

**Objectives:** To study endothelial damage, microvascular thrombosis, immune response and angiogenic imbalance in pre-eclampsia (PE) and COVID-19 in pregnancy.

**Methods:** Plasma and sera samples were obtained from pregnant women with COVID-19 infection classified into mild (n=10) or severe (n=9) in addition to normotensive pregnancies as controls (n=10) and patients with PE (n=13). Biomarker assessment included circulating VCAM-1, TNF-receptor I (TNFRI), angiotensin II (ANGII), heparan sulfate (HS), thrombomodulin (TM), VWF antigen, activity and multimeric pattern,  $\alpha$ 2-antiplasmin ( $\alpha$ 2AP), dsDNA for neutrophil extracellular traps (NETs), C5b9, PAI-1, ADAMTS-13 activity, fms-like tyrosine kinase-1 (sFlt1) and placental growth factor (PlGF). Statistical analysis included univariate and multivariate methods.

**Results:** Both COVID-19 and PE showed abnormal results in most endotheliopathy and immune response markers, with distinctive profiles among them: severe COVID-19 with predominant alterations in HS, NETs and PlGF, versus PE with most significant alterations in VCAM-1, TNFRI, ANGI, VWF, PAI, c5b9 and sFlt1. The principal component analysis (figure 1) demonstrated a clear separation between PE and the rest of groups (first and second components explained 42.2% and 13.5% of the variance), mainly differentiated by variables related to VWF that were markedly reduced in PE.

**Conclusions:** COVID-19 and PE exhibit distinctive profiles of endothelial damage, immune dysregulation and angiogenic imbalance, which could help in the differential diagnosis and development of new therapeutic strategies.

Supporting information can be found in the online version of this abstract

## OC16: ULTRASOUND IN FERTILITY: GENERAL PRINCIPLES, PRESERVATION AND RESTORATION

OC16.01

**Quantitative analysis of uterine peristalsis for prediction of pregnancy in IVF patients: external validation of the WAVES method**

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**Objectives:** To assess features of uterine contractility associated with pregnancy in IVF/ICSI patients prior to embryo transfer (ET) by using a previously developed quantitative speckle tracking transvaginal ultrasound (TVUS) measurement tool.

**Methods:** This study is part of a completed multi-centre randomised placebo-controlled trial (IMPLANT 1 – NCT02310802) in IVF patients (n=247) carried out in 2015. Our study retrospectively assessed a combined set of a) IMPLANT 1 patients (n=42) receiving placebo with good quality TVUS recordings and b) previously gathered prospective data from 16 IVF patients at the Ghent University Hospital. Subjects were < 37 years with normal uteri, undergoing Day 3 ET on Day 3, with evidence of uterine contractions. Patients underwent TVUS 4 h and immediately before ET. Contraction frequency, amplitude, power and coordination were measured by applying dedicated speckle tracking and strain

analysis. Coordination was measured by Hausdorff distance metric to assess the presence of simultaneous movements of the anterior and posterior uterine walls, a lower value reflected increased coordination. The Shapiro–Wilk and the Wilcoxon rank-sum test were used to compare features between groups.

**Results:** 34% of patients achieved clinical pregnancy. The median (IQR) frequency of uterine contractions was 1.63 (0.23) in the pregnant group vs 1.70 (0.17) in the non-pregnant group (p = 0.012). The median (IQR) coordination (Hausdorff distance metric) was 32.65 (3.85) in the pregnant group versus 35.88 (8.04) in the non-pregnant group (p = 0.0197). No difference in contraction amplitude or power. These results confirmed our initial findings that coordination and frequency are the most important features associated with successful pregnancy after ET.

**Conclusions:** These results validate the WAVES method for quantitatively assessing uterine peristalsis, and consolidate the results of our previous pilot study that coordination and frequency are important uterine contraction features for the prediction of successful pregnancy.

OC16.02

**Prevalence of septate uterus in a non-selected population: comparison of three different diagnostic criteria**

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**Objectives:** To assess and compare the prevalence of septate uterus in a non-selected population according to ESHRE-ESGE, ASRM and CUME classifications criteria.

**Methods:** Prospective observational study comprising a consecutive series of premenopausal women (18-45 years old) who attended our institution for routine gynecological check-up or gynecological symptoms such as bleeding or pain. All women underwent transvaginal ultrasound and a 3D volume of the uterus was acquired for further analysis. Offline assessment of the uterine coronal plane was performed for measuring uterine wall thickness, fundal indentation length and indentation angle. The diagnosis of a septate uterus was established according to three different criteria (ESHRE-ESGE, ASRM and CUME). The prevalence of septate uterus was estimated according to each classification and compared. The presence of uterine fibroids (larger than 2cm), IUD or other type of uterine mullerian anomaly was also recorded.

**Results:** 993 women (mean age: 35.1 years) were included. In 13 cases (1.3%) the coronal plane could not be assessed for the presence of uterine fibroid (n=8), IUD (n=3) or poor quality volume (n=2). 28 women had IUD inserted and 96 women had uterine fibroids. Ten women had a uterine congenital anomaly other than septate uterus, whatever the classification used. According to ESHRE-ESGE classification, 135 women had septate uterus (prevalence: 13.8%). According to ASRM, nine women had a septate uterus (prevalence: 0.9%) and nine women could not be classified (grey zone). According to CUME classification, 23 women had a septate uterus (prevalence: 2.3%). The prevalence of septate uterus was significantly higher when using ESHRE-ESGE as compared to ASRM (p < 0.001) and CUME (p < 0.001). The prevalence of septate uterus was higher when using the CUME classification as compared to ASRM (p < 0.001).

**Conclusions:** The prevalence of septate uterus in a non-selected population varies significantly depending the diagnostic criteria used.