COVID-19 Vaccination in Immunocompromised Persons: Challenges in COVID-19 Control and Prevention

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Editorial

Preliminary data of phase II/III clinical trials of BNT162b2 (Pfizer/BioNTech) and mRNA-1273 (Moderna) vaccines those were investigated in more than 50 million COVID-19 cases and 1.35 million COVID-19 related deaths worldwide revealed to be about 95 % effective in COVID-19 prevention and both trials revealed more than 90 % of lowering the severe-COVID-19 illness risk, whereas theses clinical vaccine trials excluded immunocompromised patients, patients on immunosuppressive drugs, or those with immunosuppressive status [1-4]. BNT162b2 (Pfizer/BioNTech) and mRNA-1273 (Moderna) vaccines encode the RBD of SARS-CoV-2 (COVID-19) spike protein and the S-2P antigen, respectively [5,6]. A strong humoral response and strong cellular response were elicited by both vaccines through neutralizing-antibody production and a strong cellular response and through inducing Th1-cytokine production and functional and pro-inflammatory CD4+ and CD8+ T-cells, respectively [5,6]. Methotrexate and rituximab can decrease the neutralizing-antibody-to-neoantigen production, such as SARS-CoV-2 (COVID-19) that have been demonstrated the reduction of humoral responses to pneumococcal and seasonal influenza vaccines [7,8]. Hypothetically, humoral suppression by methotrexate is mediated by increasing regulatory B cells and immunosuppressive adenosine and interaction with the B-cell Activation Factor.
(BAF) and with significant improvement by temporarily discontinuing for 2 weeks post-influenza vaccination, whereas rituximab directly suppresses CD20+ B-cells that is significant humoral-response-to-polysaccharide-pneumococcal-vaccination reduction and significant decrease in the immune response to neoaogen [9-11].

In conclusion, rituximab and methotrexate on immune response of a SARS-CoV-2 (COVID-19) vaccine are to be investigated, yet. Two weeks of holding methotrexate and a few weeks of scheduling after the COVID-19 vaccination are considered until the questions are answered by the further clinical trials.

**Conflicts of Interest**

The authors declare that have no competing interest and not any conflict of interest.

**References**