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Change in the Incidence of Stillbirth and Preterm Delivery During the COVID-19 Pandemic

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Article Information

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This study compares pregnancy outcomes, including rates of stillbirth (fetal death ≥24 weeks' gestation), preterm and cesarean delivery, and neonatal unit admission in the months preceding vs during the 2020 COVID-19 pandemic at a London university hospital.

High rates of preterm birth and cesarean delivery have been reported in women with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection.[1] However, studies have inadequate power to assess uncommon outcomes like stillbirth (fetal death ≥24 weeks' gestation). The UK Obstetric Surveillance System reported 3 stillbirths among 247 completed pregnancies in women with confirmed coronavirus disease 2019 (COVID-19) vs the national rate (12.1 per 1000 births vs 4-5 per 1000 births).[2] We assessed the change in stillbirth and preterm delivery rates during the pandemic.

Methods

We compared pregnancy outcomes at St George's University Hospital, London, in 2 epochs: from October 1, 2019, to January 31, 2020 (preceding the first reported UK cases of COVID-19), and from February 1, 2020, to June 14, 2020. Outcomes included stillbirth, preterm birth, cesarean delivery, and neonatal unit admission. We investigated all stillbirths and repeated the analysis after excluding late terminations for fetal abnormalities, as the definition of stillbirth in the UK includes late termination at 24 weeks' gestation or beyond.

Group comparisons were made using Mann-Whitney and Fisher exact tests. The analysis was performed using Stata 11, release 11.2 (StataCorp) and GraphPad Prism 5.0 for Windows (InStata, GraphPad Software Inc). A 2-sided $P < .05$ defined statistical significance. Ethics committee approval and informed consent were not required per the UK Health Research Authority.

Results

There were 1681 births (1631 singleton, 22 twin, and 2 triplet pregnancies) in the prepandemic period and 1718 births (1666 singleton and 26 twin pregnancies) in the pandemic period. There were fewer nulliparous women (45.6% vs 52.2%; $P < .001$) in the pandemic period than in the prepandemic period and fewer women with hypertension (3.7% vs 5.7%; $P = .005$) in the pandemic period than the prepandemic period, and there were no significant differences in other maternal characteristics (Table 1).

The incidence of stillbirth was significantly higher during the pandemic period (n = 16 [9.31 per 1000 births]; none associated with COVID-19) than during the prepandemic period (n = 4 [2.38 per 1000 births]) (difference, 6.93 [95% CI, 1.83-12.0] per 1000 births; $P = .01$) (Table 2), and the incidence of stillbirth was significantly higher when late terminations for fetal abnormality were excluded during the pandemic period (6.98 per 1000 births vs 1.19 per 1000 births in the prepandemic period; difference, 5.79 [95% CI, 1.54-10.1]; $P = .01$). There were no significant differences over time in births before 37 weeks' gestation, births after 34 weeks' gestation, neonatal unit admission, or cesarean delivery (Table 2).

During the pandemic period, 19 patients with COVID-19 were hospitalized in the study site maternity department. None of the pregnant women who experienced stillbirth had symptoms suggestive of COVID-19, nor did the postmortem or placental examinations suggest SARS-CoV-2 infection. Universal testing for SARS-CoV-2 started on May 28, 2020, and only 1 pregnant woman, who had a live birth, had a positive test result.

Discussion

This study demonstrates an increase in the stillbirth rate during the pandemic. A direct consequence of SARS-CoV-2 infection is possible. Although none of the stillbirths in the pandemic period were among women with COVID-19, surveillance studies in pregnant women reported that as much as 90% of SARS-CoV-2–positive cases were asymptomatic.[3,4,5] Moreover, until recently, UK national policy limited testing to symptomatic individuals requiring hospitalization. Alternatively, the increase in stillbirths may have resulted from indirect effects such as reluctance to go to the hospital when needed (eg, with reduced fetal movements), fear of contracting infection, or not wanting to add to the National Health Service burden. Changes in obstetric services may have played a role secondary to staff shortages or reduced antenatal visits, ultrasound scans, and/or screening. Although differences in the populations in the 2 periods were observed, the lower proportion of nulliparous and hypertensive women during the pandemic period would have been expected to be associated with a lower rather than higher risk of stillbirth. However, hypertension in pregnancy may have been underdiagnosed during the pandemic as women had fewer face-to-face antenatal visits. Other possible explanations include change in referral patterns with more high-risk women referred to St George's Hospital or chance due to the short time frame of the study.

Limitations of this study include its retrospective nature, single-center setting, small numbers, short time frame, and lack of information on the causes of stillbirths. Moreover, a comparable period in 2019 was not used, but this should not affect the results as there is no seasonality to stillbirths in the UK.

Notes

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Figures and Tables

Table 1.

Comparison of Maternal and Pregnancy Characteristics Between the Prepandemic Period (October 1, 2019, to January 31, 2020) and the Pandemic Period (February 1, 2020, to June 14, 2020)

Abbreviations: BMI, body mass index; IQR, interquartile range.

[a]Discrepancies between the denominator for some of the categories and the number of pregnancies included in the study are due to missing data.
[b]BMI was calculated as weight in kilograms divided by height in meters squared.
[c]Race/ethnicity was assessed in the study as it has a well-established association with stillbirth and preterm birth outcomes. The categories for race/ethnicity were defined by the investigators and self-reported at the first hospital appointment during pregnancy.
[d]Includes any race/ethnicity not included in the listed categories.
[e]Includes gestational diabetes and diabetes diagnosed before pregnancy (type 1 and type 2).
[f]Includes gestational hypertension, preeclampsia, and hypertension diagnosed before pregnancy.

Table 2.

Comparison of the Study Outcomes Between the Prepandemic Period (October 1, 2019, to January 31, 2020) and the Pandemic Period (February 1, 2020, to June 14, 2020)

[a]Discrepancies between the denominator for some of the categories and the number of pregnancies included in the study are due to missing data.