PREDICTORES DE MORTALIDAD EN UNA COHORTE DE PACIENTES HOSPITALIZADOS CON COVID 19 EN LA CIUDAD DE VALLEDUPAR

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RESUMEN

El nuevo coronavirus humano afecta principalmente al sistema respiratorio, dando lugar a una enfermedad respiratoria caracterizada por fiebre, tos seca, disnea, fatiga y, en casos graves, puede avanzar hacia neumonía intersticial, distrés respiratorio agudo severo, disfunción renal, sepsis y, en última instancia, la muerte. El 80 % de los pacientes experimenta síntomas leves a nivel respiratorio, mientras que en el 15 % de los casos, el cuadro clínico se torna grave. Un 5 % de las personas requiere atención crítica, siendo el síndrome de distrés respiratorio agudo (SDRA) la principal causa de mortalidad asociada al SARS-CoV-2. Este síndrome resulta de la

interacción del virus con los receptores de la enzima convertidora de angiotensina 2 (ACE2), liberando su ARN dentro de las células epiteliales, lo que conlleva a su replicación y propagación a células adyacentes. Este proceso provoca una respuesta inflamatoria pulmonar y, en última instancia, limita el intercambio de gases en los alvéolos. El SDRA se caracteriza por ser una inflamación sistémica que afecta de manera evidente los pulmones y otros órganos.

Objetivo. Este estudio tiene como objetivo determinar los factores predictores de mortalidad en una cohorte de pacientes hospitalizados con COVID-19 en la ciudad de Valledupar.

Metodología: Este estudio epidemiológico es de naturaleza observacional, retrospectiva y descriptiva. La población de estudio está compuesta por las historias clínicas de los pacientes con COVID-19 que fueron hospitalizados en las instituciones colaboradoras entre marzo de 2020 y diciembre de 2021. Se analizaron los datos clínicos de un total de 3.193 pacientes hospitalizados confirmados con COVID-19. El tamaño de la muestra se calculó teniendo en cuenta la población total según el Instituto Nacional de Salud. La frecuencia esperada de aumento de la presión arterial fue del 8 %, con un margen de error del 5 % y un nivel de confianza del 95 %. Esto resultó en una muestra total de 110 pacientes evaluados.

Los resultados del análisis bivariado indicaron que factores como antecedentes de cáncer aumentan la probabilidad de fallecer por COVID-19 en 10,8 veces. Además, recibir ventilación mecánica (con una razón de riesgo de 32,0 (intervalo de confianza de 4,25 - 240,63)) y presentar valores elevados de cloro (con una razón de riesgo

de 4,04 (intervalo de confianza de 1,94 - 8,41)) también se asociaron con un mayor riesgo de mortalidad.

En cuanto a los resultados del modelo predictivo multivariado, se observó que en la muestra estudiada, factores como la falta de terapia física, recibir ventilación mecánica, y valores anómalos de hemoglobina y cloro aumentaron el riesgo de fallecer debido a COVID-19; es importante señalar el efecto de esta sobre la disminución del gasto cardiaco y las alteraciones en otros órganos y sistemas que componen al cuerpo humano; ya que al momento inducir a la persona a soporte ventilatorio, la presión positiva del ventilador aumenta la presión intratorácica, tendiendo a reducir el gasto cardiaco debido a la disminución del flujo sanguíneo y del retorno venoso**,** por lo que también repercute en la función en ambos ventrículos**,** disminuyendo la precarga ventricular derecha, por consiguiente se produce una disminución del gasto cardiaco y descenso de la presión arterial**.** El flujo arterial coronario depende de la diferencia de presión diastólica y la presión telediastólica del ventrículo izquierdo**,** la disminución de este flujo (bajo gasto cardiaco, hipotensión arterial, disminución de la precarga, compresión de los vasos coronarios) pueden causar una isquemia coronaria.

Palabras clave: COVID-19, Hemoglobina, Cloro, Ventilación mecánica.

ABSTRACT

The new human coronavirus primarily affects the respiratory system, resulting in a respiratory illness characterized by fever, dry cough, dyspnea, fatigue and, in severe cases, can progress to interstitial pneumonia, severe acute respiratory distress,

renal dysfunction, sepsis and, ultimately, death. Eighty percent of patients experience mild respiratory symptoms, while in 15 percent of cases, the clinical picture becomes severe. About 5% of people require critical care, with acute respiratory distress syndrome (ARDS) being the leading cause of mortality associated with SARS-CoV-2. This syndrome results from the interaction of the virus with angiotensin-converting enzyme 2 (ACE2) receptors, releasing its RNA into epithelial cells, leading to its replication and spread to adjacent cells. This process provokes a pulmonary inflammatory response and ultimately limits gas exchange in the alveoli. ARDS is characterized as a systemic inflammation that obviously affects the lungs and other organs.

Objective. This study aims to determine the predictors of mortality in a cohort of hospitalized patients with COVID-19 in the city of Valledupar.

Methodology: This epidemiological study is observational, retrospective and descriptive in nature. The study population is composed of the clinical records of patients with COVID-19 who were hospitalized in collaborating institutions between March 2020 and December 2021. Clinical data from a total of 3,193 hospitalized patients confirmed with COVID-19 were analyzed. The sample size was calculated taking into account the total population according to the National Institute of Health. The expected frequency of increased blood pressure was 8 %, with a margin of error of 5 % and a confidence level of 95 %. This resulted in a total sample of 110 patients evaluated.

The results of the bivariate analysis indicated that factors such as a history of cancer increase the probability of death from COVID-19 by 10.8-fold. In addition, receiving

mechanical ventilation (with a hazard ratio of 32.0 (confidence interval of 4.25 - 240.63)) and having elevated chlorine values (with a hazard ratio of 4.04 (confidence interval of 1.94 - 8.41)) were also associated with an increased risk of mortality.

Regarding the results of the multivariate predictive model, it was observed that in the sample studied, factors such as lack of physical therapy, receiving mechanical ventilation, and abnormal hemoglobin and chlorine values increased the risk of death due to COVID-19; it is important to point out the effect of this on the decrease in cardiac output and alterations in other organs and systems that make up the human body; Since at the moment of inducing the person to ventilatory support, the positive pressure of the ventilator increases the intrathoracic pressure, tending to reduce cardiac output due to the decrease in blood flow and venous return, so it also affects the function in both ventricles, decreasing the right ventricular preload, consequently there is a decrease in cardiac output and decrease in blood pressure. Coronary arterial flow depends on the difference between diastolic pressure and end-diastolic pressure of the left ventricle; a decrease in this flow (low cardiac output, arterial hypotension, decreased preload, compression of the coronary vessels) can cause coronary ischemia.

Key Words: COVID-19, Hemoglobin, Chlorine, Mechanical ventilation.

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