Real-world Coronavirus disease-19 vaccine hesitancy in systemic sclerosis

Sir,

We read with great interest the article by Ciaffi *et al*. describing their findings about Coronavirus disease (COVID)-19 vaccine hesitancy in patients with systemic sclerosis (SSc) (1). We wanted to share our real-life experience on COVID-19 vaccination acceptance in a large cohort of patients with SSc to help understand how to increase adhesion to vaccination campaigns in patients with this rare disease.

Between the 28th of March and the 29th of April 2021, a group of 135 consecutive patients with SSc suitable for vaccination according to the American College of Rheumatology guidelines (2) were offered vaccination with the BNT162b2 (Pfizer/BioNTech) COVID-19 vaccine at our facility at the Rheumatology Unit of University of Verona Hospital Trust.

All patients had a phone discussion about vaccination with their trusted rheumatologist and additional discussion time was allowed in case of uncertainty, as well as a short time (one week) to communicate adhesion. All patients agreed to share their decision about vaccination and to collect their clinical data.

The majority of patients with SSc (88.1%, 95% confidence interval: 82.8-93.4%) accepted to be vaccinated. Between the 13 patients refusing vaccination (11.9%), the most common reasons were generalised vaccine hesitancy (*e.g*., anti-vaxxers) (38.5%), fear of rheumatic disease worsening (15.4%), distrust specifically in COVID-19 vaccine (*e.g*., concerns related to the rapidity of vaccine production, doubt on its usefulness) (7.7%), fear of adverse reactions (7.7%), and fear of interaction with rheumatic therapies (7.7%). Three patients (23%) did not provide an explanation of their refusal.

Our data show a high real-world acceptance of COVID-19 vaccination in patients with SSc, confirming the findings of Ciaffi *et al*. (1). Patients with SSc perceive themselves at a higher risk of COVID-19 (3) and this could explain a generally positive attitude toward COVID-19 vaccination. We also believe our acceptance rate could have been enhanced by the chance to receive the vaccine at the usual infusion centre and, more importantly, by the availability of a trusted rheumatologist during the decisional process. Harrison *et al*. (4) have already shown the importance of the rheumatologist's role in the adhesion to the influenza vaccine campaign. Patients refusing vaccination were significantly younger than patients who accepted to get vaccinated for COVID-19 (63.2±13.6 *vs*. 56.4±10 years, p=0.049), as previously observed in patients with SSc for seasonal Influenza and Streptococcus pneumoniae vaccinations. (5) No difference in organ involvement or treatment was found in the two groups of patients (vaccinated *vs*. patients refusing vaccination), as summarised in Table I.

Table I. Demographic and clinical characteristics of patients with systemic sclerosis who were offered vaccination with BNT162b2 (Pfizer/BioNTech) COVID-19 vaccine.

	Accepting Vaccination n = 126	Refusing Vaccination n = 17	*p*-value
Socio-demographic characteristics			
Female, n (%)	107 (84.9)	14 (82.4)	0.723
Age (years), mean (SD)	63.2 (13.6)	56.4 (10)	0.049
Smokers, n (%)	37 (29.4)	4 (23.5)	0.681
Disease characteristics			
Disease duration (years), mean (SD)	14.6 (7.9)	12.1 (7.2)	0.214
mRSS, mean (SD)	6.6 (4.1)	8.3 (5.4)	0.135
Diffuse cutaneous SSc, n (%)	41 (32.5)	6 (35.3)	0.847
Interstitial lung disease, n (%)	38 (30.2)	6 (35.3)	0.799
Digital ulcers, n (%)	72 (57.1)	12 (70.6)	0.295
Pulmonary arterial hypertension, n (%)	8 (6.3)	1 (5.9)	0.996
Gastrointestinal involvement, n (%)	21 (16.7)	1 (5.9)	0.197
Therapies			
Immunosuppressive therapies, n (%)	48 (38.1)	6 (35.4)	0.808
cDMARDs, n (%)	23 (18.3)	6 (35.3)	
bDMARDs/tsDMARDs, n (%)	25 (19.8)	0 (0)	
Glucocorticoids, n (%)	24 (19)	4 (23.5)	0.667
Vasoactive therapy, n (%)	104 (82.5)	13 (76.5)	0.446

N: number; SD: standard deviation; mRSS: modified Rodnan's skin score; SSc: systemic sclerosis; cDMARDs: conventional disease modifying anti-rheumatic drugs (mycophenolate mofetil, methotrexate, hydroxychloroquine, leflunomide, cyclophosphamide); bDMARDs: (rituximab, tocilizumab); tsDMARDs: target synthetic disease modifying anti-rheumatic drugs (baricitinib, upadacitinib, tofacitinib).

Our report is limited by the lack of dedicated questionnaires (as the "Oxford Covid-19 Vaccine Hesitancy Scale" and "Oxford COVID-19 Vaccine Confidence & Complacency Scale") to assess patients' views on COVID-19 vaccination, since we aimed to explore the real-world experience and not the patients' opinion. Our report also lacks data about marital, employment, and education status. On the other hand, we provide actual reasons leading patients with SSc to decline COVID-19 vaccination. Eventually, Ciaffi *et al*. did not assess the impact of the vaccine type on hesitancy, while our patients had the assurance of being vaccinated with an mRNA vaccine, in light of the recent fears of thrombotic complication after ChAdOx1 nCoV-19 vaccine (Oxford/AstraZeneca) (6), and this could hinder comparison with previous studies.

Overall, we believe our combined reports confirm a globally positive attitude of patients with SSc towards COVID-19 vaccination and highlight some potential tools to lead to a successful vaccination campaign in patients with SSc.

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