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Research Article

Current Clinical-Epidemiological Profile of Patients with COVID-19 in Reference Hospital of Perú -

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ABSTRACT

Introduction: The covid-19 pandemic continues to be a global health problem. Daily reports provide more insight into your natural history. The objective of this study is to evaluate and analyze the dynamics of the clinical-epidemiological characteristics of patients with COVID-19, according to their vital status (alive or deceased).

Materials and Methods: 98 patients were evaluated, divided into two groups: 81 alive and 17 deceased. It is an observational, analytical, case report type study from March 7 to June 20, 2020. The variables were compared with the chi-square test, Yates or Fisher's exact test, as appropriate. The magnitude of risk was expressed in Odds Ratio. Significance was established at $p \leq 0.05$.

Results: The most frequent age group was 30-59 years (51.8% vs. 17.6, $p = 0.0100$), as well as males (69.4% vs. 52.9%, $p = 0.564$). The symptomatic were the majority (67.9% vs. 88.2%, $p=0.254$). In the deceased group, general malaise (93.3%) was the main symptom. Risk factors were found less frequently in living than deceased patients (62.9% vs. 94.1%, $p = 0.033$). Most patients had accumulated 2 risk factors (52.9% vs. 58.8%, $p = 0.142$), with an Old Ratio of 1.481 (95% CI: 0.468-4.687).

Conclusion: The COVID-19 pandemic is a disease with similar clinical and epidemiological characteristics in world populations, in most temporary scenarios. Current reports should provide information to re-evaluate interventions and modify them if they do not meet public health policy goals.

Keywords: Coronavirus infection; Risk factors; Pandemic; Epidemiology; Signs and symptoms

INTRODUCTION

Coronavirus is a single-stranded RNA virus 1 of the Coronaviridae family, also called SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) [1]. It is the etiological agent of the disease known as COVID-19 (coronavirus disease 2019). Since March 11, 2020, the WHO (World Health Organization) has classified coronavirus infection as a pandemic. Until July 20 there was worldwide 14 348858 cases reported, causing 603691 deaths. Only on that same day there were 5111 deaths [2].

In America, 7 584675 cases were reported, with 309309 deaths. Most were registered in the United States. In South America, Brazil and Peru are the most affected countries. Only Peru accounted for 10% of cases in that region, with 12998 deaths, [2] having a population of 32 625948 (it ranks 25th by population density). The increase in daily cases makes this country a delicate scenario [3].

This study seeks to evaluate and analyze the current clinical-epidemiological characteristics of patients with a definitive diagnosis for COVID-19, according to their vital status (alive or deceased). The aim is to contribute to the knowledge of the factors that are hindering their control. Monitoring is essential for preventing the spread of the virus, including basic measures such as wearing a mask [4].

MATERIAL AND METHODS

Design and type of study

Observational, analytical, case report type study, composed of a random sample of 98 patients, from March 7 to July 20, 2020. Carried out at Carlos Seguí Escobedo Hospital, city of Arequipa, Peru. The inclusion criteria were: definitive diagnosis of COVID-19, by means of a Rapid-Core Test (immunoassay) and/or molecular by RT-PCR (Reverse transcription polymerase chain reaction).

Ethical considerations

The Helsinki principles were followed. Authorization was obtained from the Hospital Research Committee.

Statistical analysis

The variables were described by categories, comparing the frequencies with the chi-square test and the Yates test or Fisher's exact test, as appropriate. The magnitude of risk was expressed in OR

and 95% confidence intervals. Statistical significance was established at $p \leq 0.05$.

RESULTS

The scenario was reported according to vital status (alive and deceased). Most were reported alive, 81 cases; with 17 cases corresponding to the deceased. The most frequent age group for the living, with respect to the deceased, was 30-59 years (51.8% vs 17.6%). Males were the majority (69.4% vs. 52.9%) (Table 1).

Likewise, in the semiological characteristics (signs and symptoms) of living and deceased patients, the group of symptomatic patients was the majority (67.9% vs. 88.2%) (Table 2). In the first group, the most frequent symptoms were cough, fever, and mild-moderate dyspnea. On the other hand, in the deceased group, general malaise, cough and mild-moderate dyspnea occurred more frequently.

Risk factors were found more frequently in the deceased (94.1%). The most frequent comorbidity was Hypertension, following in frequency the diabetes, somewhat more frequent in living than deceased (30.8% vs. 24.6%). In the group of deceased, chronic respiratory diseases represent a considerable percentage, with 75%. Both living and deceased had accumulated 2 risk factors (52.9% vs. 58.8%), with an OR (Old Ratio) of 1,481 (Table 3).

Table 1: Characteristics of patients infected by SARS-CoV-2, according to age and sex.

Variable	Living	Deadly	x ²	p value
	n° cases (%)	n° cases (%)		
Age (years)				
0-11	1 (1.2)	0	0.212	0.645
12-17	2 (2.4)	0	0.428	0.512
18-29	10 (12.3)	0	2.337	0.126
30-59	42 (51.8)	3 (17.6)	6.619	0.010
60-69	15 (18.5)	6 (35.2)	2.348	0.125
70-80	10 (12.3)	7 (41.1)	10.230	0.001
> 90	1 (1.2)	1 (5.8)	1.518	0.217
TOTAL	81 (100)	17 (100)		
Sex				
Male	49 (60.4)	9 (52.9)	0.331	0.564
Female	32 (39.5)	8 (47.1)		
TOTAL	81 (100)	17 (100)		

Variables presented as number of patients, n (%).

DISCUSSION

Since the start of the pandemic, a higher percentage of cases and deaths have been identified in adult patients. In our findings, the greatest number of patients with live disease occurred between 30-59 years (51.8%), followed by 60-69 years (18.5%). In Iran, at the beginning of the pandemic, the first interval had 57% of cases; corresponding 21% those 60-70 years [5]. In Spain, similar to Peru and Iran, the group aged 30-59 years constituted the highest percentage group, with 44% [6]. In the United States (New York), this same range comprises 39% [7]; in China, Hubei province, 56% of cases were reported, including those with high suspicion for symptoms [8]. This trend is mainly explained by concomitant risk factors.

Table 2: Semiological characteristics of patients infected with SARS-CoV-2.

Variable	Living		Deadly		x ²	p value
	n° cases (%)	n° cases (%)	n° cases (%)	n° cases (%)		
Presence of Symptomatology						
Symptomatic	55 (67.9)	15 (88.2)			0.091	0.2548
Asymptomatic	26 (32.1)	2 (117)				
TOTAL	81	17				
Signs-Symptoms						
Cough	49 (89)	13 (86.6)	0.068	0.793		
Fever	38 (69)	10 (66.6)	0.032	0.857		
Mild-moderate dyspnea	29 (52.7)	11 (73.3)	2.043	0.152		
Chest pain	14 (25.4)	8 (53.3)	4.250	0.039		
Rhinorrhea	14 (25.4)	2 (13.3)	0.982	0.321		
General discomfort	13 (23.6)	14 (93.3)	5.780	0.001		
Hyporexia	13 (23.6)	5 (33.3)	8.941	0.002		
Headache	13 (23.6)	5 (33.3)	1.595	0.206		
Sensory commitment	3 (5.4)	3 (20)	3.181	0.074		
Breathing difficulty	2 (3.6)	5 (33.3)	11.548	0.001		
Diarrhea	2 (3.6)	0	7.910	0.004		
Other ^a	8 (14.5)	4	1.219	0.269		

^aNausea, vomiting, abdominal pain, dermatitis, sweating, palpitations, anosmia, tachycardia.

In Europe, initial reports indicated an average age of 48 years, with 15-39 years, being more frequent, with 55% [9]. In Bulut's meta-analysis [6], in countries such as Italy, Spain, Germany and the Netherlands, those under 20 years of age, barely represented 4%. In China, the age group with the lowest number of cases is under 20 years old [8]. In Iran, only 2 cases occurred in this same group [5]. In agreement with the majority of world reports, children and adolescents are the least affected. This low representativeness is due to the lack of risk factors and possibly other biological characteristics. In our study, there was only one girl younger than 11 years old (1.2%).

Likewise, evaluating a report of 18 hospitals in Europe, with a population of 1,420 cases, the average age was 39 years [9], but those requiring hospitalization were the elderly with risk factors. In more closed populations, such as that of the Diamond Princess cruise ship, with Japanese, Spanish, American, Australian, and French citizens, among others [10], the main group infected was the over-60s, with 75% (476 of 634 cases). The 10 deceased patients were in this group. In meta-analyzes including populations from Canada, Turkey and Europe, those over 60 years were an important group, with 31% of cases, as well as mortality [6]. In our findings, in accordance with the aforementioned, patients older than 60 years corresponded to 82.3% of the deceased.

In Brazil, 61% mortality occurs in this same age group [11], with something similar occurring in initial reports from Peru, with 35.3% [12]. In Colombia, projections give greater risk to those over 60 years of age, and may constitute 80% of those that will require an ICU (Intensive Care Unit) [13]. In the United States, every 10 years of age increase, evaluated in 40000 patients, almost doubled the probability of death [7]. In Peru, those over 65 years of age are usually more reticent to abide by primary prevention measures (social distancing and use of protective equipment). Therefore, biological and cultural differences tend to converge at the disadvantage of these age groups.

Regarding the scenario in men and women, there is almost a worldwide consensus in verifying a greater number of cases in the

Table 3: Semiological characteristics of patients infected with SARS-CoV-2.

Variable	Living		Deadly		Odds ratio	95 % CI	p value
	n° Cases (%)	n° cases (%)	n° cases (%)	n° cases (%)			
Presence of Risk Factors							
Present	5 (62.9)	16 (94.1)			9.41	1.187- 74.58	0.033
Missing	30 (37.1)	1 (5.8)					
TOTAL	81 (100)	17 (100)					
Risk Factors							
Hypertension	34 (66.6)	13 (81.2)	2.16	0.543-8.645			0.273
Diabetes	25 (49)	9 (56.2)	4.68	0.919-23.82			0.063
Obesity	20 (39.2)	8 (50)	1.55	0.500-4.797			0.447
Chronic lung disease	19 (37.2)	12 (75)	5.05	1.424-17.92			0.012
Chronic kidney disease	17 (33.3)	6 (37.5)	1.20	0.373-3.857			0.759
Cancer	4 (7.8)	0	0.31	0.016-6.266			0.452
Recent surgical history ^a	1 (1.9)	1 (6.2)	3.33	0.196-56.55			0.404
Pregnancy	1 (1.9)	0	1.02	0.039- 26.27			0.990
Others ^b	5 (9.8)	3 (18.7)	2.12	0.447-10.08			0.343
Number of Risk Factors							
1	20 (39.2)	3 (17.6)	0.35	0.090-1.415			0.142
2	17 (52.9)	10 (58.8)	1.48	0.468-4.687			0.503
3	1 (1.9)	1 (5.5)	3.33	0.19-56.557			0.404
4	2 (3.9)	3 (17.6)	5.65	0.853- 37.45			0.072
5	1 (1.9)	0	1.02	0.039- 26.27			0.990

^aAcute appendicitis, secondary intestinal perforation. ^bHypothyroidism, pulmonary hydatidosis, senile dementia, Parkinson's disease, sedentary lifestyle.

first one mentioned. This preponderance is verified in meta-analyses of Malaysia: 51.60% [14], of China: 60% [15], Spain: 51% [16], Iran: 69% [5], and some regions of the United States (California): 64% [17]. In this same country, both symptomatic and asymptomatic patients, males continued to be the largest number of cases, with 67%. In Lima, the percentage is maintained and correlates to our study, when evaluating severe symptomatic patients, with 78.5% [12].

In Washington, in residents of a specialized center, more cases were verified in women, with 67.1% [18]. But in this scenario it was due to a greater number of patients and female health personnel, since if only visitors were considered, the percentage was more in men, with 68.8%.

In some reports, the highest number of cases in men is associated with chronic concomitances, as in Spain, where there is a higher prevalence of smoking in men (25.6% versus 18.8% in women) [16]. In addition to these concomitances, there are studies that add other biological factors, such as ACE2 (Angiotensin converting enzyme 2) and estrogens. The highest plasma concentration of ACE2 is a biological characteristic of males, which leads to chronic cardiac dysfunction and higher mortality [19].

Hypertension, chronic coronary heart disease and diabetes, have the first places as concomitant problems in most studies. In the United States, hypertension (49%), diabetes (27%), and smoking (39%), make up the greatest number of risk factors [17]. In China, patients with concomitants had an increased risk of pneumonia [20]. In Meta-analysis of Asian, German, Australian populations, among others, the percentages of hypertension, diabetes and heart disease was also greater than 80% [13]. In Europe, when evaluating 1420 patients with moderate disease, allergic rhinitis (13.4%) and hypertension (9.2%) were the most representative [9].

In the United States (Washington), it is striking that the oncological background occupies fourth place, with 14.9%, explained by the purpose of the site where the study was conducted, a specialized care center [7]. In our report, this risk factor was barely 4.4%, given by 4 patients (2 in active disease and 2 in follow-up). A similar percentage was also reported in meta-analyses from April and May, such as Europe [9], Malaysia [14], Iran [5] and populations from China, India, Singapore and South Korea [21].

The analysis of pregnancy as a risk factor is complicated by the small number of studies. In ours, the frequency was 1.2%, given by a single case of a 39-year-old woman, with obesity as a risk factor, who at 35 weeks of gestation presented severe eclampsia, that required an emergency caesarean section, with fetal death and transfer of the patient to ICU. A meta-analysis reported severe morbidity in 6.2% of cases, with maternal mortality from 1% to 8%, mainly in the third trimester [22]. In Wuhan, 23% of pregnant women required hospitalization at the start of the pandemic [23].

Obesity is a global health problem. In our study we reported it in 39.2% for uncomplicated patients, but 50% in the deceased. In Asia (China) and Europe (Italy, United Kingdom), the reports give it a worse prognosis [24]. In the United States it is usually associated with hypertension and diabetes [7]. In Lima, during March and April, obesity in positive patients was 17.6% [12], but the report in a study of deceased only was higher: 21.4% [25]. In all time scenarios, obesity is a risk factor that must be considered for epidemiological surveillance.

The accumulation of risk factors leads to complicate the scenario. The majority of cases, both live and deceased, had 2 concomitant

factors (52.9% vs. 58.8%). Diabetes and its association with hypertension and cardiovascular diseases, increases mortality in non-COVID-19 scenarios [26]. The same was reported in Germany in COVID-19 and diabetes cases, with higher mortality compared to those without diabetes [27]. In China, it was verified that old age, diabetes, use of insulin and elevated C-reactive protein, led to higher mortality [28].

The semiology of the COVID-19 process is similar in most studies. In our report, the asymptomatic constituted 32.0%; on the other hand, in the group of deceased they were only 11.7%. In Germany, at the start of the pandemic, most were asymptomatic [27], perhaps associated with being subclinical cases where the chain of contagion was most interesting to study. In a meta-analysis of epidemiological contacts with follow-up, those who remained asymptomatic were 20% [27].

Likewise, in initial reports, Wuhan patients tended to debut with fever, cough, and shortness of breath [20]. The following frequency, fever, cough, fatigue, and dyspnea were reported in the United States [17], very similar to most world reports. In meta-analysis of cases in South Korea, Germany, France, Australia, Italy, Singapore, Vietnam, Nepal, Hong Kong, Taiwan, among others, the symptomatic were the majority (99.2%), mainly presenting fever, cough and myalgia [14]. In Lima, these same symptoms also occupied the first places during March [12].

Anosmia and rhinorrhea are not common in the reports. In our study, only 2 cases of deceased had rhinorrhea (13.3%), with a higher percentage in the living (25.4%). In the United States, only 1.2% of patients refer it [17]; in China from 1% to 25% according to various reports [8,14]. The first epidemiological studies gave a frequency of rhinorrhea of up to 10% [29]. In Germany, in the analysis of the first 16 cases, only 2 reported runny nose [27].

At the start of the pandemic, 82% of cases in Wuhan were symptomatic, with fever, cough, and fatigue being the most common semiology [30]. In the Diamond Princess Tourism cruise, this symptomatic value was very close, with 82.1% [10]. Another follow-up report from China, with 328 cases, reported 96.1% for the symptomatic [31].

CONCLUSION

The COVID-19 pandemic has similar clinical and epidemiological characteristics in the populations studied, both at the start of the pandemic and today. However, the study of the dynamics of factors that complicate the outcome of the disease should continue, since there are countries in which mortality is increasing, not related to population density, as in Peru. The reports provide information to monitor the variables, as well as to evaluate the interventions given and modify them if they do not meet the goals of public health policy.

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