Risk of pregnancy loss before 20 weeks' gestation in study participants with COVID-19

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OBJECTIVE: Many studies have evaluated birth outcomes in patients with COVID-19, but less attention has been paid to the risk of early pregnancy loss (EPL) despite the known association of miscarriage with viral infection.[1] The current literature is limited by a small number of cases, a focus on inpatient visits, and lack of longitudinal follow-up.[2–5] These studies have primarily been conducted in Europe and Asia, which limits generalizability to a diverse US population with unique patient characteristics. To address this evidence gap, we present data on a cohort of US women with SARS-CoV-2 infection in early pregnancy to help inform clinical practice.

STUDY DESIGN: The Pregnancy Coronavirus Outcomes Registry (PRIORITY) study is an ongoing, nationwide, prospective cohort study of pregnant people COVID-19 during pregnancy in the United States. Participants were ≥13 years, under investigation for or had confirmed COVID-19 (defined as a positive polymerase chain reaction test for SARS-CoV-2), and were enrolled from March 2020 to October 2020. For this analysis, we selected participants who were enrolled at <14 weeks gestation and who underwent SARS-CoV-2 testing; 7 were excluded owing to a lack of longitudinal follow-up. The study was approved by the University of California, San Francisco Institutional Review Board (IRB #20-30410).

TABLE
Demographic and clinical characteristics of the study population according to COVID-19 status

Characteristics	COVID-19 positive, n=94	COVID-19 negative, n=15
Age (y), mean±SD	31.2±4.77	30.5±5.37
Race and ethnicity, n (%)		
Asian	4 (4.0)	1 (5.9)
American Indian or Alaska Native	1 (1.0)	0 (0.0)
Black or African American	2 (2.1)	2 (13.3)
Hispanic or Latina	33 (35.1)	3 (20.0)
Native Hawaiian or Pacific Islander	1 (1.1)	0 (0.0)
White	62 (66.0)	10 (66.7)
Region, n (%)		
Midwest	14 (14.9)	4 (26.7)
Northeast	31 (33.0)	1 (6.7)
South	17 (18.1)	4 (26.7)
West	29 (30.9)	6 (40.0)
Gravida, mean±SD	2.68±1.79	1.87±0.99
Parity, mean±SD	1.02±1.36	0.467±0.64
Body mass index (kg/m²), mean±SD	26.8±6.45	24±4.22
Gestational age at enrollment (wk), mean±SD	9.76±2.84	9.83±3.24
Health history, n (%)		
Asthma	10 (10.6)	1 (6.7)
Hypertension	2 (2.1)	0 (0.0)
Thyroid disease	4 (4.3)	3 (20.0)
Depression	15 (16.0)	3 (20.0)
Anxiety	17 (18.1)	6 (40.0)
Current smoker	1 (1.1)	0 (0.0)

SD, standard deviation.

Jacoby. Risk of pregnancy loss at <20 weeks' gestation with COVID-19. Am J Obstet Gynecol 2021.

Participants completed questionnaires at enrollment, weekly thereafter for 4 weeks, and then multiple times throughout pregnancy. Medical record review was used to adjudicate adverse outcomes in a subsample of the population. We calculated the incidence and 95% confidence intervals (CIs) for EPL, defined as pregnancy loss at <20 weeks' gestation.

RESULTS: Among the 1338 PRIORITY participants, 109 were enrolled at <14 weeks gestation and comprised the analysis set; 94 had a positive test result for COVID-19 and 15 had a negative test result for COVID-19. All of the 109 patients were outpatients, and all were symptomatic. The average age of the population was 31 years; 33% of the participants were Hispanic (Table). The mean gestational age at enrollment was approximately 9 weeks; 83% of participants had at least 1 month of longitudinal follow-up before the end of pregnancy.

In the COVID-19−positive group, 6 of 94 patients (6.4%; 95% CI, 2.4%−13.4%) had EPL compared with 1 of 15 in the COVID-19−negative group (6.7%; 95% CI, 0.1%−31.9%). In the COVID-19−positive group, 5 EPLs occurred at 7 to 12 weeks' gestation and 1 occurred at 15 weeks' gestation. In a subgroup analysis of 34 COVID-19−positive participants enrolled at <8 weeks' gestation, 2 of 34 patients had EPL (5.9%). In the COVID-19−positive group, 82 of 90 patients (91.1%; 95% CI, 83.2%−96.1%) had live births, of which 82.9% (95% CI, 73%−90.3%) were at term and 17.1% (95% CI 9.7%−27%) were at <37 weeks' gestation; 4 of 94 pregnancies are ongoing but all are at >24 weeks' gestation.

CONCLUSION: In this nationwide study of pregnant people in the United States, the risk for pregnancy loss at <20 weeks' gestation was about 6% for both the participants with COVID-19 (n=94) and the controls without COVID-19 (n=15). These data compare favorably with the 10% rate of miscarriage among clinically recognized first-trimester pregnancies before the pandemic.[6] This study conducted analyses of COVID-19 in 109 pregnant people in the first trimester in a longitudinal US cohort. With this sample size, the upper bound of the CI for pregnancy loss of 13.4% is reassuring because it is not significantly higher than the expected miscarriage rate without viral infection. These results can guide counseling for people infected with SARS-CoV-2 early in pregnancy. ∎

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