Table 1. Studies on SARS-CoV-2 infection pathogenesis

Research question	N
Cytokines profile	7
Immune profile	18
Algorithm	17
Children	3
Comorbidities	1
Endothelial dysfunction and platelets	8
Gut and microbiota	3
Genetics and variants	8
Histology	7
Antibodies profiles	8
Viral load and immune response	4
Interferon	3
Immunosenescence	3
Total	90*

*Some manuscripts were including in several research questions. Total number of studies included n=85.

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POS0053

RHEUMATOID ARTHRITIS AND THE RISK OF COVID-19 DIAGNOSIS, HOSPITALISATION AND DEATH: A POPULATION-BASED MULTI-STATE COHORT ANALYSIS INCLUDING 5,586,565 PEOPLE IN CATALONIA, SPAIN

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Background: The COVID-19 pandemic caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus is of particular concern for people with rheumatoid arthritis (RA), with concerns that these people may be at higher risk and have poorer outcomes. However, at present the implications of COVID-19 for people with RA remain poorly understood.

Objectives: To investigate the associations between rheumatoid arthritis and the risk of COVID-19 diagnosis, hospitalisation with COVID-19 and COVID-19-related death.

Methods: A population-based cohort study including all individuals registered in the Information System for Research in Primary Care (SIDIAP). SIDIAP includes primary care records covering over 80% of the population of Catalonia, Spain, and was linked to region-wide SARS-CoV-2 PCR testing, hospital and mortality records. Outpatient diagnoses of COVID-19, hospitalisations with COVID-19 and deaths with COVID-19 were identified as study outcomes between 1st March and 6th May 2020. A multi-state model was used, with cause-specific Cox survival models estimated for each transition, adjusted for age and sex.

Results: A total of 5,586,565 individuals were identified in SIDIAP as of the 1st March 2020, of which 16,344 had RA. RA patients were median (IQR) 63 years (52.0, 74.0) and the majority (n=11,727, 71.8%) were female. Having RA was positively associated with being diagnosed with COVID-19 (adjusted HR 1.14 (1.03 to 1.28)), with hospitalisation with COVID-19 (HR 1.66 (1.35 to 2.04)). However, we did not find an association between RA status and the risk of worsening from outpatient diagnosis to hospitalization or death, or from hospitalization to death (see Table 1).

Table 1. Estimated hazard ratios, adjusted for age and gender, for individuals with rheumatoid arthritis

Transition	Study population (RA), n	Total events (RA), n	Hazard Ratios (95% Confidence Intervals)
From general population to diagnosed with COVID-19	5,586,565 (16,344)	88,396 (324)	1.14 (1.03 to 1.28)
From general population to hospitalised with COVID-19	5,586,565 (16,344)	10,143 (90)	1.66 (1.35 to 2.04)
From diagnosed with COVID-19 to hospitalised with COVID-19	88,396 (324)	5,946 (30)	0.95 (0.66 to 1.36)
From diagnosed with COVID-19 to death	88,396 (324)	2,295 (16)	0.96 (0.58 to 1.56)
From hospitalised with COVID-19 to death	16,089 (120)	2,602 (27)	1.13 (0.77 to 1.64)

Conclusion: To our knowledge, this is the largest study performed to date looking at COVID-19 outcomes in RA patients. Individuals with RA were found to have an increased risk of COVID-19 diagnosis and hospitalisation with COVID-19, compared to the general population. Further research is needed to address factors associated with this including the presence of other co-morbidities, underlying RA disease activity and the use of immunosuppressive medications.

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POS0054

THE IMPACT AND OUTCOME OF COVID-19 ON SYSTEMIC SCLEROSIS PATIENTS FROM THE EUROPEAN SCLERODERMA TRIAL AND RESEARCH GROUP (EUSTAR)

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Background: Coronavirus disease-19 (COVID-19) has been a major clinical challenge worldwide. Sex, age and comorbidities have been associated with worse outcome in the general population. Systemic sclerosis (SSc) is a severe, autoimmune disease with frequent multi-organ involvement.

Objectives: To assess the impact of COVID-19 and to determine factors associated with worse outcome in SSc patients from the European Scleroderma Trial and Research (EUSTAR) database.

Methods: SSc patients from the EUSTAR database with COVID-19 were prospectively collected between 15.03.-31.12.2020. Two outcomes were chosen: (1) hospitalization; and (2) severe outcome defined as either non-invasive ventilation, mechanical ventilation/extracorporeal membrane oxygenation (ECMO) or death. General risk factors assessed were sex, age and number

of comorbidities. SSc related risk factors were SSc subtype, autoantibodies, disease duration, SSc associated organ manifestations including interstitial lung disease (ILD), pulmonary arterial hypertension (PAH), cardiac, gastro-intestinal (GI), and musculoskeletal involvement; digital ulcers (DU), CRP at last visit, renal disease (scleroderma renal crisis and SSc associated renal insufficiency), modified Rodnan skin score (mRSS) and immunosuppressive treatment. Descriptive statistics and logistic regression models were applied.

Results: In total, 178 European SSc patients with COVID-19 were registered with a median observation time of 5.5 weeks (Table 1). 95 patients (53%) could recall SAR-Cov-2 contact, while 47 (26%) had no contact. 156 (88%) were symptomatic at COVID-19 onset with fever, cough, malaise and dyspnea being most prevalent. Over the disease course, 63 (36%) developed pneumonia. In total, 67/176 (38%) were hospitalized which were in 84% due to COVID-19. 41/170 (24%) had a severe outcome including 21 (12%) deaths. 128 (72%) recovered completely, while 14 (8%) complained of sequela, with 7 (50%) stating respiratory complications. Age, non-SSc comorbidities, presence of ILD, PAH and SSc associated renal or cardiac disease were numerically associated with hospitalization and severe outcome (Table 1). Univariable logistic analyses for hospitalization and severe outcome are shown in Figure 1. In multivariable logistic regression, age (OR 1.03, 95%CI 1.01-1.07, $p=0.019$), presence of non-SSc comorbidities (OR 2.52, 95%CI 1.16-5.47, $p=0.019$) and SSc-related renal disease (predicting success perfectly) were associated with hospitalization and for severe outcome age (OR 1.05, 95%CI 1.01-1.08).

Conclusion: SSc patients at older age, with non-SSc comorbidities, SSc related renal disease or ILD are at risk of a more severe outcome and should follow precautions to avoid COVID-19 infections and need careful monitoring in case of COVID-19.

Table 1. SSc disease characteristics of COVID-19 patients

	All (n=172)	Hospitalized (n=67)	Severe outcome (n=41)
Age at COVID-19, yrs (SD)	57 (14.0)	63 (13.8)	65 (12.2)
Male sex, n (%)	38 (21)	18 (27)	12 (29)
≥1 comorbidity, n (%)	63/176 (36)	37 (55)	30 (58)
SSc disease duration at COVID, yrs (SD)	11.5 (8.8)	13.3 (9.7)	12.7 (10.2)
Diffuse cutaneous SSc, n (%)	74 (42)	29 (43)	19 (46)
mRSS, median (IQR)	5 (8)	5 (9)	5 (7)
ILD, n (%)	90/175 (51)	36/65 (55)	26/40 (65)
PAH, n (%)	21/175 (12)	11/65 (17)	8/40 (20)
GI disease, n (%)	112/176 (64)	45 (67)	30 (73)
Cardiac disease, n (%)	37/166 (22)	19/59 (32)	16/36 (44)
Musculoskeletal disease, n (%)	40/175 (23)	15/65 (23)	6/40 (15)
Renal disease, n (%)	8/175 (5)	7/65 (11)	5/40 (13)
Ever DU, n (%)	69/175 (39)	27/65 (42)	14/40 (35)
CRP, ng/ml (SD)	35/177 (20)	14 (21)	9 (22)
Immunosuppressive treatment, n (%)	104/177 (59)	41/66 (62)	26 (63)

Figure 1. Univariable logistic analyses for hospitalization and severe outcome

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POS0055 SARS-COV-2 OUTBREAK IN AUTOIMMUNE DISEASES: THE EURO-COVIMID STUDY

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Background: Coronavirus disease 2019 (COVID-19), has raised several questions in patients with immune-mediated inflammatory diseases (IMID). Whether the seroprevalence and factors associated with symptomatic COVID-19 are similar in IMID patients and in the general population is still unknown.

Objectives: To assess the serological and clinical prevalence of COVID-19 in European IMID patients, along with the factors associated with its risk and the impacts the pandemic had on the IMID management.

Methods: Prospective multicentre cross-sectional study among patients with five IMID (i.e. systemic lupus erythematosus, Sjögren's syndrome, rheumatoid arthritis, axial spondylarthritis or giant cell arteritis) from six tertiary-referral centers from France, Germany, Italy, Portugal, Spain and United Kingdom. Demographics, comorbidities, IMID, treatments, flares and COVID-19 details were collected. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) serological tests were systematically performed.

Results: Between June 7 and December 8, 2020, 3028 patients were included (median age 58 years, 73.9% females). SARS-CoV-2 antibodies were detected in 166 (5.5%) patients. Symptomatic COVID-19 was seen in 122 patients (prevalence: 4.0%, 95% CI 3.4-4.8%); 23 (24.2%) of them were hospitalized and four (3.2%) died. In multivariate logistic regression analysis, symptomatic COVID-19 was more likely to be observed in patients with higher levels of C-reactive protein (OR: 1.18; 95% CI 1.05-1.33; $p=0.006$), and increased with the number of IMID flares (OR: 1.27; 95% CI 1.02-1.58; $p=0.03$). Conversely, it was less likely to occur in patients treated with biological therapy (OR: 0.51; 95% CI 0.32-0.82; $p=0.006$). During the pandemic, at least one self-reported disease flare was seen in 654 (21.6%) patients. Also, 519 (20.6%) patients experienced changes in their treatment, with 125 of these (24.1%) being due to COVID-19.