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Newborns Born to Omicron-Infected: Mothers having Low-Birth Weight and Respiratory Distress

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Description

The coronavirus disease 2019 (COVID-19) is a critical infectious disease, identified in December 2019; various mutations of COVID-19 have developed since then. Its mutants have differences in infectivity, virulence, and antigenicity. Since December 2021, omicron variant has become the dominant variant, in South Korea. Other than previous variant, omicron variant has higher infectivity, but lower virulence. Since then, Korean Disease Control and Prevention Agency (KDCPA) suggested new COVID-19 treatment guideline, which doesn't need to outdoor facial mask, non-face-to-face meeting. And then, South Korea's COVID-19 infection rate increased again, also in pregnant woman. By Korean Society of Pediatric Infectious Diseases guidelines, all COVID-19 mothers' newborn need isolation in negative-pressure room, so they are admitted in neonatal intensive care unit. Although novel coronavirus (nCoV) studies were ongoing, its impact on humans remains unknown. Research of COVID-19 effects on newborns is ongoing. But the research of specific variant dominant period is none.

So, we analyzed the effects of the omicron variant on the perinatal outcomes of full-term newborns during the omicron wave period. We analyzed a data in single tertiary center. For COVID-19 control, all mothers of newborns were tested for 2019 nCoV before delivery or within 24 hour of hospitalization. We investigated maternal pregnancy complications, delivery methods, birth week, Apgar scores, Neonatal Resuscitation Program (NRP) requirement, whether respiratory support was required until 12 hour after childbirth, suspicious infectious status, and mortality depending on maternal omicron infection.

We analyzed total of 127 neonates, and 12 were excluded based on exclusion criteria. Sixteen neonates were born to mothers with a history of omicron COVID-19, and 99 were born to non-infectious mothers. All infected mothers became infected in the 3rd trimester. Of the 16 mothers, seven were symptomatic, and four met the isolation criteria, according to KDCPA guidelines. The birth weight of newborns to mothers with a history of COVID-19 and those without was 2.958 ± 0.272 kg and 3.064 ± 0.461 kg (p=0.049), respectively. The 5-min Apgar score at childbirth was 9.29 ± 0.756 and 9.78 ± 0.460 for neonates born to symptomatic and asymptomatic mothers (p=0.019), respectively. When compared with or without maternal self-isolation, neonates requiring respiratory support 12 h after birth demonstrated a significant difference (p=0.014; OR, 10.275). Additionally, the presence or absence of transient tachypnea of the newborn showed a significant value (p=0.010; or 11.929).

Owing to omicron COVID-19, newborns were born with lower birth weight, low 5-min Apgar scores, and required respiratory support until 12 hour after birth. So, it is necessary for the health of the newborn to minimize the risk of infectious disease such as COVID-19 by paying more attention to the environment as the time of delivery approaches. In addition, medical institutions that treat infected mothers and children should be equipped with personnel and equipment to prepare for emergency situations such as respiratory depression along with thorough preparation for quarantine. This study is meaningful in that it confirmed that the mother's coronavirus infection can affect the child's health, although vertical transmission of the virus was not observed in newborns. This study is also significant in that it is the first study to analyze the effects of specific variants, such as omicron mutations, on the health status of newborns among coronaviruses.

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