Humoral response to Pfeizer mRNA vaccine against SARS CoV2, in patients with autoimmune inflammatory rheumatic diseases and the impact on the rheumatic disease activity

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Background: The registration trials of mRNA vaccines against SARS CoV2 did not address patients with autoimmune inflammatory rheumatic diseases (AIRD). Concerns were raised whether these patients can mount a protective immune response and whether the vaccination may trigger a flare up of the AIRD. Previous studies proved that protein based vaccines induce significant humoral responses in AIRD patients that reach protective antibody titers (1). However, the humoral response was blunted in patients treated with anti CD20 (2).

Aims: To assess the humoral response to mRNA vaccine against SARS CoV2, in AIRD patients treated with DMARDs and the impact on AIRD activity.

Methods: Consecutive patients treated at the rheumatology institute who received their first SARS-CoV-2 (Pfizer) vaccine were recruited to the study, at their routine visit. The visit included AIRD activity assessment and questioning regarding vaccine side effects. The patients were invited for serology tests 4-6 weeks after the second dose of vaccine. IgG Antibodies (Ab) against SARS COV2 virus were detected using the SARS-Cov-2 IgG II Quant (Abbott) assay based on a chemiluminescent microparticle immunoassay (CMIA) on the ARCHITECT ci8200system from Abbott. This assay measures IgG antibodies against the spike receptor-binding domain (RBD) of the virus. The test is considered positive above 50 AU/ml. The study was approved by the local ethical committee.

Results: 86 patients (mean age [SD) 61[12] years), mean (SD) disease duration 11.2 [8.6] years, were recruited;67 % received csDMARDs, 64% b/tsDMARDs and 31% steroids. 72 patients (84%) were seropositive for IgG Ab against SARS CoV2 virus (median 2832.5 AU/ml, range 58-29499). Fourteen (16%) patients had negative tests: 8 out of 13 rituximab treated patients

(1.5-12 months before), 2 out of 2 abatacept treated patients, 2 out of 7 patients treated with cellcept only, 1 out of 3 belimumab treated patients, and the only patient treated with obinutuzumab. The reported side effects of the vaccine were minor (muscle sore, headache, low grade fever). The rheumatic disease remained stable in all patients.

Conclusions: The vast majority of AIRD patients developed a significant humoral response following the administration of the second dose of the Pfeizer mRNA vaccine against SARS CoV2 virus. Only minor side effects were reported and no apparent impact on AIRD activity was noted. Notably, 86% of the non-responders were treated with B cell depleting agents.

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