AUTOANTIBODIES AGAINST TYPE I INTERFERONS ARE ASSOCIATED WITH MULTI-ORGAN FAILURE IN COVID-19 PATIENTS

Rutger Koning[1], Paul Bastard[2,3,4], Jean-Laurent Casanova[2,3,4,5], Matthijs C. Brouwer,[1] Diederik van de Beek[1],

with the Amsterdam UMC Covid-19 Biobank investigators

[1]Amsterdam UMC, University of Amsterdam, Department of Neurology, Amsterdam Neuroscience

Meibergdreef 9, 1100 DD Amsterdam, The Netherlands

[2]Laboratory of Human Genetics of Infectious Diseases, Necker Branch, INSERM U1163, Necker Hospital for

Sick Children, Paris, France, EU

[3]University of Paris, Imagine Institute, Paris, France, EU

[4]St. Giles Laboratory of Human Genetics of Infectious Diseases, Rockefeller Branch, The Rockefeller

University, New York, NY, USA.

[5]Howard Hughes Medical Institute, New York, NY, USA

Supplementary Table 1: Characteristics of Covid-19 patients in the Amsterdam UMC Covid-19 biobank –

Covid-19 patients tested for auto-Abs compared to patients not tested

	Covid-19 patients tested for auto-Abs (N = 210)	Covid-19 patients not tested for auto-Abs (N = 263)	P-value
Age, years (median - IQR)	63 (56-71)	53 (51-73)	0.771
Gender (male)	134/210 (64%)	154/263 (59%)	0.256
Comorbidities			
Hypertension	105/210 (50%)	102/262 (39%)	0.031
Diabetes	63/210 (30%)	63/263 (24%)	0.144
Obesity	75/203 (36%)	80/242 (30%)	0.425
Complications			
Acute renal injury	21/210 (10%)	12/263 (5%)	0.028
Bacterial pneumonia	28/210 (13%)	22/258 (8%)	0.100
Thromboembolic event	44/210 (21%)	26/263 (10%)	0.001
Clinical course			
ICU admission	89/210 (42%)	77/263 (29%)	0.004
Mortality	57/210 (27%)	31/263 (12%)	<0.001

Supplementary Table 2: Baseline and clinical characteristics of non-Covid-19 intensive care unit controls

	Non-Covid-19 intensive care unit controls (N = 37)
Age, years (median - IQR)	63 (45 – 73)
Gender (male)	28/37 (76%)
Comorbidities	
Hypertension	10/37 (27%)
Diabetes	6/37 (16%)
Obesity	10/36 (28%)
Admission diagnosis	
Cardiac arrest or surgery	15/37 (41%)
Traumatic injury	8/37 (22%)
Aortic dissection	2/37 (5%)
Gastro-intestinal surgery	2/37 (5%)
Gastro-intestinal bleeding	2/37 (5%)
Subarachnoid bleeding	2/37 (3%)
Kidney disease	2/37 (5%)
Intoxication	2/37 (5%)
Myasthenia gravis	1/37 (3%)
Pancreatitis	1/37 (3%)
Autoantibodies against type I IFNs	6/37 (16%)
Mortality	5/37 (14%)

Supplementary Table 3: Baseline characteristics and clinical course of Covid-19 patients with auto-Abs to IFN-Is without neutralizing ability *in vitro* compared to Covid-19 patients negative for auto-Abs

	Patients with auto-Abs not neutralizing *in vitro* (N = 26)	Patients without auto-Abs (N = 175)	Significance (P-value)
Age, years median - IQR	61 (50 – 75)	64 (56-71)	0.60
Gender, male	16/26 (62%)	111/175 (63%)	0.83
Comorbidities			
Hypertension	14/26 (54%)	87/175 (50%)	0.83
Diabetes	10/26 (39%)	51/175 (29%)	0.36
Obesity	13/25 (50%)	61/169 (36%)	0.13
Complications			
Acute renal injury	5/26 (19%)	15/175 (9%)	0.15
Bacterial pneumonia	4/26 (15%)	20/175 (11%)	0.52
Thromboembolic event	4/26 (15%)	36/175 (21%)	0.79
Clinical course			
ICU admission	12/26 (46%)	70/175 (40%)	0.67
Mortality	8/26 (31%)	44/175 (25%)	0.63

Supplementary Fig 1 Recruitment diagram