Clinical Pearl: Maternal COVID-19 Infections

Pyone David, MD, MSW

"COVID-19 was initially seen as an adult problem, thankfully sparing children at the pandemic's beginning. That mindset has changed, especially as pediatricians worldwide faced the "tripledemic" this respiratory season."

As the third year of the COVID-19 pandemic persists, I have reflected on both the progress and limitations. Like many pediatric trainees during the beginning of the pandemic, I faced the difficulty of managing a condition with relatively little published data in the neonatal population. COVID-19 was initially seen as an adult problem, thankfully sparing children at the pandemic's beginning. That mindset has changed, especially as pediatricians worldwide faced the "tripledemic" this respiratory season.

With the initial paucity of research, the American Academy of Pediatrics (AAP) guidance on infants born to mothers with suspected or confirmed COVID-19, published on April 2, 2020, was celebrated, carefully studied, and adhered to in my hospital's nursery and NICU. Utilizing published reports from China describing deliveries from pregnant women with COVID-19 and their neonatal outcomes, the members of the AAP Section on Neonatal-Perinatal Medicine, Committee on Infectious Disease, and Committee on the Fetus and Newborn combined this information with current Centers for Disease Control and Prevention to come up with its recommendations (1). The recommendations for safety precautions, isolation, testing, discharge, and visitation are similar in the most current iteration published November 10, 2022 (1-2).

Some of the most controversial recommendations have been reversed as additional studies emerged. In the original guidance, separation of the newborn from the mother was recommended even if there was no other medical indication (1). Although the studies at that time had not detected the virus in breast milk, it was also recommended that mothers express milk and have not infected caregivers feed the baby directly out of an abundance of precaution (1). These two recommendations were highly controversial and impacted families' early bonding periods. Based upon new research showing no significant association with neonatal infection risks, the new AAP guidance now recommends rooming in with precautions and breastfeeding when medically appropriate (2).

As greater attention and research were focused on neonatal outcomes, some concerning associations have been seen in the literature. Maternal COVID-19 infection has been found to be associated with an increased risk of numerous complications for infants, especially if infection occurs near the delivery date. These complications include increased risk of fetal demise, preterm birth, NICU admission, respiratory conditions, and mortality (3-6). Specific respiratory concerns for neonates include respiratory distress syndrome, pneumonia/bronchiolitis, apnea of prematurity, bronchopulmonary dysplasia, transient tachypnea of the newborn, and meconium aspiration (6).

The exact pathophysiology related to the relationship between maternal COVID-19 and neonatal complications is still being investigated. However, COVID-19 is associated with maternal systemic inflammatory response and placental inflammation. These maternal issues may contribute to preterm birth, fetal growth restriction, and risk of fetal demise (3).

"Preventing COVID-19 infections during pregnancy to mitigate these impacts remains challenging. Vaccine hesitancy, especially among pregnant women, remains despite the scientific research completed (7). The lockdowns and strict social distancing are part of a bygone period."

Preventing COVID-19 infections during pregnancy to mitigate these impacts remains challenging. Vaccine hesitancy, especially among pregnant women, remains despite the scientific research completed (7). The lockdowns and strict social distancing are part of a bygone period.

References:

1. Wyckoff, A. *AAP News*. AAP issues guidance on infants born to mothers with suspected or confirmed COVID-19. April 2, 2020. https://publications.aap.org/aapnews/news/6713

2. American Academy of Pediatrics. *COVID-19 Interim Guidance.* FAQs: Management of Infants Born to Mothers with Suspected or Confirmed COVID-19. November 10, 2022. https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/faqs-management-of-infants-born-to-covid-19-mothers/

3. Newton, S.M., Reeves, E.L., O'Malley Olsen, E. *et al.* Preterm birth among pregnant persons with severe acute respiratory syndrome Coronavirus 2 infection. *J Perinatol* **42**, 1328–1337 (2022). https://doi.org/10.1038/s41372-022-

01467-6

4. AMA Griffin I, Woodworth KR, Galang RR, et al. Recurrent SARS-CoV-2 RNA Detection after COVID-19 Illness Onset during Pregnancy. *Emerging Infectious Diseases*. 2022;28(4):873-876. doi:10.3201/eid2804.212354.

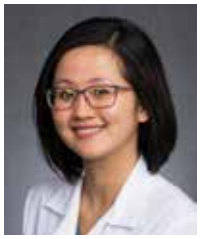
5. Woodworth KR, Olsen EO, Neelam V, et al. Birth and Infant Outcomes Following Laboratory-Confirmed SARS-CoV-2 Infection in Pregnancy — SET-NET, 16 Jurisdictions, March 29–October 14, 2020. MMWR Morb Mortal Wkly Rep 2020;69:1635–1640. DOI: http://dx.doi.org/10.15585/mmwr.mm6944e2

6. Giuliani F, Oros D, Gunier RB, et al. Effects of prenatal exposure to maternal COVID-19 and perinatal care on neonatal outcome: results from the INTERCOVID Multinational Cohort Study. *Am J Obstet Gynecol*. 2022;227(3):488.e1-488.e17. doi:10.1016/j.ajog.2022.04.019

7. Halasa NB, Olson SM, Staat MA, et al. Effectiveness of Maternal Vaccination with mRNA COVID-19 Vaccine During Pregnancy Against COVID-19–Associated Hospitalization in Infants Aged <6 Months — 17 States, July 2021–January 2022. MMWR Morb Mortal Wkly Rep 2022;71:264–270. DOI: http://dx.doi.org/10.15585/mmwr.mm7107e3

Disclosures: The author has no disclosures

NT



Pyone David, MSW, MD
Neonatal Fellow
University of Chicago School of Medicine
Chicago, IL
email: Pyone.David@uchicagomedicine.org