

Characterization of Mortality by Covid-19 in a Health System in Central Mexico

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Abstract

Since the beginning of the COVID-19 pandemic, much has been documented about its lethality and the risk factors associated with death. However, these have varied as the cases of contagion and especially the most serious cases, due to the new coronavirus SARS-CoV 2, the cause of the new coronavirus disease, are investigated. We did a cross-sectional design study of a retrospective cohort of fatal cases due to COVID-19 between May and June 2020 in a hospital in central Mexico, the objective was to characterize the deaths to identify the behavior in the study population of some variables of interest, as a first step for the identification of risk factors associated with death in our population. Our results show that the medical care of these cases was delayed, that we do not have a standardized process for the management of critically ill patients, and that the lack of supplies probably played a very important role in the fatal outcome of the cases. However, more research is needed to document these observations.

Keywords: Mortality; Covid-19; Health System; Central Mexico

Introduction

In December 2019 in China, the first cases of pneumonia of unknown etiology were reported [1] until then, which rapidly spread to Asia, Australia, Europe and the rest of the world [2,3]. The first reports described a viral pneumonia of atypical behavior [4], this new disease was called new coronavirus disease 2019 (COVID-19) [5] and the etiological agent was called severe acute respiratory syndrome coronavirus 2 (SARS-CoV 2) [6] as the cases increased, the first deaths from pneumonia.

The first published reports of COVID-19 showed that the main cause of death was pneumonia, especially in older adult patients [7] later it was pointed out that coagulopathy and disseminated intravascular coagulation were responsible for the deaths [8]. Thus, it was established a clinical-epidemiological pattern: 80-85% of the patients suffered a mild infection, 10 - 15% a moderate disease that required hospitalization and 3 to 5% of patients with severe forms of the infection that required hospitalization and mechanical ventilation assisted [9].

Currently (as of October 13, 2020) 38,172,523 infected cases and 1,086,918 deaths have been reported in the world; In Mexico there are 825,340 cases and 84,420 deaths [10]. In our state of Hidalgo, health authorities report 14,120 cases and 2,103 deaths [11]. The health

systems in each country have implemented very different actions to avoid contagion and therapeutic actions to mitigate mortality from COVID-19 but it continues to appear to pass from the great efforts that have been carried out. Many epidemiological studies have analyzed risk factors for mortality from SARS-CoV2 but there is still no consensus as to whether these are all factors associated with mortality [12].

A first step to identify such factors is the characterization of fatal cases in a given place and time, so the purpose of this brief review is to introduce you to the demographic, clinical and medical care characteristics of a retrospective cohort of fatal cases. by COVID-19 in a state in central Mexico.

Materials and Methods

From May 1 to June 30, a retrospective cohort study was carried out at the COVID-19 Immediate Response Hospital, a portable hospital built by the State Government especially for the care of patients with COVID-19 diagnosed in the entity. The inclusion criteria were to be treated in one of the Immediate Response Hospitals in the state, to be positive for COVID-19 During the study period Socio-demographic data (age, gender, history of smoking, alcoholism and drug use were collected, exposure to biomass, obesity (Body Mass Index, BMI \geq 25) Comorbidities, diabetes mellitus DM, hypertension HA, chronic obstructive pulmonary disease COPD, cancer, cerebrovascular disease CVD, chronic kidney disease CKD, hepatic failure IH, cardiovascular disease CVD, neurological disease EN, autoimmune disease EAI and Human Immunodeficiency Virus Infection, HIV. Clinical data (fever, cough, rhinorrhea,odynophagia, myalgia, arthralgia, dyspnea, chest pain, headache, abdominal pain, diarrhea, nausea, vomiting, fatigue and hyposmia. Blood pressure, heart rate, respiratory rate, oxygen saturation and Glasgow scale); including laboratory information (Bi Hematic ometry, Blood chemistry, D money and arterial blood pH) and data related to medical care (Administration of antivirals, antibiotics, immunomodulators and steroids), two severity indices were calculated at the beginning of his hospitalization (Systemic Inflammatory Response Syndrome and Rapid Sequential Measurement of Organic Failure), the days of six moments related to the opportunity for medical care were finally measured: moment 1, onset of symptoms at hospitalization; moment 2, days from hospitalization to the start of assisted mechanical ventilation (AMV); moment 3, days with AMV; moment 4, days from AMV to fatal outcome; moment 5, days of hospitalization to death; moment 6, days of hospital stay. The protocol was approved by the Hospital's Ethics Committee.

Results

During the period from May 1 to June 30, 2020, retrospective data were collected from patients admitted for medical care for a confirmed positive diagnosis of SARS-CoV 2 infection and its fatal outcome. 96 patients were included who met the inclusion criteria, in terms of sociodemographic variables the age groups were distributed as follows < 60 years, 56.9%; 60 - 74, 33.7%; > 75 9.3%. The gender was male 64.7%; female 35.2%. Smoking, 19.4%; alcoholism 27.5% and drug use, 1.5%; exposure to biomass, 15.6%; and obesity 80.4%. Regarding the comorbidities identified in the study population, we found, with DM, 46.2%; HA, 38.3%; COPD, 14.4%; ERC, 11.1%; Cancer, 2.9%; EVC, 2.9%; ECV, 2.9%; EAI, 2.8%; HI, 1.5%; EN, 1.5%; HIV, 1.5%. The most recorded signs and symptoms were: Dyspnea: 87.5%; Fever: 85.4%; Cough: 78.1%; Headache: 60.4%; Chest Pain: 58.3%; Myalgia: 42.7%; Arthralgias: 41.6%; Fatigue: 35.4%; Diarrhea: 4.1%; Hyposmia: 3.1%. In relation to vital signs: with 9.5% systolic hypotension; systolic hypertension 33.6%; systolic hypertension 16.8%. Tachycardia, 53.6%; tachypnea, 53.6%; SaO₂, normal, 5.2%; mild hypoxia, 6.3%, moderate, 13.6%, and severe 74.7%. Glasgow scale < 15, 15%; the severity rates at the beginning of the medical evaluation were: SIRS (3 and 4 parameters) 29.7%; qSOFA (2 and 3 parameters), 98.8%. The laboratory data obtained were the following: with anemia, 28.2%; leukocytosis, 45.2%; leukopenia, 16.9%; lymphopenia: 34.3%; thrombocytopenia: 8.2%; hyperglycemia: 90.7%; uremia (> 36): 57.4%; elevated creatinine, 44.4%; bilirubinemia (> 1.2): 22.4%; D-dimer (> 500) 57.1%; acidosis: 19.2%. The variables of medical attention found were as follows: application of antivirals 31.2%; the antiviral used was oseltamivir, 90%; administration of antibiotics 89.5%, double scheme 61.6%; triple scheme, 23.2%; quadruple scheme, 15.1%; steroids, 14.6%, of these, dexamethasone 91.3%. The median of the six times described in material and method was calculated. Time 1, five days; moment 2, two days; moment 3, two days; moment 4, one day; moment 5, four days and moment 6, 10 days.

Conclusion

In the study period, the patients who died from COVID-19 were mostly people under 60 years of age, which contrasts with other similar reports; with comorbidities, already documented in the literature and who, apparently, came late to the unit for medical care. There is evidence of the lack of standardized management protocols for severe cases and the lack of drugs to attend to these cases. It is necessary to continue research to identify risk factors associated with severe cases of SARS-CoV 2 infection with the aim of improving medical care for these cases, trying to reduce deaths from COVID-19.

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