COVID-19 Vaccine During Pregnancy Does Not Increase Postnatal Complications in Premature Infants

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Background

COVID-19 vaccine given during pregnancy is safe and effective and is not associated with premature delivery or perinatal complications. However, the effect of maternal vaccine on premature infants is unknown.

Objective

This study aims to determine the association between maternal COVID-19 vaccine and postnatal outcome in premature infants.

Methods

This is a single-centre retrospective case-control study of premature infants born before 35 weeks' gestation. We compared infants born to mothers who received Pfizer BNT162b2 SARS-CoV-2 vaccine during pregnancy to infants born to non-vaccinated mothers. Perinatal characteristics and postnatal complications were compared between the groups.

Results

Seventy-eight infants born to vaccinated mothers between May 2020 and October 2021 were matched with infants born to non-vaccinated mothers. First vaccine was given at 15 (11-18) weeks' gestation. No increase in postnatal complications was observed in the vaccinated group. However, in this group respiratory distress syndrome (RDS) and the need for non-invasive respiratory support (NIPPV) were less frequent (P=0.02, P=0.002, respectively). Maternal vaccine had a protective effect on RDS [adjustable OR 0.38 (0.17-0.85), P = 0.02].

	Control group	Study group
	n=78	n=78
Any postnatal respiratory complication	43 (55)	25 (32) *
RDS	**34 (43)**	**21 (26)** *
NIPPV	44 (57)	25 (32) *
NIPPV ≥ 3 days	31 (40)	15 (19) *
Mechanical ventilation	11 (14)	8 (10)
Bronchopulmonary Dysplasia	4 (5.3)	2 (2.6)

Table 1. Postnatal outcomes. Values presented as n (%), *P < 0.05

Conclusion

We demonstrated that maternal SARS-CoV-2 vaccine is not associated with postnatal adverse effect in premature infants and potentially has a protective effect on RDS and the need for non-invasive respiratory support. Fetuses exposed to chronic intrauterine mild to moderate inflammation or mild hypoxemia have accelerated lung maturation and less RDS. We cautiously speculate that SARS-CoV-2 vaccine could induce a mild inflammatory reaction and thus result in acceleration of lung maturation. Our findings might suggest that COVID-19 vaccine is safe in high-risk pregnancies for premature delivery. Further studies are needed to confirm our findings and the biological mechanism.

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