

**FACTORES RELACIONADOS A LA LESIÓN RENAL AGUDA EN  
PACIENTES CRÍTICOS CON COVID-19 EN UNA UNIDAD DE CUIDADOS  
INTENSIVOS DURANTE EL AÑO 2021**

**Dr. Carlos Mauricio López García**

**Código estudiantil: 2019214416681**

**Dr. Johann Andrés Tabares Vásquez**

**Código estudiantil: 2018114090758**

***Tutor científico:***

***Dr. Álvaro Viñas Granadillo***

***Médico Internista Nefrólogo***

**UNIVERSIDAD SIMÓN BOLÍVAR  
DEPARTAMENTO DE POSTGRADO  
ESPECIALIZACIÓN EN MEDICINA CRÍTICA Y CUIDADOS INTENSIVOS  
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## RESUMEN

**Introducción:** En pacientes con infección grave por SARS-CoV-2, se ha señalado al riñón como un órgano blanco para la proliferación del virus, lo que provoca lesión renal aguda /LRA/ que empeora el pronóstico e incrementa el riesgo de muerte en comparación con los que no desarrollan LRA. Una ascendente evidencia científica ha demostrado que la LRA es de hecho prevalente entre los pacientes con COVID-19, particularmente entre los pacientes críticamente enfermos en la UCI.

**Objetivos:** Determinar los factores asociados a la lesión renal aguda en pacientes críticos con neumonía grave por COVID-19 en una unidad de cuidados intensivos de Barranquilla, Colombia durante el año 2021.

**Materiales y métodos:** Estudio descriptivo, corte transversal, retrospectiva en el que se incluyeron consecutivamente pacientes con neumonía grave por SARS-CoV-2 que ingresaron a una unidad de cuidados intensivos de la Clínica General del Norte de Barranquilla (Colombia) desde el 14 de abril del 2020 al 31 de diciembre del 2021. Se recolectaron las variables sociodemográficas, condiciones coexistentes, intervenciones clínicas, parámetros de laboratorio en la admisión y desenlace final.

Se realizó dos modelos de regresión logística binaria para ajustar las variables de confusión (presencia de LRA) y se calcularon las medidas de asociación OR con sus intervalos de confianza al 95%.

**Resultados:** 58.4% (156) de los pacientes presentaron LRA. En pacientes que presentaron LRA, el 55.1% (86) de los pacientes se encontraban con una clasificación KDIGO estadio 3 que corresponde a la población más frecuente. En las dos regresiones binarias encontramos que las variables significativas del modelo fueron condiciones coexistentes el antecedente de enfermedad renal crónica; la intervención clínica como el uso de ventilación mecánica invasiva; dentro de los desenlaces clínicos destacan la muerte dentro de la UCI. Se evidenció que la presencia de condiciones coexistentes como la enfermedad renal crónica otorga una mayor oportunidad de presentar LRA con una relación 3.32 veces (IC 95% 1.37 – 8.01 p valor 0.007). El uso de ventilación mecánica invasiva constituye un factor relacionado para la presencia de LRA (OR: 3.07; IC 95% 1.31 – 7.20 p valor 0.010). Dentro de los desenlaces clínicos los pacientes que tuvieron muerte en UCI tenían una probabilidad de haber cursado con LRA (OR: 2.45; IC 95% 1.08 – 5.56 p valor 0.032). En el modelo regresión lineal realizado con respecto a la evaluación de los hallazgos de laboratorio en la admisión la mediana de ingreso de la creatinina

(coeficiente 0.782 [IC 95% 0.301 – 1.262]; p valor 0.001), la mediana del BUN (coeficiente 0.0686 [IC 95% 0.043 – 0.094]; p valor <.001), y la mediana de ingreso de LDH (coeficiente  $1.91 \times 10^{-3}$  [IC 95%  $7.74 \times 10^{-4}$  –  $3.05 \times 10^{-3}$ ]; p valor 0.001) se correlaciono con cambios significativos para la presencia de LRA.

**Conclusiones:** Encontramos una alta frecuencia de pacientes con requerimiento de terapia de remplazo renal que se asoció de forma independiente con la presencia de enfermedad renal crónica, la necesidad de ventilación mecánica invasiva, el uso de vasoactivo y el desenlace fatal.

**Palabras claves:** COVID-19, Unidad de cuidados intensivos, Lesión renal aguda, Factores de riesgo.

## ABSTRACT

**Introduction:** In patients with severe SARS-CoV-2 infection, the kidney has been identified as a target organ for the destruction of the virus, causing AKI that worsens the prognosis and increases the risk of death compared to those who do not develop AKI. Mounting scientific evidence has shown that AKI is indeed common among COVID-19 patients, particularly among critically ill ICU patients.

**Objectives:** to determine the factors related to acute kidney injury in critically ill patients with severe pneumonia due to COVID-19 in an intensive care unit in Barranquilla, Colombia during the year 2021.

**Materials and Methods:** descriptive, quantitative study that consecutively included patients with severe pneumonia due to SARS-CoV-2 who were admitted to an intensive care unit of the clinica General del Norte in Barranquilla (Colombia) from April 14, 2020 to December 31, 2021 Sociodemographic variables, coexisting conditions, clinical interventions, laboratory parameters on admission and final outcome were included. Two binary logistic regression models were performed to adjust the confounding variables (presence of AKI) and the OR association measures with their 95% confidence intervals were calculated.

**Results:** 58.4% (156) of the patients admitted to the ICU presented AKI. In patients hospitalized in the ICU who presented AKI, 55.1% (86) of the patients had a KDIGO stage 3 classification, which corresponds to the most frequent population. In the two binary regressions we found that the significant variables of the model were coexisting conditions and a history of chronic kidney disease; clinical intervention such as the use of invasive mechanical ventilation; Among the clinical outcomes, death in the ICU stands out. It was evidenced that the presence of coexisting conditions such as chronic kidney disease gives a greater chance of presenting AKI with a ratio of 3.32 times (95% CI 1.37 – 8.01 p value 0.007). The use of invasive mechanical ventilation is a related factor for the presence of AKI (OR: 3.07; 95% CI 1.31 – 7.20 p value 0.010). Within the clinical outcomes, the patients who died in the ICU had a probability of having undergone AKI (OR: 2.45; 95% CI 1.08 – 5.56 p value 0.032). In the linear regression model performed regarding the evaluation of laboratory findings on admission, the median admission of creatinine (coefficient 0.782 [95% CI 0.301 – 1.262]; p value 0.001), the median of BUN (coefficient 0.0686 [95% CI 0.043 – 0.094]; p value <.001), and median LDH admission (coefficient  $1.91 \times 10^{-3}$  [95% CI  $7.74 \times 10^{-4}$  –  $3.05 \times 10^{-3}$ ]

3]; p value 0.001) was correlated with significant changes for the presence of AKI.

**Conclusions:** We found a high frequency of patients requiring renal replacement therapy that was independently associated with the presence of chronic kidney disease, the need for invasive mechanical ventilation, the use of vasoactive agents, and fatal outcome.

**Keywords:** COVID-19, Intensive care unit, Acute kidney injury, risk factors.

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