VAC_14 - Evaluation of Humoral Response to SARS-CoV-2 after Two-Doses of the ChAdOx1 nCoV-19 Vaccine (Astrazeneca) in a Cohort from Rio de Janeiro, Brazil

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Introduction: The pandemic caused by SARS-CoV-2 has been challenging the public health system worldwide. Besides this, vaccination is presenting itself as the most effective alternative against the virus nowadays. In this regard, it is critical to identify and quantify neutralizing antibodies (NAbs) against SARS-CoV-2 in order to understand their specific role during the immune response in naïve or infected individuals pre-and post-vaccination.

Objective: To assess the level of neutralizing/total antibodies against SARS-CoV-2 in samples obtained from vaccinated participants through PRNT and ELISA methods.

Methodology: Between January and September 2021, blood samples were taken from participants in Rio de Janeiro, Brazil. Serum samples were incubated with viral suspension (v/v), transferred to plates with cell monolayer and incubated for 3 days. ELISA was procedure as described by the manufacturer, Promega®. Statistical analyses were performed using R Software.

Results: The PRNT results were comparable to those obtained with an ELISA kit in general with a good correlation (R=0.88). Participants that reported prior SARS-CoV-2 infection showed high levels of both total IgG and NAbs when compared to naïve-vaccinated donors. Previous infection leads to a 6 and 11-fold increase in total IgG titers and in NAbs, at 7 days post- vaccination, respectively. In addition, antibody levels increased over time, until reaching the highest level 30 days after the second immunized dose in all vaccinated but showed NAbs titers 6-fold higher in individuals with previous infection with SARS-CoV-2 than naïve vaccinated donors.

Conclusion: Our findings, with a Brazilian cohort, support the WHO recommendation to vaccinate the population with two doses of ChAdOx1 nCoV-19 vaccine to trigger an increase in both overall humoral response and the specific response of neutralizing antibodies. Besides this, our data suggest that prior natural infection provided a booster of humoral response. Certainly, the length of this humoral response and the correlate-of-protection are still need further explored.

Keywords: PRNT; ELISA; ChAdOx-nCoV-19