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Case Study

Evidence of Maternal Transfer of Sars-Cov-2 Antibodies after a Single Dose of Astrazeneca Covid-19 Vaccination during Pregnancy: A Case Study

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Maternal transfer of SARS-CoV-2 antibodies after COVID-19 vaccination may provide the new-born with passive protection from COVID-19. Studies by Maryamsadat et al [1] and Shimabukurro et al [2] in 2021 have assessed maternal transfer of SARS-CoV-2 antibodies after COVID-19 mRNA vaccine, with nearly all data originating from high income, non-black populations. Many Low and Middle-Income Countries (LMIC) are reliant on the adenovirus-vectored AstraZeneca COVID-19 vaccine (AZD1222) but studies of pregnant women receiving this vaccine are lacking. Many COVID-19 vaccine trials have excluded pregnant and lactating women. Studies by Gray et al [3], Beharier et al [4], Norman et al [5] in 2021 have demonstrated maternal transfer of SARS-CoV-2 antibodies but no studies were done with AZD1222.

The American College of Obstetrics and Gynaecology (ACOG) [6], the Royal College of Obstetrics and Gynaecology (RCOG) [7] and the Centers for Disease Control and Prevention (CDC) [8] recommends that pregnant individuals be vaccinated against COVID-19. The preference is for the Pfizer-BioNTech (BNT162b2) and Moderna (mRNA-1273) mRNA vaccines where available (RCOG), with limited studies documenting safety of AZD1222 use in pregnancy. We describe a neonate who was delivered in April 2021 (38 weeks gestation) via Lower Segment Caesarean Section (L.S.C.S) to a 38-year-old Gravida 2 mother of African descent vaccinated with AZD1222 at 34 weeks of pregnancy.

The antenatal period was unremarkable with normal antenatal serology (VDRL non-reactive and negative for HIV, HBV and HCV) and no history of diabetes, hypertension, urinary tract infections or any known viral illnesses. Smoking, alcohol abuse and illicit drug use were not reported. Harmony testing was not done. Significant findings from three fetal anomaly scans were that of bilateral ureteropelvic junction obstruction L > R. Serum from the mother (taken just prior to surgery at 38 weeks gestation) and cord blood was tested for SARS-CoV-2 nucleocapsid-specific and spike-specific Receptor Binding Domain (RBD) IgG via an Abbott Architect *i*2000SR instrument. There was no evidence of previous SARS-CoV-2 infection as SARS-CoV-2 nucleocapsid-specific IgG was negative in the mother. SARS-CoV-2 rapid antigen tests performed during the first, second and third trimester, and PCR done prior to delivery per hospital guidelines, were all negative. SARS-CoV-2 spike RBD IgG was 1650.3 AU/mL in the mother's sample and 263.6 AU/mL in cord blood. The lower SARS-CoV-2 IgG level in the new-born is similar to what has been reported previously for maternal antibody transfer after a single

dose of the Pfizer-BioNTech mRNA vaccine according to Beharier et al in 2021 [4].

This case provides evidence of passively transferred SARS-CoV-2 spike RBD antibodies from mother to new born in the third trimester after a single dose of the AstraZeneca COVID-19 vaccine, indicating the potential usefulness of even a single dose of AZD1222 late in pregnancy.

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