FACULTAD DE CIENCIAS DE LA SALUD
ESPECIALIZACIÓN EN MEDICINA CRITICA
Y CUIDADOS INTENSIVOS

ASOCIACIÓN ENTRE VALORES DE PRESIÓN ARTERIAL DE OXÍGENO Y SATURACIÓN ARTERIAL DE OXÍGENO EN LAS PRIMERAS 24 HORAS DE INGRESO A CUIDADOS INTENSIVOS Y MORTALIDAD HOSPITALARIA.

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RESUMEN:

Introducción: La relación entre la saturación de oxígeno (SpO_2), saturación arterial de oxígeno (SaO_2), presión arterial de oxígeno (PaO_2) y la mortalidad en las primeras 24 horas de ingreso a la UCI sigue siendo poco clara, destacando la necesidad de estudiar estos parámetros vitales.

Objetivos: Evaluar la relación entre los diferentes niveles de oxigenación (SpO_2, SaO_2, PaO_2) durante las primeras 24 horas de admisión en dos UCI en Cartagena (Bolívar) entre 2018 y 2021 y su impacto en la mortalidad.

Materiales y métodos: Estudio de cohorte retrospectivo en pacientes ingresados a la UCI. Se seleccionaron pacientes ≥ de 18 años, quienes al ingreso requirieron FiO_2 suplementaria >21%, evidencia de gases arteriales durante las primeras 24 horas de ingreso. Se excluyeron pacientes con COVID-19, gestantes, trauma craneoencefálico, registros clínicos insuficientes, entre otros. Se evaluaron los niveles de SpO_2, SaO_2 estratificados en (<88%, 88–92%, 93–96%, >96%) y PaO_2 (<55 mmHg, 55-80 mmHg, 81-100 mmHg, >100 mmHg) en las primeras 24 horas a la admisión. El desenlace primario fue la muerte al alta de la UCI o a los 28 días. Realizamos un análisis de regresión logística multinomial, bivariado, multivariado para estimar la asociación entre los niveles de oxigenación estratificados y el desenlace primario.

Resultados: La asociación entre los diferentes parámetros de oxigenación con la mortalidad durante las primeras 24 horas en UCI no está claramente definida. Este estudio de cohorte retrospectivo evalúa la relación entre los niveles de SpO_2, SaO_2 y PaO_2 con la mortalidad en pacientes de dos UCI en Cartagena entre 2018 y 2021. Incluimos pacientes > de 18 años con requerimiento de FiO_2 >21% excluyendo aquellos con condiciones que podrían alterar los resultados. Hicimos un análisis de regresión logística multinomial para analizar la influencia de los parámetros de oxigenación con mortalidad, ajustando por variables contundentes. De los 621 pacientes analizados, se tomó como referencia el grupo de SpO2 entre 93-96%. Encontramos que los subgrupos de SpO2 al ingreso y SaO2 más baja > de 96% mostraron asociaciones protectoras con un OR crudo de 0.68 (IC95%: 0.47 – 0.99; p=0.049), 0.61 (IC95%:0.41 – 0.90; p=0.015) con menos probabilidad para morir. Sin embargo, al realizar el OR ajustado, se perdió la significancia estadística por variables como la edad, género, score Apache II ≥ 12 puntos, Sofa ≥ 2, pacientes con inestabilidad hemodinámica, necesidad de terapia de reemplazo renal y ventilación mecánica invasiva. Por lo tanto, este estudio sugiere establecer puntos de corte para realizar una adecuada monitorización de los parámetros de oxigenación para orientar la oxigenoterapia; aunque se requieren investigaciones adicionales para confirmar estos hallazgos y su aplicabilidad clínica.

Conclusiones: Nuestro estudio demuestra la importancia crucial de la relación entre los parámetros de oxigenación y la mortalidad en la población de cuidados intensivos, destacando que la oxigenoterapia es un predictor crucial de los desenlaces. Sin embargo, tenemos limitaciones, como ser un solo centro, una cohorte retrospectiva y los resultados son consistentes con literatura publicada en otros escenarios de diferentes centros, donde aún no se han encontrado puntos de corte que permitan establecer un rango de seguridad. Por lo tanto, esta investigación no solo refuerza la importancia de monitorizar de cerca estos parámetros en entornos críticos, sino que también sienta las bases para futuros estudios que profundicen en intervenciones y estrategias personalizadas que podrían mejorar significativamente las tasas de supervivencia.

Palabras clave: Hipoxemia; Oxigenoterapia; Hiperoxemia; Mortalidad; Cuidado crítico.

ABSTRACT:

Introduction: The relationship between oxygen saturation (SpO_2), arterial oxygen saturation (SaO_2), arterial oxygen pressure (PaO_2) and mortality in the first 24 hours of ICU admission remains unclear, highlighting the need to study these vital parameters.

Objectives: To evaluate the relationship between different oxygenation levels (SpO_2, SaO_2, PaO_2) during the first 24 hours of admission in two ICUs in Cartagena (Bolívar) between 2018 and 2021 and its impact on mortality.

Materials and Methods: Retrospective cohort study in patients admitted to the ICU. Patients ≥ 18 years of age were selected, who upon admission required supplemental FiO_2 >21%, with evidence of arterial blood gases during the first 24 hours of admission. Patients with COVID-19, pregnant women, craniocerebral trauma, insufficient clinical records, among others, were excluded. SpO_2, SaO_2 levels stratified into (<88%, 88–92%, 93–96%, >96%) and PaO_2 (<55 mmHg, 55-80 mmHg, 81-100 mmHg, >100 mmHg) were evaluated. in the first 24 hours of admission. The primary outcome was death at discharge from the ICU or at 28 days. We performed a multivariate, bivariate, multinomial logistic regression analysis to estimate the association between stratified oxygenation levels and the primary outcome.

Results: The association between different oxygenation parameters with mortality during the first 24 hours in the ICU is not clearly defined. This retrospective cohort study evaluates the relationship between SpO_2, SaO_2 and PaO_2 levels with mortality in patients from two ICUs in Cartagena between 2018 and 2021. We included patients > 18 years of age with a FiO_2 requirement > 21%, excluding those with conditions that could alter the results. We performed a multinomial logistic regression analysis to analyze the influence of oxygenation parameters on mortality, adjusting for conclusive variables. Of the 621 patients analyzed, the SpO_2 group between 93-96% was taken as a reference. We found that the subgroups of SpO_2 on admission and lowest SaO_2 > 96% showed protective associations with a crude OR of 0.68 (95% CI: 0.47 – 0.99; p=0.049), 0.61 (95% CI: 0.41 – 0.90; p=0.015) less likely to die. However, when performing the adjusted OR, statistical significance was lost due to variables such as age, gender, Apache II score ≥ 12 points, Sofa ≥ 2, patients with hemodynamic instability, need for renal replacement therapy and invasive mechanical ventilation. Therefore, this study suggests establishing cut-off points to carry out adequate monitoring of oxygenation parameters to guide oxygen therapy; although additional research is required to confirm these findings and their clinical applicability.

Conclusions: Our study demonstrates the crucial importance of the relationship between oxygenation parameters and mortality in the intensive care population, highlighting that oxygen therapy is a crucial predictor of outcomes. However, we have limitations, such as being a single center, a retrospective cohort, and the results are consistent with literature published in other settings from different centers, where cut-off points that allow establishing a safety range have not yet been found. Therefore, this research not only reinforces the importance of closely monitoring these parameters in critical environments, but also lays the foundation for future studies that delve into personalized interventions and strategies that could significantly improve survival rates.

Keywords: Hypoxemia; oxygen therapy; hyperoxemia; Mortality; critical care.

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