Determinants of death in critically ill COVID-19 patients during the first wave of COVID-19: a multicenter study in Brazil

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Table S1. Laboratory data at ICU admission.[a]

Variable	In-hospital outcome		Total	OR	95% CI		p
	Discharge (n = 371)	Death (n = 274)	(N = 645)		2.5%	97.5%	
Hemoglobin, g/dL	13.1 [11.2; 14.4] (n = 370)	12.1 [9.6; 13.7]	12.7 [10.6; 14.2] (n = 644)	0.89	0.84	0.94	< 0.0001
Hematocrit, %	38.8 [33.5; 42.4] (n = 370)	36.2 [29.2; 41.1]	37.8 [31.9; 42.0] (n = 644)	0.96	0.95	0.98	0.0004
Neutrophils, million cells/mm^3	5.8 [3.9; 8.3] (n = 320)	7.2 [4.4; 10.8] (n = 240)	6.3 [4.0; 9.5] (n = 560)	1.08	1.04	1.12	0.0001
Neutrophils, %	76.7 [68.0; 84.4] (n = 320)	80.4 [73.0; 87.8] (n = 240)	78.7 [70.0; 85.2] (n = 560)	1.02	1.01	1.03	0.006
Lymphocytes, million cells/mm^3	0.9 [0.7; 1.4] (n = 367)	0.9 [0.5; 1.3] (n = 272)	0.9 [0.6; 1.3] (n = 639)	0.90	0.72	1.13	0.38
Lymphocytes, %	13.0 [8.4; 19.1] (n = 367)	10.0 [6.0; 15.0] (n = 272)	11.8 [7.0; 17.7] (n = 639)	0.95	0.93	0.97	< 0.0001
Platelets, (1,000/mm^3)/10	20.4 [15.7; 26.5] (n = 369)	17.3 [12.5; 23.1]	19.0 [14.2; 25.2] (n = 643)	0.95	0.93	0.97	< 0.0001
Creatinine, (mg/dL)/10	0.1 [0.1; 0.1] (n = 368)	0.2 [0.1; 0.3] (n = 271)	0.1 [0.1; 0.2] (n = 639)	3.38	1.59	7.19	0.001
Urea, (mg/dL)/10	3.9 [2.6; 6.0] (n = 367)	7.0 [4.1; 11.6] (n = 265)	4.7 [2.9; 8.8] (n = 632)	1.12	1.08	1.16	< 0.0001
Glucose, (mg/dL)/10	11.8 [10.1; 16.3] (n = 214)	15.2 [11.6; 23.9] (n = 152)	13.0 [10.6; 19.4] (n = 366)	1.05	1.02	1.08	0.0002
C-reactive protein, (mg/dL)/10	1.3 [0.6; 7.0] (n = 227)	4.5 [1.0; 18.8] (n = 139)	1.7 [0.7; 11.6] (n = 366)	1.04	1.02	1.07	< 0.0001
Lactate, mg/dL	13.0 [10.0; 17.0] (n = 292)	15.0 [12.0; 20.5] (n = 243)	14.0 [11.0; 19.0] (n = 535)	1.05	1.03	1.07	< 0.0001
ALT, (U/L)/10	3.6 [2.4; 5.7] (n = 315)	3.2 [2.0; 5.3] (n = 235)	3.4 [2.2; 5.6] (n = 550)	1.01	1.00	1.03	0.12
AST, (U/L)/10	3.9 [2.6; 5.8] (n = 215)	5.5 [3.4; 8.3] (n = 141)	4.4 [2.8; 7.2] (n = 356)	1.02	1.00	1.05	0.07
Total bilirubin, mg/dL	0.4 [0.3; 0.6] (n = 297)	0.5 [0.3; 0.9] (n = 229)	0.4 [0.3; 0.7] (n = 526)	2.05	1.45	2.91	< 0.0001
Partial prothrombin time, s	32.6 [28.8; 37.7] (n = 327)	34.9 [30.4; 41.0] (n = 251)	33.8 [29.5; 39.1] (n = 578)	1.02	1.01	1.03	0.006
Prothrombin time, s	13.7 [13.0; 14.6] (n = 326)	14.7 [13.7; 16.3] (n = 251)	13.9 [13.2; 15.2] (n = 577)	1.16	1.09	1.24	< 0.0001
INR	1.1 [1.0; 1.2] (n = 326)	1.1 [1.0; 1.3] (n = 251)	1.1 [1.0; 1.2] (n = 577)	2.21	1.27	3.85	0.005
Sodium, mmol/L	137.0 [135.0; 139.0] (n = 366)	137.0 [134.0; 140.0] (n = 271)	137.0 [134.0; 140.0] (n = 637)	1.00	0.98	1.03	0.80
Potassium, mmol/L	4.2 [3.8; 4.6] (n = 364)	4.4 [4.0; 5.0] (n = 268)	4.2 [3.9; 4.7] (n = 632)	1.67	1.35	2.07	< 0.0001
Procalcitonin, ng/mL	0.2 [0.1; 0.7] (n = 87)	0.5 [0.2; 2.2] (n = 80)	0.3 [0.1; 0.9] (n = 167)	1.00	0.99	1.00	0.57
D-dimer, mg/mL	1.1 [0.4; 2.8] (n = 264)	2.4 [1.2; 5.3] (n = 162)	1.6 [0.6; 3.5] (n = 426)	1.14	1.09	1.20	< 0.0001
LDH, (mg/mL)/10	49.9 [0.0; 64.4] (n = 55)	19.2 [0.0; 70.5] (n = 12)	48.2 [0.0; 65.2] (n = 67)	1.00	0.98	1.02	0.93
Ferritin, (mg/mL)/10	50.4 [0.0; 124.0] (n = 53)	60.9 [0.0; 134.5] (n = 17)	54.0 [0.0; 130.8] (n = 70)	1.00	1.00	1.01	0.86

INR: international normalized ratio. [a]Values expressed as median [IQR].

Table S2. Drug sensitivity profile of the agents isolated from blood samples.[a]

Bacteria	Oxacillin	Vancomycin	Linezolid	Cephalosporin	Carbapenem	Quinolone	Polymyxin
Gram-positive							
Other *Staphylococcus* sp.	5/50 (10.0)	43/50 (86.0)	42/50 (84.0)				
Streptococcus sp.	1/1 (100.0)	1/1 (100.0)	1/1 (100.0)				
Staphylococcus aureus	2/5 (40.0)	4/5 (80.0)	4/5 (80.0)				
Enterococcus faecalis		2/3 (66.7)	1/3 (33.3)				
Other *Enterococcus* sp.		0/1 (0.0)	1/1 (100.0)				
Gram-negative							
Acinetobacter baumannii				1/2 (50.0)	1/2 (50.0)	1/2 (50.0)	1/2 (50.0)
Escherichia coli				2/5 (40.0)	3/5 (60.0)	2/5 (40.0)	2/5 (40.0)
Klebsiella pneumoniae				0/21 (0.0)	1/21 (4.8)	1/21 (4.8)	8/21 (38.1)
Other				1/5 (20.0)	2/5 (40.0)	1/5 (20.0)	2/5 (40.0)
Pseudomonas aeruginosa				1/2 (50.0)	1/2 (50.0)	1/2 (50.0)	2/2 (100.0)

[a]Values expressed as n/n (%), that is, number of sensitive strains/number of isolates. [b]A microorganism may have appeared in more than one culture.

Table S3. Drug sensitivity profile of the agents isolated from tracheal aspirate samples.[a]

Bacteria	Oxacillin	Vancomycin	Linezolid	Cephalosporin	Carbapenem	Quinolone	Polymyxin
Gram-positive							
Other *Staphylococcus* sp.	1/1 (100.0)	1/1 (100.0)	1/1 (100.0)				
Staphylococcus aureus	5/11 (45.5)	5/11 (45.5)	4/11 (36.4)				
Enterococcus faecalis		1/1 (100.0)	1/1 (100.0)				
Other *Enterococcus* sp.		1/1 (100.0)	1/1 (100.0)				
Gram-negative							
Acinetobacter baumannii				0/1 (0.0)	0/1 (0.0)	0/1 (0.0)	0/1 (0.0)
Acinetobacter sp.				1/1 (100.0)	1/1 (100.0)	1/1 (100.0)	0/1 (0.0)
Escherichia coli				0/2 (0.0)	1/2 (50.0)	0/2 (0.0)	0/2 (0.0)
Klebsiella pneumoniae				3/45 (6.7)	5/45 (11.1)	4/45 (8.9)	13/45 (28.9)
Other				4/8 (50.0)	3/8 (37.5)	3/8 (37.5)	2/8 (25.0)
Pseudomonas aeruginosa				11/17 (64.7)	11/17 (64.7)	10/17 (58.8)	11/17 (64.7)

[a]Values expressed as n/n (%), that is, number of sensitive strains/number of isolates.

Table S4. Drug sensitivity profile of the agents isolated from urine samples.[a]

Bacteria	Oxacillin	Vancomycin	Linezolid	Cephalosporin	Carbapenem	Quinolone	Polymyxin
Gram-positive							
Enterococcus faecalis		1/1 (100.0)	0/1 (0.0)				
Other *Enterococcus* sp.		2/2 (100.0)	0/2 (0.0)				
Gram-negative							
Escherichia coli				3/7 (42.9)	5/7 (71.4)	3/7 (42.9)	3/7 (42.9)
Klebsiella pneumoniae				3/12 (25.0)	4/12 (33.3)	3/12 (25.0)	4/12 (33.3)
Other				1/3 (33.3)	2/3 (66.7)	2/3 (66.7)	2/3 (66.7)
Pseudomonas aeruginosa				0/1 (0.0)	1/1 (100.0)	1/1 (100.0)	1/1 (100.0)

[a]Values expressed as n/n (%), that is, number of sensitive strains/number of isolates.

Table S5. Drug sensitivity profile of the agents isolated from catheter tip samples.[a]

Bacteria	Oxacillin	Vancomycin	Linezolid	Cephalosporin	Carbapenem	Quinolone	Polymyxin
Gram-positive							
Other *Staphylococcus* sp.	0/6 (0.0)	5/6 (83.3)	5/6 (83.3)				
Staphylococcus aureus	2/2 (100.0)	1/2 (50.0)	1/2 (50.0)				
Enterococcus faecalis		0/1 (0.0)	1/1 (100.0)				
Gram-negative							
Acinetobacter baumannii				0/1 (0.0)	0/1 (0.0)	0/1 (0.0)	1/1 (100.0)
Escherichia coli				0/1 (0.0)	0/1 (0.0)	0/1 (0.0)	1/1 (100.0)
Klebsiella pneumoniae				0/7 (0.0)	0/7 (0.0)	0/7 (0.0)	2/7 (28.6)
Other				1/8 (12.5)	2/8 (25.0)	1/8 (12.5)	0/8 (0.0)
Pseudomonas aeruginosa				0/2 (0.0)	0/2 (0.0)	0/2 (0.0)	1/2 (50.0)

[a]Values expressed as n/n (%), that is, number of sensitive strains/number of isolates.

Table S6. Drug sensitivity profile of agents isolated from blood from catheter samples.

Bacteria	Oxacillin	Vancomycin	Linezolid	Cephalosporin	Carbapenem	Quinolone	Polymyxin
Gram-positive							
Other *Staphylococcus* sp.	0/7 (0.0)	5/7 (71.4)	5/7 (71.4)				
Staphylococcus aureus	2/2 (100.0)	2/2 (100.0)	2/2 (100.0)				
Gram-negative							
Klebsiella pneumoniae				0/1 (0.0)	0/1 (0.0)	0/1 (0.0)	0/1 (0.0)

[a]Values expressed as n/n (%), that is, number of sensitive strains/number of isolates.

Chart S1. Immediate causes of death in the ICUs.

Cause of death
Acute multiple organ dysfunction[a]
Acute myocardial infarction
Acute/chronic liver failure
Central nervous system failure
Hemorrhage
Hypoxemia
Intractable intestinal ischemia
Pulmonary embolism
Refractory shock
Other

[a]Defined as dysfunction of three or more organs as determined by the multiple organ dysfunction syndrome score.[18]