COVID-19 in-hospital mortality of a secondary care center of Mexico City in a marginated area during the first months of the Mexican epidemic

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Abstract

Introduction: Low socioeconomic conditions and hospital saturation have been associated with higher mortality rates in hospitalized patients with COVID-19. Mexico City has become the country's highest death toll. Iztapalapa is the district with the highest population density and marginalization in Mexico City. Most of the information on COVID-19 in-hospital mortality in Mexico comes from intensive care units or tertiary hospitals without considering the level of income. Data regarding hospital mortality in care centers with low availability of intensive care beds has not been explored.

Material and methods: A retrospective cohort study in consecutive patients with COVID-19 hospitalized managed outside the intensive care unit in a secondary care center in Mexico City from April 1st, 2020, to May 31st, 2020. Analysis was performed between subgroups with a p-value <0.05 considered statistically significant.

Results: A total of 164 patients were recruited; the median age was 52.5 years (IQR 44 - 64.5), 68% were males, 48.7% were obese, and 59.7% had comorbidities. Among those patients, 67% required mechanical ventilation and 32.3% vasopressor support. In this population, 52 recovered (31.7%) and 112 died (68.3%). The main risk factors associated with death were male sex, age ≥ 50 years, diabetes, severe pneumonia on admission, PORT / PSI ≥ 91 , SMART-COP ≥ 5 , SCAP score ≥ 10 , dyspnea on admission, fever during hospitalization [p <0.05] and the administration of intravenous antibiotics [RR 3.45, 95% CI 1.69-7.06, p <0.001].

Conclusion: In this study, we found higher in-hospital mortality compared to previous reports. We suggest that the administration of intravenous antibiotics could impact patient survival for the risk of developing hospital-acquired infections.

Background

Novel coronavirus disease 2019 (COVID-19), caused by severe acute respiratory coronavirus-2 (SARS-CoV-2), has become a significant health concern worldwide. As the pandemic has spread, it has persisted in Latin America, creating a substantial demand for hospital admission and critical care. Worldwide reports have shown a mortality rate ranging from 8% to 21% in patients hospitalized for SARS-CoV-2 pneumonia and up to 16-78% in those requiring intensive care unit (ICU) admission. [1]

Mexico has high rates of hypertension, obesity, and diabetes, all of which are risk factors for severe disease after infection with SARS-CoV-2. [2] Escobedo de la Peña et al., in November 2020 established in an epidemiological research of 323,671 subjects with COVID-19 in Mexican Social Security Institute that patients who had a history of diabetes, obesity, and hypertension combined were most likely to die with an adjusted OR 3.28 (95% CI 2.65-4.05, p <0.001), hypertension and obesity combined increased risk of death to an adjusted OR 2.36 (95% CI 1.63-3.43, p <0.001) [3]. As of March 15, 2021, Mexico had become the nation with the third-highest number of SARS-CoV-2-related deaths worldwide, and Mexico City was one of the epicenter cities of the pandemic, with the country's highest death toll. [4]

A study from a tertiary care center in Mexico City reported in-hospital mortality rates of 30.1% and 49.2% in ICU beds, noting that 45% of the nonsurvivor patients who developed critical illness did not receive invasive mechanical ventilation/ICU care due to the lack of ICU bed availability. [2]

Iztapalapa is a region in Mexico City with the highest population density (representing 20.5% of the population in Mexico City) and the most notorious conditions of marginalization in Mexico City. [3] By March 15th, 2021, with a total population of 1,815,551 inhabitants in the Iztapalapa delegation, accumulated COVID-19 confirmed cases of 91,112 had been reported, with 66,373 recovered cases and 5,670 deaths, a fatality rate of 6.2%. Near than 2,496 active cases had been reported in the second week of March 2021. [5] Prevalent socioeconomic factors such as higher poverty rates, high public transportation use, lack of health insurance, poor formal education level, and overcrowded housing (and other factors that

preclude social distancing and preventive measures) are associated with an increased rate of in-hospital mortality in COVID-19 patients. [2]

As the principal tertiary centers for COVID-19 treatment in the metropolitan area of Mexico City reached bed saturation, most people with severe or critical COVID-19 received attention in units with minimal ICU bed availability. Previous studies in Mexico have determined risk factors for mortality in population contexts without adjusting by income. This study aimed to determine COVID-19 in-hospital mortality and risk factors in a secondary care center in Mexico City in a region with low income. We described the clinical characteristics and risk factors associated with mortality of adults with confirmed SARS-CoV-2 pneumonia who received care outside ICU during the first months of the Mexican epidemic.

Materials And Methods

2.1.- Study design and setting

This was a retrospective cohort study at a hospital in the Iztapalapa District of Mexico City, Mexico. Our hospital has served as a pandemic hospital since March 2020. During the study period, the ICU bed capacity was only seven beds, but the hospital wards' capacity was expanded from 36 to 72 beds (all equipped for invasive mechanical ventilation).

We conducted the study in line with the Declaration of Helsinki. The Institutional Ethics Committee approved the study protocol and waived the requirement for written informed consent due to the study's minimal risk to participants. Privacy and personally identifiable information of the patients were protected, and data collection did not harm the patients.

2.2. Study population

We enrolled patients who had been diagnosed with COVID-19 pneumonia and were hospitalized in the internal medicine department of our hospital between April 1st, 2020, and May 31st, 2020. The inclusion criteria were as follows: (1) patients over 18 years old; (2) patients with COVID-19 confirmed by real-time reverse transcription-polymerase chain reaction (PCR); (3) patients treated only by the internal medicine department medical team; and (5) patients discharged from the hospital due to death or clinical improvement. Exclusion criteria: (1) pregnant patients, (2) patients treated only in the emergency department and intensive care unit, (3) patients referred from other medical units with mechanical ventilation and/or vasopressor support, and (4) those with incomplete data.

Any suspected case with respiratory distress (>30 breaths/minute) or oxygen saturation lower than <90% at room air was hospitalized.

2.3.- Data collection

Patients' clinical, demographic, radiologic, and laboratory feature data with treatments and hospitalization days were extracted from medical records and collected in a database.

2.4.- Variables

The study's primary outcome was in-hospital mortality, defined as documented death from any cause during hospitalization. The secondary outcome was the use of mechanical ventilation during hospitalization. Patients were further categorized into different subgroups: alive vs. deceased and intubated vs. nonintubated patients.

2.5.- Statistical analysis

The analyses were computed using IBM SPSS Statistics 22. Regarding data distribution, continuous data are presented as the mean and standard deviation (SD) or median and interquartile range (IQR). Categorical data are reported as frequencies and percentages. Variables were compared between groups using Student's t-test or a Mann-Whitney U test if

numeric or a chi-squared test if categorical. Analysis of risk factors for in-hospital mortality was performed between the groups. A p-value <0.05 was considered statistically significant.

Results

Demographic and clinical characteristics

During the study period, PCR was performed in 265 consecutive patients with suspected SARS-CoV-2 infection; 191 patients (72.1%) were confirmed SARS-CoV-2 cases. Of them, 164 patients (85.8%) met all the study criteria. In this population, 52 patients recovered (31.7%) and 112 (68.3%) died during hospitalization.

The demographic and clinical characteristics of the patients are shown in **Table 1**. All patients were residents of Mexico City. The median age was 52.5 years (IQR 44 to 64.5), 68% (n=112) were male, median schooling was 9 years (IQR: 6 to 9), 48.7% (n= 74) were obese, 29% (n =44) were overweight, median BMI was 29.3 kg/m² (IQR 25.5 to 34.7) and 24.3% (n=40) had a history of smoking. A total of 59.7% (n= 98) had comorbidities; diabetes (37.8%) and hypertension (37%) were the most common.

Comparing surviving vs. deceased patients, age (median 47.5 years [IQR: 38-54] vs. 55 years [IQR: 46.5-65.7], p <0.001), diabetes prevalence (21% vs. 45.5%, p 0.003), and smoking index (median of 1 pack/year vs 6 packs/year, p 0.005) were higher in deceased patients. Schooling (median of 9 years [IQR 6 to 12] vs. 7 years [IQR 6 to 9], p 0.01) was lower in deceased patients.

Comparing intubated vs. nonintubated patients, male sex (p 0.036), older age (p 0.024), and a higher smoking index (p 0.002) were observed in patients who needed mechanical ventilation.

Signs and symptoms

Clinical evaluation is summarized in **Table 2**. The most common symptoms were dyspnea in 82.9% (n=136), cough in 75.6% (n=124), fever in 69% (n=131), myalgias in 44% (n=72) and headache in 40.2% (n=66). On admission, the most common findings at physical examination were pharyngeal hyperemia in 15.2% (n=25) and cyanosis in 8.5% (n=14).

When comparing surviving vs deceased groups, dyspnea (73% in the survivor group vs. 83% in deceased group, p 0.02) and cyanosis (1.9% vs. 11.6%, p 0.03) were more frequently observed in deceased patients. Comparing the intubated vs. nonintubated groups, cyanosis (p 0.03) was associated with the requirement of mechanical ventilation.

At admission, only 17.6% (n=29) of patients presented with fever. During hospitalization, 62.2% (n=109) of patients continued or developed fever. The onset of fever in initially afebrile patients was a median of 2 days after admission (IQR 1-3). Comparing groups, fever at hospitalization (32.7% in the survivor group vs. 76% in the deceased group, p <0.001) and a higher temperature during hospitalization (median 37°C [IQR: 36.8-38.5] vs. 39°C [IQR: 38.2-40], p <0.001) were frequently observed in deceased patients who needed mechanical ventilation.

Radiographic and laboratory findings

Radiographic and laboratory features are summarized in **Table 3**. The most common findings were ground-glass opacities, interstitial abnormalities, and bilateral infiltrates. No difference was found in the radiographic features between groups.

With respect to laboratory findings, low PaO₂/FiO₂ ratio (mean 213 +/- 107), high WBC count (median 11,050 per mm³, IQR: 7,900-15,100), high neutrophil count (median 9,250 per mm³, IQR:6,475-13,025), high neutrophil-lymphocyte ratio (median 11, IQR: 6.5-19), high lactate dehydrogenase (median 406 U/L, IQR: 322-570), high D-dimer (median 1740 ng/ml,

IQR: 728-3380), increased glucose (median 123 mg/dl, IQR: 93-198) and high C-reactive protein (median 21.4 mg/dl, IQR: 12-32) were observed.

After comparing surviving and deceased patients, the deceased group had lower PaO₂/FiO₂ ratio (mean 274 vs 184, $p < 0.001$), higher WBC count (median 8,700 per mm³ vs 12,000 per mm³, $p < 0.001$), increased neutrophil count (median 6,900 per mm³ vs 10,700 per mm³, $p < 0.001$), higher neutrophil-lymphocyte ratio (median 7.6 vs 13, $p < 0.001$), increased lactate dehydrogenase (median 322 U/L vs 482 U/L, $p < 0.001$), increased D-dimer (median 845 ng/ml vs 2235 ng/ml, $p < 0.001$), elevated glucose (median 101 mg/dl vs 138 mg/dl, $p < 0.001$), and higher C-reactive protein (median 12 mg/dl vs 26.2 mg/dl, $p < 0.001$) levels. The same findings with statistical significance ($p < 0.05$) were observed in patients who needed mechanical ventilation.

Treatments and complications

Treatments and complications are described in **Table 4**. Overall, patients had a median hospital stay of 7 days (IQR: 4-11). Regarding treatment, 98.7% ($n=162$) had oxygen therapy, 76.2% ($n=125$) received oral antibiotics, 70.7% ($n=116$) received intravenous antibiotics, 59.8% ($n=98$) received hydroxychloroquine, and 25% ($n=41$) received systemic steroids. The most common complications during hospitalization were acute kidney injury (36%, $n=59$) and acute respiratory distress syndrome (34.8%, $n=57$). Sixty-seven percent ($n=110$) of the patients required invasive mechanical ventilation, and 32.3% ($n=53$) needed vasopressor support.

Regarding in-hospital mortality, fewer days of hospital stay (median 10 days, IQR: 7-16 vs 5 days, IQR: 3.2-9, $p < 0.001$), higher use of intravenous antibiotics (52% vs 79.5%, $p < 0.001$), higher use of systemic steroids (13.5% vs 30.4%, $p = 0.02$), higher incidence of ARDS (5.8% vs 48.2%, $p < 0.001$) and AKI prevalence (11.5% vs 47.3%, $p < 0.001$), and higher use of vasopressor support (3.8% vs 45.5%, $p < 0.001$) were observed in deceased patients.

Risk factors for death

We summarize the analysis of risk factors for in-hospital mortality in **Table 5**. Mortality was significantly higher in patients who were male (RR 2.1, 95% CI 1.02-4.51, $p = 0.04$), aged >50 years (RR 2.3, 95% CI 1.49-3.83, $p < 0.001$), had diabetes (RR 3.07, 95% CI 1.28-7.37, $p = 0.012$), had severe pneumonia at admission (RR 14.1, 95% CI 1.66-120.22, $p = 0.015$), PORT/PSI score >91 (RR 6.5, 95% CI 1.33-32.23, $p = 0.021$), SMART-COP score >5 (RR 6.79, 95% CI 1.65-27.86, $p = 0.008$), SCAP score >10 (RR 4.86, 95% CI 1.18-19.92, $p = 0.028$), had dyspnea at admission (RR 3.55, 95% CI 1.16-10.85, $p = 0.026$), had fever during hospitalization (RR 6.83, 95% CI 2.43-19.13, $p < 0.001$), and were administered intravenous antibiotics (RR 3.45, 95% CI 1.69-7.06, $p < 0.001$).

Discussion

In this study, among patients with confirmed COVID-19 pneumonia who presented during the initial phase of the COVID-19 outbreak in a hospital in the Iztapalapa region of Mexico City, in-hospital mortality was 68.3%, which was higher than that found in previous studies. [1, 7-13]

The hospitalization criteria in our hospital may be the cause for this finding. As discussed previously, a considerable number of severely ill or oxygen-dependent patients were hospitalized. Thus, our cohort might represent more severe COVID-19 patients. In this setting of ICU bed unavailability, 67% of the patients hospitalized in a hospital ward required mechanical ventilation, and 32.3% needed vasopressor support.

This study shows the problem of health system saturation and ICU resource rationing during the COVID-19 pandemic. These results were similar to those observed during the pandemic's initial surge in several countries, where over 50% of the critically ill patients who required ICU care died in general hospital wards due to resource constraints. [14]

This investigation showed similar factors associated with death as previous studies. Some comorbidities (such as diabetes mellitus), male sex, older age, increased inflammatory markers, and laboratory values indicating organ failure were associated with a higher rate of in-hospital mortality. [7-9, 11-12]

In this study, we found that routine use of intravenous antibiotics was associated with a higher rate of in-hospital mortality and the need for mechanical ventilation. COVID-19 may mimic bacterial pneumonia, and therefore, antibiotics for possible bacterial coinfections are frequently administered. [15] Langford et al. reported a more frequent unnecessary antibiotic prescription in patients with COVID-19 in the first six months of the global pandemic, mainly due to suspected bacterial coinfections. Despite frequent antibiotic prescriptions, the prevalence of bacterial coinfection and secondary infection in patients hospitalized with COVID-19 was relatively low at 3.5% and 14.3%, respectively. [16]

Studies about the impact of early antibiotic therapy on mortality or critical complications in COVID-19 patients are limited. Buetti et al. reported that early administered antibiotics do not appear to significantly impact mortality or delay hospital-acquired infections in critically ill patients. [15]

In respiratory viral infection, an altered innate immune function exists in pulmonary tissue due to respiratory viral infection; macrophages are overwhelmed by the increased burden of apoptotic cells and become limited in their capacity to phagocytose bacteria as a result of increasing bacterial growth. Additionally, the initial immune response to a viral lung infection modifies the respiratory tract microbiome, which can, in turn, undermine immune defenses against infectious pathogens. Other inciting mechanisms following viral illnesses include altered epithelial cells that disrupt mucociliary clearance and mucus thickening, impairing immune cell movement. In the specific setting of SARS-CoV-2 infection, fluid- and pus-filled pulmonary alveoli create a nutritive environment for bacteria such as *P. aeruginosa* and *S. aureus*. [17]

Nosocomial and ventilator-associated pneumonia associated with multidrug-resistant *P. aeruginosa*, *Acinetobacter baumannii*, and *K. pneumoniae* is common in our center. We did not have microbiology laboratory analyses during the study period in our hospital, so bacterial infections in these patients were unknown. To our knowledge, this is the first research study in which early antibiotic intravenous therapy was associated with higher in-hospital mortality and an increased need for mechanical ventilation in COVID-19 patients. The use of routine intravenous antibiotics, generally broad-spectrum antibiotics, could modify the respiratory tract microbiome. This altered microbiome with impaired immune cells due to SARS-CoV-2 infection could trigger multidrug-resistant pulmonary infections, impacting patient survival.

Respiratory failure is the leading cause of mortality in patients with COVID-19. [18] Myocardial injury, kidney or liver injury, and multiorgan dysfunction are among the other complications leading to death. [19] There are several pathways leading to SARS-CoV-2-related death: those directly attributed to viral infection, those in which the infection partially contributed to the cause of death, and those unrelated to it. In this study, most complications were directly related to SARS-CoV-2. [20]

In a large retrospective cohort study in the United States, risk factors associated with mortality were similar to those identified in our study. Nevertheless, due to the low in-hospital mortality and lower mechanical ventilation use reported, COVID-19 patients present a higher prevalence of acute complications such as ARDS, AKI, and shock. [21] Regarding Mexico, Olivas Martinez et al. reported in a prospective cohort study the same patterns for risk factors for death as our study and showed how lack of ICU bed availability increased patient mortality. The limitation reported in this extensive study was that a considerable percentage of the patients were transferred to other hospitals due to clinical improvement, clinical deterioration, and saturation of critical care areas, so some clinical outcomes were unknown. [1]

With the findings of previous studies and our results, our group rightfully concluded that in-hospital mortality is associated with a clear pattern. We can expect an increased incidence of acute complications, need for critical care, and higher mortality in a COVID patient with the following risk factors: male sex, older age, presence of comorbidities, laboratory values indicating increased inflammatory/organ failure markers, and severe disease at admission.

An important limitation of this study was the small sample size. The population was limited to the Iztapalapa district in Mexico City. Extrapolating these findings to other areas in Mexico (with different population densities and ICU bed availability) could be inaccurate.

Conclusions

In this study, we found higher in-hospital mortality compared to previous reports. Our population showed similar factors associated with death as previous studies: male sex, older age, comorbidities, laboratory values indicating increased inflammatory/organ failure markers, and severe disease at admission. Additionally, we found that routine use of intravenous antibiotics was associated with a higher rate of in-hospital mortality. We suggest that administration of intravenous antibiotics could impact patient survival for the risk of developing hospital-acquired infections. A hospital with a low ICU bed capacity could not provide a better outcome for these patients, who had higher mechanical ventilation or vasopressor support requirements. This study reports a critical situation of hospital area overcrowding, elucidating this situation during the COVID-19 pandemic to inform strategies in resource-limited medical units.

Declarations

FUNDING CONSIDERATIONS

This study did not benefit from any funding organization in the public or commercial.

CONFLICT OF INTEREST

None.

AUTHOR'S CONTRIBUTIONS

JM Alanís-Naranjo wrote the initial draft of the manuscript. VM Anguiano-Alvarez, and EF Hammeken-Larrondo contributed to reviewing the manuscript. All authors played a significant role in editing this research article.

ETHICAL CONSIDERATIONS

The Institutional Ethics Committee approved the study protocol (501-010-01-21). Privacy and personally identifiable information of the patients were protected, and data collection did not harm the patients.

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Tables

Table 1.- Demographic and clinical characteristics							
Variable	Overall (N=164)	Death		p- value	Mechanical ventilation		p- value
		NO (N=52)	YES (N=112)		NO (N=54)	YES (N=110)	
Male gender, n (%)	112/164 (68%)	31/52 (59.6%)	81/112 (72%)	0.1	31/54 (57.4%)	81/110 (73.6%)	0.036
Age, median (IQR) -years-	52.5 (45- 64.5)	47.5 (38-54)	55 (46.5- 65.7)	<0.001	49.5 (42- 56.2)	55 (45- 65)	0.024
Schooling, median (IQR) -years-	9 (6-9)	9 (6-12)	7 (6-9)	0.01	9 (6-12)	7 (6-9)	0.09
BMI, median (IQR) -kg/m2-	29.3 (25.5- 34.7)	28.6 (25.9- 34)	30.2 (25.3- 36.5)	0.6	28.6 (25.7- 33.4)	30.2 (25.3- 36.6)	0.6
Normal BMI, n (%)	34/152 (22.3%)	12/51 (23.5%)	22/101 (22%)	0.8	12/53 (22.6%)	22/99 (22%)	0.9
Overweight, n (%)	44/152 (29%)	16/51 (31.3%)	28/101 (28%)	0.6	17/53 (32.1%)	27/99 (28%)	0.5
Obesity, n (%)	74/152 (48.7%)	23/51 (45.1%)	51/101 (50%)	0.5	24/53 (45.3%)	50/99 (50.5%)	0.5
Obese class I, n (%)	37/152 (24.3%)	12/51 (23.5%)	25/101 (24.7%)	0.8	14/53 (26.4%)	23/99 (24.7%)	0.6
Obese class II, n (%)	19/152 (12.5%)	6/51 (11.7%)	13/101 (12.8%)	0.8	3/53 (5.7%)	16/99 (12.8%)	0.06
Obese class III, n (%)	18/152 (11.8%)	5/51 (9.8%)	13/101 (12.8%)	0.5	7/53 (13.2%)	11/99 (12.8%)	0.7
Smoking history, n (%)	40/164 (24.3%)	17/52 (33%)	23/112 (20.5%)	0.09	17/54 (31.4%)	23/110 (20.9%)	0.1
Former smoker ¹ , n (%)	20/40 (50%)	11/17 (64.7%)	9/23 (39%)	0.1	12/17 (70.6%)	8/23 (34.7%)	0.025
Current smoker ² , n (%)	20/40 (50%)	6/17 (35.3%)	14/23 (61%)	0.1	5/17 (29.4%)	15/23 (65.2%)	0.025
Smoking index ³ , median (IQR) - pack/year-	2.9 (0.7- 8.3)	1 (0.3- 2.9)	6 (1.4- 12)	0.005	1 (0.3- 2.9)	6 (1.4- 12)	0.002
Alcohol history, n (%)	37/164 (22.5%)	19/52 (36.5%)	18/112 (16%)	0.004	19/54 (35.2%)	18/110 (16.4%)	0.007
Former drinker ⁴ , n (%)	19/37 (51.4%)	12/19 (63%)	7/18 (39%)	0.1	12/19 (63.2%)	7/18 (39%)	0.1
Current drinker ⁵ , n (%)	18/37 (48.6%)	7/19 (37%)	11/18 (61%)	0.1	7/19 (36.8%)	11/18 (61%)	0.1
Drug history ⁶ , n (%)	4/164 (2.4%)	1/52 (1.9%)	3/112 (2.67%)	0.77	2/54 (3.7%)	2/110 (1.8%)	0.4
Contact with COVID-19 confirmed case within past 14 days, n (%)	22/164 (13.4%)	10/52 (19.2%)	12/112 (10.7%)	0.13	9/54 (16.7%)	13/110 (11.8%)	0.39
Comorbidities, n (%)	98/164 (59.7%)	26/52 (50%)	72/112 (64%)	0.08	27/54 (50%)	71/110 (64.6%)	0.07

COPD, n (%)	6/164 (3.6%)	2/52 (3.8%)	4/112 (3.6%)	0.9	2/54 (3.7%)	4/110 (3.6%)	0.9
Diabetes, n (%)	62/164 (37.8%)	11/52 (21%)	51/112 (45.5%)	0.003	14/54 (25.9%)	48/110 (43.6%)	0.02
Hypoglycemic drugs, n (%)	14/62 (22.5%)	3/11 (27%)	11/51 (21.6%)	0.6	3/14 (21.4%)	11/48 (22.9%)	0.9
Insulin, n (%)	9/62 (14.5%)	1/11 (9%)	8/51 (15.7%)	0.5	2/14 (14.3%)	7/48 (14.6%)	0.9
Hypoglycemic drugs with insulin, n (%)	8/62 (13%)	4/11 (36%)	4/51 (7.8%)	0.01	4/14 (28.6%)	4/48 (8.3%)	0.04
No-treatment, n (%)	17/62 (27.4%)	1/11 (9%)	16/51 (31.4%)	0.1	1/14 (7.1%)	16/48 (33.3%)	0.053
New-onset diabetes, n (%)	14/62 (22.6%)	2/11 (18.2%)	12/51 (31.4%)	0.7	4/14 (28.6%)	10/48 (20.8%)	0.5
Hypertension, n (%)	61/164 (37%)	15/52 (28.8%)	46/112 (41%)	0.13	16/54 (29.6%)	45/110 (40.9%)	0.1
Use of ACEI or ARBs, n (%)	34/61 (55.7%)	5/15 (33%)	29/46 (63%)	0.04	7/16 (43.8%)	27/45 (60%)	0.2
ACEI, n (%)	11/61 (18%)	1/15 (6.7%)	10/46 (21.7%)	0.1	1/16 (6.3%)	10/45 (22.2%)	0.1
ARBs, n (%)	23/61 (37.7%)	4/15 (26.7%)	19/46 (41.3%)	0.3	6/16 (37.5%)	17/45 (37.8%)	0.9
CCBs, n (%)	14/61 (23%)	3/15 (20%)	11/46 (24%)	0.7	4/16 (25%)	10/45 (22.2%)	0.8
Use of >2 drugs, n (%)	8/61 (13%)	1/15 (6.7%)	7/46 (15.2%)	0.3	2/16 (12.5%)	6/45 (13.3%)	0.9
No-treatment, n (%)	13/61 (21.3%)	3/15 (20%)	10/46 (21.7%)	0.8	3/16 (18.7%)	10/45 (22.2%)	0.7
New-onset hypertension, n (%)	8/61 (13%)	5/15 (33.3%)	3/46 (6.5%)	0.008	4/16 (25%)	4/45 (8.8%)	0.1
Hypothyroidism, n (%)	7/164 (4.2%)	2/52 (3.8%)	5/112 (4.5%)	0.85	2/54 (3.7%)	5/110 (4.5%)	0.8
Asthma, n (%)	6/164 (3.6%)	5/52 (9.6%)	1/112 (0.9%)	0.006	5/54 (9.3%)	1/110 (0.9%)	0.007
Chronic heart failure, n (%)	3/164 (1.8%)	1/52 (1.9%)	2/112 (1.7%)	0.9	1/54 (1.9%)	2/110 (1.8%)	0.9
Peripheral vascular disease, n (%)	1/164 (0.6%)	0	1/112 (0.9%)	0.4	0	1/110 (0.9%)	0.4
Rheumatoid arthritis, n (%)	2/164 (1.2%)	0	2/112 (1.8%)	0.3	0	2/110 (1.8%)	0.3
Coronary heart disease, n (%)	2/164 (1.2%)	1/52 (1.9%)	1/112 (0.9%)	0.57	1/54 (1.9%)	1/110 (0.9%)	0.6
Chronic kidney disease, n (%)	7/164 (4.2%)	1/52 (1.9%)	6/112 (5.3%)	0.3	1/54 (1.9%)	6/110 (5.5%)	0.2
Benign prostatic hyperplasia, n (%)	2/164 (1.2%)	1/52 (1.9%)	1/112 (0.9%)	0.5	1/54 (1.9%)	1/110 (0.9%)	0.6

Atrial fibrillation, n (%)	1/164 (0.6%)	0	1/112 (0.9%)	0.4	0	1/110 (0.9%)	0.4
Epilepsy, n (%)	1/164 (0.6%)	0	1/112 (0.9%)	0.4	0	1/110 (0.9%)	0.4
Chronic pulmonary thromboembolism, n (%)	1/164 (0.6%)	1/52 (1.9%)	0	0.1	1/54 (1.9%)	0	0.1
Pulmonary hypertension, n (%)	1/164 (0.6%)	1/52 (1.9%)	0	0.1	1/54 (1.9%)	0	0.1
Pneumonia severity (ATS) * Severe, n (%)	66/164 (40.2%)	5/52 (9.6%)	61/112 (54.5%)	<0.001	9/54 (16.7%)	57/110 (51.8%)	<0.001
NEWS2, median (IQR)	7 (6-8)	7 (5.5-7.5)	8 (6-9)	0.001	7 (6-7.5)	8 (6-9)	0.004
MuLBSTA, median (IQR)	7.5 (5-11)	7 (4.5-9.5)	8 (5-11)	0.2	8 (5-11)	7 (5-11)	0.9
PORT/PSI, median (IQR)	83 (60-107.5)	56.5 (46-67)	93 (75-119)	<0.001	60 (46.2-70.7)	91 (71.5-119)	<0.001
SMART-COP, median (IQR)	4 (3-5)	3 (2-4)	5 (3.7-6)	<0.001	4 (2-4)	5 (3-6)	<0.001
SCAP, median (IQR)	14 (6-20)	6 (5-11)	19 (11-25)	<0.001	6 (5-11)	19 (11-25)	<0.001
SOFA at admission, median (IQR)	2 (2-3)	2 (1-2)	3 (2-3)	<0.001	2 (1-2)	3 (2-3)	<0.001
APACHE II, median (IQR)	9 (7-14)	7 (5-9.5)	11 (8-15)	<0.001	8 (5-11)	11 (8-15)	<0.001
CHARLSON, median (IQR)	2 (0-3)	1 (0-2)	2 (1-3)	<0.001	1 (0-2)	2 (1-3)	0.03
BMI = Body Mass Index, COPD = Chronic Obstructive Pulmonary Disease, ACEI = Angiotensin-Converting Enzyme Inhibitor, ARB= Angiotensin II Receptor Blocker, CCB = Calcium Channel Blocker, ATS = American Thoracic Society.							
1.- Patient who has smoked at least 100 cigarettes in his or her lifetime but who had quit smoking at the time of interview.							
2.-Patient who has smoked 100 cigarettes in his or her lifetime but who currently smokes cigarettes.							
3.- [No. of cigarettes per day * No. of years of smoker] /20							
4.- At last 12 drinks in any one year in lifetime but no drinks in past year.							
5.-Patients who have consumed a drink containing alcohol in the last 12 months.							
6.- Use of marijuana, cocaine, or inhalants							
* We defined the degree of severity of COVID-19 (severe vs. nonsevere) at the time of admission using the 2019 American Thoracic Society guidelines for community-acquired pneumonia.							

Table 2.- Signs and symptoms							
Variable	Overall (N=164)	Death		p- value	Mechanical ventilation		p- value
		NO (N=52)	YES (N=112)		NO (N=54)	YES (N=110)	
Conjunctivitis, n (%)	4/164 (2.4%)	1 (1.9%)	3 (2.7%)	0.7	1 (1.9%)	3 (2.7%)	0.7
Rhinorrhea, n (%)	18/164 (11%)	6 (11.5%)	12 (10.7%)	0.8	8 (14.8%)	10 (9.1%)	0.2
Headache, n (%)	66/164 (40.2%)	26 (50%)	40 (35.7%)	0.08	28 (51.8%)	38 (34.5%)	0.03
Cough, n (%)	124/164 (75.6%)	40 (76.9%)	84 (75%)	0.7	45 (83.3%)	79 (71.8%)	0.1
Odynophagia, n (%)	33/164 (20.1%)	12 (23%)	21 (18.7%)	0.5	13 (24%)	20 (18.2%)	0.3
Expectoration, n (%)	32/164 (19.5%)	10 (19.2%)	22 (19.6%)	0.9	11 (20.4%)	21 (19.1%)	0.8
Fatigue, n (%)	33/164 (20.1%)	15 (28.8%)	18 (16%)	0.058	12 (22.2%)	21 (19.1%)	0.6
Dyspnea, n (%)	136/164 (82.9%)	38 (73%)	98 (87.5%)	0.02	42 (77.8%)	94 (85.5%)	0.2
Nausea or vomiting, n (%)	17/164 (10.3%)	7 (13.4%)	10 (8.9%)	0.3	7 (13%)	10 (9.1%)	0.4
Diarrhea, n (%)	21/164 (12.8%)	6 (11.5%)	15 (13.4%)	0.7	8 (14.8%)	13 (11.8%)	0.5
Hyporexia, n (%)	3/164 (1.8%)	2 (3.8%)	1 (0.8%)	0.1	2 (3.7%)	1 (0.9%)	0.2
Myalgias, n (%)	72/164 (44%)	26 (50%)	46 (41%)	0.2	27 (50%)	45 (41%)	0.2
Arthralgias, n (%)	61/164 (37.2%)	23 (52%)	38 (34%)	0.2	23 (42.6%)	38 (34.5%)	0.3
Chills, n (%)	10/164 (6%)	3 (5.7%)	7 (6.2%)	0.9	4 (7.4%)	6 (5.4%)	0.6
Thoracic pain, n (%)	12/164 (7.3%)	3 (5.7%)	9 (8%)	0.6	4 (7.4%)	8 (7.2%)	0.9
Diaphoresis, n (%)	5/164 (3%)	2 (3.8%)	3 (2.6%)	0.6	3 (5.5%)	2 (1.8%)	0.1
Anosmia, n (%)	4/164 (2.4%)	4 (7.6%)	0	0.003	4 (7.4%)	0	0.004
Seizures, n (%)	2/164 (1.2%)	0	2 (1.8%)	0.3	0	2 (1.8%)	0.3
Disorientation, n (%)	3/164 (1.8%)	0	3 (2.6%)	0.2	0	3 (2.7%)	0.2
Pharyngeal hyperemia, n (%)	25/164 (15.2%)	8 (13.4%)	17 (15.2%)	0.9	9 (16.7%)	16 (14.5%)	0.7
Tonsillitis, n (%)	8/164	2 (3.8%)	6 (5.3%)	0.6	3 (5.5%)	5 (4.5%)	0.7

	(4.8%)						
Rash, n (%)	1/164 (0.6%)	1 (1.9%)	0	0.1	1 (1.8%)	0	0.1
Cyanosis, n (%)	14/164 (8.5%)	1 (1.9%)	13 (11.6%)	0.03	1 (1.8%)	13 (11.8%)	0.03
Fever¹							
At home, n (%)	131/164 (69%)	39 (75%)	92 (82 %)	0.2	42 (77.7%)	89 (80.9%)	0.6
On admission, n (%)	29/164 (17.6%)	6 (11.5%)	23 (20.5%)	0.1	7 (12.9%)	22 (20%)	0.2
<i>Median highest temperature (IQR) - °C</i>	37 (36.5-37.8)	37 (36.5-37.6)	37 (36.5-37.9)	0.5	37 (36.5-37.7)	37 (36.5-38)	0.7
During hospitalization, n (%)	102/164 (62.2%)	17 (32.7%)	85 (76%)	<0.001	17 (31.5%)	85 (77.3%)	<0.001
<i>Day of presentation, median (IQR) -days-</i>	2 (1-3)	2 (1-3)	2 (1-3)	0.7	2 (1-3)	2 (1-3)	0.4
<i>Median highest temperature (IQR) - °C</i>	38.6 (37.5-39.9)	37 (36.8-38.5)	39 (38.2-40)	<0.001	37 (36.8-38.5)	39 (38.2-40)	<0.001
1.-Axillary temperature $\geq$ 38.3°C							

Table 3.- Radiographic and laboratorial findings							
Radiographic findings							
Abnormalities in Chest X-ray	Overall (N=160)	Death		p-value	Mechanical ventilation		p-value
		NO (N=51)	YES (N=109)		NO (N=53)	YES (N=107)	
<i>Ground-glass opacity, n (%)</i>	115 (71.8%)	35 (68.6%)	80 (73.4%)	0.5	36 (67.9%)	79 (73.8%)	0.4
<i>Local infiltrates, n (%)</i>	12 (7.5%)	5 (9.8%)	7 (6.4%)	0.4	5 (9.4%)	7 (6.5%)	0.5
<i>Bilateral infiltrates, n (%)</i>	94 (58.7%)	31 (60.8%)	63 (57.8%)	0.7	34 (64.2%)	60 (56.1%)	0.3
<i>Interstitial abnormalities, n (%)</i>	107 (66.8%)	35 (68.6%)	72 (66%)	0.7	37 (68.5%)	70 (65.4%)	0.5
<i>Unilateral pleural effusion, n (%)</i>	13 (8.1%)	4 (7.8%)	9 (8.2%)	0.9	6 (11.3%)	7 (6.5%)	0.2
<i>Bilateral pleural effusion, n (%)</i>	4 (2.5%)	0	4 (3.6%)	0.2	1 (1.8%)	3 (2.8%)	0.7
<i>Pneumothorax, n (%)</i>	1 (0.6%)	1 (1.9%)	0	0.1	1 (1.8%)	0	0.1
Abnormalities in Chest CT	Overall (N=24)	Death		p-value	Mechanical ventilation		p-value
		NO (N=9)	YES (N=15)		NO (N=9)	YES (N=15)	
<i>Ground-glass opacity, n (%)</i>	21 (87.5%)	7 (77.8%)	14 (93%)	0.2	6 (66.7%)	15 (100%)	0.01
<i>Local infiltrates, n (%)</i>	1(4.2%)	0	1 (6.7%)	0.4	0	1 (6.7%)	0.4
<i>Bilateral infiltrates, n (%)</i>	22 (91.7%)	9 (100%)	13 (86.7%)	0.2	9 (100%)	13 (86.7%)	0.2
<i>Interstitial abnormalities, n (%)</i>	5 (20.8%)	2 (22%)	3 (20%)	0.8	2 (22%)	3 (20%)	0.8
<i>Unilateral pleural effusion, n (%)</i>	2 (8.3%)	1 (11%)	1 (6%)	0.7	2 (22%)	0	0.057
<i>Bilateral pleural effusion, n (%)</i>	1 (4.2%)	0	1 (6%)	0.4	0	1 (6.7%)	0.4
<i>Pneumothorax, n (%)</i>	1 (4.2%)	1 (11%)	0	0.1	1 (11%)	0	0.1
Laboratory findings*							
Characteristic	Overall	Death		p-value	Mechanical ventilation		p-value
		NO	YES		NO	YES	
PaO2/FiO2 ratio, mean (+/-SD)	213 (107.1)	274 (104.5)	184 (96)	<0.001	280 (97.5)	181 (96.5)	<0.001
White cell count, median (IQR) – per mm³	11,050 (7,900-15,100)	8,700 (6,550-11,575)	12,000 (9,125-16,200)	<0.001	8,850 (6,925-11,400)	12,200 (9,175-15,800)	<0.001

Neutrophil count, median (IQR)- per mm3-	9,250 (6,475-13,025)	6,900 (4,800-10,100)	10,700 (7,700-14,100)	<0.001	6,900 (5,000-9,950)	10,900 (7,750-14,000)	<0.001
Lymphocyte count, median (IQR) -per mm3-	800 (600 – 1,200)	1,000 (700 -1,450)	800 (575-1000)	0.005	900 (700-1,400)	800 (600-1,087)	0.03
Neutrophil-lymphocyte ratio, median (IQR)	11 (6.5-19)	7.6 (3.8-12.2)	13 (8.4-21)	<0.001	7.8 (3.8-13.2)	13 (8.1-21)	<0.001
Monocyte count, median (IQR) -per mm3-	500 (300-700)	600 (300-700)	500 (400-700)	0.3	600 (300-700)	500 (375-700)	0.2
Platelet count, median (IQR) -per mm3-	244,500 (187,000-328,500)	280,500 (178,250-405,750)	240,000 (196,250-309,250)	0.1	259,500 (172,750-405,250)	242,000 (196,750-312,250)	0.4
Hemoglobin, median (IQR) -g/dl-	14.4 (13-15.4)	14.2 (13.3-15.4)	14.4 (13-15.5)	0.8	14.2 (13.2-15.4)	14.5 (13-15.6)	0.7
Lactate dehydrogenase, median (IQR) -U/L	406 (322-570)	322 (235-392)	482 (376-615)	<0.001	340 (236-402)	479 (359-605)	<0.001
Aspartate aminotransferase, median (IQR) -U/L-	49 (34.7-68.2)	44.5 (28.5-62)	49 (38-69.7)	0.09	45.5 (29.2-65.7)	49 (37.5-71.7)	0.2
Alanine aminotransferase, median (IQR) -U/L-	33.5 (24-52)	33 (24-62)	34.5 (23-51)	0.7	33 (24.2-62.5)	34.5 (23.7-52)	0.7
Total bilirubin, median (IQR) -mg/dl-	0.7 (0.5-0.9)	0.7 (0.5-0.9)	0.7 (0.5-0.9)	0.9	0.7 (0.5-0.9)	0.7 (0.5-0.9)	0.9
Creatine kinase, median (IQR) -U/L-	119.5 (52-270)	71 (31-169)	130 (70-275)	0.006	62.5 (31.5-166)	132 (73.5-277.7)	0.005
Creatinine, median (IQR) -mg/dl-	0.8 (0.7-1.4)	0.7 (0.5-0.8)	0.9 (0.7-1.6)	<0.001	0.8 (0.5-0.9)	0.9 (0.7-1.5)	<0.001
D-dimer, median (IQR) -ng/ml-	1740 (728-3380)	845 (387-2190)	2235 (821-3527)	<0.001	970 (488-2,230)	2190 (800-3542)	0.005
C-reactive protein, median (IQR) -mg/dl-	21.4 (12-32)	12 (5.8-23)	26.2 (16-34.7)	<0.001	13.3 (7.6-26.6)	25.9 (14.8-34)	<0.001
Procalcitonin, median (IQR) -ng/ml-	0.5 (0-2)	0 (0-0.5)	0.5 (0-2)	<0.001	0 (0-0.5)	0.5 (0-2)	<0.001
Glucose, median (IQR) -mg/dl	123 (93-198)	101 (87-131)	138 (101-215)	<0.001	102 (90-136.5)	136 (100-215)	0.001
Sodium, median (IQR) -mEq/L	137 (133-141)	137 (133-140)	137 (132-142)	0.2	137 (133-140)	137 (132-142)	0.2
Chloride, median (IQR) -mEq/L	102 (99-107)	102 (99-106)	102 (98-109)	0.5	102 (99-107)	102 (98.5-108)	0.6
Potassium, median (IQR) -mEq/L	4.1 (3.7-4.5)	3.8 (3.6-4.1)	4.2 (3.8-4.8)	<0.001	3.9 (3.6-4.1)	4.2 (3.7-4.8)	<0.001

Calcium, median (IQR) - mg/dl-	7.7 (7.4-8.1)	7.9 (7.5-8.3)	7.7 (7.3-8)	0.03	7.9 (7.4-8.1)	7.7 (7.4-8.1)	0.3
Phosphor, median (IQR) - mg/dl-	3.4 (2.8-4.2)	3.3 (2.8-3.8)	3.5 (2.8-4.5)	0.1	3.4 (3-3.9)	3.4 (2.8-4.4)	0.4
Magnesium, median (IQR) -mg/dl-	2.1 (1.9-2.4)	2 (1.8-2.2)	2.2 (1.9-2.6)	<0.001	2 (1.8-2.2)	2.2 (1.9-2.6)	<0.001
Erythrocyte sedimentation rate, median (IQR) -mm/hr	18 (10-30)	17 (13-26.5)	18 (10-30)	0.8	17.5 (13-29.2)	18 (9.7-30)	0.5
Brain natriuretic peptide, median (IQR) – pg/ml	49 (11.6-136)	14.2 (2-67.5)	68.6 (23.9-163)	0.008	24.1 (9.8-82.7)	64.4 (21.6-145)	0.1
*Reference ranges: PaO ₂ /FiO ₂ ratio, >300; white cell count, 4,600 to 10,200/mm ³ ; neutrophil count, 2,000 to 6,900/mm ³ ; lymphocyte count, 600 to 3,400/mm ³ ; neutrophil-lymphocyte ratio, 1-3; monocyte count, 0 to 900/mm ³ ; platelet count, 142,000 to 424,000/mm ³ ; hemoglobin, 12.2 to 18.1 g/dL; lactate dehydrogenase, 100 to 170 U/L; aspartate aminotransferase, 0 to 38 U/L; alanine aminotransferase, 0 to 41 U/L; total bilirubin, 0.1 to 1 mg/dL; creatine kinase, 26 to 140 U/L; creatinine, 0.8 to 1.4 mg/dL; D-dimer, 0 to 400 ng/mL; c-reactive protein, 0 to 0.7 mg/dL; procalcitonin, 0 to 0.5 ng/mL; glucose, 70 to 110 mg/dL; sodium, 136 to 145 mEq/L; chloride, 95 to 110 mEq/L; potassium, 3.5 to 5.3 mEq/L; calcium, 8.5 to 10.3 mg/dl; phosphor, 2.5 to 4.5 mg/dL; magnesium, 1.7 to 2.8 mg/dL; erythrocyte sedimentation rate, 0 to 10 mm/hr; brain natriuretic peptide, 0 to 100 pg/ml.							

Table 4.- Treatments and Complications							
Characteristic	Overall (N=164)	Death		p-value	Mechanical ventilation		p-value
		NO (N=52)	YES (N=112)		NO (N=54)	YES (N=110)	
Oral antibiotics ¹ , n (%)	125/164 (76.2%)	42/52 (80.8%)	83/112 (74.1%)	0.3	43/54 (79.6%)	82/110 (74.5%)	0.4
Intravenous antibiotics, n (%)	116/164 (70.7%)	27/52 (52%)	89/112 (79.5%)	<0.001	24/54 (44.4%)	92/110 (83.6%)	<0.001
Oseltamivir, n (%)	5/164 (3%)	3/52 (5.8%)	2/112 (1.8%)	0.1	3/54 (5.6%)	2/110 (1.8%)	0.1
Hydroxychloroquine ² , n (%)	98/164 (59.8%)	31/52 (59.6%)	67/112 (59.8%)	0.9	30/54 (55.6%)	68/110 (61.8%)	0.4
Ivermectin ³ , n (%)	8/164 (4.8%)	1/52 (1.9%)	7/112 (6.2%)	0.2	1/54 (1.85%)	7/110 (6.3%)	0.2
Tocilizumab, n (%)	3/164 (1.8%)	1/52 (1.9%)	2/112 (1.8%)	0.9	1/54 (1.85%)	2/110 (1.8%)	0.9
Systemic steroid, n (%)	41/164 (25%)	7/52 (13.5%)	34/112 (30.4%)	0.02	9/54 (16.7%)	32/110 (29.1%)	0.08
<i>Hydrocortisone, n (%)</i>	13/164 (7.9%)	2/52 (3.8%)	11/112 (9.8%)	0.1	3/54 (5.6%)	10/110 (9.1%)	0.9
<i>Methylprednisolone, n (%)</i>	13/164 (7.9%)	1/52 (1.9%)	12/112 (10.7%)	0.05	1/54 (1.9%)	12/110 (10.9%)	0.1
<i>Prednisone, n (%)</i>	2/164 (1.2%)	2/52 (3.8%)	0	0.03	2/54 (3.7%)	0	0.006
<i>Dexamethasone, n (%)</i>	13/164 (7.9%)	2/52 (3.8%)	11/112 (9.8%)	0.1	3/54 (5.6%)	10/110 (9.1%)	0.9
Oxygen therapy ⁴ , n (%)	162/164 (98.7%)	51/52 (98%)	111/112 (99%)	0.5	52/54 (96.3%)	110/110 (100%)	0.04
Acute respiratory distress syndrome ⁵ , n (%)	57/164 (34.8%)	3/52 (5.8%)	54/112 (48.2%)	<0.001	0	57/110 (51.8%)	<0.001
Acute kidney injury ⁶ , n (%)	59/164 (36%)	6/52 (11.5%)	53/112 (47.3%)	<0.001	6/54 (11%)	53/110 (48.2%)	<0.001
Rhabdomyolysis ⁷ , n (%)	2/164 (1.2%)	0	2/112 (1.8%)	0.3	0	2/110 (1.8%)	0.3
Use of renal replacement therapy, n (%)	1/164 (0.6%)	1/52 (1.9%)	0	0.1	0	1/110 (0.9%)	0.4
Vasopressor support, n (%)	53/164 (32.3%)	2/52 (3.8%)	51/112 (45.5%)	<0.001	1/54 (1.8%)	52/110 (47.3%)	<0.001
Days of hospital stay, median (IQR) -days-	7 (4-11)	10 (7-16)	5 (3.2-9)	<0.001	9 (6-14.2)	6 (4-9)	<0.001
1.-Azithromycin 500 mg PO qDay for five days. 2.- Hydroxychloroquine 400 mg PO twice daily for two doses, then 200 mg twice daily for five days 3.- Ivermectin 0.2 mg/kg/day PO for 4 days. 4.- Use of supplemental oxygen by nasal cannulas, simple face mask, or non-rebreather mask during hospitalization.							

5.- In non-intubated patients, sudden respiratory failure with a PAO_2 / FiO_2 ratio <200 or new bilateral opacities in hospitalization; on intubated patients, a PAO_2 / FiO_2 ratio <200 or new bilateral opacities in hospitalization.

6.- Decreased urine output under 0.5 ml/kg/hr for more than 6 hours, either an elevation in serum creatinine equal to or greater than 0.3 mg/dl or an increase equal to or greater than 50% within 48 hours in hospitalization.

7.- Dark urine color with myoglobinuria plus creatine kinase $> 1000 \text{ U / L}$ or an increase of 5 times its normal value in hospitalization.

Table 5.- Risk factors associated with mortality						
	Unadjusted RR			Adjusted RR		
	RR	95% CI	p-value	RR	95% CI	p-value
Age >50 years	2.3	1.49-3.83	<0.001			
Male gender	1.45	0.93-2.27	0.1	Adjusted by age		
				2.1	1.02-4.51	0.04
Schooling ≤6 years	1.6	0.98-2.63	0.049	Adjusted by age and gender		
				1.64	0.78-3.47	0.1
Obesity (BMI ≥ 30 k/m ²)	1.15	0.73-1.81	0.5	Adjusted by age and gender		
				2.4	0.69-8.29	0.16
BMI Classification				Adjusted by age and gender		
Overweight	0.8	0.55-1.43	0.63	0.8	0.36-1.78	0.58
Obese class I	1.04	0.61-1.77	0.8	1.08	0.44-2.62	0.8
Obese class II	1.07	0.53-2.16	0.8	1.19	0.39-3.57	0.7
Obese class III	1.23	0.56-2.69	0.58	1.45	0.46-4.53	0.52
Smoking history	0.66	0.42-1.04	0.09	Adjusted by age and gender		
				0.42	0.18-0.94	0.035
Smoking index ≥10	1.74	0.66- 4.6	0.19	Adjusted by age and gender		
				2.08	0.45-9.49	0.3
Diabetes	2.26	1.26-4.07	0.003	Adjusted by age, gender and BMI		
				3.07	1.28-7.37	0.012
Hypertension	1.5	0.91-2.59	0.08	Adjusted by age, gender and BMI		
				1.2	0.52-2.8	0.6
Severe pneumonia (ATS 2019)	6	2.5-14.23	<0.001	Adjusted by age, gender, BMI, diabetes, hypertension, smoking history.		
				14.1	1.66-120.22	0.015
NEWS2 score ≥7	1.58	1.01-2.47	0.047	Adjusted by age, gender, BMI, diabetes, hypertension, smoking history.		
				2.7	0.72-10.11	0.1
PORT/PSI ≥91	6.08	2.56-14.41	<0.001	Adjusted by age, gender, BMI, diabetes, hypertension, smoking history.		
				6.56	1.33-32.23	0.021
SMART-COP ≥5	6.07	2.56-	<0.001	Adjusted by age, gender, BMI, diabetes, hypertension,		

		14.39		smoking history.	
				6.79	1.65-27.86 0.008
SCAP ≥ 10	3.92	2.45-6.29	<0.001	Adjusted by age, gender, BMI, diabetes, hypertension, smoking history.	
				4.86	1.18-19.92 0.028
SOFA ≥ 3	3.64	1.84-7.2	<0.001	Adjusted by age, gender, BMI, diabetes, hypertension, smoking history.	
				1.77	0.51-6.15 0.36
APACHE II ≥ 10	2.79	1.59-4.89	<0.001	Adjusted by age, gender, BMI, diabetes, hypertension, smoking history.	
				2.47	0.76-8.03 0.76
CHARLSON ≥ 2	2.4	1.43-4	<0.001	Adjusted by age, gender, BMI, diabetes, hypertension, smoking history.	
				0.87	0.2-3.75 0.85
Dyspnea	1.72	1.11-2.75	0.026	Adjusted by age, gender, BMI, smoking history.	
				3.55	1.16-10.85 0.026
Cyanosis	5.07	0.75-33.96	0.028	Adjusted by age, gender, BMI, smoking history.	
				18.87	0.57-618.32 0.09
Fever on hospitalization	3.33	2.06-5.39	<0.001	Adjusted by age, gender, BMI, smoking history.	
				6.83	2.43-19.13 <0.001
Use of intravenous antibiotics	2.2	1.45-3.43	<0.001	Adjusted by age	
				3.45	1.69-7.06 <0.001