

Coronavirus Disease 2019 (COVID-19) and the Risk of Hypertensive Disorders of Pregnancy: A Retrospective Cohort Study

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Introduction: Severe acute respiratory syndrome coronavirus-2 (SARs-CoV-2), the virus that manifests as human coronavirus disease-2019 (COVID-19), was first described in the Wuhan, Hubei Province of China in December 2019. Early reports of COVID-19 in pregnancy suggested an association between SARs-CoV infection and hypertensive disorders of pregnancy (HDP). This association, however, was mainly derived from case reports. Without an appropriate comparator group, these studies were subject to confounding and biases.

Objective: To evaluate the association of HDP (gestational hypertension, preeclampsia, eclampsia) and SARs-CoV-2 infection in pregnancy.

Methods: This is a retrospective cohort study of all pregnant patients who tested positive for COVID-19 at three participating hospitals located in metro Detroit and who delivered between 2/1/2020 and 11/24/2020. Patients who tested positive for SARs-CoV-2 during their pregnancy and delivered (index cases) were matched to the three subsequent deliveries from SARs-CoV-2 negative patients (controls) at the same institution. Univariable analysis was conducted with Student's t-test, the chi-squared test, and analysis of variance. Associations were analyzed using linear and logistic regression models.

Results: A total of 280 patients were included in the study: 70 index cases and 210 matched controls. From logistic regression, after controlling for BMI, pre-eclampsia in a prior pregnancy, comorbid hypertension or asthma, and prior Cesarean delivery, COVID-19 increased the risk of hypertensive disorders of pregnancy (aOR 3.68, 95% CI 1.67-8.10).

Conclusion: Compared with pregnant patients who tested negative for COVID-19, patients who tested positive for COVID-19 during their pregnancy were at increased risk of developing a hypertensive disorder of pregnancy.

