Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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proportion paralleled the racial demographic of Atlanta for these minority residents. When the demographics of Atlanta OC cycles were compared to nationally reported OC trends, the proportion of minorities undergoing OC in Atlanta was greater than the proportion in the national cohort.

CONCLUSIONS: OC patient demographics were similar at each the private and academic clinics with respect to age, number of OC cycles, race/ethnicity, ovarian reserve testing and BMI. National SART data for race/ethnicity is not available for 47% of OC cycles as previously reported (1), which makes the accuracy of our data unique. Despite the increasing number of OC cycles at both clinics from 2014-2019, there was a disproportionate use of OC among Atlanta’s minority ethnic groups when compared to white patients.

IMPACT STATEMENT: With a rise in OC cycles, disparities in usage among minority populations highlights the importance of future research investigating barriers to fertility treatment uptake.

Reference

1. Katler Q, Shandley L, Hipp H, Kawass J. National Egg Freezing Trends: Cycle and Patient Characteristics with a Focus on Race/Ethnicity. Fertility & Sterility. 2021;S0015-0282(21)00150-3.

P-264 6:30 AM Tuesday, October 19, 2021

TRENDS IN ELECTIVE EGG FREEZING BEFORE AND AFTER THE COVID-19 PANDEMIC. Anne E. Martini, DO,1 Samad Jahandideh, PhD,2 Ali Williams, N/A,3 Kate Devine, MD,2 Eric A. Widra, M.D.,2 Micah J. Hill, DO,2 Alan H. DeCherney, MD,1 Jeanne E. O’Brien, MD, MSc,1 NIH-NICHD, Bethesda, MD;2 Shady Grove Fertility, Washington D.C., DC;3 Shady Grove Fertility Center, Rockville, MD;3 SGF Fertility, Washington, DC;3 NIH, Bethesda, MD.

OBJECTIVE: To compare trends in and rates of elective egg freezing (EF) cycles before and during the COVID-19 pandemic.

MATERIALS AND METHODS: We retrospectively identified all appointments for EF from June 2019-February 2020 (group 1, pre-pandemic) and June 2020-February 2021 (group 2, post-pandemic) for comparison. Total numbers of EF consultation appointments and retrievals, time to first EF cycle after initial consultation, as well as EF demographic characteristics were collected. Growth rates in EF cycles from pre- to post-pandemic were calculated as a whole, by age group (n<30, 30-34.9, 35-39.9, 40-44.9 and ≥45).

RESULTS: Post-pandemic retrieval volume for EF increased by 39% compared to pre-pandemic despite only a 3% increase in new consultation appointments seen over the same timeframe. Demographics in patients pursuing EF between the two timeframes were similar (average age 36.8 years pre-pandemic vs 36.6 years post-pandemic). There was 44% growth in patients pursuing EF cycles in 90 days or less, primarily driven by increased numbers of EF cycles in the 30-34.9 year-old age group.

CONCLUSIONS: Despite stable numbers of patients presenting for EF consultation pre- and post-pandemic, more EF retrieval cycles were observed post-pandemic, notably occurring at earlier timepoints from initial consultation and in patients <35. This may represent pandemic-related reevaluation of life goals, changes in financial status, and/or alterations in workplace flexibility. Qualitative survey data will provide further insight into the motivations and drivers of EF, particularly during a time of national crisis. Research focused on what factors were most responsible for the increase in EF cycles may enable providers and patients to make accommodations in the future.

IMPACT STATEMENT: Following the COVID-19 pandemic, we observed growth in EF cycle volume and the rates at which EF cycles were initiated after EF consultation.

P-265 6:30 AM Tuesday, October 19, 2021

SPERM CRYOPRESERVATION IN MALE CANCER PATIENTS: UTILIZATION AND SPECIMEN QUALITY. Jessica Garcia de Paredes, MD,1 Michael Strauf, MD, PhD,1 Marcos Cordoba, MD,2 Mila Thakur, MD,3 Emma Giulian, MD1 Spectrum Health/Michigan State University, Grand Rapids, MI;2 Spectrum Health / Michigan State University, Grand rapids, MI;3 Michigan state University / The Fertility Center, Grand Rapids, MI.

OBJECTIVE: Sperm cryopreservation is an easy and effective fertility preservation option in men before initiating gonadotoxic treatment. However, referral to a fertility specialist, banked sperm disposition, and information on pregnancy outcomes remain limited. The objective of the study was to assess utilization and results of sperm cryopreservation, as well as the barriers to its use.

MATERIALS AND METHODS: In this retrospective cohort study, men (14-50 years old) with cancer who elected to cryopreserve sperm at our onco-fertility program between 2017-2021 were included. Clinical characteristics, pre-freeze sperm parameters, access to reproductive endocrinology services, utilization of cryopreserved sperm, and pregnancy outcomes were analyzed. Statistical significance was determined using a one-way ANOVA with Tukey’s Multiple Comparison Test with significance defined as p<0.05.

RESULTS: A total of 83 men cryopreserved 131 semen samples for a diagnosis of cancer [testicular cancer (37.4%), lymphoma (23.0%), leukemia (7.2%), other cancers (32.6%)]. Most of the collections (90.4%) occurred before chemotherapy was initiated. Only 12/83 (14.4%) men elected to consult with a fertility specialist prior to sperm banking (9 in-person and 3 virtual consults). There was a significant difference between pre-freeze average total motile count for patients with testicular cancer (21.9±5.6 million/ejaculate), lymphomas (60.3±10.8 million/ejaculate), and leukemias (36.2±14.7 million/ejaculate, p=0.02). Over the course of the study, 11/131 (8.3%) sperm samples were utilized, 13/131 (10.1%) were discarded, and 107/131 (81.6%) remain stored. 9 samples were subsequently utilized for intrauterine insemination (IUI), while 2 for in-vitro-fertilization (IVF). One successful pregnancy was recorded after IUI. The average duration between cryopreservation and use was 15.3±2.2 months.

CONCLUSIONS: We reported a low utilization of fertility preservation counseling prior to sperm banking, which may have resulted in poor post-treatment fertility monitoring and utilization of sperm banking in male patients after cancer treatment. This study also highlights an opportunity to improve patient outreach, referring physicians’ education, and accessibility to fertility specialist clinics. Further work is needed to better understand sperm cryopreservation quality among specific cancer diagnoses and subsequent pregnancy outcomes in order to improve fertility specialist counseling and make sperm banking more cost-effective.

IMPACT STATEMENT: Fertility preservation awareness, education, and patient counseling needs to occur early in the management of men with cancer. The application of telemedicine to fertility preservation services could expand patient outreach and accessibility to specialized care.

P-266 6:30 AM Tuesday, October 19, 2021

CRYOPRESERVED SEMINAL SAMPLES FROM PATIENTS WITH ACUTE COVID-19 HAVE THE WORST POST-THAW QUALITY WHEN COMPARED TO OTHER ANDROLOGICAL DISEASES. Juliana Risso Pariz, PhD, Heloisa Faquinetti, Bsc,2 Mayara Rodrigues, Bsc,2 Larissa Namei Chiba, Bsc,2 Ana Clara Monteiro Barduchi, Bsc,2 Felipe Saraiva Bernandes, MD,2 Thiago Teixeira, MD, MSc,2 Joel Drevet, PhD,3 Raúl Segundo Sanchez, MD, PhD,3 Jorge Hallak, MD, Ph.D.3 Methodology: University of Sao Paulo, Sao Bernardo do Campo, Brazil;4 Andro-science, Science and Innovation Center in Andrology and High-Complex Clinical and Andrology Laboratory, Sao Paulo, Brazil;5 Univesiçao Cerrmont Auvergne, France;6 Universidad de La Frontera, Temuco, Chile;7 University of Sao Paulo Medical School, Sao Paulo, Brazil.

OBJECTIVE: To evaluate the effect of COVID-19 in sperm cryopreservation and post-thaw, and to compare post-thaw results from COVID-19 patients to samples from others systemic and andrological diseases.

| Time from consultation to first EF cycle (days) | Group 1 (Pre-pandemic) | Group 2 (Post-pandemic) | Growth rate (%) |
|-----------------------------------------------|------------------------|-------------------------|-----------------|
| 90 or less                                    | 68                     | 98                      | 44%             |
| 91-180                                        | 73                     | 96                      | 32%             |
| 181-365                                       | 59                     | 66                      | 12%             |
| 366 or more                                   | 65                     | 97                      | 49%             |
MATERIALS AND METHODS: In this cross-sectional study, 37 semen samples of male patients aged 18 to 45 years at Division of Urology, Department of Surgery, Hospital las Clinicas of the University of Sao Paulo or at Androscience- Science and Innovation Center in Andrology, High-Complex Clinics and Research, Andrology Laboratory were collected from April 2020 to April 2021. Patients were categorized as acute COVID-19 (n=15), confirmed by RT-PCR (COVID-19 group), and healthy individuals with normozoospermic semen samples (n=22; Control group). We evaluated seminal parameters, cryosurvival rates (%), mitochondrial activity (%; 3,3′-diaminobenzoic acid stain), reactive oxygen species levels (ROS; chemiluminescent technique) and DNA fragmentation (%; SSCS method) in cryopreserved semen samples of male patients with and without acute COVID-19. Cryopreservation decreased progressive motility (to 2.07 ± 1.58%), and DNA fragmentation index = 42.91 ± 33.38%. Cryopreservation decreased progressive motility (to 5.39 ± 7.92%; p = 0.02), sperm vitality (70.46 ± 8.50 vs. 72.20 ± 23.27; p = 0.042), and ROS (156.0 vs. 19.8 x 10^7 cpm; p = 0.038). When we compared with cryopreserved normozoospermic samples, there was observed a significant difference in HDS (p = 0.002). Cryosurvival rate from COVID-19 samples was 19.93; 19.71%, and had significant difference when compared with severe infertility (40.16; 31.05%; p = 0.003), and other malignant diseases (53.14; 28.55%, <0.001).

RESULTS: Macroscopy analysis of COVID-group revealed abnormal viscosity in 53.33%, semen volume = 4.50 ± 1.72 ml and pH = 8.13 ± 0.23. COVID-19 fresh samples demonstrated mean of progressive motility = 29.07 ± 16.83%, sperm morphology = 2.07 ± 1.58%, and DNA fragmentation index = 42.91 ± 33.38%. Cryopreservation decreased progressive motility (to 5.39 ± 7.92%; p = 0.02), sperm vitality (70.46 ± 8.50 vs. 72.20 ± 23.27; p = 0.042), and ROS (156.0 vs. 19.8 x 10^7 cpm; p = 0.038). When we compared with cryopreserved normozoospermic samples, there was observed a significant difference in HDS (p = 0.002). Cryosurvival rate from COVID-19 samples was 19.93; 19.71%, and had significant difference when compared with severe infertility (40.16; 31.05%; p = 0.003), and other malignant diseases (53.14; 28.55%, <0.001).

CONCLUSIONS: Semen samples from patients with COVID-19 showed reduced fertility potential, especially when compared to the reference values. In the comparisons performed with samples from patients with different anatological diagnoses, common in the specialized andrology laboratory, we can suggest that samples from patients with the acute form of COVID-19 had the worst quality, with low cryosurvival rates. This information contribute to the conduct of these patients during assisted reproduction routines and preservation of male fertility.

IMPACT STATEMENT: It will contribute to conduct in the cryopreservation of sperm in patients with acute COVID-19.

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SUPPORT: Financial SUPPORT: 2019/18571, 2019/22138-0, 2019/13753-3, University of Sao Paulo and Androscience.

P-267 6:30 AM Tuesday, October 19, 2021

MEDICAL MANAGEMENT OF UTERINE ARTERIO-VENOUS MALFORMATIONS. Ruth M. Habe, BSc(Pharm), BSc(Med), MD,1 Ali Yosef, M.B.B.Ch,2 Mohamed Ali Bedaiwy, M.D., Ph.D.1 1University of British Columbia, Vancouver, BC, Canada; 2Assiut University Egypt.

OBJECTIVE: Evaluate the efficacy of combined oral contraceptive pills (OCP) or medroxyprogesterone acetate (MPA) in uterine Arteriovenous Malformation (AVM) resolution and perinatal outcomes of subsequent pregnancies.

MATERIALS AND METHODS: Retrospective chart review of hemodynamically stable outpatients with uterine AVM seen at British Columbia Women’s Hospital and/or Vancouver General Hospital was undertaken (n=6). Data was collected on patient demographics, clinical presentation, uterine AVM characteristics (size, location, Peak Systolic Velocity (PSV)), surgery history, management (type of OCP, MPA, length of treatment), clinical course, and subsequent pregnancy outcomes.

RESULTS: The majority of patients presented with abnormal uterine bleeding (AUB) following uterine instrumentation due to a pregnancy complication (n=4). One case presented with light menses following recurrent pregnancy loss, while another presented with AUB following a complicated pre-term vaginal delivery. Amongst six cases of uterine AVM managed medically, three had complete resolution and three had partial resolution. Time to complete resolution on OCP ranged from 40 days to 3 months. All those with complete resolution conceived shortly after trying and went on to have uncomplicated term pregnancies.

Cases of partial resolution (n=3) tended to have larger and more extensive uterine AVMs. One case involving both uterine arteries had been treated with Uterine Artery Embolization (UAE) then a combination of OCP for eighteen months and repeat UAE. While she had residual low volume venous flow, she went on to conceive and was in her second trimester at the time of data collection. Another case was treated with OCP for thirteen months with significant improvement in vaginal bleeding and regression in size (5.0x4.2x3.8cm to 1.4x1.1x1.0cm), she remains on treatment. Finally, one case treated with MPA for four months experienced improvement from severe AUB to normal menstruations and regression in uterine AVM (PSV >100 centimeters per second (cm/sec)) to <20 cm/sec) at the time of treatment discontinuation.

CONCLUSIONS: Medical management is effective in completely or partially resolving uterine AVMs and halting AUB. Subsequent pregnancies in this population are feasible and are not at higher risk for perinatal complications.

IMPACT STATEMENT: Consider medical management of uterine AVM in hemodynamically stable outpatients patients desiring future fertility.

SUPPORT: no financial support was obtained for this study.

P-268 6:30 AM Tuesday, October 19, 2021

YOUNG WOMEN DIAGNOSED WITH DISTAL CANCER SHOW TELOMERE ALTERATIONS IN THE OVARY. Lucía Chico-Sordo, MSc,1 Inmaculada Soler, MD,2 Isabel Córdova-Oroz, MSc,3 Alba M. Polonio, MSc,3 Marta Medrano, B.Sc,2 Cesar Diaz-Garcia, M.D., M.P.H., Ph.D.,4 Juan A. Garcia-Velasco, MD, PhD,3 Elisa Varela, PhD3 1IVI Foundation, IIS La Fe, Valencia, Spain; 2Gynecology, Hospital de Xativa Lluis Alcanys, Valencia, Spain; 3IVI-RMA Madrid, Madrid, Spain; 4Medical Director IVI LONDON, London, United Kingdom; 5IVI Madrid, Rey Juan Carlos University, Madrid, Spain; 6IVI Foundation, IIS La Fe, Rey Juan Carlos University, Madrid, Spain.

OBJECTIVE: Telomeres play an essential role in the protection of chromosomes. Telomere length (TL) decreases progressively with age, limiting the number of cell divisions and inducing cellular senescence or apoptosis. The loss of telomere protection (TP), which depends on the Shelterin complex, leads to a state of genomic instability that can promote cancer. The aim of this study is to determine whether the telomere pathway is altered in the ovary of women with distal cancer at the time of diagnosis, and the possible role of peripheral blood mononuclear cells (PBMC) TL as biomarker of fertility.

MATERIALS AND METHODS: 15 women with non-ovarian cancer (Cn) and 13 controls (Ctl) were recruited at the Hospital La Fe (Valencia). Ovarian biopsies and blood samples were obtained before therapy. Ovarian biopsies were collected during process of fertility preservation in patients, and in controls, during tubal ligation. Ovarian samples were embedded in paraffin. Blood cells were processed with a Ficoll gradient to isolate PBMC. Telomere length was measured by Fluorescence in Situ Hybridization (FISH), and TP was analyzed by immunoﬂuorescence of the TRF1 Shelterin.

RESULTS: Participants were divided into two groups, young women (<33 years old, Y) and older women (>33 years old, O). Mean age and anti-mullerian hormone (AMH) of controls and patients were: YCt (30 ± 3.55 years, 3.87 ± 2.09 ng/mL) and O Ct (37.6 ± 2.11 years, 3.87 ± 2.44 ng/mL); YO (25.18 ± 6.24 years, 3.72 ± 1.92 ng/mL) and OC n (36 ± 1.82 years, 1.29 ± 0.55 ng/mL).

Regarding younger women, ovarian TL was higher in controls than in patients (42.62 ± 3.91 and 39.61 ± 3.25 a.u., respectively). In PBMC, similar results were obtained (controls 86.54 ± 9.29 and patients 75.21 ± 14.26 a.u.), but TL differences were not statistically significant. Both ovarian and blood TL showed a positive correlation trend. Ovarian TP was higher in controls than in patients (47.14 ± 4.14 and 43.34 ± 4.32 a.u., respectively), but this trend was not observed in PBMC.

Regarding older women, no differences were observed between controls and patients in TL or TP in the ovary. However, in PBMC from the control group TL was higher than in patients (79.75 ± 9.86 and 76.87 ± 4.44 a.u., respectively). In addition, a better TP was found in controls compared to patients (45.65 ± 154 and 37.46 ± 154 a.u., respectively). This trend was not observed in PBMC.

CONCLUSIONS: TL shows a tendency to be shorter in non-ovarian cancer patients than in controls, this difference is observed at the ovarian and blood levels in young women. TP tends to be lower in the ovary of...