

SUPPLEMENTARY INFORMATION

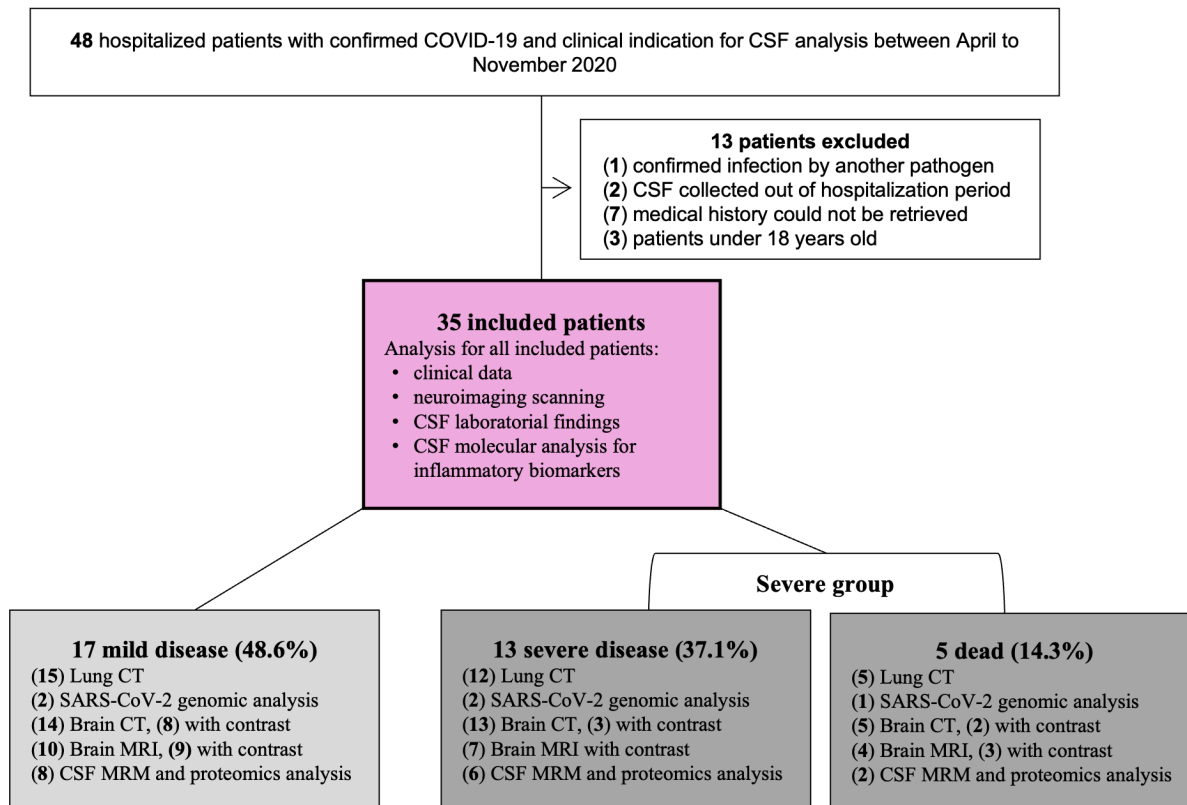
Barros-Aragão et al.

Table of Contents.

SUPPL. FIGURES.....	3
BARROS-ARAGÃO ET AL., SUPPL. FIG. 1.....	3
BARROS-ARAGÃO ET AL., SUPPL. FIG. 2.....	4
BARROS-ARAGÃO ET AL., SUPPL. FIG. 3.....	5
BARROS-ARAGÃO ET AL., SUPPL. FIG. 4.....	6
BARROS-ARAGÃO ET AL., SUPPL. FIG. 5.....	7
BARROS-ARAGÃO ET AL., SUPPL. FIG. 6.....	8
SUPPL. TABLES.....	9
BARROS-ARAGÃO ET AL., SUPPL. TABLE 1	9
BARROS-ARAGÃO ET AL., SUPPL. TABLE 2	10
BARROS-ARAGÃO ET AL., SUPPL. TABLE 3	21
BARROS-ARAGÃO ET AL., SUPPL. TABLE 4	22
BARROS-ARAGÃO ET AL., SUPPL. TABLE 5	23

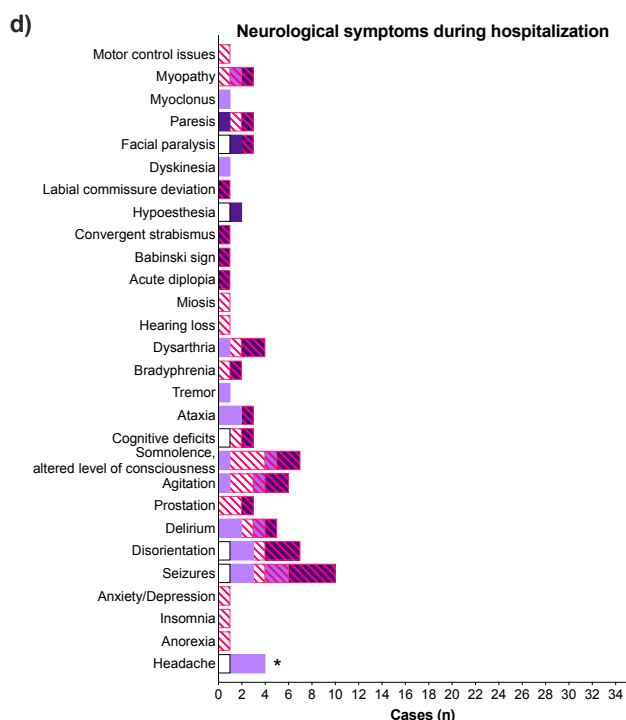
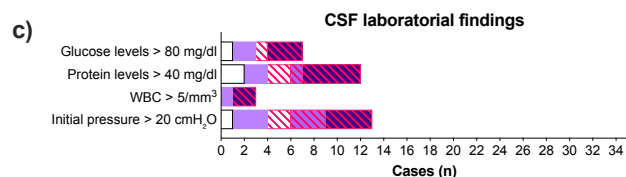
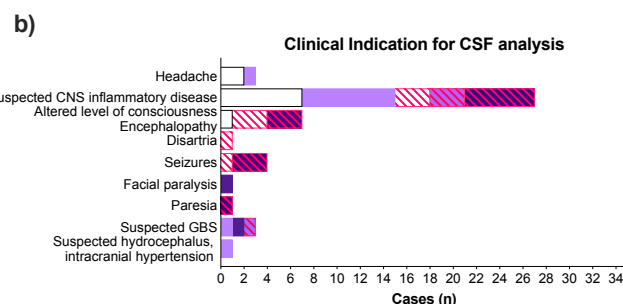
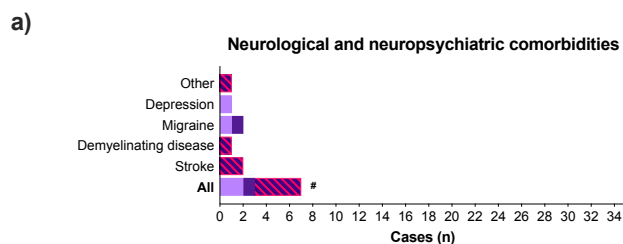
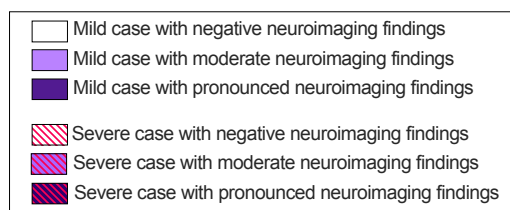
SUPPL. FIGURES

Barros-Aragão et al., Suppl. Fig. 1



Suppl. Fig. 1. Study enrolment and analysis. Abbreviations: (CSF) Cerebrospinal fluid; (CT) Computed tomography; (MRI) Magnetic resonance imaging; (MRM) Multiple Reaction Monitoring.

Hospitalization



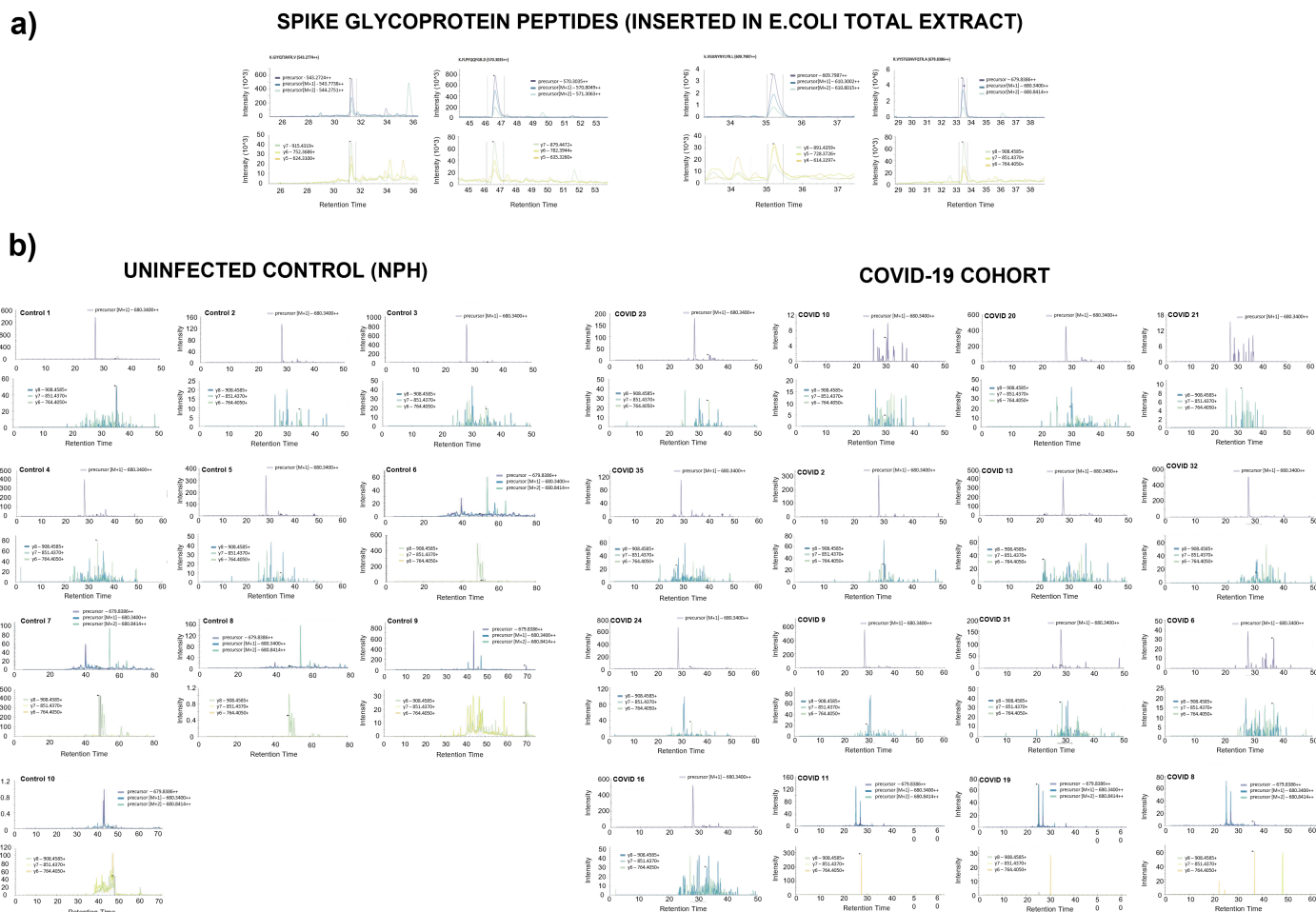
Suppl. Fig. 2. Patients' neurological comorbidities and cerebrospinal fluid (CSF) analysis concerning COVID-19 severity and neuroimaging findings.

(a-d) Patients were grouped as presenting negative (white bars), moderate (light purple) or pronounced (dark purple) neuroimaging (CT/MRI) findings related to COVID-19 hospitalisation (n =35). Dashed lines represent severe disease or death. Central Nervous System (CNS) inflammatory diseases include meningitis or encephalitis. (GBS), Guillain-Barré Syndrome. (WBC) White Blood Cells. $p < 0.05$, disease severity as an outcome, Fisher's exact test; # $p < 0.017$, neuroimaging positivity as an outcome, Chi-Square test, followed by pairwise comparison with Bonferroni correction.



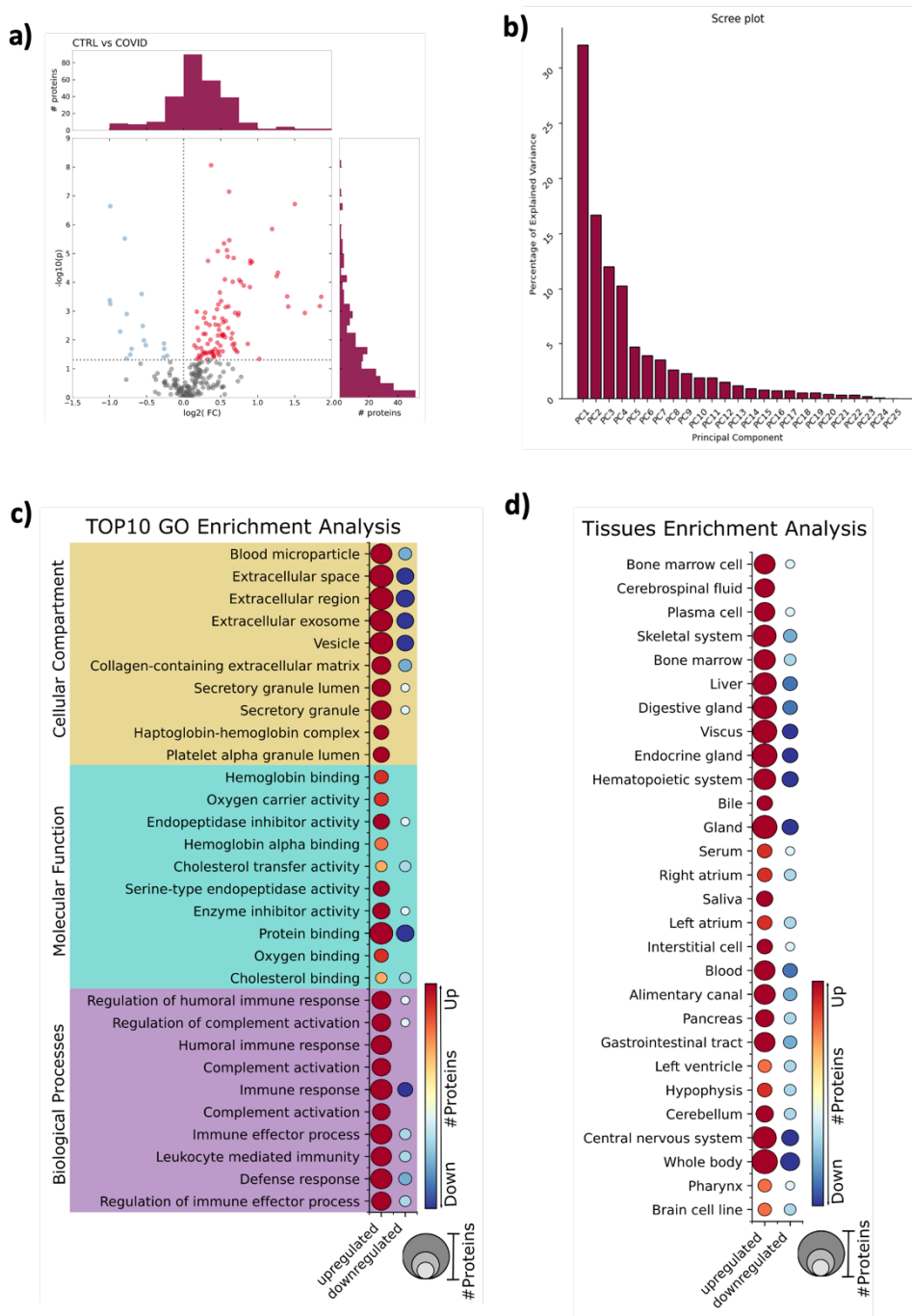
Suppl. Fig. 3. COVID-19 neurological patients are infected with B.1.1.33 SARS-CoV-2 lineage.

A maximum-likelihood tree was inferred on IQ-Tree under the GTR+F+I+G4 model with a reference dataset, encompassing sequences from Rio de Janeiro (Brazil) from April 2020 to September 2020 (n =62). Tip circular shape mark sequences characterised in this study, n = 4. Grey symbols indicate mild disease, and black symbols indicate severe or dead cases.



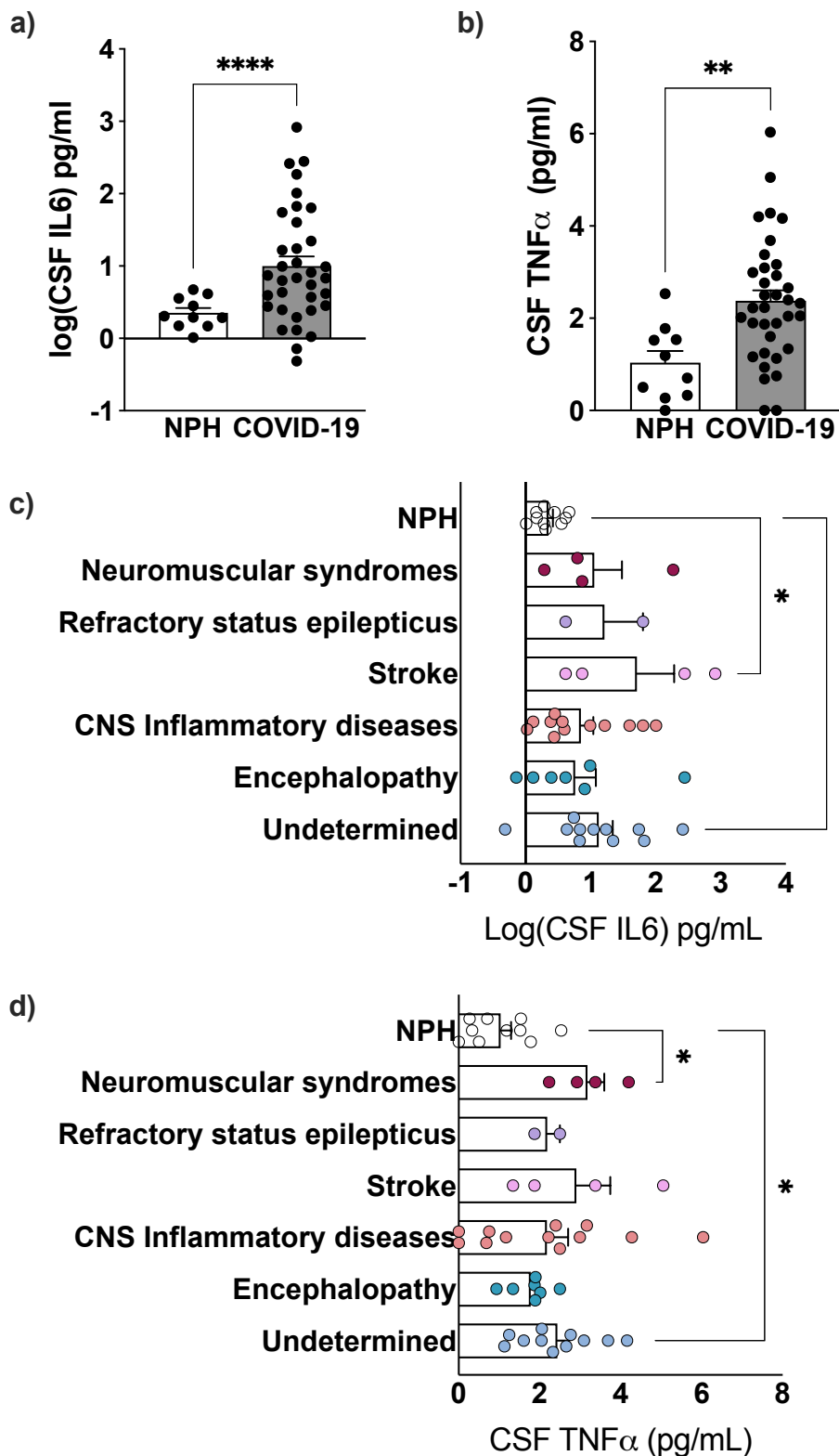
Suppl. Fig. 4. SARS-CoV-2 spike protein cannot be detected in the cerebrospinal fluid (CSF) of COVID-19 neurological patients.

(a) Peptide ion transitions validation of a recombinant SARS-CoV-2 spike protein inserted into an *E. coli* protein extract. Skyline aligned the parent ion transition with the fragment transitions and exported the SRM method. (b) A representative panel of the spike protein absence in all the CSF samples was analysed by SRM. Only one of the four transitions used to construct the SRM method is presented, showing that no trace of the spike protein was not found in CSF samples. N = 10 controls; 16 COVID-19.



Suppl. Fig. 5. Cerebral Spinal fluid (CSF) proteomic analysis.

(a) Gene ontology (GO) analysis of the dysregulated proteins found in the CSF of COVID-19 patients against control. (b) Tissue enrichment analysis of the statistically significant dysregulated proteins found in COVID-19 patients' CSF, showing the overlap between tissue protein markers and the proteins found in our dataset. (c) Volcano plot showing the protein abundance distribution between controls and COVID-19 patients considering the fold change and the p-value (cut-off > 0.05). Normal-pressure hydrocephalus CSF samples are used as non-infectious control. N = 10 controls; 16 COVID-19.



Barros-Aragão et al, Suppl. Fig. 6

Suppl. Fig. 6. COVID-19 neurological patients present higher CSF IL6 and TNF α levels than uninfected controls. Data are shown as the mean and SEM. Symbols indicate individual patients. * $p < 0.05$, ** $p < 0.01$, t-test with Welch's correction or Kruskal-Wallis followed by Dunn's multiple comparison test compared to uninfected control (NPH, Normal Pressure Hydrocephalus Patients).

SUPPL. TABLES

Barros-Aragão et al., Suppl. Table 1

Suppl. Table. 1. Patient inclusion and exclusion criteria.

Inclusion criteria	
1.	Hospitalisation due to COVID-19 (confirmed).
2.	Clinical indication for cerebrospinal fluid (CSF) sampling.
Exclusion criteria	
1.	COVID-19 tested negative or unavailable.
2.	CSF was collected out of the hospitalisation period.
3.	Confirmed infection by another pathogen unrelated to this study or concomitant infection by another relevant pathogen.
4.	Medical history could not be retrieved.
5.	Children or adolescent patients (younger than 18 years old).

Barros-Aragão et al., Suppl. Table 2

Barros-Aragão et al., Suppl. Table 2. Individualized demographics, clinical data, neuroimaging, and sample molecular analysis of COVID-19 patients presenting neurological symptoms.

Patient	#1	#2	#3	#4	#5
Age (years)	38	47	47	52	48
Sex	F	f	f	m	f
Hospitalisation period (days)	27	3	7	1	7
Disease severity (score)	Mild (3)	Mild (3)	Mild (3)	Mild (3)	Mild (4)
Chest CT Covid-19 pulmonary involvement (%)	< 25	< 25	< 25	< 25	50-75
Blood analysis					
C-Reactive Protein (mg/dl)	16.9	0.5	0.5	0.5	8.7
D-dimer (ng/ml)	2143.8	660	1630	749	1131.8
Comorbidities	Ankylosing spondylitis.	Hypertension, heart failure, previous bariatric surgery, obesity, chronic renal disease, and migraine.	Obesity, previous bariatric surgery, hepatitis C, smoking.	Hypertension.	dyslipidemia, hypothyroidism.
Neurological symptoms at admission	Headache, altered level of consciousness, fatigue, dizziness, neck stiffness, prostration, anorexia.	Headache, fatigue, malaise, prostration, nausea/vomiting.	Headache, fatigue, malaise.	Headache, nausea/vomiting, dizziness, photophobia.	None.
Clinical complaint/complication during hospitalisation	Drug-induced hypersensitivity syndrome, hepatic dysfunction.	Headache.	headache.	Headache.	Headache and sepsis.
Clinical indication for CSF analysis	Headache and suspected meningoencephalitis.	Headache and suspected meningoencephalitis.	Headache and suspected encephalitis.	Intracranial hypertension and suspected encephalitis.	Suspected meningitis.
Neurological diagnosis	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined
	NEGATIVE	MODERATE	NEGATIVE	MODERATE	MODERATE

Neuroimaging findings for COVID-19 and imaging modalities	Brain CT and MR, non-enhanced. MR brain angiography.	Brain MR, contrast-enhanced. Brain CT, non-enhanced. Cerebral MR angiography. Mild signs of intracranial hypertension (optic nerves tortuosity with enlarged subarachnoid space).	Brain CT, contrast-enhanced. Brain CT angiography.	Brain MR, contrast-enhanced. Cerebral MR angiography. Mild signs of intracranial hypertension (enlarged Meckel caves; slight optic nerves enlarged subarachnoid space).	Brain CT, contrast-enhanced. Signs of intracranial hypertension (enlarged Meckel caves; optic nerves enlarged subarachnoid space; partial empty sella; bilateral venous transverse sinus stenosis).
CSF analysis					
WBC cells/mm³	1	1	1	3	1
Protein mg/dL	41	34	44	71	17
Glucose mg/dL	59	60	61	46	70
IL6 pg/mL	55	4.3	0.5	11.1	5.5
TNFα pg/mL	4.2	1.3	2.3	3.7	2.05
Other	..	Included for CSF proteomics analysis.	..	..	..

Patient	#6	#7	#8	#9	#10
Age (years)	29	43	44	60	68
Sex	F	F	f	m	M
Hospitalisation period (days)	2	6	3	11	12
Disease severity (score)	Mild (3)	Mild (3)	Mild (3)	Mild (3)	Mild (3)
Chest CT Covid-19 pulmonary involvement (%)	0	0	NA	< 25	<25
Blood analysis					
C-Reactive Protein (mg/dl)	0.7	3.2	0.6	0.68	6.2
D-dimer (ng/ml)	282	353	282	3957	1269
Comorbidities	None	Obesity, previous bariatric surgery, hypothyroidism, and depression	None	Obesity, dyslipidemia, smoking	None
Neurological symptoms at admission	Headache, anosmia, ageusia, fatigue, nausea, rotational	Headache, seizures, fatigue/malaise, vomiting/nausea.	Headache, confusion, anosmia, fatigue/malaise, paresthesia,	Ataxia, dysarthria and dyslalia, lip commissure deviation, tremor.	Altered level of consciousness.

	photophobia/phonophobia , syncope.		dysarthria, urinary incontinence.		
Clinical complaint/complication during hospitalisation	None.	Seizures, delirium, agitation, somnolence, altered level of consciousness.	Disorientation, paresthesia, cognitive deficits.	Appendicular and gait ataxia, dysarthria, and tremor. Deep venous thrombosis.	Disorientation, ataxia, recent onset dyskinesia, and myoclonus.
Clinical indication for CSF analysis	Suspected encephalitis.	Suspected encephalitis.	Suspected encephalomyelitis.	Suspected encephalitis /Guillain-Barré syndrome.	Suspected encephalitis.
Neurological diagnosis	Possible myelitis	Encephalitis	Encephalomyelitis	Probable encephalitis	Probable encephalitis
Neuroimaging findings for COVID-19 and imaging modalities	MODERATE Brain CT and MR, contrast-enhanced. Cerebral MR angiography. Mild signs of intracranial hypertension (optic nerves tortuosity with enlarged subarachnoid space).	MODERATE Brain MR, contrast-enhanced. Cerebral MR angiography. Mild signs of intracranial hypertension (slight enlarged Meckel caves; mild optic nerves tortuosity with enlarged subarachnoid space).	NEGATIVE Brain and spine MR, contrast-enhanced. Cerebral MR angiography.	MODERATE Brain and cervical spine MR, contrast-enhanced. Brain CT, contrast-enhanced. Mild signs of intracranial hypertension (enlarged Meckel caves; slight downward displacement of the cerebellar tonsils).	MODERATE Brain CT, contrast-enhanced. Signs of intracranial hypertension (enlarged Meckel caves; partial empty sella; optic nerves tortuosity).
CSF analysis					
WBC cells/mm³	1	1	1	2	2
Protein mg/dL	2	29	28	37	34
Glucose mg/dL	54	90	56	56	63
IL6 pg/mL	1.95	2.4	1.05	1.3	3.7
TNFα pg/mL	4.2	2.4	Undetermined	0.68	1.17
Other	Included for CSF proteomics analysis.	..	Included for CSF proteomics analysis.	Included for CSF proteomics analysis.	Included for CSF proteomics analysis.

Patient	#11	#12	#13	#14	#15
Age (years)	73	81	48	50	51
Sex	m	M	M	f	M
Hospitalisation period (days)	14	10	30	56	83
Disease severity (score)	Mild (3)	Severe (5)	Severe (6)	Severe (7)	Severe (7)

Chest CT Covid-19 pulmonary involvement (%)	< 25	< 25	< 25	25-50	< 25
Blood analysis					
C-Reactive Protein (mg/dl)	0.8	30.55	3.5	4.94	15.7
D-dimer (ng/ml)	674.2	803	1105	501	1759
Comorbidities	Chronic hematologic and lung diseases, cancer (lymphoma).	Hypertension, coronary artery disease, congenital heart disease, diabetes, cancer.	Hypertension.	Hypertension, obesity, diabetes, CNS demyelinating disease.	Hypertension.
Neurological symptoms at admission	Paratonia, confusion/alterd level of consciousness, fatigue, dysarthria.	Confusion/alterd level of consciousness, nausea/vomiting.	Anosmia.	Paresis and afasia.	Severe psychomotor agitation.
Clinical complaint/complication during hospitalisation	Seizures, disorientation, delirium.	Seizures.	Disorientation, clonus.	Disorientation, agitation, hemiparesis, and sepsis.	Seizures. Bacterial pneumonia
Clinical indication for CSF analysis	Suspected encephalitis.	Seizures and suspected encephalitis.	Dysarthria and altered level of consciousness.	Seizures, altered level of consciousness, suspected encephalitis.	Suspected encephalitis.
Neurological diagnosis	Encephalitis	Probable encephalitis	Encephalitis	Acute disseminated encephalomyelitis (ADEM)	Encephalitis
Neuroimaging findings for COVID-19 and imaging modalities	MODERATE Brain and cervical spine MR, contrast-enhanced. Brain CT, contrast-enhanced. Signs of intracranial hypertension (enlarged Meckel caves; partial empty sella; slight optic nerves tortuosity with enlarged subarachnoid space).	NEGATIVE Brain CT, non-enhanced. Mild optic nerves enlarged subarachnoid space.	NEGATIVE Brain CT, non-enhanced. Brain MR, contrast-enhanced.	PRONOUNCED Brain and spine MR, contrast-enhanced. Brain CT, contrast-enhanced. Multiple demyelinating lesions, some with signs of activity (enhancing / DWi restriction). Slight optic nerves enlarged subarachnoid space.	MODERATE Brain CT, non-enhanced. Signs of intracranial hypertension (slight optic nerves tortuosity with enlarged subarachnoid space; downward displacement of the cerebellar tonsils).
CSF analysis					
WBC cells/mm³	25	1	1	1	2
Protein mg/dL	100	37	3	57	35
Glucose mg/dL	81	69	74	144	60
IL6 pg/mL	40	3.9	2.8	101.6	16.5
TNFα pg/mL	4.28	3	Undetermined	2.2	3.2

Other	Included for CSF proteomics analysis.	..	Included for CSF proteomics analysis.	Included for CSF proteomics analysis.	..
-------	---------------------------------------	----	---------------------------------------	---------------------------------------	----

Patient	#16*	#17	#18	#19	#20
Age (years)	65	37	45	79	53
Sex	M	M	M	F	M
Hospitalisation period (days)	21	4	17	12	31
Disease severity (score)	Severe (7)	Mild (3)	Mild (4)	Severe (5)	Severe (6)
Chest CT Covid-19 pulmonary involvement (%)	0	< 25	NA	< 25	NA
Blood analysis					
C-Reactive Protein (mg/dl)	5.6	0.03	1.6	5.9	3.4
D-dimer (ng/ml)	599	119.22	2058.8	1471	4765
Comorbidities	Coronary artery disease, hypothyroidism.	None.	Hypertension and alcoholism.	Fibromyalgia and localized scleroderma.	Hypertension and diabetes.
Neurological symptoms at admission	Nausea/vomiting.	Altered level of consciousness, catatonia, insomnia, aggressiveness, psychomotor agitation, prostration, syncope.	Disorientation.	Altered level of consciousness/confusion, fatigue, prostration.	Headache and altered level of consciousness/confusion.
Clinical complaint/complication during hospitalisation	Somnolence, mild ataxia, dysarthria, acute diplopia, bilateral Babinski sign, convergent strabismus, and cognitive deficits. Venous thrombosis and urinary retention.	None.	Bacteremia.	Delirium, agitation, somnolence. Hypotension.	Disorientation, agitation, delirium, altered level of consciousness, dysarthria, facial paralysis /lip commissure deviation. Ventricular arrhythmia.
Clinical indication for CSF analysis	Suspected encephalitis.	Altered level of consciousness and suspected encephalitis.	Suspected encephalitis.	Suspected encephalitis.	Suspected posterior reversible encephalopathy syndrome (PRES).
Neurological diagnosis	Meningoencephalitis	Encephalopathy	Encephalopathy	Encephalopathy	Stroke and encephalopathy
	PRONOUNCED	NEGATIVE	NEGATIVE	MODERATE	PRONOUNCED

Neuroimaging findings for COVID-19 and imaging modalities	Brain CT, non-enhanced. Brain MR, contrast-enhanced. Cerebral MR angiography. Mild dural enhancement evolving to demyelinating lesions. Slight optic nerves enlarged subarachnoid space.	Brain CT, non-enhanced.	Brain CT, non-enhanced.	Brain CT, non-enhanced. Brain MR, contrast-enhanced. Cerebral MR angiography. Signs of intracranial hypertension (slight enlarged Meckel caves; optic nerves tortuosity with enlarged subarachnoid space; partial empty sella). Cerebral microangiopathy due to chronic small vessel disease (Fazekas 3). Hydrocephalus with probable transependymal oedema.	Brain CT, contrast-enhanced. Mesencephalic, left occipital, and right cerebellar hipodensities. Posterior circulation stroke.
	CSF analysis				
WBC cells/mm³	65	1	2	1	2
Protein mg/dL	67	33	38	26	69
Glucose mg/dL	63	69	54	52	63
IL6 pg/mL	9.8	2.5	1.3	9.9	280.8
TNFα pg/mL	6.0	2.5	2.0	1.9	1.3
Other	Included for CSF proteomics analysis.	..		Included for CSF proteomics analysis.	Included for CSF proteomics analysis.

Patient	#21	#22	#23	#24	#25
Age (years)	65	73	78	62	83
Sex	M	M	M	M	M
Hospitalisation period (days)	58	142	134	64	53
Disease severity (score)	Severe (7)	Dead (8)	Dead (8)	Severe (7)	Dead (8)
Chest CT Covid-19 pulmonary involvement (%)	< 25	< 25	0	< 25	50-75
Blood analysis					
C-Reactive Protein (mg/dl)	2.1	4.6	39.8	2.3	13.8
D-dimer (ng/ml)	4348.7	2278	2213	7397	4372
Comorbidities	Hypertension, diabetes, and chronic renal disease.	Diabetes, AIDS/HIV, and CHIKV arthropathy.	Diabetes, dyslipidemia,	Hypertension, congenital heart disease, chronic renal disease, and stroke.	Hypertension, arrhythmia, and

			hyperuricemia, and stroke.		chronic obstructive pulmonary disease.
Neurological symptoms at admission	Fatigue/malaise and nausea/vomiting.	Altered level of consciousness and somnolence.	Somnolence, bradypsychism, and paresthesia.	Altered level of consciousness, adynamia, somnolence, fatigue/malaise, nausea/vomiting, and hemiparesis.	None.
Clinical complaint/complication during hospitalisation	Psychomotor agitation, altered level of consciousness, prostration, paresis, motor disturbance, bradypsychism, and cognitive deficits. Sepsis, acute renal failure, and anaemia.	Coma, pharmacodermia, bacterial pneumonia, tachycardia, venous thrombosis, sepsis, acute renal failure, and non-controlled diabetes.	Seizures, disorientation, prostration, and bradypsychism. Cardiogenic shock, sepsis, thoracic surgery.	Seizures. Bacterial pneumonia, tracheobronchitis, sepsis.	Myopathy. Bacterial pneumonia, pleural effusion, rhabdomyolysis, sepsis, acute hepatic and renal failure, and cardiac arrest.
Clinical indication for CSF analysis	Suspected encephalitis.	Encephalopathy post-COVID.	Coma investigation and suspected encephalitis.	Seizures and suspected encephalitis.	Coma investigation.
Neurological diagnosis	Encephalopathy	Encephalopathy	Encephalopathy, stroke and refractory status epilepticus	Stroke	Multiple strokes and myopathy
Neuroimaging findings for COVID-19 and imaging modalities	NEGATIVE Brain CT, contrast-enhanced. Mild optic nerves enlarged subarachnoid space.	NEGATIVE Brain CT, non-enhanced. Brain MR, contrast-enhanced. Mild enlarged Meckel caves. Hydrocephalus (Evans index 0,34) with probable transependymal oedema.	PRONOUNCED Brain CT, contrast-enhanced. Brain MR, non-enhanced. Subacute ischemic stroke. Mild signs of intracranial hypertension (slight optic nerves tortuosity with enlarged subarachnoid space).	PRONOUNCED Brain CT, non-enhanced. Brain MR, contrast-enhanced. Brain encephalomalacia with hemosiderin deposition. Chronic brain lesions related to vascular disease. Enhancing hemorrhagic stroke. Mild signs of intracranial hypertension (slight optic nerves	PRONOUNCED Brain CT, non-enhanced. Brain MR, contrast-enhanced. Multiple acute brain ischaemic lesions, some in the watershed territory. Mild signs of intracranial hypertension (slight optic nerves tortuosity with enlarged subarachnoid space).

	tortuosity with enlarged subarachnoid space).				
CSF analysis					
WBC cells/mm³	1	1	9	2	1
Protein mg/dL	46	25	35	39	46
Glucose mg/dL	66	77	74	58	95
IL6 pg/mL	8.1	0.7	4.2	828.7	7.4
TNFα pg/mL	0.9	1.9	1.9	5.05	3.4
Other	Included for CSF proteomics analysis.	..	Included for CSF proteomics analysis.	Included for CSF proteomics analysis.	Included for CSF proteomics analysis.

Patient	#26	#27	#28	#29	#30
Age (years)	69	29	26	56	61
Sex	M	F	F	f	M
Hospitalisation period (days)	36	23	2	5	138
Disease severity (score)	Severe (6)	Dead (8)	Mild (3)	Mild (3)	Severe (7)
Chest CT Covid-19 pulmonary involvement (%)	< 25	< 25	0	25-50	25-50
Blood analysis					
C-Reactive Protein (mg/dl)	24.9	2.55	0.03	0.7	2.5
D-dimer (ng/ml)	1240	1274	274,25	2701.8	680
Comorbidities	Hypothyroidism, bladder cancer, and chronic renal disease.	Epilepsy and systemic lupus erythematosus.	Post-trauma chronic headache and asthma.	None.	Lymphoma and chronic immunosuppressor use.
Neurological symptoms at admission	Seizures, altered level of consciousness/ confusion, and paresis.	Disorientation, refractory status epilepticus, amaurosis, paresis, tremor and dysdiadochokinesia	Headache, altered level of consciousness/ confusion.	Paresthesia, paraparesis, facial paralysis.	Ageusia, fatigue/malaise, nausea/vomiting, and prostration.

Clinical complaint/complication during hospitalisation	Seizures.	Seizures. Ventricular arrhythmia, acute renal failure.	Facial paralysis.	Paresthesia, paraparesis.	Delirium, agitation, altered level of consciousness, anorexia, insomnia, anxiety, depression, prostration, speech problems, hearing impairment, and miosis. Bacterial pneumonia, fibrosis and pulmonary thromboembolism, venous thrombosis, sepsis.
Clinical indication for CSF analysis	Paresis and seizures.	Suspected encephalitis.	Facial paralysis.	Suspected Guillain-Barré syndrome.	Altered level of consciousness.
Neurological diagnosis	Undetermined	Central nervous system vasculitis and refractory status epilepticus	Peripheral facial paralysis	Guillain-Barré syndrome	Probable cranial neuropathy
Neuroimaging findings for COVID-19 and imaging modalities	PRONOUNCED Brain CT, non-enhanced. Extensive right parieto-occipital ischemic stroke. Small left occipital ischemic stroke.	PRONOUNCED Brain CT and MR, contrast-enhanced. Cerebral MR angiography. Encephalitis and ischemic stroke. Mild signs of intracranial hypertension (slight optic nerves enlarged subarachnoid space; partial empty sella).	PRONOUNCED Brain CT, non-enhanced. Brain CT enhanced angiography. Subtle non-enhancing white matter hypodensities not expected for the patient's age group.	PRONOUNCED Brain CT, non-enhanced. Brain and spine MR, contrast-enhanced. Possible non-enhancing demyelinating lesions. No signs of intracranial hypertension.	NEGATIVE Brain CT, non-enhanced. Brain MR, contrast-enhanced.
CSF analysis					
WBC cells/mm³	2	4	1	5	1
Protein mg/dL	49	22	26	30	40
Glucose mg/dL	105	52	68	52	92
IL6 pg/mL	67.1	63.7	1.95	6.3	185.5
TNFα pg/mL	3.1	2.5	4.2	2.2	2.9
Other	..	..	..	..	..

Patient	#31	#32	#33	#34	#35
Age (years)	34	87	60	31	75
Sex	M	M	M	M	M
Hospitalisation period (days)	8	10	69	40	34
Disease severity (score)	Mild (4)	Mild (4)	Severe (6)	Severe (7)	Dead (8)
Chest CT Covid-19 pulmonary involvement (%)	25-50	< 25	25-50	< 25	> 75
Blood analysis					
C-Reactive Protein (mg/dl)	14.9	0.8	19.9	3.9	34.16
D-dimer (ng/ml)	535	1478	2530.3	6148	3036
Comorbidities	None.	Hypertension, coronary artery disease and coronary artery bypass surgery.	Chronic heart disease, coronary disease, and heart failure.	Hypertension, vitiligo.	Hypertension, coronary disease, heart attack, and gout.
Neurological symptoms at admission	Fatigue/malaise.	Confusion/altered level of consciousness, psychomotor agitation, seizures, and dysarthria.	None.	None.	Fatigue/malaise.
Clinical complaint/complication during hospitalisation	Facial paralysis.	Seizures.	None.	Seizures, atrial fibrillation, acute renal failure.	Bacterial pneumonia, acute respiratory distress syndrome, coagulopathy, sepsis, acute renal failure, cardiac arrest.
Clinical indication for CSF analysis	Suspected encephalitis.	Suspected encephalitis.	Suspected encephalitis.	Suspected Guillain-Barré Syndrome.	Fever and suspected encephalitis/meningitis
Neurological diagnosis	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined
Neuroimaging findings for COVID-19 and imaging modalities	NEGATIVE Brain CT, non-enhanced. Brain MR, contrast-enhanced.	NEGATIVE Brain CT, non-enhanced.	NEGATIVE Brain CT, non-enhanced.	MODERATE Brain CT, non-enhanced Brain MR, contrast-enhanced	MODERATE Brain CT, non-enhanced Signs of intracranial hypertension (enlarged Meckel caves; optic nerves enlarged)

					subarachnoid space; partial empty sella).
	Enlarged Meckel caves.			Cerebral MR angiography. Mild signs of intracranial hypertension (slightly enlarged Meckel caves; optic nerves enlarged subarachnoid space).	
CSF analysis					
WBC cells/mm³	2	1	2	1	2
Protein mg/dL	33	3	47	41	24
Glucose mg/dL	91	62	64	57	55
IL6 pg/mL	6.8	17.4	261.4	22.1	6.9
TNFα pg/mL	1.1	1.6	2.7	2.8	2.0
Other	Included for CSF proteomics analysis.	Included for CSF proteomics analysis.	..	..	Included for CSF proteomics analysis.

Only main symptoms and complications are described. Abbreviations: (M) male, (F) female, (CT) computed tomography, (SII) systemic inflammatory index, (MR) magnetic resonance, (IL6) interleukin-6; (TNF α) tumour necrosis factor-alpha; (CSF) cerebrospinal fluid; (WBC), white blood cells. Bold values represent values outside reference levels: C-reactive protein \geq 15 mg/dL¹³; D-dimer \geq 1500 ng/mL¹³; CSF WBC > 5 cells/mm³; CSF protein > 40 mg/dL; CSF glucose > 80 mg/dL. NA, not-available. (..) Non-applicable.

*Case reported at a previous publication (Freitas et al, 2021).

Suppl. Table 3. CSF laboratory analysis in COVID-19 and non-infected control patients.

	COVID-19	Non-infectious control (NPH)	Odds ratio (p-value)
Number of individuals (n)	35	10	..
Age [years], mean (SD)	55.6 (17.0)	78.6 (3.9)	(0.0001****)
Sex, male (%)	23 (65.7)	4 (40.0)	2.9 (0.166)
CSF analysis			
Opening pressure [cmH ₂ O], mean (N° above 20/n)	20.2 (13/34)	12.9 (1/10)	(0.005**)
RBC count [cells/mm ³], median (IQR)	26.0 (1-103)	1.5 (1-13.8)	(0.086)
WBC count [cells/mm ³], median (N° above 5)	1.0 (3)	1.0 (0)	(0.051)
CSF Proteins [mg/dL], mean (N° above 40)	37.4 (12)	34.7 (1)	(0.672)
CSF Glucose [mg/dL], median (N° above 80)	63.0 (7)	59.5 (2)	(0.205)
CSF Lactate [mg/dL], mean (N° above 19/n)	18.2 (3/13)	NA	..

Normal-pressure hydrocephalus (NPH) CSF samples are used as a non-infectious control group. Categorical variables are expressed as the number of positive cases (N°). Normal distributed continuous variables are expressed as the mean. Non-parametric continuous variables are expressed as the median. **p < 0.01, t-test. ****p < 0.0001, Welch's t-test. (NA) Non-available. (..) Non-applicable. (SD) Standard deviation. (IQR) interquartile range.

Suppl. Table 4. SARS-CoV-2 genome sequencing statistics and classification.

Sample	Number of raw reads	Number of paired filtered reads	Number of unpaired filtered reads	Number of mapped reads	Efficiency	Average depth	Coverage 10x	Coverage 100x	Coverage 1000x
#3	280982	272956	2545	272493	0.969788	1550.95	0.971173	0.857105	0.545798
#6	267754	258948	2857	259131	0.967795	1519.4	0.942514	0.777815	0.449487
#24	229522	219722	3274	209219	0.911542	1277.54	0.968933	0.811791	0.460991
#12	235670	220428	5290	169163	0.717796	1007.05	0.865599	0.683711	0.363341
#35	272654	244636	9928	36331	0.133249	210.555	0.292345	0.214427	0.0756111

Virus isolated from nasopharyngeal swabs.

Barros-Aragão et al., Suppl. Table 5

Suppl. Table 5. GISAID EpiCoV database acknowledgments.

We gratefully acknowledge the following Authors from the Originating laboratories responsible for obtaining the specimens, as well as the Submitting laboratories where the genome data were generated and shared via GISAID, on which this research is based.

All Submitters of data may be contacted directly via www.gisaid.org

Authors are sorted alphabetically.

Accession ID	Originating Laboratory	Submitting Laboratory	Authors
EPI_ISL_1023833	Centro de Desenvolvimento Tecnológico em Saúde - CDTS	Centro de Desenvolvimento Tecnológico em Saúde - CDTS	A.D.; C.Q.; De Paula; F.B.; Ferreira; Fintelman-Rodrigues, N.; M.A. and Sacramento; Saraiva; Souza; T.M.
EPI_ISL_717835, EPI_ISL_717841, EPI_ISL_717912, EPI_ISL_717917, EPI_ISL_717964	LACEN Dr. Francisco Rimolo Neto	Bioinformatics Laboratory / LNCC	Alexandra L Gerber; Amílcar Tanuri; Ana Paula de C Guimarães; Ana Tereza R de Vasconcelos; Andréa Cony Cavalcanti; Carolina M Voloch; Claudia dos Santos Rodrigues; Cynthia C Cardoso; Diana Mariani; Luiz G P de Almeida
EPI_ISL_717789, EPI_ISL_717795, EPI_ISL_717796, EPI_ISL_717800, EPI_ISL_717900, EPI_ISL_717902, EPI_ISL_717903, EPI_ISL_717909	LACEN RJ - Noel Nutels	Bioinformatics Laboratory / LNCC	Alexandra L Gerber; Amílcar Tanuri; Ana Paula de C Guimarães; Ana Tereza R de Vasconcelos; Andréa Cony Cavalcanti; Carolina M Voloch; Claudia dos Santos Rodrigues; Cynthia C Cardoso; Diana Mariani; Luiz G P de Almeida
EPI_ISL_2731471	Laboratório Central de Saúde Pública do Estado do Rio de Janeiro (LACEN/RJ)	Laboratory of Respiratory Viruses and Measles, Oswaldo Cruz Institute, FIOCRUZ	Alice Sampaio Rocha; Ana Carolina Mendonça; Andrea Cony Cavalcanti; Anna Carolina Paixão; Elisa Cavalcante Pereira; Fernando Motta; Luciana Appolinario; Marilda Siqueira on behalf of the Fiocruz COVID-19 Genomic Surveillance Network
EPI_ISL_2970373	Laboratório de Biologia Molecular de Flavivirus, Instituto Oswaldo Cruz	Laboratório de Biologia Molecular de Flavivirus, Instituto Oswaldo Cruz	A.A.; B.D.; Bonaldo; Brasil, P.; Damasceno, L.; Furtado; I.P.; L.M.; M.C.; M.P.; Mello, I.; N.D.; Oliveira; Pelajo-Machado, M.; Rhapael; Ribeiro; Santos; Siqueira
EPI_ISL_470638, EPI_ISL_623130, EPI_ISL_717810, EPI_ISL_717811, EPI_ISL_717848, EPI_ISL_717852, EPI_ISL_717859, EPI_ISL_717866	Laboratório de Virologia Molecular / UFRJ	Bioinformatics Laboratory / LNCC	Alexandra Gerber; Alexandra L Gerber; Amílcar Tanuri; Ana Paula Guimarães; Ana Paula de C Guimarães; Ana Tereza R de Vasconcelos; Andréa Cony Cavalcanti; CADDE-group; Carolina M Voloch; Carolina Voloch; Claudia dos Santos Rodrigues; Renata Santana Aguiar e Ana Tereza Vasconcelos; Ronaldo S Francisco Jr; Ronaldo da Silva F Jr; Ronaldo da Silva Francisco Junior; Terezinha M P P Castilheira; Terezinha M P P Castilheiras; Terezinha Maria F de Almeida
EPI_ISL_467356, EPI_ISL_467359, EPI_ISL_467366, EPI_ISL_541354, EPI_ISL_541355, EPI_ISL_541359, EPI_ISL_1181361, EPI_ISL_1181384, EPI_ISL_1181499, EPI_ISL_1181500, EPI_ISL_1181508, EPI_ISL_1181509, EPI_ISL_1181510, EPI_ISL_1181512, EPI_ISL_1181513, EPI_ISL_1181518, EPI_ISL_1181521, EPI_ISL_1181524, EPI_ISL_2731476, EPI_ISL_2731478, EPI_ISL_2731480, EPI_ISL_2731481, EPI_ISL_2731482, EPI_ISL_2731486	Laboratory of Respiratory Viruses and Measles, Oswaldo Cruz Institute, FIOCRUZ	Laboratory of Respiratory Viruses and Measles, Oswaldo Cruz Institute, FIOCRUZ	Alex Pauvolid-Corrêa; Alice Sampaio Rocha; Aline Mattos; Ana Beatriz Machado Lima; Ana Carolina Mendonça; Ana Carolina Mendonça; Anna Carolina Paixão; Anna Carolina Paixão; Bráulia Caetano; Cinthia Avila; Cristiana Garcia; Ogrzewalska; Marilda Siqueira on behalf of the Fiocruz COVID-19 Genomic Surveillance Network; Mia Ferreira de Araujo; Milene Miranda; Paola Resende; Renata Serrano Lacerda
EPI_ISL_456088	Laboratório Central de Saúde Pública Noel Nutels (LACEN-RJ)	Laboratory of Respiratory Viruses and Measles, Oswaldo Cruz Institute, FIOCRUZ	Aline Mattos; Bráulia Caetano; Cristiana Garcia; Fernando Motta; Jonathan Lopes; Luciana Appolinario; Maria Ogrzewalska; Marilda Siqueira on behalf of the Fiocruz COVID-19 Genomic Surveillance Network
EPI_ISL_513514, EPI_ISL_513532, EPI_ISL_513546, EPI_ISL_513557	Programa de Oncovirologia, Instituto Nacional de Câncer	Programa de Oncovirologia, Instituto Nacional de Câncer	Andria C. de Melo; Brunna M. Alves; Claudia Cicala; James Arthos; João P.B. Viola; Juliana D. Siqueira; Livia R. Goes; Marcelo A. Soares