

Correspondence on 'SARS-CoV-2 vaccine hesitancy among patients with rheumatic and musculoskeletal diseases: a message for rheumatologists'

We read with great interest the letter recently published in *Annals of the Rheumatic Diseases* by Priori *et al.*,¹ who carried out an online survey among patients with rheumatic diseases to explore their willingness to receive the SARS-CoV-2 vaccination. An alarming high hesitancy was observed in nearly half of these patients.

This is particularly concerning as patients with autoimmune inflammatory rheumatic diseases (AIIRDs) are regarded as at higher risk for developing severe COVID-19 and, for this reason, they should be vaccinated with priority.^{2,3}

To date, four vaccines have been approved in Italy for COVID-19 but only three are currently available (ie, Pfizer/BioNTech, Moderna and AstraZeneca). Importantly, the European Alliance of Association for Rheumatology stated that all these vaccines can be used safely in patients with AIIRDs as well as in patients receiving immunosuppressive treatment.⁴ Similarly, the Italian Society of Rheumatology (Società Italiana di Reumatologia) produced a document (last update: 13 March 2021) to confirm the safety of all the SARS-CoV-2 vaccines for patients with AIIRDs.⁵

In recent weeks, AstraZeneca vaccine is undergoing an unprecedented media firestorm following reports on its possible association with venous thromboembolism.⁶ With this regard, the European Medicines Agency has stated that the overall benefits of AstraZeneca vaccine in preventing COVID-19 outweigh the risks of side effects in the general population.⁷

Our aim was to explore the willingness to receive SARS-CoV-2 vaccines among patients with AIIRDs, as well as their eventual reasons for declining and preferences on the different available vaccines.

From 1 April to 13 April, we performed a phone survey among patients with AIIRDs followed-up at the Rheumatology Unit of "Carlo Urbani" Hospital in Jesi (Ancona, Italy), Polytechnic University of Marche. All patients provided their informed consent for the use of their anonymous data. For statistical analyses, Mann-Whitney test, χ^2 test and multivariate logistic regression analysis were used (two-sided, significance level <0.05). The analyses were performed with SPSS (V.26).

The following questions were asked to the patients:

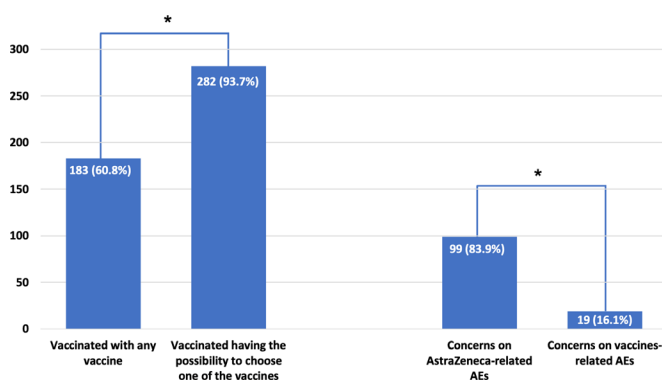


Figure 1 Vaccination acceptance among patients with autoimmune inflammatory rheumatic diseases (on the left) and main reasons for declining (on the right). All the comparisons (*) are significant ($p < 0.01$). AEs, adverse events.

- ▶ Would you agree to be vaccinated with any of the SARS-CoV-2 vaccines currently available in Italy (ie, Pfizer/BioNTech, Moderna and AstraZeneca)?

In case of negative answer, the following questions were asked:

- ▶ Why not?
- ▶ Would you agree to be vaccinated having the possibility to choose one of the SARS-CoV-2 vaccines among those currently available in Italy? If YES, which one(s) would you choose?

A total of 301 patients agreed to participate in this survey. Demographic and clinical data are shown in online supplementary table S1. The willingness to potentially receive any of the SARS-CoV-2 vaccines was reported by 183 out of 301 (60.8%) patients, similarly to what observed by Priori *et al.*¹ Concerns about AstraZeneca-related adverse events were the main reason for declining; indeed, 99 out of 118 (83.9%) patients who declined would have accepted to be vaccinated if they were given the option to choose a different vaccine (Pfizer/BioNTech or Moderna) (figure 1). Only 19 patients declined because of fear of vaccines-related adverse events (16.1%).

The decision of accepting or declining vaccination was not associated with any of the demographic and clinical variables evaluated (eg, age, gender and education) (online supplementary table S2).

The main result of our survey is that the decision of accepting or declining vaccination is heavily influenced by the type of vaccine. While the great majority of patients would accept the possibility to get vaccinated either with Pfizer/BioNTech or Moderna (93.7%), almost one-third would refuse vaccination because of concerns regarding AstraZeneca vaccine (32.9%).

Our data clearly highlight the discrepancy between what is perceived by patients with AIIRDs and the recommendations coming from international scientific societies regarding the safety of AstraZeneca vaccine. This might be explained by the uncertainty generated by conflicting messages from mass media, social media and controversial decisions by political institutions. The prevalence of AstraZeneca-related venous thromboembolism is low (approximately four cases per million⁷) and its prevalence does not seem to exceed the expected incidence rate in the general population.⁸

Our results raise the need of promoting initiatives to defeat AstraZeneca vaccine scepticism among patients with AIIRDs. Rheumatologists should actively inform their patients on benefits and risks of SARS-CoV-2 vaccine, as recommended by national and international scientific societies. In this context, two recent studies have demonstrated that rheumatologists have the potential to increase the willingness of patients with AIIRDs to receive vaccination; in these studies, 9%–20% of patients with AIIRDs would have reconsidered their refusal of vaccination on recommendation by their treating physician.^{9,10} Moreover, Priori *et al.* showed that patients with AIIRDs would be significantly more willing than healthy controls to reconsider their decision if they were provided more medical education.¹ This is particularly relevant in view of the fact that one of the possible future scenarios includes the need for periodical revaccination.¹¹

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Table S1. Demographic and clinical data.

Variable	Value
Age (years), mean \pm SD	56 \pm 13
Male/female ratio	1:1.6
Education, n (%)	
Primary school	32 (10.6%)
Middle school	108 (35.9%)
High school	118 (39.2%)
College/University	43 (14.3%)
Disease, n (%)	
Rheumatoid arthritis	116 (38.5%)
Psoriatic arthritis	82 (27.2%)
Ankylosing spondylitis	41 (13.6%)
Systemic sclerosis	24 (7.9%)
Systemic lupus erythematosus	9 (2.9%)
Giant cell arteritis	6 (1.9%)
UCTD	4 (1.3%)
Sjogren's syndrome	3 (0.9%)
Polymyalgia rheumatica	3 (0.9%)
Other (i.e. overlap syndrome, APL syndrome, ANCA vasculitis, sarcoidosis)	13 (4.3%)
Current treatment, n (%)	
conventional DMARDs	123 (40.9%)
biologic DMARDs	203 (67.4%)

Abbreviations. ANCA: Anti-neutrophil cytoplasmic autoantibody, APL: antiphospholipid; DMARDs: Disease-modifying antirheumatic drugs; SD: standard deviation; UCTD: undifferentiated connective tissue disease.

Table S2. Demographic and clinical predictors of vaccination acceptance.

Variable	Standardized beta coefficient	P value
Age	0.99	0.83
Sex	1.36	0.21
conventional DMARD	1.63	0.09
biological DMARD	1.30	0.37
Education	1.05	0.94

Abbreviation. DMARD: disease-modifying antirheumatic drug.