

Persistence of anti-spike antibody in samples from 6-month infants correlates with anti-S IgG placental transfer ratio in a Brazilian Cohort

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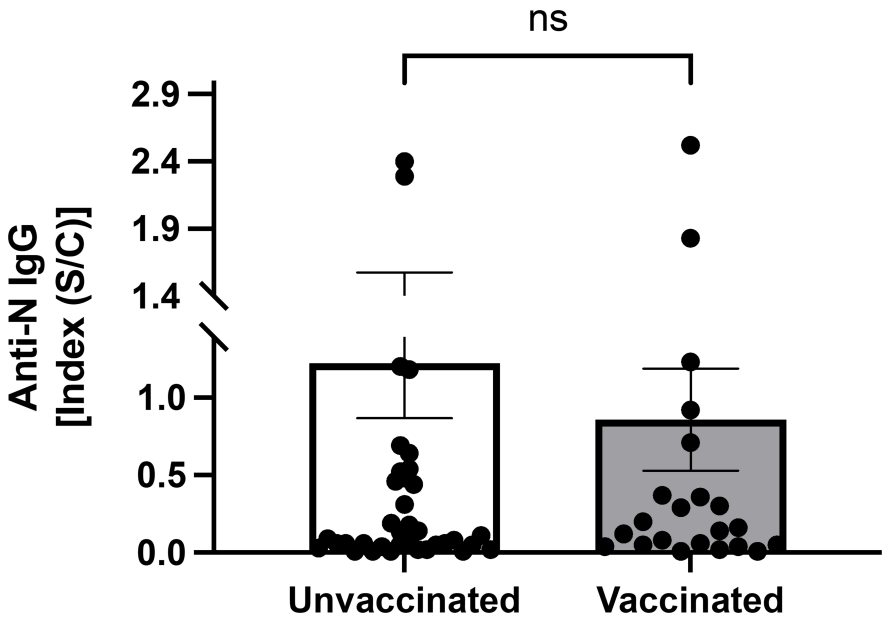
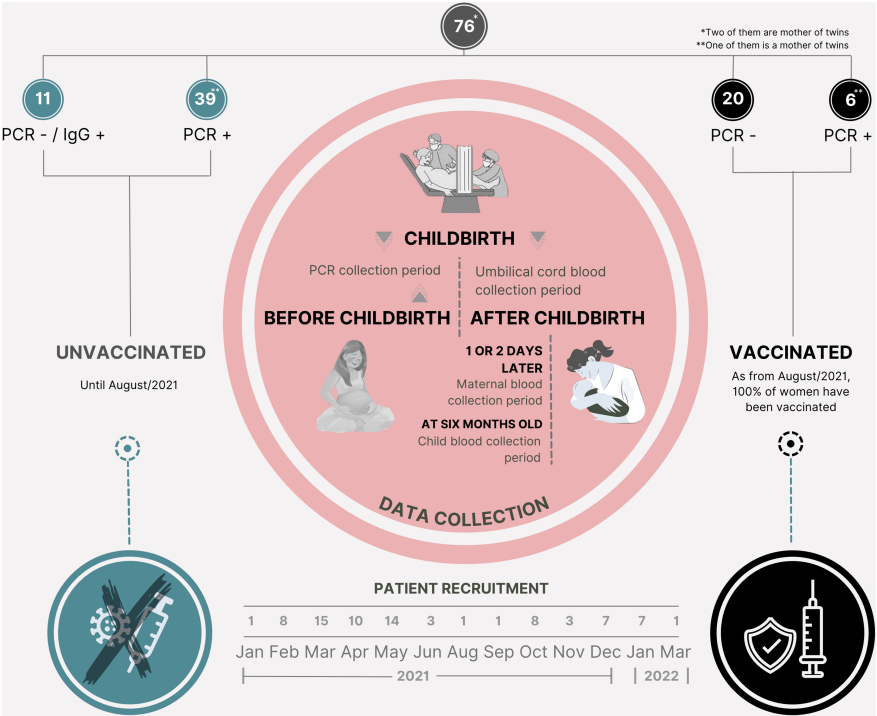
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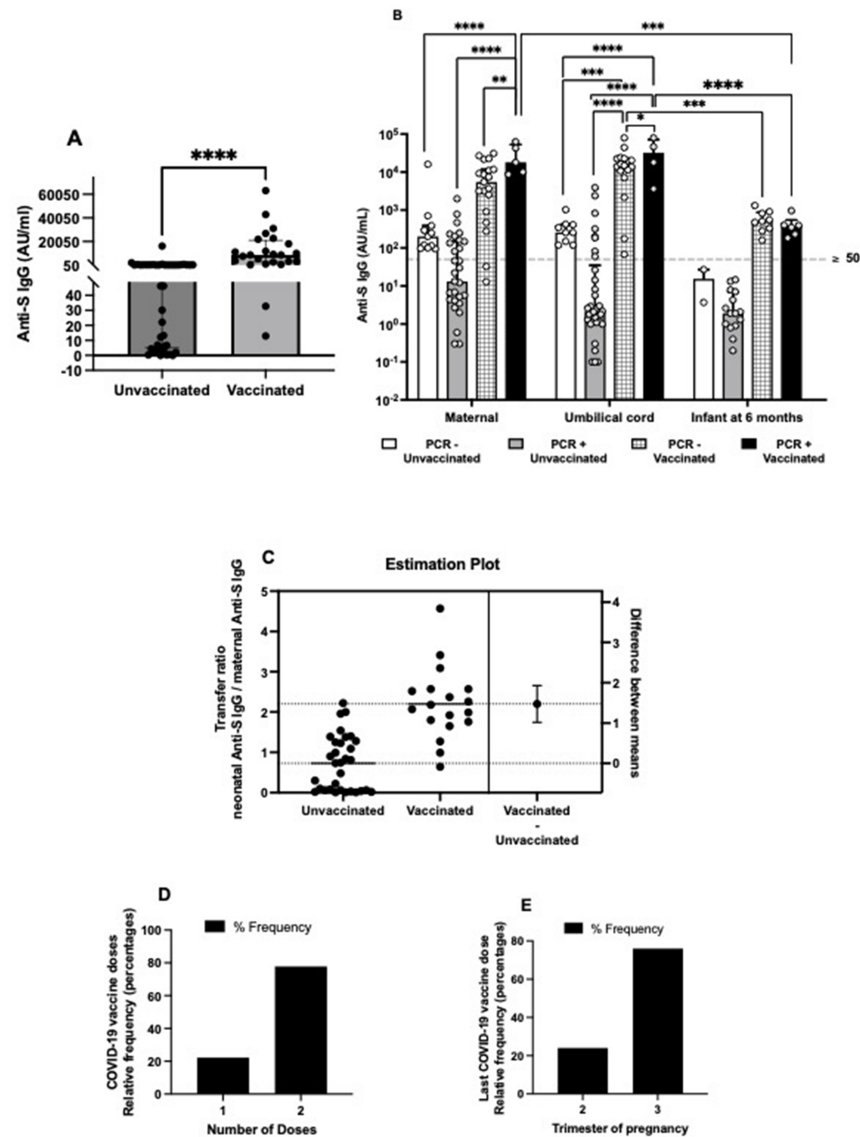
Abstract

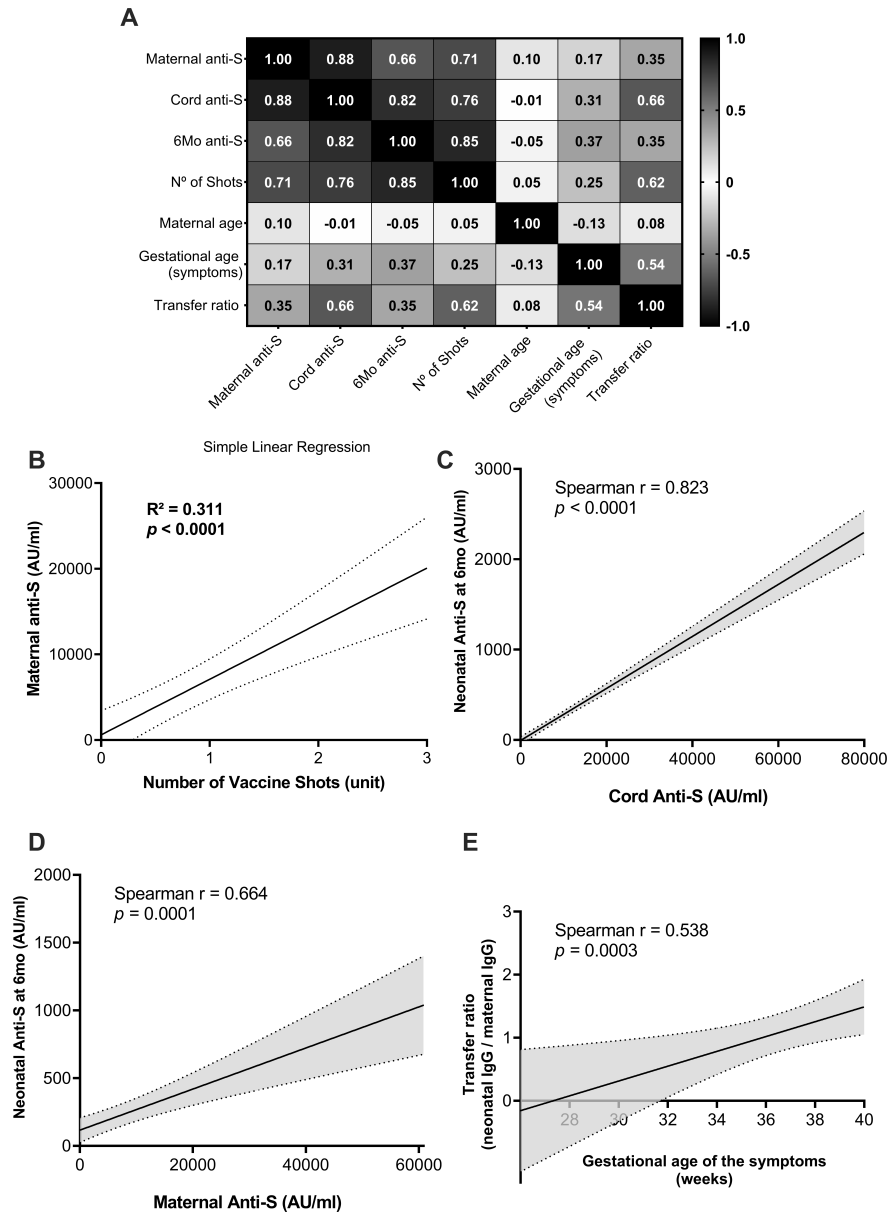
The precise effects of infection and maternal vaccination during pregnancy on the fetus remain uncertain. Therefore, this study aims to investigate the immunological responses triggered by SARS-CoV-2 exposure or vaccination in pregnant women. However, we also evaluated the vertical antibody transmission and the persistence of immunity in infants up to six months post-birth. The study recruited pregnant women admitted for labor and delivery in Fortaleza, Brazil, between January 2021 and March 2022. Participants aged 18 or older with flu-like symptoms were included. Nasopharyngeal swabs and blood samples were collected for COVID-19 testing and antibody detection for the viral Nucleocapsid (N) and Spike (S) of SARS-CoV-2. Participants were categorized as Unvaccinated or Vaccinated, and further divided based on PCR test results. Blood or plasma samples were collected at birth and from infants at six months postpartum. We included 76 mother-infant dyads, 11 in the unvaccinated/PCR-/IgG+, 39 in the unvaccinated/PCR+, 20 in the vaccinated/PCR- and 6 in the vaccinated/PCR+. Analysis of maternal serological profiles showed no significant differences in anti-N IgG levels between unvaccinated and vaccinated groups. However, anti-S IgG titers were significantly higher in vaccinated mothers. The ratio of anti-S IgG antibody transfer from vaccinated mothers to infants was notably higher, especially in the Unvaccinated/PCR+ group compared to the Vaccinated/PCR- group. Furthermore, infants born to vaccinated mothers maintained seroconversion at six months, while those born to unvaccinated mothers did not. Maternal vaccination, particularly during the second trimester, results in a significantly higher transplacental transfer ratio. This leads to elevated anti-S IgG antibody levels in cord blood and infants at six months of age. The study emphasizes the importance of vaccination protocols in optimizing antibody transfer and persistence.

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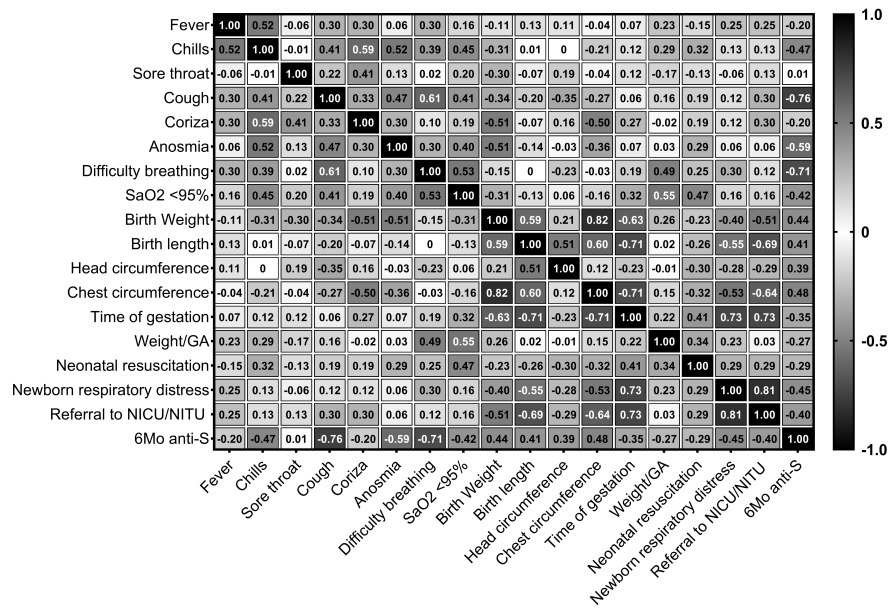
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Correlation between Symptoms and Neonatal Outcome



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