

Shared risk factors for COVID-19 and preeclampsia in the first trimester: An observational study

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Objective

The association between preeclampsia (PE) and COVID-19 is under study. Previous publications have hypothesized the existence of shared risk factors for both conditions or a deficient trophoblastic invasion as possible explanations for this association. The primary aim of this study was to examine baseline risk factors measured in the first-trimester combined screening for PE in pregnant women with COVID-19 versus the general population. A secondary aim of this study was to compare risk factors among patients with mild and severe COVID-19.

Methods

This was an observational retrospective study conducted at Vall d'Hebron Hospital Campus (Catalonia, Spain). Study patients were 231 pregnant women undergoing the first-trimester screening for PE and positive for SARS-CoV-2 between February 2020 and September 2021. The reference cohort were 13,033 women of the general population from 6 centers across Catalonia from May 2019 to June 2021. Based on the need for hospitalization, patients were classified in two groups: mild and severe COVID-19. First-trimester screening for PE included maternal history, mean arterial blood pressure (MAP), mean uterine artery pulsatility index (UtAPI), placental growth factor (PIGF) and pregnancy-associated plasma protein-A (PAPP-A).

Results

The proportion of cases at high risk for PE was significantly higher amongst the COVID-19 group compared with the general population, (19.0% and 13.2%, respectively; $P=0.012$). When analyzing risk factors for PE individually, women with COVID-19 had higher median body mass index (BMI) (25.2 vs. 24.5, $P=0.041$), higher UtAPI multiple of the median (MoM) (1.08 vs. 1.00, $P<0.001$), higher incidence of chronic hypertension (2.8% vs. 0.9%, $P=0.015$), and there were fewer smokers (5.7% vs. 11.6%, $P=0.007$). PIGF and PAPP-A MoMs did not differ significantly between both groups (0.96 vs. 0.97, $P=0.760$ and 1.00 vs. 1.01, $P=0.432$; respectively).

Conclusion

In patients with COVID-19, there was a higher proportion of women at a high risk for PE at the first-trimester screening than in the general population, mainly due to maternal risk factors, rather than placental signs of a deficient trophoblastic invasion.