Maternal-fetal immunologic response to SARS-CoV-2 infection in a symptomatic vulnerable population: A prospective cohort

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To the Editor:

We read with great interest the article by Larcade et al. on maternal-fetal immunologic responses to SARS-CoV-2 infection in a symptomatic vulnerable population: A prospective cohort (1). We would like to raise a few concerns for further discussion.

First of all, we are curious whether too much time had elapsed between initial symptom onset to the delivery time. A previous study showed that people with COVID-19 are unlikely to be infectious ≥10 days after symptom onset, so long as they do not have any risk factors for prolonged infectivity (2). The longer the time gap between symptom onset to giving birth, the more likely pregnant women are to be non-contagious to the baby. Including mothers who were not a potential risk for virus transmission to their neonates could complicate interpretation of the results.

Secondly, it should be noted that labor, and particularly pushing, often causes loss of feces, which can contain SARS-CoV-2, as shown in a previous study (3). Given that the authors did not delineate delivery methods among participants, vaginal births vs. cesarean section, in their analysis, it is difficult to conclude whether neonates were infected via placenta or feces. We suggest further stratifying the participant results based on delivery type to better understand the pathway of virus transmission during labor.

Finally, a single polymerase chain reaction (PCR) test may not be sufficient to differentiate whether there is superficial contamination or actual neonatal infection. A previous study showed that definitive diagnosis of in utero infection requires a positive diagnostic test near the time of birth that is confirmed with a second positive specimen, while definitive diagnosis of intrapartum infection requires a negative diagnostic test near the time of birth, with a later test in the first few days after birth being positive and confirmed by a later second specimen (4). This indicates that two tests are ideal for a better understanding of the source of infection. Thus, we suggest a combination of initial and secondary tests to determine infection occurrence and timing.

Given the ongoing COVID-19 pandemic, this study highlights the ongoing concerns about potential risks of maternal-fetal virus transmission. Accounting for the optimal timing of sample collection, controlling for labor variability by dividing into groups, and increasing precision by additional testing may impact the results and conclusions of this study.

References:

1. Larcade, R., et al. (2021). "Maternal-fetal immunologic response to SARS-CoV-2 infection in a symptomatic vulnerable population: A prospective cohort." J Infect Dis.
2. Owusu, D., et al. (2021). "Persistent SARS-CoV-2 RNA Shedding Without Evidence of Infectiousness: A Cohort Study of Individuals With COVID-19." J Infect Dis **224**(8): 1362-1371.
3. Wang, W., et al. (2020). "Detection of SARS-CoV-2 in Different Types of Clinical Specimens." Jama **323**(18): 1843-1844.
4. WHO scientific brief. Definition and categorization of the timing of mother-to-child transmission of SARS-CoV-2. February 8, 2021 https://www.who.int/publications/i/item/WHO-2019-nCoV-mother-to-child-transmission-2021.1 (Accessed on February 11, 2021).