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Title: Humoral and cellular immune response to second and third severe acute respiratory syndrome coronavirus 2 mRNA vaccine in patients with plasma cell dyscrasia

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【Abstract】

The recently developed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) mRNA vaccine has a short history of use and further information is needed regarding its efficacy, especially in immunocompromised conditions, such as plasma cell dyscrasia.

Methods：We retrospectively measured serum SARS-CoV-2 antibodies against the spike protein (S-IgG) after the second and third mRNA vaccine doses (doses 2 and 3, respectively) in 109 patients with plasma cell dyscrasia. We evaluated the proportion of patients with an adequate humoral response (defined as S-IgG titers ≥300 antibody units/mL).

Results：Although active anti-myeloma treatments prior to vaccination had a significantly negative impact on adequate humoral response, specific drug subclasses including immunomodulatory drugs, proteasome inhibitors, and monoclonal antibodies were not negatively associated, except for B-cell maturation antigen-targeted therapy. Dose 3 (booster vaccination) led to significantly higher S-IgG titers and more patients acquired an adequate humoral response. Furthermore, evaluation of vaccine-induced cellular immune response in patients using T-spot Discovery SARS-CoV-2 kit, revealed an enhanced cellular immune response after Dose 3.

Conclusions：This study highlighted the significance of booster SARS-CoV-2 mRNA vaccination in patients with plasma cell dyscrasia with respect to humoral and cellular immunity. Moreover, this study highlighted the potential impact of certain drug subclasses on vaccine-induced humoral immune response.