SUPPLEMENTAL MATERIALS

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SARS-CoV-2 and Stroke Characteristics:

A Report from the Multinational COVID-19 Stroke Study Group

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METHODS

Methods; Supplemental Document I. Detailed Study Design

This multicenter, multinational observational study was conducted and reported according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE),[1] and Enhancing the QUAlity and Transparency Of health Research (EQUATOR) guidelines.[2] The study protocol was designed by the investigators at the Neuroscience Institute of Geisinger Health System, Pennsylvania, USA, and received approval by the Institutional Review Board of Geisinger Health System and other participating institutions when it was required. Investigators from North America (Canada, Mexico, and six states of the United States), South America (Brazil), Europe (Belgium, Croatia, Czech Republic, Finland, France, Germany, Greece, Ireland, Italy, Norway, Portugal, Spain, Sweden, and Switzerland), Asia and the Middle East (India, Iran, Iraq, Israel, Lebanon, Singapore, South Korea, Turkey, and the United Arab Emirate), Oceania (Australia and New Zealand), and Africa (Egypt, Nigeria, and Uganda) responded to our invitation. The centers were included by non-probability sampling and data were recruited until June 10th, 2020. The core investigators invited their existing networks and collaborators from several countries through phone calls, emails, and announcements on social media platforms for professionals. The investigators and collaborators further introduced the study to local societies for physicians, academic health systems, hospitals that were designated as COVID-19 centers, services in charge of stroke patients, and other related organizations, sometimes using local languages. The authors also invited many stroke clinic investigators in other affected countries. In the USA, our collaborators from seven health systems accepted our invitation. Tertiary centers from health systems in New York, Pennsylvania, Tennessee, North Carolina, Virginia, and California provided data. In New Zealand, the data collection was led by the National Stroke Register team, which is supported by the National Stroke Network and the New Zealand Ministry of Health. Stroke physicians from all districts (Auckland, Bay of Plenty, Canterbury, Capital and Coast, Counties Manukau, Hawke's Bay, Lakes, Mid Central, Nelson Marlborough, Northland District, South Canterbury, Southern, Tairawhiti, Taranaki, Waikato, Waitemata, West Coast, Wairarapa, Whanganui, and Hutt Valley) further verified the stroke events. In Iran, we communicated with the Departments of Neurology and Neurosurgery in main university hospitals according to the ranking by the Iranian Ministry of Health and Medical Education, geographical location, and whether the center was located in the SARS-CoV-2 infection hot spots. The local investigators further announced the invitation through the Iranian Stroke Organization and the National Society for Neurologist portals. We received data from 16 provinces (Tehran, East Azerbaijan, Khorasan, Guilan, Ardabil, Isfahan, Golestan, Kermanshah, Semnan, Hormozgan, Kerman, Lorestan, Khuzestan, Markazi, Fars, and Ghazvin). In India, detailed data regarding the stroke were obtained from four states (Karnataka, Chhattisgarh, Ladakh, and Uttar Khand). Data from all Karnataka districts (Bengaluru, Mysuru, Belagavi, Kalaburgi, Vijayapura,

Chikkaballapur, Bagalkote, Bidar, and Dakshina-Kannada) were obtained from the Government of Karnataka, Department of Health and Family Welfare in Bengaluru. Records of stroke were rechecked with Stroke Registry in Karnataka and individual communications with 15 tertiary centers in Bengaluru. In Lebanon, two health systems in Beirut, where over 75% of patients with SARS-CoV-2 diagnosis were hospitalized, participated in this study. In Italy, data from Sicily were provided by the Regional Health Authority of Sicily. We also received data from Genova. Multiple centers in Switzerland (Lugano, and Basel), Israel (Jerusalem), Portugal (Porto, Coimbra, and Lisbon), Spain (Valladolid, Barcelona, Lleida, and Seville), Greece (Athens), Germany (Frankfurt, and Bochum), France (Paris), Croatia (Zagreb), Brazil (São Paulo), Turkey (Istanbul), Finland (Helsinki), South Korea (Seoul), Australia (Adelaide, Melbourne, and Sydney), Uganda (Kampala), Egypt (Cairo) collaborated in this study. Collaborators from the United Arab Emirates (Abu Dhabi) could not provide data by the deadline. Several centers reported no eligible patients for this study. Centers in Brazil, Canada, Croatia, Egypt, France, Germany, Greece, Iran, Israel, Italy, Portugal, Republic of Korea, Singapore, Spain, Switzerland, Turkey, and the United States reported data on their patients for the purpose of this study.

Supplemental Table I. Annual country health expenditures per capita during 2010 – 2017, according to WHO Health Expenditure reports. These countries provided reports of stroke among SARS-CoV-2 infected patients.

Countries	Current Health Expenditure (CHE) per Capita in US$							
	2010	2011	2012	2013	2014	2015	2016	2017
United States of America	$7,957.28	$8,169.91	$8,441.00	$8,647.64	$9,068.00	$9,538.07	$9,941.35	$10,246.14
Switzerland	$8,021.81	$9,572.17	$9,286.55	$9,689.67	$10,014.71	$9,807.80	$9,835.96	$9,956.26
Germany	$4,597.24	$5,021.63	$4,754.66	$5,094.42	$5,290.72	$4,617.49	$4,734.18	$5,033.45
Canada	$5,044.14	$5,361.24	$5,408.93	$5,345.32	$5,081.56	$4,539.14	$4,518.14	$4,754.95
France	$4,593.39	$4,933.40	$4,652.29	$4,900.39	$4,987.87	$4,204.09	$4,256.96	$4,379.73
Israel	$2,211.02	$2,410.75	$2,376.65	$2,648.82	$2,788.50	$2,640.31	$2,856.18	$3,144.63
Italy	$3,214.55	$3,387.58	$3,125.61	$3,195.55	$3,190.09	$2,708.84	$2,736.26	$2,840.13
Singapore	$1,513.57	$1,704.37	$1,863.08	$2,114.62	$2,237.40	$2,326.27	$2,489.91	$2,618.71
Spain	$2,775.14	$2,894.76	$2,588.67	$2,628.86	$2,671.28	$2,351.53	$2,390.63	$2,506.46
Republic of Korea	$1,374.27	$1,521.49	$1,575.86	$1,712.08	$1,910.74	$1,925.47	$2,040.41	$2,283.07
Portugal	$2,213.10	$2,207.70	$1,918.60	$1,959.42	$1,986.89	$1,724.53	$1,802.77	$1,908.03
Greece	$2,573.74	$2,354.01	$1,968.48	$1,834.34	$1,724.53	$1,464.73	$1,499.35	$1,516.59
Brazil	$891.76	$1,025.49	$950.93	$974.50	$1,009.83	$776.15	$795.66	$928.80
Croatia	$1,126.37	$1,132.50	$1,029.97	$889.94	$909.37	$795.52	$840.91	$902.14
Iran	$440.85	$524.69	$519.30	$413.73	$382.71	$375.13	$454.19	$475.48
Turkey	$539.33	$531.66	$524.82	$552.41	$527.20	$454.61	$468.65	$444.65
Egypt	$111.44	$123.26	$143.38	$140.33	$153.79	$180.82	$151.47	$105.77

Total Health Expenditure During 2010-2017
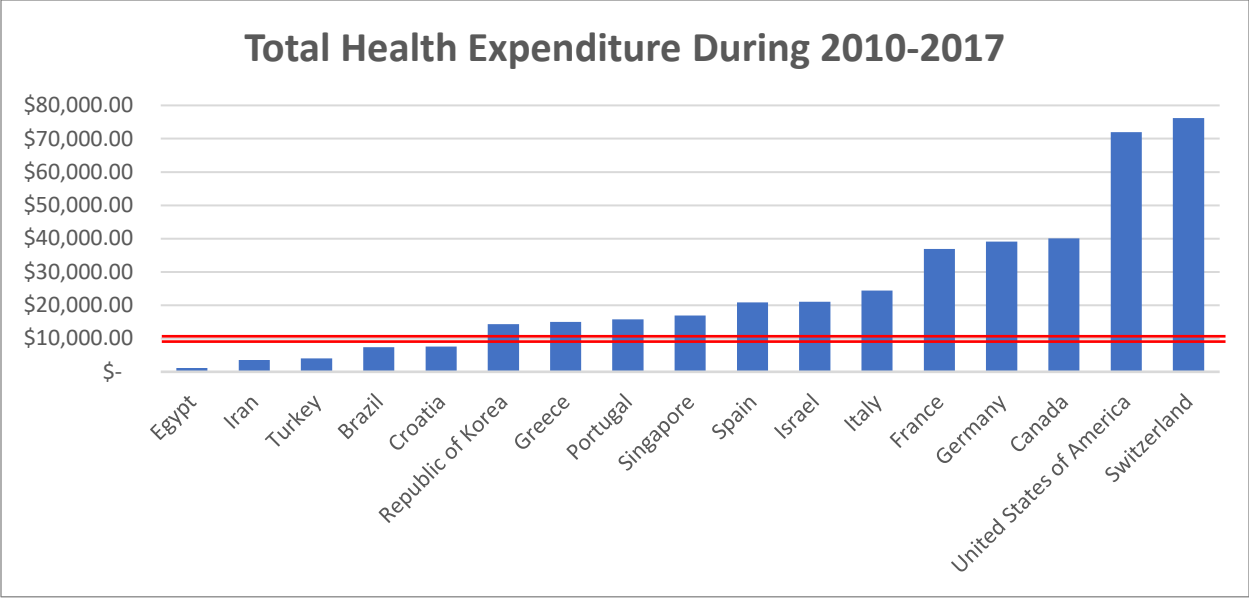
Supplemental Figure I. Distribution of total health expenditures per capita during 2010-2017 by country, according to WHO Health Expenditure. These countries provided reports of stroke among SARS-CoV-2 infected patients.

RESULTS

Results; Supplemental Table II. Subgroups of AIS patients based on geographical regions

Baseline characteristics, comorbidities, and laboratory findings among SARS-CoV-2 patients with an acute ischemic stroke, according to geographical regions. Blue ink indicates the post-hoc p values.

Parameter	A: Middle East N = 153 (47.4%)	B: Asia N = 6 (1.9%)	C: America N = 88 (27.2%)	D: Europe N = 76 (23.5%)	P-value
Age; Mean (SD); Years	67 ± 15	54 ± 20	68 ± 14	68 ± 16	0.19
Age; Median [IQR]; Years	68 [58 – 78]	48 [39 – 75]	66 [59 – 79]	70 [58 – 80]	0.39
Sex; Female; N (%)	58 (37.9)	1 (16.7)	38 (43.2)	33 (43.4)	0.50
Large Vessel Occlusion; N (%)	71 (48.3)	2 (40.0)	23 (41.1)	30 (40.0)	0.62
Intravenous Thrombolysis; N (%)	22 (14.4)	1 (16.7)	11 (12.5)	10 (13.2)	0.97
Mechanical Thrombectomy; N (%)	4 (2.6)	0 (0.0)	4 (4.5)	16 (21.1) [A (<0.001)] [C (0.004)]	<0.001
National Institutes of Health Stroke Scale (NIHSS) Score; Median [IQR]	12.0 [6.0 – 17.0]	7.0 [5.0 – 11.0]	7.0 [0.0 – 16.0]	8.0 [4.0 – 18.0]	0.06
Imaging Patterns					
Embolic/Large Vessel athero-Thromboembolism; N (%)	107 (75.4)	5 (83.3)	29 (87.9)	65 (86.7)	0.05
Lacune; N (%)	16 (11.3)	0 (0.0)	3 (9.1)	7 (9.3)	
Border-zone; N (%)	19 (13.4)	1 (16.7)	0 (0.0)	3 (4.0)	
Vasculitis Pattern; N (%)	0 (0.0)	0 (0.0)	1 (3.0)	0 (0.0)	
TOAST					
Large-Artery Atherosclerosis; N (%)	38 (53.5) [D (<0.001)]	2 (33.3)	5 (26.3)	11 (14.9)	<0.001
Cardio-embolism; N (%)	15 (21.1)	1 (16.7)	3 (15.8)	27 (36.5)	
Small-Vessel Occlusion; N (%)	12 (18.3) [D (0.02)]	0 (0.0)	1 (5.3)	3 (4.1)	
Stroke of Other Determined Etiology; N (%)	5 (7.0)	0 (0.0)	2 (10.5)	6 (8.1)	
Stroke of Undetermined Etiology; N (%)	0 (0.0)	3 (50.0)	8 (42.1)	27 (36.5)	
Interval Between Onset to Index Event; Median [IQR]; Days	3.0 [0.0 – 8.0]	5.0 [4.0 – 6.0]	2.0 [0.0 – 7.0]	4.0 [0.0 – 14.0]	0.14
Mechanical Ventilation; N (%)	47 (30.7)	1 (16.7)	15 (17.0)	22 (28.9)	0.11
Disposition*					
Discharged Home; N (%)	74 (48.4)	0.0 (0.0)	28 (45.2)	25 (32.9)	<0.001
In Hospital Mortality; N (%)	46 (30.1)	1 (16.7)	16 (25.8)	19 (25.0)	
Still in Hospital/Subacute Care; N (%)	33 (21.6)	5 (83.3) [A (0.003)] [C (0.04)]	18 (29.0)	32 (42.1) [A (0.007)]	

Parameter	A: Middle East N = 153 (47.4%)	B: Asia N = 6 (1.9%)	C: America N = 88 (27.2%)	D: Europe N = 76 (23.5%)	P-value
Length of Hospital Stay; Median (IQR); Days	6.0 [4.0 – 10.0] C (0.047) D (0.047)	12.0 [12.0 – 14.0]	9.0 [4.0 – 14.0]	11.0 [5.0 – 18.0]	0.04
Comorbidities					
Hypertension; N (%)	93 (60.8)	2 (33.3)	56 (65.9)	51 (67.1)	0.33
Diabetes Mellitus; N (%)	53 (34.6)	1 (16.7)	34 (39.5)	23 (30.3)	0.50
Ischemic Heart Disease; N (%)	50 (32.7) C (0.02) D (0.04)	0 (0.0)	9 (14.8)	13 (17.1)	0.01
Atrial Fibrillation; N (%)	20 (13.1)	0 (0.0)	9 (10.6)	16 (21.1)	0.17
Carotid Stenosis; N (%)	17 (11.1)	0 (0.0)	7 (11.5)	14 (18.4)	0.32
Chronic Kidney Disease; N (%)	30 (19.6) C (0.01)	0 (0.0)	5 (5.9)	7 (9.2)	0.01
Cardiac Ejection Fraction <40%; N (%)	6 (3.9)	1 (16.7)	7 (11.5)	10 (13.2)	0.05
Active Neoplasm; N (%)	12 (7.8)	0 (0.0)	5 (8.2)	4 (5.3)	0.78
Rheumatological Disease; N (%)	0 (0.0)	0 (0.0)	0 (0.0)	5 (6.6)	<0.001
Prior Stroke or Transient Ischemic Attack; N (%)	2 (1.3)	0 (0.0)	2 (3.3)	1 (1.3)	0.75
Smoking; N (%)	28 (18.3)	0 (0.0)	16 (8.8)	9 (11.8)	0.38
Laboratory Findings					
White Blood Cell Count x10^9/L; Mean (SD)	10.3 ± 4.5	7.2 ± 3.2	9.0 ± 4.1	10.1 ± 5.9	0.15
White Blood Cell Count x10^9/L; Median [IQR]	9.6 [7.5 – 11.8]	6.3 [4.4 – 10.2]	7.9 [6.2 – 10.5]	8.5 [6.2 – 11.5]	0.02
Neutrophil Count x10^9/L; Mean (SD)	8.2 ± 4.3	4.4 ± 2.6	7.2 ± 4.2	7.6 ± 5.0	0.11
Neutrophil Count x10^9/L; Median [IQR]	7.6 [5.4 – 9.9]	3.7 [2.5 – 5.3]	6.3 [4.2 – 8.2]	6.0 [4.2 – 8.8]	0.01
Lymphocyte Count x10^9/L; Mean (SD)	1.5 ± 1.0	1.7 ± 0.5	1.6 ± 2.1	2.2 ± 2.2	0.05
Lymphocyte x10^9/L; Median [IQR]	1.3 [0.9 – 1.9]	1.6 [1.4 – 1.7]	1.2 [0.9 – 1.8]	1.4 [0.9 – 2.5]	0.14
Platelet Count x10^9/L; Mean (SD)	230.5 ± 112.5 D (<0.001)	200.5 ± 86.8	295.6 ± 138.3 D (0.017)	506.0 ± 835.8	<0.001
Platelet Count x10^9/L; Median [IQR]	192.0 [145.0 – 305.0] C (0.039)	181.5 [127.0 – 241.0]	268.0 [202.0 – 381.0]	244.5 [177.0 – 397.5]	<0.001
Alanine Transaminase (ALT); Mean (SD); U/L	59.7 ± 70.9	60.6 ± 70.5	78.1 ± 109.9	57.2 ± 91.3	0.50
Alanine Transaminase (ALT); Median [IQR] ; U/L	33.0 [9.0 – 97.0]	26.0 [11.0 – 113.4]	42.3 [16.2 – 102.0]	20.5 [3.1 – 57.5]	0.21
Aspartate Transaminase (AST); Mean (SD); U/L	34.1 ± 29.4	23.7 ± 14.3	30.9 ± 21.0	30.4 ± 27.5	0.62
Aspartate Transaminase (AST); Median [IQR] ; U/L	23.0 [14.6 – 43.0]	23.5 [14.2 – 34.0]	23.5 [15.0 – 40.0]	25.6 [7.7 – 40.0]	0.70
Blood Urea Nitrogen (BUN); Mean (SD); mg/dl	50.0 ± 49.0	101.7 ± 118.7	79.6 ± 188.3	38.9 ± 27.6	0.05

Parameter	A: Middle East N = 153 (47.4%)	B: Asia N = 6 (1.9%)	C: America N = 88 (27.2%)	D: Europe N = 76 (23.5%)	P-value
Blood Urea Nitrogen (BUN); Median [IQR]; mg/dl	30.0 [20.0 – 46.0]	60.0 [35.0 – 86.0]	35.0 [21.0 – 67.0]	33.0 [23.0 – 46.0]	0.14
Creatinine; Mean (SD); mg/dl	1.51 ± 1.3	1.4 ± 0.9	1.9 ± 2.8	1.1 ± 0.6	0.04
Creatinine; Median [IQR]; mg/dl	1.12 [0.9 – 1.5]	1.0 [1.0 – 1.4]	1.1 [0.8 – 2.3]	1.0 [0.8 – 1.3]	0.06
C-Reactive Protein (CRP); Mean (SD); mg/L	50.0 ± 60.0	118.0 ± 138.0	98.0 ± 239.0	40.0 ± 24.0	0.02
C-Reactive Protein (CRP); Median [IQR]; mg/L	33.0 [24.0 – 49.0]	72.0 [45.0 – 94.0]	43.0 [24.0 – 82.0]	36.0 [24.0 – 50.0]	0.10
Lactate Dehydrogenase (LDH); Mean (SD); U/L	462.4 ± 186.8	541.5 ± 185.8	432.1 ± 278.6	911.6 ± 2623.2	0.40
Lactate Dehydrogenase (LDH); Median [IQR]; U/L	426.5 [331.5 – 558.5] D (0.006)	504.0 [419.0 – 648.0] D (0.008)	384.0 [266.0 – 536.0]	270.0 [197.0 – 426.0]	0.03
Fibrinogen; Mean (SD); mg/dl	459.6 ± 759.0	43.5 ± 58.8	421.9 ± 214.8	560.3 ± 1377.8	0.70
Fibrinogen; Median [IQR]; mg/dl	166.8 [2.2 – 403.0] C (0.043) D (0.039)	23.0 [3.5 – 53.9] C (0.037)	464.0 [216.5 – 578.5]	210.0 [3.8 – 456.0]	0.01
D- Dimer; Mean (SD); ng/ml	1356.6 ± 3084.7	560.0 ± 265.5	4430.7 ± 9768.1	1659.8 ± 1167.4	0.09
D- Dimer; Median [IQR]; ng/ml	584.0 [427.0 – 1100.0]	550.0 [400.0 – 650.0]	1060.0 [565.0 – 2867.0]	1431.0 [730.0 – 2200.0]	0.01

* Data on patients' disposition were sparse.

Results; Supplemental Table III. Subgroups of AIS patients according to the countries' health expenditure

Baseline characteristics, comorbidities, and laboratory findings among SARS-CoV-2 patients with an acute ischemic stroke, based on the countries' health expenditures. Blue ink indicates the post-hoc p values.

Parameter	Middle to high health expenditure N = 170 (52.6%)	Low health expenditure N = 153 (47.4%)	P-value
Age; Mean (SD); Years	68 ± 15	67 ± 15	0.65
Age; Median [IQR]; Years	69 [58 – 79]	68 [58 – 77]	0.83
Sex; Female; N (%)	74 (43.5)	56 (36.6)	0.21
Large Vessel Occlusion; N (%)	53 (39.0)	73 (49.7)	0.07
Intravenous Thrombolysis; N (%)	21 (12.4)	23 (15.0)	0.48
Mechanical Thrombectomy; N (%)	21 (12.4)	3 (2.0)	<0.001
National Institutes of Health Stroke Scale (NIHSS) Score; Median [IQR]	8.0 [3.0 – 17.0]	11.0 [5.0 – 17.0]	0.02
Imaging Patterns			
Embolic/Large Vessel athero-Thromboembolism; N (%)	100 (87.0) B (0.02)	106 (75.2)	
Lacune; N (%)	10 (8.7)	16 (11.3)	0.02
Border-zone; N (%)	4 (3.5)	19 (13.5) A (0.01)	
Vasculitis Pattern; N (%)	1 (0.9)	0 (0.0)	
TOAST			
Large-Artery Atherosclerosis; N (%)	19 (19.2)	37 (52.1) A (<0.001)	
Cardio-embolism; N (%)	31 (31.3)	15 (21.1)	
Small-Vessel Occlusion; N (%)	4 (4.0)	13 (18.3) A (0.002)	<0.001
Stroke of Other Determined Etiology; N (%)	8 (8.1)	5 (7.0)	
Stroke of Undetermined Etiology; N (%)	37 (37.4) B (<0.001)	1 (1.4)	
Interval Between Onset to Index Event; Median [IQR]; Days	3.0 [0.0 – 10.0]	3.0 [0.0 – 8.0]	0.69
Mechanical Ventilation; N (%)	38 (22.4)	47 (30.7)	0.09
Disposition*			
Discharged Home; N (%)	54 (37.5)	73 (47.7)	
In Hospital Mortality; N (%)	35 (24.3)	47 (30.7)	0.01
Still in Hospital/Subacute Care; N (%)	55 (38.2) B (0.002)	33 (21.6)	
Length of Hospital Stay; Median (IQR); Days	10.0 [5.0 – 17.0]	6.0 [4.0 – 10.0]	0.14
Comorbidities			
Hypertension; N (%)	109 (65.3)	93 (60.8)	0.41
Diabetes Mellitus; N (%)	59 (35.1)	52 (34.0)	0.83
Ischemic Heart Disease; N (%)	22 (15.4)	50 (32.7)	<0.001

Parameter	Middle to high health expenditure N = 170 (52.6%)	Low health expenditure N = 153 (47.4%)	P-value
Atrial Fibrillation; N (%)	25 (15.0)	20 (13.1)	0.63
Carotid Stenosis; N (%)	19 (13.3)	19 (12.4)	0.82
Chronic Kidney Disease; N (%)	11 (6.6)	21 (20.3)	<0.001
Cardiac Ejection Fraction <40%; N (%)	18 (12.6)	6 (3.9)	0.01
Active Neoplasm; N (%)	8 (5.6)	13 (8.5)	0.33
Rheumatological Disease; N (%)	4 (2.8)	1 (0.7)	0.15
Prior Stroke or Transient Ischemic Attack; N (%)	3 (2.1)	2 (1.3)	0.60
Smoking; N (%)	23 (13.8)	30 (19.6)	0.16
Laboratory Findings			
White Blood Cell Count x10^9/L; Mean (SD)	9.6 ± 5.0	10.1 ± 4.6	0.30
White Blood Cell Count x10^9/L; Median [IQR]	8.2 [6.2 – 10.8]	9.5 [7.4 – 11.8]	0.02
Neutrophil Count x10^9/L; Mean (SD)	7.3 ± 4.6	8.2 ± 4.3	0.11
Neutrophil Count x10^9/L; Median [IQR]	6.2 [4.2 – 8.7]	7.5 [5.3 -9.9]	<0.001
Lymphocyte Count x10^9/L; Mean (SD)	1.9 ± 2.2	1.5 ± 1.0	0.09
Lymphocyte x10^9/L; Median [IQR]	1.3 [0.9 – 2.0]	1.3 [1.0 – 1.9]	1.00
Platelet Count x10^9/L; Mean (SD)	393.4 ± 591.6	229.0 ± 110.6	<0.001
Platelet Count x10^9/L; Median [IQR]	247.0 [183.0 – 386.0]	191.0 [145.0 – 298.5]	<0.001
Alanine Transaminase (ALT); Mean (SD); U/L	65.8 ± 99.9	60.9 ± 70.6	0.65
Alanine Transaminase (ALT); Median [IQR]; U/L	26.9 [8.6 – 76.5]	40.0 [10.4 – 98.0]	0.46
Aspartate Transaminase (AST); Mean (SD); U/L	31.3 ± 24.0	33.0 ± 29.6	0.60
Aspartate Transaminase (AST); Median [IQR]; U/L	27.0 [14.0 – 40.0]	21.4 [14.0 – 39.0]	0.62
Blood Urea Nitrogen (BUN); Mean (SD); mg/dl	61.4 ± 135.2	43.5 ± 47.9	0.14
Blood Urea Nitrogen (BUN); Median [IQR]; mg/dl	33.0 [22.0 – 53.0]	32.0 [20.0 – 46.0]	0.35
Creatinine; Mean (SD); mg/dl	1.52 ± 2.0	1.5 ± 1.3	0.95
Creatinine; Median [IQR]; mg/dl	1.0 [0.8 – 1.4]	1.1 [0.9 – 1.5]	0.07
C-Reactive Protein (CRP); Mean (SD); mg/L	71.0 ± 170.0	50.0 ± 60.0	0.18
C-Reactive Protein (CRP); Median [IQR]; mg/L	39.0 [24.0 – 66.0]	33.0 [25.0 – 48.0]	0.11
Lactate Dehydrogenase (LDH); Mean (SD); U/L	667.0 ± 1861.5	473.8 ± 187.3	0.50
Lactate Dehydrogenase (LDH); Median [IQR]; U/L	346.0 [205.0 – 522.0]	438.0 [336.0 – 600.0]	0.01
Fibrinogen; Mean (SD); mg/dl	514.4 ± 1061.6	171.7 ± 216.9	0.27
Fibrinogen; Median [IQR]; mg/dl	328.0 [53.9 – 506.0]	2.47 [2.1 – 373.0]	0.02
D- Dimer; Mean (SD); ng/ml	2879.1 ± 6884.8	1522.9 ± 3156.3	0.38
D- Dimer; Median [IQR]; ng/ml	1060.0 [585.0 – 2235.0]	600.0 [462.0 – 1100.0]	0.05

* Data on patients' disposition were sparse.

Results; Supplemental Table IV. Subgroups of AIS patients based on sex.

Baseline characteristics, comorbidities, and laboratory findings among SARS-CoV-2 patients with an acute ischemic stroke among female versus male patients. Blue ink indicates the post-hoc p values.

Parameter	Female N = 130 (40.2%)	Male N = 193 (59.8%)	P-value
Age; Mean (SD); Years	68.8 ± 17.1	66.1 ± 13.7	0.13
Age; Median [IQR]; Years	73 [58 − 81]	66 [58 − 76]	0.14
Large Vessel Occlusion; N (%)	46 (39.3)	80 (48.2)	0.14
Intravenous Thrombolysis; N (%)	22 (16.9)	22 (11.4)	0.16
Mechanical Thrombectomy; N (%)	12 (9.2)	12 (6.2)	0.31
National Institutes of Health Stroke Scale (NIHSS) Score; Median [IQR]	12.0 [5.0 − 19.0]	8.0 [4.0 − 16.0]	<0.001
Imaging Patterns			
Embolic/Large Vessel athero-Thromboembolism; N (%)	83 (81.4)	123 (79.9)	0.49
Lacune; N (%)	11 (10.8)	15 (9.7)	
Border-zone; N (%)	7 (6.9)	16 (10.4)	
Vasculitis Pattern; N (%)	1 (1.0)	0 (0.0)	
TOAST			
Large-Artery Atherosclerosis; N (%)	19 (28.4)	27 (35.9)	0.05
Cardio-embolism; N (%)	21 (31.3)	25 (24.3)	
Small-Vessel Occlusion; N (%)	3 (4.5)	14 (13.6)	
Stroke of Other Determined Etiology; N (%)	9 (13.4) [B (0.02)]	4 (3.9)	
Stroke of Undetermined Etiology; N (%)	15 (22.4)	23 (22.3)	
Interval Between Onset to Index Event; Median [IQR]; Days	1.0 [0 − 8.0]	4.0 [0 − 9.0]	0.55
Mechanical Ventilation; N (%)	35 (26.9)	50 (25.9)	0.84
Disposition*			
Discharged Home; N (%)	47 (39.2)	80 (45.2)	0.59
In Hospital Mortality; N (%)	35 (29.2)	47 (26.6)	
Still in Hospital/Subacute Care; N (%)	38 (31.7)	50 (28.2)	
Length of Hospital Stay; Median (IQR); Days	7.0 [4.0 − 17.0]	7.0 [4.0 − 15.0]	0.10
Comorbidities			
Hypertension; N (%)	80 (63.0)	122 (63.2)	0.97
Diabetes Mellitus; N (%)	46 (35.9)	65 (33.7)	0.68
Ischemic Heart Disease; N (%)	28 (23.9)	44 (24.6)	0.90
Atrial Fibrillation; N (%)	22 (17.3)	23 (11.9)	0.17
Carotid Stenosis; N (%)	14 (12.0)	24 (13.4)	0.72
Chronic Kidney Disease; N (%)	10 (7.9)	32 (16.6)	0.02
Cardiac Ejection Fraction <40%; N (%)	12 (11.1)	11 (6.1)	0.13

Parameter	Female N = 130 (40.2%)	Male N = 193 (59.8%)	P-value
Active Neoplasm; N (%)	7 (6.0)	14 (6.8)	0.55
Rheumatological Disease; N (%)	1 (0.9)	4 (2.2)	0.37
Prior Stroke or Transient Ischemic Attack; N (%)	2 (1.7)	3 (1.7)	0.98
Smoking; N (%)	12 (9.4)	41 (21.2)	0.01
Laboratory Findings			
White Blood Cell Count x10^9/L; Mean (SD)	9.7 ± 5.0	9.9 ± 4.7	0.80
White Blood Cell Count x10^9/L; Median [IQR]	8.8 [6.5 – 10.8]	9.1 [7.2 – 11.6]	0.64
Neutrophil Count x10^9/L; Mean (SD)	7.7 ± 4.9	7.7 ± 4.2	0.94
Neutrophil Count x10^9/L; Median [IQR]	6.3 [4.6 – 9.2]	7.2 [4.9 – 9.4]	0.94
Lymphocyte Count x10^9/L; Mean (SD)	1.6 ± 0.8	1.7 ± 2.1	0.64
Lymphocyte x10^9/L; Median [IQR]	1.5 [1.0 – 2.2]	1.3 [0.9 – 1.8]	0.24
Platelet Count x10^9/L; Mean (SD)	284.9 ± 199.0	334.6 ± 546.7	0.35
Platelet Count x10^9/L; Median [IQR]	242.0 [162.0 – 353.0]	221.0 [161.0 – 313.0]	0.90
Alanine Transaminase (ALT); Mean (SD); U/L	47.4 ± 55.5	73.6 ± 100.2	0.01
Alanine Transaminase (ALT); Median [IQR] ; U/L	22.4 [4.0 – 74.0]	33.0 [12.3 – 109.0]	0.05
Aspartate Transaminase (AST); Mean (SD); U/L	32.1 ± 25.5	32.1 ± 27.7	0.98
Aspartate Transaminase (AST); Median [IQR] ; U/L	25.0 [14.0 – 44.0]	23.0 [14.0 – 40.0]	0.42
Blood Urea Nitrogen (BUN); Mean (SD); mg/dl	38.1 ± 36.0	63.4 ± 131.2	0.02
Blood Urea Nitrogen (BUN); Median [IQR]; mg/dl	29.0 [19.0 – 41.0]	34.5 [22.0 – 56.5]	0.91
Creatinine; Mean (SD); mg/dl	1.4 ± 1.3	1.6 ± 1.9	0.31
Creatinine; Median [IQR]; mg/dl	1.0 [0.8 – 1.5]	1.1 [0.9 – 1.5]	0.68
C-Reactive Protein (CRP); Mean (SD); mg/L	49.7 ± 65.4	69.3 ± 131.2	0.23
C-Reactive Protein (CRP); Median [IQR]; mg/L	33.0 [23.0 – 50.0]	40.0 [26.0 – 58.0]	0.33
Lactate Dehydrogenase (LDH); Mean (SD); U/L	438.6 ± 353.6	696.8 ± 1894.5	0.33
Lactate Dehydrogenase (LDH); Median [IQR]; U/L	349.5 [277.5 – 467.0]	414.5 [241.0 – 556.0]	0.13
Fibrinogen; Mean (SD); mg/dl	286.7 ± 227.9	562.3 ± 1216.6	0.23
Fibrinogen; Median [IQR]; mg/dl	346.0 [56.0 – 477.0]	218.0 [3.9 – 561.0]	0.68
D- Dimer; Mean (SD); ng/ml	2979.3 ± 6778.1	2470.6 ± 6258.5	0.67
D- Dimer; Median [IQR]; ng/ml	1057.0 [510.0 – 2200.0]	992 [568.0 – 2180.0]	0.92

* Data on patients' disposition were sparse.

Results; Supplemental Table V. Subgroups of AIS patients younger or older than 55-year-old

Baseline characteristics, comorbidities, and laboratory findings among SARS-CoV-2 patients with an acute ischemic stroke, comparing those younger versus older than 55. Blue ink indicates the post-hoc p values.

Parameter	Age <55-year-old N = 67 (36.2%)	Age >55-year-old N = 256 (79.3%)	P-value
Sex; Female; N (%)	29 (41.8)	102 (39.8)	0.77
Large Vessel Occlusion; N (%)	30 (47.6)	96 (43.6)	0.58
Intravenous Thrombolysis; N (%)	11 (16.4)	33 (12.9)	0.45
Mechanical Thrombectomy; N (%)	8 (11.9)	16 (6.3)	0.11
National Institutes of Health Stroke Scale (NIHSS) Score; Median [IQR]	8.0 [4.0 – 17.0]	9.0 [4.0 – 17.0]	0.68
Imaging Patterns			
Embolic/Large Vessel athero-Thromboembolism; N (%)	46 (78.0)	160 (81.2)	
Lacune; N (%)	4 (6.8)	22 (11.2)	0.21
Border-zone; N (%)	9 (15.3)	14 (7.1)	
Vasculitis Pattern; N (%)	0 (0.0)	1 (0.5)	
TOAST			
Large-Artery Atherosclerosis; N (%)	14 (31.1)	42 (33.6)	
Cardio-embolism; N (%)	7 (15.6)	39 (31.2) [A (0.04)]	
Small-Vessel Occlusion; N (%)	4 (8.9)	13 (10.4)	0.05
Stroke of Other Determined Etiology; N (%)	7 (15.6) [B (0.02)]	6 (4.8)	
Stroke of Undetermined Etiology; N (%)	13 (28.9)	25 (20.0)	
Interval Between Onset to Index Event; Median [IQR]; Days	4.0 [0.0 – 10.0]	3.0 [0.0 – 8.0]	0.22
Mechanical Ventilation; N (%)	18 (26.9)	67 (26.2)	0.91
Disposition*			
Discharged Home; N (%)	39 (59.4) [B (0.002)]	89 (38.9)	
In Hospital Mortality; N (%)	8 (12.5)	74 (31.8) [A (0.01)]	<0.001
Still in Hospital/Subacute Care; N (%)	18 (28.1)	70 (30.0)	
Length of Hospital Stay; Median (IQR); Days	12.0 [5.0 – 18.0]	7.0 [4.0 – 15.0]	0.05
Comorbidities			
Hypertension; N (%)	26 (39.4)	176 (69.3)	<0.001
Diabetes Mellitus; N (%)	20 (29.9)	91 (35.8)	0.36
Ischemic Heart Disease; N (%)	9 (13.8)	63 (27.3)	0.03
Atrial Fibrillation; N (%)	4 (6.1)	41 (16.1)	0.04
Carotid Stenosis; N (%)	3 (4.6)	35 (15.2)	0.03
Chronic Kidney Disease; N (%)	12 (18.2)	30 (11.8)	0.17
Cardiac Ejection Fraction <40%; N (%)	4 (6.2)	20 (8.7)	0.51
Active Neoplasm; N (%)	4 (6.2)	17 (7.4)	0.74

Rheumatological Disease; N (%)	1 (1.5)	4 (1.7)	0.92
Prior Stroke or Transient Ischemic Attack; N (%)	1 (1.5)	4 (1.7)	0.92
Smoking; N (%)	8 (12.1)	45 (17.7)	0.28
Laboratory Findings			
White Blood Cell Count x10^9/L; Mean (SD)	9.9 ± 4.8	9.8 ± 4.8	0.91
White Blood Cell Count x10^9/L; Median [IQR]	9.1 [7.3 – 11.6]	9.0 [6.7 – 11.1]	0.96
Neutrophil Count x10^9/L; Mean (SD)	7.7 ± 4.7	7.7 ± 4.4	0.99
Neutrophil Count x10^9/L; Median [IQR]	6.7 [4.8 – 9.1]	6.8 [4.8 – 9.3]	0.86
Lymphocyte Count x10^9/L; Mean (SD)	2.0 ± 2.3	1.6 ± 1.4	0.05
Lymphocyte x10^9/L; Median [IQR]	1.6 [1.2 – 2.2]	1.3 [0.9 – 1.9]	<0.001
Platelet Count x10^9/L; Mean (SD)	315.9 ± 201.9	314.2 ± 487.5	0.98
Platelet Count x10^9/L; Median [IQR]	259.5 [179.0 – 398.5]	219.0 [158.5 – 315.0]	0.02
Alanine Transaminase (ALT); Mean (SD); U/L	43.4 ± 60.4	69.3 ± 92.0	0.01
Alanine Transaminase (ALT); Median [IQR] ; U/L	17.1 [6.1 – 56.4]	34.3 [12.0 – 99.0]	0.02
Aspartate Transaminase (AST); Mean (SD); U/L	20.9 ± 16.2	35.2 ± 28.2	<0.001
Aspartate Transaminase (AST); Median [IQR] ; U/L	16.0 [10.4 – 25.0]	26.0 [15.0 – 44.0]	<0.001
Blood Urea Nitrogen (BUN); Mean (SD); mg/dl	68.0 ± 197.7	48.8 ± 53.6	0.46
Blood Urea Nitrogen (BUN); Median [IQR]; mg/dl	30.0 [18.0 – 50.0]	33.0 [22.0 – 50.0]	0.38
Creatinine; Mean (SD); mg/dl	1.4 ± 1.5	1.5 ± 1.8	0.53
Creatinine; Median [IQR]; mg/dl	0.9 [0.8 – 1.2]	1.1 [0.9 – 1.5]	<0.001
C-Reactive Protein (CRP); Mean (SD); mg/L	87.0 ± 259.0	54.0 ± 55.0	0.34
C-Reactive Protein (CRP); Median [IQR]; mg/L	32.0 [20.0 – 48.0]	38.0 [25.0 – 60.0]	0.06
Lactate Dehydrogenase (LDH); Mean (SD); U/L	487.1 ± 334.5	635.3 ± 1716.0	0.64
Lactate Dehydrogenase (LDH); Median [IQR]; U/L	397.5 [286.0 – 588.0]	371.0 [241.5 – 522.5]	0.44
Fibrinogen; Mean (SD); mg/dl	285.6 ± 266.5	547.8 ± 1181.4	0.27
Fibrinogen; Median [IQR]; mg/dl	338.5 [4.0 – 501.0]	220.0 [42.0 – 490.0]	0.70
D- Dimer; Mean (SD); ng/ml	1911.7 ± 3209.7	2884.7 ± 7135.6	0.47
D- Dimer; Median [IQR]; ng/ml	625.5 [426.0 – 2085.0]	1100.0 [585.0 – 2205.0]	0.22

* Data on patients' disposition were sparse.

Results; Supplemental Table VI. Subgroups of AIS patients younger or older than 65-year-old

Baseline characteristics, comorbidities, and laboratory findings among SARS-CoV-2 patients with an acute ischemic stroke, comparing those younger versus older than 65. Blue ink indicates the post-hoc p values.

Parameter	Age <65-year-old N = 148 (45.8%)	Age >65-year-old N = 175 (54.2%)	P-value
Sex; Female; N (%)	52 (35.1)	78 (44.6)	0.09
Large Vessel Occlusion; N (%)	62 (47.3)	64 (42.1)	0.38
Intravenous Thrombolysis; N (%)	29 (19.6)	15 (8.6)	0.004
Mechanical Thrombectomy; N (%)	14 (9.5)	10 (5.7)	0.20
National Institutes of Health Stroke Scale (NIHSS) Score; Median [IQR]	8.0 [4.0 – 16.0]	11.0 [5.0 – 20.0]	0.15
Imaging Patterns			
Embolic/Large Vessel athero-Thromboembolism; N (%)	94 (80.3)	112 (80.6)	0.31
Lacune; N (%)	9 (7.7)	17 (12.2)	
Border-zone; N (%)	13 (11.1)	10 (7.2)	
Vasculitis Pattern; N (%)	1 (0.9)	0 (0.0)	
TOAST			
Large-Artery Atherosclerosis; N (%)	33 (38.8)	23 (27.1)	0.07
Cardio-embolism; N (%)	15 (17.6)	21 (36.5) A (0.006)	
Small-Vessel Occlusion; N (%)	8 (9.4)	9 (10.6)	
Stroke of Other Determined Etiology; N (%)	8 (9.4)	5 (5.9)	
Stroke of Undetermined Etiology; N (%)	21 (24.7)	17 (20.0)	
Interval Between Onset to Index Event; Median [IQR]; Days	4.0 [0.0 – 10.0]	2.0 [0.0 – 8.0]	0.10
Mechanical Ventilation; N (%)	42 (28.4)	43 (24.6)	0.44
Disposition*			
Discharged Home; N (%)	71 (52.2) B (0.002)	56 (34.8)	0.01
In Hospital Mortality; N (%)	29 (21.3)	53 (32.9) A (0.03)	
Still in Hospital/Subacute Care; N (%)	36 (26.5)	52 (32.3)	
Length of Hospital Stay; Median (IQR); Days	9.0 [5.0 – 18.0]	7.0 [4.0 – 14.0]	0.05
Comorbidities			
Hypertension; N (%)	77 (52.4)	125 (72.3)	<0.001
Diabetes Mellitus; N (%)	54 (36.5)	57 (32.9)	0.51
Ischemic Heart Disease; N (%)	25 (18.0)	47 (29.9)	0.02
Atrial Fibrillation; N (%)	12 (8.2)	33 (19.1)	0.01
Carotid Stenosis; N (%)	9 (6.5)	29 (18.5)	0.002
Chronic Kidney Disease; N (%)	24 (16.3)	18 (10.4)	0.12
Cardiac Ejection Fraction <40%; N (%)	6 (4.3)	18 (11.5)	0.03
Active Neoplasm; N (%)	11 (7.9)	10 (6.4)	0.61
Rheumatological Disease; N (%)	1 (0.7)	4 (2.5)	0.22
Prior Stroke or Transient Ischemic Attack; N (%)	1 (0.7)	4 (2.5)	0.22

Parameter	Age <65-year-old N = 148 (45.8%)	Age >65-year-old N = 175 (54.2%)	P-value
Smoking; N (%)	18 (12.2)	35 (20.2)	0.06
Laboratory Findings			
White Blood Cell Count x10^9/L; Mean (SD)	9.8 ± 4.7	9.8 ± 5.0	0.96
White Blood Cell Count x10^9/L; Median [IQR]	9.1 [7.2 – 11.3]	8.9 [6.5 – 11.1]	0.54
Neutrophil Count x10^9/L; Mean (SD)	7.7 ± 4.2	7.7 ± 4.7	0.97
Neutrophil Count x10^9/L; Median [IQR]	6.9 [4.9 – 9.2]	6.5 [4.7 – 9.2]	0.52
Lymphocyte Count x10^9/L; Mean (SD)	1.8 ± 2.0	1.6 ± 1.3	0.32
Lymphocyte x10^9/L; Median [IQR]	1.4 [1.0 – 2.0]	1.3 [0.8 – 1.9]	0.06
Platelet Count x10^9/L; Mean (SD)	306.5 ± 218.5	321.8 ± 571.5	0.77
Platelet Count x10^9/L; Median [IQR]	266.0 [177.0 – 381.0]	207.0 [154.0 – 300.0]	0.03
Alanine Transaminase (ALT); Mean (SD); U/L	61.2 ± 81.1	65.4 ± 91.4	0.69
Alanine Transaminase (ALT); Median [IQR]; U/L	26.9 [7.0 – 80.4]	32.8 [12.0 – 96.0]	0.54
Aspartate Transaminase (AST); Mean (SD); U/L	27.2 ± 22.4	36.5 ± 29.6	0.003
Aspartate Transaminase (AST); Median [IQR]; U/L	21.0 [12.0 – 35.0]	27.0 [15.5 – 47.5]	0.01
Blood Urea Nitrogen (BUN); Mean (SD); mg/dl	61.4 ± 138.9	45.4 ± 54.8	0.21
Blood Urea Nitrogen (BUN); Median [IQR]; mg/dl	32.5 [21.4 – 56.0]	32.0 [20.0 – 47.0]	1.00
Creatinine; Mean (SD); mg/dl	1.5 ± 2.2	1.6 ± 1.2	0.59
Creatinine; Median [IQR]; mg/dl	1.0 [0.8 – 1.3]	1.2 [0.9 – 1.5]	0.004
C-Reactive Protein (CRP); Mean (SD); mg/L	70.0 ± 178.0	53.0 ± 60.0	0.27
C-Reactive Protein (CRP); Median [IQR]; mg/L	35.0 [25.0 – 60.0]	37.0 [24.0 – 55.0]	0.95
Lactate Dehydrogenase (LDH); Mean (SD); U/L	548.9 ± 788.5	653.6 ± 1975.0	0.68
Lactate Dehydrogenase (LDH); Median [IQR]; U/L	420.0 [283.5 – 558.5]	358.0 [220.0 – 503.0]	0.14
Fibrinogen; Mean (SD); mg/dl	421.3 ± 674.7	528.5 ± 1347.3	0.64
Fibrinogen; Median [IQR]; mg/dl	346.0 [4.0 – 506.0]	166.4 [22.9 – 464.0]	0.30
D- Dimer; Mean (SD); ng/ml	2417.5 ± 6626.8	2874.2 ± 6284.3	0.69
D- Dimer; Median [IQR]; ng/ml	830.0 [510.0 – 2085.0]	1100.0 [578.0 – 2430.0]	0.09

* Data on patients' disposition were sparse.

Results; Supplemental Table VII. Subgroups of AIS patients with stroke as the chief complaints versus others.

Baseline characteristics, comorbidities, and laboratory findings among SARS-CoV-2 patients with a stroke, based on stroke as the chief complaint versus the presence of stroke following COVID-19 symptoms. Blue ink indicates the post-hoc p values.

Parameter	Stroke patients asymptomatic for SARSA-CoV-2 infection N = 104 (36.1%)	Stroke Following COVID-19 Symptoms N = 184 (63.9%)	P-value
Age; Mean (SD); Years	69 ± 15	66 ± 16	0.17
Age; Median [IQR]; Years	70 [60 – 79]	67 [56 - 78]	0.20
Sex; Female; N (%)	49 (47.1)	67 (36.4)	0.08
Large Vessel Occlusion; N (%)	43 (46.2)	75 (43.1)	0.62
Intravenous Thrombolysis; N (%)	18 (17.3)	24 (13.0)	0.33
Mechanical Thrombectomy; N (%)	8 (7.7)	14 (7.6)	0.98
National Institutes of Health Stroke Scale (NIHSS) Score; Median [IQR]	10.0 [3.0 – 20.0]	9.0 [5.0 – 16.0]	0.94
Imaging Patterns			
Embolic/Large Vessel athero-Thromboembolism; N (%)	67 (79.8)	132 (81.0	
Lacune; N (%)	12 (14.3)	13 (8.0)	0.23
Border-zone; N (%)	5 (6.0)	17 (10.4)	
Vasculitis Pattern; N (%)	0 (0.0)	1 (0.6)	
TOAST			
Large-Artery Atherosclerosis; N (%)	13 (25.5)	43 (38.7)	
Cardio-embolism; N (%)	17 (33.3)	28 (25.2)	
Small-Vessel Occlusion; N (%)	8 (15.7)	9 (8.1)	0.21
Stroke of Other Determined Etiology; N (%)	2 (3.9)	10 (9.0)	
Stroke of Undetermined Etiology; N (%)	11 (21.6)	21 (18.9)	
Mechanical Ventilation; N (%)	28 (26.9)	54 (29.3)	0.66
Disposition*			
Discharged Home; N (%)	36 (37.9)	72 (42.4)	
In Hospital Mortality; N (%)	37 (38.9) B (0.006)	39 (22.9)	0.02
Still in Hospital/Subacute Care; N (%)	22 (23.2)	59 (34.7)	
Length of Hospital Stay; Median (IQR); Days	6.0 [4.0 – 12.0]	9.0 [5.0 – 17.0]	
Comorbidities			
Hypertension; N (%)	69 (67.6)	122 (66.3)	0.82
Diabetes Mellitus; N (%)	35 (34.0)	67 (36.4)	0.68
Ischemic Heart Disease; N (%)	23 (25.3)	45 (26.0)	0.90
Atrial Fibrillation; N (%)	19 (18.6)	22 (12.0)	0.12

Parameter	Stroke patients asymptomatic for SARSA-CoV-2 infection N = 104 (36.1%)	Stroke Following COVID-19 Symptoms N = 184 (63.9%)	P-value
Carotid Stenosis; N (%)	10 (11.0)	28 (16.2)	0.25
Chronic Kidney Disease; N (%)	13 (12.7)	28 (15.2)	0.57
Cardiac Ejection Fraction <40%; N (%)	10 (11.0)	10 (5.8)	0.13
Active Neoplasm; N (%)	5 (5.5)	13 (7.5)	0.54
Rheumatological Disease; N (%)	2 (2.2)	3 (1.7)	0.80
Prior Stroke or Transient Ischemic Attack; N (%)	1 (1.1)	2 (1.2)	0.97
Smoking; N (%)	15 (14.7)	31 (16.8)	0.64
Laboratory Findings			
White Blood Cell Count x10^9/L; Mean (SD)	10.2 ± 5.4	9.8 ± 4.5	0.54
White Blood Cell Count x10^9/L; Median [IQR]	8.9 [6.7 – 12.1]	9.0 [7.2 – 11.1]	0.94
Neutrophil Count x10^9/L; Mean (SD)	7.7 ± 4.8	7.9 ± 4.2	0.75
Neutrophil Count x10^9/L; Median [IQR]	6.4 [4.4 – 9.7]	7.2 [5.1 – 9.2]	0.39
Lymphocyte Count x10^9/L; Mean (SD)	1.7 ± 1.7	1.7 ± 1.7	0.90
Lymphocyte x10^9/L; Median [IQR]	1.4 [0.9 – 1.9]	1.3 [0.9 – 1.9]	0.81
Platelet Count x10^9/L; Mean (SD)	263.4 ± 201.5	343.4 ± 557.7	0.10
Platelet Count x10^9/L; Median [IQR]	224.0 [168.0 – 313.0]	222.0 [150.0 – 335.0]	0.93
Alanine Transaminase (ALT); Mean (SD); U/L	54.3 ± 92.7	65.3 ± 81.9	0.34
Alanine Transaminase (ALT); Median [IQR]; U/L	20.0 [7.0 – 75.0]	32.3 [10.0 – 99.0]	0.11
Aspartate Transaminase (AST); Mean (SD); U/L	32.9 ± 27.1	33.9 ± 27.8	0.78
Aspartate Transaminase (AST); Median [IQR]; U/L	24.6 [15.0 – 42.0]	25.0 [14.0 – 44.2]	0.96
Blood Urea Nitrogen (BUN); Mean (SD); mg/dl	58.1 ± 167.5	50.1 ± 53.0	0.58
Blood Urea Nitrogen (BUN); Median [IQR]; mg/dl	27.5 [19.0 – 46.5]	33.0 [23.0 – 55.0]	0.05
Creatinine; Mean (SD); mg/dl	1.4 ± 1.1	1.5 ± 1.2	0.88
Creatinine; Median [IQR]; mg/dl	1.1 [0.9 – 1.5]	1.1 [0.9 – 1.5]	0.71
C-Reactive Protein (CRP); Mean (SD); mg/L	65.0 ± 210.0	56.0 ± 62.0	0.59
C-Reactive Protein (CRP); Median [IQR]; mg/L	32.0 [24.0 – 46.0]	38.0 [26.0 – 62.0]	0.07
Lactate Dehydrogenase (LDH); Mean (SD); U/L	398.6 ± 223.1	756.2 ± 2008.6	0.27
Lactate Dehydrogenase (LDH); Median [IQR]; U/L	347.0 [216.0 – 507.0]	407.0 [258.0 – 574.0]	0.31
Fibrinogen; Mean (SD); mg/dl	520.1 ± 650.6	469.4 ± 1185.3	0.86
Fibrinogen; Median [IQR]; mg/dl	411.0 [53.9 – 594.0]	178.0 [3.8 – 471.0]	0.20
D- Dimer; Mean (SD); ng/ml	2444.7 ± 7368.7	2953.1 ± 6845.3	0.73
D- Dimer; Median [IQR]; ng/ml	691.0 [441.0 – 1100.0]	1259.5 [585.0 – 2460.0]	0.02

* Data on patients' disposition were sparse.

Results; Supplemental Table VIII. Subgroups of patients according to the imaging patterns.

Baseline characteristics, comorbidities, and laboratory findings among SARS-CoV-2 patients with a stroke, based on the neuroimaging pattern found when evaluating the patient. Blue ink indicates the post-hoc p values.

Parameter	Embolic/Large Vessel Athero-Thromboembolism N = 206 (80.5%)	Lacune N = 26 (10.2%)	Border-zone N = 23 (9.0%)	Vasculitis Pattern N = 1 (0.4%)	P-value
Age; Mean (SD); Year	67 ± 15	72 ± 18	62 ± 18	57 ± 0	0.17
Age; Median [IQR]; Year	68 [58 – 78]	73 [62 – 88]	59 [49 – 77]	57 [57 – 57]	0.41
Sex; Female; N (%)	83 (40.3)	11 (42.3)	7 (30.4)	1 (100.0)	0.49
Large Vessel Occlusion; N (%)	99 (50.0) A (<0.001)	23 (92.0)	12 (52.2) C(0.01)	1 (100.0)	0.001
Intravenous Thrombolysis; N (%)	34 (16.5)	1 (3.8)	2 (8.7)	0 (0.0)	0.28
Mechanical Thrombectomy; N (%)	23 (11.2)	0 (0.0)	1 (4.3)	0 (0.0)	0.24
National Institutes of Health Stroke Scale (NIHSS) Score; Median [IQR]	11.0 [5.0 – 19.0]	5.0 [2.0 – 8.0]	14.0 [6.0 – 17.0]	0.0 [0.0 – 0.0]	0.03
TOAST Criteria					
Large-Artery Atherosclerosis; N (%)	54 (37.5)	0 (0.0)	2 (33.3)	0 (0.0)	
Cardio-embolism; N (%)	43 (29.9)	1 (5.3)	1 (16.7)	1 (100.0)	
Small-Vessel Occlusion; N (%)	4 (2.8)	13 (68.4) A(<0.001)	0 (0.0)	0 (0.0)	<0.001
Stroke of Other Determined Etiology; N (%)	9 (6.3)	1 (5.3)	3 (50.0) A <0.001 B (0.03)	0 (0.0)	
Stroke of Undetermined Etiology; N (%)	34 (23.6)	4 (21.1)	0 (0.0)	0 (0.0)	
Interval Between Onset to Index Event; Median [IQR]; Day	3.0 [0.0 – 10.0]	1.0 [0.0 – 6.0]	5.0 [1.0 – 7.0]	23.0 [23.0 – 23.0]	0.39
Mechanical Ventilation; N (%)	63 (30.6)	8 (30.8)	6 (26.1)	0 (0.0)	0.89
Disposition*					
Discharged Home; N (%)	79 (38.5)	14 (53.8)	10 (43.5)	1 (100.0)	
In Hospital Mortality; N (%)	62 (30.2)	3 (11.5)	6 (26.1)	0 (0.0)	0.44
Still in Hospital/Subacute Care; N (%)	64 (31.2)	9 (34.6)	7 (30.4)	0 (0.0)	
Length of Hospital Stay; Median (IQR); Day	7.0 [5.0 – 16.0]	6.0 [4.0 – 14.0]	15.0 [5.0 – 16.0]	37.0 [37.0 – 37.0]	0.52
Comorbidities					
Hypertension; N (%)	130 (63.4)	16 (61.5)	18 (78.3)	1 (100.0)	0.45
Diabetes Mellitus; N (%)	66 (32.2)	8 (30.8)	10 (43.5)	1 (100.0)	0.35
Ischemic Heart Disease; N (%)	56 (27.3)	6 (23.1)	3 (13.0)	0 (0.0)	0.45
Atrial Fibrillation; N (%)	34 (16.6)	4 (15.4)	2 (8.7)	1 (100.0)	0.10
Carotid Stenosis; N (%)	33 (16.1)	1 (3.8)	2 (8.7)	0 (0.0)	0.30
Chronic Kidney Disease; N (%)	25 (12.2)	5 (19.2)	8 (34.8) A (0.01)	1 (100.0)	0.003
Cardiac Ejection Fraction <40%; N (%)	16 (7.8)	2 (7.7)	1 (4.3)	1 (100.0)	0.61

Parameter	Embolic/Large Vessel Athero-Thromboembolism N = 206 (80.5%)	Lacune N = 26 (10.2%)	Border-zone N = 23 (9.0%)	Vasculitis Pattern N = 1 (0.4%)	P-value
Active Neoplasm; N (%)	16 (7.8)	2 (7.7)	0 (0.0)	0 (0.0)	0.57
Rheumatological Disease; N (%)	4 (2.0)	1 (3.8)	0 (0.0)	0 (0.0)	0.81
Prior Stroke or Transient Ischemic Attack; N (%)	2 (1.0)	0 (0.0)	1 (4.3)	0 (0.0)	0.50
Smoking; N (%)	33 (16.1)	2 (7.7)	5 (21.7)	0 (0.0)	0.55
Laboratory Findings					
White Blood Cell Count; Mean (SD); x10^9/L	10.2 ± 5.2	9.5 ± 2.6	9.4 ± 3.4	7.1 ± 0.0	0.79
White Blood Cell Count; Median [IQR]; x10^9/L	9.1 [6.7 − 11.8]	8.8 [7.6 − 11.0]	9.8 [7.0 − 11.6]	7.1 [7.1 − 7.1]	0.40
Neutrophil Count; Mean (SD); x10^9/L	7.9 ± 4.8	7.6 ± 2.5	7.7 ± 3.2	5.3 ± 0.0	0.94
Neutrophil Count; Median [IQR]; x10^9/L	7.0 [4.7 − 9.3]	7.1 [5.9 − 8.8]	8.0 [5.2 − 9.1]	5.3 [5.3 − 5.3]	0.18
Lymphocyte Count; Mean (SD); x10^9/L	1.6 ± 1.3	1.7 ± 1.1	1.3 ± 0.5	1.0 ± 0.0	0.60
Lymphocyte; Median [IQR]; x10^9/L	1.4 [0.9 − 1.9]	1.3 [1.0 − 2.0]	1.2 [0.9 − 1.6]	1.0 [1.0 − 1.0]	0.65
Platelet Count; Mean (SD); x10^9/L	332.7 ± 520.1	283.1 ± 374.6	256.1 ± 176.7	268.0 ± 0.0	0.92
Platelet Count; Median [IQR]; x10^9/L	227.0 [163.0 − 328.0]	190.0 [145.0 − 261.0]	184.0 [135.0 − 338.0]	268.0 [268.0 − 268.0]	0.53
Alanine Transaminase (ALT); Mean (SD); U/L	55.2 ± 68.6	60.2 ± 68.3	67.4 ± 60.5	156.0 ± 0.0	0.45
Alanine Transaminase (ALT); Median [IQR]; U/L	23.0 [7.0 − 85.0]	45.5 [18.7 − 65.0]	43.7 [15.0 − 110.0]	156.0 [156.0 − 156.0]	0.06
Aspartate Transaminase (AST); Mean (SD); U/L	33.1 ± 28.6	22.2 ± 12.4	27.4 ± 24.8	77.0 ± 0.0	1.00
Aspartate Transaminase (AST); Median [IQR]; U/	24.4 [13.0 − 44.0]	19.0 [12.4 − 35.0]	17.8 [13.0 − 37.5]	77.0 [77.0 − 77.0]	0.28
Blood Urea Nitrogen (BUN); Mean (SD); mg/dl	52.8 ± 120.1	41.3 ± 46.4	54.7 ± 57.5	13.0 ± 0.0	0.96
Blood Urea Nitrogen (BUN); Median [IQR]; mg/dl	33.0 [21.0 − 51.0]	29.0 [18.0 − 38.0]	35.5 [20.7 − 65.5]	13.0 [13.0 − 13.0]	0.70
Creatinine; Mean (SD); mg/dl	1.4 ± 1.1	1.5 ± 1.4	1.4 ± 0.9	2.4 ± 0.0	0.71
Creatinine; Median [IQR]; mg/dl	1.0 [0.8 − 1.4]	1.2 [0.9 − 1.5]	1.0 [0.9 − 1.9]	2.4 [2.4 − 2.4]	0.30
C-Reactive Protein (CRP); Mean (SD); mg/L	59.0 ± 148.0	40.0 ± 26.0	91.0 ± 133.0	20.0 ± 0.0	0.78
C-Reactive Protein (CRP); Median [IQR]; mg/L	36.0 [25.0 − 51.0]	30.0 [25.0 − 46.0]	48.0 [24.0 − 87.0]	20.0 [20.0 − 20.0]	0.62
Lactate Dehydrogenase (LDH); Mean (SD); U/L	679.4 ± 1885.7	345.2 ± 205.6	590.5 ± 335.5	312.0 ± 0.0	0.95
Lactate Dehydrogenase (LDH); Median [IQR]; U/L	349.5 [222.0 − 490.0]	367.0 [201.0 − 561.0]	581.5 [341.5 − 839.5	312.0 [312.0 − 312.0]	0.57
Fibrinogen; Mean (SD); mg/dl	511.5 ± 1213.3	217.4 ± 199.6	114.5 ± 223.6	NA	0.71
Fibrinogen; Median [IQR]; mg/dl	154.7 [3.8 − 450.0]	120.0 [104 − 403.0]	2.8 [2.6 − 226.5]	NA	0.54
D- Dimer; Mean (SD); ng/ml	1488.5 ± 1919.1	951.9 ± 701.9	1558.3 ± 1682.0	955.0 ± 0.0	0.89
D- Dimer; Median [IQR]; ng/ml	1000.0 [510.0 − 2100.0]	781.0 [480.0 − 1850.0]	625.0 [550.0 − 3500.0]	955.0 [955.0 − 955	0.42

* Data on patients' disposition were sparse.