VAC_12 - Inflammatory and cytotoxic mediators in COVID-19 patients and in ChAdOx1 nCoV-19 (AZD1222) vaccine recipients

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Introduction: Immunological and cytotoxic mediators are induced in natural infection and are essential for the effectiveness of vaccination. Vaccination is useful to prevent the spread of SARS-CoV-2 and limit the morbidity/mortality of COVID-19. ChAdOx1 nCoV-19 is one of the most widespread vaccines in the world.

Objectives: We compared the detection of anti-S1 SARS-CoV2 IgG, and the profile of inflammatory and cytotoxic responses of patients who developed different clinical outcomes of COVID-19 with individuals previously exposed or not to the virus received the first and booster doses of ChAdOx1 nCoV-19.

Methodology: Plasma from 35 patients with COVID-19 and 11 vaccinated were evaluated by multiplex and ELISA assays.

Results: Here, no vaccinated subjects had serious adverse effects. Those vaccinated with a booster dose had lower anti-S1 IgG than mild/moderate and recovered patients. Critically ill and deceased patients had IgG levels like those immunized. IL-2, IL-17, and perforin do not differentiate between patients and vaccinated individuals. Granzyme A increased at dose 1, while patients had their levels reduced. High levels of granulysin, Fas, and IL-6 were detected in the deaths, but after vaccination, all were declined.

Conclusion: Our data confirm the ability of the ChAdOx1 vaccine to produce specific antibody levels up to booster time. Furthermore, our data suggest that the vaccine can regulate both the hyper-production and the kinetics of the production of inflammatory and cytotoxic mediators involved in the cytokine storm, such as granulysin, Fas, and IL-6.

Keywords: Covid-19, ChAdOx1 nCoV-19 Vaccine, Inflammatory mediators and Cytotoxic mediators