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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vaginal blood (n=13). On retesting the samples 3 to 20 days later, these results remained the same (positive test strip). The remaining 17 vaginal blood samples were from 4 women with ectopic pregnancies and from 13 non-pregnant women with vaginal bleeding. All 4 ectopic pregnancies had no AFP detected in the vaginal blood and only 1 out of 13 non-pregnant patient samples had AFP detected.

The ROMplus test strip correctly detected AFP in all samples tested containing fetal tissue (n=13) resulting in a test sensitivity of 100%. ROMplus correctly identified the absence of AFP in 16 out of the 17 samples lacking fetal tissue, a 94% test specificity.

CONCLUSIONS: ROMplus has the potential to accurately and reliably detect the presence of AFP, and hence fetal tissue, in vaginal blood samples. This could be a vital non-invasive aid in ruling out an ectopic pregnancy at the bedside (currently off-label use). Furthermore, it could limit the amount of invasive testing and visits needed in cases of pregnancies of unknown location.

IMPACT STATEMENT: In light of the recent COVID-19 pandemic, a simple non-invasive bedside test to rule out an ectopic pregnancy is highly desired given its potential for reducing the number of visits, investigations performed, and personnel involved in the workup of a pregnancy of unknown location.

Reference

1. Mor A, Tal R, Haberman S, Kalgi B, Nasab SH, Minkoff H. Same-day confirmation of intrauterine pregnancy failure in women with first-and early second-trimester bleeding. Fertility and sterility. 2018 Jun;109(6):1060.

SUPPORT: none

O-16 11:30 AM Monday, October 18, 2021

LUTEAL PHASE PROGESTERONE SUPPORT IN IVF CYCLES IS RENDERED REDUNDANT UNLESS IT IS HYDROXYLATED TO 17-A-HYDROXYPROGESTERONE (17-A-OHP); A MOLECULE THAT ROBUSTLY STIMULATES ENDOMETRIAL RECEPTIVITY AND PREDICTS PREGNANCY OUTCOMES.

Bindu N. Chimote, Ph.D. (Reproductive Biology); M.Sc., Clinical Embryology; 1Natandra Manoharrao Chimote, M.Sc., Ph.D. 1Vaunshdhar Fertility Centre, Nagpur, India; 2Scientific Director, Vaunshdhar Fertility Centre, Nagpur, India.

OBJECTIVE: To evaluate 17α-hydroxyprogesterone (17-α-OHP) levels in post embryo transfer (ET) serum samples as a determinant of endometrial receptivity and pregnancy outcomes in IVF cycles.

MATERIALS AND METHODS: Prospective observational clinical study involving standard antagonist ovarian stimulation protocol in 716 fresh IVF cycles. Embryo transfer (n=698) was done either on day3 (n=223) or day5 (n=475). Luteal phase was supported with micronized Progesterone injection. Serum (Sr.) levels of estradiol E2, Progesterone P and 17α-OHP were measured by radioimmunoassay on d7 and d14 of ET. βChG > 50 mIU/ml on day14 ET was considered as positive indicator of pregnancy. Gestational sac with positive cardiac activity at 6 weeks confirmed clinical pregnancy. Data was compared between pregnant/non-pregnant and singleton/twin pregnancy. Statistical analysis was done using Graph-pad prism V software. Power of study >80%

RESULTS: Overall Clinical Pregnancy rate was 36%. Pregnant women (n=251) had significantly higher levels of Sr. 17-α-OHP on day7 ET (7.26 ± 0.43 vs. 2.63 ± 0.11 ng/ml, P<0.0001) and day14 ET (10.31 ± 0.72 vs. 2.41 ± 0.22 ng/ml, P<0.0001) compared to non-pregnant women (n=447). Within the pregnant group, Sr. 17-α-OHP levels not only showed a marked rise from day7 to day14 but also significantly distinguished between singleton (n=225) and twin (n=26) pregnancies respectively (d7: 5.91 ± 0.39 vs. 11.15 ± 0.86 ng/ml, P<0.0001 and d14: 7.1 ± 0.24 vs. 12.82 ± 0.75 ng/ml, P<0.0001).

Clinical Pregnancy rate below and above the Day7 median value 3.6 ng/ml was 7.25% (24/331: only singletons) and 61.85% (227/367: 201 singletons, 26 twins) respectively. On Day7 lower cut-off (25th percentile) >2.5 ng/ml increased likelihood of pregnancy (ROC: 96.43%, Sensitivity:92.56%, Specificity:75.89%) whereas upper cut-off (75th percentile) >5.7 ng/ml enhanced the chances of a twin pregnancy. 17-α-OHP levels did not differ significantly whether embryos were transferred on day3 or day5. Although Sr. E2 levels on Day7 and day14 of ET were significantly higher in pregnant vs. non-pregnant group; they did not differ significantly between singleton vs. twin pregnancies. Sr. P levels on d7 and day14 of ET neither differed significantly between pregnant/non-pregnant nor between singleton/twin groups indicating that just luteal phase P support may not be enough for endometrial development.

CONCLUSIONS: Sr. 17-α-OHP is a strong indicator of enhanced endometrial response favorable for pregnancy. Day7 Sr. 17-α-OHP is also a robust EARLY predictive marker to distinguish between singleton and twin pregnancy much before visualization of an embryo-sac by ultrasonography is possible in IVF cycles.

IMPACT STATEMENT: First study to provide cutoff values for pregnancy and multiple gestation. This study introduces a novel, non-invasive serum biomarker 17-α-OHP, as an additional factor influencing endometrial receptivity; thus paving way for a better understanding of the process. Since 17-α-OHP robustly distinguishes singleton from twin pregnancy; it will help early management and avoid complications of multiple gestation.

SUPPORT: None
Schnell, MD,1 Eric D. Foster, PhD,2 Sarah A. Grover, MBBS,3 Patrick W. SUPPORT WITH A NOVEL PROGESTERONE HMG) OVARIAN STIMULATION AND LUTEAL TREATMENT OUTCOMES AFTER HIGHLY-PURI-
O-18 providers. continued emotional health support should remain an important focus for
With limitations in prenatal care administration during the pandemic, COVID-19 pandemic on early pregnancy anxiety.

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IMPACT STATEMENT: Socioeconomic disparities may exacerbate the

CONCLUSIONS: Pre-existing history of anxiety and low maternal educational attainment likely exacerbated the contribution of stressors due to the COVID-19 pandemic on early pregnancy anxiety. IMPACT STATEMENT: Socioeconomic disparities may exacerbate the contribution of pandemic-related stressors to early pregnancy anxiety risk. With limitations in prenatal care administration during the pandemic, continued emotional health support should remain an important focus for providers.

COVID-19 stressors
Household contact deceased from COVID-19
No -
Yes 3.157*** 2.485***

Very/Extremely Worried about COVID-19
No -
Yes 2.428***

Perceived stress
Low -
Moderate-High 6.860***

*p<0.05, **p<0.01, ***p<0.001

O-18 12:00 PM Monday, October 18, 2021

TREATMENT OUTCOMES AFTER HIGHLY-PURIFIED HUMAN MENOPAUSAL GONADOTROPIN (HP-HMG) OVARIAN STIMULATION AND LUTEAL SUPPORT WITH A NOVEL PROGESTERONE VAGINAL SYSTEM (PVS): SARA TRIAL ANALYSIS. Vicki L. Schnell, MD,1 Eric D. Foster, PhD,2 Sarah A. Grover, MBBS,1 Patrick W. Heiser, PhD1 Center of Reproductive Medicine, Houston, TX; 2Ferring Pharmaceuticals, Inc., Parsippany, NJ; 3Ferring Pharmaceuticals, Copenhagen, Denmark; 4Ferring Pharmaceuticals, Inc., Parsippany, NJ.

OBJECTIVE: To characterize key parameters associated with the use of HP-hMG and PVS in a bridging study designed to evaluate the safety and efficacy of PVS after implementation of manufacturing enhancements.

MATERIALS AND METHODS: Prospective, open-label, single-arm, US trial conducted in 14 sites (NCT03565211). Women aged 18-34 years old meeting ASRM guidelines (2017), and continued for up to 10 weeks. The PVS (a silicone ring releasing 11 mg/day progesterone over 7 days) started on day of biopsy (BD) (p<0.01 for all). In Model 1, the variables in the final random-intercept logistic model were UF (OR=1.45, 95% CI 1.28-1.65, p<0.0001), HQE (OR=1.46, 95% CI 1.30-1.60, p<0.0001), and BD (6 vs 5: OR=1.71, 95% CI 1.21-2.19, p<0.0001; 7 vs 5: OR=0.72, 95% CI 0.65-0.80, p<0.0001). Model-predicted probabilities of 1 and 2 LB after up to 7 SEET were determined. For example, in a patient with a HQE biopsied on day 5 without UF: the model-predicted probability of having at least 2 LB after

RESULTS: Mean subject age was 30.8 years, BMI 26.5 kg/m2, AMH 2.9 ng/mL, and FSH 6.9 mIU/mL. 274 subjects initiated treatment with HP-hMG. The mean (SD) daily dose of HP-hMG was 258.7 IU (50.01) and mean duration was 10.1 days; 64.6% of subjects had ≤ 1 dose adjustment. The mean serum estradiol at end of stimulation was 2516 pg/mL. The mean (SD) oocytes, MII, and 2PN per subject were 11.0 (6.04), 8.2 (4.62), and 6.8 (3.93), respectively. This resulted in 4.1 (2.96) day 5 blastocysts and 2.8 (2.45) good quality day 5 blastocysts. Fresh embryo transfer after IVF/ICSI was performed in 243 (95.7%) of the 254 subjects treated with PVS. The primary trial objective was met, with a cumulative spontaneous abortion rate of 7.4% with upper bounds of the 95% confidence interval (CI; 4.4%, 11.5%) below the predefined threshold of 15% set based upon the observed 10.0% rate (CI 7.6%, 12.8%) in the pivotal trial (Stadtmauer 2013). Adverse events (AEs) occurring in ≥5% of the PVS treated population included biochemical abortion (9.8%), spontaneous abortion (7.1%), nausea (8.7%) and headache (5.1%). Mild and moderate ovarian hyperstimulation syndrome (OHSS) was noted in 3 and 4 subjects, respectively, with no cases of severe OHSS. Clinical pregnancy rates were 44.9% at 6 weeks post OR and 43.2% at 10 weeks post OR.

CONCLUSIONS: HP-hMG stimulation led to good blastocyst yields with a low incidence of OHSS. This trial established a safety bridge between PVS produced via enhanced manufacturing processes and the legacy PVS. Weekly administration of the PVS was well-tolerated with good pregnancy outcomes after stimulation with HP-hMG. IMPACT STATEMENT: Given its demonstrated safety and efficacy, the recently FDA-approved PVS provides an important new option for luteal phase supplementation offering more convenient dosing than existing therapies.

References
Stadtmauer, L. et al. Fertil Steril. 2013;99:1543-1549
SUPPORT: Ferring Pharmaceuticals, Inc.

FERTILITY PRESERVATION
O-19 10:45 AM Monday, October 18, 2021

OPTIMAL NUMBER OF EUPLOID EMBRYOS NEEDED TO ACHIEVE A DESIRED FAMILY SIZE: A PERSONALIZED PREDICTIVE MODEL. Devora Aharon, MD,1 Guillaume Stoffels, MA,1 Dmitry Gounko, MA,1 Tamar Alkon, MD, MS, PhD,1 Joseph A. Lee, BA,2 Eric Flisser, MD,1 Alan B. Copperman, MD,1 Erkan Buyuk, MD,1 Kahn School of Medicine at Mount Sinai, New York, NY; 2Reproductive Medicine Associates of New York, New York, NY.

OBJECTIVE: Patients presenting for embryo banking require accurate modeling of goals and outcomes. This study aims to build a model incorporating personalized factors to assist patients in determining how many euploid embryos would convey a high likelihood of achieving a desired family size.

MATERIALS AND METHODS: All single euploid embryo transfer (SEET) cycles from 2011-2020 were included in the study. Two models were built to predict the likelihood of 1 and 2 live births (LB) based on the number of SEET, the first including baseline characteristics and the second incorporating cycle characteristics. A multivariable random-intercept logistic model was used to compute the probability of LB after a single SEET (p(LB)), and a binomial probability model was used to compute the probability of at least 1 or 2 LB as a function of p(LB) and number of SEET. Variables were selected using backward selection based on the Bayesian Information Criterion.

RESULTS: A total of 7434 SEET cycles were included, corresponding to 4586 patients. On univariate analyses, the variables associated with LB were age, BMI, AMH, BAFC, gravidity, endometrial thickness (EMT), endometrial pattern, uterine factor (UF), high quality embryo (HQE), and day of biopsy (BD) (p<.01 for all). In Model 1, the variables in the final random-intercept logistic model were UF (OR=1.47, 95% CI 1.21-1.79, p=0.0001), HQE (OR=1.45, 95% CI 1.28-1.65, p<0.0001), and BD (6 vs 5: OR=0.72, 95% CI 0.65-0.80, p<0.0001), and BD (6 vs 5: OR=1.22, 95% CI 0.91-1.68, p<0.0001), and BD (6 vs 5: OR=0.72, 95% CI 0.65-0.80, p<0.0001), and BD (6 vs 5: OR=0.72, 95% CI 0.65-0.80, p<0.0001), and BD (6 vs 5: OR=0.72, 95% CI 0.65-0.80, p<0.0001), and BD (6 vs 5: OR=0.72, 95% CI 0.65-0.80, p<0.0001). Model-predicted probabilities of 1 and 2 LB after up to 7 SEET were determined. For example, in a patient with a HQE biopsied on day 5 without UF: the model-predicted probability of having at least 2 LB after

Step 1 Step 2 Step 3

Demographics Education
Professional degree
Masters 1.624* 1.291 1.237
College 1.456 1.205 1.213
< College 2.584*** 2.205** 1.852

Obstetric/Medical history
Pre-existing Anxiety
No -
Yes 3.157*** 2.485***

COVID-19 stressors
Household contact deceased from COVID-19
No -
Yes 9.397**

Very/Extremely Worried about COVID-19
No -
Yes 2.428***

Perceived stress
Low -
Moderate-High 6.860***

*p<0.05, **p<0.01, ***p<0.001