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Increasing severity of COVID-19 in pregnancy with Delta (B.1.617.2) variant surge



OBJECTIVE: The Delta (B.1.617.2) variant of the SARS-CoV-2 virus became the predominant variant circulating in the United States beginning July 2021.¹ We report the trends of illness severity among obstetrical patients with COVID-19, on a background of Delta variant predominance and describe COVID-19 vaccinations in this cohort at Parkland Hospital—a public county hospital.

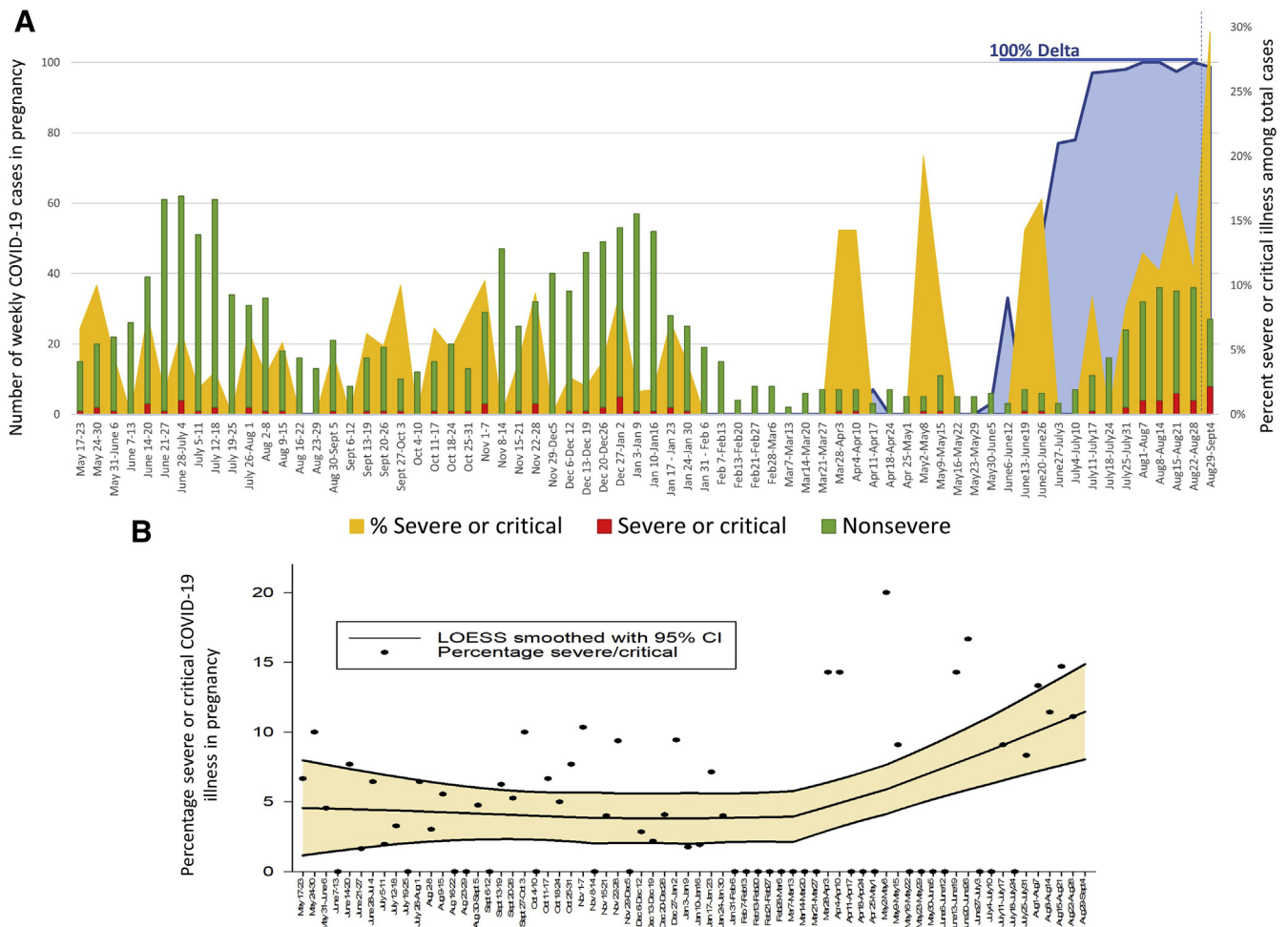
STUDY DESIGN: We prospectively studied pregnant patients diagnosed with SARS-CoV-2 by nasal or nasopharyngeal swab polymerase chain reaction, in a large prenatal system encompassing a centralized acute care hospital and 10 community-based prenatal clinics, all with an integrated electronic health record. Externally tested patients who received care at Parkland were also included. In mid-May 2020, universal SARS-COV-2 screening was implemented for obstetrical patients on hospital admission, with symptom-based testing at outpatient clinics and the emergency department. Positive tests were grouped into weekly epochs by the date of diagnosis and the maximum severity of symptoms. Severe or critical illness was defined as that requiring supplemental oxygen, a high-flow nasal cannula, intensive care unit admission, or mechanical ventilation. The management of asymptomatic or mild-to-moderate illness in pregnancy included symptom treatment

with isolation precautions and virtual or in-person follow-up. The routine management of severe or critical illness included the administration of dexamethasone or other therapies according to the National Institutes of Health guidance.² The association between severe or critical illness and the week was evaluated for the trend using the Mantel-Haenszel chi-squared test for trend. Local SARS-CoV-2 Delta variant (B.1.617.2) sequencing was performed and the variant predominance was tracked weekly. The COVID-19 vaccines were offered from December 2020 onward and the vaccination rates in pregnancy or immediately after childbirth are described.

RESULTS: From May 17, 2020 to September 4, 2021, 1515 pregnant patients were diagnosed with COVID-19, and 7 (0.5%) had reinfection >90 days after the initial infection during pregnancy. The infections included 690 (45%) patients from labor and delivery or inpatient units, 383 (25%) outpatient, 167 (11%) emergency department, and 282 (19%) external tests. Furthermore, 82 (5.4%) cases with severe or critical illness during pregnancy, with 11 (0.7%) requiring mechanical ventilation, 2 (0.1%) maternal deaths whose neonates survived, and 2 (0.1%) fetal-neonatal deaths associated with maternal critical illness, were included.

FIGURE

Number and severity of weekly COVID-19 cases diagnosed in pregnancy May 17, 2020 through September 4, 2021



A, Weekly case counts and percent of severe or critical COVID-19 illnesses in pregnancy at Parkland Hospital, May 17, 2020 to September 4, 2021. Data after the *dotted line* considered preliminary. Delta (B.1.617.2) variant predominance shown in blue; the last week includes sequencing through August 30, 2021. **B**, LOESS of percent of severe or critical COVID-19 illnesses in pregnancy with 95% CI shown ($P=.001$ for trend), May 17, 2020 to September 4, 2021.

CI, confidence interval; LOESS, locally weighted smoothing scatterplot.

Adhikari. Increasing severity of COVID-19 in pregnancy with the Delta variant surge. *Am J Obstet Gynecol* 2022.

The proportion of pregnant patients with severe to critical illness increased in April 2021; the total number of cases, however, remained low (Figure). As the Delta (B.1.617.2) variant predominated locally, both the case volume and the proportion of severe or critical illnesses increased significantly ($P=.001$ for trend), with over a quarter of pregnant patients who were diagnosed between August 29, 2021 and September 4, 2021 requiring admission for severe or critical illness.

Vaccination with any of the COVID-19 vaccines authorized for emergency use was examined in this cohort. Among 665

still pregnant patients or those who had just given birth when the vaccines were available, 142 (21.4%) received at least 1 dose of an available vaccine, including 39 before infection, 99 after infection, and 4 administered between repeat infections. One infected patient was hospitalized for severe COVID-19 after being vaccinated; this patient had a body mass index of 61 kg/m².

CONCLUSION: Increased morbidity was observed in pregnancy with COVID-19 during the recent surge associated with the Delta variant, particularly in an underserved pregnant

population where vaccine acceptance is low.³ The overall rates of severe or critical illness in this cohort are consistent with the previously published data from our institution.⁴ However, recent trends demonstrate that along with increasing case volume, the proportion of cases requiring hospitalization is rising. The potential pathophysiologic mechanisms for the increased severity of illness with B.1.617.2 in pregnancy are unclear. Our results highlight the urgency of the requirement of prevention measures including COVID-19 vaccination during pregnancy. ■

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