CONCLUSIONS: Women with a diagnosis of RA or SLE have a higher risk of unexplained infertility compared to women who did not have RA or SLE. Future studies will elucidate the mitigating effects of ethnicity among RA patients and insurance status among SLE patients.

SUPPORT: None

O-196 10:25 AM Tuesday, October 20, 2020
CHARACTERIZATION OF PITUITARY AND OVARIAN HORMONE CONCENTRATIONS DURING TREATMENT WITH RELUGOLIX COMBINATION THERAPY. Ingrid Duijkers, MD, PhD;1 Elizabeth M. Migoya, Pharm D;2 Juan Camilo Arjona Ferreira, MD;3 Christine Klippling, MD, PhD1 dinox consultancy bv, Groningen, Netherlands; 3Myovant Sciences Inc., Brisbane, CA; 2Chief Medical Officer, Brisbane, CA; 1Dinox BV, Berlin, Germany.

OBJECTIVE: To characterize the effects of Relugolix combination therapy (Rel-CT; relugolix 40 mg, estradiol [E2] 1 mg, norethindrone acetate 0.5 mg) on pituitary (luteinizing hormone [LH] and follicle-stimulating hormone [FSH]) and ovarian (E2 and progesterone [P]) hormone concentrations, follicular growth, and endometrial thickness.

DESIGN: An open-label, single-cohort study. Healthy, premenopausal, ovulatory women (n=70) received oral administration of Rel-CT once daily for 84 days.

MATERIALS AND METHODS: Blood samples for determination of LH, FSH, E2 and P serum concentrations were collected every 3 (±1) days during the treatment and post-treatment periods. LH, FSH and P were quantified using a validated, enzyme-linked immunosorbent assay. E2 serum concentrations were quantified using a validated liquid chromatography-tandem mass spectrometry method. The size of the dominant follicle and endometrial thickness were measured by transvaginal ultrasound performed every 3 (±1) days during the treatment and post-treatment periods.

RESULTS: Relugolix, an orally active, potent, non-peptide gonadotropin-releasing hormone (GnRH) receptor antagonist, blocks endogenous GnRH from binding to GnRH receptors, preventing the release of LH and FSH from the anterior pituitary gland. Reduction in FSH minimizes follicular growth and development, with consequently lower production of E2. In the absence of an LH surge, and ovulation, the corpus luteum does not develop, resulting in decreased production of P. In the current study, during treatment with Rel-CT, mean LH concentrations were below 1.0 U/L, and FSH concentrations were suppressed, being maintained between 2 and 3 U/L, with an absence of pre-ovulatory peaks. Follicular growth was diminished, with a mean dominant follicle size consistently at approximately 6 mm. Mean (median) E2 concentrations were maintained between 32.6 and 44.5 pg/mL (30.6 and 40.1 pg/mL), comparable to concentrations in the early follicular phase of the menstrual cycle, as a result of profound suppression of ovarian E2 production and exogenous administration of E2 as part of Rel-CT. Endometrial proliferation was markedly suppressed, with mean endometrial thickness between 4 and 5 mm. Mean P concentrations remained between 1.3 mmol/L, with individual concentrations below 5 mmol/L (corresponding to 1.57 ng/mL), reflecting an absence of luteal activity. Over 84 days, Rel-CT inhibited ovulation in 100% of women.

CONCLUSIONS: Rel-CT consistently suppressed pituitary and ovarian hormone concentrations, follicular growth and endometrial thickness. The reduction in systemic E2 and progesterone concentrations is expected to minimize hormone-induced growth and proliferation of uterine fibroids and endometriosis lesions, resulting in an improvement of disease-related symptoms without adverse consequences related to a hypoestrogenic state.

SUPPORT: Myovant Sciences Inc.

O-197 10:40 AM Tuesday, October 20, 2020
CELL-LEVEL EXPRESSION OF SARS-COV-2 CELL ENTRY FACTORS IN HUMAN ENDOMETRIUM DURING THE PRECONCEPTION PERIOD. Felipe Vilella, PhD;1 Wanxin Wang, PhD;1 Immaculada Moreno, PhD,2 Stephen R. Quake, DPhil,3 Carlos Simon, MD, PhD3 Igennom Foundation, C1LIVA, Valencia, Spain; 2Department of Obstetrics and Gynecology, Bidmc, Harvard University, Boston, MA- USA Boston, U.S.A., Paterna, Spain; 3Stanford University, Stanford, CA; Igennom Foundation / INCLIVA, Valencia, Paterna, Spain; 2Chan Zuckerberg Biohub, San Francisco, CA; 1Igennom Foundation, INCLIVA, Valencia, Spain, Department of Obstetrics and Gynecology, Valencia University, valencia, Spain, Department of Obstetrics and Gynecology, BIDMC, Harvard University, Boston, MA- USA Boston, U.S.A., Valencia, Spain.

OBJECTIVE: ACE2 enzyme serves as SARS-CoV-2 human receptor through binding of the viral S protein and subsequent trimming of S protein between S1 and S2 units by host serine proteases asTMPRSS2, CTSB or CTSL. Here, we aim to investigate the expression of the different cell entry proteins involved in SARS-CoV-2 infection in the different cell types of the human endometrium throughout the menstrual cycle using single-cell RNAseq (scRNAseq).

DESIGN: Gene expression patterns for SARS-CoV-2 entry molecules were analyzed by scRNAseq in a total of 73,181 endometrial single cells obtained from endometrial biopsies from 19 reproductive-age women across the full menstrual cycle (Fluidigm C1: 2,149 cells) and 10 women from the same cohort (10x: 71,032 cells). For two women, both C1 and 10x data were collected as anchors for comparison.

MATERIALS AND METHODS: After tissue dissociation, single cell capture was performed on Fluidigm C1 system (n=2,149 cells) or Chromium 10x system (Chromium Next Gem Chip G, 10x Genomics) (n=71,032 cells) followed by reverse-transcription, cDNA generation and library construction. Barcoded libraries were sequenced in paired-end reads on Nextseq (Illumina) for the C1 dataset or Novaseq (Illumina) for the 10x dataset. Data pre-processing, quality filtering, and statistical analyses were performed using custom Python, R, and Java scripts.

RESULTS: Expression analysis across the menstrual cycle showed no significant expression of ACE2 in stromal or uniliated epithelial cells in any cycle phase. TMPRSS2 was expressed more highly in glandular epithelial cells during the early proliferative phase and towards the end of the cycle. Interestingly, expression of CTSB and CTSL was observed in both stromal and epithelial cells across all phases of the menstrual cycle, with CTSB being the more abundant of the two. All four genes were simultaneously expressed in less than 0.7% of glandular epithelial cells.

Expression analysis during the secretory phase did not detect significant expression of ACE2 (less than 2% of epithelial or stromal cells). TMPRSS2 showed mild expression in about 12% of uniliated epithelial cells. In contrast, CTSB and CTSL were highly expressed in ~80% and ~40% of cells during the mid-late secretory phase, aligning with what we detected via Fluidigm. In addition, while CTSB was highly expressed in both epithelial and stromal cells, CTSL was more highly expressed in stromal cells across the menstrual cycle.

CONCLUSIONS: Percentages of endometrial cells expressing ACE2, TMPRSS2, CTSB, or CTSL were <2%, <12%, <80%, and <40%, respectively, with <0.7% of cells expressing all four. This finding implies low efficiency of SARS-CoV-2 infection in the endometrium before embryo implantation, providing information to assess preconception endometrial infection risk in COVID-19 asymptomatic carriers.

FV & WW contributed equally.

O-198 10:55 AM Tuesday, October 20, 2020
HIGH PREVALENCE OF MEASLES NON-IMMUNITY IN REPRODUCTIVE AGE WOMEN. Claire M. Smith, MSN, RN;1 Sedona Speedy, MD,2 Christina E. Boots, MD, MSCI3 1Northwestern Medicine, Chicago, IL; 2Northwestern University, Chicago, IL; 3Northwestern Feinberg School of Medicine, Chicago, IL.

OBJECTIVE: To determine if the percentage of reproductive age women who are immune to measles is at or above the level required for herd immunity (95%) and to evaluate the patient characteristics and demographics that correlate with measles non-immunity.

DESIGN: Retrospective case control.

MATERIALS AND METHODS: A retrospective chart review of women seeking preconception and fertility care who underwent serum testing for measles, rubella, and/or varicella immunity between March 1, 2018 and May 1, 2020 were included in the analysis. Serum results resulted as either immune, non-immune, or equivocal, as determined by serum IgG titer levels for the respective diseases. Women with equivocal results underwent further testing to quantitate titers and determine immunity. Eqivocal results that did not have follow-up testing were excluded from the final analysis. Clinical characteristics were collected on the women including age, BMI, parity, race, and ethnicity. Students t test and chi square tests were used for continuous and categorical outcomes. Multivariable logistic regression was performed to control for confounding. A post hoc power analysis was performed.

RESULTS: 3,235 women were included in the study. Of the 1,396 women tested for measles antibodies (n=1396), 20.1% were considered non-immune