Supplemental material

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Supplementary Table 1. Description of patients with hospitalized COVID-19.

Patient	1	2	3	4	5	6	7	8	9	10
Gender	Male	Male	Female	Male	Female	Female	Female	Male	Male	Female
Age (years)	67	74	52	46	67	49	81	90	81	63
Biologic treatment	Rituximab	Rituximab	Rituximab	Rituximab	Rituximab	Rituximab	Rituximab	Rituximab	Rituximab	Infliximab
Associated csDMARDs	No	MTX 10 mg/sem (Oral)	Cellcept 3g/day	No	MTX 15 mg/sem (SC)	MTX 15 mg/sem (SC)	No	No	No	MTX 25 mg/sem (SC)
Associated glucosteroids	No	Prednisone 2 mg/day	Prednisone 7 mg/day	No	No	No	Prednisone 3.5 mg/day	No	Prednisone 20 mg/day	No
IAs	Rheumatoid arthritis	Rheumatoid arthritis	Necrotizing myositis	Rheumatoid arthritis	Rheumatoid arthritis	Rheumatoid arthritis	Rheumatoid arthritis	Rheumatoid arthritis	Granulomatosis with polyangiitis	Spondyloarthritis
IAs disease activity before COVID-19	DAS28-CRP= 1.74 (remission)	DAS28-CRP= 3.18 (low disease activity)	NA but in a control state	DAS28-CRP= 1.64 (remission)	DAS28-CRP= 1.48 (remission)	DAS28-CRP= 5.3 (high disease activity)	DAS28-CRP= 4.73 (moderate disease activity)	DAS28-CRP= 3.35 (moderate disease activity)	NA but in a controlled state	ASDAS= 3.7 (high disease activity)
Known risk factor for severe COVID-19	Ischemic cardiopathy, hypertension	Diabetes, rhythmic cardiopathy	Obesity, chronic lung disease (interstitial pneumopathy)	Chronic lung disease (bronchiolitis, pulmonary embolism)	No	No	Hypertension, chronic lung disease (obstructive sleep apnea-hyponea syndrome)	Diabetes, hypertension, pacemaker	Cerebrovascular event, chronic lung disease (alveolar hemorrhage)	Cerebrovascular event, obesity
BMI (kg/m²)	26.1	34.5	47.0	20.0	24.1	17.6	23.6	21.7	24.7	40.8
Date of COVID-19	December 2020	November 2020	October 2020	August 2020	April 2020	October 2020	March 2020	December 2020	November 2020	April 2020
Hospitalization	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Length of hospitalization (days)	17	19	12	22	66	10	48	18	27	15
Oxygenation	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Admission in an ICU	No	No	No	No	Yes	No	No	No	No	No
Mechanical oxygenation	No	No	No	No	Yes	No	No	No	No	No

1

Specific COVID-19 treatment	Dexamethasone	No	No	Remdesivir and convalescent plasma	No	Convalescent plasma	No	No	Dexamethasone and convalescent plasma	No
Death	No	No	No	No	No	No	No	No	No	No
Recovery	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time between last infusion and COVID-19 (months)	3	4	2	1	5	1	4	5	5	2
IgG level (g/L) at the time of COVID-19 [last IgG level before COVID-19]	NA [10.1]	NA [6.6]	IV Ig supplementation	7.4 [12.9]	6.1 [5.6]	11.2 [11.9]	6.4 [7.4]	NA [9.1]	4.5 [NA]	NA [NA]
Lymphocytes count (/µL) (B/TCD4$^+$/TCD8$^+$)*	0 / 437 / 287	NA	NA	1 / 303 / 144	0 / 607 / 175	1 / 282 / 96	NA	NA	0 / 87 / 266	NA

IA, inflammatory arthritides; BMI, Body Mass Index; ICU, intensive care unit; MTX, methotrexate; NA not available

The median delay from last infusion to confirmation of severe COVID-19 was 3.5 months (IQR [1.8-5.0]). No death was reported, but one patient was admitted to intensive care. Patients were hospitalized for a median of 18.5 days (IQR [14-32]). A minority of patients received specific COVID-19 treatment (n=6), 3 received convalescent plasma, 2 received dexamethasone and 1 received remdesivir. At last follow-up, all patients had recovered. The last immunoglobulin G (IgG) level recorded before infection was normal for all patients (median 7.4, IQR [5.6-10.1] g/L). In patients for whom IgG level was measured at the time of COVID-19, IgG level was at the lower limit of normal (median 6.4, IQR [5.3-9.3] g/L). B-cell counts were available for 5 patients at the time of COVID-19, all of whom presented complete B-cell depletion.

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Supplementary Table 2. Univariate and multivariate models assessing the association between the occurrence of moderate-to-severe COVID-19 and each variable

Variables	Univariate OR of severe COVID (95% CrI)	Multivariate OR of severe COVID (95% CrI) Model #1	Multivariate OR of moderate-to-severe COVID (95% CrI) Model #2
bDMARDs (RTX vs Other bDMARDs)	**6.6 (1.7-35.0)** **Pr (OR>1) ≈ 1.0**	**6.6 (1.3-43.0)**	**4.1 (1.7-10.4)**
Median age (years)	1.0 (1.0-1.1) Pr (OR>1) = 0.7	1.0 (0.9 -1.1)	1.0 (0.9-1.0)
Female	0.6 (0.2-2.3) Pr (OR>1) = 0.2	0.6 (0.2-2.7)	0.5 (0.2-1.0)
IA diagnosis *Rheumatoid arthritis* *Spondyloarthritis (including psoriatic arthritis)* *Other**	RA vs SPA 0.4 (0.1-1.9) Pr (OR>1) = 0.1 RA vs Other 2.8 (0.5-12.3) Pr (OR>1) = 0.9	RA vs SPA 1.0 (0.1-7.6) RA vs Other 2.7 (0.4-15.5)	RA vs SPA 0.6 (0.1-4.0) RA vs Other 2.4 (0.4-12.3)
Comorbidities *Cardiovascular disease* *Cerebrovascular disease* *Chronic lung disease* *Diabetes* BMI (kg/m²)	**3.7 (1.0-16.9)** **Pr (OR>1) ≈ 1.0** 2.0 (0.9-4.6) Pr (OR>1) = 0.9 2.4 (0.5-9.3) Pr (OR>1) = 0.9 2.1 (0.4-8.5) Pr (OR>1) = 0.8 Normal BMI vs BMI > 25 0.2 (0.0-1.7) Pr (OR>1) = 0.1 Normal BMI vs BMI > 30 0.7 (0.1-3.9) Pr (OR>1) = 0.3	3.4 (0.8-16.8) 0.5 (0.0-5.3) 1.4 (0.2-6.3) 1.4 (0.2-6.9) Normal BMI vs BMI > 25 0.2 (0.0-1.5) Normal BMI vs BMI > 30 0.5 (0.1-3.6)	2.7 (1.2-5.7) 0.6 (0.0-5.4) 2.1 (1.0-4.4) 1.7 (0.3-8.0) Normal BMI vs BMI > 25 0.2 (0.0-1.7) Normal BMI vs BMI > 30 0.5 (0.1-3.1)
Treatments *Conventional synthetic DMARDs* *Other immunosuppressive agents* *Glucocorticoids*	0.8 (0.2-3.1) Pr(OR>1)= 0.4 **3.0(1.4-6.6)** **Pr(OR>1) ≈ 1.0** No Steroids vs. 0 to 10 mg/day 2.9 (0.6-12.9) Pr(OR>1) =0.9 No Steroids vs. > 10mg/day 3.4 (0.3-25.1) Pr(OR>1)=0.8	1.0 (0.2-4.3) 5.2 (0.6-39.5) No steroids vs 0 to 10 mg/day 1.6 (0.3-8.3) No steroids vs > 10 mg/day 1.7 (0.2-15.0)	0.5 (0.3-1.2) **2.2 (1.1-4.5)** No steroids vs 0 to 10 mg/day 1.6 (0.3-8.2) No steroids vs > 10 mg/day 1.9 (0.2-15.7)

Model #1: Weakly informative prior (specifying that $0.05 < OR_x < 20$ a priori)

Model #2: Taking into account prior according to a recent publication by Strangfeld et al. [3] (same as Table 1)

Moderate-to-severe COVID-19 was defined as following: patients who had SpO2 <94% on room air at sea level and who required oxygen.