



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

☆ **Spotlight on Special Topics**

CLINICAL CHARACTERISTICS OF NEUROLOGICAL DISEASE AND COVID-19

Poster Contributions

For exact presentation time, refer to the online ACC.22 Program Planner at <https://www.abstractsonline.com/pp8/#!/10461>

Session Title: Spotlight on Special Topics Flatboard Poster Selections: COVID
Abstract Category: 61. Spotlight on Special Topics: Coronavirus Disease (COVID-19)

Authors: *Kajal Thakkar, Alan Goldberg, Joanne Gomez, Tisha Marie Suboc, Jeanne du Fay de Lavallaz, Athina Bouroukas, Annabelle S. Volgman, Kim Allan Williams, SR, Neelum T. Aggarwal, Rush University Medical Center, Chicago, IL, USA*

Background: To investigate the differences among COVID-19 patients presenting with and without neurological disease in a large Illinois-based cohort.

Methods: A multicenter retrospective cohort study compared COVID-19 positive patients with and without neurological disease from March to November 2020 in the Rush University Systems for Health. We analyzed cardiovascular and health outcomes in rates of hospitalization, comorbidities, respiratory support, complications, readmissions, and death. Patients were followed for 60 days to gather readmissions and complications data.

Results: There were a total of 1770 positive COVID-19 patients— 30% [528] with neurological disease and 70% [1242] without neurological disease (Table 1). Significant findings included higher rates of hospitalization (V= 5886, p = 0.008) as well as higher rates of complications, such as acute myocardial infarction (13% vs. 8%; p = 0.00313) in the neurological disease cohort. A multivariable model showed a significant association between patients with neurological disease and readmission to the hospital (generalized linear model, z = 4.905, p<0.001).

Conclusion: Patients with neurological disease had higher rates of hospitalization and complications. With increasing evidence for SARS-CoV-2's mechanism in the central nervous system and potential long term consequences to the brain and neurological health, this data warrants ongoing studies that will further characterize the neurological patient population.

Table 1. Demographics by Neurological Disease Status

	No Neurologic Disease (n=870)	Neurologic Disease (n=900)	P
N= 1770	1242 (70)	528 (30)	<0.001
Median age	56	67	<0.001
Male	710 (57)	229 (43)	<0.001
Female	532 (43)	299 (57)	<0.001
Comorbidities:			
Atrial fibrillation	218 (18)	99 (11)	<0.001
Acute myocardial infarction	224 (17)	65 (12)	<0.001
Asthma	128 (10)	47 (9)	<0.001
Coronary artery disease	391 (32)	92 (17)	<0.001
Cancer	280 (23)	29 (5)	<0.001
Cerebrovascular disease	58 (5)	7 (1)	<0.001
Congestive heart failure (diastolic)	181 (15)	21 (4)	<0.001
Congestive heart failure (systolic)	157 (13)	21 (4)	<0.001
NYHA I	18 (1)	1 (0)	0.007
NYHA II	69 (6)	9 (2)	0.008
NYHA III	39 (3)	3 (0)	0.027
NYHA IV	12 (1)	0 (0)	0.038
Chronic kidney disease	51 (4)	3 (1)	0.406
CKD Stage 1	282 (23)	77 (15)	<0.001
CKD Stage 2	5 (0)	0 (0)	0.000
Stage 3	14 (1)	0 (0)	<0.001
Stage 4	14 (1)	0 (0)	<0.001
Stage 5	22 (2)	0 (0)	<0.001
Stage V	48 (4)	0 (0)	0.007
Chronic obstructive pulmonary disease	129 (10)	18 (3)	<0.001
Connective tissue disease	8 (1)	1 (0)	0.091
Dementia	127 (10)	82 (16)	<0.001
Diabetes mellitus	399 (33)	221 (42)	0.011
Diabetes mellitus (compensated)	50 (4)	169 (32)	<0.001
DVT/PE	262 (21)	62 (12)	<0.001
End-stage renal disease (ESRD)	29 (2)	0 (0)	0.009
Anemia	31 (3)	0 (0)	0.117
Hemiplegia	51 (5)	23 (4)	<0.001
IBS	19 (1)	1 (0)	0.253
Hypertension	689 (56)	387 (73)	<0.001
Hypertension	689 (56)	379 (72)	<0.001
Ischemic lung disease	31 (3)	0 (0)	0.005
Lactemia	29 (2)	0 (0)	0.011
Liver disease	106 (9)	31 (6)	0.012
Liver disease	23 (2)	0 (0)	0.121
Lymphoma	6 (0)	0 (0)	0.111
Myocarditis	2 (0)	0 (0)	0.139
Obstructive sleep apnea	221 (18)	47 (9)	0.019
Peripheral artery disease	139 (11)	26 (5)	<0.001
Posterior hypopituitarism	82 (7)	0 (0)	0.001
Parkinson's disease	51 (5)	0 (0)	<0.001
Pneumonia	21 (2)	0 (0)	<0.001
Rheumatoid arthritis	44 (4)	7 (1)	0.017
Tumor	214 (17)	44 (8)	<0.001
Valve	199 (16)	48 (9)	<0.001
Ventricular arrhythmia	69 (6)	0 (0)	0.447
Median Days of Hospitalization	5	6	0.008
Mean Days of Hospitalization	6.097363	6.883711	<0.001
Ventilator Use (mean days)	1.5587	1.2051	<0.001
Respirations			
Non-invasive respiratory support	287 (23)	154 (29)	<0.001
Non-invasive + Invasive support	711 (57)	276 (52)	0.047
Intrabronch + Invasive support	281 (23)	164 (32)	0.022
Intubated on admission	69 (6)	31 (6)	0.348
Complications:			
Acute myocardial infarction	189 (15)	65 (12)	0.003
ARDS	281 (23)	81 (16)	0.002
DKC	10 (1)	3 (0)	0.043
DRG	12 (1)	7 (1)	0.005
Phlebotomy	29 (2)	30 (6)	0.722
Shock	222 (17)	91 (17)	0.747
Ventricular arrhythmia	27 (2)	0 (0)	0.613
Health outcomes:			
ICU admission	461 (37)	201 (38)	0.297
Readmission to a floor	123 (10)	112 (21)	<0.001
Tracheostomy	36 (3)	17 (3)	0.463
ICU/MO	21 (2)	0 (0)	0.013
Alive	1092 (87)	455 (86)	0.311
Deceased	120 (10)	73 (14)	0.311