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BACKGROUND: Patients with autoimmune inflammatory rheumatic diseases (AIIRD) may be subject to an increased incidence of infectious diseases, often carrying a worse prognosis [1]. Immune responses in AIIRD patients may be attenuated and affected by immunosuppressive treatments [2]. Data on the effect of immunosuppressive treatment on mounting of antibodies against SARS-CoV-2 in AIIRD patients is limited.

AIMS: 1. Prevalence of SARS-CoV-2 antibodies in AIIRD patients 2. Define clinical factors affecting seroprevalence 3. The influence of immunosuppression on seroprevalence 4. Monitor lasting antibody positivity over time

METHODS: A cross sectional study conducted at a tertiary rheumatology department in Israel. Consecutive patients completed a questionnaire and tested for SARS-CoV-2 anti-nucleoprotein IgG (N-IgG). If this was positive, an anti-S1/S2 spike IgG (S-IgG) test was done. If both were positive, the patient was considered seropositive. Seropositive patients were retested after 3 months.

The seroprevalence of SARS-CoV-2 in our AIIRD patients was 5.24%
Patients treated with bDMARDs had a lower seroconversion rate

	Negative Serology (n=542)	Positive Serology (n=30)	p-value
Total immunosuppression	407 (96.45)	15 (3.55)	≤0.01
GC	118 (96.72)	4 (3.28)	0.36
csDMARDs	262 (94.76)	14 (5.07)	1
bDMARDs	252 (97.3)	7 (2.7)	≤0.05
Anti CD-20	36 (100)	0 (0)	0.25

Table 1. Effect of immunosuppressive medications on SARS-CoV-2 seropositive rate.

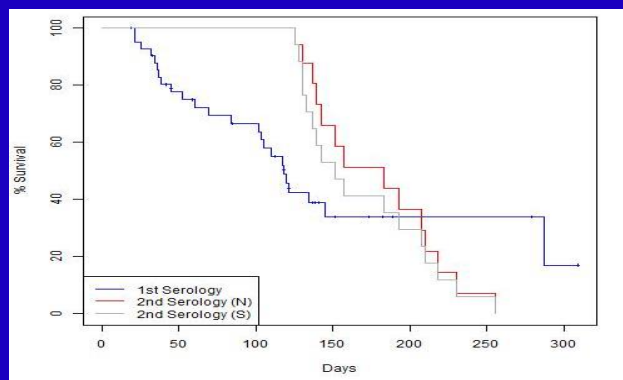


Figure 1. SARS-CoV-2 IgG survival in days from SARS-CoV-2 PCR test.

Time from positive-PCR to serology was significantly shorter for patients with detectable anti-SARS-CoV-2 antibodies

RESULTS: The study included 572 patients representative of AIIRD clinic patients (Figure 2). 43 patients were diagnosed as COVID-19 patients by PCR, for a prevalence of 7.5%. 30 patients had positive SARS-CoV-2 serology, for a seroprevalence of 5.24%. Of the positive PCR patients, 18 (41.9%) had negative serology.

Positive serology patients were not different from negative serology patients in regard to demographic and clinical characteristics or rheumatologic diagnosis. Immunosuppressive medications in general, and bDMARDs specifically were associated with lower seroprevalence (Table 1).

In the positive PCR group, the only factor associated with positive serology was a shorter time interval between the PCR and serology test (Figure 1).

After 3 months 100% (21/21) of patients still had a positive S1/S2-IgG test, and 85% (17/20) had a positive N-IgG test.

CONCLUSIONS: Humoral response to SARS-CoV-2 in AIIRD patients may be affected by immunosuppressive treatment, especially bDMARDs. Similarly to individuals without AIIRD, titers of SARS-CoV-2 IgG antibodies, especially N-IgG antibodies, fade with time, while S-IgG antibodies persist.

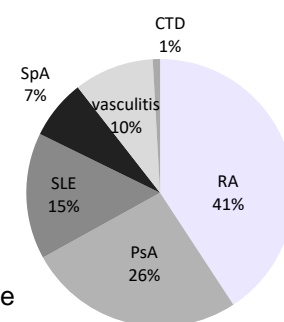


Figure 2. Diagnosis frequencies of participating AIIRD patients.

REFERENCES: 1. Furer V, et al. doi.org/10.1136/rmdopen-2019-001041. 2. Rondaan C, et al. doi.org/10.1136/rmdopen-2019-001035. 3. Simon D, et al. doi.org/10.1038/s41467-020-17703-6.

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