THE EMOTIONAL IMPACT OF THE ASRM GUIDELINES ON FERTILITY PATIENTS DURING THE COVID-19 PANDEMIC. Jenna M. Turocy, M.D.,1 Alex Robles, M.D.,2 Daniel Herz, M.D.,3 Mary D’Alton, M.D.,2 Eric J. Forman, M.D.,1 Zev Williams, M.D., PhD.1 1Columbia University Fertility Center, New York, NY; 2Jackson Memorial Hospital, Miami, FL; 3Columbia University Medical Center, New York, NY.

OBJECTIVE: To survey fertility patients’ agreement with ASRM recommendations during the COVID-19 pandemic and the emotional impact on them.

DESIGN: An online survey was sent to current fertility patients at a New York City academic fertility practice at the epicenter of the COVID-19 pandemic.

MATERIALS AND METHODS: Patient agreement with the ASRM recommendations during the COVID-19 pandemic and the emotional impact rated on a Likert scale. Ordinal data such as responses rated on a Likert scale were analyzed using Mann-Whitney Wilcoxon testing and responses were compared using Fisher exact or chi-square test as appropriate, with significance at p<0.05.

RESULTS: A total of 518 patients completed the survey for a response rate of 17%. Fifty percent of respondents had a cycle canceled due to the COVID-19 pandemic. Of those who had a cycle cancelled, 85% of respondents found it to be moderately to extremely upsetting with 22% rating it to be equivalent to the loss of a child. There was no difference on the emotional impact based on the type of cycle cancelled. Fifty-five percent of patients agreed that diagnostic procedures such as hysterosalpingograms should be cancelled while 36% of patients agreed all fertility cycles should be cancelled (22% unsure, 43% disagreed). Patients were slightly more likely to agree with the ASRM guidelines if they have an upcoming cycle cancelled (p = 0.041). Of all respondents 82% would have preferred to have the option to start a treatment cycle in consultation with their doctor.

CONCLUSIONS: Given the severity of the COVID-19 pandemic, the physical, financial and emotional impact of this unprecedented threat cannot be underestimated in our fertility patients.

O-152: 2:05 PM Monday, October 19, 2020

MALE VITAMIN D STATUS AND MALE FACTOR INFERTILITY. Nicole Banks, MD.1 Fangbai Sun, MPH.1 Stephen A. Krawetz, PhD.2 Robert M. Coward, MD.3 Puneet Masson, MD.4 JAMES F. SMIH, MD, MS.5 J. C. Trussell, MD.1 Nanette Santoro, MD.6 Heping Zhang, PhD.1 Anne Z. Steiner, MD, MPH.1 1VCU Health, Richmond, VA; 2Yale University School of Public Health, New Haven, CT; 3Wayne State University School of Medicine, Detroit, MI; 4University of North Carolina, Chapel Hill, NC; 5Penn Medicine, Philadelphia, PA; 6University of California, San Francisco, San Francisco, CA; 7Upstate University Hospital, Syracuse, NY; 8University of Colorado School of Medicine, Aurora, CO; 9Duke University, Durham, NC.

OBJECTIVE: To determine the association between 25-hydroxyvitamin D (25(OH)D) levels in the male partner and fertility outcomes in couples with mild male factor infertility.

DESIGN: Secondary analysis of a randomized, controlled trial.

MATERIALS AND METHODS: Males (n=154) with sperm concentration ≤15 M/ml, motility ≤40%, or normal morphology ≤4% were eligible. Female partners were ovulatory, ≤ 40 years old, and had documented tubal patency. Men were randomized to a vitamin formulation intervention or placebo. Comparative outcomes were conceived naturally for 3 months with and without vitamin D supplementation.

RESULTS: Six-hundred one cycles resulted in 2,992 diagnosed embryos available for analysis. Most patients were of normal weight (N=321) or overweight (N=144), or had class I obesity (N=80). Overall, 21% of patients in the cohort had obesity (BMI >30). The average patient age was 36.0 years, and age and BMI were positively correlated (r=0.2). There was no difference in overall euploidy or mosaicism rate stratified by BMI. Compared with normal weight, overweight (RR: 4.1 [1.5-11.3]), overweight (1.6 [1.1-2.5]) and obesity (1.6 [1.1-2.4]) were all associated with significantly higher rates of LL mosaicism (6.3% vs. 20.8%, 10.0%, and 9.1%, respectively). Compared with normal BMI, overweight was associated with lower rates of HL mosaicism (8.1% vs. 3.7%, RR: 0.4 [0.2-0.8]) and whole chromosome mosaicism (7.1% vs. 3.7%, RR: 0.5 [0.3-0.9]).

CONCLUSIONS: This is the first study to examine the effect of BMI on embryo mosaicism. Our findings support previous research demonstrating that BMI is not associated with the rate of embryonic euploidy. While the overall rate of mosaicism did not differ among BMI categories, both low and high rates of LL mosaicism and increased rates of LL mosaicism compared with normal BMI, and overweight was associated with decreased rates of HL and whole chromosome mosaicism. Though a large proportion of our patient cohort had obesity, further research is needed to clarify the impact of BMI on embryo mosaicism.
associated with a lower pregnancy loss rate (adjusted OR, 0.11; 95% CI, 0.02 to 0.75; P = 0.024).

CONCLUSIONS: Vitamin D deficiency in the male partner is unrelated to semen parameters, pregnancy or live birth rates. Further study is warranted to better characterize the rate of miscarriage in couples with male vitamin D deficiency.

Table 1. Semen parameters at baseline by male vitamin D status

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Vitamin D &lt; 20 ng/mL (n=26)</th>
<th>Vitamin D ≥ 20 ng/mL (n=128)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sperm concentration (million/ml)</td>
<td>19.0 (11.0-52.0)</td>
<td>19.0 (10.2-38.2)</td>
<td>0.504</td>
</tr>
<tr>
<td>Sperm concentration &lt; 15 million/ml</td>
<td>11/26 (42.3%)</td>
<td>52/128 (40.6%)</td>
<td>0.874</td>
</tr>
<tr>
<td>Normal morphology (%)</td>
<td>6.5 (4.0-10.0)</td>
<td>5.0 (2.0-8.0)</td>
<td>0.133</td>
</tr>
<tr>
<td>Normal morphology ≤ 4%</td>
<td>7/22 (31.8%)</td>
<td>41/94 (43.6%)</td>
<td>0.312</td>
</tr>
<tr>
<td>Total motility (%)</td>
<td>44.7 ± 20.2</td>
<td>43.8 ± 16.1</td>
<td>0.908</td>
</tr>
<tr>
<td>DNA fragmentation (%)</td>
<td>20.4 (13.6-35.1)</td>
<td>19.7 (14.2-27.9)</td>
<td>0.518</td>
</tr>
<tr>
<td>DNA fragmentation index (%)</td>
<td>n=23</td>
<td>n=112</td>
<td></td>
</tr>
<tr>
<td>&gt; 25%</td>
<td>9/23 (39.1%)</td>
<td>35/112 (31.3%)</td>
<td>0.463</td>
</tr>
</tbody>
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O-154 2:35 PM Monday, October 19, 2020

THE RELATIONSHIP BETWEEN FEMALE BODY MASS INDEX (BMI) AND EMBRYONIC EUPLOIDY AS DETECTED VIA NEXT GENERATION SEQUENCING BUT (NGS): A STUDY OF 5,703 CYCLES

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OBJECTIVE: Women with an elevated BMI (≥25 kg/m²) have been shown to experience poor reproductive outcomes[1, 2]. Obese patients are at particularly high risk for adverse pregnancy outcomes[3]. Several studies have evaluated the impact of BMI on assisted reproductive technology (ART) outcomes[4, 5]. However, the association between BMI and rate of embryo euploidy as determined by NGS has yet to be fully explored. We sought to assess the impact of BMI on euploid rate (ER) as determined by NGS.

DESIGN: Retrospective cohort study.

MATERIALS AND METHODS: The study included patients at an academic center who underwent in vitro fertilization with intracytoplasmic sperm injection from 2016 to 2020. BMI (kg/m²) was categorized as follows: underweight (<18.5), normal weight (18.5-24.9), overweight (25-29.9), and obese (≥ 30). A secondary analysis that compared obese patients with all other BMI categories was also performed. Baseline demographics were obtained: age, AMH, cumulative gonadotropin dose (GND), total number of eggs retrieved, and number of metaphase II (MII) oocytes retrieved. Our primary outcome was ER as diagnosed by NGS. Secondary outcomes were maturation rate (MR), fertilization rate (FR), blastulation rate (BR), and biopsied blastocyst rate (BBR). Data were analyzed using ANOVA, Kruskall-Wallis test, chi-square, and logistic multivariate generalized estimating equation (GEE) regression models to adjust for confounders, with P < 0.05 considered significant.

RESULTS: 4,067 patients underwent 5,703 cycles during the study time period and were included in analysis. Overweight (n=1,267 cycles) and obese (n=660 cycles) patients were older, had lower average AMH levels, required higher cumulative GND, and had significantly fewer total oocytes and MII oocytes retrieved than patients with a low (n=210 cycles) or normal (n=3,566 cycles) BMI (P < 0.05 for all).

CONCLUSIONS: In the largest study to date evaluating the association between BMI and rate of embryonic euploidy as diagnosed by NGS, our results demonstrated that BMI is not predictive of euploid rate. In particular, obesity does not appear to result in increased risk of embryonic aneuploidy. Although mouse models have suggested potentially deleterious effects of abnormal metabolites from obesity on oocyte quality, spindle formation, and chromosome alignment, our findings suggest that the detrimental effect of elevated BMI on pregnancy and ART outcomes may be the result of non-genomic, endocrine, uterine, or an unspecified alternative etiology.

References