

# THE LANCET

## Rheumatology

### Supplementary appendix

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Supplementary Table 1. Baseline characteristics of patients with primary systemic vasculitis and polymyalgia with complete outcome data by disease subtypes at time of COVID-19 onset (n = 1020)

	GCA	AAV	PMR	Behcet's	Other Vasculitis
<b>N</b>	158 (15.5)	294 (28.8)	323 (31.7)	97 (9.5)	148 (14.5)
<b>Demographics</b>					
Age (Mean, SD)	75.1 (11.1)	58.8 (16.9)	72.7 (10.2)	44.2 (12.6)	52.5 (16.8)
Sex					
Female	98 (62.0)	167 (56.8)	193 (59.8)	57 (58.8)	101 (68.2)
Male	60 (38.0)	128 (43.2)	130 (40.2)	40 (41.2)	47 (31.8)
Race					
White	111 (70.3)	173 (58.8)	251 (77.7)	42 (43.3)	73 (49.3)
Black	0 (0.0)	3 (1.0)	4 (1.2)	0 (0.0)	6 (4.1)
Latin American	7 (4.4)	58 (19.7)	19 (5.9)	9 (9.3)	25 (16.9)
Other	6 (3.8)	30 (10.2)	17 (5.3)	24 (24.7)	26 (17.6)
Missing	34 (21.5)	30 (10.2)	32 (9.9)	22 (22.7)	18 (12.2)
<b>Region</b>					
Europe	122 (77.2)	158 (53.7)	215 (66.6)	61 (62.9)	74 (50.0)
North America	27 (17.1)	93 (31.6)	84 (26.0)	13(13.4)	44 (29.7)
South America	6 (3.8)	22 (7.5)	9 (2.8)	4 (4.1)	15 (10.1)
Other	3 (1.9)	21 (7.1)	15 (4.6)	19 (19.6)	15 (10.1)
<b>Season</b>					
Before June 15	78 (49.4)	101 (34.4)	136 (42.1)	44 (45.4)	62 (41.9)
June 16-Sept 30	16 (10.1)	46 (15.7)	31 (9.6)	16 (16.5)	31 (21.0)
Oct 1-April 12	64 (40.5)	147 (50.0)	156 (48.3)	37 (38.1)	55 (37.2)
<b>Number of Comorbidities</b>					
0	35 (22.2)	90 (30.6)	92 (28.5)	72 (74.2)	67 (45.3)
1	54 (34.2)	91 (31.0)	128 (39.6)	16 (16.5)	51 (34.5)

≥ 2	69 (43.7)	113 (38.4)	103 (31.9)	9 (9.3)	30 (20.3)
<b>Comorbidities</b>					
Hypertension	95 (60.1)	137 (46.6)	171 (52.9)	16 (16.5)	59 (39.9)
Cardiovascular Disease	49 (31.0)	52 (17.7)	73 (22.6)	4 (4.1)	11 (7.4)
Diabetes	34 (21.5)	44 (15.0)	72 (22.3)	9 (9.3)	19 (12.8)
Chronic Kidney Disease	16 (10.1)	80 (27.2)	26 (8.0)	1 (1.0)	12 (8.1)
Lung Disease*	29 (18.4)	80 (27.2)	44 (13.6)	6 (6.2)	23 (15.5)
Interstitial Lung Disease	5 (3.2)	23 (7.8)	4 (1.2)	2 (2.1)	3 (2.0)
Cancer	12 (7.6)	15 (5.1)	27 (8.4)	1 (1.0)	10 (6.8)
<b>BMI</b>					
Obese	31 (19.6)	60 (20.4)	61 (18.9)	18 (18.6)	37 (25.0)
<b>Smoking Status</b>					
Ever	36 (22.8)	63 (21.4)	74 (22.9)	14 (14.4)	30 (20.3)
Never	48 (30.4)	118 (40.4)	104 (32.2)	41 (42.3)	75 (50.7)
Missing	74 (46.8)	113 (38.4)	145 (44.9)	42 (43.3)	43 (29.1)
<b>Glucocorticoid dose</b> (median, IQR) (excluding non-users)	9.0 (5.0, 17.5)	5.0 (5.0, 16.0)	5.0 (4.0, 10.0)	7.3 (5.0, 10.0)	7.0 (5.0, 17.5)
<b>Glucocorticoid use/dose</b> <b>(prednisolone equivalent)</b>					
No glucocorticoid use	55 (34.8)	93 (31.6)	69 (21.4)	59 (60.8)	69 (46.6)
1 - 5 mg/day	40 (25.3)	94 (32.0)	137 (42.4)	15 (15.5)	32 (21.6)
6 - 9 mg/day	10 (6.3)	21 (7.1)	35 (10.8)	4 (4.1)	7 (4.7)
≥ 10 mg/day	49 (31.0)	72 (24.5)	69 (21.4)	15 (15.5)	33 (22.3)
Missing Glucocorticoids	4 (2.5)	14 (4.8)	13 (4.0)	4 (4.1)	7 (4.7)
<b>Disease Activity</b>					
Remission	63 (39.9)	116 (39.5)	137 (42.4)	24 (24.7)	51 (34.5)
Low	43 (27.2)	91 (31.0)	110 (34.1)	42 (43.3)	44 (29.7)
Moderate	13 (8.2)	31 (10.5)	27 (8.4)	10 (10.3)	21 (14.2)
High	7 (4.4)	27 (9.2)	7 (2.2)	2 (2.1)	9 (6.1)

Missing	32 (20.3)	29 (9.9)	42 (13.0)	19 (19.6)	23 (15.5)
<b>Medication Category</b>					
No DMARD	84 (53.2)	71 (24.2)	233 (72.1)	33 (34.0)	55 (37.2)
csDMARD only	31 (19.6)	109 (37.1)	77 (23.8)	32 (33.0)	72 (48.7)
b/tsDMARDs only	36 (22.8)	87 (29.6)	7 (2.2)	16 (16.5)	13 (8.8)
b/tsDMARDs + csDMARDs combination	7 (4.4)	27 (9.2)	6 (1.9)	16 (16.5)	8 (5.4)
Cyclophosphamide only	1 (0.6)	10 (3.4)	0 (0.0)	1 (1.0)	7 (4.7)

n (%) presented unless otherwise specified.

\*Interstitial lung disease, chronic obstructive pulmonary disease, asthma, or other lung diseases.

COVID-19, Coronavirus Disease 2019; AAV, ANCA-associated vasculitis; GCA, giant cell arteritis; PMR, polymyalgia rheumatica; csDMARDs, conventional synthetic disease-modifying antirheumatic drugs; b/tsDMARDs, biologic/targeted synthetic disease-modifying antirheumatic drugs; SD, standard deviation; ECMO, extracorporeal membrane oxygenation.

Supplementary Table 2. Multivariable<sup>†</sup> logistic regression analysis of factors associated with the ordinal COVID-19 severity outcome for patients with AAV including individual comorbidities

	AAV N= 264	
	OR (95% CI)	p-value
<b>Age</b> (per decade)	1.56 (1.29, 1.88)	<0.01**
<b>Sex</b>		
Female	REF	
Male	1.31 (0.77, 2.22)	0.31
<b>Region</b>		
Europe	REF	
North America	0.37 (0.20, 0.70)	<0.01**
South America	3.69 (1.26, 10.83)	0.02*
Other	1.90 (0.73, 4.90)	0.19
<b>Season</b>		
Prior to June 15, 2020	REF	
June 16, 2020-Sept 30, 2020	1.00 (0.45, 2.23)	1.00
Oct 1, 2020- April 12, 2021	0.39 (0.22, 0.69)	<0.01**
<b>Medication Category</b>		
No DMARD	REF	
Methotrexate	0.83 (0.32, 2.19)	0.71
Azathioprine	0.90 (0.42, 1.90)	0.77
Rituximab	2.43 (1.27, 4.66)	<0.01**
Cyclophosphamide	3.90 (0.89, 17.19)	0.07
<b>Hypertension</b>	0.98 (0.56, 1.71)	0.95
<b>Cardiovascular Disease</b>	0.87 (0.43, 1.76)	0.71
<b>Diabetes</b>	0.80 (0.38, 1.67)	0.55
<b>Chronic Kidney Disease</b>	2.12 (1.17, 3.84)	0.01*
<b>Lung Disease</b>	1.06 (0.60, 1.85)	0.85
<b>Smoking</b>	1.13 (0.60, 2.13)	0.71
<b>Obesity</b>	1.92 (0.99, 3.73)	0.05
<b>Glucocorticoid</b>		
No glucocorticoid use	REF	
1-5 mg/day	1.57 (0.84, 2.91)	0.15
6-9 mg/day	0.57 (0.20, 1.68)	0.31
≥ 10 mg/day	2.71 (1.28, 5.76)	0.01*
<b>Disease Activity</b>		
Minimal or Low	REF	
Moderate or Severe	2.27 (1.12, 4.61)	0.02*

†Adjusted for sex, age, region, season, medication category, hypertension, cardiovascular disease, diabetes, chronic kidney disease, lung disease, smoking, obesity, glucocorticoid use, and disease activity.

\*  $p < 0.05$

\*\*  $p < 0.01$

COVID-19, Coronavirus Disease 2019; DMARDs, disease-modifying antirheumatic drugs; AAV, ANCA-associated vasculitis

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