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Short Talk and Poster Abstracts

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microRNAs as potential biomarkers for embryo quality assessment in human blastocysts

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MicroRNA (miRNA) is a group of small noncoding genes that regulate gene expression. Despite the great magnitude of studies that searched miRNA in pregnancy complications, it is rarely considered as a quality maker for embryo selection. In here, it is investigated whether the expression of miRNA has changed in what is generally ranked a suboptimal embryo. Samples were investigated according to their aneuploidy status, the day of blastocyst formation and their morphology score for differential miRNA expression analysis.

Surplus embryos donated for research were collected from CRGH, London. miRNAs were extracted from each sample and measured by NGS. Multiple comparisons were performed on the same set of blastocysts but with distinct grouping. The analysed aneuploid groups include: single, multiple, gain, loss, and partial. Each group was individually compared to euploid. The day embryo reached blastocyst was investigated after dividing the samples into Day5 and Day6 groups. Due to the insufficient number of samples per group; analysis of expansion and ICM grade were not applicable, however, miRNAs in TE graded A,B,C were studied.

Compared to the euploid blastocysts, all types of aneuploidies showed significant changes in the miRNA profile. Embryos that reached blastocyst stage in Day-6 showed elevated levels of miRNAs when compared to Day-5. In morphology comparisons, changes in the miRNA profile were identified in TE grade C versus B. Some miRNAs were repeatedly altered in different comparisons. When these miRNAs were analysed for pathway annotation, they were involved in critical cellular processes such as apoptosis, cell-cycle phases transition and gene expression.

Altogether, miRNA profile is commonly affected in low quality blastocysts. This alteration would consequently affect essential pathways required for normal embryonic development which makes miRNAs a promising marker for evaluating the developmental potential of preimplantation embryos.

Sioban SenGupta, Associate Professor, University College London (UCL)
Xavier Gonzalez, Embryologist, University College London (UCL)

Comparison of two thawing methods of semen donor samples and impact on pregnancy outcomes

Savvas Dimitriou, Trainee Embryologist, Aberdeen Fertility Centre, NHS Grampian, Aberdeen, UK

Cryopreservation and thawing methods are critical to the sperm survival and ultimately success of intrauterine insemination (IUI). Suboptimal thawing process can damage sperm, leading to decreased motility and viability, resulting in lower success rates. The aim of this service evaluation study was to compare the post-thaw progressive motility of donor sperm samples and possible impact on pregnancy outcomes.

Retrospective data analysis was conducted on first-cycle IUIs using frozen donor sperm samples between February 2018 and November 2022. Samples were thawed at room temperature for 5 minutes and were either rapidly thawed (sample released directly into the tube containing sperm wash medium) (n=19) or gradually diluted (4.5ml of sperm wash medium added dropwise over 5-10 minutes) (n=23). All samples were centrifuged at 500g for 10 minutes. Motility assessed following WHO 2021. The post-thaw sperm motility, motility recovery (post-thaw motility/motility prior to freeze), pregnancy, and clinical pregnancy (presence of a foetal heart) outcomes were compared using unpaired t-tests.

Post-thaw sperm motility and motility recovery rates were greater for the gradual dilution method compared to rapid thaw (54% vs 51%, P=0.16 and 71% vs 69%, P=0.62, respectively), however the difference was not statistically significant. Although positive pregnancy rates were the same for both groups (26%), there was an upper trend for clinical pregnancy rates in the gradual dilution method compared to rapid thaw (21% vs 17%, P=0.77).

Despite no significant differences between two thawing methods, possibly due to small sample group sizes and retrospective nature of the study, the gradual dilution method appeared to be beneficial for post-thaw sperm motility and clinical pregnancy rates. This evaluation study demonstrates the importance of continuous review of standard procedures based on recent literature evidence and demonstrates that even small changes can make a difference. Further studies are required to increase sample sizes to confirm the findings.

Sylwia Milne, Deputy Laboratory Manager, Aberdeen Fertility Centre, NHS Grampian, Aberdeen, UK
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Efficacy and Outcomes of Change in Use of Buserelin to Leuprorelin in GnRH Agonist IVF Cycles

Cheryl Dunlop, Subspecialist Trainee in Reproductive Medicine, NHS Lothian

Introduction

In our centre, GnRH agonist IVF cycles using buserelin (Suprecur®) are performed for predicted poor responders. Due to supply issues with buserelin, we switched to using leuprorelin (Prostap®). We collated data to analyse the efficacy and outcomes of this change in practice.

Methods

We audited 100 consecutive patients undergoing an agonist cycle: 50 patients who received buserelin before the change and 50 who received leuprorelin following the change. Data on demographics, stimulation and outcomes (number of oocytes, embryos and pregnancies) were collected and statistically analysed.

Results

There were no significant differences between the two groups in terms of demographics (age, BMI and AMH). With regards ovarian stimulation, there was no difference between the groups in: 1) starting dose, total dose and number of days of stimulation medication, 2) oestradiol level prior to oocyte retrieval (OR), 3) number of follicles □10mm pre-OR and 4) endometrial thickness pre-OR. Significantly more patients in the leuprorelin group received Menopur® ($p<0.00001$).

There was no significant difference between the groups in terms of number of oocytes retrieved and fertilised or the number of embryos frozen. Similar numbers had day 3 versus day 5 embryo transfers in each group and there was no difference in pregnancy rates (biochemical and clinical). However, significantly more patients in the buserelin group experienced failed fertilisation or poor embryo development, resulting in no transferable embryo ($p=0.019$).

Five patients underwent both a buserelin and leuprorelin cycle in the cohort of patients. Three patients experienced failed fertilisation in their buserelin cycles and none had a clinical pregnancy. They all became pregnant in their leuprorelin cycle (80% being clinical pregnancies).

Conclusion

Leuprorelin may be more beneficial than buserelin for agonist cycles in terms of embryo outcomes. It may also be more acceptable to patients given it is a single dose, rather than daily injections.

Dr Maya Chetty, Consultant in Reproductive Medicine, NHS Lothian

Chemotherapy alters the proteome of the human immature testis in an in vitro model

Tara Marie Layden, Student, University of Dundee

Introduction: Men who have received chemotherapy as a child may suffer with infertility as a result of the treatment, however the exact mechanism for effects of different drugs on developing gonads remains unclear. We aimed to determine the changes that occur at the protein level in the immature testis after exposure in vitro to the chemotherapeutic drug cisplatin.

Methods: Human fetal testis (17wpc, N=3) were cultured as previously described (1). Tissue fragments were cultured in hanging drops for a total of 72h (Day 1-3) and exposed to a human-relevant dose of cisplatin (0.5 µg/ml) or vehicle control for 24h only (Day 2). After the culture, proteins were extracted, and mass spectrometry performed.

Results: Over 7,000 proteins were identified on average for each testis sample. Student's T-test identified 308 proteins with a significant difference in abundance, between cisplatin-treated versus vehicle-control group. These proteins were analysed via PANTHER classification system which identified "reproduction", among other affected biological processes, whilst STRING analysis allowed the identification of the interactions and known pathways connecting these proteins. The analysis of protein function revealed that 8 proteins involved in male reproduction were downregulated (DAZAP1, TOP2B, YTHDC1, HMGB2, VIPAS39, TSPAN8, HIST1H2BA, SAFB2) whilst 11 were upregulated (TYRO3, TBPL1, CRTAP, ADGRG1, B4GALT1, CD46, APOA1, PARK7, COL9A3, PTPN11, MFGE8), with some of them specifically involved in processes relative to gonadal development.

Conclusions: Cisplatin treatment dysregulated the level of proteins involved in reproductive processes and gonadal development in the human immature testis in vitro. This suggests that chemotherapy treatment can impair physiological development of the testis, leading to infertility during adulthood. By elucidating the molecular pathways that are affected by chemotherapy exposure it may be possible to develop a targeted fertility preservation strategy for children with cancer.

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Christos Spanos, Proteomics Facility Manager, University of Edinburgh
Rod T Mitchell, Professor of Developmental Endocrinology / Honorary Consultant Paediatric Endocrinologist / UKRI Future Leaders Fellow/Academic Lead for Public Engagement, University of Edinburgh
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Is the Sperm PKA Interacting factor (SPIF) a cause of male infertility?

Ugochukwu Samuel Okafor, M.Sc Student, University of Dundee

Introduction

Sperm capacitation is vital for fertilisation and has previously shown to be highly dependent on the following three steps:

1) The production of cAMP by soluble adenyly cyclase (sAC).

2) The subsequent activation of the enzyme Protein Kinase A (PKA).

3) And consequently, the downstream phosphorylation of proteins.

Steps 2 and 3 have been shown in mice to be catalysed by an essential Sperm PKA Interacting Factor (SPIF) . In this mouse model, the complete knockout of SPIF is embryologically lethal. In humans, the SPIF gene is known as Maestro Heat-Like Repeat-Containing Protein Family Member 2B (MROH2B) with unproven function.

Methods

Whole exome sequencing, bioinformatics and PCR

Results

We found a predicted severe frameshift mutation in MROH2B gene in a male patient with sperm that failed IVF. Finnish population control “normal” data show that 10 males in a 12,125 adult cohort are homozygous for the severe MROH2B frameshift mutation. The fertility status of these men however remains to be elucidated. The frequency of the mutated allele in Finland is 4% and 1% in USA, Italy and Spain. Therefore, developing a rapid PCR screen to differentiate between normal and mutant alleles has translational potential. We will present our findings of development of novel specific multiplex PCR assay for MROH2B, a rapid PCR and electrophoresis test that could filter homozygote affected males from the pool of idiopathic infertile patients attending IVF clinics.

Shruti Kane, co-researcher,
Douglas Lester, co-supervisor,
Sean G. Brown, Supervisor,

POSTER PRESENTATIONS

Extracellular vesicle mediated damage in the cells of the pre-pubertal testis during chemotherapy treatment

Michael P Rimmer, Clinical Lecturer in Obstetrics and Gynaecology, MRC Centre for Reproductive Health University of Edinburgh & St Johns Hospital, Livingston, UK.

Introduction: Extracellular vesicles (EVs) are small lipid-delimited structures released by all cells and regulating the survival and functional activities of recipient cells. They are an essential aspect of cell-to-cell communication.

The release and functions of extracellular vesicles (EVs) within the pre-pubertal testis are poorly characterised. Recent studies suggest they are crucial for somatic and germ cell health, while perturbation of this can lead to germ cell loss and male infertility. Damage to the testis is an unwanted off target effect of childhood cancer treatment in pre-pubertal boys, many of whom are left infertile in later life.

We demonstrate a novel potential cause of chemotherapy mediated damage in the testis, following chemotherapy, which may cause infertility in later life.

Methods: Mouse Sertoli (TM4) cells were incubated with cisplatin, and the EVs they released were isolated and incubated with treatment naïve somatic cells (TM4) and mouse germ cells (GC1-spg).

EV uptake and interaction with recipient cells was quantified. Proteomics of control and cisplatin-induced EVs was undertaken to identify molecular pathways they may trigger.

Results: TM4 cells treated with cisplatin release twice as many EVs vs. controls ($p<0.0001$) following incubation with treatment-naïve cells, four times as many are then taken up by these cells vs. control EVs ($p=0.008$).

The proportion of apoptosis in treatment-naïve somatic cells, incubated with cisplatin-induced EVs is 2.3 times greater compared to control EVs (0.007), yet apoptosis is reduced in germ cells incubated with these EVs ($p=0.03$) .

Proteomic analysis of EVs demonstrated increased expression and interaction of both pro-apoptotic proteins and drivers of germ cell development in cisplatin-induced EVs.

Conclusion: Pro-apoptotic EVs within the testis are a novel finding, their enhanced release, cargoes and uptake lead to significantly altered function in recipient cells, triggering apoptosis. This previous unrecognised phenomenon may contribute to adult infertility in childhood cancer patients.

Chris D Gregory, Chair of inflammation Biology, Centre for Inflammation Research - University of Edinburgh.
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Miscarriage and Live Birth Following COVID-19 Vaccination

Michael P Rimmer, Clinical Lecturer in Obstetrics and Gynaecology, MRC Centre for Reproductive Health University of Edinburgh & St Johns Hospital, Livingston, UK.

Introduction: Higher rates of maternal mortality and morbidity are seen in unvaccinated women who contract COVID-19 compared to those who are vaccinated. Initial clinical trials evaluating vaccine efficacy excluded pregnant women, leading to a paucity of evidence regarding the possible effects of these vaccines on women future reproductive success. Various social media platforms enabled the dissemination of unproven concerns and of 'fake news' related to COVID-19 vaccine on miscarriage rates and their fertility, leading to poor vaccine uptake in this group.

We sought to understand the risk of miscarriage and live birth among pregnant women who received any COVID-19 vaccine.

Methods: We undertook a systematic review and meta-analysis searching MEDLINE, EMBASE, and Cochrane CENTRAL from inception until June 2022. We used a combination of keywords and MeSH terms to identity relevant papers.

We included observational and interventional studies enrolling pregnant women and evaluated any of the available COVID-19 vaccines compared to placebo or no vaccination. We primarily reported on miscarriage in addition to ongoing pregnancy and/or live birth.

Results: We identified 21 studies (5 randomized trials and 16 observational studies) reporting on 149685 women. We calculated the pooled rate of miscarriage among women who received a COVID-19 vaccine to be 9% (n = 14749/123185, 95% CI 0.05–0.14).

Compared women who received a placebo or no vaccination, women who received a COVID-19 vaccine did not have a higher risk of miscarriage (risk ratio (RR) 1.07, 95% CI 0.89–1.28, I2 35.8%) and had comparable rates for ongoing pregnancy or live birth (RR 1.00, 95% CI 0.97–1.03, I2 10.72%).

Conclusion: We did not identify any increase in the rates of miscarriage or reduction in the rates of live birth in women who received a COVID-19 vaccine. These data may help women make an informed decision over if they chose to receive a COVID-19 vaccine.

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Can the blastocyst KIDScoreTM predict the reproductive outcomes in frozen embryo transfer (FET) cycles?

Charlotte Baxter, Trainee Embryologist, Aberdeen Fertility Centre

Introduction

At Aberdeen Fertility Centre all embryos are cultured in a timelapse incubator which enables monitoring of embryo morphokinetics and their annotations used in KIDScoreTM D5 algorithm (Vitrolife, Sweden).The software analyses embryo morphokinetics including morphology assessment for trophectoderm and inner cell mass, to give a score ranging from 1-9. The aim of this service evaluation was to determine if a reduction in pregnancy time could be achieved by identifying the embryo with the greatest implantation potential from a cohort using KIDScoreTM D5 as a tool alongside morphology.

Methods

The evaluation involved 317 frozen blastocyst transfers that were performed between 2020 and 2022. All the data included were for single embryo transfers that had a KIDscoreTM D5. Blastocysts were annotated and graded according to Gardner's criteria before vitrification.

Analysis was carried out on KIDScoreTM D5 of transferred blastocysts.

Data was analysed retrospectively using Pearson correlation test and Poisson logistic regression to determine if there is correlation between the KIDScoreTM D5 and reproductive outcomes, and adjusted for confounding factors including age, embryo grade and previous pregnancy. Ongoing clinical pregnancy confirmed with presence of a foetal heart.

Results

The KIDscoreTM D5 generated for blastocysts in this data set was 3 - 9.7. Statistical analysis determined there was no significant correlation between KIDScoreTM D5 and ongoing clinical pregnancy (43%), biochemical pregnancy (7%) and miscarriage (14%) (P= 0.08, 0.07 and 0.16 respectively) nor correlation after adjusting for confounders (adjusted odds ratio 0.98, 1.34 and 0.68, respectively).

Conclusion

No correlation between KIDScoreTM D5 and reproductive outcomes was seen which may have been due to small sample size or because KIDScoreTM is not discriminatory. Studies for the future could include splitting KIDScoreTM data into categories, relationship between embryo grade and expansion status in larger data sets to determine if these can assist with identifying the embryo with the highest implantation potential.

Nicola Marconi, Clinical Research Fellow, Aberdeen Fertility Centre
Dr Sylwia Milne, Deputy laboratory manager, Aberdeen Fertility Centre
Dr Elizabeth Ferguson, Laboratory manager, Aberdeen Fertility Centre

Fertility Scotland Network: A qualitative review of impact through stakeholder engagement

Deborah Brown, Customer Insight Manager, National Services Scotland

Introduction:

In January 2021, the Fertility Scotland Strategic Network was launched to promote a “One Scotland” approach to the provision of care to fertility patients across NHS Scotland. This unified approach to fertility services in NHS Scotland aimed to enhance collaboration, reduce duplication and minimise national variation for all clinical outcomes, processes, consumables and equipment.

Aim:

To ensure the Network meets stakeholder needs and identify areas for improvement, an independent review of impact through stakeholder engagement was undertaken by the Customer Experience Team at National Services Scotland.

Methodology:

To gain an in-depth insight, a qualitative approach was adopted. Semi-structured interviews were conducted via online focus groups and/or on a one-to-one basis with each stakeholder group. The research focused on groups with regular exposure to the network, including; clinicians, nurses, counsellors, scientific staff, quality managers, business managers, patient and policy representatives.

Data collection involved the exploration of the stakeholders’ views on the network and its purpose, impact, and areas for improvement.

Thematic analysis was utilised to identify key themes and requirements in stakeholder feedback.

Results:

Early review reveals high levels of engagement and positive sentiment to the Networks impact across all stakeholder groups and continued support for the Network’s core purpose. The Network has also fostered relationships between Boards, enhanced knowledge sharing and supported unified decision-making.

The groups also offered actionable recommendations to improve ways of working, drive clarity and transparency to enhance the impact of the network. These will be discussed at SHREG 2023.

Conclusions:

Recommendations from the independent research will drive quality improvement and network strategy.

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Carsten Mandt, Senior Programme Manager, National Service Scotland
Abha Maheshwari, Clinical Lead - Fertility Scotland National Network, National Services Scotland, NHS Grampian
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Agonist downregulation: clinical service evaluation of Decapeptyl IM vs Buserelin/Naferelin nasal spray

Lindsay Crawford, BMSc Student, University of Dundee

Introduction: GnRH agonists have a crucial role in IVF/ICSI controlled hyperstimulation in assisted conception. GnRH agonists act on the pituitary gland to induce a gonadotrophic flare, followed by desensitization downregulation and decreased production of FSH and LH. This prevents premature ovulation, improves treatment protocol outcomes and reduces complications of ovulation induction. More recently Buserelin nasal spray has been the agonist drug of choice at Ninewells ACU, but due to a multitude of reasons such as the COVID-19 pandemic, Brexit, and the Ukraine-Russia war, supplies completely ran out and an alternative drug was required. Decapeptyl IM has been used in place of Buserelin and has been advantageous since only a singular injection is required, unlike Buserelin which is required to be taken 4 times daily. However, Decapeptyl IM requires patients who live remotely to travel a great distance to Ninewells ACU, in contrast with Buserelin, which was simply posted to a patient's home address. Now that Buserelin is available again, a clinical service evaluation is required to determine whether Ninewells ACU reverts to Buserelin nasal spray or continues with Decapeptyl IM. Since clinical efficacy of both medications is similar, the ultimate deciding factor comes down to patient preference.

Methods: A questionnaire was distributed to patients visiting Ninewells ACU for embryo transfer as part of their IVF/ICSI or FET treatment. The questionnaire comprised of questions regarding side effects and their severity, ease of administration and for patients who had experience of both Buserelin and Decapeptyl – which medication was preferred. Statistical analysis of the questionnaire responses will allow for conclusions to be drawn, and a decision regarding drug choice to be made.

Patient compliance – a phone call away? How the Andrology service are improving the patient experience

Lynsey Christie, Biomedical Andrologist, Aberdeen Fertility Centre

The Andrology service at Aberdeen Fertility Centre performs 750-800 Routine Semen Analysis (RSA) tests per year. During Covid, instructions for RSA appointments were delivered provided by a 10 minute phone call in addition to written instructions. In addition to this, in 2021 patients were also emailed video-recorded instructions. The aim of this service evaluation was to determine which form of communication was the most understandable and preferred by patients. Optimising the delivery of instructions prior to appointment will benefit both the service and patient in terms of reducing the number of samples rejected at the time of the appointment.

The rate of sample rejection, the number of cancelled appointments, and number that did not attend appointments (DNA) were compared over a 4 year time period (2018-2022).

In a mini audit, 60 patients were questioned at time of appointment which method of instructions they received and preferred.

Out of 122 phone calls conducted, the frequency of answered calls was recorded along with how many further attempts were made if the call was not answered first time.

Sample rejection rates dropped from 8% (n=5) to 2% (n=1)/month, however, an increase in both cancellations and DNA's was seen (1% vs 8% and <1% to 3% respectively).

85% of patients (n=51) asked received the instructions by letter, however the preferred form of communication was the video 87% (n=13). 65% of patients (n=39) asked preferred the phone call instructions. However, 64% of the patients phoned (n=77) failed to answer on the first attempt.

This evaluation study confirmed that phoning andrology patients was no longer an effective method of communication in terms of cost effectiveness and patient preference. Video instructions should be sent in conjunction with written instructions to optimise time and resources.

Elizabeth Ferguson, Lead Embryologist, Aberdeen Fertility Centre

A human factors evaluation of the management of critical incidents in IVF clinics

Gayathiri Suresh Kumar, Student, University of Dundee

A human factors evaluation of the management of critical incidents in IVF clinics would involve an assessment of how the various factors that contribute to human performance interact with the design of the IVF clinic environment, equipment, and procedures. This type of evaluation would aim to identify areas where improvements could be made to reduce the likelihood of errors, improve safety, and enhance the quality of care provided to patients. This study is done using SEIPS model to construct a questionnaire including both open and closed questions.

Here potential sources of error is identified and optimize the performance of the healthcare team. By evaluating team dynamics, identifying potential sources of error, standardizing care, and optimizing the physical work environment, a human factors evaluation can help to reduce the risk of adverse events, enhance the quality of care provided to patients, and improve overall healthcare performance.

Some of the key factors that would be evaluated as part of a human factors assessment of IVF clinic management include:

Teamwork and communication: The effectiveness of communication and collaboration among members of the IVF clinic team, including physicians, nurses and other healthcare professionals, can have a significant impact on patient safety and the quality of care.

Equipment and technology: Evaluating the design, usability, and maintenance of equipment, as well as the availability and adequacy of backup systems, can help to identify errors and ensure that appropriate safeguards are in place.

Procedures and protocols: The development and implementation of clear, well-defined procedures and protocols can help to standardize care and reduce the likelihood of errors. An evaluation of existing procedures can help to identify areas where modifications may be needed to improve safety and efficiency.

Work environment and ergonomics: Evaluating the work environment and identifying ergonomic issues can help to reduce the risk of musculoskeletal injuries, fatigue, and other performance-related problems.

Overall, a human factors evaluation of the management of critical incidents in IVF clinics can help to optimize the performance of the healthcare team, reduce the risk of errors and adverse events, and enhance the quality of care provided to patients.

Exploring the Emergence of a New Professional Community: IVF Tribe

David O'Rourke, CEO, IVF Tribe

The growth of IVF Tribe, a new global professional community of IVF professionals, has been exponential in its first month of existence. This is largely attributed to the increasing availability of technology, training, education and support services, as well as the rising demand for people to connect post-pandemic. This study aimed to explore the current state of the IVF professional community, in terms of its size, composition and activities. Members' activity data were analysed, to understand their views and experiences in the community. Results show that the size of the IVF professional community has increased significantly, with more professionals joining from diverse backgrounds. The community is now better organised, with many more activities, support services and resources available. We highlight some challenges that the community faces, such as a lack of recognition and support from authorities, and inadequate resources for training and education. This study provides important insights into the growth of the IVF professional community, which can be used to support its further development.

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Blair Sowry, Senior Clinical Embryologist, CRGH
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Women's autonomy in fertility preservation. Choice between embryo vs oocyte cryopreservation as first line option in reproductive females

Biny Bhaskaran, MscHCEA student, University of Dundee

Introduction: In fertility preservation, the choice of method best suited is dependent upon the consent and relationship status of both partners at the point of time they plan to start treatment. In situations when the partners get separated or divorced, legal battles are initiated to reach a settlement. But this involves loss of many years for the patient until a time the body of the female, due to age related changes, can itself become a reason for the poor outcome to the treatment. Also, the legal settlement may not be in favour of the patient and she may have to forego her last chance to have a genetically related child forever.

Research objectives: By this study, we try to reason whether only oocyte cryopreservation rather than embryo cryopreservation must be the choice for fertility preservation in females who are eligible for both means. We also try to determine the reasons, if any, across the countries to choose between embryo and oocyte cryopreservation and trends towards use of one method over the other.

Methods: It is a meta-analysis. The period chosen is from 2000, the year of inception of oocyte cryopreservation as a method of fertility preservation according to HFEA.

Results: Over the years there has been a positive trend in women choosing oocyte CP, rather than depending on their partners or sperm donors and preserving embryos. This implies their desire in reproductive autonomy. Out of the literature bases searched so far, we have not come across any article addressing the issue of women's autonomy in fertility preservation.

Conclusions: So, in reproductive age females seeking fertility preservation, oocyte CP must only be offered rather than offering socially, ethically and morally perceived norms. A Woman's autonomy must be in focus and should embolden her to make right decisions for her future.

The development of a new dietetic service within Edinburgh Fertility Centre (EFC)

Eugenia Grand, Fertility Specialist Dietitian, NHS Lothian Adult Weight Management and Type 2 Diabetes Prevention Service

Introduction and aims: Current EFC referral criteria for NHS fertility treatment requires a Body Mass Index (BMI) above 18.5kg/m2 and below 30kg/m2. The NHS Lothian Weight Management Service supports people to achieve their health goals and reduce their weight. Patients that require to gain weight are supported by the nutritional support team. Waiting times for required services could delay the progression to fertility treatment. No specialist dietetic service for those wishing to engage with the Edinburgh Fertility Centre (EFC) existed within NHS Lothian.

In May 2022, a test of change service was established for EFC patients. This service was to provide dedicated, specialist dietetic input to help patients meet EFC criteria for support.

Method: EFC refer patients directly to the Specialist Dietitian. Each patient completes an assessment and is offered 6 core sessions plus relevant resource tools. A choice of virtual groups, 1:1 face to face or virtual sessions or the Second Nature digital programme is available. Support is extended on a monthly basis for 12 months.

Results:

228 referrals, 63.2% opt in

144 assessments

57 chose a group programme

50.8% completed all sessions, average 3.8kg weight loss

48 chose Second Nature

72% completed, average 4kg weight loss

39 opted for 1:1 support

51.2% completed, average 4.34kg weight loss

6 spontaneous pregnancies reported

Extended engagement with the service was 86%, comparing favourably to an average 60% of patients in the mainstream weight management programme.

Conclusion: EFC referrals exceeded the anticipated 200 per year. Waiting times were lower (9 weeks average wait for this specialist service) than for the standard Weight Management Service, and engagement rates were higher in this very well received service.

Plan: To continue supporting healthy lifestyle behaviours to help patients safely access fertility treatment.

Audrey McGregor, Service Lead for Weight Management, NHS Lothian Adult Weight Management and Type 2 Diabetes Prevention Service
Laurie Eyles, Dietetic Service Lead, NHS Lothian Adult Weight Management and Type 2 Diabetes Prevention Service

Male fertility bioethics

Nkoyenum Pamela Olisa, International Medical Graduate, University of Dundee

The guilt women bear in their role during fertility process has never been proportional. Although concerns have been raised about deficiencies in clinical evaluation of infertile men, A Survey Monkey questionnaire was created to capture current clinical practices (2021) of fertility specialists working in IVF clinics. Responses were collected May – July 2021. 112 clinicians completed the pilot survey with respondents from Europe (n=49; 43.8%), Africa (n=39, 34.8%), North America (n=6; 5.4%), Asia (n=16; 14.3%), South America (n=1; 0.9%) and Australia (n=1;0.9%). 41% fertility specialists (45/110) reported taking only a brief medical history and 24% reported that they never routinely examined infertile male patients. 54% fertility specialists also reported issues getting men to undertake diagnostic semen analysis. Treatment for male infertility spanned Assisted Reproductive Technology (ART), with themes of individualized medicine influencing treatment recommendations. 48.2% clinicians reported using empirical medical therapy (EMT) for unexplained male infertility. Notably, 3.6% respondents recommended testosterone treatment, despite likely negative impact on spermatogenesis. However, high levels of opportunistic general health advice were reported, including discussion of life exposures thought to be important for male reproductive health. This study would add novel evidence and highlights of the current deficiencies in clinical practice relating to male infertility. Evaluation of the infertile male using simple medical tools (detailed history taking and clinical examination) has the potential to identify treatable or reversible conditions and should be an immediate focus for education and improvement in Reproductive Medicine. Investment in research and development is much needed in the field of andrology, to develop effective non-ART treatment options for male infertility.

Sarah Martins da Silva, Research supervisor, University of Dundee
Lisa Campo-Engelstein, Research supervisor, University of Texas Medical Branch at Galveston Institute for the Medical Humanities

MACS (Magnetic-Activated cell Sorting- Annexin V columns) – A retrospective pilot study on the application of MACS in an Irish clinic

Toyin Ojo, Trainee Embryologist, ReproMed Galway

Study question: MACS is used for high DNA fragmentation, recurrent miscarriages and abnormal sperm parameters. This study investigates if the application of MACS improves reproductive outcomes.

Summary answer: Patients undergoing MACS have shown increased utilization and pregnancy rates when compared to the control group. However, the study wasn't sufficiently powered to reach significance.

Apoptosis in spermatozoa induces the expression of external phosphatidylserine (EPS) on its surface. These are said to be attributed to poor embryonic development, implantation and subsequently poor pregnancy rates.

Magnetic-activated cell sorting (MACS) is used to select non-apoptotic spermatozoa and its application clinically will help to improve overall blastocyst quality. The population of patients for whom MACS would be most beneficial is still unclear. Our study aimed to evaluate the efficacy of MACS for couples with high DNA fragmentation and or abnormal sperm parameters and or recurrent miscarriages.

Study design: The retrospective pilot study was performed on a total of 48 patients who underwent fresh ICSI cycles between July 2022 and January 2023 at two Irish clinics.

Methods: Patients were divided into two groups: MACS-ICSI (n = 23) vs. Control group (n = 25). The ages of patients in both groups were similar. Pre-implantation genetic testing, donor cycles and freeze-all cycles were excluded. Fertilisation rate, blastocyst utilisation rate, clinical pregnancy rate and ongoing pregnancy rate were analysed. Statistical significance was analysed using Mann-Whitney U and Chi-square. A value of $p < 0.05$ was considered statistically significant.

Main results: The fertilization rate of the MACS group was 62.9% and that of the control group was 72.4%. No statistical significance was observed between the MACS and non-MACS groups ($p = 0.247$). The utilization rate for the MACS group was 62.5% compared with the non-MACS group which had 57.83% ($p = 0.393$). The overall pregnancy rate of the MACS group was 47.83% when compared with the non-MACS group at 34.78% ($p=0.263$).

Limitations of this study include retrospective data analysis. This pilot study needs to be increased to a larger sample size to increase the robustness of the overall analysis, especially in a randomised clinical cohort to further evaluate the potential importance of MACS in ART.

Wider Implications: Traditional semen preparations techniques select the best spermatozoa, in terms of morphology and motility. However, the DNA integrity of spermatozoa is not routinely analysed. This study emphasises the need for further investigations to assess the benefit of MACS for sperm selection.

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Patient Satisfaction Survey of Lubion Subcutaneous Progesterone as Luteal Support for IVF/ICSI

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Introduction:

At Ninewells, luteal support can be delivered in three forms, with standard luteal support conducted using either Crinone gel or Cyclogest pessaries. Additional progesterone can be provided by using Lubion Subcutaneous Progesterone (SCP) for enhanced luteal support.

Enhanced luteal support can be beneficial to patients who have had 2 or more good quality embryo transfers that have been unsuccessful or resulted in biochemical pregnancy/miscarriage. The use of additional progesterone on top of standard vaginal preparations can improve clinical pregnancy and live birth rates, this is thought to be because the vaginal preparations result in a higher concentration of progesterone in the endometrial tissue and subcutaneous delivery increases serum levels of progesterone.

Little is known about the acceptability of this subcutaneous method of administration, and so the object of my study was to capture the experiences of patients attending the ACU at Ninewells who are receiving Lubion Subcutaneous progesterone in combination with vaginal progesterone as enhanced luteal support. Patient experience with only vaginal progesterone has also been analysed as a comparator.

Methods:

A questionnaire was created and distributed to 67 patients visiting the Ninewells ACU for an embryo transfer during their IVF/ICSI treatment. It comprised of questions regarding side effects, severity of side effects, and overall satisfaction of each individual progesterone product. It also offered an opportunity to raise awareness of any supply issues they had experienced during their treatment. Statistical analysis of the responses to the questionnaire will allow for conclusions to be drawn about patient acceptability of SCP as luteal support.

Results:

60% of patients receiving Lubion Subcutaneous Progesterone reported that they were satisfied or extremely satisfied with this method of luteal support. Of those receiving Crinone and Cyclogest, 55.9% and 43.3% reported to be satisfied or very satisfied respectively. This indicates that patients are just as accepting of the Lubion SCP as they are Crinone and Cyclogest.