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OUTCOMES OF VACCINATION AGAINST SARS-COV-2 IN PATIENTS WITH RHEUMATIC DISEASES IN LATVIA

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The retrospective study for rheumatic disease patients was conducted between 27 December 2020 and 31 August 2021 at Pauls Stradiņš Clinical University Hospital, in the largest centre of Rheumatology in Latvia with the aim of assessing the impact of vaccination against SARS-CoV-2 for rheumatic disease patients. From the hospital's local medical electronic system, we collected demographic data, disease activity, comorbidities, data regarding vaccines and their side effects for 422 rheumatic disease patients. Most of them, 377 (89.3%), had inflammatory arthritis or a rare rheumatic disease and the most common disease was rheumatoid arthritis 30.1%; 26.5% of all patients were in remission. csDMARDs (conventional synthetic disease modified antirheumatic drugs) were used in 47.2%, biological DMARDs in 51%, and immunosuppressive medicines in 4.2% cases. The most commonly used vaccine was BNT162b2, for 49.05% patients. The main side effect after vaccination was pain in the injection site, for 16.1% patients. 36.7% of patients had no side effects after vaccination. 8.7% of patients had a flare of disease after the vaccination process. The most common comorbidity was cardiovascular diseases, for 38.7% of patients. Mild side effects, and a small percentage of flare-up of a rheumatic disease demonstrated the safety of vaccination against SARS-CoV-2 in the rheumatic disease patient group.

Keywords: *arthritis, rare diseases, vaccination against COVID-19, comorbidities.*

INTRODUCTION

Following the publication of the genome sequence of SARS-CoV-2 on 11 January 2020, the development of vaccines against SARS-CoV-2 accelerated at an extraordinary pace; in December 2020, two vaccines using mRNA technology (Pfizer/BioNTech and Moderna) and one vaccine using a non-replicating adenoviral vector expressing the spike protein (AstraZeneca/Oxford) were authorised for use by several national and international drug regulatory bodies (Kyriakidis *et al.*, 2021). Vaccines are a key pillar of public health and the WHO estimates that vaccine immunisation currently prevents 4–5 million deaths every year (Machado *et al.,* 2022). There is a scarcity of data regarding vaccinated patients with rheumatic diseases, and better information could inform decision making and guidance for clinicians and patients (Sattui *et al.,* 2021). People with systemic rheumatic diseases, who may have a unique risk and benefit profile, were largely excluded from the initial vaccine clinical trials. People with systemic rheumatic diseases may have specific concerns regarding how their underlying disease or their immunomodulatory therapies affect the benefit and safety of receiving COVID-19 vaccination (Furer *et al.,* 2021; Felten *et al.,* 2021). Safety and efficacy aspects of vaccines against COVID-19 for rheumatic disease patients were challenges during 2021. Various pre-existing conditions have also been associated with increased risk (Williamson *et al.,* 2020). A UK cross-sectional survey describing 16,749 patients hospitalised with COVID-19 showed higher risk of death for patients with cardiac, pulmonary, and kidney disease, as well as malignancy, dementia, and obesity (Docherty *et al.,* 2020).

The vaccination process against SARS-CoV-2 began on 27 December 2020 in Latvia and cumulative COVID-19 vaccination per 100 people was 0.03 on 28 December 2020 with an increasing trend — 78.8 on 31 August 2021 according to ourworldindata.org. data. B1.117 (alpha) SARS-CoV-2 was registered in the 4th week of 2021 in Latvia, and B.1617.2 (delta) was registered in the 20th week of 2021 in Latvia, according to the Diseases Prevention and Control Centre (DPCC) data from the National Reference Laboratory confirmed COVID-19 cases. COVID-19 incidence was 399 cases on 26 December 2020 per 1 million population and 256 cases on 28 August 2021 according to data from DPCC and 106818 people had confirmed COVID-19 on 31 August 2021 in Latvia.

The objective of this study was to characterise the profiles of rheumatic disease patients during vaccination and to analyse the impact of vaccination against SARS-CoV-2 infection on rheumatic disease patients' course of disease, comorbidities and disease activity in Latvia.

MATERIALS AND METHODS

We collected data about vaccination against COVID-19 of rheumatic disease patients in Pauls Stradiņš Clinical University Hospital, the Centre of Rheumatology, between 27 December 2020 and 31 August 2021. The data collection was the part of participation of Pauls Stradiņš Clinical University Hospital, the Centre of Rheumatology, in the COVID-19 global rheumatology alliance and EULAR (European Alliance of Associations for Rheumatology) COVID-19 and COVAX registries. We collected data of rheumatic disease patient vaccination against COVID-19 status retrospectively from the local data base *Ārstu birojs* in Pauls Stradiņš Clinical University Hospital, the Centre of Rheumatology, according to the study protocol: inclusion criteria were performed vaccination against COVID-19 and with specifying of type of SARS-CoV-2 vaccine (BNT162b2 (Pfizer–BioNTech-Comirnaty), mRNA-1273 (Moderna-Spikevax), ChAdOx1 nCoV-19 (Astra-Zeneca-Vaxzevria), Ad26.CoV2.S (Johnson & Johnson)); holding or continuing rheumatic disease therapy during the vaccination process; vaccines side effects like fever, fatigue, nausea, pain in injection site, myalgia, arthralgia, lymphadenopathy, and others, and long duration side effects — more than three days after vaccination; flares of immune-mediated inflammatory diseases (I-RMDs) after vaccination reported by a rheumatologist and the following characteristics — age, sex, rheumatic disease diagnosis; the activity of the disease (only applicable to I-RMD) during vaccination reported by a rheumatologist and categorised as remission/inactive disease, low, moderate or severe disease activity; exposure to immunomodulatory/immunosuppressive treatment at the time of vaccination — glucocorticoids, conventional synthetic disease-modified antirheumatic drugs (csDMARDs), namely hydroxychloroquine, leflunomide, methotrexate, sulfasalazine, biological DMARDS (bDMARDS), namely abatacept, rituximab, tocilizumab, ustekinumab, secukinumab, tumuor necrosis factor (TNF) inhibitors (including adalimumab, etanercept, golimumab, infliximab and biosimilars), target synthetic DMARDS (tsDMARDS, namely JAK inhibitors (tofacitinib, upadacitinib), immunosuppressive medicines (azathioprine, mycophenolate mofetil, cyclophosphamide), and NSAIDs (nonsteroidal anti-inflammatory drugs); and comorbidities (reported by a rheumatologist's in a consultation record in the electronical medical record system of the hospital) — hyperlipidaemia, diabetes mellitus, respiratory diseases (bronchial asthma, chronic obstructive pulmonary disease), cardiovascular diseases (hypertension, coronary heart disease), and malignancy. Exclusion criteria for the study were: vaccination against COVID-19 was not performed for a patient with a rheumatic disease during the study.

Descriptive statistics, including mean and SD (standard deviation), frequencies and proportions, were used to describe data. Data were presented separately for I-RMD or inflammatory arthritis (rheumatoid arthritis (RA), spondyloarthropathies (ankylosing spondylitis (AS), psoriatic arthritis (PsA), reactive arthritis, undifferentiated spondyloarthropathy)) and rare rheumatic diseases (juvenile idiopathic arthritis (JIA) for adults, SLE (systemic lupus erythematosus), systemic sclerosis (SSc), antiphospholipid syndrome (APS), mixed connective tissue disease (MCTD), primary Sjogren's syndrome (pSS), polymyositis/dermatomyositis (PM/DM), polymyalgia rheumatica (PMR), vasculitis, undifferentiated connective tissue disease (UCTD), panniculitis, granulomatous mastitis) and non-inflammatory rheumatic and the musculoskeletal disease (NI-RMD) group: osteoarthritis, gout, generalised joint hypermobility.

RESULTS

From 27 December 2020 to 31 August 2021, four hundred and twenty-two rheumatic disease patients were enrolled in this study. Table 1 shows the demographics and clinical, therapy, and vaccination characteristics of rheumatic disease patients of the study. Out of 422 patients, 69% were women and 31% were men, and the mean age for patients was 51.79 (SD 14.63) years old. Diagnosis characteristics are shown in Figure 1.

Inflammatory arthritis. The most common diagnoses for the patients were rheumatoid arthritis (n = 127, 30.1%) and spondyloarthropathies: AS (n = 76, 18%), PsA (n = 66, 15.6%) patients and other spondyloarthropathies (n = 11, 2.6%) — reactive arthritis, and undifferentiated spondyloarthropathy.

Rare rheumatic diseases. Rare rheumatic diseases were presented as follows: JIA (n = 28, 6.7%); SLE (n = 20, 4.7%), SSc (n = 8, 1.9%), pSS (n = 7, 1.6%); PM/DM (n = 3, 0.7%); PMR (n = 6, 1.4%), vasculitis (n = 16, 3.8%); MCTD (n = 2, 0.5%), others (panniculitis (n = 1, 0.2%), undifferentiated connective tissue disease (n = 4, 1%), primary antiphospholipide syndrome (n = 1, 0.2%), and granulomatous mastitis (n = 1, 0.2%)), (n = 7, 1.6%).

Table 1. Demographics and clinical, therapy and vaccination characteristics of rheumatic diseases patients

Parameter	Data
Age (years), mean ± SD (n = 422)	51.79 ± 14.63
Female, n (%)	290 (69)
Male, n (%)	132 (31)
Rheumatic disease, n 422	
Inflammatory arthritis ^, n (%)	280 (66.3)
Rare rheumatic diseases #, n (%)	97 (24)
Osteoarthritis, n (%)	38 (9)
Gout, n (%)	4 (1)
Generalized joint hypermobility, n (%)	3 (0.7)
Comorbidities of inflammatory arthritis and rare rheumatic diseases patients, n = 377	
Cardiovascular disease, n (%)	146 (38.7)
Hyperlipidemia, n (%)	111 (30)
Diabetes mellitus, n (%)	27 (7.1)
Malignancy, n (%)	20 (5.3)
Chronic respiratory diseases (COPD, bronchial asthma), n (%)	14 (3.7)
At least two co-morbidities combination, n (%)	135 (35.8)
Disease activity, n (%) 377	
Remission, n (%)	99 (26.5)
Low disease activity, n (%)	188 (49.8)
Moderate disease activity, n (%)	72 (19)
High disease activity, n (%)	18 (4.7)
Therapy, n 377	
Glucocorticoids, n (%)	65 (17.2)
Glucocorticoids 10 mg or higher prednisolone or equivalent, n (%)	8 (2)
csDMARDs[&], n (%)	178 (47.2)
bDMARDs[&&], n (%)	192 (51)
tsDMARDs[&&&], n (%)	19 (5)
Immunosuppressive medicines (AZA, MMF, CYC) ^^, n (%)	16 (4.2)
Combined therapy, n (%)	69 (18.3)
NSAIDs (non-steroidal anti-inflammatory drugs), n (%)	24 (6.3)
No therapy, n (%)	6 (1.5)
Therapy use during vaccination, n 377	
Temporary discontinued, n (%)	77 (20.4)
No changes in therapy, n (%)	300 (79.6)
Vaccine, n = 422	
BNT162b2 (Pfizer–BioNTech), n (%)	207 (49.05)
mRNA-1273 (Moderna), n (%)	85 (20.14)
ChAdOx1 nCoV-19 (Astra-Zeneca), n (%)	116 (27.48)
Ad26.CoV2. S (Johnson & Johnson), n (%)	12 (2.84)
Mixed vaccines*, n (%)	2 (0.47)
Vaccine side effects 422	
Pain in injection site, n (%)	68 (16.1)
Fatigue, n (%)	58 (13.7)
Fever, n (%)	57 (13.5)
Arthralgia, myalgia, n (%)	45 (10.7)
Headache, n (%)	35 (8.3)
Others**, n (%)	12 (3.1)
Long duration***, n (%)	8 (2.1)
No side effects, n (%)	150 (36.7)

Continuation of Table 1. Demographics and clinical, therapy and vaccination characteristics of rheumatic diseases patients

Parameter	Data
Rheumatic disease flare after vaccination 377	
Flare (arthritis), n (%)	33 (8.7)
No flare, n (%)	344 (91.3)

SD – standart deviation, ^ inflammatory arthritis (rheumatoid arthritis (RA), spondyloarthropathies: (ankylosing spondylitis (AS), psoriatic arthritis (PsA), reactive arthritis, undifferentiated spondyloarthropathy), #(juvenile idiopathic arthritis (JIA) for adults, SLE (systemic lupus erythematosus), systemic sclerosis (SSc), antiphospholipid syndrome (APS), mixed connective tissue disease (MCTD), primary Sjögren's syndrome (pSS), polymyositis/dermatomyositis (PM/DM), polymyalgia rheumatica (PMR), vasculitis, undifferentiated connective tissue disease (UCTD), panniculitis, granulomatous mastitis)

csDMARDs – conventional synthetic disease modified antirheumatic drugs; [&&] biological DMARDS (bDMARDS); [&&&] target synthetic DMARDS (tsDMARDS); ^^ AZA – azathioprine, MMF – mycophenolate mofetil, CYC – cyclophosphamide; * BNT162b2 and Ad26.CoV2.S; ChAdOx1 nCoV-19 and BNT162b2; ** local lymphadenopathy, rhinitis, conjunctivitis, dizziness, hypertensive crisis, arterial fluttering; *** headache, stomatitis, diarrhea, herpes zoster, nausea, subfebrile temperature, urticaria, bilateral pneumonia

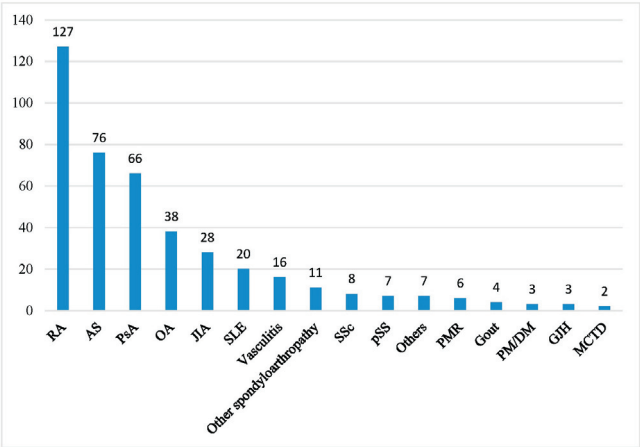

Fig. 1. Rheumatic diseases diagnosis characteristics

RA – rheumatoid arthritis, AS – ankylosing spondylitis, PsA – psoriatic arthritis, OA – osteoarthritis, JIA – juvenile idiopathic arthritis, SLE – systemic lupus erythematosus, other spondyloarthropathy-reactive arthritis, undifferentiated spondyloarthropathy, SSc – Systemic sclerosis, primary Sjögren's syndrome (pSS), others – UCTD - undifferentiated connective tissue disease, panniculitis, APS – antiphospholipid syndrome, granulomatous mastitis, PMR – polymyalgia rheumatica, PM/DM – polymyositis/dermatomyositis, GJH – generalised joint hypermobility, MCTD – mixed connective tissue disease

Musculoskeletal disease data were osteoarthritis (OA) (n = 38, 9%), gout (n = 4, 1%), and generalised joint hypermobility (GJH) (n = 3, 0.7%).

Comorbidity characteristics are shown in Figure 2. Inflammatory arthritis and the rare rheumatic disease patient group with 377 patients had cardiovascular disease predominance (n = 145, 38.7%), followed by hyperlipidaemia (n = 11, 30%), at least two comorbidities (n = 135, 35.8%), diabetes (n = 27, 7.1 %) and malignancy (n = 20, 5.3%).

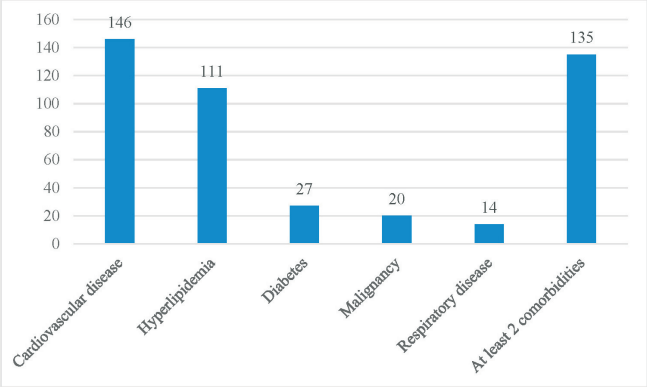

Fig. 2. Comorbidities for inflammatory arthritis and rare rheumatic diseases patients

Inflammatory arthritis – rheumatoid arthritis (RA), spondyloarthropathies (axial spondyloarthropathy (AxSpA), ankylosing spondylitis (AS), psoriatic arthritis (PsA), reactive arthritis, undifferentiated spondyloarthropathy).

Rare rheumatic diseases – juvenile idiopathic arthritis (JIA) for adults, SLE (systemic lupus erythematosus), systemic sclerosis (SSc), antiphospholipid syndrome (APS), mixed connective tissue disease (MCTD), primary Sjogren's syndrome (pSS), undifferentiated connective tissue disease (UCTD), panniculitis, granulomatous mastitis.

Respiratory comorbidities were not commonly observed (n = 14, 3.71%).

Disease activity characteristics are shown in Figure 3. From inflammatory arthritis and rare rheumatic diseases, 377 patients, nighty-nine patients (26.5%) were in remission, eighty-eight patients had low disease activity (49.8%), seventy-two patients had moderate disease activity (19%) and the smallest group — eighteen patients had high disease activity (4.7%).

Therapy profile. 377 patients with inflammatory arthritis and rare rheumatic diseases used glucocorticoids (n = 65, 17.2%), glucocorticoids 10 mg or higher prednisolone or equivalent dosage (n = 8, 2%), csDMARDs (n = 178, 47.2%), bDMARDs (n = 192, 51%), a small group of patients used tsDMARDs (n = 19, 5%), and a small group of patients also used immunosupresive medicines (n = 16, 4.2%). The list of used medicines is given in Table 2. 69 patients used combined therapy (18.3%) and a part of the spondyloarthropathy group and two PMR patients used NSAIDs (n = 24, 6.3%). There were patients with no anti-inflammatory therapy, shortly finished before vaccination process and not restarted during the study: two pSS patients, one UCTD patient, one APLs, one granulomatous mastitis patient, and one PMR patient (n = 6, 1.5%).

Therapy discontinuation during vaccination. 77 (20.4%) of 377 patients temporarily discontinued therapy in the inflammatory arthritis and rare rheumatic disease group due to a rheumatologist's or family doctor's recommendation, but a larger proportion of patients (n = 300, 79.6%) continued therapy for a rheumatic disease during the vaccination process.

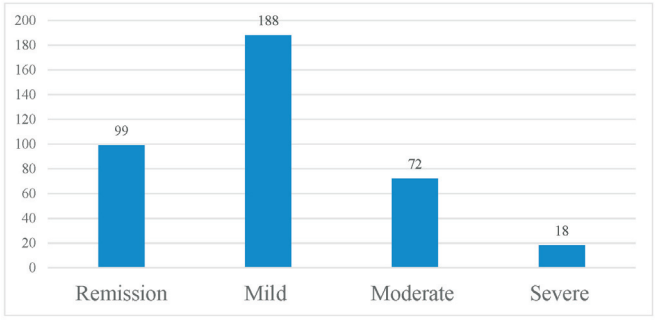

Fig. 3. Rheumatic diseases activity characteristics

Rheumatic diseases – inflammatory arthritis and rare rheumatic diseases

Table 2. Inflammatory arthritis and rare rheumatic diseases medicines

Medicine	Data, n
Hydroxychloroquine	33
Leflunomide	15
Methotrexate	93
Sulfasalazine	34
Abatacept	4
Rituximab	8
Tocilizumab	12
Ustekinumab	1
Secukinumab	26
Tumor necrosis factor (TNF) inhibitors (including adalimumab, etanercept, golimumab, infliximab and biosimilars)	140
Tofacitinib	10
Upadacitinib	9
Azathioprine	10
Mycophenolate mofetil	9
Cyclophosphamide	1

Vaccine profile. BNT162b2 was received by 207 patients (49%), ChAdOx1 nCoV-19 116 patients (27.5%), mRNA-1273 85 patients (20 %) and Ad26.CoV2.S 12 patients (3%), mixed vaccines were received by two patients (0.5%) (one patient ChAdOx1 nCoV-19 and BNT162b2 and one patient BNT162b2 and Ad26.CoV2.S).

Vaccine side effects. Among 377 patients with rheumatic disease flares in the inflammatory arthritis and rare rheumatic disease group, there were 33 patients (8.7%) who experienced a flare of arthritis. Vaccine side effects are shown in Figure 4: pain in the injection site (n = 68, 16.1%); fatigue (n = 58, 13.7%); fever (n = 57, 13.5%); myalgia, arthralgia (n = 45, 10.7%), headache (n =35, 8.3%); others (n = 12, 3.1%) like local lymphadenopathy (n = 2), rhinitis (n = 3), conjunctivitis (n = 1), dizziness (n =2), hypertensive crisis, arterial fluttering (n = 2) for every side effect; long duration side effects (n = 8, 2.1%) lasting for more than three days after vaccination, including headache, stomatitis, diarrhea (n = 1) for every side effect, one patient with herpes zoster infection after three weeks of BNT162b2, nausea for one week (n = 1), subfebrile temperature for ten days for two patients, urticaria for three

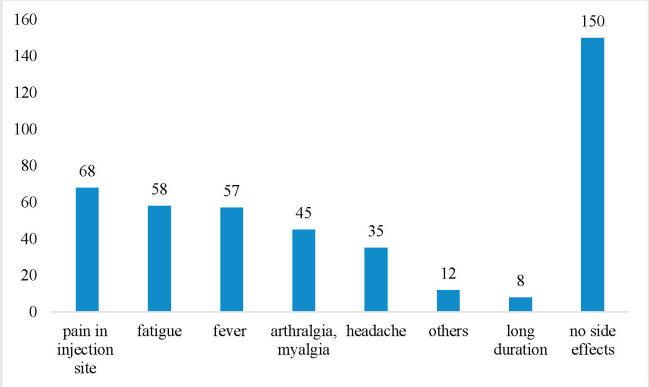

Fig. 4. Vaccination side effects

Others – local lymphadenopathy, rhinitis, conjunctivitis, dizziness, hypertensive crisis, arterial fluttering; long duration – headache, stomatitis, diarrhea, herpes zoster, nausea, subfebrile temperature, urticaria, bilateral pneumonia

weeks after BNT162b2 for one patient, bilateral pneumonia on 10th day after the 2nd ChAdOx1 nCoV-19 vaccine (n = 1); and no side effects (n = 150, 36.7%).

COVID-19 cases. From March 2020 to August 2021, 38 Covid-19 cases (10 %) were diagnosed in the study group with no decease cases.

DISCUSSION

Information regarding AE of COVID-19 vaccination in patients with rheumatic disease has been increasing (Esquivel-Valerio *et al.*, 2021). The adverse event profile of these vaccines has been very similar to the general population and severe adverse events have been very rare (Cherian *et al.*, 2021; Furer *et al.*, 2021; Bartels *et al.*, 2021; Sattui *et al.*, 2021). EULAR recommends (Landewé *et al.,* 2022) that patients with rheumatic and musculoskeletal diseases should be advised to receive SARS-CoV-2 vaccination with any of the vaccines approved in their country. EULAR recommendations (Landewé *et al.,* 2022) do not mention disease activity for rheumatic and musculoskeletal disease as a factor for delaying vaccination. ACR (Amercian Collegue of Rheumatology) recommendations for rheumatic and musculoskeletal disease patients about COVID-19 vaccination mention (Curtis *et al.*, 2021), as a general principle, that vaccination should optimally occur in the setting of well-controlled AIIRD (autoimmune and inflammatory rheumatic diseases).

Taking the information from EULAR and ACR vaccination against COVID-19 into account, 26.5% of our study patients were in remission, 49.8% in low disease activity, which is the optimal time for vaccination, but a small group of patients (4.7%) received vaccination despite high disease activity. As moderate/high disease activity of a rheumatic disease is significantly associated with COVID-19-related death (Strangfeld *et al.,* 2021), it is important to protect rheumatic patients from severe COVID-19 outcome by vaccination, despite a rheumatic disease activity.

During the vaccination process we recognised side effects of vaccines, which were similar to those previously reported in the overall population — redness, swelling, muscle pain, and fever (Han *et al.*, 2021). Similar results were reported by Sattui *et a.l*, 2021, where among all participants 1371/2860 (47.9%) in the study, at least one adverse event lasting for at least two days post-COVID-19 vaccine was reported: fatigue or sleepiness (955, 33.4%) was the most common reported adverse event, followed by a headache (792, 27.7%), and widespread muscle/joint pain (653, 22.8%). As our study population was smaller, pain in the injection site was the most common side effect, reported by 16.1%, followed by fatigue, 13.7%, and fever, 13.5%.

Sattui *et al.* (2021) reported about flares of existing systemic rheumatic disease, lasting at least two days post-COVID-19 vaccine for 382 (13.4%) participants and in comparison with our study group — a smaller one — 8.7% of our patients had a rheumatic disease flare. These results could be possibly due to the high number of patients in remission or low disease activity in our study. Interim data from the cohort (Barbhaiya *et al.,* 2021) demonstrate that 85% of patients did not report a systemic rheumatic disease flare post-SARS-CoV-2 vaccination.

Comorbidities are a serious risk factor for the complicated outcome of COVID-19 and it is mandatory to check for them in rheumatic disease patients. Cardiovascular diseases (38.7%) and hyperlipidaemia (30%) were the most common comorbidities for our patients. The review of Ahmed *et al.* (2021) showed that patients with rheumatic and musculoskeletal diseases and comorbidities may fare worse. Various meta-analyses have reiterated that pre-existing hypertension, cardiovascular disease, strokes, diabetes, chronic kidney disease, heart failure, lung disease or obesity predispose one to increased COVID-19 mortality.

Most patients used csDMARDs 47.2% and bDMARDs 51% for therapy of a rheumatic disease, combined therapy was used by 18.3%, and 17.2% used glucocorticoids. 20.4% of patients had temporary stopped treatment among csDMARDs, bDMARDs and combined DMARDs therapy users. EULAR recommendations (Landewé *et al.,* 2022) do not recommend stopping therapy of a rheumatic disease (exception is rituximab therapy, with specific rules for vaccination), but ACR recommendations for COVID-19 vaccination (Curtis *et al.*, 2021) recommend to withhold MMF, MTX, JAK inhibitors, and abatacept. In clinical practice, the final outcome is always the result of the process of shared decision-making between the patient, who is optimally informed about facts and residual uncertainties, and the HCP (Landewé *et al.,* 2022).

The limitations of our study include a small group of patients and the lack of a control group, as well as the absence of long-term follow-up data.

CONCLUSIONS

Vaccination against SARS-CoV-2 for rheumatic disease patients is safe and can cause a rheumatic disease flare in 8.7% of patients in a population with high numbers of patients in remission or low disease activity. 38.7% of patients had no side effects during the vaccination process and the side effects for the rest of patients were mild, especially due to the fact that they are outweighed by the benefits of rheumatic disease patients on immunomodulatory/immunosuppressive medicine protection from severe COVID-19 and with meaningful comorbidities causing an unfavourable outcome of COVID-19. Follow-up studies are necessary to study the impact of SARS-CoV-2 vaccination on the rheumatic disease patient population for different COVID-19 variants and long-term outcomes.

ETHICS

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Pauls Stradiņš Clinical University Hospital the Clinical Research Ethics Committee (No. 290421-19L on 20 May 2020 and No. 280520-19L on 29 April 2021).

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REIMATISKO SLIMĪBU PACIENTU VAKCINĀCIJAS PRET SARS-CoV2 REZULTĀTI LATVIJĀ

Lai izvērtētu SARS-CoV2 vakcinācijas procesu lielākajā reimatoloģijas centrā Latvijā, mēs veicām retrospektīvu pētījumu Paula Stradiņa Klīniskajā universitātes slimnīcā laika periodā no 2020. gada 27. decembra līdz 2021. gada 31.augustam. Pētījuma mērķis bija novērtēt vakcinācijas pret SARS-CoV-2 ietekmi uz reimatisko slimību pacientiem. Mēs apkopojām datus par 422 reimatisko slimību pacientiem, un lielākajai daļai no tiem, 377 (89,3%), bija iekaisuma artrīts vai reta reimatiskā slimība, biežākā reimatiskā slimība bija reimatoīds artrīts (30,1%) un 26,5% pacientu bija slimības remisija. Konvencionālos sintētiskos slimību modificējošos antireimatiskos medikamentus (SMAM) saņēma 47,2% un bioloģiskos SMAM 51% pacienti, imūnsupresīvus medikamentus lietoja 4,2% pacienti. Biežākā vakcīna, ko saņēma mūsu pacienti, bija BNT162b2 49,05%. Biežākā blakus parādība pēc vakcinācijas bija sāpes injekcijas vietā (16,1%) un 36,7% pacientu nenovēroja blakus parādības. 8,7% pacientu pēc vakcinācijas procesa bija reimatiskās slimības paasinājums. Biežākā blakus slimība bija sirds un asinsvadu slimība (38,7% pacientu). Nebūtiskas blakus parādības, neliels reimatisko slimību paasinājumu skaits liecina par vakcinācijas pret SARS-CoV-2 drošību reimatisko slimību pacientiem.