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.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
OBJECTIVE: To determine the effect of consecutive ejaculates on seminal parameters after short abstinence using the SQA-V sperm quality analyzer tool.

MATERIALS AND METHODS: The prospective study was conducted from February 2020 to November 2020 in males undergoing treatment for primary infertility. Fifty-five fresh semen samples from infertile men were obtained by masturbation and analysed. Two semen samples were collected in succession after an abstinence period of 4 days followed by another sample after only 2 hrs. For both ejaculates, semen volume, sperm concentration, total motility & motility groups and detailed kinematic parameters were assessed using SQA-V sperm quality analyzer. The Statistical analysis was carried out by using the software, Statistical Package for Social Science, SPSS 20.0 (SPSS, Chicago, IL, USA). The obtained results were analyzed statistically using student’s t-test and P-values <0.05 were considered significant.

RESULTS: The second raw ejaculate demonstrated lower semen volume (1.30 ± 0.48 vs 3.0 ± 0.73, p<0.05) and sperm concentration (43.87 ± 14.69 vs 60.54 ± 14.50, p<0.05) than initial sample. While a significant increase in total motility and progressive motility in the consecutive sample (0.48 vs 3.0, p<0.05) and sperm concentration (43.87 vs 8.34, p<0.05) was observed.

CONCLUSIONS: The findings of the present study indicate that pooling semen samples collected yields significantly better sperm samples from a functional point of view. Support: NA

P-583 6:30 AM Wednesday, October 20, 2021

WHOLE EXOME SEQUENCING IDENTIFIES A RARE NONSENSE MUTATION IN NACAD AS A POSSIBLE CAUSE OF COVID ORCHITIS IN BROTHERS. Rohit Reddy, B.S., Willy Chertman, B.S., El-iayhu Kresch, B.A., Kajal Khodamoradi, Ph.D., Iakov Eninkeno, B.S.,3 Ranjith Ramasamy, M.D 1University of Miami, Miami, FL; 2University of Miami and Jackson Health System, Miami, FL; 3University of Miami Miller School of Medicine, Miami, FL.

OBJECTIVE: This project sought to uncover genetic explanations as to why certain men face increased susceptibility to developing COVID orchitis. Our goal was to identify genetic variants associated with COVID orchitis in a group of patients, aided by whole-exome sequencing and protein phenotyping of affected patients.

MATERIALS AND METHODS: We identified and examined six COVID-19 patients who all were confirmed with polymerase chain reaction (PCR), including three COVID-19 (+) men without orchitis (controls) and three COVID (+) men with orchitis (bilateral testicular pain for at least 5 days around the time of testing PCR positive). Of note, among the three men with COVID-19 who had orchitis, two of them were siblings. DNA extraction and whole exome sequencing were performed on blood using the QiAmp blood maxi kit on five of the six patients. Variants were prioritized by being shared between the three patients affected with orchitis, absent in controls, and introducing nonsense, frameshift, splicing or non-synonymous amino acid changes and less than 10% in population prevalence. Based on WES findings, DuoSet® Human ACE2 reagent kit 2 (catalog number: DY933-05) was purchased from R&D Systems, USA, and used to measure the level of soluble ACE2 in the plasma samples.

RESULTS: The average age of the men in the study was 25 years old. The average duration of COVID symptoms (fever, sore throat, cough, body aches) were 7 days. Among the men who developed bilateral testis pain, the symptoms lasted for an average of 22 days. The median sperm concentration and sperm motility was 19 million/cc and 60% around 3 months after original infection. A list of 16 variants was generated that found to be shared between the two siblings with COVID orchitis along with the unrelated subject with COVID orchitis, and not present in the two controls. Among the 16 variants, a nonsynonymous non-framedeletion in NACAD variant on chromosome 7 with a frequency of 3.9% prevalence in ExAC was prioritized based with those reported in experimental work. Then, all ion channels were integrated to simulate the VDSM electrical activities towards neurotransmitter/ current stimulus. We investigated the contribution of the castration by mimicking the testosterone as down regulation of A-type K+ channel on VDSM cell excitability.

RESULTS: The ion channel conductances are set to maintain the resting membrane potential (RMP) at — 50 mV as the physiological range of RMP in VDSM cell varies from — 45 mV to — 70 mV. The action potential (AP) and membrane depolarization are simulated in the whole cell model by applying an external stimulus current (10-30 pA), as a brief square pulse of 10 ms duration. The results showed both L-type Ca2+- and Na+ channel are indispensable for generating the spike, although the L-type Ca2+ channel is the major contributor to the total inward current. The results also revealed that both BK and A-type K+ channel channels are essential in maintaining the RMP and repolarization. Because of castration, A-type K+ current is reduced, and as a result, it elevated the RMP from — 50 mV to — 47 mV (more positive). The model was able to evoke an AP with a reduced current stimulus.

CONCLUSIONS: To date, a biophysically detailed computational model does not exist for VDSM cells. Our model, constrained heavily by physiological data, provides a powerful tool to investigate the ionic mechanisms underlying the genesis of VDSM electrical activity. In the guinea-pig, following castration, VDSM was accompanied by cell membrane depolarization, which caused to evoke more spontaneous contractions.

IMPACT STATEMENT: The testosterone-mediated regulation of A-type K+ channels provides important information for the male sexual disorder induced by testosterone therapy for men with castration.

Reference

1. Ohya S, Ito K, Hatano N, Ohno A, Muraki K, Imaizumi Y. Castration Induces Down-Regulation of A-Type K+ Channel in Rat Vas Deferens Smooth Muscle. International journal of molecular sciences. 2019 Jan;20(17):4073.

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on known involvement in the ACE2 pathway, read depth, and genotype qual-
ity. Phenotypically, we found that circulating levels of soluble ACE2 was 3.72
ng/ml among men who had COVID orchitis and was lower than men who
developed COVID without orchitis.

CONCLUSIONS: We observed a stop mutation in NACAD in 2 brothers
and 1 unrelated man who developed COVID orchitis. Interestingly, we found
lower circulating ACE2 serum levels in both brothers with orchitis and the
one nonrelated orchitis subject but normal serum levels in all controls. Na-
CAD when involved with cellular ability to shuttle out ACE2 becomes crit-
ical for COVID symptomatology. With decreased transcellular and extracellular
transport of ACE2 being possible in subjects with the gene mu-
tation, it can be postulated that NACAD will be found intracellularly leading
to increased cellular entry of SARS CoV-2 and possibility of orchitis
sequela.

IMPACT STATEMENT: These findings provide an explanation as to why
genetic variations can lead to some patients developing comorbidities such as
orchitis from COVID-19.

SUPPORT: n/a

P-584 6:30 AM Wednesday, October 20, 2021
WHICH SUBFERTILE MEN SHOULD BE TREATED WITH ANTIOXIDANT THERAPY? - RESULTS OF A SCIENOTOMETRIC STUDY AND PRACTITIONER’S SURVEY. Ashok Agarwal, PhD,1 Renata Finelli, PhD,2 Ralf Henkel, PhD,3 Ramadan Saleh, MD,4 Rupin Shah, MD1 1American Center for Reproductive Medicine, Cleveland Clinic, Cleveland; 2American Center for Reproductive Medicine, Cleveland Clinic, Cleveland, OH; 3Imperial College London, London, United Kingdom; 4Sohag University, Sohag, Egypt;

OBJECTIVE: To investigate the clinical conditions associated with male infertility which may benefit from antioxidant (AOX) treatment.

MATERIALS AND METHODS: First, original studies investigating AOX treatment for male infertility were retrieved by using specific keywords on Scopus, and considering semen parameters as the final outcome. Secondly, the top 100 articles on this topic were collected based on the citation rate (number of citations normalized for the year of publication). These articles were further analyzed for the clinical conditions treated. Finally, an online survey was designed to investigate the practice patterns of reproductive specialists involved in the care of patients with male infertility.

RESULTS: We systematically identified 97 original studies investigating AOX treatment in male infertility conditions. Approximately 55% of the retrieved studies included patients with idiopathic male infertility (IMI), n=53), followed by varicocele (n=11), and unexplained male infertility (UMI, n=5). When these patients were treated with AOX, an improvement of semen parameters was significantly observed in most of the studies conducted on varicocele (63.6%), IMI (88.9%), and UMI (80.0%). A specific interest in investigating the effect of AOX treatment in such conditions was also observed when the citation rate was used as criterion for classification, with majority of the top 100 articles showing asthenozoospermia (n=19), IMI (n=14), and oligozoospermia (n=14) as the top 3 conditions mainly investigated by researchers globally, followed by varicocele (n=12). The global survey investigating AOX treatment in male infertility was completed by 1,327 participants from 88 countries. Interestingly, survey results reported that clinicians frequently prescribe AOX in these same conditions, such as IMI (i.e. oligoasthenoteratozoospermia, 63.4%; atenozoospermia, 60.5%; terato-
zoospermia, 48.2%; oligozoospermia, 46.1%), UMI (62.6%), and varicocele
(41.3%).

CONCLUSIONS: This study used a multi-parametric approach to identify those conditions associated with male infertility which may benefit most from the AOX treatment, i.e. asthenozoospermia, teratozoospermia, IMI, UMI and varicocele. This is highlighted based on a) the evidence published in the literature, b) the clinical interest in these conditions, based on the cita-
tion rate, and c) the experience provided by the participants in the global sur-
vey.

IMPACT STATEMENT: Due to their widespread availability, safety pro-
file, and low cost compared to other treatments, AOXs are a simple starting
point for many infertile couples seeking to improve their chances of con-
ception. The identification of those conditions which may benefit most
from this treatment is of utmost clinical importance, in order to identify a tar-
geted approach for the treatment of male infertility.

SUPPORT: This research was supported by the American Center for Reproductive Medicine, Cleveland Clinic.

P-585 6:30 AM Wednesday, October 20, 2021
TESTICULAR SPERM EXTRACTION (TESE) FOR IN-
TRACYTOPLASMIC SPERM INJECTION (ICSI) IN
SUB-SAHARAN AFRICA - A TWO - YEAR MULTI-
CENTRE REVIEW IN GHANA. Promise E. Seforugh, Dr., MD, MPH, FWACS.1 Alim Swarry-Deen, Jr., MD, MSc, FWACS,1 Edem K. Hiaodzi, MD, FRCOG, FGCS,2 Rudolph K. Adageba, MD, FWACS, FGCS,3 Nana Essuman Oduro, MD, MWACS, MPH,4 Mercy Nuamah, MD, PhD,5 Hanson G. Nuamah, BSc, MPH6 University of Ghana Medical School, Accra, Accra, Ghana; 1Lister Hospital & Fertility Center, Accra, Ghana; 2Ruma Fertility & Specialist Hospital, Kumasi; 3Korle Bu Teaching Hospital, Accra, Ghana; 4University of Ghana, Accra, Ghana.

OBJECTIVE: Several factors have been found to influence successful testicular sperm extraction treatment outcomes. This study evaluated treatment outcomes and assessed predictors of clinical pregnancy in obstructive azoospermia treated with testicular sperm extraction and intracytoplasmic sperm injection in Ghana.

MATERIALS AND METHODS: This study was a retrospective cohort study that reviewed archived data and evaluated treatment outcomes of cases of obstructive azoospermia at the Lister Hospital and Ruma Hospital. The data were retrieved from the hospital records at the two study sites. A structured data collection form was used to collect and record essential data such on sociodemographic, treatment details and outcomes. Cases of obstructive azoospermia that met the inclusion criteria were included in the study. Descriptive data were expressed in the form of frequencies and per-
centages. Associations between the dependent and independent variables were analyzed using multiple logistic regression and reported as odds ratios (OR). The confidence interval (CI) was set at 95% and p-value <0.05 was considered significant.

RESULTS: Sixty-seven men seeking treatment for obstructive azoospermia at the Lister Hospital & Fertility Centre as well as the Ruma Fertility and Specialist Hospital participated in the study. The mean age of the male participants was 42.43 years ± 9.11 standard deviation (SD) while the mean age of their partners was 32.89 years ± 5.73 SD. The average duration of infertility before intervention was 5.01 years ± 3.60 SD. Successful pregnancy was observed in 35 (52.2%) of the 67 participants. After adjusting for confounders, the odds of successful pregnancy is 0.07 times reduced for every additional year to the male’s age [AOR = 0.93 (95% CI = 0.87 – 0.99), p = 0.02].

CONCLUSIONS: Overall pregnancy rate following TESE/ICSI from our study was 52.2%. A man’s age was a strong predictor of clinical pregnancy following TESE/ICSI for obstructive azoospermia in Ghana.

IMPACT STATEMENT: Findings from our study would influence clinical counseling and decision-making in cases of obstructive azoospermia.

SUPPORT: Nil

P-586 6:30 AM Wednesday, October 20, 2021
DOES THE LOW SPERM CONCENTRATION ON THE DAY OF INTRAUTERINE INSEMINATION (IUI) AFFECT THE REPRODUCTIVE OUTCOME OF IUI CYCLES. Siddhartha Nagireddy, MCh(Reproductive medicine and Surgery),1 Manjula Daniel G, PhD,2 Sindhuja Namboori Srinivasan, MBBS, M.Sc Clinical Embryology, PhD Research Scholar,3 Eshitha Dam-
avarupu, B.D.S,4 Swathy Tuyuraj, M.B.B.S, Dip.DM,5 Shobana Rakesh, B.D.S,6 Gokul Raman, B.D.S,7 Radha Vembu, DGO, DNB (Obstetrics and Gynaecology), MNAMS, FICS, FIGOG, PhD,2 Monna Pandurangi, MD (Ob & Gyn),3 S Janseeva Reddy, MD (Obstetrics and Gynaecology), DGO4 1Assistant Professor, Sri Ramachandra Institute of Higher Education and Research, Chennai, India; 2Assistant Professor, Department of Repro-
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SUPPORT: This research was supported by the American Center for Reproductive Medicine, Cleveland Clinic.

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