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Clinical Research

CLINICAL FACTORS FORECAST OF SERIOUS DISEASE AND MORTALITY IN PATIENTS COVID-19: PRESENTATION OF A CASE

Viviana Karina Moyano Paz y Miño	1Medical Resident at "Hospital de Especialidades Carlos Andrade Marín" /Quito-Ecuador/
Alexis Santiago Mejía Arias*	Medical Resident at "Hospital de Especialidades de las Fuerzas Armadas" /Quito-Ecuador/*Corresponding Author
Sandy Estefanía Yandun Guamani	MD. General Practitioner /Quito-Ecuador/
Ángel Fabián Cando LLangari	Medical Resident at "Hospital IV D.E Amazonas"/Napo-Ecuador/
Karen Ximena Villamar Loor	General Doctor IESS- Social Security at Centro de Salud Pulucate/Ecuador
Mónica Alexandra Costales Logroño	Medical Resident at "Hospital Básico Baños/Ecuador/

ABSTRACT   The appearance of epidemics is not something new in the history of humanity, but in recent years we are witnessing epidemic outbreaks, many of them by viruses, causing social alarm. Following the SARS-CoV and MERS-CoV epidemics, strategies were established in China for the timely identification of emerging and reemerging viruses. 1 The new Coronavirus, cataloged as SARS-CoV-2 and its disease COVID-19, has currently caused a pandemic, where its behavior is still uncertain. The clinical-prognostic factors of COVID-19 infection have led us to present this clinical case, which meets several criteria for severity, which culminated in its death. **Objective:** Identify clinical prognostic factors for severe disease and mortality in COVID-19 patients early in order to provide adequate therapy according to the case of each patient and avoid poor prognosis. **Method:** This is a retrospective study, clinical prognostic factors for severe disease and mortality in COVID-19 patients, emphasizing its clinical, imaging and laboratory examination analysis characteristics. **Conclusión:** COVID-19 disease, caused by the so-called severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2), produces respiratory disease, which can progress to a form of severe pneumonia in 10 to 15% of patients, and continue to a state of critical illness, characterized by the presence of acute respiratory distress syndrome (ARDS) and multisystemic organ failure (FOM). Several determinants have been mentioned such as age, comorbidity, LDH, CRP, and elevated D-Dimer to fit in a serious disease with high mortality, which is why in the present clinical case highlights risk factors for serious disease and mortality.

KEYWORDS : Clinical Factors, Covid-19, Serious illness

INTRODUCTION

The severity markers of COVID-19 disease are consistent with the hyperinflammatory syndrome observed in other infections such as SARS-CoV-1 and avian influenza, known as "cytokine storm" that leads to the deterioration of patients, and of this Thus, a progressive elevation of neutrophil levels, indicators of inflammation and myocardial damage has been observed with the progression of the disease.[2]

A phenomenon observed in COVID-19, as in other infectious diseases, is the activation of coagulation. In this process, thrombin is an enzyme that converts fibrinogen into fibrin and which is broken down giving rise to another product known as D-Dimer, which is used as a marker of system activation. Excessive activation of coagulation is associated with thrombotic phenomena, tissue damage and a worse prognosis in people with sepsis. In COVID-19, the increase in D-Dimer and, to a lesser extent, the increase in prothrombin time and thrombocytopenia, have been considered prognostic markers of severity and mortality.[3]

In a retrospective study by Tan et al, they observed that the administration of prophylactic low molecular weight heparin to 99 patients with severe COVID-19 from a series of 449, was significantly associated with the reduction of mortality in the most severe: the who had a sepsis-associated coagulopathy index> 4 (40 versus 64.2%, p = 0.029) and D-Dimer levels 6 times above normal (32.8 versus 52.4%, p = 0.017) .[4]

For all the above, we present the case of an older adult patient, with multiple comorbidities, who attended a clinic compatible with COVID-19, the same one who, after performing extension examinations, found leukocytosis, neutrophilia, elevated coagulation factors, chest radiographs with cottony infiltrates; All of them together were factors of poor prognosis for the patient, who finally died in the intensive care unit (UCI).

METODOLOGÍA

This is a retrospective study, clinical prognostic factors for severe disease and mortality in COVID-19 patients, emphasizing its clinical, imaging and laboratory examination analysis characteristics.

The information and images obtained belong to the medical personnel in charge of the case whose reinforcements rest in the statistical package Excel, Word and JPG.

CASE PRESENTATION

This is a 66-year-old male patient, resident in Pichincha, Ecuador, in the military profession in passive service, with a personal pathological history of Diabetes Mellitus type II undergoing treatment with Metformin 750 mg every 12 hours. Patient reported that approximately 8 days ago he presented cough without expectoration accompanied by an unquantified thermal rise, MMRC 1 dyspnea, the same that 12 hours prior to his arrival exacerbated MMRC4, for which he went to the doctor who indicated that he should attend a home.

of more complex health for immediate attention.

Upon arrival at the Pneumology service of the Hospital de Especialidades FFAA –Quito, a simple chest tomography was performed (photo1).

Photo 1. Infiltrated with central and peripheral bilateral

Extension tests Leukocytes: 13,110, Neutrophils: 88.4%, Lymphocytes: 600, PCR: 15.14, Hemoglobin: 14g / dl Hematocrit: 42.4%, Platelets: 334000, Glucose: 121 mg / dl, Creatinine 1.44mg / dl , Urea: 74 mg / dl, TP 35, TTP 40, INR 5, D-dimer: 8766, Ferritin: 1357, TGO: 50, TGP: 31, LDH: 757, GGT: 487, Na: 128, K: 5.37, Cl: 92, nasopharyngeal swab: PCR Positive SARS-COV-2.

Due to the previously described respiratory symptoms associated with lymphopenia, neutrophilia, prolonged clotting times, dimer DY ferritin, high bilateral infiltrates, PCR, Positive SARS-COV-2, Severe Pneumonia was diagnosed by COVID-19, therefore treatment with (hydroxychloroquine, azithromycin) was prescribed. , ceftriaxone, methylprednisolone 5/5). Patient from admission with signs of respiratory distress, tachypneic, use of accessory musculature and saturations of 60% ambient air, gasometry, mixed acidosis was observed (PH 7.17 PCO2 43.4 PO2 63.3 HCO3 15.5 PAFI 79.1), therefore requiring airway management with mechanical ventilation with parameters: Pressure PC 16, PEEP 12, FIO2 100%, FR 30, so it is transferred to the intensive care unit of our health unit; upon arrival patient in poor general condition, orointubated, prone, on physical examination: vital signs: TA 124 /, FC 78, FR 24, SATO 86%, VM, PSV MODE VC DE 405, PEEP DE 12, FR 24X , P. PICO 22, GLASGOW 3 / T, 2mm hyperreactive pupil eyes, rhythmic heart with no murmurs, lungs, bilateral basal crackles, soft abdomen, depressable, hydro-air noises present, extremities with edema + / ++++. I present hypotension marked 60/40 so that vasoactive agents are established, norepinephrine cataloging it as Septic Shock of the Pulmonary Focus, for which an antibiotic based on Piperacillin / Tazobactam 7/7 is added.

In addition, I present abundant mucopurulent orotracheal secretions accompanied by thermal rise, which is why it was classified as Pneumonia Associated with late mechanical ventilation, adding a double antibiotic scheme, directed with definitive results of aspirated tracheal culture (enterococcus faecalis), prescribed Vancomycin and Gentamicin.

He received life support and mechanical ventilation for 10 days, underwent emergency cricothyrotomy, due to airway edema.

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Subsequently, the patient presented diaphoresis, tachypnea, use of accessory musculature, therefore GSA was performed, where respiratory acidosis and hypercapnia were evidenced. Chest CT revealed bilateral bronchopneumonic infiltrates (photo 2).
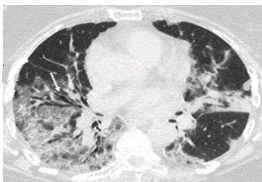

Photo 2: peripheral ground glass opacities in both hemithorax.

Increased resistances were evident with difficulty in aspiration; therefore, it was decided to perform a tracheal tube change using a guide. Consecutively, patient presents refractory desaturation to increased FIO2; progresses to bradycardia and no central and peripheral pulse is palpable. Monitoring without reading of electrocardiographic leads, patient dies.

DISCUSSION

COVID-19 disease occurs in 80% of cases in a mild or moderate way, 15% requires hospital admission and 5% requires intensive care. This distribution of clinical severity was observed in the first series of cases in China, at the end of its epidemic, and has been repeated in European and Latin American countries.[5]

Thus, we have some aspects that, until now, research reports as predictors of severe morbidity, including different comorbidities, cardiovascular disease, high blood pressure, diabetes mellitus, and malignancy. Of the cohort studies analyzed, that of Guan et al., And Wu et al., Were the ones that included the largest number of patients with comorbidities (1191 and 201, respectively) 6,7. In both studies, the presence of high blood pressure and diabetes mellitus were found to increase the risk of severe disease more than twice. The systematic review and meta-analysis of Ma et al, (30 studies, 53,000 patients), reported that increased LDH and CRP independently increased the risk of severe disease 4-fold.[8]

However, emphasizing age as a predictor of mortality, it was evaluated in 8 of these studies (4 cohorts, 1 case and control, and 3 case series; 393 patients died and 1066 survived). It was found that mortality increases with a minimum mean age of 68 years (SD +2.5) and a maximum of 72 (SD + 9) in the group of deceased, compared to a minimum mean age of 41 years (SD + 4) and maximum of 60 (SD + 3.17) in survivors 9. Furthermore, in 4 studies (2 case series, 1 cohort, and 1 case-control) it was possible to assess that mortality is up to 2 times higher for those over 60 years of age.[10]

Comorbidities such as cardiovascular disease, high blood pressure, diabetes mellitus and chronic kidney disease; They double the risk of dying from COVID-19 compared to patients without these comorbidities.

Along these same lines, very recent results obtained from patients in the Wuhan area of China have shown that D-dimer, a marker of thrombin generation and fibrinolysis, constitutes a relevant prognostic index of mortality. These studies indicate that D-dimer levels higher than 1000ng / mL are associated with an 18-fold higher risk of mortality, to the point that they are currently included in the screening of all symptomatic COVID-19 positive patients.

Based on the research, we believe that the presentation of a clinical case is of utmost importance, since it practically describes various prognostic factors of severity and mortality, and led to different, not very encouraging scenarios that ended in his death.

CONCLUSIÓN

In the face of an unknown disease, COVID-19, the severity criteria are neither defined at the beginning of the epidemic nor homogenized. Perhaps the most relevant observation of this study is that the factors associated with a higher morbidity and mortality are age, diabetes and arterial hypertension, D-Dimer, LDH, prolonged coagulation times, could increase the risk of complications in patients, such as ARDS, superinfection, shock, ARI and even death.

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