulation, cell proliferation and differentiation. In the past decade several BET inhibitors have been developed to treat bromodomain linked diseases. JQ1 is a potent bromodomain inhibitor and has the ability to bind to all the members of the BET family. The present study was designed to understand the effect of JQ1 on various sperm functional parameters.

Methodology

Normozoospermic semen samples were collected after the completion of routine analysis from the Andrology Laboratory, Kasturba Hospital, Manipal, India. The samples were split into 3 groups viz. control (EBSS), vehicle control (0.01 % DMSO in EBSS media) and JQ1 (100 µM in EBSS). At 1, 4 and 24 h after swim up motility, sperm kinematics, mitochondrial membrane potential, acrosome reaction, DNA integrity and protein acetylation level was assessed.

Results

Within 1 h of JQ1 exposure, a significant decrease in progressive motility was observed in JQ1 group compared to control ($p < 0.05$). Similar trend was observed at 24 h time interval indicating poor sperm survival following JQ1 exposure. Sperm kinematics assessment revealed a significant ($p<0.05$) decrease in the curvilinear velocity (VCL), amplitude of lateral head displacement (ALH) and average path velocity (VAP) in JQ1 exposed spermatozoa compared to control. Percentage of TUNEL positive spermatozoa was significantly higher in spermatozoa exposed to JQ1 ($p<0.05$) compared to control, indicating that JQ1 induces DNA damage. Further, a significant decrease in the lysine acetylation level was observed in the JQ1 exposed spermatozoa compared to the control suggesting inhibition of capacitation process.

Conclusion

The data from the present study indicates that, JQ1 exposure to human spermatozoa affects sperm motility, DNA integrity and protein acetylation level, which could potentially affect the oocyte sperm interaction and sperm fertilizing ability.

Authors' COI

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SPATIALLY AND TEMPORALLY RESTRICTED EXPRESSION OF BMP-2 AND SHH DURING NEUROGENESIS OF HUMAN EMBRYO SPINAL CORD

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Abstract

Introduction

Data of several studies confirms the approaches that the patterning of dorsal fates of the developing spinal cord is mediated through coordinated actions of TGF-b family protein BMP-2, while ventral patterning is mediated by the Sonic hedgehog (Shh). Both BMP-2 and Shh are involved in activation or repression of homeodomain proteins leading to the specification of progenitor domains and distinct neuronal fates or cell-types. This work is based on findings from the expressions of BMP-2 and Shh in dorsal and ventral half of human developing spinal cord at Carnegie stages (CS) 14 to 20.

Materials and methods

22 human embryos were obtained by medical abortions from Tartu University Hospital. The study was approved by the Ethics Committee of Human Research of the University of Tartu. The embryos were fixed in 4% paraformaldehyde and embedded in paraffin according to standard methods. For the detection of the expression of BMP-2 and Shh the method of immunohistochemistry was used.

Results

In our study we comparatively evaluated BMP-2 and Shh expressions in dorsal and ventral parts of the developing spinal cord. The results demonstrate a remarkable level of BMP-2 expression in the human developing spinal cord of the roof and alar plate at CS 14 to 20. However, variations seem to exist in immunostaining intensity at different developmental stages. The expression of BMP-2 were found to be less intensive at later stages as compared to CS 14–16. Spatial and temporal expression pattern of Shh was seen in the forming spinal cord – higher expression in the ventral and lower expression in the dorsal part. Shh expression was noticed to decrease throughout the later stages of the spinal cord development and significantly stronger expression was found at CS 14–16.

Conclusions

Across the vertebrate subphylum the dorsal-ventral patterning of the developing spinal cord remains largely similar, the same set of signals simultaneously controls tissue growth and neural patterning. Our findings support the theory about the important role of BMP-2 and Shh in the regulation of the cellular proliferation and patterning of the developing spinal cord in human embryos.

Authors' COI

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SUCCESSFUL PREGNANCY FROM HYPOGONADOTROPIC-HYPOGONADISM WOMEN: A CASE SERIES

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Abstract

Background

Hypogonadotropic-hypogonadism primary abnormalities lies in the hypothalamic-pituitary-axis. Decrease in gonadotropin stimulation of the ovaries leads to loss of ovarian folliculogenesis, which occur spontaneously in idiopathic hypogonadotropic-hypogonadism (IHH). Patients' complaint ranged from secondary amenorrhea to infertility. Henceforth, some patients are seeking for fertility treatment. Therefore, we herein report two cases underwent fertility treatment in IHH women using controlled ovarian hyper-stimulation (COH) procedure that resulted in successful pregnancy.

Results

This is a case series of 2 patients seeking for fertility treatment. Case 1 was a 27-year-old woman with a history of secondary amenorrhea and osteopaenia. Case 2 was a 31-year-old woman with a history of primary infertility and oligomenorrhea. Both patients previously had normal menstruation and no abnormalities in physical and psychological findings. We found low level serum of FSH, LH, and estradiol in both patients. Therefore, diagnosis of IHH established. We initiated COH by administering Pergoveris ® for 12 days, then we used ultrasound to evaluate the oocyte production and Cetrotide® (GnRH-antagonist) to prevent premature ovulation. The procedure then followed with Ovidrel® (hCG) and assisted reproductive therapy. The treatment had no complication and resulted in pregnancy and live birth for both of the patients.

Discussion

Daily injections of Pergoveris® (rFSH and rLH) used in COH showed an improvement in reproductive outcomes by promoting adequate follicular development and production of estrogen. The rFSH is important to induce multiple follicle growth in the ovaries and the rLH is essential in the development of normal healthy folliclles by promoting androgen production during folliculogenesis. The androgen will increase amount of FSH receptors of the follicles and eventually be converted to estrogen which promotes growth of the endometrium. Ovidrel® administered to induce ovulation then followed by assisted reproductive therapy either with IUI or IVF. The procedure resulted in successful pregnancy and live birth.

Conclusion

The combination of rFSH and rLH showed a better reproductive outcomes marked with successful pregnancy and live birth in hypogonadotropic-hypogonadism patients.

Authors' COI

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